Oral Health and Quality of Life in Candidates for Liver Transplantation

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ABSTRACT

Background.   There is a gap in the scientific literature about the association between oral health and the health-related quality of life of patients on the liver transplantation waiting list. The aim of this work was to describe aspects of oral health and quality of life of patients on a liver transplantation waiting list.

Methods.   This was a cross-sectional study among 116 patients with chronic hepatic disease: 29 on a liver transplantation waiting list (Model for End-Stage Liver Disease score $\geq$15) and 87 under monitoring in a gastroenterology service in a Brazilian university hospital. Oral health was evaluated according to criteria recommended by the World Health Organization and by the European Association of Dental Public Health. Health-related quality of life was evaluated by means of the 36-Item Short-Form Health Survey (SF-36).

Results.   Patients on the liver transplantation waiting list presented poorer health-related quality of life than those who were not on the list in the domains physical functioning, role physical, bodily pain, general health perceptions, and social functioning and in the physical component summary. Periodontitis affected 72.4% of the patients on the liver transplantation waiting list, but only 27.6% of the patients not on that list. Reduced salivary flow was associated with poorer mental health component summary in hepatitis C patients.

Conclusions.   Patients on the liver transplantation waiting list presented poorer health-related quality of life than those who were not on the list, mainly in the indicators concerning physical health, as well as higher frequencies of decayed teeth and periodontitis. The mental health component summary was associated with reduced salivary flow in hepatitis C patients.

PATIENTS with chronic hepatic disease usually present poor quality of life [1–4] and precarious oral health [5–7], mainly in the advanced stages of the disease. Reduced salivary flow increases the risk of oral infection and susceptibility to periodontal disease [8]. Periodontal disease and poor oral health status are very frequent among patients with chronic liver disease [5,9,10].

There is a gap in the scientific literature about the association between oral health and quality of life of individuals on liver transplantation waiting lists.

The aim of the present study was to describe aspects of oral health and quality of life of patients on a liver transplantation waiting list.

METHODS

Patients

This was a cross-sectional study of 116 patients with chronic hepatic disease: 29 on a liver transplantation waiting list (group 1), and 87 (group 2) under monitoring in the Gastroenterology Service of the University Hospital, Federal University of Bahia. The status on the

waiting list was defined by the Model for End-Stage Liver Disease score, adopting the ≥15 cutoff point. Data were collected from June 2014 to July 2016.

Oral Health Evaluation

Oral health was evaluated according to criteria recommended by the World Health Organization [11] and the European Association of Dental Public Health [12,13]. The severity of periodontal disease was ascertained by measuring clinical attachment loss, probing pocket depth, tooth mobility, and number of decayed/missed/filled teeth (DMFT index), and panoramic radiography to assess intraosseous lesions. Stimulated salivary flow exams classified a flow of <1 mL/min as reduced [14].

Health-Related Quality of Life Evaluation

We used the Brazilian Portuguese version of the 36-Item Short Form Health Survey (SF-36) [15], as recommended by Qualitymetric [16]. Questions referring to a 4-week recall period are used to build 8 multi-item scales: physical functioning (PF), role limitations due to physical problems (RP), bodily pain (BP), general health perceptions (GH), vitality (VT), social functioning (SF), role limitations due to emotional problems (RE), and mental health (MH). These scales can be aggregated to yield physical component (PCS) and mental component (MCS) summary scores. All 8 SF-36 scales contribute to both PCS and MCS scores, but PF, RP, and BP contribute more to PCS, whereas SF, RE, and MH contribute more to MCS. The VT, GH, and SF scales contribute to both PCS and MCS equally. The scoring of the raw scores and of the 2 summary components, as well as the calculation of normalized scores, was performed with the use of the Qualitymetric Health Outcomes Scoring Software 4.0, which assumes a mean of 50 and a standard deviation of 10. The general population from the United States is taken as a standard. Thus, a normalized score <50 should be interpreted as below that found among the American general population [16]. This study was licensed by Qualitymetric Health Outcomes with the number QM025905.

Statistical Analyses

The SPSS set of programs was used for data processing and statistical analyses. T tests were used for comparing group means (age, DMFT index, and SF-36 domains and component summaries) and Mann-Whitney tests for comparing SF-36 domains and component summaries by salivary flow strata according to status on the waiting list and liver disease. Comparisons of differences between proportions were tested by means of chi-square or Fisher exact test when appropriate. Pearson correlation coefficients were calculated for data regarding SF-36 indicators and DMFT index and its components.

Ethical Aspects

This study was approved by the School of Medicine of the Federal University of Bahia Ethical Review Board (protocol number 711.945/2014), in accordance with Brazilian National Health Council Resolution 466/2012 and the 6th revision of the Declaration of Helsinki, 2008.

RESULTS

The 2 groups were similar according to age, sex, race, civil status, family income (only 1 patient on the waiting list and 2 patients not on the waiting list had family income greater than US$1,362.00), smoking, drinking, physical activity,

Table 1. Characteristics of Patients According to Their Status on the Liver Transplantation Waiting List

Characteristic	On Waiting List		P Value
	Yes (n = 29)	No (n = 87)	
Age, y	52.4 ± 14.2	51.0 ± 11.2	.603
Sex, male:female (ratio)	20:19 (1.05)	60:27 (2.22)	1.000
Race			.193
Black	8 (27.6%)	22 (25.3%)	
Mulatto	16 (17.2%)	35 (34.5%)	
White	5 (55.2%)	30 (40.2%)	
Civil status			.217
Single	11 (33.7%)	21 (24.1%)	
Married	16 (55.2%)	49 (56.3%)	
Divorced	2 (6.9%)	9 (10.3%)	
Widow	0 (0.0%)	8 (9.2%)	
Family income, US$			.239
0–545	18 (62.1%)	64 (73.6%)	
>545	11 (37.9%)	23 (26.4%)	
Smoking habit, present or past	14 (48.3%)	43 (49.4%)	.915
Drinking habit, present or past	21 (72.4%)	67 (77.0%)	.632
Sedentary lifestyle, present or past	22 (75.9%)	60 (69.0%)	.480
Diabetes	8 (27.6%)	15 (17.0%)	.226
Arterial hypertension	9 (31.0%)	22 (25.3%)	.545
Hepatitis C	10 (34.5%)	50 (57.5%)	.031
Alcoholic liver disease	10 (34.5%)	15 (17.2%)	.050
Other liver diseases	9 (31.0%)	22 (25.3%)	.544
DMFT index— mean (SD)	22.5 ± 7.7	19.3 ± 8.4	.068
Decayed	3.79 ± 3.6	2.05 ± 2.0	.023
Missing	14.38 ± 8.6	13.57 ± 10.1	.477
Filled	4.34 ± 4.0	3.78 ± 3.9	.317
Reduced salivary flow-	26 (90.0%)	50 (57.5%)	.011
Gingivitis	7 (24.1%)	45 (51.7%)	.009
Periodontitis	21 (72.4%)	24 (27.6%)	.001
No periodontal disease	1 (3.4%)	18 (20.7%)	.043

Note. Results are presented as mean ± SD or n (%) unless otherwise specified.

diabetes, and arterial hypertension. Alcoholic liver disease was more frequent in group 1, whereas hepatitis C prevailed in group 2 ($P < .031$ and $P < .050$, respectively). Considering the DMFT index components, only the decayed component differed between the 2 groups ($P < .023$). Reduced salivary flow was significantly ($P < .011$) more frequent among patients on the liver transplantation waiting list than in patients not on that list (90.0% and 57.5%, respectively). Periodontitis, a more severe form of periodontal disease, prevailed in group 1 (72.4% vs 27.4%, respectively), whereas gingivitis prevailed in group 2 (51.7% vs 24.1%, respectively). No periodontal disease occurred in 3.4% of group 1 patients and in 20.7% of group 2 patients (Table 1).

All health-related quality of life indicators were systematically lower among patients on the liver transplantation waiting list, particularly among those related to the physical component (Table 2).

Most of the Pearson correlation coefficients between SF-36 indicators and DMFT index and its components