Quality of life and oral health among hypertensive and diabetic people in a Brazilian Southeastern city

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Abstract *This research aimed to assess the oral health related to quality of life among hypertensive and diabetic patients in the city of Alfenas, Brazil. This was a domiciliary-based, descriptive-analytical, cross-sectional research with a random, systematic sample stratified by the Family Health Team, consisting of 218 individuals. The following indexes were applied: DMFT, T-Health, FS-T, SiC index, use and need of prosthesis and OHIP-14. Most of the patients (56.42%) had only high blood pressure, were females (67.43%), with an average age of 64.83 (±11.99) years old, varying between 35 and 93 years old. No significant differences on the variables between hypertensives, diabetics and hypertensive-diabetics were noticed. The following data was registered: DMFT=27.16 (± 6.15), with 22.94 (± 10.46) of missing teeth; T-Health=5.23 (± 6.52); FS-T=8.53 (± 10.12) and SiC=32 (± 0.00). 85.78% of the individuals were using prosthesis (58.72% Dentures) and 61.01% needed prostheses (58.26% in the jaw).The correlations between OHIP-14 (5.37 [± 4.95]) and oral health evidenced the increase in the number of teeth affecting psychological dimensions, besides the use and need of prostheses were associated to physical and social impacts (p < 0.05). We concluded that edentulism, use and need of prostheses affected quality of life in hypertensive and diabetic patients concerning psychological, physical and social aspects.*

Key words *Oral health, Epidemiology, Quality of life*

Introduction

Demographic and epidemiologic transitions have reflected on a significant increase on the prevalence of Chronic Non-Communicable Diseases (CNCD)[1]. Among them, Systemic Arterial Hypertension (SAH) and Diabetes *Mellitus* (DM). Both of them reach up to 1.5 billion people in the world[2,3] and 50 million people in Brazil[4,5]. There are some evidences on literature correlating SAH and DM with oral health. Adequate examples of oral manifestations would be the occurance of periodontal severe insertion losses, hyposalivation, microbiota changes, healing difficulties, abscesses, hyperplasias, polyps, cheilitis and clefts associated to physiopathology of the diseases or their drug treatments[6-9].

Nevertheless, clinical aspects discussed isolatedly showed us the dichotomous aspect (based on the presence-absence of diseases) of the researches[10], as well as their biomedical and unidirectional aspects (focused on the expert). In this way, subjective indicators, based on self-perception and related to social, demographic, economical, psychological and behavioural factors, can fit the purpose of this research and be enlightening, mainly if they inform how specific conditions affect people's welfare and daily lives[10,11].

Therefore, quality of life has been frequently associated to Oral Health Clinical Conditions (OHCC)[10-15]. However, the World Health Organization (WHO) has officially recognized the importance of an agenda when it presented, as global goal, the decrease of the impact of health and craniofacial diseases on human health and the psychosocial development among populations[16]. For the institution, quality of life is a perception of the individual on his/her own life upon the aegis of cultural context, the value system in which the person is set and the relation one has with one's objectives, expectations, patterns and worries[17].

In 1980, the International Discomfort, Incapacity and Social Disadvantage Classification was published[18]. In this model, there is an evolutionary sequence which starts with deficiencies, goes through incapacities and ends up in disadvantages. But in 1980, David Locker proposed some developments. This author declares that functional limitations, pain and discomfort may be consequences of deficiencies and they may cause physical, psychological and social incapacities, or even reach the highest level: social disadvantage[19].

In 1994, Slade and Spencer[20] developed a questionnaire to assess OHRQL (Oral Health-related Quality of Life): OHIP-49 (*Oral Health Impact Profile*).Its original version has 49 questions which approach the dimensions proposed by Locker. Slade prepared, reduced and validated the questionnaire (OHIP-14). The author described a hierarchy among dimensions. Functional limitation, physical pain and psychological discomfort are related to questions the individual has to himself/herself in an organic basis. They express impact on speech, sense of taste, besides pain, masticatory discomfort, tension and preoccupation. Physical, psychological and social incapacities refer to individual behavioural aspects which reverberate in daily life, expressing restrained eating behaviour, difficulties to relax, shame, irritation and injury on daily activities in general. Finally, social disadvantage is described as the highest degree of impact and represents social consequences of oral problems. Absence at work and feeling that life has become worse are targets of that dimension. So, the gravity of the impact might be understood according to the affected dimensions. A problem which leads to discomfort and pain brings fewer consequences to quality of life than a problem which leads to incapacities and disadvantages[21]. OHIP-49 and OHIP-14 were submitted to transcultural validation processes into numerous languages and places[22,23], but in Brazil its psychometric properties and inner stability were assessed by different researchers[24,25].

Considering the necessity of understanding the role dentition plays on welfare and daily life of hypertensive and diabetic people, a domiciliary research, in Family Health Units(FHU) adjoined territory, was conducted in the city of Alfenas, Brazil, aiming to assess the quality of life related to Oral Health Clinical Conditions (OHCC).

Methodology

This research was approved by the Ethics in Research with Human Beings Commitee from UNIFAL/MG (assessment number 795.485) and by the Alfenas City Health Office.

This was a descriptive-analytical, cross-sectional research which took place in Alfenas, a city in the south of Minas Gerais State, Brazil. This city is ubicated 342km far from the Minas Gerais's capital, Belo Horizonte, and its estimated population is of 78,176 inhabitants.

The total amount of people to be part of the sample was defined through a formula for fi-

nite populations proposed by Silva[26], taking the DMFT (Decayed, Missed of Filled Teeth) index as reference to people aged between 35 and 44 and 65 and 74, living in countryside cities in the Southeastern area – both obtained after the national research on oral health *SB Brasil 2010*[27,28]. It was established a level of 95% of assurance, with a 10% error possibility. In order to correct the sample size, we used deff (design effect) resource (in which the starting value is doubled) and we considered a 20%-rate of getting no answers. This way, the minimum sample should be of 216 individuals. For it was a domiciliary study, in which the active research is the only tool of captivation and considering the possibilities of refusals and difficulties on finding participants, we decided to organize a reserve register with twice the number of eligible individuals.

To do so, we proceeded to obtaining a random, systematic sample stratified by FHU from hypertensive and diabetic patients. In Alfenas, there are 15 FHU, but, in the beginning, we chose five out of them by dividing the urban area into five areas and raffling off five FHU, one from each region. In the sequence, we mapped out the people registered in the HIPERDIA/SUS system (a system of registry and follow-up of hypertensive and diabetic patients in the Brazilian health public service), in the chosen FHU, coming to a total of 2629 people. In order to select the possible participants of the research, we created a spreadsheet listing a sequence of micro-areas, streets and progressive numbering of the domiciles, according to FHU. The raffle systematized the sample through a regular interval obtained by the division of the total population (2,629) and the doubled sample – referring to the reserve register – (432), and we obtained a 6.1-interval rate. The first person was raffled off within a table of random numbers from 1 to 6. Number 6, the chosen one, was the first component of the list. From this moment on, to every individual who was raffled off, we added the 6,1-interval rate and proceeded to the necessary adjustments on the value. This way, as a matter of course, each stratum (FHU) composed proportionally the 432-person list (reserve register), from which at least 216 (minimum sample) should be arranged for this study.

OHCC were investigated through the following indices: DMFT, according to codes and criteria claimed by WHO[29]; T-Health (Tissue Health - through which different values can be attributed to healthy, recovered, decayed or missing teeth. The closer the value gets to 32, the more health-

iness the indicatives show)[30], according to Barnabé et al.[31] researches; c) FS-T (Filled and Sound Teeth – the sum of healthy and filled teeth, aiming to check the amount of teeth presumably functional in the oral cavity - it is important to highlight that the closer the index value is to 32, the higher the quantity of functional teeth will be[30]) and d) SiC (Significant Caries Index, an average calculation between DMFT and the third part of the sample in which values are higher, what also serves as a parameter to analyse the distribution of tooth cavity)[32]. We also assessed usage and necessity of prostheses, which were divided into types of dentures (partial [fixed permanently or removable] and complete) and extension (related to the quantity of elements to be replaced) in upper and lower arches, according to some codes and criteria adopted in SB Brasil 2010[27]. The evaluations were done under natural light, with the auxiliary of *ballpoint* probe (WHO) and plain buccal mirror, while the individuals were in supine position, being the examiner at 12 hours[29].

OHRQL evaluation was done through OHIP-14 application on the interview modality[24], considering possible difficulties on reading and writing among elderly individuals. An answer sheet, with a codified instrument scale (0 = never; 1 = rarely; 2 = sometimes; 3 = often; 4 = always) was handed to the participants. We obtained general and dimension scores, multiplied the codified answers (0, 1, 2, 3 or 4) and specific weighted grades, proposed by Slade[21]. The maximum value each dimension would reach would be 4, considering that the general OHIP-14 ranking varies from 0 and 28. This way, the highest the scores are, the worst OHRQL is going to be according to the interviewees.

In order to make a table with the data analysis, we used a statistical pack *SPSS*® 22.0. The individuals were organized into groups related to their systemic conditions (Hypertension; Diabetes; Hypertension-Diabetes). We did not observe any abnormality in the distribution of the data (Kolmogorov-Smirnov test, <0.05), we proceeded to the application of non-parametric tests. The average (Kruskal-Wallis) and proportional (McNemar test) rates related to OHCC and OHRQL were compared between the systemic conditions under investigation. Speaman Correlation Coeficient was used to determine associations between OHCC and OHIP-14. In all procedures, we used a 95% level of significancy.

A training step was done, as well as a calibration in two FHU with people who was not part of the final sample. A total of 36 people took part

in this stage (16 in the training and 20 in calibration).Taking a pattern examiner (Gold Standard) as reference, we measured kappa inter-examiner to determine DMFT (kappa = 0.91), besides the use and necessity of prostheses (kappa = 1.00).

Results

A total of 218 people took part in this research, which fit our quorum, previously defined (216 individuals). Among the observed people, 33.93% was not found after two communication trials and 9.59% refused to participate in the research. Most of the individuals in this research (56.42%) presented only Arterial Hypertension, is feminine (67.43%) (Table 1), with an average age of 64.83 (± 11.99), varying between 35 and 93 years.

No significant, statistical differences on the OHCC variables among the groups were no-

ticed. There was no disparity on the teeth cavity distribution (Sic=32 [± 0.00]) and the average DMFT to the total sample was 27.16 (± 6.15), with "missing" component prevalence (22.94 [± 10.46]). Nevertheless, among the 9.06 [± 10.46] existing teeth, 8.53 (± 10.12) were functional and only 0.53 (± 1.32) had cavities (Table 2).

Among the examined individuals, 85.78% were using prostheses, being the Dentures the most common (58.72%).However, the necessities of use of prostheses are still high (61.01%), specially for the use of Partial Prostheses (37.16%). When it comes to the arch, the jaw presents most part of the demands (58.26%) (Table 3).

No significant differences among the groups were noticed concerning OHIP-14. In general, the scores showed a low impact on oral health quality of life (Table 4).

In order to obtain correlations between OHCC and OHIP-14, considering the lack of difference among the results from the groups,

Table 1. Sample distribution according to systemic condition, gender and age group.Alfenas, MG, Brazil, 2015 (n = 218).

	SAH			DM			SAH/DM			Total		
	M n	F n	T %*	M n	F n	T %*	M n	F n	T %*	M n	F n	T %*
Age group												
35-44 years	2	6	**3.67**	0	2	**0.92**	1	1	**9.17**	3	9	**5.50**
45-64 years	13	34	**21.56**	5	5	**4.59**	6	24	**13.76**	24	63	**39.91**
65-74 years	16	24	**18.35**	4	6	**4.59**	4	19	**10.56**	24	49	**33.49**
≥75 years	14	14	**12.84**	1	4	**2.29**	5	8	**5.96**	20	26	**21.10**
Total	**45**	**78**	**56.42**	**10**	**17**	**12.39**	**16**	**52**	**31.19**	**71**	**147**	**100.00**

Caption:M = male; F = female; T = total; SAH = Systemic Arterial Hypertension; DM = Diabetes Mellitus; SAH/DM = hypertensive and diabetic individuals; n = number of individuals. * Percentage related to the total sample (n = 218).

Table 2. Dental condition according to systemic condition in adults and elderly people in Alfenas, MG, Brazil, 2015 (n = 218).

	SAH		DM		SAH/DM		General		p*
Dental condition, μ (sd)									
Healthy	4.56	(6.02)	3.30	(4.40)	4.25	(5.72)	4.31	(5.74)	0.766 [K]
Decayed	0.60	(1.59)	0.44	(0.85)	0.43	(0.87)	0.53	(1.32)	0.959 [K]
Filled	3.59	(5.08)	4.33	(5.53)	3.60	(4.61)	3.69	(4.98)	0.799 [K]
Missing	22.50	(10.99)	23.78	(9.97)	23.43	(9.74)	22.94	(10.46)	0.849 [K]
FP Support	0.70	(2.00)	0.15	(0.46)	0.29	(0.96)	0.50	(1.62)	0.140 [K]
DMFT	26.69	(6.59)	28.56	(4.52)	27.46	(5.86)	27.16	(6.15)	0.529 [K]
T-Health	5.53	(6.85)	4.24	(5.35)	5.07	(6.36)	5.23	(6.52)	0.801 [K]
FS-T	8.90	(10.67)	7.78	(9.47)	8.15	(9.43)	8.53	(10.12)	0.868 [K]
SiC	32.00	(0.00)	32.00	(0.00)	32.00	(0.00)	32.00	(0.00)	1.000 [K]

Caption:SAH = Systemic Arterial Hypertension; DM = Diabetes Mellitus; SAH/DM = hypertensive and diabetic individuals; μ= average; (sd) = standard deviation; FP= fixed prothesis. * Significant statistics: p < 0.05; [K] Kruskal-Wallis H-Test.

we considered the total sample. The increase of healthy, filled teeth, supported by fixed prosthesis, and the increase of FS-T and T-Health indexes, as well as the decrease on the quantity of missing teeth, OHCC and the extension of the prostheses used in lower and upper arches, contribute to the increase of psychological discomfort (p < 0.05). But, as healthy feet decrease in number, the increase in teeth loss and FS-T and T-Health indexes, along with OHCC and the demanded prostheses dimension, are physical dimensions, specially when it comes to incapacities, which increase (p < 0.05). Social disadvantage is affected only with the healthy teeth decrease and the

increase of necessary extended prostheses. And the general impact (OHIP-14) only grows with the increase of the necessity of prostheses (<0.05) (Table 5).

Discussion

Oral health clinical conditions

Few teeth could be assessed in the quantity of people in the study, as well as other researches indicate[33,34]. Absence of natural teeth is supplied, in part, by prostheses, specially dentures. Besides

Table 3. Usage of prosthesis and necessity according to systemic condition in adults and elderly people in Alfenas, MG, Brazil, 2015 (n = 218).

	SAH	DM	SAH/DM	General	p*
Usage, %					
No use	13.01	18.52	14.71	14.22	0.752 [Q]
PP	37.40	40.74	36.76	37.61	0.934 [Q]
CP	60.16	48.15	60.29	58.72	0.492 [Q]
UP	82.93	77.78	82.35	82.11	< 0.001 [Q*]
LP	52.85	59.26	54.41	54.13	
Necessity, %				38,99	0.176 [Q]
No necessity	34.15	51.85	42.65	38.99	0.096 [Q]
PP	40.65	18.52	38.24	37.16	0.726 [Q]
CP	28.46	29.63	23.53	27.06	< 0.001 [Q*]
UP	39.86	22.22	23.53	32.57	
LP	62.60	48.15	54.41	58.26	

Caption:SAH = Systemic Arterial Hypertension; DM = Diabetes Mellitus; SAH/DM = hypertensive and diabetic individuals; PP = Partial Prosthesis; CP = Complete Prosthesis; UP = Upper Prosthesis; LP = Lower Prosthesis. *Significant statistics: p < 0.05; [Q] Qui test; [Q*] McNemar test measured to the relation of dependency between usage and necessity of upper and lower prosthesis, demonstrating:1) more use of upper prosthesis than lower prosthesis; 2) more necessity of lower prosthesis than upper prosthesis.

Table 4. Quality of life related to oral health (OHIP-14 – total and dimensions) according to the systemic condition in adults and elderly individuals in Alfenas, MG, Brazil, 2015 (n = 218).

	SAH		DM		SAH/DM		General		p*
OHIP-14, μ (sd)									
FL	0.39	(0.73)	0.42	(0.71)	0.38	(0.84)	0.39	(0.76)	0.570 [K]
PP	1.20	(1.12)	1.18	(1.19)	0.99	(1.14)	1.13	(1.13)	0.260 [K]
PD	1.01	(1.10)	0.94	(1.30)	1.02	(1.27)	1.01	(1.18)	0.669 [K]
PI	1.07	(1.24)	0.87	(1.16)	0.97	(1.23)	1.02	(1.23)	0.706 [K]
PsychI	0.71	(0.85)	0.70	(0.91)	0.55	(0.81)	0.66	(0.85)	0.427 [K]
SI	0.51	(0.86)	0.23	(0.47)	0.34	(0.57)	0.42	(0.74)	0.248 [K]
SD	0.81	(0.97)	0.61	(0.75)	0.68	(0.92)	0.74	(0.93)	0.600 [K]
OHIP-14	5.71	(5.04)	4.96	(5.12)	4.92	(4.76)	5.37	(4.95)	0.360 [K]

Caption:SAH = Systemic Arterial Hypertension; DM = Diabetes Mellitus; SAH/DM = hypertensive and diabetic individuals; μ= average; (sd) = standard deviation; FL = functional limitation; PP = physical pain; PD = psychological discomfort; PI = physical incapacity; PsychI = psychological incapacity; SI = social incapacity; SD = social disadvantage. * Significant statistics: p< 0.05; [K] Kruskal-Wallis H-Test.

Table 5. Correlations between dental condition and usage/necessity of prostheses by arch and OHIP-14 total and dimensions in hypetensive and diabetic adults and elderly individuals in Alfenas, MG, Brazil, 2015 (n = 218).

	OHIP-14 total and dimensions, r							
	FL	PP	PD	PI	PsychI	SI	SD	OHIP
H	-0.033	0.025*	**0.199***	**-0.157***	0.057*	0.013	**-0.136***	0.003*
F	0.006	0.032*	**0.289***	-0.096*	0.110*	0.020	-0.081*	0.067*
FP	0.086	-0.008*	**0.145***	-0.006*	0.093*	-0.068	-0.005*	0.063*
D	0.054	0.038*	0.078*	0.040*	0.082*	-0.011	0.051*	0.099*
M	0.002	-0.008*	**-0.241***	**0.134***	-0.081*	-0.001	0.106*	-0.026*
DMFT	0.010	-0.015*	**-0.214***	**0.135***	-0.071*	-0.004	0.116*	-0.017*
T-Health	-0.007	0.028*	**0.231***	**-0.141***	0.080*	0.009	-0.118*	0.024*
FS-T	-0.006	0.018*	**0.248***	**-0.134***	0.085*	0.003	-0.108*	0.030*
UP Use	-0.028	-0.020*	**-0.162***	0.121*	-0.064*	0.054	0.131	0.016*
LP Use	0.025	**-0.093***	-0.133*	**-0.075***	**-0.096***	0.004	-0.029	**-0.104***
Nec.UP	0.050	0.186*	0.104*	**0.227***	0.153*	0.080	**0.070***	**0.195***
Nec.LP	0.039	0.233*	0.097*	**0.302***	0.128*	0.074	**0.159***	**0.234***

Caption:r = Spearman Correlation Coefficient; H = Healthy; F = Filled; FP = Fixed Prothesis; D = Decayed; M = Missing; DMFT = decayed, missed or filled teeth; T-Health = Tissue Health (healthy teeth equivalence index); FS-T = Filled and Sound teeth (functional teeth index); UP = Upper Prosthesis; LP = Lower Prosthesis; Nec. = Necessity; FL = Functional Limitation; PP = Physical Pain; PD = Psychological Discomfort; PI = Physical Incapacity; PsychI = Psychological Incapacity; SI = Social Incapacity; SD = Social Disadvantage; OHIP = Oral Health Impact Profile. *p < 0.05.

they are available at public service and present relatively low cost in comparison to other modalities, an important consideration should be done: its use is frequently associated to a higher comfort[35].

On the other hand, partial edentulism is not associated to the use of prostheses which substitute natural teeth (in the evaluated group, we found 37.16% of prostheses needs).

It is also necessary to highlight that the more constant use on the upper arch than in the lower arch does not indicate any occurrence of a more noticeable edentulism in the jaw. Contrariwise, it ratifies a historical failure in Odontology. The difficult to adapt to jaw prostheses leads to their uncountable edentulous abandonments, causing deficient alimentation and other aesthetic, functional and psychological injuries[36].

The current adult and elderly population suffers the consequences of conditions which they have experienced in an accumulative process during life cycle. So, it is possible to observe sequels left by cavities along the course of life (edentulism), yet the activity of disease among the analyzed ages is unusual. WHO and other actors[16,37] have frequently referred to a minimum of twenty functional teeth or, at times, a certain number of posterior contacts as a goal or simple way to define satisfactory function and oral health. The result we present here reflect how the analyzed population is far from that level, which does not differ, however, from the data found in similar aged populations in the same country[28].

Unlike what happens with young populations concerning cavities and their consequences, the SiC = 32 among hypertensive and diabetic adults and seniors examined here shows a situation close to the edentualism to which the sample is submitted, without any inequality among subgroups of this population. That becomes clearer when we observe the prevalence of "lost" compound in DMFT, confirmed by previous researches[38,39].

The absence of public health policies focused on the universal[40] promotion and prevention and the presence of Oral Health Attention models focused on the market, the mutilation and the once existed artificialism of prothesis[35,41] have led masses of people to mutilations, falsely repairable due to recent technology.Garrafa[42] affirms current dentistry is technically worth the praise (due to the level of quality and sophistication reached among the specialties), scientifically open to discussion (once it has not demonstrated competence in expanding this quality to most part of the population) and socially chaotic (for the inexistence of social impact before initiatives and collaborative programs implemented).Such characteristics can be translated into the clinical daily routine and the "dentristry-centeredness" in which the technique is mythified and the ar-

tificial prosthesis superposes the natural condition. Goldsmithery and sculpture are placed in a more comfortable position than the promotion of health is. As a consequence, the "naturalization of dental loss" is embodied as a mutilation culture, the "prothesism" is promoted and oral health and dental treatment are drawn near, reinforcing the odontotechnique, ruled by a critical and iatrogenic market[35,41]. Ironically, we may affirm that there was no inequality on the cavity distribution and its evils to the population.In a universe made of individuals exposed to health illnesses risks, everyone (or nearly all of them) were affected by dental loss.

Oral health-related quality of life

Low OHIP-14 scores (Table 4) facing the high edentulism may sign to an individuals' reduced perception of precarious oral health[43], existence of low evaluating cultural contexts to self-care[37] or even tool's questionable reliability[44]. The reduced impact on OHRQL has been reported by authors who use OHIP-14[11,45]. Nevertheless, the questionnaire is widely used in versions considered simple, reliable, representative and coherent[22-24,37,39,45]. It is important to consider that oral health is one of the many factors which influence quality of life. Therefore, depending on the cultural context and the perception the individuals have, real low levels of impact can be observed[44]. Another possible consideration is that, even facing low scores of OHIP-14, we could notice significant associations between OHIP-14 and OHCC (Table 5).

The correlations between OHCC and the psychological discomfort dimension suggest the incidence of teeth can be motive of tension and preoccupation. To Oliveira[35] and Souza[41], the population has a historical lack of access to oral health services and there is a tradition of mutilation in Dentistry, which contribute to understand tooth and problem as almost synonyms. This said, if problems (it means, teeth)no longer exist, there is - almost - no reason to worry anymore. On the other hand, the physical dimensions demonstrate an inverse relation between T-Health and FS-T indexes. It seems logical that the interruption of meals, as well as the exclusion of specific food from the diet, are related to the reduction of the number of teeth. Within social sphere, the reduction of healthy teeth is associated to the absenteeism to work and feeling that life has become worse (social disadvantage).Such findings corroborate Locker's[19] model: healthy teeth are associated to psychological discomforts,

but their reduction implies masticatory deficiencies which surpass the impairment scope, reflecting on aspects such as work and feeling that life has become worse to them (social disadvantage).

Facing an almost total edentualism situation, with few natural teeth, prostheses that are more extensive can substitute natural elements. The more extensive the prostheses are on the upper and lower arches (fixed prostheses, with few elements, or even complete dentures), the smaller the psychological discomfort is. For dentition is seen as hassle in this population, it seems reasonable that people eager for eliminating the remaining teeth by substituting them for complete prostheses. By contrast, whereby there are more demands for more extensive prostheses, physical dimensions are lifted until they also reverberate social disadvantage and general impact (Table 5).

If, on one hand, the natural dentition is taken as a disturb due to the imminent risk of person becoming ill, on the other hand the prostheses which substitute this risk (or the necessity of using them) bring the burden of more tension, preoccupation, embarassment, pain and masticatory issues, which impact negatively on work and quality of life. However, people who have experienced mutilation and "prothesist" dentistry may face difficulties in accepting the importance of teeth maintenance as a salutary syllogism.

Considerations about the research

We did not notice any significant differences on OHCC or OHRQL among the groups of hypertensive, diabetic and hypertensive-diabetic. Besides, the results for OHCC registered here are similar to the results obtained in researches with non-hypertensive and non-diabetic adult and elderly populations[28,34,36,38,39,43,44] and with populations in which the DM incidence is related[6-9,33,46]. Although the evidences of relations in CNCD, specially the DM, such as OHCC[6-9,33], it is possible that other factors, such as other pathologies associated (age, gender; economical, social and cultural aspects) and variable aspects that remain unclear, play a more relevant role on determining health issues in adult and, specially, elderly populations (considering 64.83 the average registered age), concealing or dissimulating the comorbidity role, such as SAH and DM on oral diseases.

Concerning OHRQL, there are plenty of cases in literature, determined by OHIP-14[11,12,14,15,23,37,44,45], related to OHCC in adults and elderly people. Although some of these studies are related to diabetic people[47], researches which

include both conditions (SAH and DM)[48] are rare. This way, this paper can be considered one of the first investigations to address OHRQL and OHCC in these populations on a comparative perspective.

Concerning edentualism, OHCC is similar in some populations with and without SAH and DM, but when we compare it to OHRQL some findings are pretty off-key. We highlight the incidence of natural dentition and naturalization of dental loss in the population we analyzed, aspects evidenced mainly through the correlation between the psychological dimensions from OHIP-14 and T-Health, FS-T and DMFT compounds. Such relations can integrate a complex amount of grievances of CNCD which surpass physical aspects (clinical indicators), echoing psychological and behavioural components.

OHRQL could be more explained by factors other than OHCC, these predictors being a reduced part of impact. Cultural, social and economical factors tell us more about health than biological aspects exclusively, in according to what the social health determining model[49] has already been alerting specialists about. Likewise, it is important to search for actions to analyse oral health from the healthy structure point of view, apart from the biomedical tradition of looking at events focusing on the illness behind them. In this research, we attempted to connect traditional, descriptive OHCC indicators and alternatives which prize health measurement instead of illness (FS-T, T-Health), besides trying to subjec-

tively measure the aftermath of oral health on people's welfare and daily life: OHRQL. Nonetheless, the non-inclusion of social-economical variables related to OHCC and OHRQL is often considered a limitation. Besides, the results lead to the necessity of wide approaches, incorporating qualitative methodologies and longitudinal follow-ups to a social-humanistic perspective in order to better elucidate matters such as the lack of faith on natural dentition, the naturalization of dental loss and the "prothesism" culture – what urges for further investigation.

Conclusions

Edentualism and protheses conjugate a significant binomial impact on the quality of life of the analyzed population, not only in physical terms, but in psychological and social aspects as well. High edentulism rates address incredulity on natural dentition, making a path for considering dental loss natural. On the other hand, "artificial" dentition does not meet the masticatory demands, reverberating social dimensions and impacting quality of life.

Such results redirect us to public policies in order to make the assistance (which is so important to this population) be marked by actions which vehemently reach the "prothesism"/dental loss naturalization culture, which negatively reverberates on quality of life of hypertensive and diabetic people.

Collaborations

Authors EJP Oliveira and AA Pereira worked on all stages of the article. VFB Rocha and DA Nogueira contributed to the organization, analysis and interpretation of the data, as well as in the final essay.

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