

Oral health and quality of life of pregnant women: the influence of sociodemographic factors

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Abstract *This study aimed to evaluate the relationship between sociodemographic factors and the impact on Oral Health-Related Quality of Life (OHR-QoL) in Brazilian pregnant women users of the Unified Health System. This is a cross-sectional epidemiological study developed with pregnant women living in two regions with different sociodemographic characteristics. In total, 1,777 puerperae were interviewed. A structured and previously tested questionnaire collected sociodemographic variables, and the Oral Health Index Profile (OHIP-14) assessed the impact on the OHR-QoL. The statistical analysis was performed using the Chi-square test and multiple logistic regression, both with a significance of 5%. The “psychological discomfort” realm was the only one with a difference between the puerperae of the RMGV and the MRSM ($p=0.042$). The following variables were associated with the impact on the OHR-QoL: residing in the RMGV (OR=1.69; 95%CI: 1.16-2.47); having a low level of schooling (OR=1.80; 95%CI: 1.03-3.18) and visit to the dentist during pregnancy (OR=2.15, 95%CI: 1.50-3.07). Sociodemographic factors should be considered in the planning of oral health actions of pregnant women, as they influence the impact on the OHR-QoL.*

Key words *Maternal and Child Health, Quality of life, Oral Health, Demographic Data*

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Introduction

Pregnancy is a complex condition involving physical and psychological changes that may impact a woman's oral health. Studies report the oral health status of pregnant women as considerably lower compared to puerperae and non-pregnant women¹, and also show the association of periodontal disease with low birth weight and with preterm birth^{2,3}.

In a study with pregnant women users of SUS regarding the prevalence of gingivitis, Bressane *et al.*⁴ found that the higher the schooling level and the household income, the lower the prevalence of the disease. Another essential aspect reported by these authors was that most pregnant women (94%) affirmed the need for treatment at the time of the interview. However, none of the women sought dental care during pregnancy.

Some factors described in the literature have been attributed to discouraging the search for dental care during pregnancy, such as popular beliefs (anesthesia risks, hemorrhages, dangers to the baby), lack of awareness of the need for treatment (they often believe that a toothache is associated with the condition of pregnancy) and fear of pain^{5,6}.

It is known that gestation is a period in which oral health care should be increased and pregnant women become more sensitive to the adoption of new habits and behaviors. Therefore, it is perhaps the most appropriate moment to analyze how she perceives her oral condition⁷.

The evaluation of the effect of diseases and oral conditions on social functions can be of great value to researchers, health managers and providers of oral health services. People's behavior is linked to the way they perceive their oral condition, by the importance assigned to it, by the intrinsic cultural values and past experiences⁸. Even in the more developed countries that provide dental services to their population, such as Australia and England, a large proportion does not attend these services because they have no perception of their need⁹.

The association between oral health and its impact on the quality of life of the individuals, in general, is much discussed in the literature⁹⁻¹³ and evidences the possibility of self-perception of health being linked to the characteristics of the individuals and the sociodemographic context in which they are inserted¹⁴. In pregnant women, while few studies have been conducted on this subject, research reports the association between the need for treatment and the impact on Oral

Health-Related Quality of Life (OHR-QoL)^{5,15}. Also, a study shows that pregnant women with higher schooling level have a lower impact on the OHR-QoL¹⁶.

Considering that pregnant women make up one of the priority groups of care and attention in health services in Brazil¹⁷ and the world¹⁸⁻²⁰, and that good oral health by pregnant women is essential as it may influence the health of the baby^{3,21}, the study of sociodemographic factors and their influence on the perception of oral conditions is relevant to the planning and implementation of dental services aimed at the prevention and control of oral diseases for this population group, facilitating the development and evaluation of oral health actions.

Thus, this study aimed to evaluate the relationship between sociodemographic factors and the impact on OHR-QoL in Brazilian pregnant women users of the Unified Health System.

Methods

This is a cross-sectional epidemiological study developed with pregnant women living in two regions with particular sociodemographic characteristics, located in the State of Espírito Santo, Brazil, who were hospitalized in public health facilities at childbirth. The data used derive from information collected in two Brazilian surveys entitled "Quality Assessment in Prenatal Care in the Metropolitan Region of Greater Vitória (RMGV): Access and Integration of Health Services", conducted from April to September 2010²², and the "Evaluation of Prenatal Care in the São Mateus Microregion (MRSM) - ES", conducted from July 2012 and February 2013²³. The two surveys were evaluated and approved by the Research Ethics Committee of the Health Sciences Center of UFES.

The RMGV and the MRSM represent two distinct populations, the former being predominantly urban (98%), with the Municipal Human Development Index (MHDI) always above 0.7 (except Viana) in 2010, and the latter, with around a quarter of the population residing in rural areas, with the worst MHDI in the state, always below 0.7 (except São Mateus)²⁴.

The sample size was calculated using the data provided by the Live Birth Information System (SINASC) of the two regions, and data for the RMGV were of 2007 and the MRSM of 2009, which reflected approximately the number of parturients. Also, considering the differences

in the population of live births among the municipalities, the sample's representativeness was assured by stratification, as per the proportions observed between the municipalities of each initial study.

The following proportions were observed: Cariacica (22.6%), Fundão (1%), Guarapari (6.3%), Serra (26.3%), Viana (3.7%), Vila Velha (22.2%) and Vitória (17.9%) make up the RMGV. The municipalities of Boa Esperança (5.3%), Conceição da Barra (10.1%), Jaguaré (12.4%), Montanha (5.8%), Mucurici (1.6%), Pedro Canário (12%), Pinheiros (12.4%), Ponto Belo (2.6%) and São Mateus (37.8%) make up the MRSM.

A pilot study was conducted with 67 puerperae at the RMGV and 30 puerperae at the MRSM – not included in the main study – before the implementation of the research to improve the completion of research forms and interviewer training. Further details on the origin surveys can be found in studies by Santos-Neto et al.²² and Martinelli et al.²³

In this study, all women hospitalized for delivery were included in one of the 15 public health service establishments in the two regions during the periods mentioned above. The interviewers checked whether pregnant women carried the Pregnant Woman Card and excluded those who did not have such a document, as well as those who performed (total or partial) prenatal care in the private system and who were monitored in municipalities outside the corresponding region. After the signature of the Informed Consent Form (Resolution 466/12), the interviewers applied a structured and closed-ended questionnaire to the mothers. The database was constructed from the information contained in the research forms and the pregnant women's cards and entered in the SPSS software, version 17.0 (SPSS Inc., Chicago, United States).

Questions regarding OHIP-14 regarding teeth, mouth or denture problems in the last six months of pregnancy were used as per adaptation by Oliveira and Nadanovsky⁵ to evaluate the impact on the OHR-QoL of pregnant women. Fourteen questions cover the seven conceptual realms described by Locker²⁵, two questions per realm: functional limitation, physical pain, psychological discomfort, physical impairment, psychological impairment, social impairment and disability. Their hierarchy is related to the impact on people's quality of life and daily living.

The method chosen to verify the oral health impact on the quality of life, through OHIP-14,

was simple counting. This method is indicated when one wishes to identify the extent of the problem²⁶. The presence of an impact is confirmed when the responses of pregnant women to the two questions of at least in one of the seven realms are “frequently” or “always”.

The following sociodemographic variables were selected for the study: age, ethnicity or skin color, schooling, economic class, marital status, paid work, number of prenatal care visits, dental visits during pregnancy, residing in the urban or rural area.

The association between the sociodemographic variables and the variables related to the oral health on the quality of life was evaluated by the chi-square with a Yates adjustment, with a significance level of 5%. A multiple logistic regression analysis was used to describe the relationship between sociodemographic variables and the presence of impact. A p-value < 0.20 was used regarding the input of the variables in the logistic model, and a level of 5% of significance was adopted for the permanence of the variable in the final model.

Results

A total of 1,777 postpartum women participated in the study, of which 1,035 (58.2%) of the RMGV and 742 (41.8%) of the MRSM. The following differences were found when comparing women of these two microregions: RMGV pregnant women are more educated ($p = 0.021$), while those from the MRSM reside in the rural area (32.6%, $p = 0.000$) and belong to the lowest economic classes (40.2% belong to economic class D or E, $p = 0.001$). Regarding access to health services, MRSM pregnant women had more access to prenatal care visits (65.5% had at least seven visits, $p = 0.000$), and to the dentist (35.3% reported a visit to the dentist, $p = 0.015$) (Table 1).

Table 2 shows the association between the realms of impact on the OHR-QoL and the regions studied. All realms evidenced some impact, and the highest frequencies were for “Physical pain” (3% in MRSM and 4.4% in RMGV) and “Psychological discomfort” (2.8% in MRSM and 4.7% in RMGV). Also, the total impact is more significant in the RMGV than in the MRSM.

The association between the sociodemographic variables and the presence of impact in each study region is shown in Table 3. In the MRSM, there was no statistically significant dif-

Table 1. Association between the sociodemographic variables and the region of residence of pregnant women of the MRSM, 2012/2013, and the RMGV, 2010.

Sociodemographic variable	MRSM		RMGV		Chi-square	p-value
	N	%	N	%		
Age					2.347	0.309
< 20 years	189	25.5	232	22.4		
20-34 years	502	67.7	723	69.9		
35 and over	51	6.9	79	7.6		
Ethnicity/skin color					3.441	0.179
White	102	14.0	134	13.7		
Black	95	13.0	159	16.3		
Brown	531	72.9	684	70		
Schooling					7.736	0.021*
4 or less	95	12.9	90	8.8		
5 to 8 years	288	39.0	413	40.2		
9 and over	356	48.2	524	51		
Economic class					14.665	0.001*
D/E	269	40.2	284	31.1		
C1/C2	366	54.7	584	63.9		
A/B	34	5.1	46	5.0		
Marital status					2.133	0.144
Without a partner	88	11.9	100	9.7		
With a partner	653	88.1	930	89.8		
Engaged in paid work					2.482	0.115
No	556	74.9	740	71.6		
Yes	186	25.1	294	28.4		
Number of prenatal care visits					55.954	0.000*
1 to 3 visits	44	5.9	126	12.6		
4 to 6 visits	212	28.6	392	39.2		
7 and over	486	65.5	483	48.3		
Visit to the dentist during pregnancy					5.912	0.015*
No	480	64.7	724	70.2		
Yes	262	35.3	308	29.8		
Resides in rural or urban area					325.315	0.000*
Urban	500	67.4	1003	98.2		
Rural	242	32.6	18	1.8		

* p-value < 0.05.

ference between the sociodemographic variables and the impact. In the RMGV, a statistically significant association was found between the schooling of pregnant women and the impact, and the higher the schooling, the lower the frequency of impact on the OHR-QoL ($p = 0.010$). Furthermore, the dental visit was also associated with impact (48.4% with impact vs. 28.1% without impact, $p = 0.000$).

When analyzing the entire sample of the study, the variables “region of residence”, “schooling” and “visit to the dentist during pregnancy” remained in the final multiple regression analysis model. Residence in the RMGV increased the

likelihood of pregnant women having an impact on the OHR-QoL by about 70%. The lower the schooling of the pregnant woman, the higher the odds of having an impact. Pregnant women who visited the dentist during pregnancy were 115% more likely to have an impact on the OHR-QoL (Table 4).

Discussion

Residing in the economically more impoverished region did not necessarily imply an impact on the OHR-QoL. However, having little schooling and

Table 2. Relationship between the impact on Oral Health-related Quality of Life, as per the OHIP-14 realms, and the region of residence of pregnant women of the MRSB, 2012/2013, and the RMGV, 2010.

Realm	Impact				Chi-square	p-value
	MRSB		RMGV			
	N	%	N	%		
Functional limitation					2.308	0.129
Without impact	736	99.2	1032	99.7		
With impact	06	0.8	03	0.3		
Physical pain					2.570	0.109
Without impact	720	97.0	989	95.6		
With impact	22	3.0	46	4.4		
Psychological discomfort					4.141	0.042*
Without impact	721	97.2	986	95.3		
With impact	21	2.8	49	4.7		
Physical impairment					0.883	0.347
Without impact	733	98.8	1027	99.2		
With impact	09	1.2	08	0.8		
Psychological impairment					1.461	0.227
Without impact	737	99.3	1022	98.7		
With impact	05	0.7	13	1.3		
Social impairment					0.818	0.366
Without impact	736	99.2	1022	98.7		
With impact	06	0.8	13	1.3		
Disability					0.338	0.561
Without impact	736	99.2	1029	99.4		
With impact	06	0.8	06	0.6		
Total					5.568	0.018*
Without impact	699	94.2	944	91.2		
With impact	43	5.8	91	8.8		

* p-value < 0.05.

visit to the dentist during pregnancy influenced the impact.

Residing in a region with a better economic condition and accounts for 60% of the Gross National Product of the entire State of the studied regions²⁷ increases the probability of impact on the OHR-QoL during pregnancy. This may be happening due to the social inequalities within the same region, where rich people end up getting much of the wealth produced, generating inequities. The universal health system contributes to reduction, but, unfortunately, it cannot eliminate it²⁸.

Another factor that can help explain the difference between the microregions is the coverage of the Oral Health Teams (ESB). When analyzing the coverage of the Oral Health Teams (number of registered persons/resident population) using data from the Primary Care Information System (SIAB)²⁹ and data from the Brazilian Institute of Geography and Statistics (IBGE)³⁰, we found

a coverage of 23.2% for the RMGV in 2010 and 47.0% for the MRSB in 2012. Given this coverage situation, women in MRSB had a greater possibility of access to dental services before and during pregnancy, thus avoiding possible “oral complications” responsible for the discomfort and, consequently, impacts on the OHR-QoL.

The study by Musskopf et al.³¹ corroborates the findings of our research, that is, pregnant women noticed improvements in their oral health status when they received primary periodontal care during dental treatment. This significantly reduced the adverse effects on OHR-QoL during pregnancy.

Although the number of prenatal consultations did not have a statistically significant influence on the impact on the OHR-QoL, MRSB pregnant women also performed a more significant number of prenatal care visits than those of the RMGV ($p = 0.000$). This reinforces the relevance of prenatal care, including dentistry,

Table 3. Relationship between sociodemographic variables and the impact on the Oral Health-Related Quality of Life of pregnant women living in the MRSM, 2012/2013, and the RMGV, 2010.

Sociodemographic variables	MRSM				Chi-square	p-value	RMGV				Chi-square	p-value
	Without impact		With impact				Without impact		With impact			
	N	%	N	%			N	%	N	%		
Age					3.327	0.190					1.100	0.577
< 20 years	183	96.8	6	3.2			215	92.7	17	7.3		
20-34 years	469	93.4	33	6.6			655	90.6	68	9.4		
35 and over	47	92.2	4	7.8			73	92.4	6	7.6		
Ethnicity/skin color					0.741	0.690					2.674	0.263
White	98	96.1	4	3.9			125	93.3	9	6.7		
Black	90	94.7	5	5.3			140	88.1	19	11.9		
Brown	499	94.0	32	6.0			625	91.4	59	8.6		
Schooling					0.083	0.959					9.144	0.010*
4 or less	89	93.7	6	6.3			78	86.7	12	13.3		
5 to 8 years	272	94.4	16	5.6			367	88.9	46	11.1		
9 and over	335	94.1	21	5.9			491	93.7	33	6.3		
Economic class					0.839	0.657					2.339	0.310
D/E	251	93.3	18	6.7			254	89.4	30	10.6		
C1/C2	345	94.3	21	5.7			535	91.6	49	8.4		
A/B	33	97.1	1	2.9			44	95.7	2	4.3		
Marital status					1.975	0.160					3.214	0.073
Without a partner	80	90.9	8	9.1			96	96.0	4	4.0		
With a partner	618	94.6	35	5.4			843	90.6	87	9.4		
Engaged in paid work					0.080	0.778					2.043	0.153
No	523	94.1	33	5.9			669	90.4	71	9.6		
Yes	176	94.6	10	5.4			274	93.2	20	6.8		
Number of prenatal care visits					4.475	0.107					0.603	0.730
1 to 3 visits	43	97.7	1	2.3			117	92.9	9	7.1		
4 to 6 visits	194	91.5	18	8.5			355	90.6	37	9.4		
7 and over	462	95.1	24	4.9			439	90.9	44	9.1		
Visit to the dentist during pregnancy					2.507	0.113					16.325	0.000*
No	457	95.2	23	4.8			677	93.5	47	6.5		
Yes	242	92.4	20	7.6			264	85.7	44	14.3		
Resides in urban or rural area					1.775	0.183					0.120	0.729
Urban	475	95.0	25	5.0			915	91.2	88	8.8		
Rural	224	92.6	18	7.4			16	88.9	2	11.1		

* p-value < 0.05.

to provide pregnant women with participation in the visits of individual or collective activities, with a multi-professional approach and articulated in the care services. This assures comprehensive care and facilitates humanized and quality prenatal care²².

The fact that the region with the best economic condition does not always provide better

living conditions and access to health services for its inhabitants is directly linked to the impact on the OHR-QoL. The study by Gabardo et al.³² conducted with Brazilian adults showed a clear relationship between better living conditions and a more favorable perception of oral health. The perception of quality of life is mostly subjective, and the way in which individuals perceive their

Table 4. Multiple logistic regression between the sociodemographic variables and the presence of impact, as per the OHIP-14, of pregnant women of the MRSM, 2012/2013, and the RMGV, 2010.

	With impact on OHR-QoL				
	Total	Yes (%)	p-value	OR (CI95%)	Adjusted OR (CI95%)
Region of residence			0,018		
MRSM	742	43 (5,8)		1,00	1,00
RMGV	1.035	91 (8,8)		1,57 (1,08-2,28)	1,69 (1,16-2,47)
Age			0,156		
<20 years	421	23 (5,5)		1,00	-
20-34 years	1.225	101 (8,2)		1,56 (0,98-2,48)	-
35 and over	130	10 (7,7)		1,44 (0,67-3,11)	-
Ethnicity/skin color			0,250		
White	236	13 (5,5)		1,00	-
Black	254	24 (9,4)		1,79 (0,89-3,60)	-
Brown	1.215	91 (7,5)		1,39 (0,76-2,53)	-
Schooling			0,066		
4 or less	185	18 (9,7)		1,65 (0,94-2,88)	1,80 (1,03-3,18)
5 to 8 years	701	62 (8,8)		1,48 (1,02-2,17)	1,55 (1,06-2,27)
9 and over	880	54 (6,1)		1,00	1,00
Economic class			0,223		
D/E	553	48 (8,7)		2,44 (0,74-8,03)	-
C1/C2	950	70 (7,4)		2,04 (0,63-6,64)	-
A/B	80	3 (3,8)		1,00	-
Marital status			0,516		
Without a partner	188	12 (6,4)		1,00	-
With a partner	1.583	122 (7,7)		1,23 (0,66-2,26)	-
Paid work			0,209		
No	1.296	104 (8,0)		1,31 (0,86-1,99)	-
Yes	480	30 (6,3)		1,00	-
Number of prenatal care visits			0,192		
≤ 3 visits	175	10 (5,7)		1,00	-
4 to 6 visits	604	55 (9,1)		1,65 (0,82-3,32)	-
7 and over	969	68 (7,0)		1,25 (0,63-2,47)	-
Visit to the dentist during pregnancy			<0,0001		
No	1.204	70 (5,8)		1,00	1,00
Yes	570	64 (11,2)		2,05 (1,44-2,92)	2,15 (1,50-3,07)
Area of residence			0,922		
Rural	260	20 (7,7)		1,03 (0,63-1,68)	-
Urban	1.503	113 (7,5)		1,00	-

quality of life may vary according to their social, cultural and political conditions³³.

On the other hand, the dental consultation during pregnancy appears in the logistic regression analysis as a factor that increased the likelihood of pregnant women to have an impact on the OHR-QoL. The studies by Oliveira and Nandanovsky⁵, Acharya et al.¹⁵ and Moimaz et al.³⁴, also with pregnant women, found an association

between the need for treatment and the impact on the OHR-QoL. A positive evaluation was observed for the sample of this study, since visiting the dentist was related to the presence of an impact.

In this study, more educated women were less likely to have an impact. Lamarca et al.¹⁶ evaluated the impact on the OHR-QoL of pregnant and puerperae, focusing on their occupation. Wom-

en who worked outside their homes had higher schooling and household income compared to housewives and had a lower impact on the OHR-QoL. The higher the education level, the higher their information, awareness and search for dental services³⁵.

Papaioannou *et al.*¹² investigated the impact on OHR-QoL in adults from different sociodemographic regions of Greece using OHIP-14. No statistically significant differences were found between rural and urban regions, but, the impact on the OHIP-14 total score and the social impairment and disability realms decreased with increased schooling. Thus, schooling appears in the literature with a positive impact on individuals' quality of life³².

The limitation of this research is the lack of aggregation of clinical variables in the analysis. According to Bandéca *et al.*³⁶, the clinical characteristics can directly influence the perception of oral health and, consequently, the quality of life, regardless of sociodemographic variables. However, defining the need for a population using subjective indicators is an essential step in health policy planning, as it assists health professionals in formulating health programs and services³⁴.

Our findings are innovative in the area of oral health because they showed the influence of access to dental services on the impact on the OHR-QoL and reinforced how the nature of social conditions affected the health and quality of

life of pregnant women, making them even more vulnerable.

Therefore, the prioritization of dental care of pregnant women, with more significant impacts on the OHR-QoL, seems to be an equitable way to plan the actions and health programs for this group, that is, this risk group should be prioritized in the health services, in order to treat and recover oral health. Our findings may provide new directions for policymakers and public health managers with a focus on improving women's quality of life and developing more specific strategies to reduce oral health problems during pregnancy.

Conclusion

Given the results found in this study, we can conclude that sociodemographic factors can influence the impact on Oral Health-Related Quality of Life. This influence can be positive or negative and its analysis contributes to a better understanding of the health-disease process since it transcends the biomedical curative vision, insufficient to ensure the maintenance of health.

The results may help in the design of more specific social-political strategies to reduce oral health problems in pregnant women and probably in other groups with similar sociodemographic characteristics.

Collaborations

KTS Pacheco, ET Santos Neto and CDD Esposti contributed to the conception and design of the study, participated in the analysis and interpretation of results, and in the critical review of the content of the article. KG Martinelli and KO Sakugawa collected the data, participated in the interpretation and analysis of the results and in the writing of the article. AC Pacheco Filho, AJI Garbin and CAS Garbin participated in the interpretation of the data, the writing of the article and the critical review of the content of the article.

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