Use of dental services during pregnancy and associated factors

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ABSTRACT

The aim this study was to evaluate the association between the use of dental services and the sociodemographic characteristics and perceptions of oral health of pregnant women living in a municipality of southern Brazil. The instrument used in this cross-sectional study was a questionnaire composed of questions about sociodemographic characteristics, perceptions of oral health and access to dental services, administered to 102 pregnant women during prenatal care. Descriptive analyses of the variables were performed, along with multivariate analyses for the estimation in a logistic regression model. The mean age of the women was 29±6.2 years. The area of residence, first pregnancy, and the perception that pregnancy impairs oral health and causes weakening of teeth remained significant predictors of dental consultation. The chances of not having had a dental appointment were significantly higher for pregnant women who lived in the countryside, by more than three times; those who believed that pregnancy damages teeth, more than five times; and those teeth were weakened during this period, more than eight times. Furthermore, not being the first pregnancy was a protective factor for not having dental appointment. Women who are pregnant for the first time, living in rural areas and with misperceptions about dental conditions during pregnancy, did not consult during pregnancy.

Descriptors: Dental Care. Oral Health. Prenatal Care. Pregnant Women.

1 INTRODUCTION

Pregnancy is a complex physiological period during which physical, psychological, and emotional changes occur, potentially leading to health risks[1]. Therefore, precautions need to be taken during the gestational period, with respect to food, weight, maintenance of general and oral health, use of medications, and exposure to risk factors[2].

During the gestational period, routine assessments to identify conditions that may interfere negatively with the health and well-being of pregnant women, are performed. Prenatal care is an important tool in the care of women during pregnancy. The Ministry of Health has stated that prenatal care should be offered into all pregnant women, using preventive and educational approaches, in order to identify any disease or risk during pregnancy[3]. In 2000, the Ministry of Health instituted the Humanization Program for Prenatal and Birth, which established a standard model of gestational assistance, as stated in Ordinance No. 569, of June 1, 2000[3]. This model has, from inception, incorporated new programs regularly and, in addition, includes improvements based on

the recommendations of the World Health Organization[4]. Due to the importance of oral health in pregnancy, it is essential that dental care be included in public health programs[5]. In 2002, the Operational Norm of Health Care NOAS-SUS incorporated oral health approaches in pregnant women in order to prevent oral problems[5].

Since prenatal dental care, an important component of women's oral health, can also prevent other problems related to general health, the importance of dental treatment during pregnancy has been evaluated in several studies[6]. Follow-up dental care with clinical evaluations by the dental surgeon, during the periodical prenatal consultations with the dentist, provides guidance on oral health care during pregnancy to ensure the well-being of women, as well as to control the changes that occur in their oral health. However, not all women have access to prenatal dental care[6].

Changes in the state of oral health of pregnant women can be due to several factors; one such factor being the physiological changes that make the oral flora vulnerable to cariogenic colonization, increasing the occurrence of oral diseases[7]. Dental consultations are necessary to prevent oral problems, such as tooth sensitivity, bleeding gums, dental caries, and periodontal problems. Periodontal disease in pregnant women can affect the fetus or even the birth of the baby, causing low birth weights or even premature births due to the stimulation of the maternal and fetal immune responses by the bacteria transmitted through the blood[8]. However, even if there are no risks to the pregnancy, untreated infections can cause long-term adverse effects to a woman's general health[9]. Thus, dental care performed by a professional during pregnancy can improve the integral health of the mother and, consequently, of the baby, minimizing the risks of bacterial transmission, and further, transforming the mother into an active educator, promoting primary prevention.

Studies have indicated that pregnant women are unaware about the importance of oral health care. A study conducted in a city in southeastern Brazil, found that the information on oral health provided by professionals to pregnant women was adequate in less than 50% cases[10]. George *et al.* (2016)[2]. reported that, in addition to not knowing about the negative impacts of poor oral hygiene during pregnancy, pregnant women have a limited knowledge about oral health, and further, they may have oral diseases, such as cavities and periodontal diseases that require interventions, due to this lack of knowledge. Therefore, pregnant women who receive adequate information translate this into positive behavior and seek dental care, while receiving insufficient or confusing information limits their behavior regarding adherence to care during pregnancy[11].

Dental treatment should be preventive and carried out on a regular basis; however, there still seems to be many beliefs and myths about dental care during pregnancy; for example, safety concerns for the child's development based on the thinking that the procedures may negatively affect the formation of the fetus, in addition to advice from family members to not undergo treatment during pregnancy[12]. Although there are several studies on this theme, the actual factors that lead to the absence of demand for dental services during pregnancy are still inconclusive.

The objective of this study was to evaluate the association between the use of dental services and the sociodemographic characteristics and perceptions of oral health of pregnant women living in the municipality of southern Brazil.

2 METHODS

The research was submitted for approval to

the Research Ethics Committee of Meridional Faculty/IMED and approved under number 689.475, CAAE 31581214.8.0000.5319. All the participants completed the Free and Informed Consent Form, thus consenting to participate in the research.

This was a cross-sectional quantitative study of 102 women who were between the 1st and the 3rd trimester of pregnancy. The non-probabilistic sample consisted of pregnant women who underwent prenatal care at the municipal Basic Health Unit, from September 2019 to April 2020 in in the municipality of Passo Fundo/RS, Brazil.

The inclusion criteria were: all pregnant women who underwent prenatal care from the 1st trimester of pregnancy; were in the gestational period; literate; and Brazilian, regardless of age. During the period of research, there were no exclusions or losses.

A pilot test was carried out to adapt the methodology and to train the examiner. The research instrument was administered to five pregnant women who were undergoing prenatal care in the municipality, in order to test the methodology used and the questions in the data collection instrument. The instrument's questions were not modified, as they were answered clearly and in full in the pilot test.

The survey was conducted in the municipality of Passo Fundo, located in the interior of Rio Grande do Sul, with a population of 9,377 inhabitants. It has a territorial area of 684.247 km² with 18.2 km² in the urban area, and 665.84 km² in the rural area. The population density is 13.71 inhabitants/km².

Data collection was performed in one of the Basic Health Unit care rooms by a researcher who was trained for this study. He presented himself and invited the pregnant women to participate in the research by filling out the questionnaire either in the physical or online form, as per their preference.

The questionnaire used was adapted from two validated instruments, composed of questions related to sociodemographic characteristics, perceptions of oral health, and access to dental services: the Pregnancy Risk Assessment Monitoring System (PRAMS)[13] and the questionnaire used in the study by Andrade (2009)[14]. The questionnaire from the PRAMS[13] consisted of 80 objective questions regarding the phases and experiences related to pregnancy, of which 10 questions were selected to be a part of this study. The study by Andrade (2009)[14], on the other hand, presented 31 questions related to the sociodemographic and socioeconomic aspects of pregnant women and their general and oral health characteristics, from which 24 questions were selected to be a part of this study. Thus, the final questionnaire was comprised 34 objective and easily understood questions.

The outcome variable of this study was the “use of the dental service during pregnancy” with the question: Did you consult a dentist during pregnancy? The variable was constructed and evaluated as follows: 'yes' represented the use of the dental service during pregnancy (= 1), and 'no' referred to the lack of use of the dental service by pregnant women during the research period (= 0).

The exposure variables were: age group in years of age: (18–30 years / 31–50 years); housing area (urban / rural); marital status (single and separated / married and in a stable relationship); schooling (elementary and high school / higher education); first pregnancy (yes / no); gestational period (1st trimester / 2nd trimester / 3rd trimester); perception of your oral health (bad or regular / good or excellent); pregnancy impairs oral health (yes / no); oral problems in pregnancy (periodontal diseases / others); teeth weakened during pregnancy (yes / no). For the analysis of associations, the variables of the gestational period were placed in two groups: the first six months and last three months of pregnancy.

The data obtained were organized in an

Excel spreadsheet and exported to the statistical program IBM SPSS® software (Statistical Package for the Social Sciences), version 20.0, (Armonk, New York). Descriptive analyses of all variables were performed, describing their relative and absolute frequencies. In addition, bivariate and multivariate analyses were performed to estimate the odds ratios (OR) and their respective 95% confidence intervals (CI), gross and adjusted by exposure variables in a binary logistic regression model (p-value <0.05).

3 RESULTS

Table 1 shows the characteristics of the sample according to the distribution of the frequencies related to the sociodemographic and oral perception variables of pregnant women. Of the 102 participants, 51% were between 18 and 30 years old, and 49% were between 29 to 45) years old (28 ± 6.2 years). Of these, 68.6% lived in an urban area and 31.4% in a rural area, and 88.2% were in stable relationships. With respect to education, 51% of them completed elementary and high school, and 49% completed higher education. Of these, 64.7% were expecting their first child, and 42.2% were in the second trimester of pregnancy. Oral health was rated as good and excellent by 78.4%, but only 26.5% of all participants had dental consultations. Seventy-point six percent affirmed that they did not believe that pregnancy harmed oral health and 52.9% are unaware of the changes that occur in the mouth during pregnancy. Regarding the condition of weakened teeth during pregnancy, 26.5% of pregnant women said they believed it was harmful.

For the binary logistic regression, all variables that had an association with a p-value <0.10 in the crude model were entered into the multivariate model, between the outcome variable: dental consultation during pregnancy, area of residence, stage of pregnancy, first pregnancy, pregnancy impaired oral health, and teeth weakened during pregnancy. However, after multivariate adjustment, only the variables: area of residence, first pregnancy, pregnancy impaired oral health, and the teeth weakened during pregnancy remained significant (p <0.05), with the other variables losing their association in the final adjusted model multivariate regression analysis.

After the final adjustments. the chances of not having a dental appointment were significantly higher for pregnant women who lived in the countryside (OR = 3.36; 95% $CI_{95\%}$ 1.01–11.14), who believed that pregnancy harms teeth, by more than five times (OR = 5.38; 95% $CI_{95\%}$ 1.53–8.04), and that their teeth were weakened during this phase, by more than 8 times (OR = 8.45; 95% $CI_{95\%}$ 2.40–9.77). However, not experiencing the first pregnancy was a protective factor (OR = 0.28; 95% $CI_{95\%}$ 0.94–10.88) for not having consulted the dental service (table 2).

4 DISCUSSION

In this study, there was a statistically significant association with dental consultation during pregnancy, with the predisposing factors for the use of this service being: the area of residence, perception of pregnancy being harmful to oral health, dental weakness, and the first pregnancy. The use of dental services during pregnancy is of paramount importance; however pregnant women often do not use these services. In this sense, it is important to map the frequency of dental consultations in different locations.

The location of the home of the pregnant women in this study was associated with the absence of dental consultations during the gestational period. The fact that dental services are more frequently used by residents of urban regions was confirmed in a study carried out in Hawaii, USA, where providing care to pregnant

Table 1. Distribution of frequencies of sociodemographic variables and oral perception of pregnant women (n = 102)

Variables	***n***	***%***
Age (years)		
18-30	52	51.0
31-50	50	49.0
Housing area		
Urban	70	68.6
Rural	32	31.4
Marital status		
Single / separated	12	11.8
Married / stable relationship	90	88.2
Schooling		
Elementary and high school	52	51.0
Higher education	50	49.0
First pregnancy		
Yes	66	64.7
No	36	35.3
Gestational period		
1st trimester	24	23.5
2nd trimester	43	42.2
3rd trimester	35	34.3
Perception of your oral health		
Bad or regular	22	21.6
Good or excellent	80	78.4
Consultation with the dentist during pregnancy		
Yes	27	26.5
No	75	73.5
Pregnancy impairs oral health		
Yes	30	29.4
No	72	70.6
Oral problems in pregnancy		
Periodontal diseases	48	47.1
Others	54	52.9
Teeth weakened		
Yes	27	26.5
No	75	73.5

Table 2. Analysis Simple (crude) and Multiple (adjusted) Binary Logistic Regression for the dental consultation variable during pregnancy

	Crude OR (95% CI)	**p-value ***	**[a]Adjusted OR (95% CI)**	**p-value ***
Age				
18-30 years	1	0.429	-	-
31-50 years	0.70 (0.60-1.69)			
Marital status				
Single / separated	1	0.362	-	-
Married / stable relationship	4.46 (0.54-36.39)			
Housing area				
Urban	1	***0.031***	1	***0.048***
Rural	2.73 (1.09-6.84)		3.36 (1.01-11.14)	
Perception of your oral health				
Good / excellent	1	0.239	-	-
Bad / regular	0.54 (0.19-1.49)			
Gestation stage				
First 3 and 6 months	1	0.476	-	-
Last 3 months	1.49 (0.49-4.49)			
First pregnancy				
Yes	1	***0.003***	1	***0.029***
No	0.25 (0.99-10.62)		0.28 (0.94-10.88)	
Pregnancy impairs oral Health				
Yes	1	***0.015***	1	***0.008***
No	3.16 (1.25-8.01)		5.38 (1.53-8.04)	
Teeth weakened in pregnancy				
Yes	1	***0.004***	1	***0.001***
No	4.04 (1.56-10.48)		8.45 (2.40-9.77)	
Oral problems in pregnancy				
Others	1	0.304	-	-
Periodontal disease	1.59 (0.65-3.85)			

* Wald test (p <0.10, statistically significant). OR– Chance Ratio; 95% CI - 95% confidence interval. [a]Adjusted for the variables: housing area, first pregnancy, pregnancy impaired oral health, and teeth weakened during pregnancy (p <0.05).

women living in the rural areas was challenging, even though it was a service recommended to be performed regularly due to the changes that occur in the oral cavity of pregnant women[15]. In rural

locations, service is difficult, and consultations require pregnant women to wait for long periods of time[16]. Consequently, the housing area is a predisposing factor for dental consultations. The vast majority of care units are distant, and women are unable to travel. In this study, the chance of not having a dental appointment during pregnancy was higher by three times for women living in rural areas. Other reasons, described in the literature as to why women did not seek dental care include: the lack of information about the need for consultations, the long wait to get an appointment[17]. Furthermore, going to the dental surgeon has become a socioeconomic barrier for some women who need more complex treatments, especially for pregnant women with low education and low income. The high cost of dental treatments makes access to consultations difficult for them.

The first pregnancy had an important significance in this study, as it showed that women who had children before this pregnancy availed dental care services more often during subsequent pregnancy. The results of a study carried out in Spain, wherein the knowledge of pregnant women experiencing their first pregnancy was gauged, differed from this study, as women who were in their first pregnancy demonstrated more knowledge related to oral health; however, this was not enough to influence the frequency of availing dental services[18]. That is, women who had had children previously seemed to know about the changes that occurred in the mouth during pregnancy, and knew how to prevent problems by seeking dental care during pregnancy, thus avoiding situations that might have affected them during previous pregnancies.

Further, the perception that pregnancy impairs oral health is another variable associated with dental consultations during pregnancy. Women who had this perception were five times more likely to not go to the dentist. In a study carried out in Greece, the perception of women regarding dental treatment being unsafe and impairing health was the main factor limiting the search for care[19]. In view of this, dental treatment during pregnancy can and should be carried out, especially in the 2nd trimester of pregnancy, and pregnant women should not neglect any necessary treatments out of fear of harming the fetus. Radiographic examination, as a complementary method, can be performed while taking appropriate precautions because dental radiographic exposure uses a lower dose and does not cause congenital deformations. Anesthesia, which is used for various procedures, can also be used during pregnancy. Thus, the perception of women that pregnancy impairs oral health is totally incorrect, and if an oral problem occurs during this period, it is necessary and essential to have it resolved. Thus, pregnant women should not be deprived of dental care during this period[20]. The satisfaction of mothers with their dentist also influences the appropriate oral hygiene habits adopted by their children[21]. In addition, the dental guidance received during pregnancy influenced the procedures adopted by mothers for their children, in relation to the beginning of oral hygiene, first appointment with the dentist, breastfeeding time, and knowledge about the factors that lead to the appearance of tooth decay[22].

However, one factor related to the outcome variable was the perception that, in pregnancy, there is a weakening of teeth. Pregnant women who believed in this were eight times more likely to not go to the dentist. Many pregnant women believed that the teeth become weaker and more prone to the development of dental caries because they did not absorb minerals, such as calcium, which is necessary for the development of the bones and teeth of the developing baby. However, the calcium in the teeth of pregnant women is in the form of crystals and is not

available in the systemic circulation. The calcium used for the baby's development is acquired in the diet through vitamins A, C, D, proteins, calcium, and matches[23].

In the present study, less than a third of the pregnant women underwent dental care during pregnancy, and the related factors were described in this study. It is worth mentioning that the research instrument used is based on a questionnaire with objective questions related to pregnancy and self-perception of oral health, with the analyses being carried out using a multivariate model to estimate the odds ratios.

A study by Albasry *et al.*(2019)[24] pointed out that although the frequent use of dental services is important for the quality of oral health, its distribution is low in several countries, and the percentage of visits to dental surgeons in pregnancy varied from 14.4% to 93%, with the frequency being lower in the United Arab Emirates and higher in Canada. Nóbrega *et al*. (2016)[1] conducted a study elucidating the factors associated with missed visits to the dentist, namely: fear, lack of time, and carelessness with health. In addition, they described that the "unnecessary" factor was paramount for mothers not seeking care.

Other studies have revealed several factors regarding women's dental visits. In the study carried out in Rio Grande, the older mothers, who had more residents at home, less education, and income, in addition to fewer consultations during prenatal care, did not undergo dental consultations, which may have occurred due to socioeconomic factors[25]. In a integrative review, the impeding factors for not seeking care were economic, cultural, and educational[26]. Rocha *et al.* (2018)[27] also included psychological factors as predictors of seeking care. A survey carried out throughout the Brazilian territory showed that at an individual level, pregnant women with lower income and younger age used oral health services less frequently in the prenatal period, and that keeping records of consultations with scheduled times make women use the services more. Significant differences regarding the use of consultations in different territories were not observed[28].

One of the limitations of this study was the inability to verify the oral clinical characteristics of pregnant women through clinical examinations and the mapping of oral diseases, such as injuries, dental caries, and periodontal problems. However, the results indicated in the study have revealed the extent of the use of dental services and associated factors, during pregnancy, in the period under investigation. Further studies are required to reinforce the findings and expand the understanding of other determining factors that may be involved.

Dental consultation is an important means of prevention because the maintenance of personal oral hygiene can be achieved with regular visits to the dentist. Although awareness of this has increased, it has not yet reached the expected level. The timely intervention for a disease can prevents adverse results and is even more important in sensitive periods such as pregnancy, as the health of both the mother and child are at risk. In addition to these visits that increase awareness regarding oral diseases and their prevention, basic preventive procedures can prevent any adverse results[29].

Oral health education can be imparted as a component of prenatal health care during the start of the gestational cycle. Butten *et al.* (2020)[30] pointed out that women do not avail dental care regularly and that they receive very little information, regarding dental care, from other sources. Therefore, this study is of paramount importance, and serves as a warning for administrators and health professionals to think about information strategies for pregnant women, showing them the importance of dental

care, and to improve its accessibility for these women. It is important to carry out studies with this methodology in other locations to verify the real needs of other municipalities. In addition, a longitudinal study in the localities is essential, in order to verify, over time, the impact of the actions carried out.

The study's findings indicate the importance of receiving prenatal care for pregnant women, in the municipality studied. Therefore, the need for the implementation and monitoring of dental prenatal care is an indispensable component of caring for women's oral health.

CONCLUSION

Based on the results of this study, the following conclusions can be made: (i) women who are pregnant for the first time, living in rural areas and with misperceptions about dental conditions during pregnancy, did not consult during pregnancy; (ii) women who had previously experienced pregnancy were aware of the need for dental consultation.

RESUMO

Uso de serviço odontológico durante a gravidez e fatores associados

O objetivo do estudo foi avaliar a associação entre a utilização de serviços odontológicos e as características sociodemográficas e percepções sobre saúde bucal de gestantes residentes em um município do Sul do Brasil. O instrumento utilizado no estudo transversal foi um questionário composto por questões sobre características sociodemográficas, percepções de saúde bucal e acesso a serviços odontológicos, aplicado a 102 gestantes durante o pré-natal. Foram realizadas análises descritivas multivariadas das variáveis em modelo de regressão logística. A média de idade das mulheres foi de 29±6,2 anos. A zona de residência, a primeira gravidez e a percepção de que a gravidez prejudica a saúde bucal e causa enfraquecimento dos dentes permaneceram como preditores significativos da consulta odontológica. As chances de não ter feito consulta odontológica foram significativamente maiores para as gestantes residentes na zona rural em mais de três vezes; as que acreditavam que a gravidez danifica os dentes em mais de cinco vezes; e que os dentes enfraqueceram nesse período mais de oito vezes. Além disso, não ser a primeira gravidez foi fator de proteção para a consulta odontológica. Mulheres grávidas pela primeira vez, residentes na zona rural e com percepções equivocadas sobre as condições odontológicas durante a gestação, não utilizaram o serviço odontológico durante a gestação.

Descritores: Cuidado Pré-natal. Cuidados Odontológicos. Gestantes. Saúde Bucal.

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