

# Oral mucosal lesions and the need for dentures in a Brazilian elderly population

Lesões em mucosa oral e necessidade de próteses totais em uma população de idosos brasileiros

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## ABSTRACT

**Objective:** Verify the presence of oral mucosal lesions (OMLs) and the need for complete dentures in elderly people during the Campaign for Prevention and Early Diagnosis of Oral Cancer for a period of five years in Piracicaba, Brazil. **Methods:** Oral clinical examinations were performed by dental surgeons previously trained according to the variables during the period of five years (2007-2011) in the 41 Basic Units of Health distributed in six areas: north, south, east, west, central and countryside. **Statistical analysis** was performed using the Chi-Square test for trend. **Results:** The Campaign reached 3,452 elderly in 2007;

2,508 in 2008; 2,756 in 2009; 3,041 in 2010 and 2,217 in 2011. The need for double complete dentures ranged from 9.9% to 18.3% being 16.8%, 12.3%, 18.3%, 13.7% and 9.9% from 2007 to 2011, respectively. And the presence of OMLs ranged from 7.3% to 1.9% being 8.9%, 11.0%, 13.9%, 9.6% and 7.3% from 2007 to 2011, respectively. Just need for complete dentures tended to decrease over the period. **Conclusion:** The results revealed that the elderly still have unmet needs prostheses, despite a slight decrease over time and the importance of monitoring of oral lesions, still prevalent in all regions, with no downward trend.

**KEYWORDS:** Oral health; Elders; Geriatric dentistry.

## INTRODUCTION

The elderly present a series of oral and systemic peculiar characteristics, such as reduced alveolar ridge, less resilient mucosa and muscle tissue degeneration<sup>1</sup>. Also, they have reduced salivary secretion which can lead to pain or a burning sensation in the mouth, and thus, swallowing difficulty, speech, mastication, as well as decreased taste and adherence of the tongue at the base of the denture, lack of retention and formation of mucosal lesions<sup>2</sup>.

In elderly people the oral lesions are highly prevalent, as diagnosed in a Brazilian city by Mendes *et al.*<sup>3</sup> (2012), they observed that 21,6% of the group had ulcerative and proliferative lesions in the oral mucosa, and by Andrade<sup>4</sup> (2010) that evaluated community dwelling elderly of Piracicaba, SP and observed that 44% of them had OMLs.

Along with aging the chronic degenerative diseases increase, and demand for medical and dental treatment is expected to increase as edentulism and consequently, the need for complete dentures.

Silva *et al.*<sup>5</sup> (2008) found that 17,4% of the elderly of Piracicaba needed maxillary dentures and 21,7% of mandibular dentures; high percentage compared with the need for dentures of the adults.

Thus, a well-directed planning to oral health is essential to give preferential treatment to the elderly<sup>6</sup>.

It has been occurred, in recent years, campaigns to prevent oral cancer in Brazil; in Piracicaba campaigns are held annu-

ally<sup>7</sup>. Thus, this study aims to verify the presence of lesions and the need for prosthetic rehabilitation of 60 years old people or older, examined during the Campaign for Prevention and Early Diagnosis of Oral Cancer according to regions of the city of Piracicaba.

## MATERIAL AND METHODS

This is a descriptive study of the results of Campaigns for Prevention and Early Diagnosis of Oral Cancer held in the city of Piracicaba, SP, from 2007 to 2011, under the coordination of the Oral Health Bureau of the City of Piracicaba, which occur in conjunction with the Annual Influenza Vaccination Campaign in accordance with procedures defined by the Health Bureau of São Paulo. These procedures are in a worksheet with the name of the elderly, economic issues and health and oral clinical examination for the presence of mucosal lesions in the mouth, being added to the present study, the need for complete dentures.

This study was approved by the Ethics Committee of the School of Dentistry of Piracicaba - UNICAMP protocol n.017/2007.

Piracicaba has 364.571 inhabitants of whom 8% are elderly<sup>8</sup>. Yearly vaccination coverage against Influenza dye reaches 70% of the elderly living in the city. All seniors who are vaccinated are invited to participate in the Campaign for Prevention and Early Diagnosis of Oral Cancer, but only 16% of them agree to participate in the campaign<sup>9</sup>. Thus, may have been the possibil-

ity of repetition of the sample during the evaluated period.

After obtaining consent term signed by the volunteer, agreeing to participate in the study, it was performed an interview and clinical examination.

The clinical examinations were performed by 50 dental surgeons of the 41 Basics Health Units by year who were previously trained according to the variables of interest.

The training was carried out through theoretic classes of four hours, and with the demonstration of lesions by photographs for the diagnosis of oral lesions.

The oral examination was conducted under natural light, using mouth mirrors and wooden spatulas, as recommended by the World Health Organization (WHO)<sup>10</sup>, but with criteria adapted by the Health Bureau of São Paulo. The oral tests evaluated the need of complete dentures for those who was edentulous and not having any prosthesis (adapted from WHO criteria)<sup>10</sup> and the presence or absence of OMLs, which were classified as follows: Lesion 0 (absence of lesion), Lesion 1 (fundamental lesions: stain/spot; plaque; erosion, ulcer, gall bladder, blister; papules and nodules), and Lesion 2 (erythroplakia, leukoplakia, actinic cheilitis and erythroleukoplakia) called lesions with potential malignancy<sup>11</sup>, as recommended by the Health Bureau of São Paulo.

All patients who had lesion types 1 and 2 were referred to the Center for Dental Specialties (CDS) of Piracicaba, SP, as those who needed double full dentures (those who were completely edentulous and did not have prostheses), were referred for preparation of complete dentures by the municipal dental laboratory of the National Health System.

The collected data were computed in program Excel 2010 spreadsheet. The data were consolidated, from 2007 to 2011 (2007 initial year of the campaign until the last year with available data – 2011), to verify the presence of OMLs and need for prosthesis, evaluating the trend by Chi-Square Test for trend by adopting a significance level of 5%, according to the six administrative regions: Countryside, Central, North, South, East, West.

The data on injuries and need of prostheses are presented in descriptive form, according to the year and region. The trend analysis performed using the program EpiInfo 6.04.

**RESULTS**

The Campaign for Prevention and Early Diagnosis of Oral Cancer reached 3,452 elderly people in 2007; 2,508 in 2008; 2,756 in 2009; 3,041 in 2010; and in 2011, 2,217.

As for the variable need to complete denture, the percentage varied from 9,9% to 18,3%, and as to the presence of OMLs in elderly people from Piracicaba, this percentage varied from 7,28% to 13,8% ranging between the years of campaign (Fig. 1).

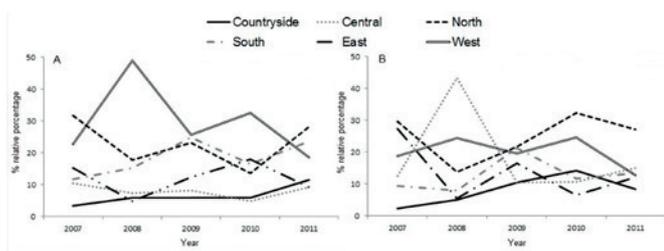


Figure 1 - Percentage of need for complete dentures, and oral mucosal lesions in Piracicaba areas, SP, from 2007 to 2011.

Figure 1.

According to Table 1, in relation to the need for dentures annually, the areas: North, South, East and West showed a significant decreasing trend.

Table 1.

Regarding the prevalence of OMLs were maintained during the study period.

Table 01 - Trend of elderly with need of complete denture in the city of Piracicaba, SP according to administrative areas in the period 2007 to 2011.

	Year					pValue*
	2007	2008	2009	2010	2011	
Country-side	19 (16,81)	18 (12,33)	30 (18,29)	53 (13,77)	25 (9,92)	0,0978
Central	60 (16,76)	23 (12,37)	41 (18,30)	28 (13,73)	20 (9,90)	0,0741
North	184 (16,74)	55 (12,33)	117 (18,28)	57 (13,73)	62 (9,92)	0,0014
South	67 (16,75)	47 (12,37)	125 (18,27)	69 (13,75)	52 (9,92)	0,0093
East	88 (16,73)	15 (12,40)	62 (18,29)	75 (13,74)	20 (9,95)	0,047
West	160 (16,74)	152 (12,36)	129 (18,30)	136 (13,75)	41 (9,93)	0,0356
Total	578 (16,74)	310 (12,36)	504 (18,29)	418 (13,75)	220 (9,92)	<0,0001

(\*). Absolute and relative data. Chi-Square test for trend. p<0,05.

Table 2.

From the total of 1,434 OMLs observed in all years of the Campaign for Prevention and Early Diagnosis of Oral Cancer, 79% had type 1, benign.

Table 02 - Trend of elderly with oral soft tissue lesions in the city of Piracicaba, SP according to administrative areas in the period 2007 to 2011.

	Year					pValue*
	2007	2008	2009	2010	2011	
Country-side	7 (8,75)	14 (11,02)	40 (13,84)	41 (9,56)	15 (7,28)	0,2138
Central	38 (8,80)	120 (11,04)	40 (13,84)	31 (9,57)	27 (7,28)	0,3031
North	90 (8,81)	38 (11,05)	83 (13,86)	94 (9,57)	49 (7,28)	0,4515
South	29 (8,81)	22 (11,06)	81 (13,87)	34 (9,58)	24 (7,29)	0,4025
East	83 (8,81)	15 (11,03)	63 (13,88)	19 (9,55)	22 (7,28)	0,8853
West	57 (8,81)	68 (11,06)	75 (13,86)	72 (9,57)	23 (7,28)	0,6436
Total	304 (8,81)	277 (11,04)	382 (13,86)	291 (9,57)	160 (7,28)	0,1436

(\*). Absolute and relative data. Chi-Square test for trend. p<0,05.

## DISCUSSION

Our data showed a trend of decreased need for complete dentures in elderly people from Piracicaba, and the numbers of OMLs in all administrative areas were maintained. However, the data ranged from 7,3% to 13,9% among evaluated years and showed that most of these lesions were benign (79%).

Since the late 1990s, the national influenza vaccination campaigns are aimed at individuals over 65 years, and since 2000, this age was reduced to 60 years<sup>12</sup>. The valuation of the influenza vaccination campaign was important for the implementation of the Campaign for Prevention and Early Diagnosis of Oral Cancer in the State of São Paulo, which began in 2001. Such initiatives are important for screening of oral cancer as observed by Warnakulasuriya e Cain<sup>13</sup> (2011). The integration of the two campaigns can be understood as an effort by the health service to interact with the elderly population, optimizing physical and human resources already available in the public health, including having been extended to the Countryside Area, which is normally difficult to access.

In parallel to the wider dissemination of these campaigns, annual immunization coverage peaked at about 80% of the target population throughout Brazil in recent years, according to Forleo-Neto *et al.*<sup>12</sup> (2003) and Barros *et al.*<sup>14</sup> (2004). In Piracicaba, the campaign covers annually about 70% of the elderly population living in the city<sup>15</sup>, while in other countries influenza vaccination campaigns are already regarded as one of the health initiatives that have adhered to by people from many social classes<sup>16</sup>.

Although not been increased in the need for dentures and/or oral lesions, the Countryside Area requires special attention, because of the great difficulty of access to this area.

North, South, East and West Areas showed a significant downward trend for need for complete dentures. In the East Zone perhaps because of greater campaign publicizing that has bringing up the demand that was previously without access or with limited access, taking the elderly to seek services for confection prosthesis indicated even by the city currently has two Dental Specialty Center.

As for OMLs in Piracicaba city, all areas showed maintenance of prevalence during the study period. This finding may be due to the fact that recently received a dental program within the Family Health Program which may helping to keep the results and not letting them get worse, therefore, in future surveys provided better data.

According to the literature, the elderly favorably self-evaluated their oral health<sup>17</sup>, and so maybe never mind the need for dentist appointments and so many OMLs may go unnoticed.

In the initial year of our evaluation, in 2007, 8.8% of the examined elderly had some type of OML, this percentage has fluctuated, in 2008 to 11.0%, in 2009 to 13.9%, in 2010 to 9.6%, whereas in 2011, 7.3%; these values are higher than the values found by Bonfim *et al.*<sup>18</sup> (2008) who studied a population of elderly who used dental prostheses and found a percentage of 69.1% of lesions among the examined, and this difference of values may be possibly related to the fact that we assessed both users and non users of prosthesis. Espinoza *et al.*<sup>19</sup> (2003) found 3.5% of lesions in Chileans elderly and Coelho *et al.*<sup>20</sup> (2004) 6.3% in patients using prostheses in a study conducted in Brazil, these

values are closer to the present study. According to Grecca *et al.*<sup>21</sup> (2002) there is a positive correlation between the presence of lesions on the palate and dental prostheses maladaptive, and although it was not the focus of this study to verify the association of dental prostheses usage and oral lesions, it can be consider in future studies.

In the Central Area we observe the need for complete dentures with a prevalence of 18.3% in 2009, but was 9.9% in 2011, which may be related to the manufacture of prostheses CDS located in this area, and despite the ability of service/manufacturing is far short of demand, it may be helping to reduce the numbers. In this area, where the same professional had worked during five years of the campaign, we find a regularity or reduction of the results, and the inclusion of experienced professionals in this type of activity seems to bring positive results. Another possible explanation for this finding in the Central Area may be related to the fact that in this Area there are not regions with high rates of social exclusion index, with the final IEX at 0.25 to 1.00.<sup>22</sup> It is known that residents of areas with lower social exclusion generally have more access to health services and information.

Data from the literature show variation from 26.9% to 68% of edentulism among the elderly, and for Tramini *et al.*<sup>23</sup> (2007). It was 26.9%, and to Fernandes *et al.*<sup>24</sup> (1997) and Rosa *et al.*<sup>25</sup> (1992) it was 68%. The percentage assessed by the Brazil SB Project 2010<sup>26</sup> is 38.8% of Brazilian elderly (between 65 and 74) edentulous and 15% of all elderly evaluated was completely total edentulous. In New Zealand this percentage is 20%, and the UK is 44%<sup>27</sup>. In Piracicaba, the percentage of edentulous elderly is 52.2%<sup>28</sup>, resulting high number of need for complete dentures.

According to Tramini *et al.*<sup>23</sup> (2007), 12.6% of the edentulous needed prostheses, close to our value in the year 2008, because in 2007 there were 16.7% of elderly from Piracicaba in need of complete dentures; in 2009, 18.3%; in 2010, 13.7%; and in 2011, 9.9%, less than the values observed by Frare *et al.*<sup>29</sup> (1997), who point to be a very small percentage of the population that does not use nor need prostheses. Although this reduction may had been due to the fact of the possibility of repetition of the sample during the evaluation period.

For Filho *et al.*<sup>30</sup> (2000) the large number of edentulous elderly is a reflection of the curative dental model instead of the preventive. And there are campaigns that provide greater observation of oral health as a whole, besides evaluating information about self-perceived on oral health by the elderly that is generally different from those obtained by clinical evaluation performed by health professionals<sup>31</sup>.

To Carvalho de Oliveira *et al.*<sup>32</sup> (2000) the increase in life expectancy may be associated with an increased need for dental prostheses. However, the inadequacy of these is a tendency for the formation of oral lesions. Fernandes *et al.*<sup>24</sup> (1997), Frare *et al.*<sup>29</sup> (1997), Rosa *et al.*<sup>25</sup> (1992) and Silva *et al.*<sup>33</sup> (2005) believe that the lack of dental care after the installation of prostheses justifies the high percentage of need for repairs as well as the high prevalence of lesions associated with them.

For Brunetti e Montenegro<sup>34</sup> (2002) the absence of complete dentures can lead to reduction of vertical dimension, facial plowing, joint problems (TMJ), and reduction of masticatory capacity that makes the elderly to change the consistency of food and consequently its protein value and social withdrawal. By

avoiding being exposed to social life, the elderly is more susceptible to depressive symptoms. And this social isolation is the beginning of a process that could result in an earlier death, so it is important to allocate resources for the manufacture of prostheses for people who need them.

A limitation of this study is that our evaluation reaches only the elderly who seek the clinics to be vaccinated and participate in the Campaign for Prevention and Early Diagnosis of Oral Cancer that they are approximately 16% of the total population of elderly who live in Piracicaba. However, despite this sample is not representative of the elderly population in this city about 2,000 elderly were assessed annually. Interesting data that probably reflect information about the oral health of the elderly, and can contribute to a good planning including the complete dentures need. Another limitation of this study was that data were collected during the Campaign for Prevention and Early Diagnosis of Oral Cancer, so, there was not specific focus for research on Oral Cancer, however, we included specific issues of interest to this study. The following prevention campaigns to oral cancer should evaluate the use of prosthesis, indication of prostheses exchanges, as well as questions about self-awareness to check the impact on the elderly population health.

It's appropriate a campaign to oral cancer prevention with influenza vaccination, but as it is not the main focus at the moment, the elderly population does not adhere significantly to the campaign of interest in this study. Maybe if the oral cancer prevention campaign was the main focus and performed by itself, we could obtain results that allow inference to all elderly in the city.

As vaccines are disease prevention, the Campaign for Prevention and Early Diagnosis of Oral Cancer also assists in maintaining the quality of life and longevity. When the diagnosis of oral cancer is in its early stages, there is a better prognosis of the disease, even with increase of survival rate. It was found that throughout this period, most of the lesions were benign. Thus, actions that routinely evaluate the oral condition of most susceptible patients should be constantly stimulated.

Campaigns have the real objective of making the elderly to evaluate himself, so he can realize the need for replacement of complete dentures when inadequate, not only when he needs a prosthesis. That is, there is still a large number of edentulous who use prostheses that may be causing iatrogenic complications, including oral lesions. Knowing the weaknesses in oral health of the elderly as well as the place of residence of individuals most likely, is a form of direct specialized attention those who often suffer from the difficulty of access and mobility.

## CONCLUSION

The results revealed that the elderly still have unmet needs prostheses, despite a slight decrease over time and the importance of monitoring of oral lesions, still prevalent in all regions, with no downward trend.

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## RESUMO

**Objetivos:** Verificar a presença de lesões de mucosa oral e a necessidade de reabilitação protética de idosos examinados durante a Campanha de Prevenção e Diagnóstico Precoce do Câncer Bucal por um período de cinco anos na cidade de Piracicaba, Brasil. **Métodos:** Exames clínicos bucais foram realizados por cirurgiões-dentistas treinados previamente segundo as variáveis no período de 5 anos (2007-2011) nas 41 Unidades Básicas de Saúde distribuídas em seis áreas: norte, sul, leste, oeste, central e rural. A análise estatística foi realizada através do teste Qui-Quadrado de tendência. **Resultados:** A Campanha atingiu 3.452 idosos no ano de 2007, 2.508 em 2008, 2.756 em 2009,

3.041 em 2010 e 2.217 em 2011. A necessidade de prótese total dupla variou de 9,9% à 18,3% sendo 16,8%, 12,3%, 18,3%, 13,7% e 9,9% de 2007 a 2011, respectivamente, e a presença de lesões em mucosa oral entre os idosos piracicabanos, variou de 7,3% à 13,9% sendo 8,8%, 11,0%, 13,9%, 9,6% e 7,3% de 2007 a 2011, respectivamente. Apenas a necessidade de próteses teve tendência decrescente no período avaliado. **Conclusão:** Os resultados revelam que os idosos ainda apresentam necessidades de próteses não atendidas, apesar de ligeiro decréscimo ao longo do tempo e da importância de monitoramento das lesões bucais, ainda prevalentes em todas as regiões, sem tendência de queda.

**PALAVRAS-CHAVE:** Saúde bucal; Idosos; Odontogeriatrics.

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