

## Half century-trends in caries prevalence and tooth retention in Japan at a glance

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### Introduction

Ministry of Health, Labour and Welfare in Japan has conducted National Survey of Dental Diseases once in 6 years since 1957. The recent survey (the 9th) was conducted in 2005. The surveys basically employ the same method which is suitable to evaluate changes in data.

Thus, this article overviewed the changes in dental diseases in Japan for almost a half century using these data.

### Method

#### 1. Data Source (Summary of National Survey of Dental Diseases)

Main features of National Survey of Dental Diseases are as follows:

- The population is community dwelling Japanese people.
- The survey is conducted once in 6 years.
- The survey is conducted along with National Health and Nutrition Survey (National Nutri-

tion Survey).

- Sampling procedure (Figure 1) is as follows:

(i) Select districts for National Livelihood Survey by stratified random sampling of the National Census unit areas, and (ii) select districts for National Health and Nutrition Survey by random sampling of further 300 areas. (iii) Districts for National Survey of Dental Diseases is the same as those for National Health and Nutrition Survey.

- The subjects are residents over the age of 1 who live in each district.
- Dentists, the majority of them are general practitioners, perform oral examination.

#### 2. Analytical method

Average number of present teeth per person and its components (average number of sound/decayed/filled teeth per person) of deciduous teeth (1 to 14 years old) and permanent teeth

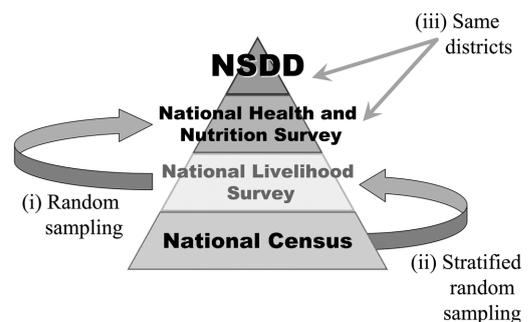


Fig.1 Structure of NSDD

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(above 5 years old) were calculated by age for each year based on the survey results. These 4 indices had a following relationship:

$$\begin{aligned} & \text{average number of teeth per person} \\ = & \text{average number of sound teeth per person} \\ + & \text{average number of decayed teeth per person} \\ + & \text{average number of filled teeth per person.} \end{aligned}$$

Accordingly, a graph which indicated the average number of present teeth per person by age for each year was made.

### Results

Figures 2 and 3 show average number of deciduous present teeth (Figure 2) and permanent present teeth (Figure 3) per person by age between 1957 and 2005 as well as its components (sound/decayed/ filled teeth), respectively. These graphs outline the changes in dental disease in Japan for

the past half century.

#### 1. Deciduous teeth (Figure 2)

Prevalence of dental caries was very high from 1957 (the first survey) to 1970's. However, it decreased in younger children with the age of 1 to 5 years old in 1980's, and has decreased in children over the age of 6 after 1990's.

The number of filled teeth was rare in the first survey (1957) but the rate of filled teeth has gradually increased afterwards.

#### 2. Permanent teeth (Figure 3)

Unlike deciduous teeth, prevalence of dental caries of children had increased after the first survey (1957) until 1980's. However, it tends to subsequently decrease and the trend still continues.

Since the first survey in 1957 as in the case of deciduous teeth, the rate of filled teeth has increased while the rate of decayed teeth has

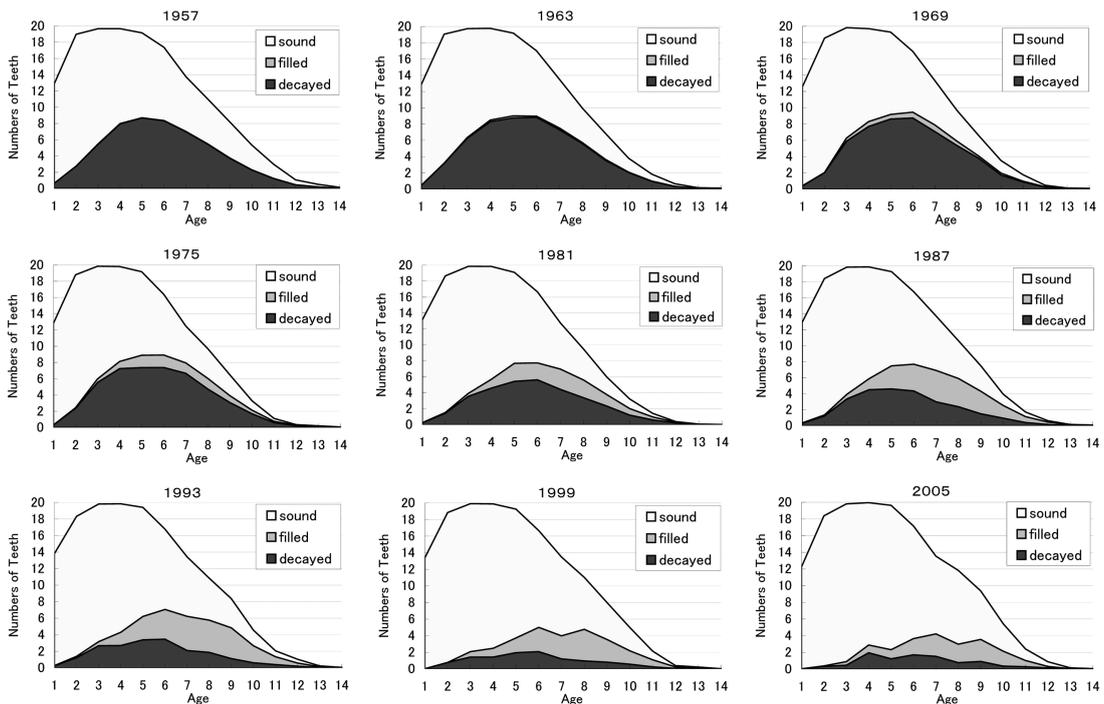


Fig.2 Trends in Composition of Primary Present Teeth (1957-2005)

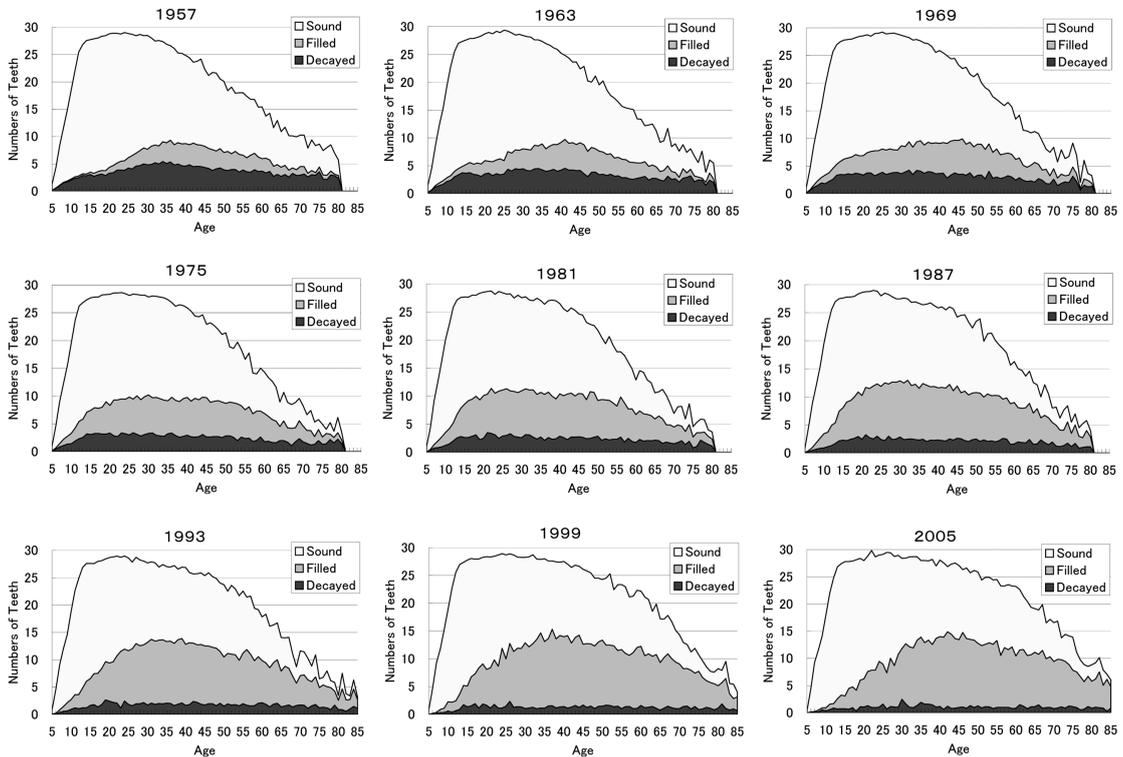


Fig.3 Trends in Composition of Permanent Present Teeth (1957-2005)

decreased.

Average number of present teeth per person tends to increase in the elderly after 1980's.

### Discussion

This article described changes in prevalence of dental caries and tooth retention for almost a half century in Japan. There might be a few countries in the world that have conducted the national survey on dental diseases for a half century. Therefore, the findings in this article seem to be valuable data on a worldwide basis.

Prevalence of dental caries increased in Japanese children between 1950's and 1970's, which mainly resulted from increase of sugar consumption<sup>1)</sup>. At that time, the most important issue of

dental health in Japan was management of the increasing number of decayed teeth among children, and caries treatment was given priority over prevention of dental caries. Japan had a relatively sufficient number of dentists and established the school oral examination system, based on national health insurance service which covered all Japanese people. Therefore these circumstances seemed to be advantageous to mainly address dental treatment. This measures produced a results of increase of the number of filled teeth and decrease of the number of missing teeth in the elderly to some extent, but failed to decrease prevalence of dental caries. Thus, Japan was said to be one of countries where the prevalence of dental caries was the highest in the world between 1970's and

1980<sup>2)</sup>. Subsequently, prevalence of dental caries in children tends to gradually decrease, which may be influenced by the widespread use of fluoride toothpaste and fissure sealants. However, since the recent 2005 survey results are not sufficient, it is necessary to further promote the preventive measures.

As the above-mentioned, the measures against dental diseases in Japan may not be successful. However, it will play a role as a reference material for other countries.

#### Reference

- 1) Miyazaki H, Morimoto M. Changes in caries prevalence in Japan. *European Journal of Oral Sciences* 1996 ; 104 : 452-458.
- 2) Renson CE, Crielaers JA, Ibikunle AJ, et al. Changing patterns of oral health and implications for oral health manpower: Part 1, *Int. Dent. J.* 1985 ; 35 : 235-251.

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## ひと目でわかる日本のう蝕有病状況と歯の保有状況：半世紀の推移

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厚生労働省による歯科疾患実態調査は1957年の第1回調査以来、6年に1回実施され、2005年に最新調査（第9回）が行われた。この調査の方法論は基本的に同じであることから、過去半世紀近くにわたる日本人の歯科疾患の推移をみることができる。そこで、これを一目で概観できるように、乳歯（1～14歳）と永久歯（5歳以上）について各調査年の一人平均現在歯数とその内訳（一人平均健全・処置・未処置歯数）を年齢別に示すグラフを作成した。

このグラフをみると乳歯では、う蝕レベルは初回調査（1957年）から高く、1970年代まで続いたが、1980年代からう蝕が減少傾向にあること、また 処置歯の割合が増えてきたことを一目で確認できる。

一方、永久歯では、う蝕が初回調査（1957年）以降、1980年代まで増加し続けたが、その後は減少傾向にが続いていること、処置歯の割合と高齢者の現在歯数が増加傾向にあることを確認できる。

世界的にみて、歯科疾患に関する全国調査が半世紀近く続いている国は数少ないと思われ、その意味でも本論文で示した所見は貴重なデータといえる。また日本の過去半世紀の歯科疾患の推移は必ずしも成功事例とはいえないが、失敗例から得られる教訓という意味では他の国々に参考になる面もあると思われる。