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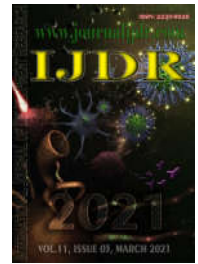
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RESEARCH ARTICLE

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## FACTORS RELATED TO PRENATAL DENTAL CARE IN PREGNANT WOMEN IN MAUÉS, AMAZONAS

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### ABSTRACT

**Objective:** To evaluate factors related to prenatal dental care and dental caries in pregnant women at a Basic Care Unit (BHU) in Maués, AM. **Methods:** A cross-sectional, retrospective and quantitative study conducted in the Maria das Dores Negreiros (Dorita) BHU, in the city of Maués. A total of 300 medical records of pregnant women seen in this unit during 2015 were analyzed, with collection of the following data: age, marital status, schooling, origin, and attendance to medical, dental and nursing consultations. **Results:** Most of the pregnant women came from the urban area, 160 (53.3%); were in a stable union, 149 (49.7%); and were primigravidae, 107 (35.7%). The majority has only incomplete elementary school, 114 (38.0%), with their first pregnancy in the 17-20 year old age group, 132 (44.0%). Regarding dental follow-up, only 48 (16.0%) of the total number of pregnant women attended a dental consultation during pregnancy. The mean DMFT of the pregnant women attended was 5.3. There was a statistically significant difference in the medical ( $p=0.030$ ) and dental ( $p=0.000$ ) consultations in relation to the rural and urban origin of the pregnant women. **Conclusion:** The results of this study showed a correlation between the dental consultations of pregnant women with low schooling, in a stable union and from the urban area, demonstrating that the frequency of consultations can be strongly associated to the difficulty in access and displacement experienced by the pregnant women, as well as the lack of information about the relevance of prenatal dental care for the health of pregnant women and infants. New studies must be carried out in order to obtain diverse information on the reasons that lead the pregnant women not to seek dental care during pregnancy.

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## INTRODUCTION

Pregnancy is a natural biological process in the woman's life, which generates changes in the physical, psychological (Santana, 2011; Codato et al., 2011; Santos Neto et al., 2012) and social (Santana 2011; Santos Neto et al., 2012) spheres. During this period, physiological changes occur in the woman's organism (Reis, 2010), both functional and anatomical, systemic and local due to increased levels of estrogen and progesterone (Codato et al., 2011; Santos Neto et al., 2012; Reis, 2010; Tirelli, 2004); Bressane et al., 2011; Moreira, 2009; Chaves, 2011). Pregnant women are considered special patients because they are a risk group for oral diseases. There are oral changes that are attributed to pregnancy, such as increased salivation, nausea and changes in the periodontium.

In addition to that, there is also an increase in vascularization of the gingival tissues in addition to the exacerbated response of the periodontium to the local irritating factors (Santos Neto et al., 2012; Reis, 2010; Tirelli, 2004; Bressane et al., 2011; Moreira, 2009; Chaves, 2011). There are also behavioral changes during pregnancy related to the increased frequency of food intake not followed by oral hygiene, which can lead to the onset or worsening of diseases of the oral cavity, such as caries and gingivitis (Santos Neto et al., 2012). There is also a high incidence of periodontal disease during pregnancy (Reis, 2010; Tirelli, 2004; Bressane et al., 2011; Moreira, 2009; Chaves, 2011), which can be avoided by controlling dental plaque (Reis, 2010; Tirelli, 2004). Prenatal care is an important moment to promote changes in the care process with a view to welcoming pregnant women, ensuring the quality of prenatal care and the right to citizenship (Santana, 2011; Bressane et al., 2011; Bezerra, 2008). Consequently, prenatal care must be initiated as early as

possible, offer universal access with a minimum of periodic consultations, and carry out preventive and educational health actions for pregnant women (Codato, Nakama, Melchior, 2008; Finkler, Oleiniski, Ramos, 2004). With regard to dental care, specifically in prenatal care, according to the Program for Comprehensive Women's Health Care (*Programa de Assistência Integral à Saúde da Mulher*, PAISM), all enrolled pregnant women must be scheduled for a routine appointment in the Basic Care Units (BHUs) that offer dental services. This routine appointment includes clinical examination of the oral cavity, guidelines on the prevention of oral diseases, diet and oral hygiene, and a treatment plan is outlined to be developed during the prenatal period (Reis, 2010; Bressane *et al.*, 2011).

However, access to oral health care during pregnancy in an equitable and universal manner still remains one of the major challenges to be faced in the structure of primary health care in the public sphere (Diniz, 2012). Some of the main factors associated with low adherence to prenatal dental care is the lack of information regarding the safety of indication and implementation of dental treatment during pregnancy; the lack of interest; complacency; low perception of the pregnant women's needs; anxiety; fear of feeling pain; and even difficulties in accessing the public service (Santos Neto *et al.*, 2012; Reis, 2010; Zanata, 2001). In addition to that, the dental surgeon's performance is surrounded by many fears and prejudices, which contributes to the harmful cycle of caries (Reis, 2010; Zanata, 2001; Uchimura *et al.*, 2014; Aguiar *et al.*, 2011). Pregnancy is the ideal time to demystify the negative beliefs that result from the association between pregnancy and dental treatment because, at this stage, women are usually more receptive to new knowledge, which can lead to the adoption of new and better health practices. These practices will have benefits that will extend to the other family members, due to the important role of the mother in caring for her dependents. Thus, this study aimed to assess the factors related to prenatal dental care and dental caries in pregnant women in a city from the inland of the state of Amazonas.

## METHODS

This is a cross-sectional, retrospective and quantitative study carried out at the Maria das DoresNegreiros (Dorita) Basic Health Unit, located in the city of Maués, which belongs to the Meso-region of Mid-Amazon and Micro-region of Parintins, state of Amazonas. For 2020, it has an estimated population of 65,040 people according to the IBGE and located 267 km in a straight-line from the capital city, Manaus, with access through river or planes. The selection of the care unit followed convenience criteria, as this unit offers prenatal care and oral health services to the population. Data was collected by analyzing the medical records of all the pregnant women seen in 2015 in the aforementioned health unit that were properly filled out, resulting in 300 medical records. The researchers did not use a probabilistic sampling method, and the variables analyzed were the following: age, marital status, schooling, origin, number of pregnancies, age at first pregnancy, DMFT, and medical, dental and nursing consultations. The data collected were typed in a Microsoft Excel table and the statistical analysis was performed in the SPSS program, version 20.0. For calculation of the DMFT (decayed, missing, filled teeth) of the pregnant women, the researchers used the information included in the odontogram of the dental records; to calculate the DMFT of each individual, the sum of the decayed, missing and filled teeth is made, and to calculate the group mean value, the sum of the DMFT for each individual is divided by the number of participants. The descriptive analyses of the quantitative and qualitative variables used absolute and relative frequencies. Pearson's correlation test was used to assess the relationship between the exposure variables (medical, dental and nursing consultation) and the outcome (oral diseases); and, to assess the difference in the medical, dental and nursing consultations between the areas of origin, the Chi-square test was used, adopting a significance level of 5%. This study was approved by the Research Ethics Committee of the State University of Amazonas (ESA/UEA) under number 1,679,704, complying with the requirements of the Brazilian legislation

according to Resolution 466/12 of the National Health Council (*Conselho Nacional de Saúde*, CNS) on Regulatory Guidelines and Rules for Research Involving Human Beings.

## RESULTS AND DISCUSSION

According to Table 01, higher frequencies are observed as follows: 160 (53.3%) for the pregnant women coming from the urban area; 93 (31.0%) in the 16-20 year old age group; 114 (38.8%) with incomplete elementary school; 149 (49.7%) in a stable union; 107 (35.7%) primigravidae; and 257 (85.7%) in the 13-20 year old age group for their first pregnancy. These results do not corroborate with most of the papers found in the literature, since the predominant age group in those works is 20-34 years old (Santana, 2011; Uchimura *et al.*, 2014; Rosell *et al.*, 2013; Moimaz, 2010; Peixoto *et al.*, 2011; Carvalho *et al.*, 2011). It is important to note that the age group is extremely important for a healthy pregnancy and with general and oral health care. The literature argues that the younger the pregnant woman is, the lower her level of education and knowledge, resulting in less care devoted to her health.

The mean age of the pregnant women in this study was 16 years old. This result corroborated with the paper by Zanata RL 2001<sup>13</sup>, which found a mean age between 14 and 20 years old. However, it diverged from other studies (Santana, 2011; Chaves, 2011; Bezerra, 2008; Uchimura, 2014; Moimaz, 2010; Carvalho *et al.*, 2016) that found mean ages varying from 24.9 to 28 years old. The fact that most of the pregnant women have a mean age of 16 years old indicates an early onset of sexual activities, associated with the fact that they have a low educational level since, in this age group, they should be attending high school. Regarding the number of pregnancies, being primigravida, 107 (35.7%), was more frequent in this study, in consonance with the papers in (Bezerra, 2008; Uchimura *et al.*, 2014; Rosell *et al.*, 2013; Martins, 2013; Peixoto, 2011; Carvalho, 2016). This result shows that the lower the schooling, the lower the educational level and the earlier the onset of sexual activity, resulting in early pregnancy. Regarding schooling, 114 (38.0%) pregnant women had only incomplete elementary school, corroborating with the findings in the studies by Zanata, 2001 and Carvalho RAS *et al.* 2016. However, it diverged from other studies (Bressane, 2011; Chaves, 2011; Bezerra, 2008; Rosell *et al.*, 2013; Martins *et al.*, 2013; Moimaz *et al.*, 2018; Peixoto, 2011) that obtained complete and/or incomplete high school as results. The schooling level of the pregnant women has a direct influence on their health habits, especially with regard to their oral health and also with their lifestyle. Therefore, the lower the schooling level, the lower the awareness of their citizenship rights, in addition to restricting access to health care. Thus, it can be inferred that pregnant women have a low educational level, and this fact can decisively contribute to the early onset of sexual activity, resulting in early pregnancy and in school dropout and/or temporary interruption of studies. In relation to their marital status, 149 (49.7%) of the pregnant women were in a stable union, corroborating with other studies (Santana, 2011; Bezerra, 2008; Zanata, 2001; Martins, 2013; Moimaz, 2010; Peixoto, 2011; Carvalho, 2016). This result is extremely relevant since, although these pregnant women were mothers at an early age, they have the support of their partners and this is very important for the progress of the pregnancy. Figure 02 shows the variables of the pregnant women related to DMFT. Of the total of 300 records, only 48 pregnant women underwent dental treatment. As for their origin, there was a higher percentage of pregnant women from the rural area with DMFT over 5 when compared to the pregnant women from the urban area. This fact can be related to the greater difficulty of access to the dental services by pregnant women who live in the rural area of the municipality. Regarding schooling, a higher percentage of pregnant women with incomplete elementary school with DMFT 4 and over 5 was found. The lower schooling level of the pregnant women strengthens the risk factors for the onset of diseases, due to the precariousness of the housing conditions, poor diet, and the difficulty in accessing health care.

**Table 1. Description of the sociodemographic and economic variables about the pregnant women (n=300), Maués, AM, 2015.**

VARIABLES	N (%)
<b>ZONE/ORIGIN</b>	
Rural	140 (46.7)
Urban	160 (53.3)
<b>AGE GROUP</b>	
Up to 15 years old	20 (6.6)
16 to 20 years old	93 (31.0)
21 to 25 years old	87 (29.0)
26 to 30 years old	47 (15.6)
Over 31 years old	53 (17.7)
<b>SCHOOLING</b>	
Incomplete Elementary School	114 (38.0)
Complete Elementary School	49 (16.3)
Incomplete High School	81 (27.0)
Complete High School	48 (16.0)
Incomplete Higher Education	4 (1.3)
Complete Higher Education	4 (1.3)
<b>MARITAL STATUS</b>	
Single	123 (41.0)
Married	23 (7.7)
Stable union	149 (49.7)
Not filled out	5 (1.6)
<b>NUMBER OF PREGNANCIES</b>	
One	107 (35.7)
Two	43 (14.3)
Three	46 (15.3)
4 to 6	75 (25.0)
7 to 11	29 (9.7)
<b>AGE AT FIRST PREGNANCY</b>	
12 years old	1 (0.3)
13 to 16 years old	125 (41.7)
17 to 20 years old	132 (44)
Over 21 years old	42 (13.0)

**Table 2. Absolute frequency of pregnant women according to DMFT and sociodemographic and economic variables about the pregnant women (n=48), Maués, AM, 2015**

VARIABLES	DMFT				
	1	2	3	4	> 5
<b>ORIGIN</b>					
Rural	3	4	2	11	23
Urban	0	0	0	1	4
<b>SCHOOLING</b>					
Incomplete Elementary School	3	3	1	12	11
Complete Elementary School	0	0	1	0	2
Incomplete High School	0	1	0	0	7
Complete High School	0	0	0	0	7
<b>AGE GROUP</b>					
16-20 years old	0	3	1	6	10
21-25 years old	0	1	0	3	12
26-30 years old	3	0	0	2	3
Over 31 years old	0	0	1	1	2
<b>NUMBER OF PREGNANCIES</b>					
1	0	1	1	6	11
2	0	3	0	0	3
3	0	0	0	0	5
> 4	3	0	1	6	29

**Table 3. Comparison between the medical, nursing and dental consultations in pregnant women according to their Origin (n=300), Maués, AM, 2015**

VARIABLES	AREA OF ORIGIN	
	RURAL	URBAN
	N (%)	N (%)
<b>MEDICAL CONSULTATION</b>		
Yes	109 (77.9)	145 (90.6)
No	31 (22.1)	15 (9.4)
p=0.030*		
<b>NURSING CONSULTATION</b>		
Yes	134 (95.7)	154 (96.3)
No	6 (4.3)	6 (3.7)
p=0.056		
<b>DENTAL CONSULTATION</b>		
Yes	5 (3.6)	43 (26.9)
No	135 (96.4)	117 (73.1)
p=0.000*		

\*Statistically significant difference  $p < 0.05$

**Table 4. Pearson's correlation between the medical, nursing and dental consultations in the pregnant women with variables assessed, Maués, AM, 2015**

Variables		Medical consultation	Nursing consultation	Dental consultation	Oral diseases
Age	Pearson's Correlation (r)	-.089	-.094	.064	-.104
	p	.123	.103	.271	.498
Schooling	Pearson's Correlation (r)	-.051	-.064	.165	-.120
	p	.383	.268	.004	.434
Marital Status	Pearson's Correlation (r)	-.097	-.024	-.173	-.028
	p	.093	.681	.003	.854
Origin	Pearson's Correlation (r)	.177	.014	.317	.342
	p	.002	.814	.000	.022
Pregnancy No.	Pearson's Correlation (r)	-.017	-.038	-.087	.005
	p	.770	.509	.131	.971
Age at 1 <sup>st</sup> Pregnancy	Pearson's Correlation (r)	-.004	-.081	.112	-.069
	p	.945	.161	.054	.654

P<0.05-Statistically significant correlation

The results suggest that, according to their origin, the lower the educational level, the lower the age group; and the greater the number of pregnancies, the greater the DMFT value. This result is worrying, since the literature presents papers with lower DMFT values (Bressane *et al.*, 2011; Rosell, 2013; Moimaz, 2010). A high DMFT value indicates that educational and preventive activities are not being carried out effectively in this population at the expense of curative activities, as most of the pregnant women, 244 (81.3%), did not finish high school. And it is in schools that many adolescents receive information on disease prevention, including dental caries. In Table 03, it is possible to compare the data regarding the medical, nursing and dental consultations attended by the pregnant women coming from the urban and rural areas. As for the medical (n=145; 57.0%) and the nursing (n=154; 53.5%) consultations, it is observed that pregnant women in the urban area had greater access to these professionals when compared to those in the rural area. There was also a statistically significant difference in the medical (p=0.030) and dental (p=0.000) consultations in relation to the rural and urban origin of the pregnant women. When referring to medical and nursing monitoring, adding pregnant women from urban and rural areas, the results were 84.77% (n=254) of medical monitoring and 96% (n=288) of nursing monitoring. This result is corroborated by the papers by Peixoto *et al.*, 2011; Santana MSO, 2011; and Bezerra MP, 2008, and allows inferring that there is organization, execution and efficiency of prenatal care by these professionals. However, a very worrying data is related to dental care during pregnancy. Of a total of 300 pregnant women monitored by the health unit, only 48 (16.0%) attended some type of dental consultation, 43 (26.9%) of which were from the urban area. This result corroborates with other studies (Santana, 2011; Santos Neto *et al.*, Leal; Bressane *et al.*, 2011; Zanata, 2001; Rosell *et al.*, 2013; Martins *et al.*, 2013; Moimaz *et al.*, 2010; Peixoto *et al.*, 2011) and allows verifying that, regardless of the studied population living in the capitals of the country or in a municipality from the inland of the state of Amazonas, the deficit in prenatal dental care are markedly evident. And this fact is one of the reasons that explains the high DMFT found in this study. It is important to note that there are differences between the several regions of the country with regard to oral health. Maués is a municipality located in the inland of the state of Amazonas, where the difficulties people face to move from the rural area to an urban area, either due to the high cost or the lack of means to do so, can become an important barrier for accessing the health services.

The literature shows that the North and Northeast regions have less access to dental services and have more unfavorable oral health conditions<sup>8</sup>. Perhaps for this reason, many papers (Santana, 2011; Santos Neto *et al.*, Leal; Bressane *et al.*, 2011; Zanata, 2001; Rosell *et al.*, 2013; Martins *et al.*, 2013; Moimaz *et al.*, 2010; Peixoto *et al.*, 2011) have shown that a large number of pregnant women do not schedule dental consultations during prenatal care, resulting in a high incidence of caries and gingivitis (Chaves, 2011). It should be taken into account that the Maria das Dores de Negreiros BHU is located in the Santa Tereza neighborhood, the furthest neighborhood from the city, and this is a decisive factor for the participation of pregnant women, especially those in the rural area.

In addition to that, there are recurrent problems in the dental office (either due to lack of basic supplies or to failures in equipment, which is essential for providing care). In addition, other factors must be considered in relation to the low participation of the pregnant women in prenatal dental care. There are pregnant women who believe that they can only undergo dental treatment after pregnancy, since any dental procedure would imply risks to the baby's health (Santos Neto, 2012; Pereira, 2002). Most of the women show insecurity regarding dental treatment in pregnancy as a result of mistaken beliefs, such as the loss of a tooth with each pregnancy, weakening of the mother's teeth by the calcium that the fetus takes from them and the most diverse fears, such as pain (Diniz, 2012; Santos Neto, 2002; Codato, 2011), hemorrhage, harms to the development of the fetus, and even abortion due to the use of dental anesthesia. Other associated factors are previous traumatic experiences (Codato, 2011), fear of the dentist, fear of the noise of the high-speed turbine, fear of the instruments, and fear of the environment of the dental room (Codato, 2011). As an aggravating factor, there are professionals who, due to lack of knowledge or fear, postpone procedures or do not intervene decisively for the dental treatment of pregnant women<sup>3</sup>. The professionals are expected to act as an important health education agent, contributing to the demystification of fears and myths related to dental care during the prenatal period and also to the dental changes attributed to the fact of being pregnant (Codato *et al.*, 2011). Table 4 shows the results of the correlation between the medical, nursing and dental consultations and oral diseases and the variables surveyed, revealing a correlation between the dental consultations and the pregnant woman's schooling, marital status and origin, the latter being the factor with the greatest correlation strength (r=0.317), demonstrating that such factors contribute to adherence to dental consultations during pregnancy. In the medical consultations, there was a correlation only with origin (p=0.002), as well as in oral diseases (p=0.022).

To improve the oral health indicators of this population, there is a need to expand the offer and coverage of services, comprehensive oral health care, incorporation of new technologies, adoption of monitoring mechanisms and evaluation of the quality of care for pregnant women (Bressane, 2011), especially regarding those living in rural areas of the municipality. However, there is consensus that, in any desired profound change in society, education has a relevant role in achieving this objective. The importance of education in the social transformation process and its relationship with the health field, where the knowledge of both areas are integrated, can promote changes in the lives of individuals and in the reality of a society (Reis, 2010; Pereira, 2002). Oral health education is the most used method in oral health programs (Diniz, 2012; Rosell *et al.*, 2013), together with the initiatives for the fluoridation of the water supply, the indication of the use of toothpaste, as well as supervised brushing and flossing, mouthwash with fluoridated solution and topical application of fluorides<sup>4</sup>. With the advent of preventive dentistry, health education and motivation have become strategic tools for changing habits and behaviors for health promotion (Moraes, Possobon and Ortiz, 2000; Barros *et al.*, 2001). Pregnant women are considered special patients

because they are a risk group for oral diseases<sup>1</sup>. Therefore, they are a group that needs adequate prenatal monitoring. It should be emphasized that the change in behavior with respect to hygiene and eating habits<sup>4</sup> is an important factor in the prevention of oral diseases, such as dental caries and periodontal disease. In this sense, it is essential to design programs aimed at Education in Health and at health promotion (Reis *et al.*, 2010; Pereira, 2002). Family habits and behaviors are determinant factors for the development, control and prevention of caries in children. Pregnancy is the ideal phase for establishing good habits, since the pregnant woman is psychologically receptive to acquiring new knowledge. Therefore, she is the main responsible for the oral health of her children, both for the early transmission of cariogenic bacteria and for the creation of inappropriate eating and hygiene habits, and her oral health habits tend to be passed on to her children (Batistella *et al.*, 2006; Silveira and Oliveira, 2002; Diniz, 2012; Codato *et al.*, 2011, Santos Neto *et al.*, 2012; Pereira, 2002). It is observed that most of the methods used to prevent oral diseases are aimed at those individuals who have already acquired the disease, that is, little emphasis is placed on early prevention, aimed at cleaning the oral cavity of babies, or even at the oral health of pregnant women. Intrauterine dentistry is growing and it is in prenatal dental care that mothers are approached, guided and educated in relation to the oral health of their future baby (Batistella *et al.*, 2006).

In this sense, the various health professions must articulate in the prenatal care services so that the principle of integrality is effective in its various senses. Physicians, nurses, dentists, nutritionists, psychologists and social workers, among others, must articulate their fields of knowledge to enable a humanized and quality prenatal care process (Codato *et al.*, 2011). Thus, an exchange between all these knowledge areas is necessary for giving birth to a healthy child (Zanata, 2001; Codato *et al.*, 2011). The joint actions of these professionals will certainly help to demystify old and mistaken beliefs that have no scientific basis but are transmitted by the popular culture (Tirelli, 2004). The participation and integration of the dental surgeon as a key member of the prenatal team will provide better, more conscious and safer assistance, which will result in greater comfort and better care for pregnant women at the preventive, educational and curative levels, when necessary (Diniz, 2012).

## CONCLUSION

The results of this study showed a correlation between the dental consultations attended by pregnant women with low schooling, in a stable union and coming from the urban area, demonstrating that the frequency of consultations can be strongly related to the difficulty of access and displacement by the pregnant women, as well as the absence of information about the relevance of prenatal dental care for the health of the pregnant woman and the infant. New studies must be conducted in order to obtain information on the reasons that lead pregnant women not to seek dental care during pregnancy.

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