

Dental Education: Detection of the Prevalence of Oral Lesions in Elderly who use Dental Prosthesis through the Dental Record

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Abstract:

Introduction: *The dental prostheses which the function is to rehabilitate become iatrogenic due to inadequate use.*

Objective: *To investigate, through records, the prevalence of lesions in oral mucosa of the elderly and its relation with the removable prosthesis.*

Methods: *Quantitative study based on records of elderly from 60 to 92 years old. From the records of the Dental Clinic of the University of Fortaleza-Ceará, Brazil, we elaborated a form for the collection of data which were analyzed by the Software “Statistical Package for Social Science” – SPSS, version 15 (Chicago, Illinois, USA.).*

Results: *Among the 756 researched records, 479 belonged to women (63.4%). We verified that 358 (47.3%) elderly used removable prosthesis (superior, inferior or both), 138 (18.3%) had oral lesion. Fungal 59 (42.7%) and traumatic 48 (34.7%) lesions prevailed. There was statistical significance ($p < 0.05$) between oral lesion and use of prosthesis, oral lesion and type of prosthesis, oral lesion and frequency of use of prosthesis.*

Conclusion: *Through the records we detected a high prevalence of oral lesions which can be related to the use of inadequate dental prostheses. The records constituted epidemiologic research and student’s learning tool, working as a basis for the elaboration of oral health actions to the population.*

Keywords: *Epidemiology; Oral health; Dental prosthetics; Lesion; Elder.*

1. INTRODUCTION

Brazil has faced a considerable increase in the number of older people¹, thus, aging became one of the biggest challenges of the contemporary public health^{2,3}. The Elderly People National Health Policy⁴ considers elderly, in Brazil, people who are 60 years old or older. It was because of it and the Oral Health National Policy⁵ that the primordial rights to the health of this population were ensured and explicit.

Despite the advances, aging hasn’t been fully studied so that it’s provided necessary elements to the development of adequate public actions to this population, once the health programs directed to the elderly are still rare⁶. The health professionals and services must be prepared for the work with elderly, which requires interdisciplinary approach⁷, since that, oral factors can aggravate the evolution of systemic diseases and these may endanger the dental work and/or people’s quality of life.

Regarding the dental care, for a long time, the elderly were affected by an assistential model, focused on curative and crippling practices⁸. As a consequence of this is the high edentulism rate, proved by the findings of the SB Brasil Project⁹, which found that 39.96% of the examined elderly from 65 to 74 years old needed total superior and/or inferior prosthesis and 82.75% already used these types of dental prostheses. This serious fact is corroborated by a research¹⁰, in which almost half of the elderly who used prosthesis showed oral lesions. So, investigations on the structural and functional conditions of the prosthesis in use, general health status and the oral hygiene conditions must be conducted in order to propose adequate curative and preventive measures.

The dental prosthesis recovers the aesthetics and the phonetics and it also substitutes the teeth, aiming to rehabilitate the stomatognathic system¹¹. However, many other times, it doesn't work like this, becoming iatrogenic due to laboratorial and clinical errors¹². The iatrogenesis happens also due to the fact that many prostheses are made by professionals who aren't able to make them. In a study with elderly who used removable prosthesis, 54.2% reported that the prostheses weren't made by dentist-surgeons, harming the stomatognathic system because of unsatisfactory removable prostheses, causing pain, problem in use, discomfort and oral lesions^{13,14}.

The inadequate or even the lack of guidance of the dentist-surgeon regarding the way and frequency of using it and the hygiene methods used in the prostheses can contribute to the occurrence of several oral pathologies such as stomatitis, traumatic ulcers and inflammatory fibrous hyperplasia^{14,15}.

Concerning to this problematic, this work aimed to identify, through records, the prevalence of oral lesions and their relation to the use of removable prostheses.

2. METHODS

It is a quantitative and descriptive study. The research universe was made up of all the 1361 records in the file of elderly patients who were treated in the Clinic of the Dentistry Course of the University of Fortaleza – UNIFOR from 1998 to 2006. However, the sample was simplified into 756 records because 605 didn't meet the pre-established inclusion criteria, such as record with information about the object study (oral lesions and use of dental prosthesis). This period culminates with the performance of the Dental Clinic in 10 years of foundation of the Dentistry Course, inaugurated in 1996.

The Dental Clinic of UNIFOR receives patients by spontaneous demand and is a reference in the State of Ceará. After the classification of the clinical profile, the patients are included in the System of Academic Information and sent to different assistance sectors.

Considering the records structure, it was elaborated a form as an instrument for data collection: Patient's identification (age, sex, marital status); socioeconomic level (income, schooling); use of dental prosthesis (type, hygiene and time of use) and soft tissues lesions, detected at the moment of the anamnesis.

The data collection was performed by two researchers and Dentistry students (TMMB and TGH) who were trained, using 10 randomly selected records, referent to the standardization of the investigated variables. For the database, it was used the *Software "Statistical Package for Social Science"* – SPSS, version 15 (Chicago, Illinois, USA). The data were organized in tables and in the descriptive analysis of the quantitative variables; we used measures of central tendency (arithmetic mean, standard deviation and frequency distribution). It was used Pearson's Chi-square distribution and Fisher's Exact Test for comparisons, considering statistically significant the analyses with $p < 0.05$.

An authorization term was signed by the legal depository, responsible for the patients' records. With no conflict of interest, the project was approved by the Ethics Committee of the University of Fortaleza, Opinion No. 069/2007.

3. RESULTS

From the 756 researched records, 479 belonged to women (63.4%) and 277 to men (36.6%), whose age ranged from 60 to 92 years old (mean 66.99 years, $SD \pm 6.05$).

Among the socioeconomic data, some stand out: 346 (46.2%) white elderly, 366 (48.4%) married, 320 (42.3%) retired, 341 (45.1%) incomplete elementary school and 547 (72.4%) with an income up to two minimum wages.

The women [267 (72.4%)] used more the prosthesis when compared to men [102 (27.6%)] with statistical significance Chi-square = 29.802 $p = 0.0001$.

Among all the evaluated records, it was detected a prevalence of 18.3% of patients (138) with oral lesions.

From all the records ($n = 756$), 358 (47.3%) belonged to patients who used removable prosthesis and fixed prosthesis (superior, inferior and/or both), showing in table 1 that the total bimaxillary and total superior dental prostheses are the most used. (Table 1)

In table 2, we see that most of the patients became edentulous during the time from 21 to 40 years old, culminating with a longer use of the prostheses, although the more recent prostheses, mostly, have been used for 5 to 10 years.

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In table 3, it's evidenced statistical significance between oral lesion and the use of Prosthesis ($p < 0.05$) and also in relation to the type and frequency of use of the dental prosthesis.

The prostheses, total inferior, singly, and partial bimaxillary don't show statistical significance in relation to oral lesions.

It was computed hygiene methods: mechanical – toothbrush, dental floss, toothpick with cotton, steel wool, pumice stone, brush and toothbrush, and, chemical – coconut soap, laundry soap, bath soap, detergent, hypochlorite, sodium bicarbonate, toothpaste, corega tabs, mouthwash, water with salt, clove and lemon.

To chemically clean the prosthesis showed lower prevalence of oral lesions, however without statistical significance.

Table1. Types of dental prostheses of the 369 elderly who use prosthesis assisted in the Dentistry Course in the period from 1998 to 2006. UNIFOR - Fortaleza, 2009

Type of dental prosthesis	N	%
Total Bimaxillary	120	32.5
Total Superior	121	32.8
Total Inferior	4	1.1
Partial Bimaxillary	66	17.9
Partial Superior	34	9.2
Partial Inferior	58	15.7
Fixed Bimaxillary	25	6.8
Fixed Superior	2	0.5
Fixed Inferior	3	0.8

Table2. Distribution of frequency referring to the time of edentulism, use of prosthesis and time of the current prosthesis of the patients in the research. UNIFOR, Fortaleza – CE, 2009

Variable	Time of edentulism		Time he/she uses the prosthesis		Time of the current prosthesis	
	n	%	n	%	n	%
< 5 years	4	1.1	21	5.8	77	21.5
5 to 10 years	44	12.2	60	16.8	87	24.3
11 to 20 years	60	16.6	82	22.9	55	15.4
21 to 40 years	79	21.9	87	24.3	34	9.5
> 40 years	14	3.9	12	3.4	2	0.6
Doesn't remember	20	5.5	24	6.7	8	2.2
Without information	137	38.8	72	20.1	95	26.5

Table3. Oral lesion of the 138 patients who use removable prosthesis, according to type and frequency of use. Fortaleza, 2009

Variable	Oral lesion				P
	Yes No.	%	No No.	%	
Uses prosthesis					
Yes	98	26.6	270	73.4	0.0001*
No	40	10.3	348	87.7	
Type of prosthesis					
Total bimaxillary					
Yes	48	40.7	70	59.3	0.0001*
No	90	14.1	548	85.9	
Total superior					
Yes	33	27.3	88	72.7	0.005*
No	105	16.5	530	83.5	
Partial inferior					
Yes	18	31.6	39	68.4	0.011**
No	120	17.2	579	82.8	
Frequency of use					
Continuous	77	27.3	205	72.7	0.0001*
Sporadic	61	12.9	413	87.1	

*Chi-square distribution, ** Fisher's test

4. DISCUSSION

4.1. The Socio-Economic Scenario in which the Elderly are Inserted

The research showed that the elderly women look more for dental assistance than men. To Alexandre *et al.*¹⁶, this happens because the men only look for dental assistance when they already have some kind of pathology.

It was observed a low schooling, and it's possible to imply that the lack of information causes the unawareness of the individual health problem and of the ways to solve it, leaving the elderly without access to information relating to scientific findings and recommendations of preventive and self-care measures, which are necessary to perform important oral health tasks¹⁷. Thus, attempts to improve public health are jeopardized if there's no focus on education¹⁸. The low schooling implies a lower income which results in the priority of the elderly to meet their basic needs first rather than oral health.

4.2. Oral Pathologies in Elderly and their Direct Relation with the use of Removable Prosthesis

In this study, the records subsidized the acquisition of a databank of which the epidemiological variables could identify the oral health condition of the elderly assisted in the Clinic of the University of Fortaleza.

It was detected the following oral lesions in 138 patients: fungal lesions (Prosthetic stomatitis, candida and angular cheilitis), lesions due to trauma (inflammatory fibrous hyperplasia, keratosis, fibromas, aphthous ulcer and nicotinic stomatitis), malign and Pre-malign lesions (epidermoid carcinoma, leukoplakia and actinic cheilosis), non-pathological alterations (coating tongue, fissured tongue, geographic tongue and Fordyce's spots), among others.

The fungal (42.7%) and traumatic (34.7%) lesions were computed as most prevalent ones, data which is corroborated in a similar study¹⁴. In some patients it was observed more than one oral lesion. Associations of oral pathologies in elderly were found in similar studies^{14, 19, 20}.

The stomatitis is the most present lesion in the ones who use dental prosthesis, occurring mainly, because of functional factors (deficiency in the occlusion, vertical dimension of occlusion, retention, dynamics and statics stability) and qualitative factors (time of edentulism, time of use of the prostheses, age, conservation, continuous use, dental plaque and bad oral hygiene)^{11, 15, 21}.

Regarding the mucosa lesions associated to the use of removable prosthesis, the frequency found (26.6%) was inferior when compared to the ones reported by Mojica *et al.*²⁰. This difference comes, probably, from records inadequately filled and from the lack of semiologic examination of the oral tissues, which sometimes is not made or understood by some professionals. About the records who presented inadequate information, it is important to emphasize that its filling is indispensable, because besides being tools for epidemiologic research, its lack of information may jeopardize the patient's follow-up.

4.3. Use of Dental Prosthesis in Brazil: Consequence of A Bad Oral Health Policy

In this research, total bimaxillary dental prosthesis was the most used by the elderly (Table 1). These results are corroborated by project SB Brazil9 Which found in the Brazilian population, in the age group from 65 to 74 years old, 37,5% rehabilitated by total lower dental prosthesis and 63,4% by the upper dental prosthesis. This implies that, at some moment, these individuals had access to the dental care services, independently of its quality. However, the access opportunity must not be confused with care complexity or the demand of public services for this kind of rehabilitation²².

The total superior prostheses were used more than the inferior (32.8% and 1.1%, respectively). Such results, in the conception of researchers²², appear to be a bigger preoccupation with facial aesthetics, once the superior teeth are usually more visible in the smile than the inferior and the reason that the inferior prostheses cause discomfort sensation for they are more difficult to adapt.

In table 3, it's verified that the elderly use the same prosthesis for a long time, certifying a bigger proportion from 21 to 40 years old (21.9%), with the use of the current prosthesis from 5 to 10 years (24.3%), condition that is corroborated by Peracini *et al.*¹¹ in which patients used the current prosthesis for more than 10 years. The time of use of the dental prosthesis influences on the essential factors for the harmonic functioning of the stomatognathic system, such as retention, stability and

occlusal relation²³, however, the lifetime of the prostheses depend on the clinical evaluation and the effective care in relation to the hygiene and its conservation.

The appearance of oral lesions is related to unsatisfactory prostheses, the ways to use them and hygiene care with them^{11,14}. However, the presence of the prosthesis itself is not a determinant for the emerging of oral pathologies, which can be avoided through regular control consultations¹⁵, and adequate guidance to patients, for which the professionals must be aware of its importance in their graduation.

4.4. Time of use of the Dental Prostheses by the Elderly

The long time use of the current prostheses can be explained by the elderly adaptive capacity, along with the difficulties of access to public dental treatment and the cost of prosthetic rehabilitation in private clinics²³. This information makes us believe that the oral rehabilitation is directly related to the cultural and socioeconomic condition of the individual and the society where he/she lives.

Most of the elderly who used continuously the prosthesis had oral lesion, as it's verified in table 3, and among the ones who slept with the dental prosthesis, 28.2% had oral lesions. Superior datum was described by Kossioni²⁴, whose study reported that the continuous use of dental prosthesis is the main risk factor for prosthetic stomatitis. This information is an important resource for the Dentistry professional who shall be aware to pass on notions of Health Education, e.g., to tell the patients to not sleep with the prosthesis¹², considering that its removal causes the relaxation and rest of the tissues, while the tongue, cheek, lips and saliva exert cleaning function²⁵.

4.5. Dental Prosthesis Hygiene: A Habit to be Developed

The elderly who chemically cleaned the prosthesis showed lower prevalence of oral lesions. The sodium hypochlorite in 2.25% (bleach) has a bactericide and fungicide action, reduces the accumulation of biofilm, organic deposits, removes spots and inhibits calculus formation, showing this way, efficiency in cleaning the removable prostheses^{26,27}, despite the disadvantage of the dimming and corrosion of the metal components and the brightening of the acrylic resin.

Authors²⁸ recommend that the dental prosthesis shall be immersed in a solution of 15 ml of sodium hypochlorite (2.25%) with 200 ml of water for 10 minutes every 4 days, along with brushing, because a single method isn't capable to remove all the biofilm in the dental prosthesis.

The oral cavity and prosthetic hygiene must be well explained to the patient²⁵, because the bad prosthetic hygiene is aggravated when patients don't receive instructions about oral hygiene or how to take care of their prostheses²². Researchers observed that most of the patients didn't receive instructions from the dentist-surgeon about the needs and methods of prosthetic hygiene¹¹.

According to literature, the toothbrushes shall not be used as substitutes of the ones which are adequate to clean the prosthesis, because they have an inadequate shape, raising difficulties to clean the sulci²⁹.

The findings of this research confirm the lack of public policies directed to the promotion of the elderly oral health and reveal the consequences of the Brazilian radical and crippling Dentistry of the past, when only the school people had preventive treatments³⁰.

A new perspective for the oral health of the Brazilian elderly population emerged with the insertion of Dentistry in the Family Health Program (FHP) and the insertion of the program Brasil Sorridente, by the Ministry of Health in Brazil, which pledge benefits of preventive actions, as well as oral rehabilitation³⁰.

The dental education, as well as concrete and permanent public policies of preventive, curative, educative and rehabilitating actions must have a place in specificities directed to the elderly population in order to improve its quality of life²².

It's emphasized, in the proposals for a better follow-up of patients by Dentistry professionals, the need for more rigor in the records information, for they constitute the basis for information on educative and preventive care, and for the improvement of the oral health condition of the population.

5. CONCLUSION

Through the records, it was conceived a high prevalence of 18.3% of patients with oral lesions; the use of inadequate dental prostheses increases the occurrence of these pathologies; the correct handling of the records constitutes an important tool for epidemiologic research, as well as for patient's follow-up.

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