Pesquisa Brasileira em Odontopediatria e Clínica Integrada 2025; 25:e230093
https://doi.org/10.1590/pboci.2025.027
ISSN 1519-0501 / eISSN 1983-4632

ORIGINAL ARTICLE

Influence of the Social Support, Smoke and Alcohol Use on Oral Health-Related Quality of Life in Pregnant

Gabriela Bohrer Bolsson[1,2], Jessica Klöckner Knorst[2], Cristiane Medianeira Savian[1], Maísa Casarin[3], Patricia Pasquali Dotto[1,4], Bianca Zimmermann Santos[1,4]

[1]Department of Maternal-Child Health, Franciscana University of Santa Maria, Santa Maria, RS, Brazil.
[2]Graduate Program in Oral Science, Pediatric Dentistry Unit, Department of Stomatology, School of Dentistry, Federal University of Santa Maria, Santa Maria, RS, Brazil.
[3]Department of Periodontology, School of Dentistry, Federal University of Pelotas, Pelotas, RS, Brazil.
[4]Department of Dentistry, Franciscana University of Santa Maria, Santa Maria, RS, Brazil.

Corresponding author: Bianca Zimmermann Santos **E-mail:** biancazsantos@hotmail.com

Academic Editor: Wilton Wilney Nascimento Padilha

Received: May 23, 2023 / **Accepted:** April 18, 2024

How to cite: Bolsson GB, Knorst JK, Savian CM, Casarin M, Dotto PP, Santos BZ. Influence of social support, smoking, and alcohol use on oral health-related quality of life in pregnant. Pesqui Bras Odontopediatria Clín Integr. 2025; 25:e230093. https://doi.org/10.1590/pboci.2025.027

ABSTRACT

Objective: To assess the influence of social support, smoking, and alcohol use on the oral health-related quality of life (OHRQoL) of pregnant women. **Material and Methods:** A cross-sectional study was conducted on a random sample of 256 pregnant women at a public healthcare service in southern Brazil. OHRQoL was measured using the Oral Health Impact Profile (OHIP-14) questionnaire. A semi-structured questionnaire was administered to collect demographic, socioeconomic, social support, and deleterious habits data. Clinical examinations were performed to diagnose dental caries (DMFT index) and gingivitis (marginal gingival bleeding). A Poisson regression model was used to investigate the influence of pregnant' characteristics on OHRQoL. With this approach, we calculated rate ratio (RR) and 95% confidence intervals (95% CI). **Results:** The mean overall OHIP-14 score in the sample was 9.74 (SD=9.00). Pregnant women who presented poor social support reported the worst OHRQoL. Regarding deleterious habits, women who drank alcohol (RR=1.18; IC 95%: 1.05-1.33) and smoked (RR=1.20; 95% IC: 1.07-1.35) during pregnancy had higher means in OHIP-14. In addition, older and non-white women who presented untreated dental caries, ≥15% of marginal gingival bleeding, and low household income also reported worse OHRQoL. **Conclusion:** Our findings suggest that low support social and poor habits during pregnancy influence women's OHRQoL.

Keywords: Health Behavior; Oral Health; Pregnancy; Quality of Life; Social Support.

Introduction

Pregnancy is a period of new experiences for the entire nuclear family and is a special and unique moment in a woman's lifecycle [1]. Follow-up at healthcare services is fundamental to health promotion, disease prevention, and treatment for the mother and unborn child [2]. Physical, hormonal, and psychological alterations can occur during this period, affecting all organism systems, including general and oral health [3]. In this context, these changes can significantly impact the future mother's quality of life [4].

Oral Health-related quality of life (OHRQoL) is a multidimensional construct that is an integral part of people's health and well-being, representing the subjective perspective of the individual concerning self-esteem and satisfaction with oral health [5,6]. Measuring self-perceived OHRQoL and associated factors in pregnant women is vital to determining their needs and re-educating them so that they can understand the changes occurring in their bodies, which can positively impact health [7].

Few studies have evaluated OHRQoL in pregnant women [4,8-12]. According to these findings, it was shown that oral problems can have a negative impact on the OHRQoL of pregnant women [4,12]. In addition to clinical conditions, factors with a more proximal influence on oral health, such as social support, have also been explored [11,13]. Social support has been focused on as a resource to deal with stress and provide feelings of coherence and meaningfulness [14], which can positively impact well-being. Furthermore, individuals with high social support are subject to the influence of normative dental health behaviors and healthcare [14,15], which can prevent harmful habits such as drinking and smoking during pregnancy.

In this sense, clinical oral health measures traditionally used to determine the consequences of oral problems may only partially express the impact on different populations. Including patient-reported outcomes and more distal factors with a broader influence on health is crucial to understanding pregnant women as a priority group and can assist in the planning and evaluating public health programs directed at this population [16,17]. Thus, this study aimed to assess the influence of social support and associated factors on OHRQoL of pregnant women. We hypothesized that pregnant women with low social support levels and who smoked and drank alcoholic beverages are more likely to report worse OHRQoL.

Material and Methods

Study Design and Sample

This cross-sectional study included 256 pregnant women undergoing care at public health services in Santa Maria in southern Brazil. The city has 273,489 inhabitants, with an estimated 2,389 pregnant women, according to data provided by the municipality's secretary in 2017. This study is part of a larger research project entitled "Oral Status of pregnant women and their children: a cohort study." This study was performed with baseline data from a cohort project. The sample selection was accomplished through a random multistage procedure. Our primary sample unit was the eight administrative regions of the city. All prenatal public coverage points in the municipality were considered in the second stage (n = 30), of which 18 points were randomly selected considering the number of pregnant women attended in each region. All the pregnant women who attended the 18 health points were deemed eligible.

The sample size was estimated by taking a standard error of 5%, 95% confidence level, and using the difference between the means of the total OHIP-14 questionnaire of 12.5 (SD=15.1) in the exposed group (with untreated dental caries) and 5.2 (SD=10.7) in the unexposed group (without untreated dental caries) [12]. The ratio of unexposed to exposed was 3:1, a statistical power of 90%, and a design effect of 1.2 was considered. The sample was increased by 30% to compensate for possible dropouts and allow greater precision in the multivariate

analysis, resulting in a required minimum of 229 pregnant women. Women needing antimicrobial prophylaxis before the oral examination, those taking medications associated with increased gingival volume, and those with psychomotor disorders were excluded from the study.

Data Collection

Data collection was conducted from January to October 2017, including clinical examination of the pregnant and structured interviews. A semi-structured interview was held with the women to collect data on demographic, socioeconomic, and social support characteristics. The interviewers underwent training involving theoretical discussions and practical training. Data on oral health conditions were collected through a clinical examination at the healthcare service, assessed by international criteria standardized by the World Health Organization (WHO) for oral health, with a probe and mouth mirror in a room lit with both natural and artificial light [18]. All erupted teeth (except third molars) were evaluated using a periodontal probe (Williams probe, Neumar, São Paulo, Brazil) at six sites per tooth (mesio-buccal, mid-buccal, disto-buccal, disto-lingual/palatal, lingual/palatal, and mesio-lingual/palatal) for determination of marginal bleeding index (MBI) [18].

Four previously trained and calibrated examiners conducted the examinations. The training and calibration process of the examiners for the periodontal examination and dental caries was performed following the method described by the World Health Organization in the basic manual for epidemiological surveys [18]. The intra-examiner and inter-examiner agreement was obtained through Kappa statistics. The training and calibration procedures were performed until satisfactory reproducibility was obtained, defined as a minimum of 80% agreement between repeated measurements for DMF-T index ($K > 0.80$). Reproducibility was determined before and during the study.

Explanatory and Outcome Variables

The Brazilian version of the Oral Health Impact Profile (OHIP-14) was used to assess the women's OHRQoL - the outcome of this study [19,20]. This questionnaire comprises 14 items divided into seven domains: functional limitation, physical pain, psychological discomfort, physical disability, psychological disability, social disability, and handicap during daily activities [10]. Each item is scored using a Likert scale: never = 0; rarely = 1; sometimes = 2; often = 3; and very often = 4. The overall score was computed by summing the individual scores of all items [20]. For each item, the score varied from 0 to 4: the higher the OHIP-14 score, the more significant the negative impact on OHRQoL.

Social support was assessed using the following questions: (1) "How often do you go to church?"; (2) "How often do you visit your family?" subsequently dichotomized into two possible responses: 0 = at least once a month and 1 = Less than once a month; (3) "Do you participate a pregnant woman group?" and the following possible responses: 0 = no and 1 = yes; (4) "Do you have someone to take you to the doctor?" and (5) "Do you have someone you can unburden/trust?" subsequently dichotomized in two possible responses: 0 = never or almost never and 1 = almost always or always. These are commonly used indicators in the social capital literature and Brazilian studies [10,11].

Pregnant women's sociodemographic characteristics were collected through a self-administered questionnaire regarding age, skin color, education level, and household income. The self-reported skin color was based on the criteria established by the Brazilian Institute of Geography and Statistics [21], categorized as white or non-white. Maternal education was collected in years of study and was dichotomized as≥ 8 years of schooling or < 8 years of schooling (incomplete primary education). Household income was measured using the Brazilian

monthly minimum wage (BMMW) (R$937, equivalent to approximately US$ 250 during the study) and categorized in tertiles for assessment: T1 (Lowest) < 1BMMW; T2 (Medium) 1-2.5BMMW; and T3 (Highest) >2.5BMMW. The habit of drinking or smoking during pregnancy was considered as yes (if the pregnant woman drank or smoked at least one day during pregnancy) or not (never drank or smoked during pregnancy). For analysis, deleterious habits were dichotomized into "yes" or "no."

Dental caries was assessed according to the decayed, missing, or filled teeth index (DMFT index) [18] and dichotomized considering the prevalence of untreated dental caries as “present” (corresponding to a non-zero D component in the DMFT index) or “absent” (D component of the DMFT index equal to zero). Marginal gingival bleeding was assessed according to Ainamo and Bay [22] and dichotomized in “extensive levels of gingival bleeding” (≥15% of sites) and “low levels or absence of gingival bleeding” (<15% of sites) [23].

Statistical Analysis

The data were analyzed using the Stata 14 program (StataCorp LP, College Station, TX, USA). A descriptive analysis of the independent variables was performed, followed by a description of the total OHIP-14 score and each domain score. The OHIP-14 scores were considered continuous variables. Unadjusted and adjusted Poisson regression analyses were performed to evaluate associations between the exploratory variables and total OHIP-14 scores. Variables with p-value < 0.20 in the unadjusted Poisson regression analysis were incorporated into the adjusted model. Rate ratios (RR) and respective 95% confidence intervals (CI) for the exposures in relation to the outcomes were shown. The level of significance was set at 5%.

Ethical Issues

This study received approval from the Human Research Ethics Committee of the Franciscan University Center (Certificate number 55197616.7.0000.5306), and all participants signed a statement of informed consent.

Results

A total of 256 pregnant women agreed to participate in the study. The mean age of the sample was 25.42 (SD=6.5) years, and the mean gestation time was 24.6 (SD=9.6) weeks. Inter and intra-examiner agreement (Kappa values) for dental caries ranged from 0.88 to 0.96 at the beginning and during the study.

Table 1 summarizes the characteristics of the sample according to sociodemographic, behavioral, and oral health variables. The majority of pregnant women were white (56.4%). Regarding household income, most pregnant women showed the highest tertiles for behavior characteristics; 12.5% and 14.1% of women reported smoke and drinking, respectively. Considering the clinical conditions, 44.9% of the women presented marginal gingival bleeding in ≥15% of sites. The occurrence of untreated dental caries was high, affecting 60.9% of the women.

The mean overall OHIP-14 score in the sample was 9.74 (SD=9.0). The pregnant woman's older, non-white, and with lower socioeconomic status showed higher overall OHIP-14 scores. Moreover, women with high social support levels, with the frequency of religious activities and family visits, who participated in a pregnant group with someone to take them to the doctor and who had someone they could trust showed better OHRQoL (Table 1).

Table 1. Distribution of sample characteristics according to overall OHIP-14 scores.

Variables	N	(%)	OHIP-14 Mean (SD[a])
Demographic and Socioeconomic			
Age			
< 20 years	49	19.1	8.8 (8.7)
20-30 years	165	60.6	8.3 (8.7)
31-40 years	47	18.4	9.4 (10.3)
> 40 years	5	1.9	12.4 (7.6)
Race			
White	145	56.7	7.6 (7.8)
Non-white	111	43.3	10.1 (10.1)
Education			
> 8 years of formal education	198	77.3	8.7 (9.0)
< 8 years of formal education	58	22.7	8.6 (8.8)
Household Income in BMW[b]			
Lowest (1st tertile)	12	4.8	11.5 (7.7)
Medium (2nd tertile)	190	75.7	8.6 (9.1)
Highest (3rd tertile)	49	19.5	9.1 (8.8)
Social Support			
Religious Social Networks			
At least once a month	125	54.4	8.8 (9.2)
Less than once a month	105	46.6	9.3 (8.7)
They Have Visited a Family Member			
At least once a month	184	71.9	8.4 (8.2)
Less than once a month	72	28.1	10.2 (16.3)
Pregnant Women's Group			
Yes	51	19.9	7.5 (8.1)
No	205	80.1	9.0 (9.2)
Someone to Take Them to a Doctor			
Never or almost never	40	15.8	10.3 (10.0)
Almost always or always	214	84.2	8.5 (8.7)
Someone to Unburden and Trust			
Never or almost never	89	35.0	9.4 (9.5)
Almost always or always	165	65.0	8.4 (8.7)
Deleterious Habits			
Smoke			
No	224	87.5	8.3 (8.4)
Yes	32	12.5	11.8 (11.8)
Drink Alcohol			
No	220	85.9	8.4 (8.5)
Yes	36	14.1	10.3 (10.0)
Clinical Characteristics			
Untreated Dental Caries			
Without	93	37.3	7.1 (8.5)
With	156	62.7	9.7 (9.1)
Marginal Gingival Bleeding			
< 15% of sites	133	53.6	7.07 (8.2)
> 15% of sites	115	46.4	10.7 (9.4)

Values are lower than 256 due to missing data; [a]SD: Standard Deviation; [b]BMW: Brazilian Minimum Wages.

Table 2 shows the results of unadjusted and adjusted Poisson regression analyses. In the adjusted model, age (>40 years), non-white, and low household income were associated with higher OHIP-14 scores. The influence of social support variables could be noted; pregnant women who had visited their family less than once a month (RR=1.17; 95% CI: 1.06 -1.28) did not attend pregnant women's group (RR=1.23; 95% CI: 1.09-1.37) and that had someone to take to the doctor never or almost never reported worst OHRQoL. Regarding behavior characteristics, women who drank alcohol and smoked during pregnancy had higher means of OHIP-14. In

addition, women who presented untreated dental caries (RR=1.12; 95% CI: 1.01-1.23) and marginal gingival bleeding ≥15% of sites (RR=1.38; 95% CI: 1.27-1.51) also reported worse OHRQoL.

Table 2. The association between pregnant variables and overall OHIP-14 scores was unadjusted and adjusted, determined using Poisson regression.

Variables	Unadjusted RR[a] (95% CI)[b]	p-value	Adjusted RR[a] (95% CI)[b]
Age			
< 20 years	1	0.038	1
20-30 years	0.94 (0.84-1.05)		1.01 (0.89-1.13)
31-40 years	1.07 (0.93-1.22)		1.06 (0.92-1.23)
> 40 years	1.40 (1.07-1.83)		1.49 (1.11-2.01)*
Race			
White	1	0.000	1
Non-white	1.31 (1.21-1.43)		1.27 (1.16-1.39)*
Education			
> 8 years of formal education	1	0.878	-
< 8 years of formal education	0.99 (0.89-1.09)		
Household Income in BMW[c]			
Lowest (1st tertile)	1	0.001	1
Medium (2nd tertile)	0.74 (0.63-0.89)		0.64 (0.53-0.77)*
Hightest (3rd tertile)	0.79 (0.65-0.95)		0.69 (0.56-0.85)*
Religious Social Networks			
At least once a month	1	0.287	-
Less than once a month	1.04 (0.96-1.14)		
Have Visited a Family			
At least once a month	1	0.000	1
Less than once a month	1.26 (1.15-1.37)		1.17 (1.06-1.28)*
Pregnant Women's Group			
Yes	1	0.002	1
No	1.89 (1.06-1.32)		1.23 (1.09-1.37)*
Someone to Take Them to the Doctor			
Never or almost never	1	0.000	1
Almost always or always	0.82 (0.74-0.91)		0.83 (0.75-0.93)*
Someone to Unburden and Trust			
Never or almost never	1	0.010	-
Almost always or always	0.89(0.82.-0.97)		
Smoke			
No	1	0.000	1
Yes	1.42 (1.27-1.58)		1.20 (1.07-1.35)*
Drink Alcohol			
No	1	0.000	1
Yes	1.22 (1.09-1.37)		1.18 (1.05-1.33)*
Untreated Dental Caries			
Without	1	0.000	1
With	1.35 (1.24-1.48)		1.12 (1.01-1.23)*
Marginal Gingival Bleeding			
< 15% of sites	1	0.000	1
> 15% of sites	1.35 (1.40-1.65)		1.38 (1.27-1.51)*

*p-value <0.05; [a]RR: Rate Ratio; [b]CI: Confidence Interval; [c]BMW: Brazilian Minimum Wages.

Discussion

The findings support the hypothesis that social and behavioral characteristics influence the pregnant' OHRQoL. Women who presented poor social support and harmful habits such as smoke and who drank alcoholic beverages reported poorer OHRQoL. Our results also suggest that non-white race, lower socioeconomic status, and presented worse clinical conditions such as caries and gingival bleeding are related to poor OHRQoL.

Pregnant women's social support was associated with OHIP-14 scores. This result is in agreement with previous studies [10,11]. Although prenatal care should provide pregnant women the opportunity to construct relationships with support, care, and information providers [24], when asked about social support, several women did not receive this "support" and presented poorer OHRQoL. Low social support during pregnancy may represent insufficient emotional support from the partner, family, friends, and health professionals [11,25]. This condition leads to an increase in stress, anxiety, and depression, which are related to well-being and self-perceived health among pregnant women [11,25]. For this reason, poorer social support provides lower OHRQoL.

In this context, psychosocial characteristics such as low social support may also be connected to the practice of deleterious habits such as smoking or drinking [14,15,25]. According to our findings, the practice of smoking and alcohol use by pregnant women was associated with a worse OHRQoL. Previous studies in different populations have also demonstrated the negative impacts of deleterious habits on OHRQoL [26,27]. Studies have demonstrated that drinking during pregnancy is associated with significant behavioral consequences, traits, and psychiatric disorders [28]. In addition, cigarette smoking during pregnancy is considered a risk factor for poor maternal outcomes [26]. The use of harmful substances has been related to inadequate oral hygiene habits [29], which may negatively impact users' general and oral health [30] and consequently in its OHRQoL.

Our findings also demonstrated that low household income negatively impacted the woman's OHRQoL. However, studies on pregnant women did not show an association with low income [11,12]. We considered household income and race as proxies for individual socioeconomic status [31]. One may hypothesize that this is because individuals with poor socioeconomic status are more susceptible to general and oral health risk factors [32]. In addition, lower income can make accessing and using dental services during pregnancy difficult, negatively influencing OHRQoL [33,34].

Furthermore, non-white women reported poor OHRQoL. Thus, despite the strong influence of socioeconomic status, racial inequalities have also been recognized as important predictors for disparities in OHRQoL [35]. Studies related that non-white ethnic groups with the same socioeconomic level as their white counterparts had lower-level income and occupation, thus hindering access to services and good habits [35,36], influencing OHRQoL.

Pregnant women older than 40 years of age reported a more significant negative impact on OHRQoL than contra parts, which is compatible with results found in the literature [8]. The cumulative experience of periodontal diseases, dental caries, and exposure to risk factors during an individual's life may not be discarded [37]. Data that can partially explain these findings is the fact that older women had worse oral health and dental problems. Moreover, young pregnant women demonstrate greater receptivity to adopting healthy habits and caring for their health [7], such as tooth brushing, which can positively impact quality of life [38], corroborating this result.

Clinical oral health measures were also associated with OHRQoL among pregnant in our study. Women with untreated dental caries and gingivitis had worse OHRQoL. Previous studies have also demonstrated the negative impacts of dental caries on pregnant' OHRQoL [12,39]. Dental caries cause pain, impair chewing, and also can result in psychological discomfort, limiting the performance of activities of daily living and interpersonal relationships, which causes a negative impact on quality of life [39,40,41]. The same can be observed regarding gingivitis. Erchick et al. [42] showed approximately 37% of pregnant women with gingivitis ≥10% of the sites. The presence of multiple sites with gingival bleeding can generate physical and psychological discomfort, impairing social interaction and well-being [43,44] and, consequently, in pregnant women's OHRQoL.

The present study has limitations that should be considered when interpreting the results. Some data were based on the women's reports and may be subject to measurement bias. Women who used orthodontic appliances and had systemic diseases were not excluded from the study. Furthermore, the cross-sectional design precludes the assessment of risk factors that impact OHRQoL. However, cross-sectional studies addressing this population are essential since little is known regarding the oral health status and quality of life of pregnant women. Therefore, the present data could help guide public policies that offer lasting benefits to pregnant women and their children. Studies that determine the oral health status of pregnant women, associated factors, and their relationship with quality of life are critical to the planning and implementation of new health practices [4].

Conclusion

Low social support and deleterious habits such as smoke and drinking during pregnancy influence women's OHRQoL. Further, our results also indicate that non-white, lower socioeconomic status and worse clinical conditions are associated with poor OHRQoL in pregnant women.

Authors' Contributions

GBB	https://orcid.org/0000-0002-7114-5173	Conceptualization, Methodology, Investigation, Writing - Original Draft and Writing - Review and Editing.
JKK	https://orcid.org/0000-0001-7792-8032	Conceptualization, Methodology, Investigation, Writing - Original Draft and Writing - Review and Editing.
CMS	https://orcid.org/0000-0003-0608-2409	Conceptualization, Methodology, Writing - Original Draft and Writing - Review and Editing.
MC	https://orcid.org/0000-0002-3750-5091	Methodology, Writing - Original Draft and Writing - Review, and Editing and Visualization.
PPD	https://orcid.org/0000-0003-0114-3305	Conceptualization, Methodology, Validation, Investigation, Data Curation, Writing - Original Draft, Writing - Review and Editing, Visualization, Supervision and Project Administration.
BZS	https://orcid.org/0000-0001-5303-8115	Conceptualization, Methodology, Validation, Formal Analysis, Investigation, Writing - Original Draft, Writing - Review and Editing, Visualization, Supervision and Project Administration.

All authors declare that they contributed to a critical review of intellectual content and approval of the final version to be published.

Financial Support

None.

Conflict of Interest

The authors declare no conflicts of interest.

Data Availability

The data used to support the findings of this study can be made available upon request to the corresponding author.

Acknowledgments

The authors thank all pregnant women's and to public health service for participating in this study, as well as the Municipal Health Authorities from Santa Maria, Rio Grande do Sul, Brazil.

References

[1] Nascimento EP, Andrade FS, Costa AMDD, Terra FS. Gestantes frente ao tratamento odontológico. Rev Bras Odontol 2012; 69(1):125-130. [In Portuguese].

[2] Vamos CA, Thompson EL, Avendano M, Daley EM, Quinonez RB, Boggess K. Oral health promotion interventions during pregnancy: A systematic review. Community Dent Oral Epidemiol 2015; 43(5):385-396. https://doi.org/10.1111/cdoe.12167

[3] Ebrahin ZF, Oliveira MCQ, Peres MPSM, Franco JB. Dental treatment during pregnancy. Sci Health 2014; 5(1):32-44.

[4] Shah AF, Batra M, Qureshi A. Evaluation of impact of pregnancy on oral health status and oral health related quality of life among women of Kashmir Valley. JCDR 2017; 11(5):zc01-zc04. https://doi.org/10.7860/JCDR/2017/25862.9769

[5] Glick M, Williams DM, Kleinman DV, Vujicic M, Watt RG, Weyant RJ. A new definition for oral health developed by the FDI World Dental Federation opens the door to a universal definition of oral health. Int Dent J 2016; 66(6):322-324. https://doi.org/10.1016/j.ajodo.2016.11.010

[6] Sischo L, Broder HL. Oral health-related quality of life: What, why, how, and future implications. J Dent Res 2011; 90(11):1264-1270. https://doi.org/10.1177/0022034511399918

[7] Moimaz SAS, Rocha NB, Saliba O, Garbim CAS. O acesso de gestantes ao tratamento odontológico. Rev Odontol UNESP 2007; 19(1):39-45. [In Portuguese].

[8] Acharya S, Bhat PV. Oral-health-related quality of life during pregnancy. J Public Health Dent 2011; 69(2):74-77. https://doi.org/10.1111/j.1752-7325.2008.00104.x

[9] Cornejo C, Rossi G, Rama A, Gomez-Gutierrez N, Alvaredo G, Squassi A, et al. Oral health status and oral health-related quality of life in pregnant women from socially deprived populations. Acta Odontol Latin 2013; 26(2):68-74.

[10] Lamarca GA, Leal Mdo C, Leao AT, Sheiham A, Vettore MV. Oral health related quality of life in pregnant and post partum women in two social network domains; predominantly home-based and workbased networks. Health Qual Life Outcomes 2012; 10(1):1-11. https://doi.org/10.1186/1477-7525-10-5

[11] Lamarca GA, Leal Mdo C, Leao AT, Sheiham A, Vettore MV. The different roles of neighbourhood and individual social capital on oral health-related quality of life during pregnancy and postpartum: a multilevel analysis. Community Dent Oral Epidemiol 2014; 42(2):139-150. https://doi.org/10.1111/cdoe.12062

[12] Moimaz SAS, Rocha NB, Garbin AJ, Garbin CA, Saliba O. Influence of oral health on quality of life in pregnant women. Acta Odontol Latin 2016; 29(2):186-193.

[13] Lamarca GA, do C Leal M, Sheiham A, Vettore MV. The association of neighbourhood and individual social capital with consistent self-rated health: A longitudinal study in Brazilian pregnant and postpartum women. BMC Pregn Child 2013; 16(13):1. https://doi.org/10.1186/1471-2393-13-1

[14] Kawachi I, Berkman LF. Social cohesion, social capital and health. In: Berkman LF, Kawachi I, ed. Social epidemiology. New York: Oxford University Press; 2000. https://doi.org/10.1093/med/9780195377903.003.0008

[15] Rouxel PL, Heilmann A, Aida J, Tsakos G, Watt RG. Social capital: Theory, evidence, and implications for oral health. Community Dent Oral Epidemiol 2014; 43(2):97-105. https://doi.org/10.1111/cdoe.12141

[16] Fonseca AM, Avenetti D. Social determinants of pediatric oral health. Dent Clin North Am 2017; 61(3):519-532. https://doi.org/10.1016/j.cden.2017.02.002

[17] McGuire MK, Scheyer ET, Gwaltney C. Commentary: Incorporating patientreported outcomes in periodontal clinical trials. J Periodontol 2014; 85(10):1313-1319. https://doi.org/10.1902/jop.2014.130693

[18] World Health Organization. Oral health surveys: Basic methods. Geneva: World Health Organization; 1997.

[19] Oliveira BH, Nadavsky P. Psychometric properties of the Brazilian version of the Oral Health Impact Profile-short form. Community Dent Oral Epidemiol 2005; 33(4):307-314. https://doi.org/10.1111/j.1600-0528.2005.00225.x

[20] Slade GD. Derivation and validation of a short-form oral health impact profile. Community Dent Oral Epidemiol 1997; 25(4):284–290. https://doi.org/10.1111/j.1600-0528.1997.tb00941.x

[21] Instituto Brasileiro de Geografia e Estatística. Pesquisa Nacional por Amostra de Domicílios: Síntese de Indicadores – 2003. Rio de Janeiro: Instituto Brasileiro de Geografia e Estatística; 2004. [In Portuguese].

[22] Ainamo J, Bay I. Problems and proposals for recording gingivitis and plaque. Int Dental J 1975; 25(4):229-235.

[23] American Dental Association. Acceptance Program Guidelines: Toothbrushes. Chicago: ADA Council on Scientific Affairs; 1998.

[24] Heberlein EC, Picklesimer AH, Billings DL, Covington-Kolb S, Farber N, Frongillo EA, et al. Qualitative comparison of women's perspectives on the functions and benefits of group and individual prenatal care. J Midwifery Women's Health 2016; 61(2):224-234. https://doi.org/10.1111/jmwh.12379

[25] Elsenbruch S, Benson S, Rücke M, Rose M, Dudenhausen J, Pincus-Knackstedt MK, et al. Social support during pregnancy: Effects on maternal depressive symptoms, smoking and pregnancy outcome. Hum Reprod 2007; 22(3):869-877. https://doi.org/10.1093/humrep/del432

[26] Kalayasiri R, Supcharoen W, Ouiyanukoon P. Association between secondhand smoke exposure and quality of life in pregnant women and postpartum women and the consequences on the newborns. Qual Life Res 2018; 27(4):905-912. https://doi.org/10.1007/s11136-018-1783-x

[27] Maida CA, Marcus M, Spolsky VW, Wang Y, Liu H. Socio-behavioral predictors of self-reported oral health-related quality of life. Qual Life Res 2013; 22(3):559-566. https://doi.org/10.1007/s11136-012-0173-z

[28] Barr HM, Bookstein FL, O'Malley KD, Connor PD, Huggins JE, Streissguth AP. Binge drinking during pregnancy as a predictor of psychiatric disorders on the structured clinical interview for DSM-IV in young adult offspring. Am J Psychiatry 2006; 163(6):1061-1065. https://doi.org/10.1176/ajp.2006.163.6.1061

[29] Manicone PF, Tarli C, Mirijello A, Raffaelli L, Vassallo GA, Antonelli M, et al. Dental health in patients affected by alcohol use disorders: A cross-sectional study. Eur Rev Med Pharmacol Sci 2017; 21(22):5021-5027. https://doi.org/10.26355/eurrev_201711_13811

[30] Akinkugbe AA. Cigarettes, e-cigarettes, and adolescents' oral health: Findings from the Population Assessment of Tobacco and Health (PATH) study. JDR Clin Trans Res 2018; 15:1-8. https://doi.org/10.1177/23800844188068

[31] Antunes JL, Frazao P, Narvai PC, Bispo CM, Pegoretti T. Spatial analysis to identify differentials in dental needs by area-based measures. Community Dent Oral Epidemiol 2002; 30(2):133-142. https://doi.org/10.1034/j.1600-0528.2002.300207.x

[32] Turrell G, Sanders AE, Slade G, Spencer A, Marcenes W. The independent contribution of neighborhood disadvantage and individual-level socioeconomic position to self-reported oral health: A multilevel analysis. Commun Dent Oral Epidemiol 2007; 35(3):195-206. https://doi.org/10.1111/j.1600-0528.2006.00311.x

[33] Mesquita FAB, Vieira S. Impacto da condição autoavaliada de saúde bucal na qualidade de vida. RGO 2009; 57(4):401-406. https://doi.org/10.1590/1413-81232014191 2.21352013 [In Portuguese].

[34] Rossel FL, de Oliveira ALBM, Tagliaferro EPS, da Silva SRC, Valseck A. Impacto dos problemas de saúde bucal na qualidade de vida de gestantes. Pesqui Bras Odontopediatria Clín Integr 2013; 13(3):287-293. https://doi.org/10.4034/PBOCI.2013.133.10 [In Portuguese].

[35] Lawrence HP, Cidro J, Isaac-Mann S, Peressini S, Maar M, Schroth RJ, et al. Racism and oral health outcomes among pregnant Canadian aboriginal women. J Health Care Poor Underserved 2016; 27(1):178-206. https://doi.org/10.1353/hpu.2016.0030

[36] Stepanikova I, Oates GR. Perceived discrimination and privilege in health care: The role of socioeconomic status and race. Am J Prev Med 2017; 52(1):S86-S94. https://doi.org/10.1016/j.amepre.2016.09.024

[37] Rios FS, Costa RS, Moura MS, Jardim JJ, Maltz M, Haas AN. Estimates and multivariable risk assessment of gingival recession in the population of adults from Porto Alegre, Brazil. J Clin Periodontol 2014; 41(11):1098-1107. https://doi.org/10.1111/jcpe.12303

[38] Shaghaghian S, Bahmani M, Amin M. Impact of oral hygiene on oral health-related quality of life of preschool children. Int J Dent Hyg 2015; 13(3):192-198. https://doi.org/10.1111/idh.12129

[39] de Oliveira BH, Nadanovsky P. The impact of oral pain on quality of life during pregnancy in low-income Brazilian women. J Orofac Pain 2006; 20(4):297-305.

[40] Locker D. Deprivation and oral health: A review. Community Dent Oral Epidemiol 2000; 28(3):161-169. https://doi.org/10.1034/j.1600-0528.2000.280301.x

[41] Ortiz FR, Tomazoni F, Oliveira MD, Piovesan C, Mendes F, Ardenghi TM. Toothache, associated factors, and its impact on Oral Health-Related Quality of Life (OHRQoL) in preschool children. Braz Dent J 2014; 25(6):546-553. https://doi.org/10.1590/0103-6440201302439

[42] Erchick DJ, Rai B, Agrawal NK, Khatry SK, Katz J, LeClerq SC, et al. Oral hygiene, prevalence of gingivitis, and associated risk factors among pregnant women in Sarlahi District, Nepal. BMC Oral Health 2019; 19(1):2. https://doi.org/10.7281/T1/ZPGBJW

[43] Maroneze MC, Goergen LM, Souza RCL, Rocha JMD, Ardenghi TM. Edema and gingival bleeding in anterior region have a negative influence on quality of life of adolescents. Braz Oral Res 2018; 32:e112. https://doi.org/10.1590/1807-3107bor-2018.vol32.0112

[44] Tomazoni F, Zanatta FB, Tuchtenhagen S, da Rosa, GN, Del Fabro JP, Ardenghi TM. Association of gingivitis with child oral health-related quality of life. J Periodontol 2014; 85(11):1557-1565. https://doi.org/10.1902/jop.2014.140026