

# Oral Health of the Elderly: Reality, Myth, and Perspective<sup>1</sup>

R. MARIÑO<sup>2</sup>



*As life expectancy increases, and with it both the relative and absolute numbers of individuals age 60 and older, oro-dental health services face new challenges. This article explores the status of geriatric dental care in Latin America through a bibliographic review of epidemiologic studies included in the MEDLINE and LILACS systems, as well as PAHO studies on this subject. The areas addressed are the elderly's oro-dental health status, perceptions of their own oro-dental health, and frequency of dental service use. The review gives special attention to the critical state of oro-dental health among Latin America's elderly population, which exhibits high prevalences of caries-related tooth loss and total loss of dentition.*

*The review revealed a scarcity of data relating to periodontal health and the health status of buccal soft tissues in the elderly population. It also found that elderly survey subjects tended to perceive their own oro-dental health in a manner inconsistent with clinical observations. According to several survey-based studies, most of those surveyed felt their oro-dental health was good or very good with few or no chewing problems. Regarding service utilization, many of those interviewed indicated they had not seen a dentist during the 6 months preceding the study. In view of the health, social, and psychologic consequences of the current situation for the elderly and the oral health services' potential for improving this population's quality of life, it is strongly recommended that appropriate and effective oro-dental health care programs oriented to this age group be developed.*

**I**n many Latin American countries, an improvement in the health conditions of the population can be observed, as reflected in lower rates of childhood mortality and general mortality as well as increased life expectancy at birth. As these indicators suggest, this improvement is contributing to a gradual aging of the population and to an increase in both absolute and relative numbers of individuals age 60

or older, who in this article will be referred to as the elderly population.

Despite availability of the information needed to clear up misconceptions about oro-dental health and aging, the elderly continue to be at high risk of oro-dental diseases—including caries, periodontal disease, and cancer of the mouth. The prevalences of these disorders have not declined significantly in this age group, and both society as a whole and the elderly themselves tend to continue accepting deterioration of the mouth and chewing apparatus as a normal and inevitable aspect of old age.

It is currently known, however, that one can maintain good oro-dental health to an advanced age and that teeth are not lost because of aging but rather as a result of oro-dental diseases associated with

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<sup>2</sup>University of Melbourne, School of Dental Science, Melbourne, Australia. Reprint requests and other correspondence should be addressed to Dr. Mariño at The University of Melbourne, School of Dental Science, 711 Elizabeth Street, Melbourne, Victoria 3000, Australia.

various risk factors: chronic systemic disorders beginning at an early age, unhealthy lifestyles, repeated instances of iatrogenesis, and poor nutritional status. Also, the temporomandibular joint tends to experience a series of abnormalities whose relationship with old age has not yet been established; and salivary flow alterations that are not a physiologic consequence of aging occur as frequent side-effects of using certain medications (1).

More broadly, oro-dental health is a major, inseparable component of general health that is influenced by the latter. Diseases such as arthritis, cancer, diabetes mellitus, hypertension, stroke, and autoimmune disorders interfere with care of the mouth, mastication, and use of dental prostheses—which in turn increases the risk of dental caries, dryness of the mouth, opportunistic microbial infections, and periodontal disease.

Conversely, oro-dental disease can affect an elderly individual's general health and have important physiologic consequences leading to impaired nutrition (2), interpersonal relationships, and mental health (3).

This article brings together information gathered from epidemiologic studies of the oro-dental health status of the elderly in selected Latin American countries. It also compares that status with elderly subjects' own perceptions of their oro-dental health and the frequency with which these subjects requested dental care. The aim of this review is to identify possible areas of intervention—with emphasis on education, preventive measures, and treatment—and to examine this matter in terms of future prospects afforded by dental science to individuals in the elderly age group.

## MATERIALS AND METHODS

Information was obtained from two sources. First, a bibliographic review of

MEDLINE and LILACS<sup>3</sup> was conducted in order to identify epidemiologic studies on the oral health of elderly Latin American populations. In addition, a review was made of pertinent publications and documents included in the PAHO Oral Health Program and of publications in PAHO's Technical Papers Series dealing with health profiles of elderly populations.

A total of 14 references (4–17) were found. Seven of these reported on epidemiologic studies of oral health, three of which were national in scope (4–6) and four of which (7–10) were of a local nature. The seven other studies (11–17) contained information about elderly populations' perceptions regarding their own oral health and the frequency with which members of the populations involved used oral health services.

## RESULTS

### Clinical Aspects

#### *Dental Caries*

The dental caries history of various study populations was assessed using the DMF index, which represents the arithmetic average of the number of teeth that are decayed (D), missing (M), and filled (F) as a result of caries occurring in permanent teeth (Table 1).

According to a Venezuelan study (4), survey respondents over age 65 had a DMF index of 19.1, with the "missing" (M) component and other teeth for which extraction was indicated accounting for 85% of the index.

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<sup>3</sup>MEDLINE is an electronic bibliographic database of international scope that includes references and summaries of articles and bulletins on biomedical topics. LILACS (Latin American Literature in Health Sciences) is a similar database dedicated exclusively to biomedical publications from Latin America.

**Table 1.** DMF index (decayed, missing, and filled teeth), the M (missing teeth) component of the index, teeth for which extraction was indicated (EI), and the percentage of survey subjects with complete loss of dentition, according to studies conducted on the 50–59 year age group and elderly populations in five Latin American countries from 1972 to 1989.

Country (age group)	Year	DMF index	M	EI	% toothless (total)
Brazil (50–59)	1986	27.2	23.3	0.9	51
Costa Rica (≥60)	1989	26.1	24.6	0.5	70.7
Chile (≥60)	1983	24.7	22.8	NA	33.0
Cuba (≥60)	1989	28.0	26.9	NA	(90.6)*
Venezuela (≥65)	1972	19.1	13.6	2.6	38.7

\*Patients with fewer than 20 teeth.

Another study, conducted in Brazil to establish the need for dental care (5), did not establish the prevalence of dental caries among those 60 and older; but the results for the 50–59 year group were considered indicative of the situation most likely occurring among the elderly. In this latter case, the DMF index in the 50–59 year group was 27.2, with the sum of missing teeth and those for which extraction was indicated averaging 24.2.

A study of elderly subjects in Coronado, Costa Rica (7), revealed a DMF index of 26.1, with missing teeth (M) accounting for 94.3% of the index. In a similar vein, a Chilean study (8) conducted at clubs for the elderly in the City of Valparaíso found a DMF index of 24.7, with missing teeth (M) accounting for 92.3% of the index.

### **Periodontal Health**

In general, there is less published literature and data on periodontal health than on dental health. In Venezuela (4),

data used to derive Russell's Index<sup>4</sup> in a survey population indicated that only 7% of those over age 64 were free of periodontal disease and that 4% had destructive lesions with formation of periodontal pockets.

In Brazil (5), periodontal health status was determined by applying the Community Periodontal Index of Treatment Need (CPITN).<sup>5</sup> According to the findings, 7.4% of those surveyed had advanced periodontal disease. The same index was applied to a study conducted in Coronado, Costa Rica (7), where it was

<sup>4</sup>An index used for the assessment of periodontal disease. Each tooth is rated on a scale of 0 to 8 to indicate whether it is healthy or shows signs of gingival bleeding, periodontal pockets, or loss of masticatory function.

<sup>5</sup>An index developed by WHO to establish the needs of a community for periodontal treatment. The dentition is divided into six segments (sextants), and the condition of each sextant (i.e., whether it is healthy or shows signs of gingival bleeding, hardened deposits, or periodontal pockets) is recorded.

found that 33.7% of the individuals surveyed who still had teeth were in the advanced stages of periodontal disease.

### *Soft Tissue Lesions*

Two studies analyzed the prevalence of soft tissue lesions in the oral cavity. In Brazil (9), a study of institutionalized elderly from the City of Piracicaba found that 59% of those examined had one or more lesions of the oral mucosa. In Chile, another study (8) indicated that the prevalence of such lesions in the same age group ( $\geq 60$  years) was 18%.

### *Missing Teeth*

According to official Cuban data, only 6.2% of the population over age 65 had over 20 teeth in 1984, a figure that had increased to 9.4% in 1989 (6). In Chile, the frequency of total loss of dentition found among elderly study subjects was 33%, while the number of natural teeth in the mouths of those who had them averaged only six, and many of these were carious (8). In Venezuela, the study population of individuals over age 65 had an average of nine teeth (4). Among study subjects over age 59 in Costa Rica, more than 70% had total loss of dentition (7).

According to survey data from Brazil (5), 51% of the study population 50–59 years of age was missing all its teeth, another 21% was missing all teeth in at least one jaw, and only 28% had teeth in sufficiently good condition that full dentures were not needed.

### *Use of Dental Prostheses*

The ability to chew food was related to the loss of teeth and the need for prosthetic rehabilitation. In Costa Rica (7), 33% of the population surveyed required either total or partial prosthetic rehabilitation.

In Chile, a variable degree of rehabilitation was observed among individuals requiring dental prostheses. Of the total number of individuals requiring partial upper prostheses, 85% actually used them; in contrast, of those requiring total lower prostheses, only 21% actually used them.

Data from Costa Rica indicate that a high percentage of elderly study subjects had used the same prosthetic device for many years without replacement. In the Costa Rican study (7) the average period of use was 26.2 years. Other studies outside Latin America (18, 19) have reported that some 60% of those surveyed had used the same device for less than 10 years while 30% had used it for more than 20 years, the average period of use being 11 years.

### *Oral Hygiene*

The prevalence and seriousness of periodontal disease is related to the level of personal oral hygiene. In Costa Rica (7), 100% of the study subjects who still had their own teeth required instruction in oral hygiene. In Brazil (5), only 1.3% of those examined in the 50–59 year age group had healthy gums and did not require any type of intervention.

In Venezuela, a study employed the Simplified Oral Hygiene Index, which measures the extent of soft and hard deposits on the surface of six indicator teeth (4). The index has a scale of 0 to 6, with scores above 3 indicating poor oral hygiene. In the 55–64 year age group, the index value was 4.07, while in the  $\geq 65$  year group it rose to 4.32.

The reported information suggests a significant deterioration in oral hygiene after age 60, probably in part because it is considered natural to gradually lose one's teeth until eventually all are lost (18)—a belief leading elderly patients to neglect the preventive measures needed to maintain proper health of the gums.

## How the Elderly Perceive Their Own Oral Health

Surveys performed in collaboration with PAHO on elderly populations in various Latin American countries (11–17) indicated that 33.2% to 68.3% of the elderly survey subjects characterized their own oral health as good or very good. Elderly female subjects tended to view their oral health more favorably than did elderly males (Table 2).

### Chewing Problems

The studies in question (11–17) indicated that over 60% of the elderly subjects reported very few or no problems chewing as a result of missing natural teeth. No major difference was detected between males and females in this regard (see Table 2).

## Use of Dental Services

Certain authors (4, 20, 21) have found that visits to the dentist by study subjects tend to decrease with age. The previously mentioned Latin American studies provide confirmatory evidence of this, as in most cases well over 75% of the elderly survey subjects indicated they had not seen a dentist in the 6 months preceding the survey (see Table 2).

## DISCUSSION

As part of the goal of Health for All by the Year 2000, WHO and the International Dental Federation have set specific goals for improving the oral health of the elderly. These are, first, to reduce the current rate of tooth loss by 25% and, second, to have over 50% of those above age 60 conserve a minimum of 20 func-

**Table 2.** Elderly study subjects' self-perception of their own oral health status, reported visits to the dentist, and reported chewing problems in seven countries of the Americas, 1989–1990.

Country	Sex	Oro-dental health good or very good (%) <sup>*</sup>	No visits to the dentist in last 6 months (%) <sup>†</sup>	Chewing problems nil (%) <sup>‡</sup>
Argentina	M	51.8	76.6	79.9
"	F	56.1	78.6	78.0
Brazil	M	37.4	92.2	73.0
"	F	36.5	90.1	72.7
Chile	M	50.4	88.6	69.2
"	F	58.1	88.3	71.0
Costa Rica	M	60.9	91.0	79.8
"	F	68.3	90.8	82.2
El Salvador	M	33.2	97.8	60.1
"	F	40.2	93.0	69.4
Guyana	M	39.2	94.3	79.4
"	F	50.1	97.9	83.7
Trinidad and Tobago	M	46.1	89.6	80.0
	F	44.1	92.3	79.4

<sup>\*</sup>Percentage of elderly subjects who classified their oro-dental health status as good or very good.

<sup>†</sup>Percentage of elderly subjects who indicated they had not visited the dentist in the 6 months preceding the survey.

<sup>‡</sup>Percentage of elderly subjects who indicated they rarely or never had difficulty chewing food as a result of the loss of natural teeth.

tional teeth (22). Unfortunately, our data indicate that the oral health status of the elderly in Latin America is poor, and that the high prevailing rates of tooth loss, gingival disease, complete loss of dentition, and need for prosthetic devices show we are not close to achieving the latter goal.

The Latin American clinical studies reviewed here tended to concentrate on dental caries and the use of dental prostheses. Few dealt with periodontal problems, and only two referred to lesions in the soft tissue of the oral cavity—despite the fact that the age group in question is at increased risk of suffering such disorders.

Although it is true that judgement criteria applied by clinical personnel are not the same as those applied by patients, it seems clear that the clinical situation described above is inconsistent with the apparent views of the elderly study subjects, who tended to understate their poor oral health. If the information provided by these individuals were taken at face value, one might mistakenly assume that the oral health problems of the elderly in Latin America had been clearly identified and that measures designed to resolve such problems and totally rehabilitate most patients were being applied.

It is possible that a decline in the frequency of visits to the dentist as age increases is largely the product of this unrealistic perception and a tendency to accept poor oral health as normal. It should be noted, however, that most studies indicate that the use of oral health services depends on many interrelated factors—with self-perception being a determining factor and with education, socioeconomic status, existing dentition problems, and complete loss of dentition also being important. (Studies conducted on the effect of anxiety on the decision to seek dental care indicate that this effect has significantly less predictive value

among the elderly than among younger people—23.)

Our review indicates that dentists must motivate other health professionals—physicians, nursing personnel, nutritionists, social workers, etc.—to educate and counsel their patients, instructing them about the need to provide oral health care and to periodically perform self-examinations of the soft and hard tissues of the mouth. Basically, the results highlight the need to educate patients, stressing that tooth loss, bleeding gums, poorly adjusted prostheses, and the various types of oral lesions (2) are not normal phenomena but rather disorders subject to treatment and even prevention.

The situation described here is perpetuated by current dental care systems, which are overly dependant on exclusive high-cost rehabilitative treatment. In addition, the aforementioned emerging demographic changes portend an increase in the oral health problems of the elderly. As previously noted in *Health Conditions in the Americas* (24), the situation calls for establishing specific objectives, programs, and a blend of short-, medium-, and long-term measures directed at providing dental care for elderly individuals. Those measures chosen should be directed at correcting the clinical disorders found in practice and at putting an end to a series of myths and misconceptions about elderly people's oral health. The intent should not be one of redirecting priority attention away from other groups, but rather of distributing resources more equitably in accord with current demographic, epidemiologic, and technologic reality and the situation anticipated in the future.

### Short-term Goals

Each Latin American country should identify and describe the resources available for planning oral health activities and

programs for the elderly at all levels of technical and administrative complexity.

It is also necessary to establish as a short-term goal some sort of minimal oral health care for elderly patients, keeping in mind each country's particular situation in terms of its resources and its demographic, economic, and epidemiologic features. Particular importance should be assigned to providing services designed to restore proper functioning of the mouth, take corrective therapeutic measures, and obtain socially and aesthetically appropriate as well as functional results. Once equilibrium has been restored, it will be necessary to arrange for conserving functionality without resorting to emergency measures such as tooth extraction.

Achieving the above goals implies educating both the general public and dental health personnel about the need for prevention, early diagnosis, and treatment. It will also require collaboration between dentists and other health professionals for the purpose of promoting both oral health and the biologic, mental, and social functionality of the growing elderly population (2). In addition, it will be necessary to gather socioepidemiologic information for the following purposes: to assess the oral health of the elderly, their therapeutic needs, and factors that limit their access to services; to conduct longitudinal studies; to evaluate interventions performed; and to find where current data and understanding are lacking in order to guide future research efforts in this field.

### **Medium- and Long-term Goals**

Medium- and long-term measures should be aimed at increasing access to services and improving the balance among preventive, educational, and therapeutic programs. This will require financing mechanisms based on available resources and current budgetary arrangements, as

it is unrealistic to expect increased allotments.

In general, in Latin America the training of human resources in the field of gerodontology is deficient—for undergraduates as well as for those receiving postgraduate or continuing education (25). Accordingly, one key medium-term goal should be to improve such training—among other things by having it cover the areas of health promotion and health education as well as those of prevention, treatment, and rehabilitation, and by attempting to keep teaching materials current in geriatric dentistry. In order to achieve the latter aim, periodic standardized information is required, not only about problems of the hard and soft tissues of the oral cavity for this age group, but also about the knowledge, attitudes, and practices of patients and health workers providing services; the frequency with which elderly patients seek services; nutritional concerns; mental health; and other matters.

Programs with long-term goals should be directed at young and middle-aged people, so that dental health services can act preventively instead of limiting themselves to repairing damage accumulated over many years.

### **CONCLUSIONS**

The dental profession in Latin America faces both a challenge and an opportunity. The challenge is how to modify current practices so that future generations will reach age 60 with improved oral health, conscious that disorders of the oral cavity are not an inevitable aspect of aging, and so that the elderly will be effectively incorporated into oro-dental health systems providing sound guidance and care geared to the patients' needs.

The opportunity is to conduct timely planning of activities before the current

situation deteriorates. The ability to take advantage of this opportunity will depend on the creative and participative capacity of the entire dental care community and members of other health disciplines. All must address current problems with a renovative attitude based on the knowledge that preventive measures and health education are the appropriate means for effectively controlling the principal oral disorders currently affecting the elderly population.

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## ANNOUNCEMENT

### *1995 Award in Honor of Fred L. Soper (1893-1976) for Publications in the Field of Inter-American Health*

This is a call for submission of nominations for the 1995 award in honor of Fred L. Soper, former Director (from 1947 to 1958) of the Pan American Health Organization, Regional Office of the World Health Organization for the Americas. In addition to his service with PAHO/WHO, Dr. Soper played a major role in the fight against yellow fever and other infectious diseases in Brazil as part of his work with the Rockefeller Foundation in the 1920s and 1930s, and in the control of typhus in North Africa and Italy during the Second World War. He was one of the truly major figures in inter-American health in this century.

The award is presented annually to the author or authors of an original scientific contribution containing new information on, or insights into, the broad field of public health, with special relevance to Latin America, the Caribbean, or both. This work may be a report, an analysis of new data (experimental or observational), or a new approach to analyzing available data. Preference is given to studies involving more than one discipline and to papers related to infectious disease, a life-long concern of Dr. Soper.

Only papers published during calendar year 1994 in Latin American scientific journals listed in the Index Medicus or in the official journals of the Pan American Health Organization are eligible for consideration for the 1995 award. Furthermore, the award is limited to works by authors whose principal affiliation is with teaching, research, or service institutions located in the countries of Latin America and the Caribbean (including the Centers of the Pan American Health Organization).

The Award Fund is administered by the Pan American Health and Education Foundation (PAHEF), which receives voluntary contributions designated for this purpose and holds them in a separate fund. The award consists of a certificate and a monetary prize of US\$ 400.00. Each year's winner(s) are nominated by an Award Committee, composed of representatives designated by PAHO and by PAHEF; final selection is made by the Board of Trustees of PAHEF.

Papers meeting the above criteria and submitted by or on behalf of their authors may be considered for the Fred L. Soper Award. All submissions must be received by 31 March 1995 at the following address:

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