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THE PROFILE OF HIGH-RISK PREGNANT WOMEN IN PRENATAL DENTAL CARE AT A TEACHING HOSPITAL IN BRAZIL

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ABSTRACT

This study evaluated the epidemiological profile, dietary behavior, oral hygiene, and knowledge about prenatal dental care of high-risk pregnant women. The study sample consisted of 426 high-risk pregnant women who had prenatal care at a Brazilian teaching hospital (2017). For data collection, a questionnaire covering socioeconomic aspects, gestation, eating habits, and oral health was used. It was verified that 54.5% were aged between 19 and 29 years old, 40.6% had secondary education, 43.9% were housewives, and 72.7% earned a household income smaller than two minimum wages. Hypertension (20.4%) and gestational diabetes (18.5%) were the main risk factors for high-risk pregnancy. As for diet changes, 64.5% increased consumption of citrus fruits and 41.3% of sweets. Regarding dental care, 91.5% affirmed that it is safe to go to the dentist during pregnancy, 72.1% had visited a dentist during gestation, and 67.4% had heard about prenatal dental care. Among the respondents, 99.3% brush their teeth and 64.6% floss, daily, being gingival bleeding and xerostomia the main self-perceived oral changes. This study provides important information about the profile of high-risk pregnant women, especially regarding prenatal dental care, which allows the creation of health strategies emphasizing self-care, improving quality of life for the mother-child binomial.

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INTRODUCTION

Pregnancy has a physiological course in 88% of the cases, however, when the presence of medical conditions increasing the probability of unfavorable outcomes for mother or fetus, it can be considered of high-risk (COCO, GIANNONE, ZARBO, 2014). Among the main common conditions that aggravate pregnancy are obesity, diabetes mellitus, hypertension, and alcoholism (DALLA COSTA *et al*., 2016).

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Annually, approximately 280 thousand women die worldwide due to complications during pregnancy and childbirth, being 99% in developing countries (WHO, 2015). These deaths could be reduced, since the majority of the conditions could be avoided with adequate health assistance, such as continuous follow-up during pregnancy (COSTA *et al*., 2016) and preventive interventions of risky situations for the mother-baby binomial (BRAZIL, 2012). During pregnancy, a woman's body undergoes several transformations (MUSSKOPF *et al.,* 2018). In the oral cavity, due to the increased levels of estrogen and progesterone, there is a change in the production of collagen fibers, as well as an

increase in periodontal vascularity and permeability, which increase the susceptibility to gingival inflammation (MORELLI *et al.,* 2018). The literature has suggested that gram-negative bacteria from the dental biofilm and pro-inflammatory markers are capable of causing preterm birth, low birth weight, and intrauterine growth restriction (PUERTAS *et al*., 2018). As a matter of fact, periodontal disease presents intense bacterial and immunological activity and being intrauterine infections responsible for 25-40% of cases of premature birth, (PUERTAS *et al*., 2018) basic approaches such as oral health education, prevention of gingival inflammation with oral hygiene, and removal of foci of infection have the potential to improve the quality of life of the mother-baby binomial (DAVID *et al.,* 2018; MUSSKOPF *et al.,* 2018). Additionally, considering that high-risk pregnant women already have health conditions that may result in pregnancy complications, eliminating risk factors that may aggravate maternal health and fetal development is extremely important.

Despite the relevance of oral health during gestation, the access to dental care during pregnancy has been limited in developed and developing countries (MARCHI *et al*., 2010; KEIRSE, PLUTZER, 2010; SOUZA *et al.,* 2016; ROCHA *et al.,* 2018). In view of this, the Brazilian Ministry of Health, in the National Oral Health Policy Guidelines, recommends that in the beginning of the prenatal period the woman should be referred for a dental appointment it should address oral hygiene and dietary practices, as well as intra-oral examination, diagnosis, and treatment of oral disorders such as gingivitis, periodontal is, and carious lesions (BRAZIL, 2004). Nevertheless, studies have shown that the access of pregnant women to educational and preventive dental care in Brazil is still low, around 41.3% and 21.0%, respectively (SANTOS NETO *et al.,* 2012). Likewise, a recent systematic review showed that the use of dental services during gestation ranges from 16.7% to 83% worldwide (ROCHA *et al.,* 2018), which accentuates the importance of the dissemination of prenatal dentistry among the public and the private healthcare systems in developing and developed countries. Therefore, it is necessary to identify the factors that influence the access to prenatal dental care in order to formulate strategies aiming at the optimization of public policies for maternal and fetal health. Therefore, the objective of the present study was to evaluate the epidemiological profile, dietary behavior, and the knowledge of high-risk pregnant women about prenatal dental care.

MATERIALS AND METHODS

The present research was approved by the Human Research Ethics Committee of the local university and conducted based on the resolution 466/12 of the National Health Council of the Ministry of Health of Brazil. This cross-sectional, quantitative, and exploratory study was carried out with the totality of high-risk pregnant women who underwent prenatal care in a school hospital in Southern Brazil (n=431) from May to December 2017. The women were from 11 cities of a Brazilian state and the inclusion criteria were considered high high-risk pregnancies, in any gestational period. Previously the participants were oriented about the objective and the voluntariness of the study, as well as the guarantee of secrecy. The women who met the inclusion criteria and consented to participate in the study, by signing the written informed consent form (WICF), were included in the study.

Data collection was carried out with a questionnaire developed by the researchers, which was based on scientific articles on the subject and structured with simple 34 open-ended and closed-ended questions about socioeconomic and gestational aspects, dietary habits, oral hygiene, and knowledge about prenatal dental care. The questionnaire was previously applied to pregnant women of the same institution in a pilot study in order to ensure the comprehension of the vocabulary, being these results not considered for the present research. The application of the questionnaire was carried out individually and guided by one calibrated researcher. We considered as sample loss the pregnant women who refused to answer the questionnaire. After answering the questionnaire, all women received oral care instructions for prenatal and postpartum periods. Data from open-ended questions were evaluated and categorized based on the method of content analysis proposed by Bardin (1977), while closed-question answers were evaluated by descriptive statistics.

RESULTS

The final sample consisted of 426 high-risk pregnant women. The sociodemographic characteristics of the sample can be seen in Table 1. The respondents were mostly married (51.2%), housewives (48.9%), with secondary education (40.6%), monthly household income between one and two minimum wages (38.0%), and mean age of 27.2 years old.

Table 1. Baseline sociodemographic characteristics of the high-risk pregnant women (n=426).Brazil, 2018

Characteristics	N	%
Age (years)		
≤18	45	10.5
19-24	97	22.8
25-29	135	31.7
30-34	83	19.5
35-39	54	12.7
≥ 40	12	2.8
Educational level		
Primary	61	14.3
Incomplete primary	105	24.6
Secondary	173	40.6
Incomplete secondary	48	11.2
Tertiary	35	8.2
Incomplete tertiary	5	1.1
Marital status		
Married	218	51.2
Single	193	45.3
Civil union	15	3.5
Occupation		
Housewife	187	43.9
Assistant	44	10.3
Informal work	35	8.2
Sales clerk	31	7.3
Unemployed	31	7.3
Student	22	5.2
Farmer	21	4.9
Housekeeper	17	4.0
Teacher	16	3.8
Community Health Agent	7	1.7
Hairdresser	5	1.2
Technician	4	0.9
Janitor	4	0.9
Doctor	1	0.2
Secretary	1	0.2
Monthly household income (in minimum wages)*		
≤1	148	34.7
1-2	162	38.0
2-3	63	14.8
3-4	30	7.1
≥ 4	4	0.9
Unknown	19	4.5

*One minimum wage is R$ 937.00, which is equivalent to approximately USD $310.00

Table 2 presents the main conditions reported that classified the pregnancy as high-risk, being previous hypertension and gestational diabetes the most present conditions. Among the respondents, 321 (75.3%) used at least one medicine, being the most common ferrous sulfate (27.1%), followed by methyldopa (21.5%), folic acid (20.2%), vitamin complexes (16.2%), and sodium levothyroxine (14.3%). Regarding reproductive history, 143 (33.6%) were primiparous, 50 (11.7%) had three or more deliveries, and 103 (24.2%) had a previous miscarriage.

Table 2. Main risk factors reported that classified the pregnancy as high-risk (n=426). Brazil, 2018

Risk Factors	N	%
Hypertension	87	20.4
Gestational diabetes	79	18.5
Thyroid disorder	71	16.7
Smoking	60	14.1
Bronchitis	39	9.1
Asthma	13	3.0
Syphilis	8	1.9
Anemia	5	1.2
Urinary infection	5	1.2
Obesity	5	1.2
Depression	4	0.9
Alcoholism	3	0.7
HIV positive	2	0.5

Table 3 shows the frequency of dietary habits and changes in diet due to pregnancy. Among the alterations, most women reported increasing the consumption of acidic fruits (64,5%) and sweets (41.3%), as well as reduced salt intake (Table 3). Two hundred twenty-nine participants (53.8%) reported not having changed their diet during the gestational period.

Table 3. Eating habits and changes in diet due to pregnancy (n=426). Brazil, 2018

Eating habits	N	%
Increased consumption of citrus fruits	275	64.5
Increased consumption of sweets	176	41.3
Increased consumption of vegetables	68	6.5
Reduced consumption of pasta dishes	19	4.4
Reduced consumption of sweets	19	4.4
Reduced consumption of fats and fried foods	8	1.8
Reduced salt intake	8	1.8

Table 4. Knowledge and access of high-risk pregnant women regarding prenatal dentistry (n=426).Brazil, 2018

Questions	Yes N (%)	No N (%)
It is safe to go to the dentist during pregnancy	390 (91.5)	36 (8.5)
Heard about prenatal dentistry	287 (67.4)	139 (32.6)
Went to the dentist during pregnancy	307 (72.1)	119 (27.9)
Mother's oral health interferes with baby's health	337(79.1)	89(20.9)
Brush teeth daily	423(99.3)	3(0.7)
Floss daily	275(64.6)	151(35.4)

The knowledge and access of pregnant women regarding prenatal dentistry are presented in Table 4. Among the 337 respondents who stated that mother's oral health interferes with baby's overall health, 71 (21.1%) reported the transmission of microorganisms as the main factor, 134 (39.8%) did not know how to explain the reason, and 132 (39.1%) had misinformation about the topic. Regarding oral hygiene, 7 (1.6%), 68 (15.9%), and 348 (81.6%) reported brushing once, twice, and three or more times a day, respectively. As regards to flossing, 6 (1.4%) reported performing it once daily, while 19 (4.4%) and 250 (58.6%) reported twice and three or more times a day, respectively. Among the pregnant women, 43% perceived oral changes during pregnancy (Table 5). Among them, the most frequent was an increase in gingival bleeding (17%), followed by xerostomia (15.9%).

Table 5. Main oral changes perceived during high-risk pregnancy (n=426). Brazil, 2018

Oral change	N	%
Gingival bleeding	73	17.1
Xerostomia	68	15.9
Bad taste in mouth	38	8.9
Dental sensitivity/pain	32	7.5

DISCUSSION

Pregnancy is a period of physical, hormonal, and emotional changes in women's health status (MUSSKOPF *et al*., 2018). These changes require women to adapt their routines, which create insecurity and anxiety that may lead to the aggravation of certain health conditions (LUCIANO, SILVA, CECCHETO, 2011). In this sense, the education of pregnant woman regarding the aspects that guide general and oral health of mothers and babies is of extreme importance. The understanding of their physiological condition may favor self-care, which in turn accentuates the demand and adherence to preventive and therapeutic approaches aiming at identifying healthier habits to be followed, improving quality of life for the binomial (LUCIANO, SILVA, CECCHETO, 2011). Nonetheless, it is important to note that the socioeconomic profile of pregnant women, especially schooling and family income, are factors related to the use of prenatal care, as well as the acquisition of knowledge and limited understanding of the importance of health care (DOMINGUES *et al*., 2015; DALLA COSTA *et al*., 2016; ROCHA *et* al., 2018). The Brazilian Ministry of Health considers low schooling as an obstetric risk factor, which may result in maternal health problems (BRAZIL, 2000). In the present study, there was a predominance of pregnant women aged between 19 and 29 years, multiparous, and with lower schooling and family income, corroborating findings from other studies (DOMINGUES *et al*., 2015; DALLA COSTA *et al*., 2016). Domingues *et al*. (2015), in an evaluation with 23,894 Brazilian puerperae, pointed out that low adequacy, significant inequality, and inadequate prenatal care are accentuated in multiparous women with lower schooling and income.

Regarding the disorders that characterized the high-risk pregnancy, it was verified that hypertension was the most self-reported condition (20.4%), in agreement with the literature (DALLA COSTA *et al*., 2016). In fact, hypertensive alterations are the most common conditions among pregnant women, between 12 and 22%, with eclampsia being one of the main causes of maternal and infant death (COSTANTINE *et al*., 2013; DALLA COSTA *et al*., 2016). Gestational diabetes also presented high prevalence in our study. Diabetes in pregnant women has increased worldwide (HASHIMOTO, KOGA, 2015) and has drawn attention, since they are 7.43 more likely to develop type 2 diabetes mellitus after childbirth, when compared to pregnant women with normal blood glucose levels (HASHIMOTO, KOGA, 2015). In addition, the number of pregnant smokers in this study is also relevant. The incidence of smoking during pregnancy has been declining in Brazil (from 26.9% in 1989 to 7.7% in 2008), however, it varies considerably among the different regions of Brazil

(LEVY *et al*., 2014). It is worth mentioning that consumption of tobacco increases rates of spontaneous abortion, low birth weight, placental abruption, intrauterine growth restriction, and perinatal mortality (SCHNEIDER *et al*., 2010). Thus, the importance of self-care for high-risk pregnant woman must be emphasized, highlighting the need for multidisciplinary approaches, especially among women in greater social vulnerability, in order to reduce maternal and perinatal morbidity and mortality rates. Proper feeding behaviors play a fundamental role in pregnancy, since it enables the woman to maintain health and assist in the baby's development (LUCIANO, SILVA, CECCHETTO, 2011). The present study found that pregnant women significantly increased their intake of citrus fruits. During pregnancy there is a high demand for iron by the female body (SATO *et al*., 2010;HAIDER *et al*., 2013) and citrus fruits are rich in ascorbic acid, a natural stimulant of absorption of this mineral (SATO *et al*., 2010). This finding may indicate that the pregnant women in our study are receiving adequate guidelines regarding the importance of eating these fruits. Significant intake of ferrous sulfate and folic acid may also be contributing to the low anemia levels found in the respondents of this research, since in Brazil the prevalence of iron-deficiency anemia in pregnant women ranges from 30 to 40% (SATO *et al*., 2010) and 38% worldwide (HAIDER *et al*., 2013).

On the other hand, no reduction in the intake of foods that inhibit iron absorption, such as milk and coffee, has been reported. The literature indicates that the consumption of these foods is superior to the iron-rich foods among Brazilian pregnant women, and since milk is an important source of calcium, it should be recommended that iron-rich and calcium-rich foods should not be eaten concomitantly (CAMARGO *et al*., 2012). The present study also found that an expressive number of pregnant women reported excessive consumption of sugary foods. This finding corroborates studies showing that women increase energy intake during pregnancy (CAMARGO *et* al., 2012; MURRIN *et* al., 2013), especially in single pregnancies, younger age, and lower income pregnant women (HOFFMANN *et* al., 2013; CASTRO *et* al., 2016). Guerra, Von der Heyde, and Mulinari (2007), in an evaluation with 97 pregnant women from a Southern Brazilian city, showed that 45.4% consumed more than 110% of daily energy needs. It is worth mentioning that excessive consumption of high energy density foods can cause gestational obesity, which is related to changes such as fetal macrosomia and gestational diabetes (CAMARGO *et* al., 2012). Thus, the high consumption of sugar-rich foods could be contributing to the high levels of diabetes found in our research. However, some pregnant women reported having reduced consumption of fatty foods, sweets, pasta dishes, and salt, It is similar to the findings of Oliveira *et al.,* (2011), which the respondents labeled these foods as the main ones that should be avoided during pregnancy. It is important to emphasize that dietary habits are influenced by socioeconomic and cultural factors, reasons for the inclusion or exclusion of certain foods in the diet (OLIVEIRA *et al.,* 2011). Therefore, nutritional education during the pregnancy-puerperal periods should be approached in such a way as to involve the socioeconomic and cultural determinants of this public. Additionally, pregnant women tend to reduce food portion during meals, however increase eating frequency and consumption of sugary diets, which have cariogenic potential (O MELO *et al*., 2007, NASSEM *et al*., 2016). It should be noted that during gestation the oral changes are mainly related to the increase of gingival vascularization and the exacerbated response of periodontal soft tissues to local factors (MORELLI *et al*., 2018). Such changes may be influenced by hormonal levels, nutritional changes, and dental plaque, where cariogenic foods assume a relevant role. Thus, plaque accumulation, associated with inappropriate oral hygiene and eating, may accentuate oral changes, among them increased gingival bleeding and dental sensitivity (related to periodontal disease) reported in the present study. In fact, the literature has shown that the main oral alteration noted by pregnant women is the increase in gingival bleeding and that they present a 2.2-fold increase in risk of developing gingivitis (MOIMAZ *et al*., 2011; MONTEIRO *et al*., 2012). Vogt *et al*. (2012), in an study with 334 pregnant women from a Brazilian metropolis, found that all women presented gingival bleeding on clinical examination, from which 47% were diagnosed with periodontal disease. Thus, continued maternal oral health maintenance is of fundamental importance for the planning of community actions aimed at minimizing the transmission of pathogenic bacteria from the pregnant woman to the fetus. In this study, we found that 15.9% of the respondents reported xerostomia (dry mouth), higher than the finding of Monteiro *et al*., (2012) in an evaluation of normal-risk pregnant women (9.3%). However, it is important to note that a number of external factors can lead to xerostomia, such as depression, stress, anxiety, alcohol consumption, tobacco, caffeine-rich beverages, and medications (SCULLY, 2003). Thus, xerostomia is considered an important common risk factor. Scully (2003) reports that dry mouth accounts for 80.5% of adverse drug reactions, especially in patients using drugs to control hypertension. The present study found that 75.3% of the pregnant women used medications, 21.5% of them being antihypertensives. Thus, considering that high-risk pregnant women present health conditions that usually require the use of drugs, associated with factors that may accentuate xerostomia, dry mouth sensation is expected to be higher in this public.

It is noteworthy that salivary disorders, along with dietary changes and inefficient oral hygiene, have the potential to increase oral hyper-acidity, favoring bacterial growth (FIGUEIREDO *et* al., 2017). Therefore, it is essential to intensify of dental plaque during pregnancy, since despite the hormonal alterations exacerbating the inflammatory and tissue responses to the microorganisms, gingivitis in pregnant women is plaque-induced, which can be controlled with daily oral hygiene (GEINSINGER *et al*., 2013). In our study, 58.6% of the respondents reported flossing and 81.6% brushing teeth three times or more a day, in line with the national literature (O MELO *et al*., 2007; NASCIMENTO *et al*., 2012). However, it is important to emphasize that this type of study uses information from self-report, therefore data should be analyzed with caution. Despite this limitation, the importance of oral care should be emphasized during pregnancy, since consumption of more sugary foods, difficulties in brushing due to increased nausea, as well as recurring vomiting tend to unbalance the oral environment, enhancing the acidic environment, which requires special care (NASEEM *et al*., 2016). Similarly, although the sample of this study included pregnant women from 11 cities, its generalization to a national context is limited, since the participants had prenatal care at the same hospital.

The fact that 72.1% of the participants went to the dentist during pregnancy found in the present study draws attention. Moimaz *et al*., (2011) in an evaluation with 737 pregnant women participating in the Dental Program of Attention to the

Pregnant Woman of the School of Dentistry of Araçatuba – Brazil, found that 78% did not seek dental care during pregnancy. It is believed that, faced with the recent introduction of guidelines by the Brazilian Ministry of Health addressing the importance of oral health during pregnancy, the number of pregnant women seeking dental appointments, as well as health units offering dental care to pregnant women, tend to increase. It is worth highlighting the creation of the national base program entitled Rede Cegonha (Stork Network), which aims at increasing access and improving the quality of care during prenatal, childbirth, puerperium, and early childhood (BRAZIL, 2011), an initiative that may also be increasing the search for oral health. This factor would also explain the number of pregnant women who feel safe for the fetus to go to the dentist (91.5%) found in the present study, compared to studies that demonstrate that pregnant women consider it a risky attitude (MOIMAZ *et al.,* 2011; MARINHO *et al.,*2016). However, it is worth mentioning that 32.6% of pregnant women never heard about dental prenatal care, which demonstrates the need to intensify actions aiming to accentuate the search for maternal oral health as an important preventive strategy for the pregnant woman and for the future child.

In conclusion, the majority of the 426 high-risk pregnant women evaluated was concentrated in the age group between 19 and 29 years old, with lower schooling and family income, married, and multiparous. The main risk factors for high-risk pregnancy were hypertension, gestational diabetes, thyroid abnormalities, and smoking, with the greater number of patients being medicated. Most of the pregnant women reported dietary changes, especially increasing consumption of citrus fruits and sweets, as well good hygiene habits, since the majority carries out daily oral hygiene. A high percentage of the pregnant women believe that it is safe to go to the dentist during pregnancy and that maternal oral health interfere with the baby's health, however knowledge about prenatal dentistry is still limited. Most of the participants went to the dentist during gestation, with gingival bleeding and dry mouth sensation being the main perceived mouth changes. Finally, it is important to reinforce that health education of high-risk pregnant women in the prenatal care is essential for changing habits towards self-care, which in turn accentuates adherence to preventive and therapeutic approaches that identify healthier habits to be followed, improving quality of life for the mother-child binomial.

REFERENCES

Bardin L. 1977. Análise de conteúdo, Edições 70, Lisboa, Portugal.

Brazil MS. 2000. Assistência pré-natal: manual tétcnico Available online at http://bvsms.saude.gov.br/bvs/publicacoes/cd04_11.pdf.

Brazil MS. 2004. National Oral Health Policy Guidelines. Available online at: http://bvsms.saude.gov.br/bvs/publicacoes/politica_nacional_brasil_sorridente.pdf.

Brazil MS. 2011. Institui, no âmbito do SistemaÚnico de Saúde - SUS - a RedeCegonha. Available online at http://bvsms.saude.gov.br/bvs/saudelegis/gm/2011/prt1459_24_06_2011.html

Brazil MS. 2012. Attention to the prenatal of low risk. Available online at http://bvsms.saude.gov.br/bvs/publicacoes/cadernos_atencao_basica_32_prenatal.pdf.

Camargo RMS, Pereira RA, Yokoo EM, Sachs A, Schirmer J. 2012. [Food consumption of pregnant women assisted in a public prenatal care service]. Portuguese. Available online at http://periodicos.uem.br/ojs/index.php/CiencCuidSaude/article/view/13709.

Castro MB, FreitasVilela AA, de Oliveira AS, Cabral M, de Souza RA, Kac G, Sichieri R. 2016. Sociodemographic characteristics determine dietary pattern adherence during pregnancy. Available online at https://doi.org/10.1017/S1368980015002700.

Coco L, Giannone TT, Zarbo G. 2014.Management of high-risk pregnancy.MinervaGinecol. 66, pp.383-389.

Costa DKP, Arruda LP, Magalhães AHR, Abreu LDP, Ponte KMA, Freitas CHA. 2016. Nursing care in prenatal and patient safety: integrative review. Available online at https://periodicos.ufpe.br/revistas/revistaenfermagem/article/view/11272.

Costantine MM, Cleary K; Eunice Kennedy Shriver, National Institute of Child Health and Human Development Obstetric--Fetal Pharmacology Research Units Network.2013. Pravastatin for the prevention of preeclampsia in high-risk pregnant women. Available online at https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3880675/.

Dalla Costa L, Cura CC, Perondi AR, França VF, Bortoloti DS. 2016. Epidemiological profile of high-risk pregnant women. Available online at https://revistas.ufpr.br/cogitare/article/view/44192/28239.

David SC, Mário TG, De Freitas GC, Kantorski KZ, Wikesjö UME, Moreira CHC. 2018. Correlation between plaque control and gingival health using short and extended oral hygiene intervals. Available online at https://doi.org/10.1007/s00784-018-2358-5.

Domingues RM, Viellas EF, Dias MA, Torres JA, Theme-Filha MM, Gama SG, et al. 2015.[Adequacy of prenatal care according to maternal characteristics in Brazil]. Portuguese. Available online at https://www.scielosp.org/scielo.php?script=sci_arttext&pid=S1020-49892015000300003&lng=en&nrm=iso&tlng=en.

Figueiredo CSA, Rosalem CGC, Cantanhede ALC, Thomaz EBAF, Cruz MCFN. 2017. Systemic alterations and their oral manifestations in pregnant women. Available online at https://doi.org/10.1111/jog.13150.

Geisinger ML, Geurs NC, Bain JL, Kaur M, Vassilopoulos PJ, Cliver SP, et al. 2014. Oral health education and therapy reduces gingivitis during pregnancy. Available online at https://doi.org/10.1111/jcpe.12188.

Guerra AFFS, Von der Heyde MED, Mulinari RA.2007. [Nutritional status impact on the birth weight of newborns pregnant adolescents].Portuguese. Available online at http://www.scielo.br/pdf/rbgo/v29n3/03.pdf.

Haider BA, Olofin I, Wang M, Spiegelman D, Ezzati M, Fawzi WW, et al. 2013. Anaemia, prenatal iron use, and risk of adverse pregnancy outcomes: systematic review and meta-analysis. Available online at https://www.bmj.com/content/346/bmj.f3443.

Hashimoto K, Koga M. 2015.Indicators of glycemic control in patients with gestational diabetes mellitus and pregnant women with diabetes mellitus.Available online at https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4515444/.

Hoffmann JF, Nunes MA, Schmidt MI, Olinto MT, Melere C, Ozcariz SG, et al. 2013. Dietary patterns during pregnancy and the association with sociodemographic characteristics among women attending general practices in southern Brazil: the ECCAGe Study. Available online at http://www.scielo.br/scielo.php?script=sci_arttext&pid=S0102-311X2013000500014.

Keirse MJ, Plutzer K. 2010.Women's attitudes to and perceptions of oral health and dental care during pregnancy. Available online at https://doi.org/10.1515/JPM.2010.007.

Levy D, Jiang M, Szklo A, de Almeida LM, Autran M, Bloch M. 2013.Smoking and adverse maternal and child health outcomes in Brazil. Available online at https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3842128/

Luciano MP, Silva EF, Cecchetto FH.2011. [Orientations of nursing in the high risk gestation: the pregnant perceptions]. Available online at https://doi.org/10.5205/reuol.1302-9310-2-LE.0505201124

Marchi KS, Fisher-Owens SA, Weintraub JA, Yu Z, Braveman PA. 2010. Most Pregnant Women in California Do Not Receive Dental Care: Findings from a Population-Based Study. Available online at https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2966664/.

Marinho AM, Dutra FT, Lucas SD, Abreu MHNG. 2016. Conditions and Perceptions of Oral Health in Brazilian Pregnant Women. Available online at http://revista.uepb.edu.br/index.php/pboci/article/view/2978

Moimaz S, Garbin C, Rocha N, Santos S, Saliba N. 2011. [Dental attention for pregnant woman program: ten year results]. Portuguese. Available online at http://ojs.unesp.br/index.php/revista_proex/article/view/418/410.

Monteiro RM, Scherma AP, Aquino DR, Oliveira RV, Mariotto, AH.2012. [Evaluation of pregnants oral hygiene habits by quarter of pregnancy]. Portuguese. Available online at: https://www.researchgate.net/publication/316310759_Evaluation_of_pregnants_oral_hygiene_habits_by_quarter_of_pregnancy.

Morelli EL, Broadbent JM, Leichter JW, Thomson WM. 2018.Pregnancy, parity and periodontal disease. Available online at https://doi.org/10.1111/adj.12623.

Murrin C, Shrivastava A, Kelleher CC. 2013. Maternal macronutrient intake during pregnancy and 5 years postpartum and associations with child weight status aged five. Available at https://www.nature.com/articles/ejcn201376.

Musskopf ML, Milanesi FC, Rocha JMD, Fiorini T, Moreira CHC, Susin C, et al. 2018. Oral health related quality of life among pregnant women: a randomized controlled trial. Available online at http://www.scielo.br/scielo.php?script=sci_arttext&pid=S1806-83242018000100201.

Nascimento EP, Andrade FS, Costa AMDD, Terra FS.2012. [Pregnant women during dental treatment].Portuguese. Available online at http://revodonto.bvsalud.org/pdf/rbo/v69n1/a28v69n1.pdf.

Naseem M, Khurshid Z, Khan HA, Niazi F, Zohaib S, Zafar MS. 2016. Oral health challenges in pregnant women: Recommendations for dental care professionals. Available online at https://doi.org/10.1016/j.sjdr.2015.11.002.

O Melo NSF, Ronchi R, Mendes CS, MazzaVA.2007. [Food habits and oral hygiene influencing pregnant women's health].CogitareEnferm. Portuguese.Available online at https://revistas.ufpr.br/cogitare/article/view/9824.

Oliveira DR, Gomes PR, Bando AMN, Gonçalves SR. 2011. [Food beliefs in breastfeeding. A study among pregnant and lactating attended in a public maternity hospital in the city of São Paulo, Brazil]. Portuguese.Available online at https://www.portalnepas.org.br/abcs/article/view/62.

Puertas A, Magan-Fernandez A, Blanc V, Revelles L, O'Valle F, Pozo E, León R, Mesa F. 2018. Association of periodontitis with preterm birth and low birth weight: a comprehensive review. Available online at https://doi.org/10.1080/14767058.2017.12930239.

Rocha JS, Arima LY, Werneck RI, Moysés SJ, Baldani MH. 2018. Determinants of Dental Care Attendance during Pregnancy: A Systematic Review. Available online at https://www.karger.com/Article/FullText/481407.

Santos Neto ET, Oliveira AE, Zandonade E, Leal MC. 2012.[Access to dental care during prenatal assistance]. Portuguese. Available online at http://www.scielo.br/scielo.php?script=sci_arttext&pid=S1413-81232012001100022.

Sato AP, Fujimori E, Szarfarc SC, Borges AL, Tsunechiro MA. 2010. Food consumption and iron intake of pregnant and reproductive aged women. Available online at http://www.scielo.br/scielo.php?script=sci_arttext&pid=S0104-11692010000200016.

Schneider S, Huy C, Schütz J, Diehl K. 2010. Smoking cessation during pregnancy: a systematic literature review. Available online at https://doi.org/10.1111/j.1465-3362.2009.00098.x.

Scully C. 2003. Drug effects on salivary glands: dry mouth. Available online at https://doi.org/10.1034/j.1601-0825.2003.03967.x

Sousa LLA, Cagnani A, Barros AMS, Zanin L, Flório FM. 2016. Pregnant women's oral health: knowledge, practices and their relationship with periodontal disease. Available online at http://www.scielo.br/scielo.php? script=sci_arttext&pid=S1981-86372016000200154.

Vogt M, Sallum AW, Cecatti JG, Morais SS. 2012. Factors associated with the prevalence of periodontal disease in low-risk pregnant women. Available online at https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3283460/.

WHO. 2015. Trends in Maternal Mortality: 1990 to 2015 – Estimates by WHO, UNICEF, UNFPA, World Bank Group and the United Nations Population Division. Available online at https://afro.who.int/sites/default/files/2017-05/trends-in-maternal-mortality-1990-to-2015.pdf.

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