Oral Health in people over 64 years of age, institutionalized in Centres for the Aged in the Vigo Health District Spain, 2005

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Abstract

Objective: The aim of this study is to determine the prevalence of dental caries, periodontal disease and the condition of and need for dental prosthesis in individuals over the age of 64.

Design: A cross-sectional, descriptive and observational study was carried out among all the residents in 3 Centres for the Aged in Vigo-Spain. The standardized criteria of the DMFT (Decayed, Missing and Filled Teeth) index and The Community Periodontal Index of Treatment Needs (CPITN) of the World Health Organization (WHO) were used.

Results: 459 subjects were examined with a mean age of 83.8 years, 23% were men and 77% were women; 45% fit for everyday life and 23% require intensive care. In the 85 to 89-year-old group, 53% presented both maxillary and mandibular edentulism and 5% have all of their own teeth. 40% of residents wear a maxillary and mandibular prosthesis and 21% do not wear any kind of dental prosthesis; 38% have complete well-adjusted prosthesis, 28% badly-adjusted prosthesis and 18% need replacing. 38% have inadequate oral hygiene and 20% of prosthesis wearers have a large amount of build-up of dental plaque-calculus. In the subjects studied, the DMFT index was 27.02 with a 36% prevalence of dental caries and a mean of 1.45 caries (SD ± 2.58.), with 76.7% missing teeth, 3.6% filled teeth and 4.2% decayed teeth. The CPITN index shows that 47% of the group have mild periodontal disease (gingival bleeding and calculus) and 9% moderate periodontal disease (periodontal pockets) and in the ratio of teeth CPITN index 71% have excluded sextant, 13% have gingival bleeding and 12% have dental calculus.

Conclusion: The results of this study show that dental caries affect more than 30% of the population studied and that periodontal disease in the area of local chronic irritants as well as the presence of periodontal pockets appears in more than half of the subjects studied.

Key words: Dental caries, periodontal disease, edentulism, prosthetic needs, geriatric odontology.

Introduction

Spain is one of the European countries that has undergone a rapid ageing process in recent decades, and since the last century the proportion of elderly people has risen continuously due to a sharp drop in the birthrate and a longer life expectancy.

According to data from the National Statistics Institute, (2005), 7,484,392 people in Spain are over 65, with a life expectancy of 83.8 years in women and 77.2 years in men and rising. Thus, in the future, Spain will become one of the most aged countries in the world, in addition, 1 out of 4 elderly people, could become dependent and the number will then rise to 50% among those who are over 80 (1,2).

According to statistical data provided by the Oral Health Survey in Spain (2005), the 65 to 74-year-old age group, shows 47.2% of individuals with active caries, with a DMFT index (decayed, missing and filled) of 16.79(CI 95%) with a Care Index of 9.6% missing teeth comprising 82% of the total DFMT Index. The average number of teeth present is 14.18; serious dental loss affects 40% of the subjects and the total percentage of edentulous people in both maxillae and mandible is 16.8%. Relating this index with the need for treatment of caries, it can be observed that in people over 64, the need for extractions is 20.6%, the need for simple or complex restorative care is 52.6% and pulpal treatment 5.6%.

The periodontal disease data reveals that 38.5% have calculus build-up, 27.2% have shallow periodontal pockets and 10.8% have deep periodontal pockets and close to a mean of 1.7 sextants (one fourth of the total) were excluded from the Community Periodontal Index (CPI) for not having teeth to be assessed (3).

With reference to the condition of dental prosthesis in the over 64- year-old age group, 49 - 64% of the population wears some type of prosthesis, 6 - 14% wears a fixed dental prosthesis and 17 - 24% wears a complete prosthesis (lower and upper arch respectively). The need for prosthesis, reveals that 24% require some kind of upper prosthesis treatment and 29% need some type of lower. Thus, higher in the case of the lower arch. The multiunit prosthesis are the most needed, 17 - 20% depending on the arch and only 5% of this group requires a complete prosthesis (3).

However, it was found that there is a complete lack of guidance regarding oral hygiene, prevention and treatment, neglecting the need for oral health for the ageing population. Among the health problems that the elderly suffer, oral health problems play an important role.

The oral health status of the population over 64 shows 60% with dental prosthesis that have not been replaced for more than 16 years, periodontal disease, dental caries in over 90% of dentate older adults, not taking into account the effects it has in the overall health condition (4).

Dental caries and periodontal disease are considered to be the two main causes for tooth loss in the overall population (5,6).

Historically, the availability of dental services for the Spanish population was not good. It was even more complicated for those institutionalized since those responsible for their medical care were not specialised in the area of odontology. The initial medical assessment of the dental status of the older adults that would lead to treatment and/or maintenance of their dental health should be done by a clinical or X-ray examination. Thus, making the need for these type of professionals essential.

Objectives

• To determine the prevalence and severity of dental caries (Decayed, Missing and Filled Index DMFT) (7-9).
• To determine the prevalence of periodontal disease (The Community Periodontal Index of Treatment Needs CPITN) (7-9).
• To determine the condition of dental prosthesis and the need for dental prosthesis (Budtz Criteria and collaborators) (10).

Methods

Design: Cross sectional, descriptive and observational study.

Sample: All individuals over 64 years of age institutionalized in Centres for the Aged in Vigo - Spain under the guardianship of the Xunta de Galicia.

Oral Evaluation taken from the standardized epidemiologic-odontological data records of the World Health Organization (WHO).

Variables:

Age – Sex - Marital Status; Oral Hygiene; Presence of Dental Plaque; Dental Health Status - DMFT (Decayed, Missing and Filled Teeth) index; Periodontal Disease Status - CPITN; Assessment of Dry Mouth Syndrome; Condition and Need for Dental Prosthesis.

When the data was collected, the information was entered into a database for processing, using the operating system Windows ©, Word for Windows ©, the Statistical package SPSS-PC for Windows © version 12.0 and the programme C.I.A ©.

Statistical processing: Univariate Analysis: For the evaluation of the qualitative variables the comparison of proportions of diverse values was used (in this case nominal) and the quantitative variables were calculated using the statistical indexes of central tendency (with standard error of mean, mode and median) and dispersion measurements (standard deviation and variance).

With the obtained data, a bivariate analysis was carried out, the Chi-square test was used to check if significant differences existed between two qualitative variables, and to check if significant differences existed between two quantative variables, the Pearson´s correlation coefficient test was used. If there were significant differences the confidence interval of the different proportions was calculated. To verify if significant differences existed between a

qualitative and quantitative variable a mean comparison analysis of variance was used (ANOVA- ONEWAY) and if there were significant differences the interval of confidence of the difference in variables was calculated. To check the relationship between two quantitative variables the lineal correlation coefficients were applied with the confidence intervals (11).

Results

The 459 subjects examined were residents in 3 Centres for the Aged in Vigo (Pontevedra) – Spain under the guardianship of the Xunta de Galicia. The centres were: "Centro Residencial de Mayores de Bembrive, Centro de Atención a Mayores y Centro de Día Doralresidencias".

The subjects studied had a mean age of 83.8 years, 23% were men and 77% were women, in which 45% were fit for everyday life and 55% required some type of assistance. 66% of the subjects were widow/widowers, 19% single and 11% married (Fig. 1).

In the oral evaluation it was observed that in the subjects studied the DMFT index was 27.02 with a 36% prevalence of dental caries and a mean of 1.45 caries (SD ± 2.58.), with 76.7% missing teeth(the highest), 3.6% filled teeth and 4.2% decayed teeth. It can be observed that the Care Index is affected by the high percentage of missing teeth due to caries and periodontal disease. If we compare the proportion of filled teeth to decayed and filled teeth, we can see that 46% of decayed teeth have already received treatment, and 54% of the decayed teeth remain without being treated (Table 1 and Fig. 2).
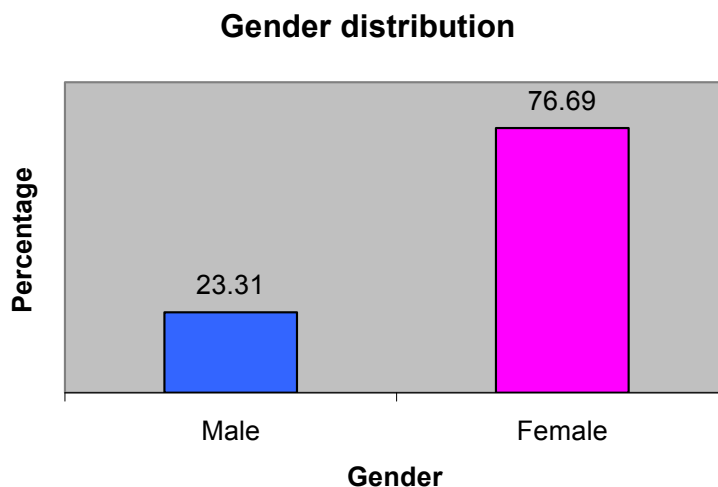
Gender distribution

Fig. 1. Gender distribution of the 459 subjects studied in 3 Centres for the Aged in the Vigo Health District - Spain.
Source: Medical records of subjects over 64 years of age in the 3 Centres for the Aged

Table 1. Number of healthy, decayed, filled, missing and abrasion teeth in subjects studied over 64 years of age in the 3 Centres for the Aged in the Vigo Health District - Spain.

Status	Explored Teetb	Mean	Rate
Healtby teeth	1,815	3.95 (SD ± 6.17)	12.35 (SD ± 28.27)
Decayed teeth	616	1.45 (SD ± 2.58)	4.2 (SD ± 8.08)
Filled teeth	526	1.15 (SD ± 2.78)	3.6 (SD ± 3.58)
Missing teeth	11,263	24.54 (SD ± 9.04)	76.7 (SD ± 28.27)
Abrasion teeth	465	1.01 (SD ± 2.78)	3.2 (SD ± 8.69)
Total	14,668		100

Source: Medical records of subjects over 64 years of age in the 3 Centres for the Aged

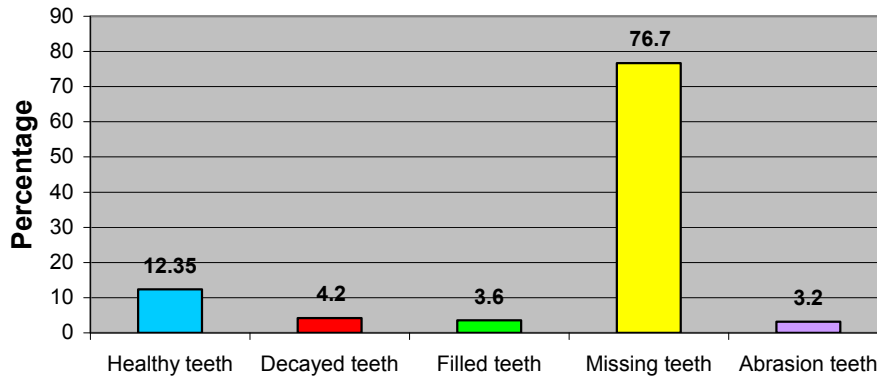## Percentage of dental status

Fig. 2. Percentage of healthy, decayed, filled, missing and abrasion teeth of the 459 subjects studied in the 3 Centres for the Aged in the Vigo Health District - Spain.
Source: Medical records of subjects over 64 years of age in the 3 Centres for the Aged
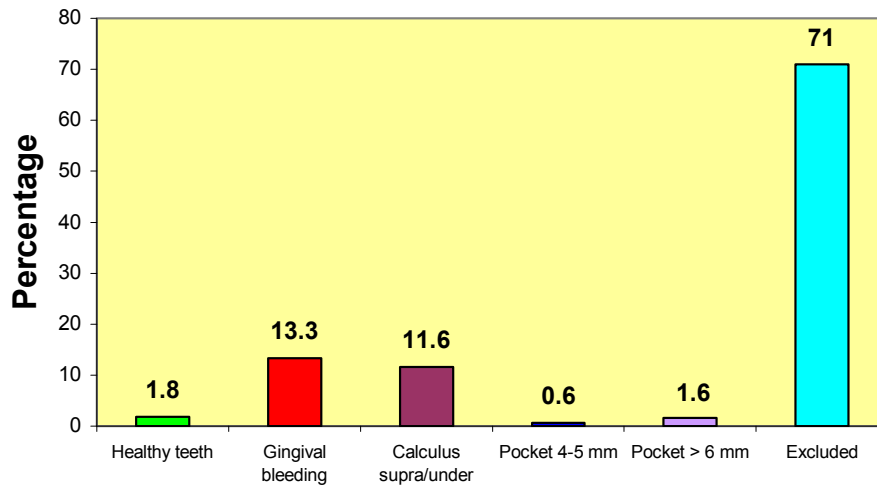
Rate of Index Teeth of CPITN

Fig. 3. Percentage of Mild and Moderate Periodontal disease of the 459 subjects studied in the 3 Centres for the Aged in the Vigo Health District - Spain.
Source: Medical records of subjects over 64 years of age in the 3 Centres for the Aged
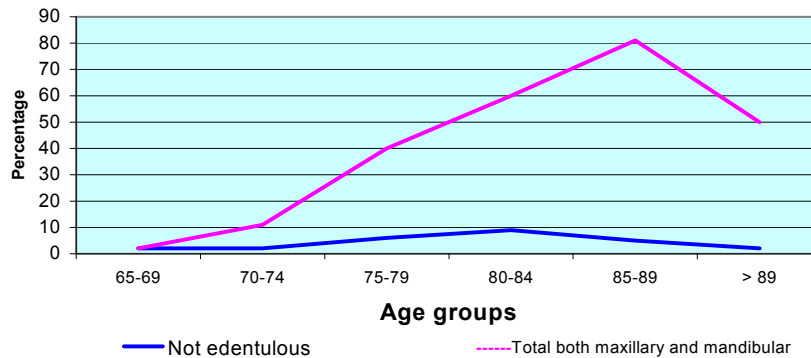
Edentulism relationship with Age

Fig. 4. Relationship of Edentulism with Age in the 459 subjects studied in the 3 Centres for the Aged in the Vigo Health District - Spain.
Source: Medical records of subjects over 64 years of age in the 3 Centres for the Aged

Relationship of Age with Type of Dental Prosthesis

Fig. 5. Relationship of Type of Dental Prosthesis with Age in the 459 subjects studied in the 3 Centres for the Aged in the Vigo Health District - Spain.
Source: Medical records of subjects over 64 years of age in the 3 Centres for the Aged
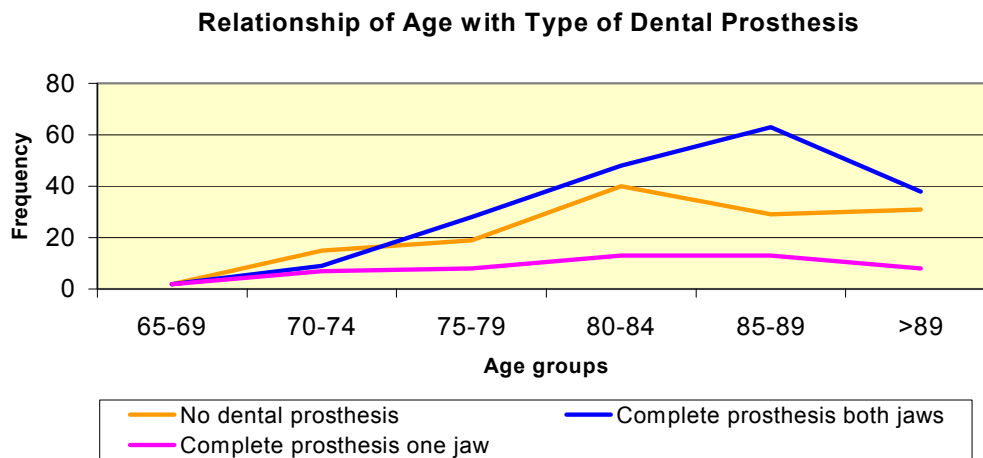
The CPITN Index shows that 47% of the studied group have mild periodontal disease (gingival bleeding and calculus) and 9% moderate periodontal disease (some have deep periodontal pockets and others have shallow periodontal pockets) and the rate of index teeth of the CPITN shows 71% have excluded sextants, 13% have gingival bleeding and 12% have dental calculus (Fig. 3).

The results show that as the age of the subjects studied increases, edentulism is higher. In the 85-89-year-old age group, 53% were edentulous in both the maxillae and mandible, 42% edentulous in one jaw and 5% have all of their own teeth (Fig. 4).

With regard to the type of dental prosthesis, the results show that 28% of the people do not use any kind of dentures, 10% wear a complete prosthesis in only one jaw (upper or lower) and 40% wear a maxillary and mandibular prosthesis. As the age of the subjects studied increases so does the percentage of people who wear a maxillary and mandibular prosthesis (Fig. 5).

Discussion

In the subjects studied the DMFT index was 27.02 with a 35.7% prevalence of dental caries and a mean of 1.45 dental caries (SD ± 2.58), higher in comparison to data from the Oral Health Survey in Spain 2005 (DMFT 16.79) (12). The missing teeth component represents 76.7% with a mean of 24.54 (SD ± 9.04), 4.19% decayed teeth, 3.58% filled teeth with a mean of 1.15 (SD ± 2.78) and finally 12.35% correspond to healthy teeth with a mean of 3.95 (SD ± 6.17).

With regard to the periodontal status of the subjects studied, 71.13% could not be assessed due to excluded sextants, this means having no teeth. The CPITN index showed that 1.8% have a healthy periodontium; 24.8%

show gingival bleeding and dental calculus build-up; a very low percentage (2.25%) have deep and shallow periodontal pockets, lower in comparison to data from the Oral Health Survey in Spain 2005, which shows 38% with calculus build-up; 27% have shallow periodontal pockets and 11% have deep periodontal pockets.

The prevalence of mild periodontal disease (presence of gingival bleeding and dental calculus build-up) is 46.4 % and the prevalence of moderate periodontal disease (periodontal pockets 4-5mm) is 8.9%.

The CPITN index recommended by the WHO was used in the assessment of periodontal disease, but it does not show the changes in epithelial insertion in the gums and therefore this technique for assessing the periodontium can lead to an undervaluation of the extent and possibly severity of the periodontal damage present. Consequently, it is possible that the subjects studied might have higher periodontal deterioration than what is estimated with the index used. The CPITN is directed towards assessing the periodontal treatment needs required in a specific community, such is the case that some countries use this index in order to establish national targets for public oral health.

In the group studied 52.7% presented both maxillary and mandibular edentulism, much higher in comparison to the data from the Oral Health Survey in Spain 2005 (16.8% in 65-74-year-old age group), and increases with age, being higher in the 85-89-year-old age group. It was higher than what was reported in the community of Galostrup, Denmark (23%), Gotenburg, Sweden (45%), Geneva, Switzerland (44%); but in these three European cities the subjects studied were 75 years old. Thus, when comparing with other European studies the results must be looked at with caution mainly because the percentage of eduntulism tends to increase with age. The percentage

of edentulous individuals in Athens, Greece was 64.4% and in Japan the percentage of edentulism in individuals in the 60-75-year-old age group was 21%.

With regard to the the most commonly used type of dental prosthesis in the group of subjects studied, the study shows that 40.3% wear a maxillary and mandibular prosthesis, this percentage is lower in comparison to the data from the Oral Health Survey in Spain 2005 (between 49-64%). This percentage also increases with age, higher in the 85-89- year-old age group.

When assessing the need for a dental prosthesis, 17.9% of the group require a maxillary and mandibular prosthesis (29% according to the Oral Health Survey in Spain 2005). With regard to gender, 31.8% of the women wear a maxillary and mandibular prosthesis.

Oral Dental Health significantly affects the quality of life. Due to its importance and the fact that people over 64 are each time a more important sector of the population (12), this study among others show that necessary measures should be taken in order to correct deficient Health Care, integrating preventive, curative and palliative care (13-15).

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