Profile of Oral Health and susceptibility to Oral Candidiasis in Patients of Primary Health Care

ORIGINAL

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Abstract

Introduction: The yeasts of the genus *Candida* are fungi that can cause an infection called oral candidiasis, when there are conditions that favor their proliferation, as the example of immunosuppression and the bad habits of oral hygiene.

Objective: Profile oral health of patients seen in the Dental Office of the Family Health Strategy in São Bentinho–PB; and its relation with the susceptibility for oral candidiasis.

Method: The study is exploratory, descriptive, quantitative type, held from May to July 2014, with 152 patients of both genders, dental service users for monitoring/dental treatment. The data were collected in an interview guided by structured script. For treatment of the data SPSS was used, in order to provide the descriptive and analytical statistics; with the application of the X^2 test there were correlated variables: age, gender, schooling and oral hygiene habits.

Results: Statistical dependence has been identified between the age and educational level ($p = 0.003$), age and gender ($p = 0.002$), age and brushing/day ($p = 0.035$) and education and brushing/day ($p = 0.001$); the average age of the participants was 30.29 (± 13.83), the majority were female (77.6%), in oral hygiene conditions evaluated on regular and disabled (86.8%); 82.2% presented caries; most (77.6%) had no use of mouthwash; 4.6% presented signs of oral candidiasis.

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Conclusion: The sample investigated was exposed to several pre-disposing factors to *Candida* infections and, therefore, needs to be intensified the educational actions and oral health promotion aimed at this target population.

Keywords

Candida; Oral Candidiasis; Oral Health.

Introduction

Candidiasis is an opportunistic infection caused by *Candida* yeasts. However, of the species most commonly found is *C. albicans*. They are fungi that commonly inhabit the mucous membranes, but only cause disease when there are conditions that favor the proliferation. The clinical evidence or not of oral infection by these fungi depends on the immune status of the host, the buccal mucosa environment and *C. albicans* resistance [1].

There are several factors, local and systemic, present in the host, which favor the development of oral candidiasis. This favoritism is due to *Candida* ability to adapt to different environmental conditions [2]. Among local factors, xerostomia and the use of antibiotics are considered the most important, mainly by changing the balance of the local microbiota [3]. There are mentioned, also, the immunosuppression, endocrine disorders, nutritional deficiency, malignancy, dentures, skin changes, quantitative or qualitative change of saliva, high carbohydrate diet, age, poor oral hygiene and smoking [4-5].

The *Candida* species are part of the microflora of the skin and mucosa of human beings, from birth [6]. In the first 3 weeks of life such yeast can colonize the gastrointestinal tract of children and adults in approximately 20 to 80% of the healthy population, and the vaginal mucosa, 20 to 30% of women [7].

Due to the adaptive capacity, yeasts can develop either in the presence of oxygen as anaerobically. These microorganisms degrade proteins and carbohydrates to achieve carbon and nitrogen essential for their development [8].

So, the objective of this study was to profile the oral health of patients assisted in the dental office of the Family Health Strategy in São Bentinho-PB and its relation with susceptibility to oral candidiasis.

Method

The study is exploratory, descriptive, quantitative, conducted at the Family Health Strategy (FHS) I for the dental office of Ivan Olimpio Segundo, in the municipality of São Bentinho-PB in the period May to July 2014, with the data source a structured guidance. Adopting a confidence level of 95%, $\alpha=5\%$ and a sampling error $\epsilon=5\%$, the sample totaled 152 participants, since they are served 240 patients monthly. It was sampled patients attending the dental service and agreed to participate by signing the Informed Consent. In compliance with Resolution 466/12, the research was approved by the Research Ethics Committee of the Federal University of Campina Grande, CAAE 37184414.5.0000.5575 protocol. In data processing we used the statistical package for social sciences (Statistical Package for Social Sciences - SPSS), version 17. To facilitate the correlation between the variables, age was dichotomized by average years. Data were analyzed using descriptive statistics, with the measure of central tendency average; and the application of the chi-square test (X^2), observing the values of standard deviation (SD) and confidence interval (CI) in order to obtain the correlation between the variables.

Results

Regarding the age of the 152 participants, the minimum and maximum were, respectively, 7 and 70; and the average was 30.29 (± 13.83). As to gender, 77.6% ($n = 118$) were female (data not informed in tables).

With regard to schooling in years, the sample studied ranged from 0 to 16 years of study; highlighting six (6) cases of illiteracy and the other with 6 or + years. Of both groups prevailed with the 12-16 years of study, 65.13% ($n = 99$). There were no cases with 10 or 11 years of study (data not reported in tables).

Table 1 shows the correlation between the variables age and education of the participants. The data show that the total number of participants whose age ranged from 7 to 30 years old, 75% ($n = 66$) had education between 12-16 years; while those aged 31-70 years old, 51.6% ($n = 33$) had the same education. Thus, it is clear that the percentage of less education was higher in participants with ages ranging 31-70 years old, 48.4% ($n = 31$).

Table 2 shows the correlation between the variables age and gender of the participants. The data show that the total number of participants whose age ranged from 7 to 30 years old, 86.4% ($n = 76$) were female; whereas in males, comparing the percentages in the two age groups was higher 34.4% ($n = 22$) in those whose age ranged 31-70 years old.

Table 3 shows the relationship between age and education with the variable brushing/day. It is noticed that the association brushing day and age was inversely proportional, because the younger patients brushed their teeth more times a day, with 62.5% ($n = 55$) and those with higher age brushed us less times a day old, with 54.7% ($n = 35$). The statistical correlation of the variables proved to be dependent ($p = 0.035$). The data shows also that investigated that brushed their teeth more times a day (3-4 times) were in among whose education was 12-16 years with 64.6 ($n = 64$). Conversely, those

Table 1. Correlation of the variables age and education of patients assisted in the FHS of São Bentinho - PB ($n = 152$).

Socio-demographic variables	Schooling (in years)				p
	0 - 9		12 - 16		
	n	%	n	%	
Age (in years)					
7 - 30	22	25	66	75	0.003
31 - 70	31	48.4	33	51.6	
p (statistical significance by X ² if p < 0.05).					
Source: Research data. São Bentinho-PB, 2014.					

Table 2. Correlation of variables age and gender of patients assisted in the FHS of São Bentinho - PB ($n = 152$).

Socio-demographic variables	Gender				<i>p</i>
	Female		Male		
	<i>n</i>	%	<i>n</i>	%	
Age (in years)					
7 - 30	76	86.4	12	13.6	0.002
31 - 70	42	65.6	22	34.4	
<i>p</i> (statistical significance by X ² if <i>p</i> < 0.05).					
Source: Research data. São Bentinho-PB, 2014.					

Table 3. Relationship of age and schooling versus dental brushing of patients assisted in the FHS, São Bentinho-PB.

Variables	Dental brushing per day				p
	1 - 2 times		3 - 4 times		
	n	%	n	%	
Age (in years)					
7 - 30	33	37.5	55	62.5	0.035
31 - 70	35	54.7	29	45.3	
Schooling (in years)					
0 - 9	33	62.3	20	37.7	0.001
12 - 16	35	35.4	64	64.6	
p (statistical significance by X ² if p < 0.05).					
Source: Research data. São Bentinho-PB, 2014.					

Table 4. Hygiene and oral problems, the use of prosthesis, medicine and morbidity of patients assisted in the FHS, São Bentinho-PB ($n = 152$).

Variables	<i>n</i>	%
Tooth brushing per day		
1 - 2	68	44.7
3 - 4 times	84	55.3
Use of mouthwash		
No	118	77.6
Cavity		
Yes	125	82.2
Use of prosthesis (Type)		
Total	2	1.3
Partial	14	9.2
Oral hygiene		
Regular to disabled	132	86.8
The use of medicines		
Yes	41	27.0
Morbidity		
Diabetes	2	1.3
Candidiasis	7	4.6
Source: Research data. São Bentinho-PB, 2014.		

Table 5. Reasons for the demand for dental care to patients of the FHS, São Bentinho - PB.

Variables	<i>n</i>	%
Pain	11	7.2
Dental extraction	34	22.4
Review	17	11.2
Restoration	62	40.8
Gingivitis and/or Periodontitis	28	18.4
Source: Research data. São Bentinho-PB, 2014.		

less brushed his teeth were among those with 0-9 years of schooling. Thus, the number of daily tooth-brushing showed extreme statistical dependence on the level ($p = 0.001$).

Regarding the relationship between education and oral hygiene conditions, data showed that the percentage of regular hygiene conditions considered poor were roughly equivalent in both educational levels, and 88.7% in patients whose schooling was 0-9 years 85.9% for those with 12-16 years of schooling. (Data not shown in table).

The data in **Table 4** show that 44.7% ($n = 68$) participants brushed their teeth for 1 to 2 times a day, and 77.6% ($n = 84$) did not use mouthwash. In turn, 82.2% ($n = 125$) were caries, 86.8% ($n = 132$) had oral hygiene considered regular deficient, 27% ($n = 41$) reported the use of medication, 1.3% ($n = 2$) it is mentioned diabetes was observed signals oral candidiasis in 4.6% ($n = 7$), 1.3% ($n = 2$) wearing dentures and 9.2% ($n = 14$) partial dentures used.

By relating the age of the participants to the use of prosthesis, aged nine cases were found ranging from 30 to 49 years old; 53, 62, 65, 66 and 67 years old (one case for every age) and 70 (two cases). Patients who wore dentures had 66 and 70; only one patient with partial dentures was 30 and the others, the majority, over 40 years old (data not shown in table).

Regarding the characterization of cases of candidiasis, four were women; five were 31-70 years old; four, from 0 to 9 years of study; five did not use mouthwash; only one was diabetic; four used drugs; six had considered poor hygiene; five did not wear prosthesis, presented decay and brushed their teeth 1-2 times/day (data not shown in table).

Concerning the reasons for the demand for dental care, the **table data 5** show that the restoration, with 40.8% ($n = 62$) was the procedure performed that prevailed, being virtually twice the extraction, 22.4% ($n = 34$). Worth noting that 11.2% ($n = 17$) returned to the service as a prophylactic measure (dental review).

In the case of extraction correlation with age, only it found two cases in adolescents, with 12 and 13 years old; three cases were 27 to 30; six, 31 to 40; 12, 41 to 50; seven, 52-60; four, 62 to 70 years old. (Data not shown in tables).

Discussions

Considering the average age and standard deviation of the sample investigated, it can be said that their ages ranged from 16.46 to 44.12 years old, ie teenagers to adults in the productive phase, predominantly female.

The years of education prevalent in this study contrary the findings of Soares et al. [9], wherein the most common educational time between investigated, was eight years or less (67.8%).

This research showed that by reducing the age, increased education, which revealed extreme statistical dependence between these correlated variables ($p = 0.003$). (**Table 1**)

It realized also by finds that in any age group, the percentage of searches for dental care was higher for females; but, being the younger who sought for more dental care, opposed to men. Therefore, the correlation ($p = 0.002$), the gender and age showed statistical dependence. (**Table 2**)

Of note was the high percentage of women in both age groups studied (**Table 2**), confirming findings of several studies [10-13]. In that sense, 50.77% of the population are women, being the main users of the Unified Health System [14]. Therefore, it is considered that the introduction of men in primary care health service is challenging, since these often do not recognize the importance of body care and health prevention, due to socio-cultural issues [15].

About statistical dependence found between age and education, it was noted that, in both age groups studied, the prevalence was higher in participants with higher education. However, most who sought dental care were younger, with higher edu-

cation (**Table 1**). It found statistical dependence to correlate the variable brushing/day and the variables age ($p = 0.035$) and education ($p = 0.001$) (**Table 3**).

Therefore reinforces the idea that age and education are determinants of behavior.

These findings corroborate those of Soares et al. [9], who also found a statistical association of variables age and education with other dependent variables. The authors found that the frequency of brushing was higher among younger people ($p < 0.01$) and with more education time ($p = 0.015$).

Several surveys indicate a relationship between the raising of the level of education and behavior/healthy habits. It is assumed that those with more education, read more and are more enlightened [16].

As the number of brushings/day and oral hygiene, it was found that most patients, both male and female, hygiene of the oral cavity was 2 to 3 times a day [17]. However, clinical examination revealed that only 15, 47% of men and 13, 42% had good oral hygiene. The authors also observed that the number of brushing teeth daily does not correspond to a better or worse sanitation of the oral cavity. While, in the clinical oral cavity hygiene was considered regular or defective in these patients.

Restorative procedures, extractions and scraping supra and subgingival should be conducted as important measures to adapt the oral environment and improve the functioning of the stomatognathic system. Patients and caregivers should be advised by the dentist, regarding the maintenance of oral hygiene through proper hygiene techniques [18].

Not using mouthwash in most patients was not a positive factor in the investigated sample (**Table 4**), especially considering that is proven its fungicidal activity against *C. albicans* [19].

Regarding the use of medicines, 27% of the sample used some type (**Table 4**). The most common changes in oral cavity, caused by medications are:

changes in flow rate and the salivary glands, change in taste, fibrous hyperplasia, tardive dyskinesia, thrush, hairy tongue, and osteonecrosis [20].

In this sense, Thomson et al. [21] conducted a longitudinal study investigating the incidence and prevalence of xerostomia in a given population and concluded that drugs are one of the predisposing factors for the onset of such a change.

Regarding morbidity, only 1.3% ($n = 2$) of patients reported being diabetic (**Table 4**). Still, it deserves attention because oral candidiasis has been related to several factors, including diabetes mellitus, justified by decreased salivary flow of patients with diabetes, caused by changes in the salivary glands, which would facilitate the accession of *C. albicans* to oral tissues. However, this fact was associated with the use of prosthesis or poorly fitting dentures [22].

In this research, the amount of patients who wore prosthesis, total or partial, was considered low (**Table 4**) compared to the study of Crispim et al. [23]. However, patients using prosthesis needs guidelines for adoption of preventive care as the diseases oral health. In this regard, the authors reported high prevalence of mucosal lesions associated with the use of prostheses; and that chronic trauma, poor fit of the prosthesis and inadequate occlusal relationships are predisposing factors for the onset of multiple lesions on the oral mucosa.

The sample investigated in this research revealed high prevalence of caries (**Table 4**), even with the placement of advertisements and educational activities in oral health in addition to the provision of public dental services in primary health care.

The presence of caries was associated with the presence of *Candida* in 40.6% of patients, while those without the decay rate of this fungus was 18.5% [3]. These data were corroborated by further investigations [24-25].

The fact that part of the investigation has sought dental service for preventive and curative actions may indicate that currently the population has warned about the importance of keeping the teeth.

However, many health users still have the view that the extraction would be the best option for the treatment and pain relief. Thus, despite the reasons of preventive nature (reviews and restorations) to the demand for dental service, has not gone unnoticed indicative of disease (gingivitis/periodontitis and pain) and tooth loss (**Table 5**).

The ratio of use of denture and tooth extraction associated with advancing age, observed in the sample investigated, as is the disclosure of epidemiological data pointing to the significant increase of tooth loss with increasing age. In 1986, it was estimated that 10% of the population at 34 years of age had a total absence of teeth. At 41 and 48 years old, this problem reached respectively 20 and 30% of Brazilians. From that age, the proportion of edentulous is increasing and the collapse of the dentition is more intense [26].

Although the prevalence of oral candidiasis was low, between investigated (**Table 4**), the findings of this research, regarding the characteristics of cases found, pointed out several predisposing factors to oral infections caused by *Candida*. However, oral candidiasis can develop in people who do not exhibit any association detected opportunistic [1].

Conclusion

Although there have been few cases of candidiasis, their characteristics point to be aware of the good habits and satisfactory oral hygiene are extremely important as they are determining factors for the prevention of opportunistic infections, which has oral candidiasis highlighted.

In general the results showed that the sample investigated was exposed to several predisposing factors for *Candida* infections, and most did not use mouthwash. So there is need for the intensification of education and promotion of oral health actions aimed at this target population.

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