

## Why are the elderly reluctant to go to dental clinics ? General Remarks in terms of Macro-Analysis

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### I. Current health care status and national efforts toward healthy life expectancy

#### 1) Life expectancy and healthy life expectancy in Japan

According to the 1999 WHO life expectancy ranking<sup>1)</sup> (Table 1), Japanese of both sexes have the longest average life expectancy and healthy life expectancy out of 191 countries surveyed. The WHO defines "healthy life" as follows :

...a full range of functional capacity at each life stage, from infancy through old age, allowing one the ability to enter into satisfying relationships with others, to work and to play.

It is very important to recognize that elderly people are

especially susceptible to losing their healthy lives to disease, injury, or dementia.

#### 2) Current and projected population of elderly in Japan

According to a national survey (Figure 1) by the Ministry of Health, Labour and Welfare (MHLW), the percentage of elderly in Japan reached 20 % in 2001, and it is estimated that this proportion will continue to increase rapidly, reaching 35 % by 2050. Elderly people go to medical hospitals and clinics for outpatient care 2.5 times more often than younger people (6 times more often in the case of inpatient treatment). This is the main reason that Japan's total medical care expenditure has been increasing at a rate of nearly one trillion yen per year.

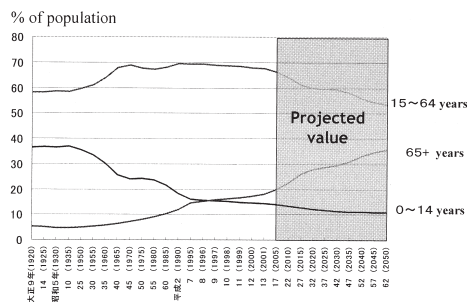
**Table 1 . Japanese life expectancy**  
Japan has the longest average life expectancy out of 191 countries surveyed by the WHO (1999).

Overall life expectancy and healthy life expectancy	male	female
overall life expectancy	77.6	84.3
healthy life expectancy	71.9	77.2

Source: Mathers CD et al.(2001). Healthy life expectancy in 191 countries, 1999. *Lancet*, 357(9269): 1685-91.

#### 3) Disease Trends in Japan

Figure 2 shows the change in Japanese mortality

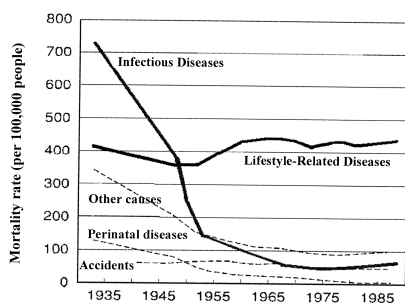


**Figure 1. Rapidly increasing percentage of elderly in Japan**

(By MHLW)

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Source: MHW " Vital Statistics "

Figure 2 . Change in Japanese mortality rate by cause

rate by cause<sup>2)</sup> from the 1930s. Serious infectious diseases such as cholera, dysentery and typhoid fever were commonplace until about fifty years ago. However, after the 1950s, breakthroughs in sanitation, nutrition and medicine contributed to a sharp reduction in the mortality rate. On the other hand, the rate of death due to Lifestyle-Related Diseases (formerly referred to as Adult Diseases) such as diabetes, cancer and circulatory diseases is all but unchanged. These diseases often deprive people, in particular the elderly, of a healthy life.

4) National efforts to prolong healthy life expectancy

To address the problem of lifestyle-related diseases in an increasingly elderly Japan, the MHLW proposed "Healthy Japan 21"<sup>13)</sup> in March 2000. This campaign emphasizes the primary prevention of lifestyle-related diseases, which are divided into the following five categories : ① cancer, ② cerebral apoplexy and heart disease, ③ diabetes, ④ mental diseases and ⑤ dental diseases.

In addition, lifestyle-related behaviors which should be improved in order to overcome these diseases are as follows : a) nutrition, b) moderate exercise, c) smoking and d) alcohol consumption.

5) National efforts to prolong tooth life expectancy

The 8020 Campaign<sup>3)</sup> is a well-known national oral health campaign that was proposed by the Dental Health Division of the MHLW in 1989. The goal of the 8020

Campaign is to ensure that all citizens can enjoy a healthy diet throughout their life. The campaign seeks to achieve this goal through the prevention of tooth loss that results in masticatory dysfunction.

In order to promote the realization of happy elderly life, the concept of the 8020 Campaign is to maintain chewing ability (for which approximately 20 teeth are required) until the age of 80 and beyond. The relationship between Healthy Japan 21 and the 8020 Campaign is interactive and complementary. Fortunately, the Health Promotion Law, which incorporates both Healthy Japan 21 and the 8020 Campaign, will take effect on May 1, 2003. This law will pave the way for all 47 prefectures and over 3,000 municipalities to draw up local health care schemes based on the national campaigns.

II . Comparison of new medical patients with new dental patients by age

1) New medical patients

Figure 3 shows the rate of new medical patients by age group in 1982 and 1996, in Japan<sup>4)</sup>. In Figure 3, age groups are on the X-axis, and the number of new medical patients per 100,000 people is on the Y-axis. The blue and red lines show the data for 1982 and 1996, respectively. The distribution by age group shows a "U-shaped" pattern in both years. The rate of new patients

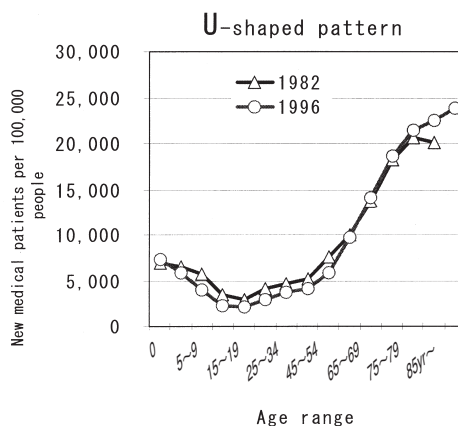


Figure 3. Rate of new medical patients by age group in 1982 and 1996, in Japan ( by MHLW)

falls to its lowest level in the young adult years, and thereafter it increases sharply with age.

### 2) New dental patients

Figure 4 shows the rate of new dental patients by age group in 1982 and 1996, in Japan<sup>4)</sup>. Distribution by age group shows an "inverted W-shaped" pattern in both years. The rates temporarily decrease from the 5-9 age group to the 10-14 group, and then rise with age until the 45-49 age group in 1982, or until 65-69 in 1996. However, after that point, the rates drop sharply with age. Oral conditions would presumably be worse in the elderly than in younger people because tooth loss and other oral health problems increase with age. Therefore, it seems counterintuitive that the rate of new dental patients decreases so rapidly during the elderly stage.

### 3) Two hypotheses

There are two hypotheses that may explain why the elderly seldom go to dental clinics, as follows :

Hypothesis 1 : The general physical conditions of the elderly deteriorate with age.

Hypothesis 2 : The number of remaining teeth decreases significantly with age, the result being that fewer teeth suffer from serious caries or periodontal diseases. In other words, the number of

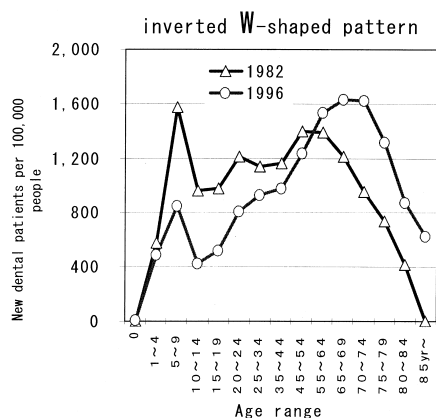


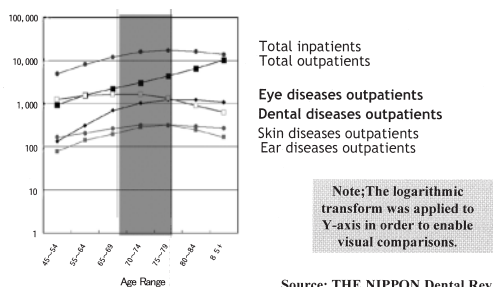
Figure 4. Rate of new dental patients by age group in 1982 and 1996, in Japan (by MHLW)

edentulous people or those wearing full dentures significantly increases in the elderly years.

### 4) Verification of Hypothesis 1 (general physical conditions)

Figure 6 shows the rate of new patients per 100,000 populations by kind of disease and age group (from 45 years old) in 1996, in Japan<sup>5)</sup>. A common logarithmic scale was applied to the Y-axis to facilitate easy comparison between the disease types, not as absolute values but as rates. For example, on the Y-axis, the absolute difference between 100 and 1,000 is 900, and the absolute difference between 1,000 and 10,000 is 9,000. However, in logarithmic terms, 1,000/100 is equivalent to 10,000/1,000, so the two intervals are made visually equivalent by applying the logarithmic scale. In figure 6, the pattern of dental diseases outpatients makes a clear and most interesting contrast with that of eye diseases outpatients.

For a more visually accurate comparison, only the rates for dental and eye diseases are shown in Figure 7. In the case of eye diseases outpatients, the rate steeply increases until the 75-79 age group and do not notably decrease before 85 years old. The increase of cataracts and glaucoma with age causes the sharp increase of eye outpatients. On the other hand, the rate of dental diseases outpatients reaches a plateau by the 55-64 range and sharply decreases from the 75-79 group in spite of



Source: THE NIPPON Dental Review vol.62 No.1 2002-1

Figure 6. Rate of new patients rates per 100,000 people by kind of disease and each age group( from 45 years old) in 1996 ,Japan

## Why are the elderly reluctant to go to dental clinics ?

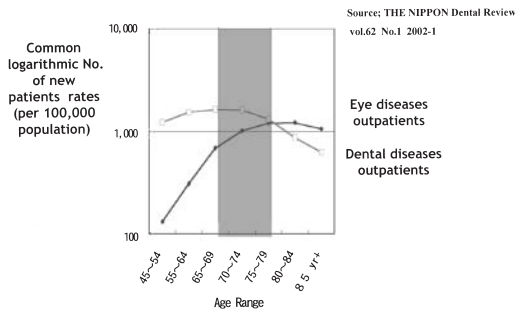


Figure 7. Rate of new patients rates per 100,000 people by dental and eye disease ( from 45 years old) in 1996 ,Japan

serious tooth loss. The two curves intersect at the 75-79 age range. This data strongly suggests that the physical conditions of the elderly up to 85 years old are generally good enough they can get themselves to a clinic. Therefore, it is indicated that the decrease of new dental outpatient rates up to 85 years old is caused not by general physical conditions but by other reasons unique to dental diseases and treatment.

### 5 ) Verification of Hypothesis 2 (dental conditions)

Figure 8 shows changes in the average number of remaining teeth by age group in Japan. The source is "Report on the Survey of Dental Diseases (1975-1999) <sup>6)</sup>" by MHLW. The number of remaining teeth of people over 45 years old has clearly increased in each dental examination year. This strongly suggests that the improvement of oral status contributes to the change in dental patient's visiting rates. However, the relationship between an increased number of remaining teeth (Figure 8) and dental patient's visiting rates (Figure 8) is not so simple. Because if that were so, it would seem that the increase in remaining teeth of the young and middle adult age groups resulted in a decreased dental clinic visitation, caused by a reduction of serious caries or periodontal diseases. Quite to the contrary, however, dental caries never heal naturally, and serious periodontal diseases are not cured easily ; therefore, these two dental diseases advanced and accumulate with age. Eventually, the rate of clinic visitation rises because of serious caries or peri-

odontal diseases in the elderly.

Douglass CW, et al. proposed the "more teeth, more disease" theory <sup>7)</sup> in 1990, and confirmed it using cross-sectional data of elderly people aged 70 years and older in 1996 <sup>8)</sup>. The theory indicates that "more teeth" decreases dental demands in young adult stages but increases them in middle and elder stages, and the eventual net total of dental demands increases ("more disease"). The results of their studies coincide with this study (Figure 4). However, it is not clear whether net total dental demands increase or not in Japan because the basic conditions of the nine background factors (e. g. diagnostic services, preventive services, changes of dental treatment method) referred to by Douglass CW<sup>7)</sup> are different in the US and Japan. In any case, it is necessary to undertake more accurate studies of the relationship between improvement of remaining teeth and dental patient visitation rates for all age groups in Japan.

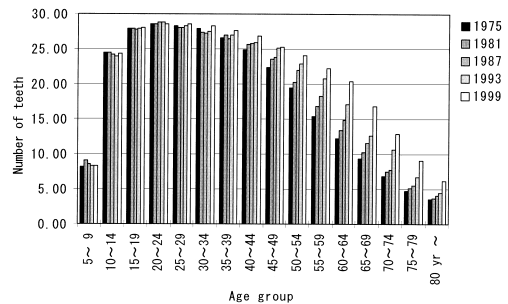


Figure 8. Changes in average number of remaining teeth by age group in Japan (by MHLW)

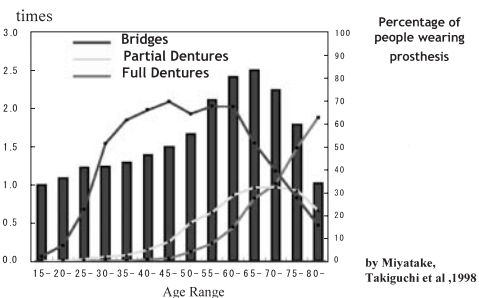


Figure 9. Relationship between new patient rates and the distribution of persons who wear prostheses (bridges and partial and full dentures) by age group.

Figure 9 shows the relationship between new patient rates and the distribution of persons who wear three types of prostheses (bridges, partial dentures and full dentures) by age group<sup>9)</sup>. New patient rates rise until the 65-69 age group, but decrease from the 70-74 group, just as in Figure 4. On the other hand, the distribution rates of the three types of prostheses are highly disparate. In the case of bridges and partial dentures, the rates decrease from the 60-64 age range and the 70-74 range, respectively. To the contrary, in the case of full dentures, the line shows a significant linear increase, starting from the 45-49 age group. This difference in the distribution patterns of the three types of prostheses in the elderly can be attributed to only one cause. That is the significant reduction of remaining teeth in the elderly (Figure 8). Therefore, this data is suggestive that the decrease in dental clinic visitation rates of the elderly is strongly related to extensive and especially complete tooth loss.

6) Conclusion : Which is most reliable, Hypothesis 1 or 2 ?

Through discussions 4) and 5) above, it became clear that Hypothesis 2 is probably main explanation for the reduction of the dental visitation rates in the elderly. In addition, this conclusion is supported by Douglass's "more teeth, more disease" theory of 1990. Generally speaking, macro-analysis has certain inherent risks derived from differences of the subjects used in each investigation. Therefore, further studies on this issue, especially those using individual cohort data, are needed to confirm the relationship between dental conditions and dental visitation rates in the elderly.

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