

Oral health-related impact on daily life in a sample of adults of Tubarao city, Santa Catarina, Brazil

*Josimari Telino de LACERDA^a, Camila de BONA^b,
Franciele TACCA^b, Jefferson TRAEBERT^b*

*^aDepartamento de Saúde Pública, Centro de Ciências da Saúde,
Universidade Federal de Santa Catarina – UFSC, 88040-900 Florianópolis - SC, Brasil*

*^bGrupo de Pesquisa em Saúde Bucal Coletiva,
Universidade do Sul de Santa Catarina – UNISUL, 88704-900 Tubarão - SC, Brasil*

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Abstract: The objective of this study was to estimate the impact of oral health conditions on the quality of life in relation to pain and discomfort, dental aesthetics and function limitation in a sample of adults of Tubarao city, Santa Catarina. A cross-sectional study involving 222 individuals who sought for treatment at the dental clinics of University of South Santa Catarina was performed. Dental aesthetics was normatively considered by the presence of cavities or missing teeth in the anterior lower and upper segments. Function limitation was represented by prosthetic need defined by a dentist. Pain and discomfort were represented by the patient's report of orofacial pain and discomfort. Clinical data were collected according to WHO criteria. Oral health-related impact was assessed through the Oral Impact on Daily Performance Indicator. General oral health-related impact was referred by 67.1% of the sample. The frequency of physical impact was 60.8% and the psychosocial impact was 45.5%. The frequency of impact was 2.28 times greater among patients who reported orofacial pain if compared to those who did not report orofacial pain. In the physical performance it was 2.02 times greater and in the psychosocial performance it was 1.81 times greater. In this last performance, the impact was also 1.50 times greater among patients presenting missing or cavities in anterior teeth if compared to those who did not presented. It could be concluded that oral health conditions generated a significant impact on individuals' quality of life.

Keywords: *Orofacial pain; oral health; quality of life; social impact indicators.*

Resumo: Objetivou-se estimar o impacto das condições de saúde bucal sobre a qualidade de vida em relação à dor e desconforto, estética dentária e limitação da função em uma amostra de adultos da cidade de Tubarão, Santa Catarina. Foi realizado um estudo transversal, envolvendo 222 indivíduos que procuraram tratamento nas clínicas odontológicas da Universidade do Sul de Santa Catarina. A estética dentária foi determinada de forma normativa pela presença de cavidades de cárie nos dentes anteriores ou por sua falta. A limitação da função foi representada pela necessidade de prótese definida por um dentista. Os dados de dor e desconforto foram obtidos por meio de relato do paciente. Os dados clínicos foram obtidos de acordo com critérios da OMS. O impacto das condições bucais no desempenho diário foi mensurado pelo indicador Impacto Oral no Desempenho Diário. Os resultados mostraram que o impacto geral foi referido por 67,1% da amostra. A frequência do impacto no domínio físico foi 60,8% e no domínio psicossocial, 45,5%. A frequência do impacto geral foi 2,28 vezes maior entre aqueles que relataram dor orofacial se comparados àqueles que não relataram dor. No desempenho físico, o impacto foi 2,02 vezes maior e no desempenho psicossocial foi 1,81 vezes maior. Neste último desempenho, o impacto foi também 1,50 vezes maior entre os pacientes com a presença de cárie ou ausência de dentes anteriores se comparados com os que não apresentavam estas condições. Pode-se concluir que as condições de saúde bucal geraram impacto significativo sobre a qualidade de vida dos indivíduos.

Palavras-chave: *Dor orofacial; indicadores de impacto social; qualidade de vida; saúde bucal.*

Introduction

One of the greatest contributions of Dentistry to society is the improvement of quality of life through the prevention and treatment of oral diseases¹. Oral health status can influence how people enjoy life in terms of appearance and function, such as speaking, chewing and tasting food. In addition, it can affect people's self-esteem, self-image and general well-being². There is a lack of consensus in the literature about the force of the correlation between oral health clinical situations and the impact on people's quality of life²⁻⁴.

The World Health Organization has defined Quality of Life as the perception that people have of life taking into account their cultural and values context in which they live⁵. It is a broad concept influenced by physical health, psychological status, the degree of independence, social relationships, personal beliefs and the relationship with the environment. Due to the subjectivity of concepts related to health-illness and quality of life, researchers have only recently begun to study the influence of oral health conditions on individuals' quality of life. Moreover, the difficulty of the definition of these concepts, their abstraction, multi-dimensionality and the fact that they are related to social, cultural and political contexts in which they are measured, have created difficulties in their investigation⁶.

Cushing et al.⁷ (1986) first proposed the study of the oral health impact on individuals' daily lives as a response to the dissatisfaction with the use of only clinical parameters for the evaluation of oral health conditions. To these authors, it was necessary to include dimensions such as well-being, absence of pain and discomfort and the adequate physical and social function from the individual's point of view.

Several indicators were developed in order to evaluate the oral health-related impact on quality of life. Such indicators are based on three main dimensions that could be hypothetically affected by oral health conditions: pain and discomfort, dental aesthetics and function limitation^{8,9}. Studies have shown the potential negative impact of oral health conditions on the adult's daily life in the three dimensions listed above^{2,10}.

The objective of this study was to estimate the impact of oral health conditions on the quality of life in relation to pain and discomfort, dental aesthetics and function limitation of adults who sought assistance in the dental clinics of University of South Santa Catarina Dental School, in the city of Tubarao, Santa Catarina, Brazil.

Material and method

A cross-sectional study was carried out with all adult patients who sought for treatment at the dental clinics of University of South Santa Catarina Dental School in Tubarao, Santa Catarina from November/2002 to April/2003.

A sample of 222 ranging between 18 to 59 year-old adults were examined and interviewed.

Oral clinical data for dental conditions and normative prosthetic needs were obtained through WHO criteria¹¹. Orofacial pain data were obtained through questionnaires applied as structured interviews including questions about orofacial pain⁶ experienced in the preceding six months. These data were categorized representing the three dimensions of interest in this study. Dental aesthetics was normatively considered by the presence of cavities (D component of DMF-T) and/or missing teeth (M component of DMF-T) in the anterior lower and upper segments. Function limitation was represented by normative prosthetic needs (Yes/No). Finally, pain and discomfort were represented by the patient's report of orofacial pain and discomfort in the preceding six months (Yes/No). Patients with pain at the moment of the clinical examination were referred to the emergency service and were excluded from the study.

The impact of oral health conditions on the quality of life was assessed through the Oral Impact on Daily Performance (OIDP)¹² validated in Brazil¹³ dichotomized into patients who reported and those who did not report oral health impacts (OIDP = 0 – no impact, and OIDP > 0 – some impact). In order to analyze in which dimension the impact could be present, OIDP questions related to physical impact (eating, speaking, cleaning teeth and working) and OIDP questions related to psychosocial impact (sleeping, smiling, maintaining emotional stability, contact with people) were clustered in two group of analyses. The OIDP related to physical impact and psychosocial impact were then dichotomized into patients who reported and those who did not report oral health-related impact (OIDP = 0 – no impact, and OIDP > 0 – some impact). The questionnaire also contained questions on the socio-economic status represented by the level of education (number of school years completed) and by the household income earned in the month preceding the study.

Calibration exercises were performed with twelve of 18-59 years-old patients, according to methodology described elsewhere¹⁴. The questionnaire pre-test and the pilot study were performed with a further twenty of 18-59 years-old patients who did not participate in the main study. The questionnaire itself and the whole methodology were found to be applicable to the local situation.

In the study period, two calibrated examiners performed the exams in the dental clinics using dental equipment and its own light source. Strict cross-infection control measures were adopted. The examiners used disposable gloves. Packages with plane mirrors, CPI periodontal probes and gauze pads were sterilized in sufficient number for a single day's work. The questionnaires were administered after dental examinations by one previously trained researcher.

To test the reliability of the clinical diagnosis, 10% of the total sample was examined in duplicate and the reliability was assessed using the Kappa test.

The research project was evaluated and approved by the Committee of Ethics in Research on Human Beings of University of South Santa Catarina, Brazil.

Data analysis included descriptive statistics such as frequency distribution and cross tabulation. Statistical significance for differences between proportions was assessed using the chi-squared test. Unconditional simple and multivariate logistic regression analysis were performed to test the association between the explanatory variables and the dependent variable in three different models: for the ODP in general, for the ODP related to physical impact, and for the ODP related to psychosocial impact. The variables with $p < 0.20$ observed in the univariate analyses were included in the multiple regression analyses. These variables were then added one by one in decreasing order according to the p values from the chi-squared test, being retained in the final model if $p < 0.05$ or if it was a control variable. Socio-demographic variables were used as control variables and were maintained in the regression models independently of statistical significance.

Result

The duplicate exams showed a diagnostic reproducibility with a minimum Kappa value of 0.70 in each one of the clinical situations studied.

All 222 patients invited to participate in the study agreed to be examined and interviewed. The mean age of the patients was 38.3 years (SD = 10.2 years) and 63.2% was married; 59.0% answered to earn less than US\$ 196.00 per month and 67.1% studied no more than 8 years. The results related to clinical variables showed that 58.6% (95% CI 51.8; 65.1) of the patients had at least one cavity or one missing tooth in the anterior lower or upper segment and 85.1% (95% CI 79.8; 89.5) demonstrated normative prosthetic need. The prevalence of orofacial pain in the preceding six months was 74.8% (95% CI 68.5; 80.3).

The prevalence of any oral health-related impact measured by the ODP including all questions was 67.1% (95% CI 60.5; 73.2). The prevalence of physical oral health-related impact was 60.8% (95% CI 54.0; 67.2) and the prevalence of psychosocial impact was 45.5% (95% CI 38.8; 52.3). Eating and enjoying food was the most affected performance [50.5% (95% CI 43.7; 57.2)] followed by smiling [33.9% (95% CI 27.2; 39.9)] (Table 1).

Table 2 shows the frequency distribution of the factors that generate impact. Dental pain was the condition that most frequently generated impact in general [40.9% (95% CI 33.0; 49.3)] as well as physical performance [44.4% (95% CI 35.9; 53.2)] and psychosocial performance [43.6% (95%

CI 33.7; 53.8)]. The second and the third causes were missing teeth and aspects of appearance (dental colour, position and shape) respectively.

Results from the first logistic regression analysis model included impact in general. Multivariate analysis showed that the presence of orofacial pain was significantly associated with impact ($p < 0.001$) after adjusting for the age, schooling level and income. The frequency of oral health-related impact on daily life was 2.28 (95% CI 1.54; 3.39) greater among patients who reported orofacial pain if compared to those who did not report orofacial pain (Table 3).

The second model included physical impact. Similarly to the previous model, only the presence of orofacial pain maintained a statistically significant impact ($p < 0.001$) after adjusting for the age, schooling level and income. The frequency of physical oral health-related impact on daily life was 2.02 (95% CI 1.42; 2.87) greater among patients who reported orofacial pain if compared to those who did not report orofacial pain (Table 4).

Finally, the third model analysed showed similar results to those for general and physical impact. The frequency of psychosocial oral health-related impact on daily was 1.81 (95% CI 1.39; 2.36) greater among patients who reported orofacial pain if compared to those who did not report orofacial pain ($p < 0.001$). Also, the frequency of psychosocial oral health-related impact on daily was 1.50 (95% CI 1.12; 2.01) greater among patients who presented missing or cavities in anterior teeth if compared to those who did not presented ($p = 0.006$) after adjusting age, schooling level and income (Table 4).

Discussion

This study presented good internal validity, with a minimum Kappa value of 0.70 in each one of the clinical situations studied. Moreover, all invited patients agreed to participate in the study. As studies seeking to investigate variables that could hypothetically interfere in the individuals' quality of life are necessarily based upon individuals' self-perception, the results of this study are representative only of the studied population. However, the results can contribute to the understanding of how individuals' self-perception can interfere directly in the success of treatment.

The prevalence of oral health-related impact on daily life found in this study is similar to that found in adults in England¹⁵ [75% (95% CI 72.4; 77.0)]. Other studies have found lower values, which could be explained by differences in the studied populations. For example, lower prevalence of impact is generally found in the elderly. It is possible that ageing could lead to a better adaptation to environmental adversities.

Table 1. Oral impact on daily performance according to the performance groups affected (n = 222). Tubarao, SC, Brazil, 2003

Variables	Impact n (%)	95% CI
Physical performance – OIDP	135 (60.8)	54.0 – 67.2
Eating and enjoying food	112 (50.5)	43.7 – 57.2
Cleaning teeth	60 (27.0)	21.3 – 33.4
Speaking	51 (23.0)	17.6 – 29.1
Working	12 (5.4)	2.8 – 9.2
Psychosocial performance – OIDP	101 (45.5)	38.8 – 52.3
Smiling	74 (33.3)	27.2 – 39.9
Emotional stability	52 (23.4)	18.0 – 29.6
Contact with people	30 (13.5)	9.3 – 18.7
Sleeping	23 (10.4)	6.7 – 15.1
General OIDP	149 (67.1)	60.5 – 73.2

Table 2. Specific factors that generated impact on daily performance (% and 95% CI). Tubarao, SC, Brazil, 2003

Causes	Physical n = 135	Psychosocial n = 101	General n = 149
Dental pain	44.4 [35.9;53.2]	43.6 [33.7;53.8]	40.9 [33.0;49.3]
Missing teeth	37.8 [29.6;46.5]	42.6 [32.8;52.8]	40.9 [33.0;49.3]
Colour/position/shape	23.0 [16.2;30.9]	28.7 [20.1;38.7]	21.5 [15.2;28.9]
Others	37.8 [29.6;46.5]	34.7 [24.5;43.7]	33.6 [26.0;41.7]

Eating and enjoying food and smiling were the activities that most suffered negative impact. These results are similar to those found in other studies^{2,3,16}.

Although indicators of oral health-related impact on an individual's activities of daily living are theoretically supported by three main dimensions, namely dental aesthetics function limitation, pain and discomfort⁸, in this study only dental aesthetics and pain and discomfort generated impact on the daily life of the investigated adults.

However, it is very important to observe the limitations of this study. The physical and social function was represented only by normative prosthetic needs, what could underestimate the perception of a good or bad oral-related physical or social function.

Nevertheless, based on the results of this study, it seems that orofacial pain exerts a greater negative effect on adults' quality of life, since it demonstrated significant association with general, physical and psychosocial impact. However, it should be considered the specificity of the studied population. As the study was undertaken in a dental service, one would expect that the majority of people who attend might have some kind of pain or symptomatology with a con-

sequent impact on daily life. It is also important to note that pain and discomfort are dimensions of the majority of oral health-related impact indicators. For this reason the significant relationship between orofacial pain and impact found here could be expected, and is well described in the literature^{6,17,18}.

In addition, it should be noted that the use of the OIDP information makes it possible to identify the factors that have an impact on the individuals' own perspective. In this study the most cited cause of general, physical and psychosocial impact was pain, as showed by the three regression models. However, aspects regarding missing teeth and dental aesthetics were reported by the individuals as the second and the third factors that generated impact, and these were detected through the clinical evaluation only in the psychosocial performance. This could indicate low sensitivity of normative models in analyzing the oral health-related impact.

Considering the appropriateness of the OIDP in evaluating the specific factors that generate impact from the individual's own perspective, it is necessary to reflect on the real need for associating the findings with clinical variables in order to investigate the oral health-related impact on the

Table 3. Frequency distribution and results of univariate and multiple logistic regression analyses for general impact. Tubarao, SC, Brazil, 2003

Variables	N (%)	Impact n (%)	Prevalence ratio crude [95% CI]	Prevalence ratio adjusted [95% CI]
Orofacial pain				
Absent	56 (25.2)	25 (25.3)	1	1
Present	166 (74.8)	124 (74.7)	2.19 [1.49; 3.22]	2.28 [1.54; 3.39]*
Missing or cavities in anterior teeth				
Absent	92 (41.4)	56 (28.5)	1	1
Present	130 (58.6)	93 (71.5)	1.38 [0.94; 2.02]	1.53 [0.60; 3.88]
Prosthetic need				
Absent	33 (14.9)	18 (30.7)	1	1
Present	189 (85.1)	131 (69.3)	1.48 [0.93; 2.36]	1.31 [0.71; 2.41]

Adjusted by socio-demographic variables. * $p < 0.001$. Hosmer and Lemeshow test: $p = 0.810$.

Table 4. Results of univariate and multiple logistic regression for physical and psychosocial impact. Tubarao, SC, Brazil, 2003

Physical Performance†	Impact n (%)	Prevalence ratio crude [95% CI]	Prevalence ratio adjusted [95% CI]
Orofacial pain			
Absent	22 (31.9)	1	1
Present	113 (68.1)	1.90 [1.35; 2.67]	2.02 [1.42; 2.87]*
Psychosocial Performance††			
Orofacial pain			
Absent	11 (45.8)	1	1
Present	90 (54.2)	1.75 [1.35; 2.26]	1.81 [1.39; 2.36]*
Missing or cavities in anterior teeth			
Absent	30 (43.3)	1	1
Present	71 (50.7)	1.51 [1.17; 1.94]	1.50 [1.12; 2.01]**
Prosthetic need			
Absent	11 (33.3)	1	1
Present	90 (47.6)	1.27 [0.93; 1.73]	1.10 [0.71; 1.70]

Adjusted by socio-demographic variables. * $p < 0.001$. ** $p = 0.006$. †Hosmer and Lemeshow test: $p = 0.460$. ††Hosmer and Lemeshow test: $p = 0.545$.

quality of life. This has been a tendency of the majority of recently published studies. The OIDP's capacity for identifying the specific causes of impact could make it useful in the identification of priority groups for dental assistance in programs and health services because it can effectively identify patients with pain, functional limitation and aesthetic problems from the patient's own point of view. However, to make this point relevant to dental services, more researches should be done including socioeconomic and cultural aspects in order to investigate such influences on the individual's

perceptions of impact. It is reasonable to expect that more affluent people have different perceptions about life, health and oral health, if compared with less affluent people.

Conclusion

It can be concluded that the oral health conditions generated a significant impact on individual's quality of life, mainly as a result of pain and discomfort and dental aesthetics.

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Corresponding author:

*Profa. Dra. Josimari Telino de Lacerda
jtleino@gmail.com*

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