

## Oral Health Survey 2011



# ORAL HEALTH SURVEY 2011



Department of Health  
Government of the Hong Kong Special Administrative Region  
People's Republic of China  
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## MESSAGE FROM THE DIRECTOR OF HEALTH

The Department of Health is the health advisor and agency of the Government of the Hong Kong Special Administrative Region to execute health policies and statutory functions. Our major role is to safeguard the health of the community through promotive, preventive, curative and rehabilitative services as well as fostering community partnership and international collaboration.

Oral Health is an integral part of general health and wellbeing. In regard of this, the Government's objective is to improve oral health of the population through oral health promotion and raising oral health awareness in the community. Within the Department of Health, the Oral Health Education Unit promotes proper daily oral home care and utilisation of oral care services. The School Dental Care Service also provides preventive oral care services to primary school children.

In view of the need for the Department of Health to collect pertinent information on the oral health status and oral health related behaviours of the people in Hong Kong, a community-wide oral health survey was conducted in 2001. The Department also made a public commitment to carry out oral health surveys every 10 years. The Oral Health Survey 2011 was therefore conducted to collect information on oral health status of the people of Hong Kong.

The results presented in this report should provide useful information to the dental profession and other health care professionals. We hope to collaborate with private and public sectors, other health care professionals and the community to improve the oral health of the people of Hong Kong.

Dr. CHAN Hon-yee, Constance, JP

Director of Health

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## **Bureaux and Departments**

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## **Kindergartens/Nurseries**

Bilok Anglo-Chinese Kindergarten  
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Evangel College  
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Oral-B

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# INTRODUCTION

According to the World Health Organization (WHO), oral health is integral to general health and essential for well-being. Surveillance of oral health on community level thus has to be done at regular intervals. It is the task of the Department of Health (DH) to assess the health status and needs of the community through collation and interpretation of reliable health information. Therefore, the DH has to regularly obtain such information for planning and evaluation of oral health programmes, and to plan for future oral health care development.

## Objectives of Oral Health Survey 2011

The Oral Health Survey (OHS) 2011 was conducted 10 years after the first territory-wide survey in 2001. The objectives of the OHS 2011 were to obtain relevant information on i) the oral health condition of the people of Hong Kong; ii) the oral health related behaviours of the population; and iii) the factors that facilitate behaviours conducive to good oral health and barriers which prevent people from adopting positive behaviours. The findings were also compared with the findings of OHS 2001 a decade ago.

The sample size of each age group was determined by taking into consideration the precision level of selected key variables (such as prevalence of tooth decay), design effect of sample design, anticipated response rate and the resources available. The sample size was large enough to detect any significant associations in most cases when the relations of the clinical data with oral health behaviours and predisposing factors were examined.

## Organisation of Oral Health Survey 2011 report

The OHS 2011 report focuses on two most common but preventable oral diseases, tooth decay (dental caries) and gum disease (periodontal disease), which affect many people. These two diseases and various oral health indicators in relation to them are described in **Chapter 1**.

Tooth decay and gum disease can be prevented effectively by simple measures. These preventive measures depend on the adoption of behaviours and lifestyle that are conducive to oral health. These lifestyles are described in **Chapter 2**.

The survey methodology followed the basic principles of the WHO recommendation. Similar to Oral Health Survey 2001, the following index age and age groups were selected: (a) 5-year old children to evaluate the status of primary teeth; (b) 12-year old students, representing the complete change from primary dentition to permanent dentition stage, to monitor the diseases trends of permanent teeth; (c) 35 to 44-year old adults to evaluate the oral health condition of the adult population; (d) 65 to 74-year old non-institutionalised older persons (NOP) to obtain information on the oral health condition of this age group which is becoming more important as the Hong Kong population is aging; and (e) the aged 65 and above Social Welfare Department long term care services (LTC) users to assess the oral health condition and needs of functionally dependent older persons receiving long term care services. These LTC users may have difficulties in daily oral hygiene and access to professional care, and they require our special attention.

The Oral Health Survey 2011 comprised of a series of fieldwork surveys which were conducted from May 2011 through February 2012. The survey findings on oral health status and oral health related behaviours of the 5-year old children, 12-year old students, 35 to 44-year old adults, 65 to 74-year old NOP and the aged 65 and above LTC users are reported in **Chapters 3, 4, 5, 6 and 7**, respectively. The overview of the entire survey is shown in **Chapter 8**. Key findings of this survey are highlighted.

## Presentation of estimates

The findings in the survey are reported at the aggregate level. For figures or tables presented in the report, figures may not add up to the totals due to rounding. It should be noted that all estimates in this report are subject to sampling error. These estimates are based on information obtained from a particular sample, which is one of a large number of possible samples that could be selected using the same sample design. By chance, estimates derived from different samples will differ from each other. Due to this possible variation of results, a zero figure may mean a non-zero figure of a small magnitude. Besides, some estimates are derived from small sub-groups of the sample or a small number of observations, and they might be subject to large sampling error. These estimates are marked by a symbol § and should be interpreted with caution.

### Green Text Boxes

Readers who wish to have an overview of the report may focus on the **Green Text Boxes**, which show the highlights of the survey findings. The **Green Text Boxes** at the end of each chapter from Chapter 3 to Chapter 7 contain the chapter summary of each index group.

### Blue Text Boxes

Important reminders and points to note are shown in the **Blue Text Boxes** found throughout the report.

## For more information

For more information related to oral health, please browse the website of Oral Health Education Unit of the Department of Health at:

<http://www.toothclub.gov.hk/>



# CHAPTER 1

## Tooth decay and gum disease

### **How to measure cleanliness of teeth?**

#### **Dental plaque and calculus**

Dental plaque is a thin film of bacteria and their products adhering on the tooth surfaces. Even after thorough cleaning, oral bacteria will quickly adhere onto the cleaned tooth surfaces to form new dental plaque. However, the immature dental plaque that keeps on re-forming after regular tooth cleaning is relatively harmless. If tooth cleaning is not thoroughly performed, bacteria in dental plaque grow continuously and undisturbed dental plaque will mature into a status that may cause tooth decay and gum disease.

Calculus is dental plaque which is hardened as a result of deposition of minerals from saliva. Calculus may be unsightly in some oral regions but calculus itself is not a health threat. The harmful effect comes from the accumulation and maturation of dental plaque that adheres on the rough surface of calculus.

The cleanliness of the mouth, as reflected by the quantity of dental plaque and calculus, is an indication of the effectiveness of tooth cleaning. The oral cleanliness is also an indicator of the risk of an individual in having dental diseases.

#### **Cleanliness of teeth – its presentation and interpretation**

In this survey, cleanliness of teeth is assessed by measuring the proportion of tooth surfaces covered by dental plaque (or calculus) on visual examination. A low proportion indicates satisfactory level of cleanliness (and good tooth cleaning actions) and vice versa. In populations with relatively good cleanliness (e.g. 5- and 12-year old age groups), the overall cleanliness is presented as the distribution of individuals according to different proportion of teeth covered by visible plaque. In populations with less satisfactory cleanliness (e.g. adult and NOP age groups), the overall cleanliness is presented as the proportion of population with more than half of the tooth surfaces covered by dental plaque (or calculus).

## What is tooth decay, and how to measure?

The cross-sectional diagram of a tooth with no decay is shown in Figure 1.1.

Certain types of bacteria that may settle in undisturbed dental plaque are efficient in consuming sugars in food and drinks. These bacteria metabolise and turn the sugars into acid. In effect, tooth is immersed in acid produced by these bacteria after each food or drink intake. The mineral in the tooth surface will dissolve in an acidic environment (Figure 1.2).



Figure 1.1 Section view of a healthy tooth

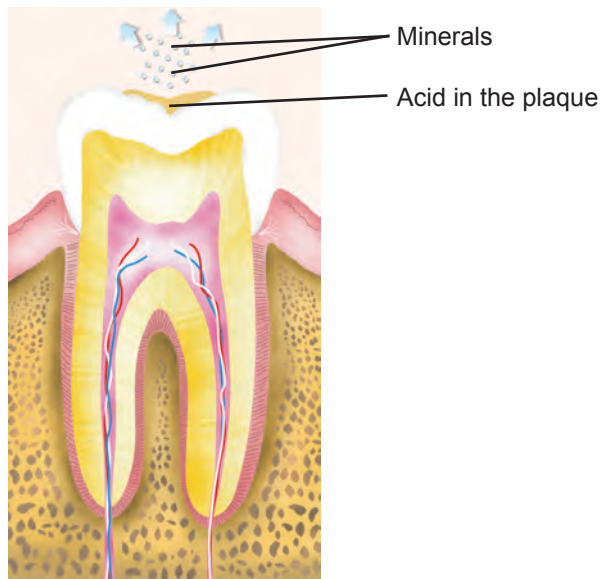


Figure 1.2 Diagrammatic illustration of mineral loss from the tooth surface

Saliva may neutralise the acidic environment around the tooth. Minerals in saliva may repair the tooth surface. It usually takes 20 to 30 minutes for the acidic environment to return to normal after each intake of food and drink.

Professionally applied fluoride or use of fluoride mouthwash under professional direction may reverse early decay before cavity formation.

If there is frequent intake of sugar-containing food or drinks, the mineral loss through dissolution will be larger than the repair. After a period of time, the tooth surface with substantial mineral loss will be so softened that the structure breaks down resulting in the formation of a cavity (Figure 1.3). Extensive decay and infection reaching the pulp may cause intense

To cause tooth decay, food and drinks must contain sugar or starch that can be metabolised by bacteria. Both added sugar and natural sugars in milk or fruits can also cause decay. Practically, the frequency of sugar-containing food / drink intake is more significant than the total quantity consumed as a risk factor for tooth decay.

pain, inflammation and subsequent death of the pulp tissues. Infection of the pulp may extend out of the tooth through an opening at the tip of the root, resulting in infection and inflammation of tissues supporting the tooth. In some situations, pus may accumulate around the root tip regions leading to the formation of dental abscess (Figure 1.4). When the crown of the tooth is completely broken down by decay, the residual root is called retained root.



Figure 1.3 Diagrammatic illustration of a decayed tooth with cavity



Figure 1.4 Diagrammatic illustration of an extensively decayed tooth with dental abscess

A tooth with cavity can no longer repair by itself and it must be restored by a dental filling (Figure 1.5). More complex and costly restorative procedures will be required if the cavity becomes very extensive (e.g. root canal treatment, crown fabrication). When the crown of a tooth is destroyed to the extent that it becomes too broken down to be repaired, the only option is to remove the tooth (dental extraction).

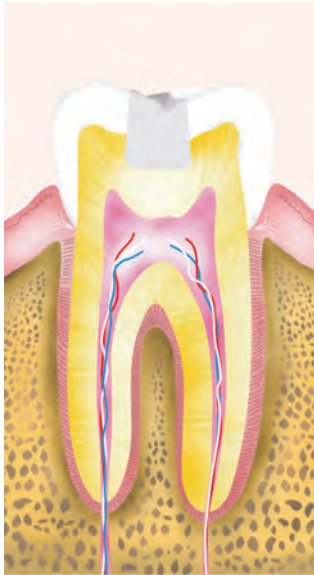


Figure 1.5 Diagrammatic illustration of a tooth with filling

Seeking treatment at early stage may avoid pain as well as costly complex treatment.

### Measurement of tooth decay experience (DMFT/dmft index)

In this oral health survey (and the one conducted in 2001), tooth decay was defined as the occurrence of cavity extended into dentine. This is in accordance with the recommendation of the WHO in defining tooth decay as 'cavities with a softened dentine floor'. The number of teeth with untreated decay (cavity) is referred to as DT/dt (decayed teeth). The number of teeth with decay in the past but already been repaired by restorative procedures is referred to as FT/ft (filled teeth). The number of teeth that were removed (extracted) due to decay is referred to as MT/mt (missing teeth). The sum of DT/dt, MT/mt and FT/ft is referred to as the DMFT/dmft value, which reflects the total number of teeth that has been affected by tooth decay in the past and at present. The convention is to use DMFT for decay experience of permanent teeth, and dmft for decay experience in primary teeth.

The level of tooth decay experience in a population can be represented by the mean values of DT/dt, MT/mt, FT/ft and DMFT/dmft, as well as by the proportion of population affected by each type of decay experience.

The DMFT/dmft value indicates the total number of teeth affected in the past and at present. The DT/dt value reflects the number of teeth with untreated decay at present that needs attention. FT/ft and MT/mt values both show the number of teeth that have received treatment due to decay in the past. However, it is difficult to ascertain the cause of tooth extraction especially in older age groups as some teeth may be lost due to injuries, gum disease or reasons other than tooth decay.

## What is gum disease, and how to measure?

Gum disease refers to the commonest types of disorders affecting the tooth-supporting structures including the gum and bone caused by dental plaque. The diagrammatic illustration of healthy gum can be found in Figure 1.6.

Besides consuming sugars and producing acids around the tooth, bacteria in undisturbed dental plaque also release toxins which irritate the gum tissue within the vicinity, leading to gum inflammation (Figure 1.7). Gum bleeding is the sign of gum inflammation. Gum inflammation can easily be reversed by thorough removal of dental plaque. As plaque may adhere to the rough surface of calculus which makes plaque removal more difficult, calculus should be removed by scaling performed by dental professionals.

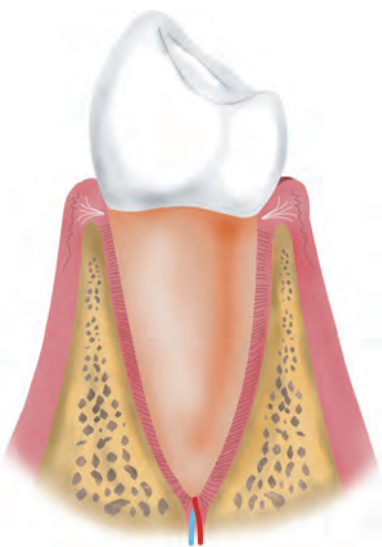


Figure 1.6 Section view of a tooth with healthy tooth-supporting structures

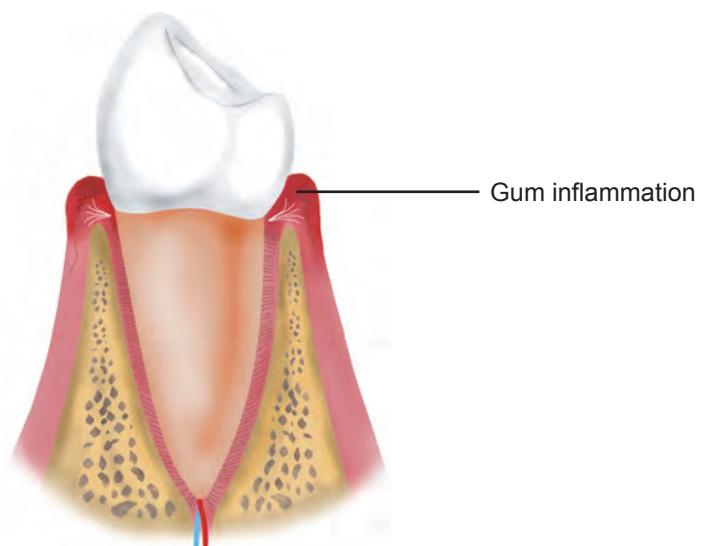


Figure 1.7 Diagrammatic illustration of gum inflammation

The breakdown of the tooth-supporting structures may or may not occur depending on the types of bacteria present in dental plaque, the genetic predisposition of the individual and their health status. When the tooth-supporting structures break down, gum that originally tightly attached to the root surfaces will detach, leading either to the formation of gum (periodontal) pockets or recession of the gum margins or both. The sum of gum pocket and gum recession measurements is referred to as the loss of attachment (LOA) (Figure 1.8).

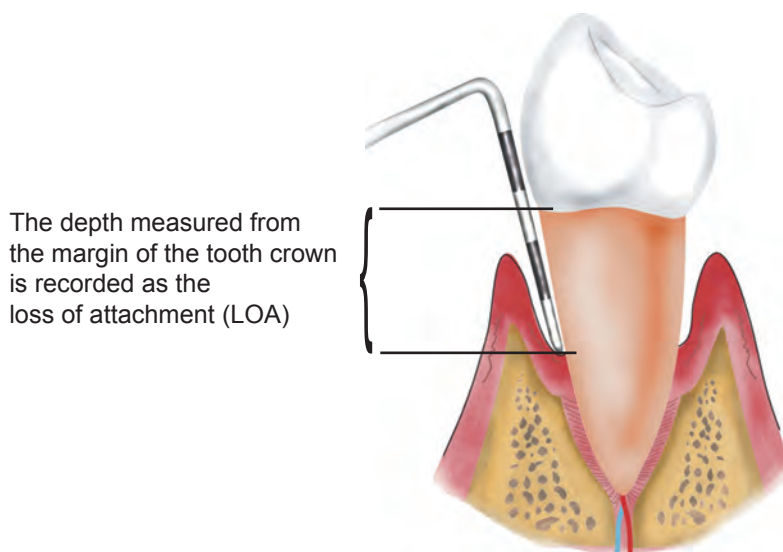


Figure 1.8 Diagrammatic illustration of how LOA is measured

Everyone should seek dental check-up regularly to assess the gum health, receive skill transfer of tooth cleaning and have scaling to remove the calculus.

The loss of attachment in the form of gum recession leads to the exposure of root surface (Figure 1.9). The affected person may notice an “elongation” of the tooth with more root surface exposed and possibly feel sensitivity to hot and cold. It is in fact a manifestation that the tooth support has been destroyed and exposing more root surfaces which will also be at risk to decay.

The loss of attachment in the form of gum pocket can hardly be perceived by the affected person (Figure 1.9). Gum pocket should not be taken lightly because the affected person cannot remove dental plaque and calculus within the pocket and the infection may perpetuate. The condition can only be managed by professional dental care.

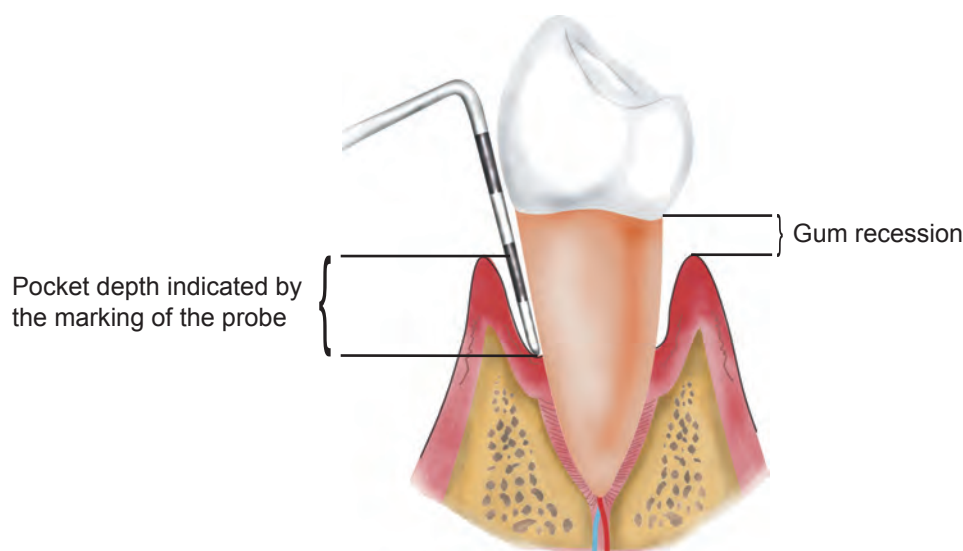


Figure 1.9 Diagrammatic illustration of a gum pocket and gum recession

### Measurement of gum disease – examination methods

In oral health surveys, gum disease is generally measured by gum bleeding (gum inflammation), pocket depths (degree of structural breakdown in the form of pocket) and LOA (the total amount of structural breakdown).

An internationally accepted standard probe for gum examination is used by dentists during examination of gum health status. The probe is inserted into the gingival/gum sulcus using a very light force and is moved gently with short upward and downward movements along the gum line. Any resulting gum bleeding is recorded as bleeding present. The pocket depth (the depth of insertion of the probe) is recorded by the standard depth markings on the probe (Figure 1.9). In the clinical assessment of an individual, pocket depth 0 to 3 mm may be a gum pocket but within normal variations. The gum health in such case has to be assessed by dentist together with other criteria. In this population scale survey, gum pocket is defined as pocket depth of 4 mm or more, which is the same as the definition used in previous oral health surveys in Hong Kong.

Loss of attachment (LOA) is measured by recording the distance between the margins of the tooth crown (which should be covered by un-receded gum in healthy state) to the bottom of the gum pocket, using the standard depth markings on the probe (Figure 1.8).

### **Measurement of gum disease – index teeth, half-mouth and full-mouth**

Traditionally, gum health is assessed by dividing all teeth in the mouth into six segments called sextants according to the WHO recommendation. Not all teeth in a sextant are examined, but only an index tooth or index teeth as specified by the WHO are examined. A sextant would be excluded from examination if less than two teeth are remaining, and a person would be excluded if all 6 sextants are excluded from examination.

Similar to tooth decay, gum disease may affect only some of the teeth present in a mouth. The measurement of the level of gum disease ideally should include all the teeth present. The current international trend is to examine at least all teeth on one side of the mouth (called half-mouth examination) or preferably to examine all teeth present (called full-mouth examination). The use of only index teeth in each of the six sextants may under-estimate the level of gum disease. However, full-mouth or half-mouth examination is more time-consuming and could cause more stress to the individual being examined. While the ideal is to examine all teeth present, the selection of the number of teeth to be examined must take into account the practical situations, resources available and the considerations of the individuals to be examined. In this Oral Health Survey, there were time constraints in examining large groups of subjects with minimal interruption of their daily routines in the 12-year old students and the long-term care service users groups. The long-term care users also had difficulties in tolerating lengthy oral examination. Therefore, the examination of index teeth by sextants was applied. Whereas in the adult and non-institutionalised older persons groups, half-mouth examination was selected to keep up with the international trend while keeping the total examination time within practical limits.

### **Sextant examination on index teeth – Community Periodontal Index**

Community Periodontal Index (CPI) is a presentation of gum health information incorporating the presence of gum bleeding, calculus and pocket depths in one index. The original purpose is to relate the results directly to treatment need estimation of the population. At present, this index is used mainly to facilitate comparison with previous survey results. In children and adolescent populations, pockets are rarely found and pocket depth is not measured. When presenting the pocket depth distribution in adult and NOP groups, the highest pocket depth found was used for comparison with the finding of 2001.



The CPI index is used with the examination by sextant and hence should result in six CPI scores in an individual without much tooth loss. The convention is to present only the maximal CPI score (i.e. the worst gum condition found) at the individual level. For example, a person who had 5 sextants with bleeding gum and 1 sextant with deep pocket would be categorised under 'deep pocket'. At the population level, the gum health is assessed by the proportion of population in each category of CPI score. As only the maximal CPI score of each individual is reported, this presentation may exaggerate the level of gum disease in the population. To get a better picture of the gum health at the population level, the mean number of sextant affected by each CPI score may give an approximation to the number of teeth affected when full-mouth or half-mouth examination methods were not applied.

### **Full-mouth / half-mouth examination**

Similar to the measurement of cleanliness, gum health is measured by the percentages of teeth in the individual with bleeding, pocket depth and various levels of LOA. Gum health at the population level is presented by the distribution of population at different percentage categories of the respective gum condition.

When comparing the results of different oral health survey, it is necessary to note the number of teeth being examined in assessment of gum health. The chance of detecting gum condition will increase if more teeth are being examined, and the prevalence of gum conditions may increase due to the change of examination method alone. In the adult and non-institutionalised groups, some degree of increase in proportion of people affected by gum conditions may be observed solely because of the change from examining index teeth by sextants to half-mouth examination. Readers must therefore exercise caution in comparing gum health information of this survey with previous Hong Kong surveys.

## CHAPTER 2

### Lifestyle conducive to good oral health

#### What kind of lifestyle is conducive to optimal oral health?

Lifestyle conducive to optimal oral health includes:

- Brush teeth twice daily with fluoride toothpaste using proper toothbrushing technique
- Perform interdental cleaning daily with dental floss or interdental brush, according to individual needs
- Make use of oral health care service by seeking regular dental checkup
- Adopt good dietary habit by reducing the frequency of food or drinks intake, especially those with sugar
- Refrain from smoking

The purpose of toothbrushing is to remove dental plaque from the tooth surfaces. Building up of dental plaque causes gum disease and tooth decay. Mechanical cleaning is the only effective means to remove dental plaque. For young children (below the age of 7) to clean their teeth effectively, parental assistance should be provided during toothbrushing. Fluoride toothpaste should be used because fluoride has been proven to be effective in preventing tooth decay.

Properly performed toothbrushing can remove dental plaque from most tooth surfaces except the adjacent surfaces of teeth in the interdental area (surfaces in-between adjacent teeth). Therefore, proper interdental cleaning by either flossing and/or interdental brushing is necessary.

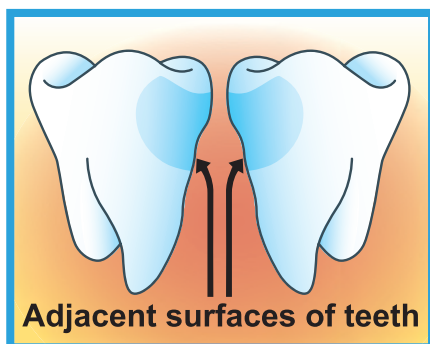


Figure 2.1 Diagram showing the adjacent surfaces of teeth in the interdental area

If the gap (interdental space) between neighbouring teeth is wide, an interdental brush may be used instead of dental floss. It requires less dexterity than dental floss to clean the adjacent surfaces. The basic steps are to choose an interdental brush that provides a snug interdental fit, insert it gently into interdental space as close to the gum margin as possible, and then move the interdental brush back and forth.

Cleaning skill is the key to effective toothbrushing and interdental cleaning. Therefore, it is important to have regular dental checkup so that the dentist can evaluate the oral health situation and provide personalised oral hygiene instruction to improve toothbrushing and interdental cleaning effectiveness.

Besides, regular dental checkup is important not only in the early detection and proper management of oral problems, it also allows the dentist to assess individual risks of getting oral diseases and give specific advice on the appropriate self-care behaviour. During regular checkup, dentists can give appropriate individualised advice on lifestyle and monitor the effectiveness of such self-care behaviour. The dentist can also provide preventive treatment such as fluoride application and fissure sealant.

Reduction in the frequency of food and drinks consumption can decrease the risk of tooth decay. Oral bacteria produce acids by metabolising the sugars present in the food or drinks, leading to tooth decay. Sugars are almost ubiquitous in our diets. They can be naturally occurring sugars such as fruit sugars, milk sugars or starch. Sugars are commonly added to food or drinks during the manufacturing process to enhance taste and texture. Therefore, whenever one eats or drinks, teeth are likely to be exposed to acid attack. In order to reduce the risk of tooth decay, the frequency of food or drinks intake other than normal meals should be reduced. In order to quench thirst, it is recommended to drink water instead of other beverages.

Smoking is known to be related to lung cancer and cardiovascular diseases. Furthermore, smoking is also a risk factor of destructive gum disease and oral cancer. The avoidance of tobacco use is an important factor in promoting general health and oral health.

## CHAPTER 3

### 5-year old children

#### **Introduction**

The 5-year old children covered in this survey were all born in 2006. As primary schools in Hong Kong only admit children who reach age 6 or above to primary grade one (P1) by the end of each calendar year, it was assumed that all children in P1 were 6 years old at the beginning of the calendar year. Hence, the survey for the 5-year old children was intentionally timed at the beginning of 2012 and the children were selected from upper class of kindergartens.

#### **Survey objectives**

The objectives of the survey of the 5-year old population were:

1. to assess the oral health status (mainly tooth decay and oral hygiene status);
2. to collect information on the oral health care behaviour;
3. to collect information on the parents' knowledge on dental diseases; and
4. to collect information on parents' attitudes towards their children's oral health.

#### **Sample design**

The sample of 5-year old children was drawn using kindergarten as the primary sampling unit. Upon harmonization of pre-primary services in 2005, all pre-primary institutions providing services for children aged 3 or above are registered under Education Ordinance (Cap. 279) and operate as either kindergartens or kindergarten-cum-child care centres (collectively referred to as kindergartens in this report). A total of 36 kindergartens were selected from a database of all kindergartens provided by the Education Bureau and invited to participate in the survey.

## Data collection method

The oral health status was assessed by clinical examination according to the method and criteria recommended by the World Health Organization. The clinical examination was carried out by three dentists (examiners) all through the survey. The clinical judgment difference was minimised through repeated calibration exercises before the survey. In addition to the pre-survey exercises, the examination reproducibility was also monitored through random cross-examination of one-tenth of all children by the examiners.

Information on the behaviour of children and information on parents were collected using a questionnaire which was completed by the children's parents. Before the survey, the draft questionnaire was pre-tested on parents of younger students attending dental clinics in the School Dental Care Service of the Department of Health. Several revisions were made on the questionnaire before it was finalised.

## Enumeration results

Out of the 36 selected kindergartens, 30 of them agreed to participate in this survey. A total of 2 022 children from the kindergartens were invited and 1 728 children with parental consent were examined. Only 5-year old children were included in the final analysis. After statistical adjustment and weighting, results from this survey could be inferred to 52 300 children aged 5 enrolled in the kindergartens. According to the Census and Statistics Department, at the end of 2011 there were 54 400 5-year old children in Hong Kong. The survey thus covered 96.1% of all 5-year old children. Some Hong Kong children in this age group were not enrolled in the above-mentioned types of institution and they were not included in this survey.

An oral health survey was done in 2001 on the 5-year old children and some of the results in that survey are presented in this report for comparison purpose.

Readers who wish to have a summary of the major survey findings can go directly to quick references sections in green text boxes.

## What was the oral health status of 5-year old children in Hong Kong?

### Tooth status - how many teeth were there?

The teeth present in 5-year old children were mainly primary teeth (milk teeth). This report, therefore, covers only the conditions of the primary teeth. The average number of primary teeth in the children in this survey was 19.4.

### Tooth status - what was the level of tooth decay experience?

The level of tooth decay experience in the 5-year old children as measured by the dmft index is shown in Table 3.1. The mean dmft value was 2.5. Most of the decay experience (dmft) was the decay component (dt) with 92.0% of the affected teeth untreated. Table 3.2 shows the percentage of children with tooth decay experience and untreated decay (dt) was found to have affected 49.4% (25 900) of the children.

**Table 3.1**  
Level of tooth decay experience as measured by the dmft index among 5-year old children

Tooth decay experience	dmft	dt (decayed)	mt (missing)	ft (filled)
Mean value	2.5	2.3	< 0.05	0.2

Base: All 5-year old children  
2011: (N = 52 300)

**Table 3.2**  
Percentage of 5-year old children with tooth decay experience

Tooth decay experience	dmft	dt (decayed)	mt (missing)	ft (filled)
Percentage among population	50.7%	49.4%	0.7%	7.3%

Base: All 5-year old children  
2011: (N = 52 300)

Table 3.3 and Table 3.4 compare the level of tooth decay experience in the 5-year old children and the proportion of children affected in 2001 and 2011. The level of tooth decay experience had increased while the proportion of children affected remained nearly the same.

**Table 3.3**  
**Level of tooth decay experience as measured by the dmft index**  
**among 5-year old children in 2001 and 2011**

Tooth decay experience	2001 (N = 67 300)	2011 (N = 52 300)
Mean dmft	2.3	2.5
Mean dt (decayed)	2.1	2.3
Mean mt (missing)	< 0.05	< 0.05
Mean ft (filled)	0.2	0.2

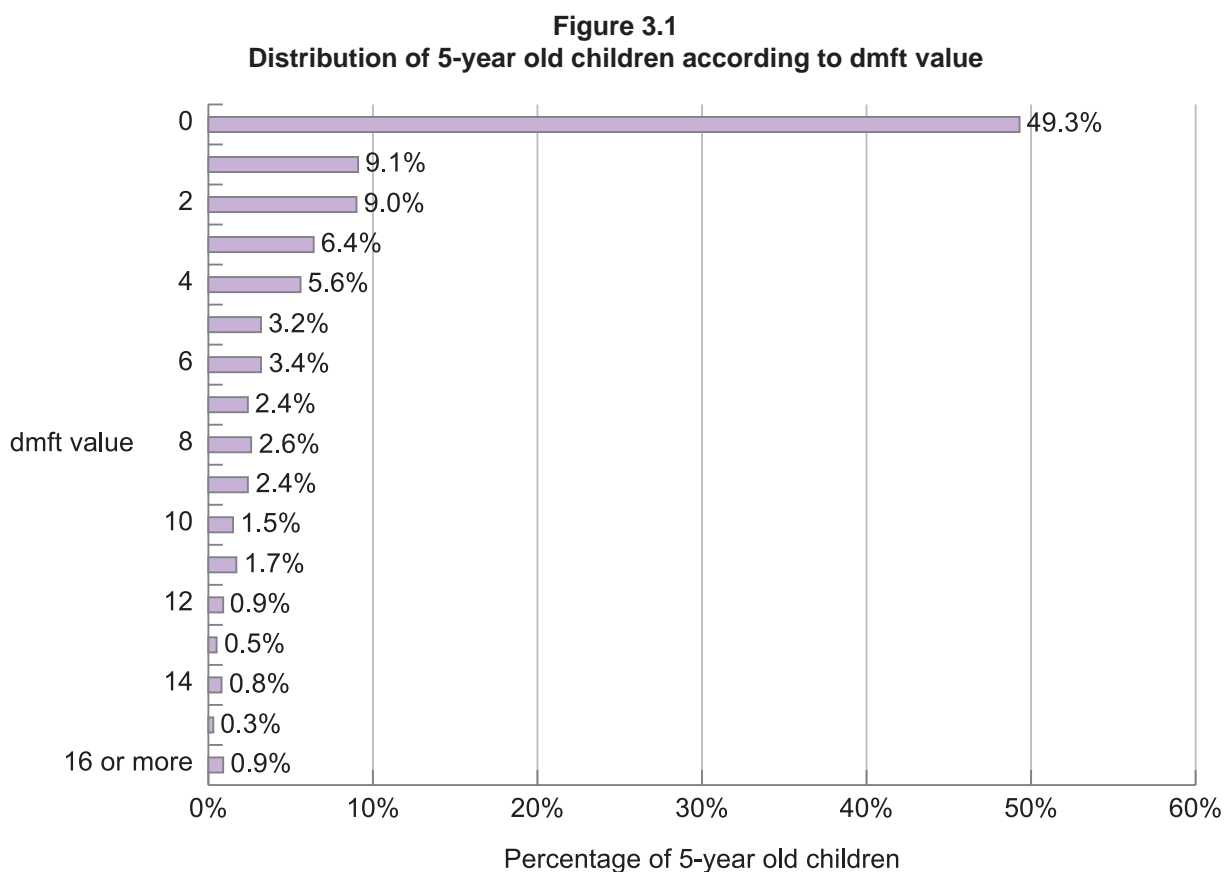
Base: All 5-year old children

**Table 3.4**  
**Percentage of 5-year old children with tooth decay experience**  
**in 2001 and 2011**

Tooth decay experience	2001 (N = 67 300)	2011 (N = 52 300)
dmft	51.0%	50.7%
dt (decayed)	49.4%	49.4%
mt (missing)	1.3%	0.7%
ft (filled)	7.4%	7.3%

Base: All 5-year old children

The distribution of 5-year old children according to their dmft value is shown in Figure 3.1. Up to 49.3% (25 800) of the children had no experience of tooth decay. On the other hand, 26.2% (13 700) had four or more teeth with decay experience. The latter group of children had around 81.2% of all the teeth affected by tooth decay. The distribution of decayed teeth among 5-year old children was skewed.

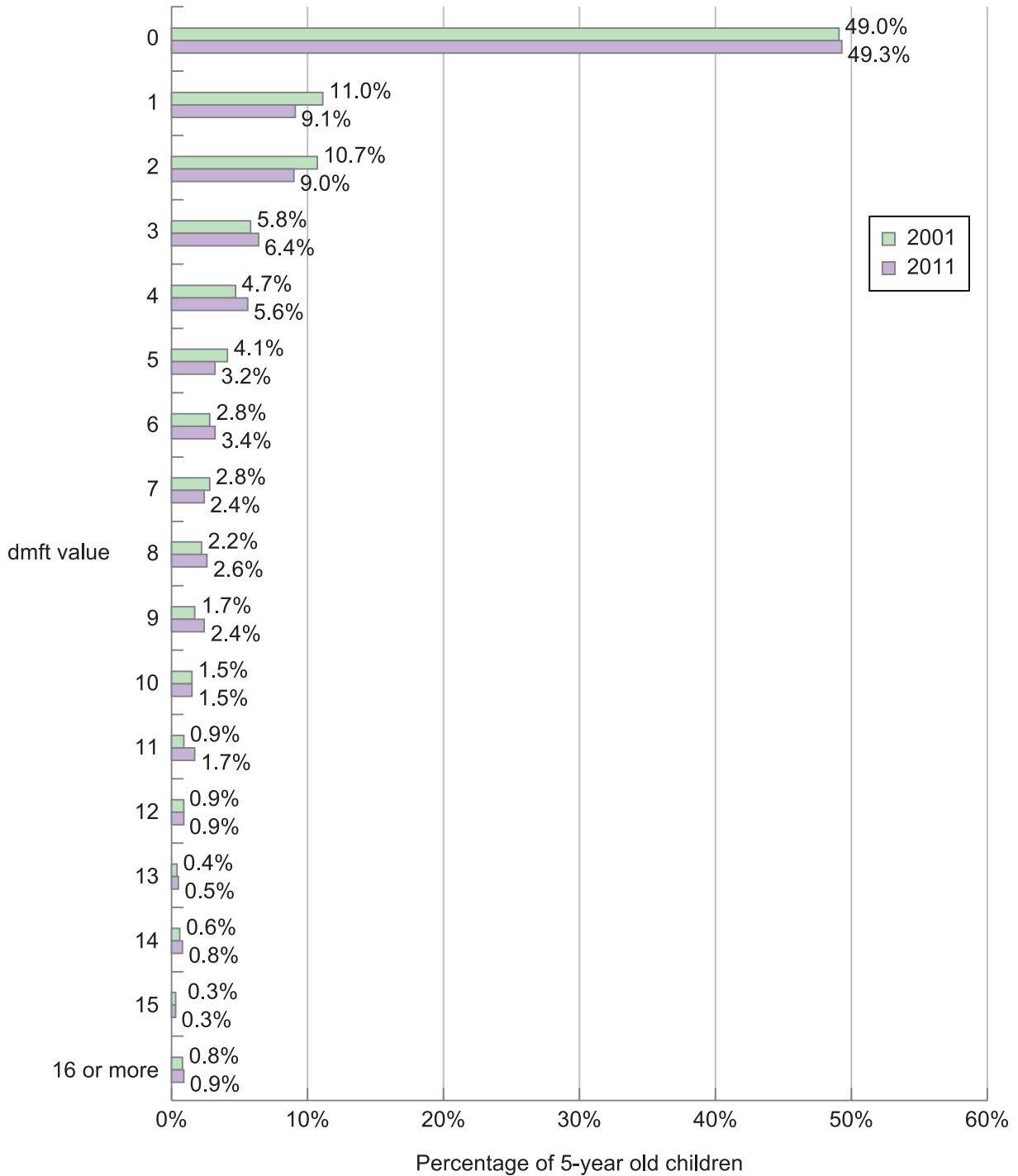


Base: All 5-year old children  
2011: (N = 52 300)



Comparing the results of the two surveys done in 2001 and 2011, there was little change in the pattern of distribution of decay experience in the 5-year old children (Figure 3.2).

**Figure 3.2**  
**Distribution of 5-year old children according to dmft value**  
**in 2001 and 2011**



Base: All 5-year old children  
 2001: (N = 67 300)  
 2011: (N = 52 300)

### **Tooth status - presence of dental abscess**

Dental abscess was present in 5.9% (3 100) of the 5-year old children. Most of these abscesses were probably associated with extensively decayed teeth. The percentage of children with abscess in the 2001 survey was found to be at a similar level of 5.7%.

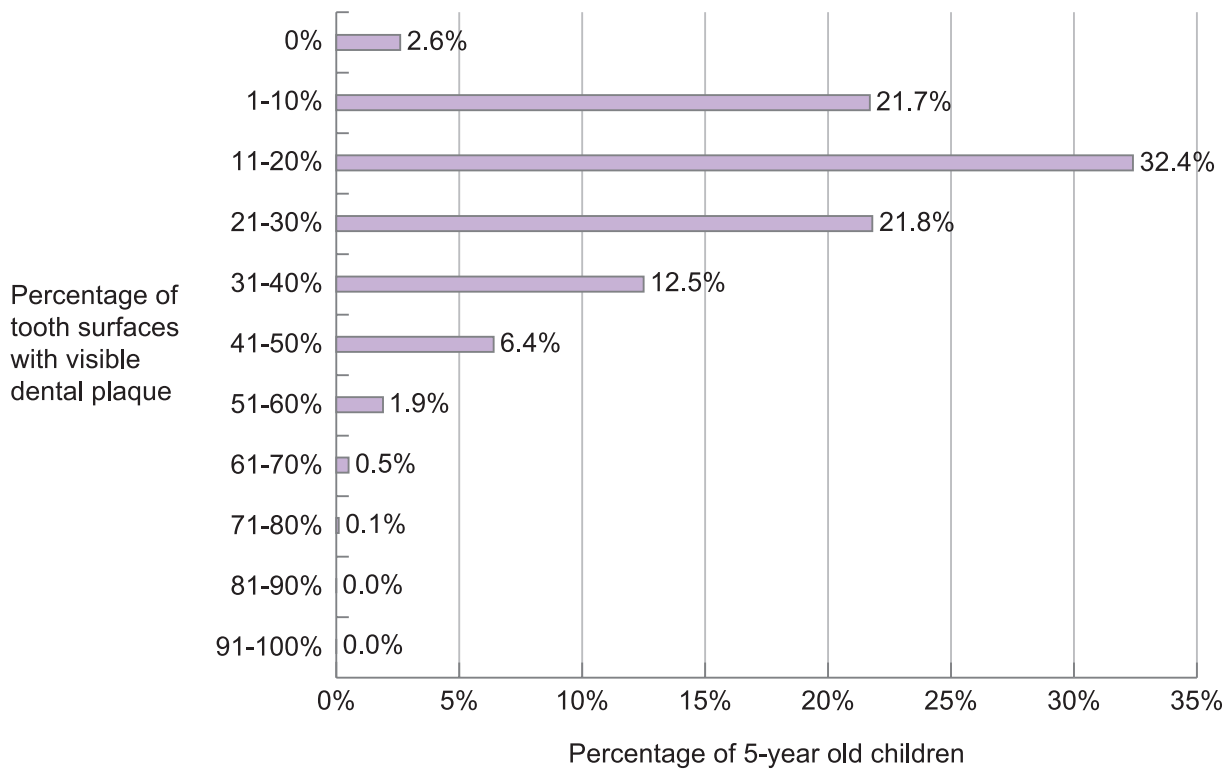
**The distribution of decayed primary teeth in 5-year old children was uneven.** Almost half of the children were not affected by tooth decay experience while 26.2% of children had around 81.2% of all the teeth with decay experience.

**Up to 92.0% of the decayed primary teeth in the children were untreated.** A small proportion (5.9%) of the children was found to have dental abscess.

### Tooth status - how clean were the teeth?

The cleanliness of the children's teeth was measured by the percentage of tooth surfaces with visible dental plaque. The mean percentage of tooth surfaces with visible dental plaque in the 5-year old children was 22.1% and the distribution in children according to the percentage is shown in Figure 3.3. Only 2.6% (1 400) had visible plaque on more than 50% of their tooth surfaces.

**Figure 3.3**  
Distribution of 5-year old children according to level of teeth cleanliness  
as measured by the percentage of tooth surfaces with visible dental plaque



Base: All 5-year old children  
2011: (N = 52 300)

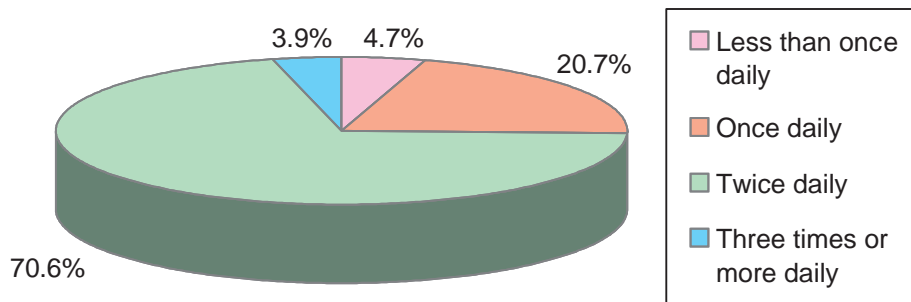
In the 2001 survey, the mean percentage of tooth surfaces with visible dental plaque in the children of this age group was 23.5%. Comparing the findings of the two surveys, there was little overall change in the level of teeth cleanliness in children of this age group.

## What was the oral health related behaviour of the 5-year old children?

### Toothbrushing - how often did the children brush?

The toothbrushing frequency of the children as reported by their parents is shown in Figure 3.4. Among the children, 74.5% (38 800) of them brushed their teeth twice or more daily while only 4.7% (2 500) of them brushed less than once a day.

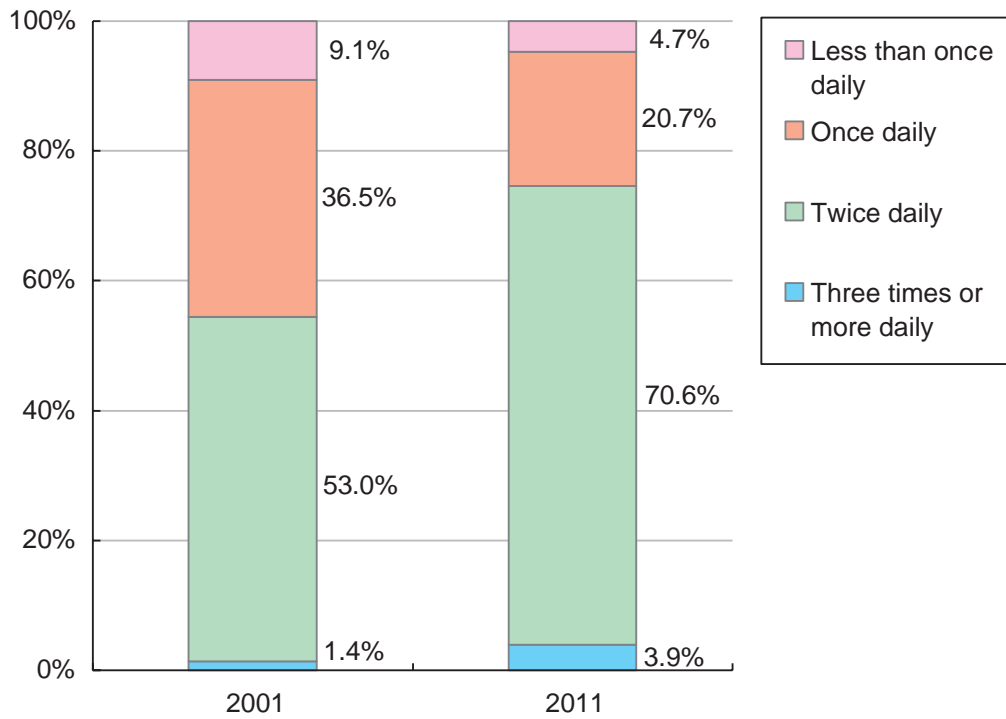
**Figure 3.4**  
Distribution of 5-year old children according to the reported toothbrushing frequency



Base: All 5-year old children whose parents responded to the question  
2011: (N = 52 100)

When the results of this survey and the 2001 survey were compared, the 5-year old children were found to be brushing more frequently (Figure 3.5).

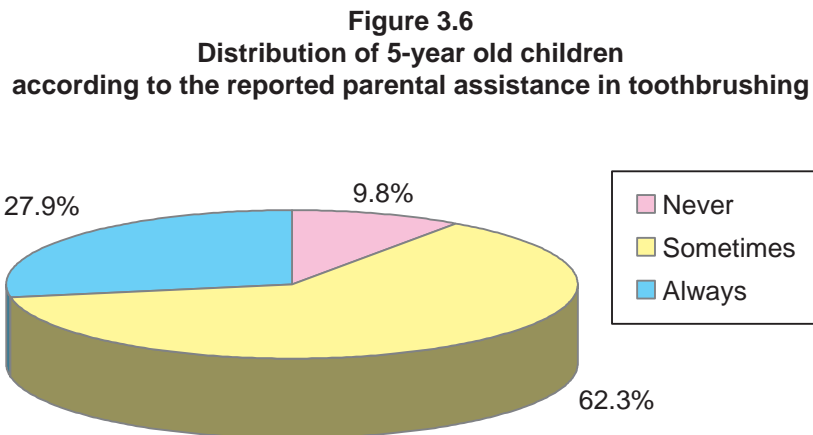
**Figure 3.5**  
**Distribution of 5-year old children according to the reported toothbrushing frequency in 2001 and 2011**



Base: All 5-year old children whose parents responded to the question  
 2001: (N = 67 300)  
 2011: (N = 52 100)

**Toothbrushing - did the children receive parental assistance while they brushed?**

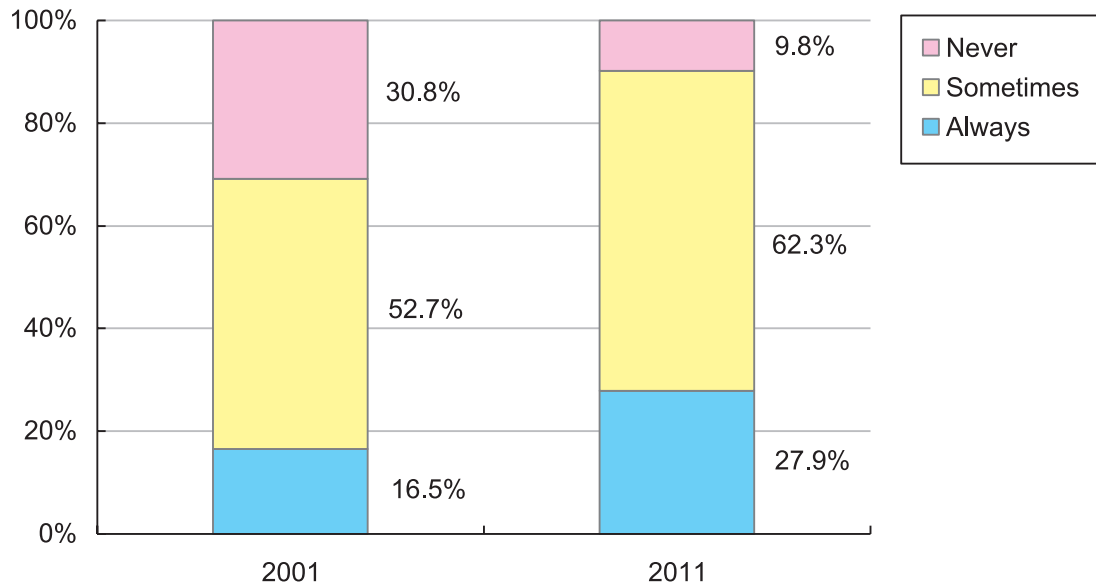
Parents of the 5-year old children were asked if they had assisted their children in toothbrushing. Up to 62.3% (32 500) of parents reported that they sometimes assisted their children in toothbrushing while 27.9% (14 500) of parents always did so (Figure 3.6).



Base: All 5-year old children whose parents responded to the question  
2011: (N = 52 100)

Comparing the findings of this survey to the 2001 survey, more parents had been helping their 5-year old children with their toothbrushing (Figure 3.7).

**Figure 3.7**  
**Distribution of 5-year old children according to the reported parental assistance in toothbrushing in 2001 and 2011**

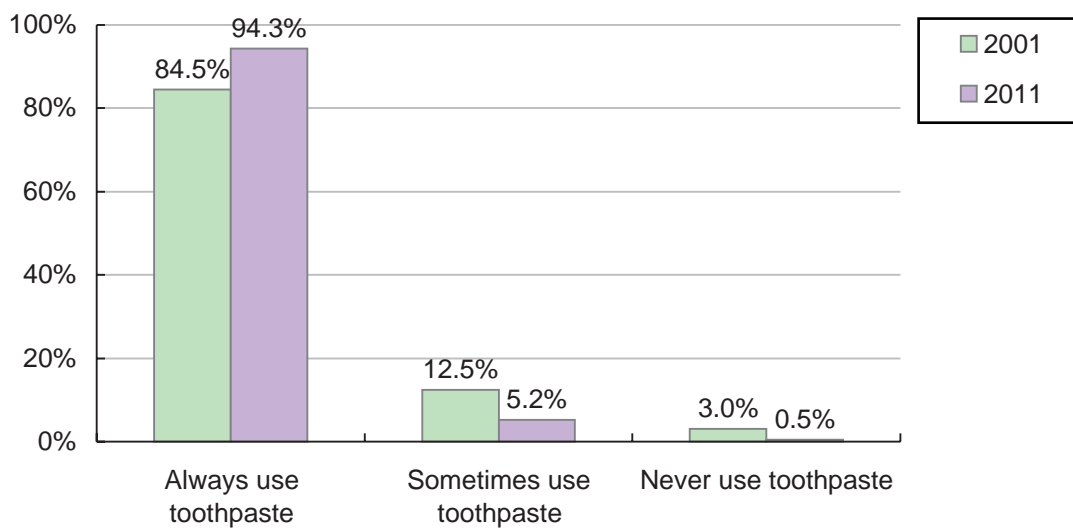


Base: All 5-year old children whose parents responded to the question  
 2001: (N = 67 300)  
 2011: (N = 52 100)

**Toothbrushing - was fluoride toothpaste used?**

Among the parents, 94.3% (49 200) of them reported that their children always used toothpaste when they brushed their teeth. Comparing the findings of this survey and the 2001 survey (Figure 3.8), more parents reported that their 5-year old children always used toothpaste.

**Figure 3.8**  
**Distribution of 5-year old children according to reported use of toothpaste in 2001 and 2011**

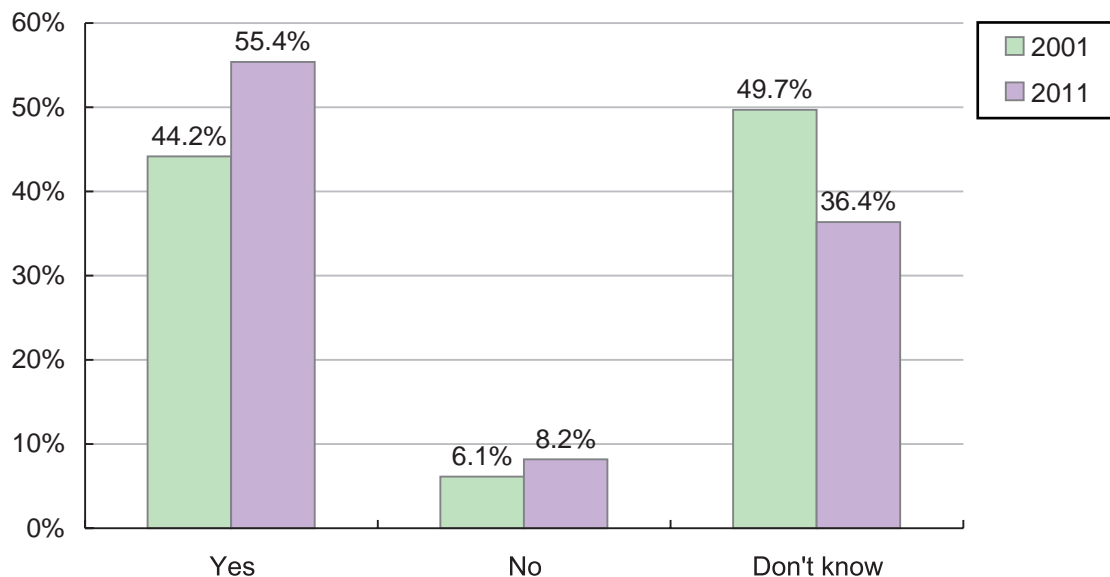


Base: All 5-year old children whose parents responded to the question  
 2001: (N = 67 300)  
 2011: (N = 52 100)



Parents of children who used toothpaste were further asked if the toothpaste they had been using contained fluoride. Among this group of parents, 55.4% (28 700) of them reported that the toothpaste contained fluoride while 36.4% (18 800) of them did not know. Comparing the result of this survey to the 2001 survey, the percentage of parents who did not know whether there was fluoride in the toothpaste had dropped but they still constituted a sizable proportion (Figure 3.9).

**Figure 3.9**  
Distribution of parents of 5-year old children according to their knowledge on whether the toothpaste their children used contained fluoride in 2001 and 2011



Base: All parents of 5-year old children who responded to the question  
2001: (N = 65 400)  
2011: (N = 51 800)

**The majority of the 5-year old children brushed their teeth twice daily.** Only 4.7% did not brush their teeth on a daily basis.

**Most of the parents assisted their 5-year old children in toothbrushing.** Around two-thirds (62.3%) of them sometimes assisted their children in toothbrushing and 27.9% always did so.

**The vast majority of 5-year old children used toothpaste to brush their teeth but only half of the parents reported that they were using toothpaste with fluoride.** Around one-third of the parents did not know if there was fluoride in the toothpaste of their children.

## Snacking habit

Parents were asked to report how frequently their 5-year old children snacked between normal meals. Around two-thirds of the parents reported that their children snacked daily but only 8.3% (4 300) snacked three times or more per day (Table 3.5).

**Table 3.5**  
Distribution of 5-year old children according to snacking frequency as reported by parents

Snacking Habit	Percentage of children (N = 52 300)
No daily snacking habit	35.6%
Snack once per day	24.4%
Snack 2 times per day	31.7%
Snack 3 times or more per day	8.3%

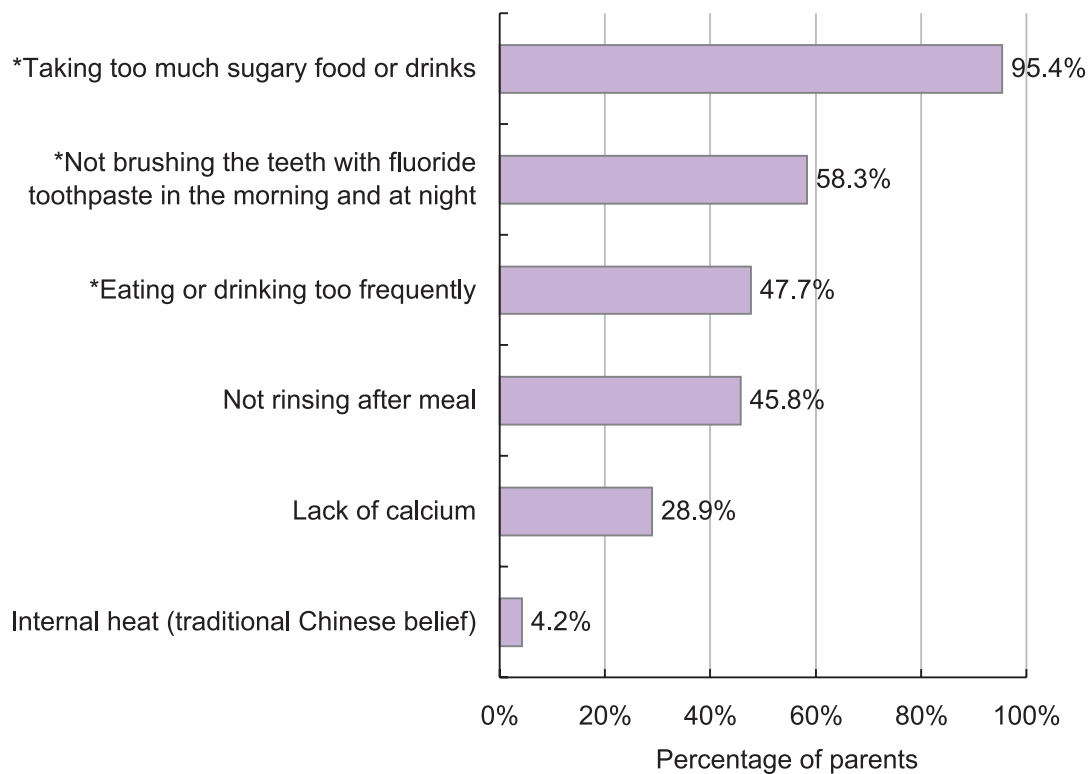
Base: All 5-year old children whose parents responded to the question

## What did the parents know about dental diseases?

### What did the parents know about the factors which might increase the risk of tooth decay?

Parents were asked what they considered were factors which might increase the risk of tooth decay and the results are shown in Figure 3.10. Up to 95.4% (49 900) of them considered *taking too much sugary food or drink* as a risk factor but only 47.7% (25 000) could identify *eating or drinking too frequently* as one. There were some common misconceptions among parents with 45.8% (24 000) and 28.9% (15 100) of them respectively believing that *not rinsing after meal* and *lack of calcium* were relevant factors which might increase the risk of tooth decay.

**Figure 3.10**  
Percentage of parents of 5-year old children according to the perceived factors which might increase the risk of tooth decay (Multiple answers)



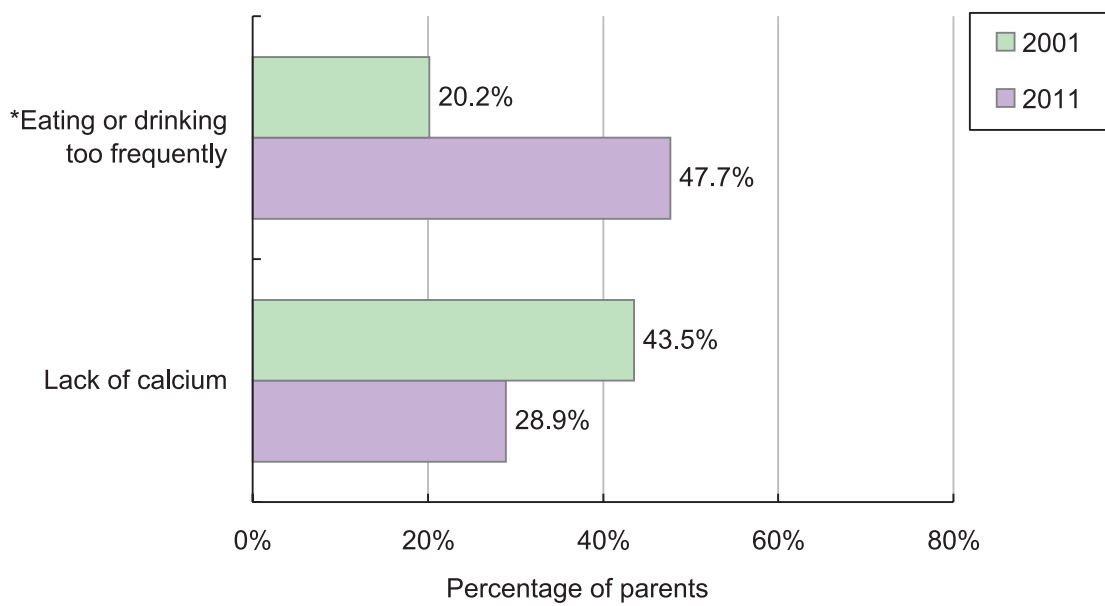
\*Relevant factors

Base: All parents of 5-year old children who responded to the question

2011: (N = 52 300)

Comparing the findings of this survey and the 2001 survey, changes are found in the parents' perceptions in frequency of eating and drinking and lack of calcium as factors which might increase the risk of teeth decay. More parents were aware of the fact that frequency of eating and drinking was a risk factor for tooth decay while fewer parents considered lack of calcium as a risk factor (Figure 3.11).

**Figure 3.11**  
**Percentage of parents of 5-year old children according to the perceived factors which might increase the risk of tooth decay in 2001 and 2011**  
**(Multiple answers)**



\*Relevant factor

Base: All parents of 5-year old children who responded to the question

2001: (N = 67 300)

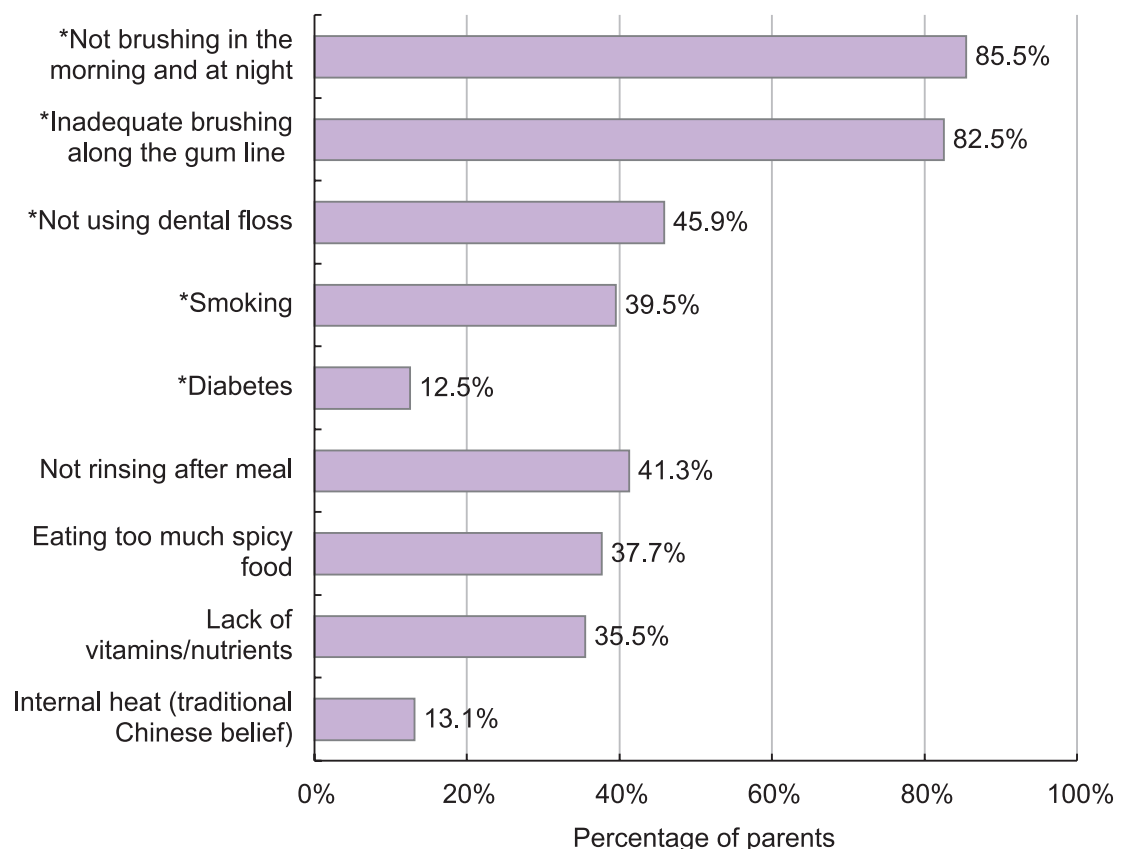
2011: (N = 52 300)

### What did the parents know about the factors which might increase the risk of gum disease?

Parents were asked what they considered were factors which might increase the risk of gum disease and the results are shown in Figure 3.12.

The majority of parents of the 5-year old children could identify *not brushing in the morning and at night* and *inadequate brushing along the gum line* as risk factors for gum disease. However, only 45.9% (24 000) and 39.5% (20 600) of them respectively knew that *not using dental floss* and *smoking* were also risk factors. It must be noted that vast majority of the parents did not know that *diabetes* could increase the risk of gum disease.

**Figure 3.12**  
Percentage of parents of 5-year old children according to the perceived factors which might increase the risk of gum disease (Multiple answers)

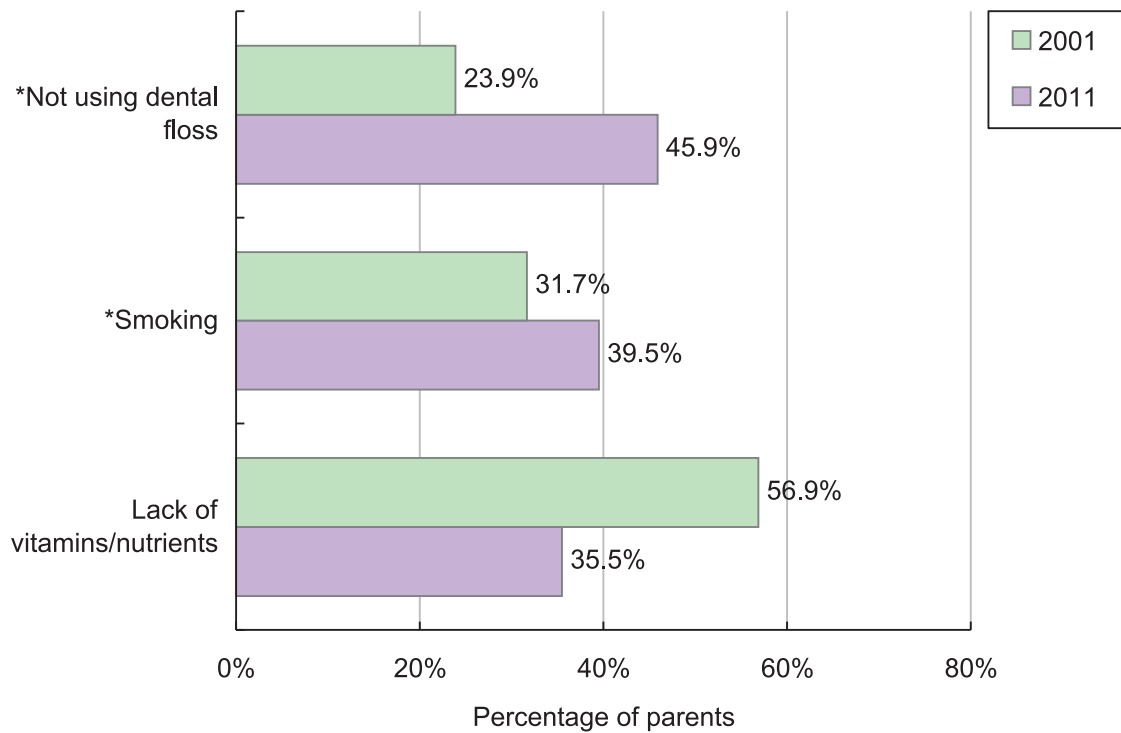


\*Relevant factors

Base: All parents of 5-year old children who responded to the question  
2011: (N = 52 200)

Comparing the findings of this survey and the 2001 survey, more parents were aware that *not using dental floss* and *smoking* were risk factors for gum disease and fewer parents considered *lack of vitamins or nutrients* as a risk factor (Figure 3.13).

**Figure 3.13**  
**Percentage of parents of 5-year old children according to**  
**the perceived factors which might increase the risk of gum disease**  
**in 2001 and 2011**  
**(Multiple answers)**



\*Relevant factors

Base: All parents of 5-year old children who responded to the question

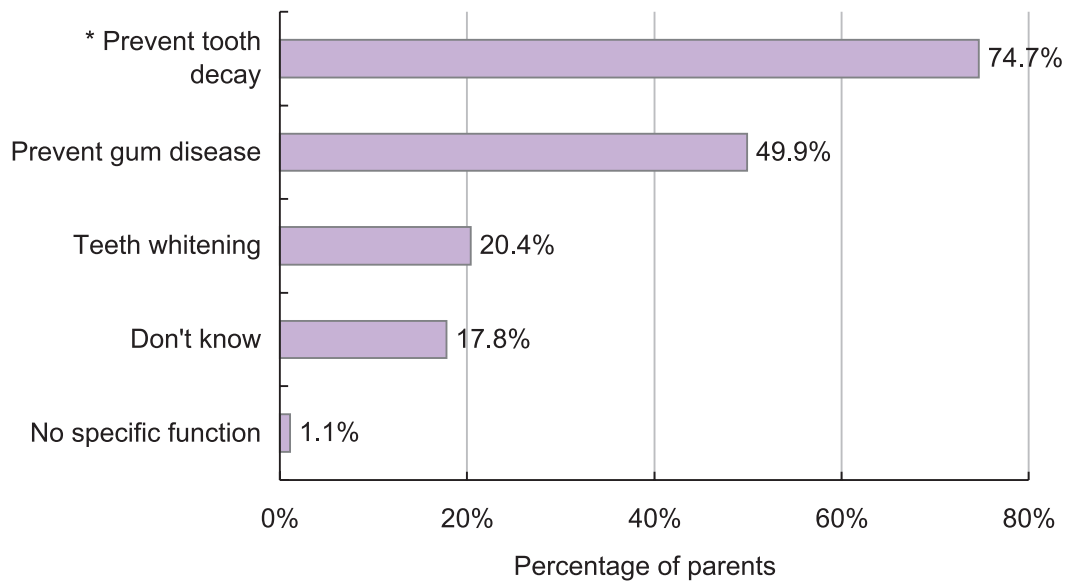
2001: (N = 67 300)

2011: (N = 52 200)

### Did the parents know about the benefits of fluoride?

The perceived benefits of fluoride as reported by parents of 5-year old children are shown in Figure 3.14. Three-quarters of the parents correctly knew the benefit of fluoride in the prevention of tooth decay. However, half of them had the misconception that fluoride could *prevent gum disease* and a fifth of them believed that fluoride was useful in *teeth whitening*.

**Figure 3.14**  
**Percentage of parents of the 5-year old children according to**  
**their knowledge on the benefits of fluoride**  
**(Multiple answers)**



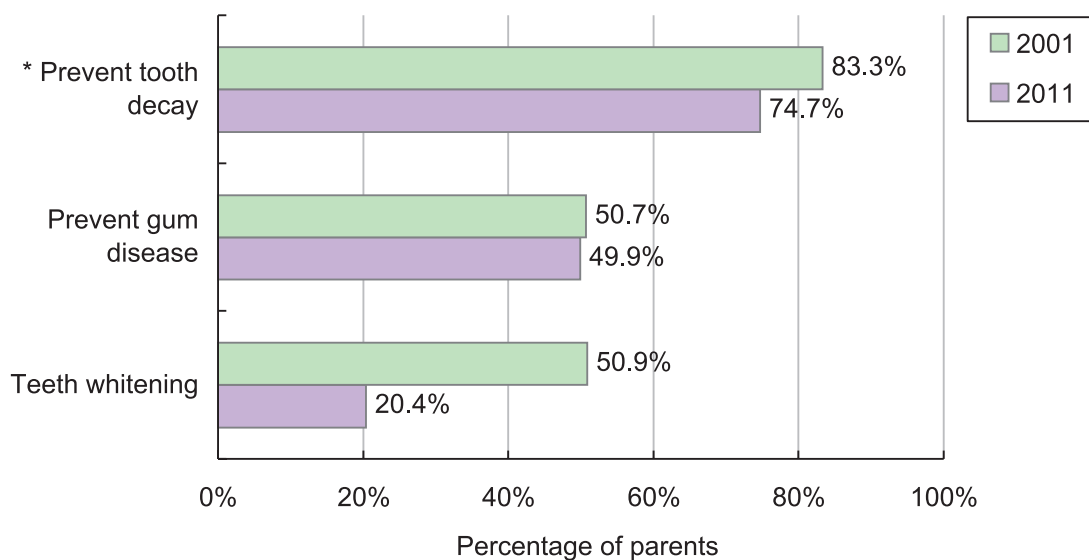
\*Relevant benefit

Base: All parents of 5-year old children who responded to the question

2011: (N = 52 300)

Comparing the findings of this survey to the 2001 survey, a smaller proportion of parents of 5-year old children knew the benefit of fluoride in tooth decay prevention and the proportion of parents who thought that fluoride was useful in prevention of gum disease remained at a similar level. On the other hand, a smaller proportion of parents had the misunderstanding that fluoride was useful for teeth whitening (Figure 3.15).

**Figure 3.15**  
**Percentage of parents of the 5-year old children**  
**according to their knowledge on the benefits of fluoride in 2001 and 2011**  
**(Multiple answers)**



\*Relevant benefit

Base: All parents of 5-year old children who responded to the question

2001: (N = 67 300)

2011: (N = 52 300)

**The parents of 5-year old children had generally improved knowledge on the risk factors for tooth decay and gum disease.** Fewer parents related tooth decay to lack of calcium or gum disease to lack of vitamins and nutrients.

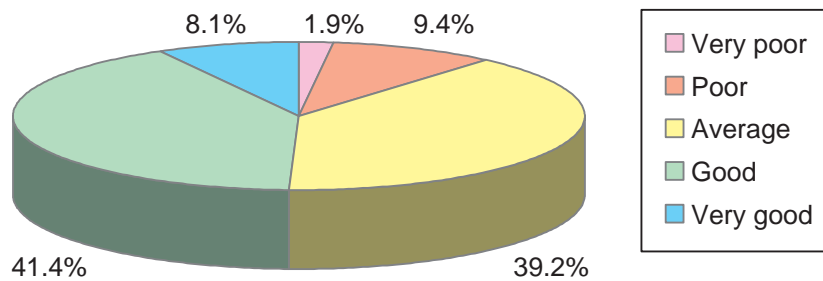
**The benefit of fluoride in the prevention of tooth decay was not fully understood.** Half of the parents wrongly believed that fluoride could prevent gum disease and a fifth of them had the misconception that it was useful for the whitening of teeth.



## What were the parents' perceptions of the oral health of their 5-year old children?

The parents were asked to rate the oral health condition of their children, and the results are shown in Figure 3.16. Around half of the parents rated their children's oral health as *good* or *very good* while around one in ten rated their children's oral health as *poor* or *very poor*.

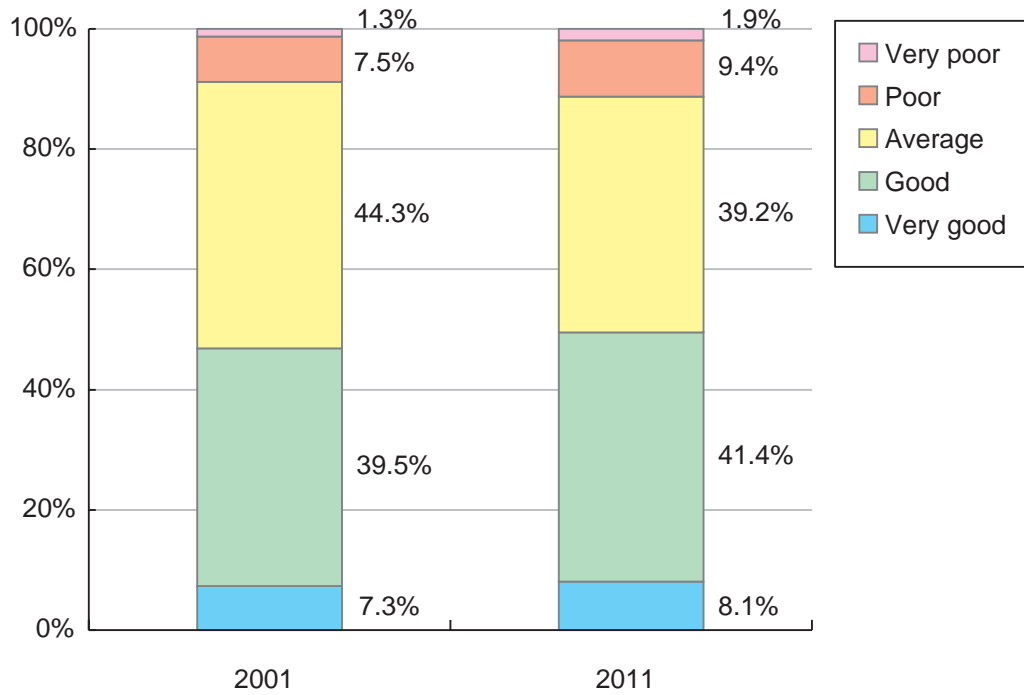
**Figure 3.16**  
Distribution of parents according to  
their perceptions of the oral health condition of their children



Base: All parents of 5-year old children  
2011: (N = 52 300)

The distribution of parents according to how they rated their children’s oral health in the present survey and the 2001 survey are shown in Figure 3.17. The profiles appear to be similar.

**Figure 3.17**  
**Distribution of parents according to**  
**their perceptions of the oral health condition of their children**  
**in 2001 and 2011**

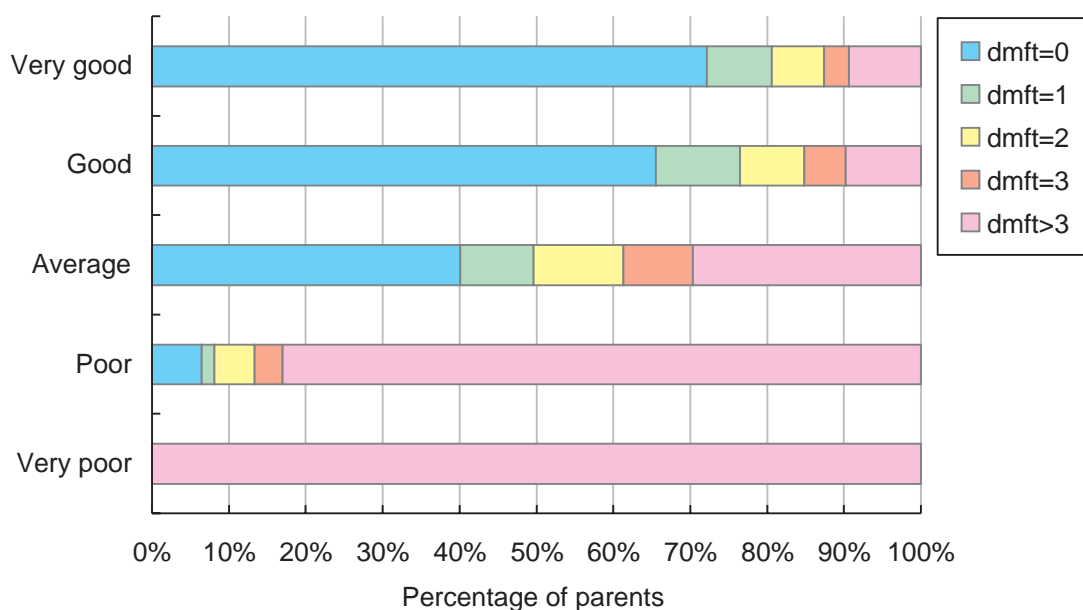


Base: All parents of 5-year old children  
 2001: (N = 67 300)  
 2011: (N = 52 300)

## How did the parents' perceptions correspond with their children's oral health status?

The tooth decay experience of the 5-year old children, as measured by the dmft value, was matched with their parents' perceptions of their oral health. The results are shown in Figure 3.18.

**Figure 3.18**  
Oral health condition of 5-year old children  
as perceived by their parents and the children's decay experience



Base: All parents of 5-year old children  
2011: (N = 52 300)

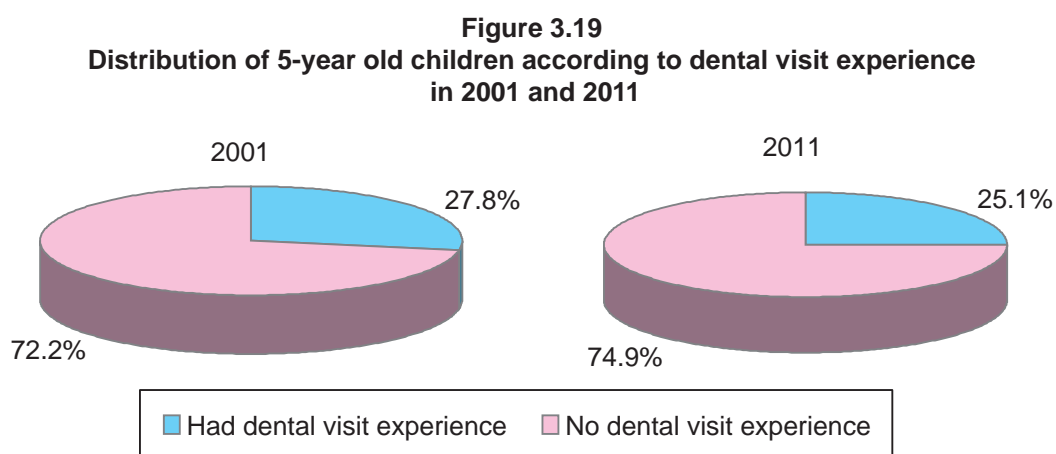
The parents' perceptions of very poor oral health were in agreement with their children's actual oral health condition, as all (1 000) of the children whose parents rated them as having *very poor* oral health condition had more than three teeth with decay experience. However, the parents' perceptions of *good* or *very good* oral health were less accurate. Up to 19.4% (800) and 23.5% (5 100) of the children whose parents rated them as having *very good* oral health and *good* oral health respectively actually had dmft value of 2 or above.

**Parents' perceptions of their children's oral health were not always accurate.** The perceptions were accurate among the parents who rated their children as having poor oral health but the same did not hold for the parents who rated their children as having good oral health.

## What was the pattern of utilisation of oral health care services among the 5-year old children?

### How many children had visited a dentist?

Only 25.1% (13 100) of the parents of 5-year old children had brought their children to visit dentist, a similar result was obtained in the 2001 survey (Figure 3.19).



Base: All 5-year old children  
2001: (N = 67 300)  
2011: (N = 52 300)

Parents who had brought their 5-year old children to visit dentist were asked to indicate the major reason for the last visit and the results are shown in Table 3.6. Only 39.9% (5 200) of the parents reported that the major reason for the visit was checkup.

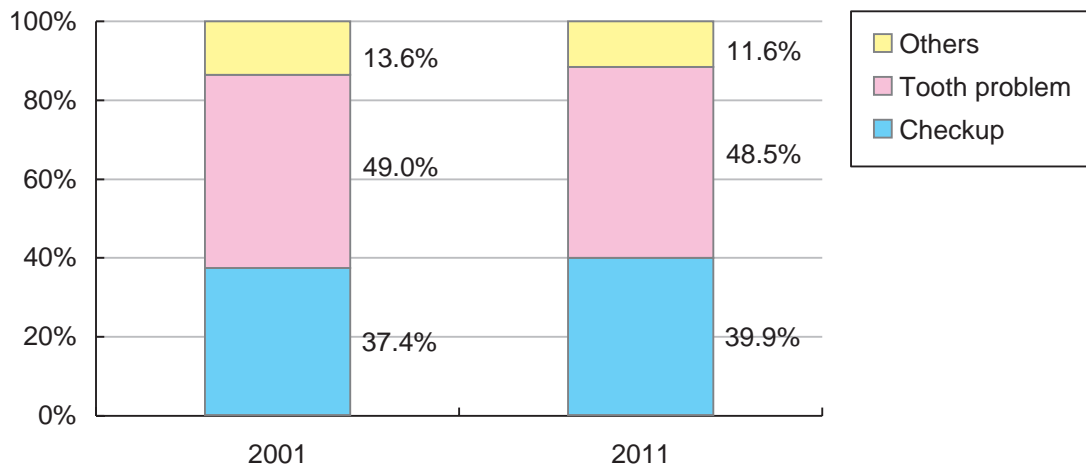
**Table 3.6**  
**Distribution of 5-year old children with dental visit experience according to the reported major reason for their latest dental visit**

Major reason for the children's latest dental visit	Percentage	Sub-categories of major reason for the children's latest dental visit	Percentage
Checkup	39.9%	Checkup	39.9%
Tooth problem	48.5%	Suspect tooth decay	31.6%
		Toothache	12.2%
		Trauma	4.7%
Other reasons	11.6%	Other reasons	11.6%

Base: All 5-year old children who had previous dental visit and whose parents responded to the question  
2011: (N = 13 000)

The distribution of 5-year old children in the 2001 and 2011 survey according to the reported major reason for their last dental visit are shown in Figure 3.20. The results appear to be very similar.

**Figure 3.20**  
**Distribution of 5-year old children who had dental visit experience according to the reported major reason for their last dental visit in 2001 and 2011**

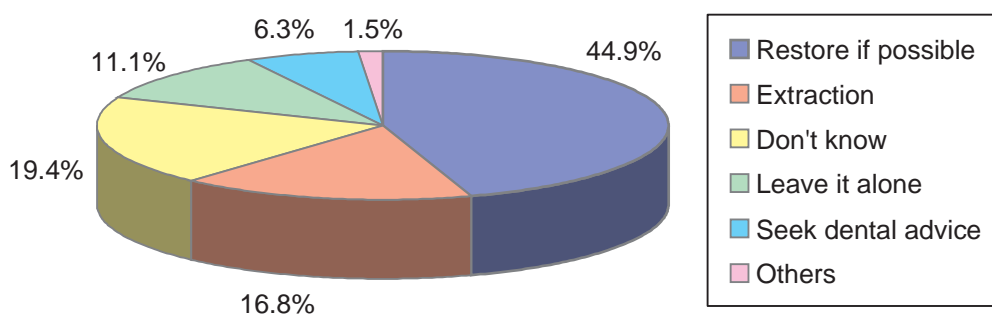


Base: All 5-year old children who had previous dental visit and whose parents responded to the question  
 2001: (N = 18 700)  
 2011: (N = 13 000)

**What was the parents' preferred treatment for decayed primary teeth in their children?**

Parents were asked what their choice of treatment for decayed primary teeth was. Only 44.9% (23 500) of them preferred to have the teeth restored (Figure 3.21).

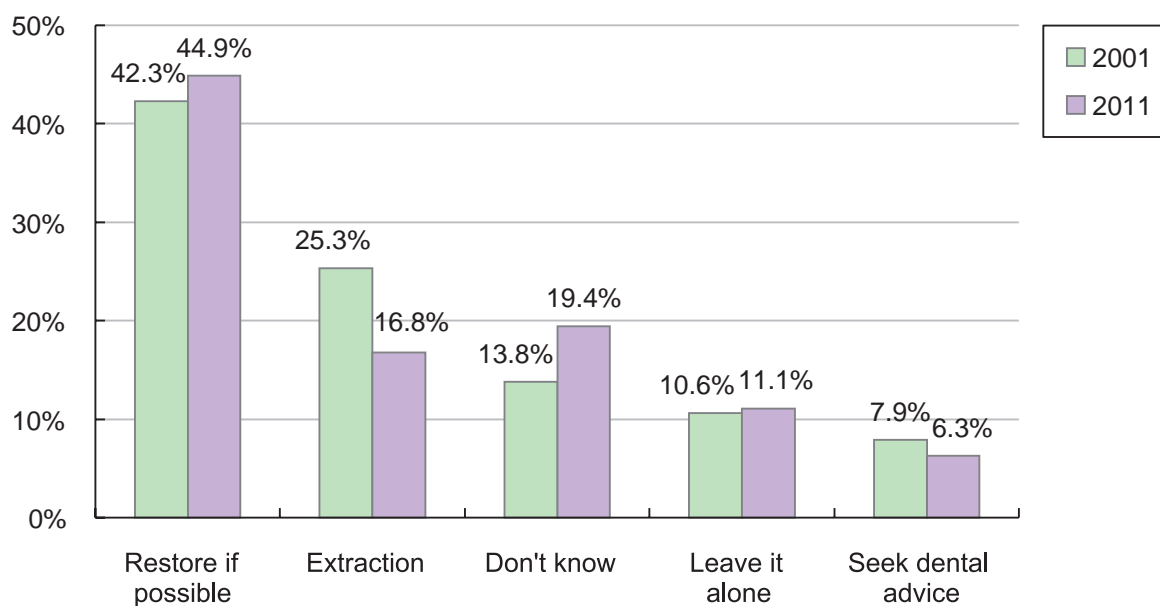
**Figure 3.21**  
**Distribution of parents according to their preferred treatment for decayed primary teeth**



Base: All parents of 5-year old children who responded to the question  
 2011: (N = 52 300)

The findings on the parents' preferred treatment for decayed primary teeth in their children were similar to those obtained in the 2001 survey (Figure 3.22).

**Figure 3.22**  
**Percentage of parents according to**  
**their preferred treatment for decayed primary teeth**  
**in 2001 and 2011**



Base: All parents of 5-year old children who responded to the question  
 2001: (N = 67 300)  
 2011: (N = 52 300)

**The utilisation of oral health care services by 5-year old children was low.**

Only one-quarter of the parents had brought their children to visit a dentist and many of them did so because of tooth problem. There had been very little change in the pattern of utilisation of oral health care of this group of children when compared with 2001.

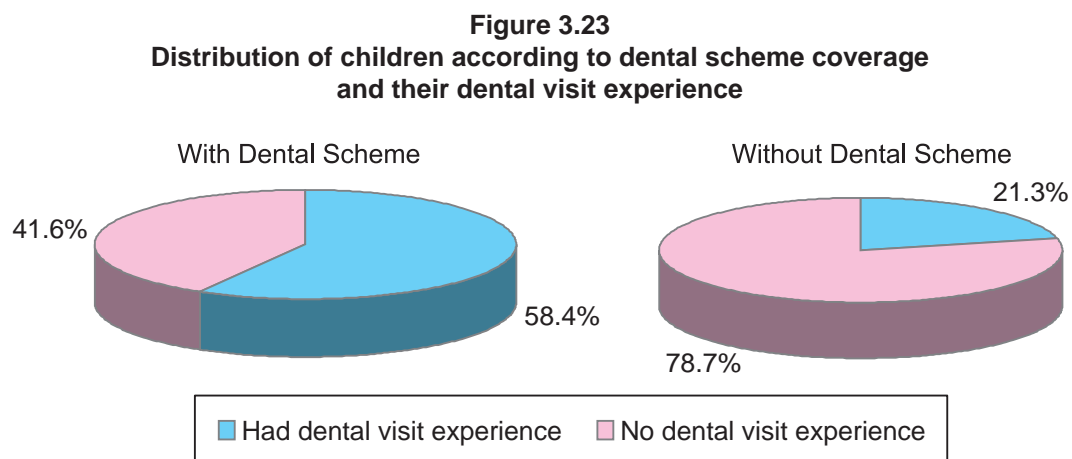
## What was the proportion of 5-year old children covered by parents' dental schemes?

Only 20.1% (10 500) of the parents reported that they had dental scheme coverage and 83.8% (8 800) of such coverage were provided by employers. Among the parents with dental scheme coverage, 49.4% (5 200) of them indicated that their children were also covered. This was equivalent to 9.9% of all 5-year old children.

Similar findings were obtained in the 2001 survey. At that time, 20.5% of the parents had dental scheme coverage with 77.6% of such coverage provided by employers. Among the 5-year old children, 10.5% of them were covered.

## Dental scheme and the utilisation of oral health care services

Up to 58.4% (3 000) of the parents of those children who were covered by dental scheme reported that they had brought their 5-year old children to visit dentist while only 21.3% (10 000) of parents of those children who were not covered by dental scheme coverage had done so (Figure 3.23).

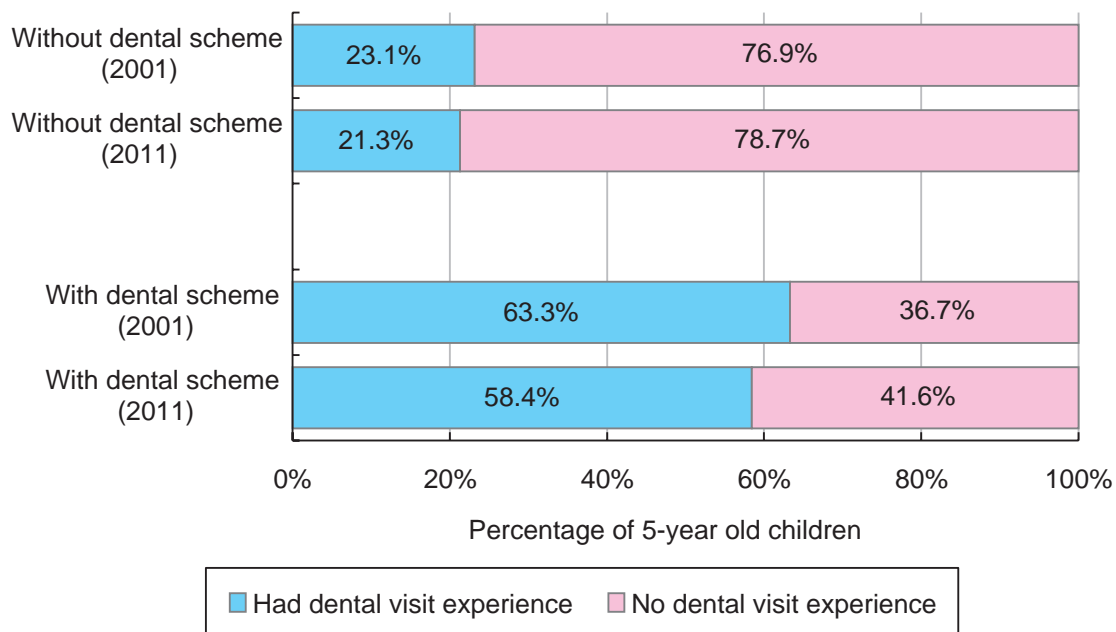


Base (with dental scheme): All 5-year old children covered by dental scheme and whose parents answered the questions  
2011: (N = 5 200)

Base (without dental scheme): All 5-year old children not covered by dental scheme and whose parents answered the questions  
2011: (N = 47 000)

Comparing the findings of the 2011 survey to the 2001 survey, there was very little change in the proportion of children who had visited dentist in both the covered group and the non-covered group (Figure 3.24).

**Figure 3.24**  
**Distribution of children according to dental scheme coverage**  
**and their dental visit experience in 2001 and 2011**



Base (without dental scheme): All 5-year old children not covered by dental scheme and whose parents answered the questions  
 2001: (N = 60 200)  
 2011: (N = 47 000)  
 Base (with dental scheme): All 5-year old children covered by dental scheme and whose parents answered the questions  
 2001: (N = 7 100)  
 2011: (N = 5 200)



## Chapter 3 – Summary

**The distribution of tooth decay among 5-year old children was uneven.** The distribution of tooth decay experience was skewed with 26.2% of the children having four or more teeth with decay experience. This group of children had 81.2% of all the teeth affected by tooth decay. Up to 92.0% of the decayed teeth were untreated.

**Among the 5-year old children, three-quarters of them had the habit of brushing their teeth twice or more daily.** The vast majority of them used toothpaste but up to one-third of the parents did not know whether there was fluoride in the toothpaste.

**When compared with 10 years ago, the parents of 5-year children had generally improved knowledge on the factors which might increase the risk of tooth decay and gum disease.** Fewer parents considered lack of calcium as a risk factor for tooth decay and lack of vitamins and nutrients as risk factors for gum disease. The benefit of fluoride was, however, not fully understood.

**Not many parents brought their 5-year old children to visit dentist.** Only 25.1% of the parents had brought their 5-year old children to visit dentist and most of them did so because of tooth problem. Parents with dental scheme coverage for their children had a higher tendency to bring them to dental visit.

## Way forward

Compared with ten years ago, there was improvement in the oral health home care behaviour of the 5-year old children. Children in this age group had been brushing their teeth more frequently and they were getting more parental assistance when they brushed. Parents also had generally improved knowledge on the factors which might increase the risk of tooth decay and gum disease.

Improvement was, however, not seen in the level of tooth decay experience. The percentage of 5-year old children with tooth decay experience remained the same as ten years ago and the average number of decayed teeth per child had actually increased.

The lack of improvement in the decay experience could partly be attributed to the fact that most of the children did not go for dental checkup where they could receive individualised oral health education and early preventive intervention. Three-quarters of the 5-year old children had never visited a dentist. Even for those who had, around half of them did so mainly because of dental problems. The low checkup rate, together with the inaccurate perceptions of some parents that the oral health of their children had been good while in fact they had tooth decay, could result in many tooth decay getting undetected and untreated. Some of the untreated tooth decay might progress and lead to pain and abscess in the children, and they might have to undergo prolonged and costly treatment in order to restore oral health.

Looking at the way forward, there is a need for the dental profession to strengthen oral health education to parents of young children to encourage them to start seeking regular dental checkup from as early as 6 months after the eruption of the first tooth. Parents should also be further motivated to help their children with their toothbrushing. This survey showed that one-third of the parents did not know whether there was fluoride in the toothpaste of their children and many of them did not know the benefit of fluoride in the prevention of tooth decay. In future oral health education to parents of young children, more emphasis should be placed on the use of fluoride toothpaste.

# CHAPTER 4

## 12-year old students

### **Introduction**

The 12-year old students covered in this survey were all born between 1 October 1998 and 30 September 1999. In Hong Kong, majority of 12-year old children are in Form 1 (F1) and Form 2 (F2) in secondary schools. The survey on this age group was thus targeted at 12-year old students in F1 and F2 in secondary schools.

### **Survey objectives**

The objectives of the survey of the 12-year old population were:

1. to assess the oral health status (mainly tooth decay, gum condition and oral hygiene status);
2. to collect information on the oral health care behaviour;
3. to collect information on the students' and parents' knowledge on dental diseases; and
4. to collect information on the students' and parents' attitudes towards oral health and regular checkup.

### **Sample design**

The sample of 12-year old students was drawn using secondary schools as the primary sampling unit. From a database of all secondary schools provided by the Education Bureau, 35 schools were selected. All F1 and F2 12-year old students who were born between 1 October 1998 and 30 September 1999 in the selected secondary schools were included in a second stage of selection. To avoid undue disruption of classes to the school, the number of students selected from each school was limited to a maximum of 50.

## Data collection method

The oral health status was assessed by clinical examination based on the method and criteria recommended by the World Health Organization. The clinical examination was carried out by four dentists (examiners) all through the survey. Through repeated calibration exercises before the survey, the differences in clinical judgment were minimised. Monitoring of the examiners' reproducibility was also maintained through random cross-examination of one-tenth of the students during the clinical examination.

Information on the students and their parents were collected by means of two separate questionnaires to students and parents. Students' questionnaires were conducted onsite while parents' questionnaires were completed by parents at home. Before the survey, the draft questionnaires were pre-tested on primary school students and parents attending dental clinics in the School Dental Care Service of the Department of Health. Several revisions were made on the questionnaires before they were finalised.

## Enumeration results

Out of the 35 selected secondary schools, 25 of them agreed to participate in the survey. From these 25 schools, 1 225 students were selected and 1 054 of them with parental consent were successfully examined. With statistical adjustment and weighting, the results of this survey could be inferred to some 56 900 students aged 12 in Hong Kong. According to the Census and Statistics Department, at the end of 2011 there were 60 500 students aged 12 in Hong Kong. The survey thus covered 94.0% of all 12-year old students.

An oral health survey was done in 2001 on the 12-year old students and some of the results in that survey are presented in this report for comparison purpose.

Readers who wish to have a summary of the major survey findings can go directly to quick references sections in green text boxes.

## What was the oral health status of 12-year old students in Hong Kong ?

### Tooth status - how many teeth were there?

Students at age 12 usually have most of their permanent teeth (adult teeth) erupted and almost all of their primary teeth (milk teeth) shed. On average, each 12-year old student in this survey had 25.7 permanent teeth and 0.8 primary teeth. As most of the primary teeth were already replaced, this report covers only the conditions of permanent teeth of the students.

### Tooth status - what was the level of tooth decay experience?

The level of tooth decay experience in the 12-year old students as measured by the DMFT index is shown in Table 4.1. The level of tooth decay experience was found to be very low with a mean DMFT value of 0.4. Most of the tooth decay experience (DMFT) was filled component (FT) and untreated decay (DT) affected only 5.4% (3 100) of the students (Table 4.2).

**Table 4.1**  
Level of tooth decay experience as measured by the DMFT index among 12-year old students

Tooth decay experience	DMFT	DT (Decayed)	MT (Missing)	FT (Filled)
Mean value	0.4	0.1	<0.05	0.3

Base: All 12-year old students  
2011: (N = 56 900)

**Table 4.2**  
Percentage of 12-year old students with tooth decay experience

Tooth decay experience	DMFT	DT (Decayed)	MT (Missing)	FT (Filled)
Percentage among population	22.6%	5.4%	0.5%	19.3%

Base: All 12-year old students  
2011: (N = 56 900)

The level of tooth decay experience in the 12-year old students and the proportion of students affected as found in the 2001 and 2011 survey are shown in Table 4.3 and Table 4.4. The tooth decay experience level had dropped while the proportion of students affected was also smaller.

**Table 4.3**  
**Level of tooth decay experience as measured by the DMFT index**  
**among 12-year old students in 2001 and 2011**

Tooth decay experience	2001 (N = 67 100)	2011 (N = 56 900)
Mean DMFT	0.8	0.4
Mean DT (Decayed)	0.1	0.1
Mean MT (Missing)	0.1	<0.05
Mean FT (Filled)	0.6	0.3

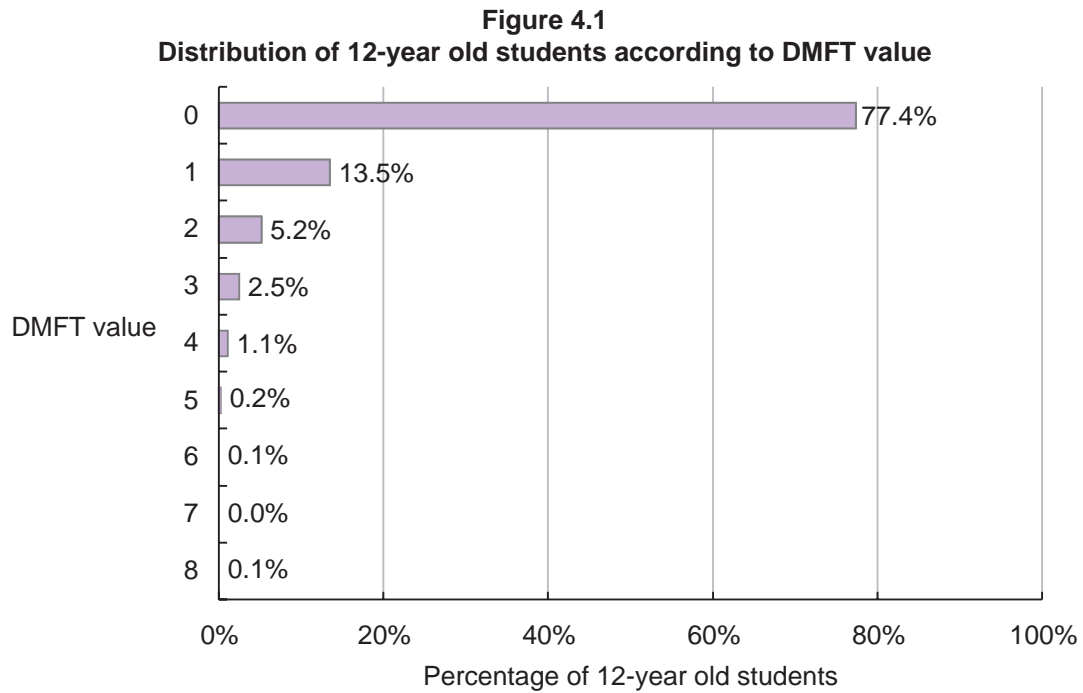
Base: All 12-year old students

**Table 4.4**  
**Percentage of 12-year old students with tooth decay experience**  
**in 2001 and 2011**

Tooth decay experience	2001 (N = 67 100)	2011 (N = 56 900)
DMFT	37.8%	22.6%
DT (Decayed)	6.9%	5.4%
MT (Missing)	3.1%	0.5%
FT (Filled)	33.8%	19.3%

Base: All 12-year old students

The distribution of 12-year old students according to their DMFT value is shown in Figure 4.1. Over three-quarters (77.4%) of the students were free from tooth decay experience. It was found that most of the affected students had only one tooth with decay experience while around 1.5% of the students had four or more teeth with decay experience.



Base: All 12-year old students  
2011: (N = 56 900)

### What was the gum condition of the students?

The gum condition of the 12-year old students was measured by the *Community Periodontal Index* (CPI), and the results are shown in Table 4.5 and Table 4.6.

**Table 4.5**  
Gum condition as measured by CPI among 12-year old students

Gum condition	Healthy gum in all parts of the mouth	No calculus but bleeding gum in some parts of the mouth	Calculus present in some parts of the mouth
Percentage among population	13.8%	63.8%	22.4%

Base: All 12-year old students who received examination on gum condition  
2011: (N = 55 900)

**Table 4.6**  
Mean number of sextants with healthy gum, bleeding gum and calculus in 12-year old students

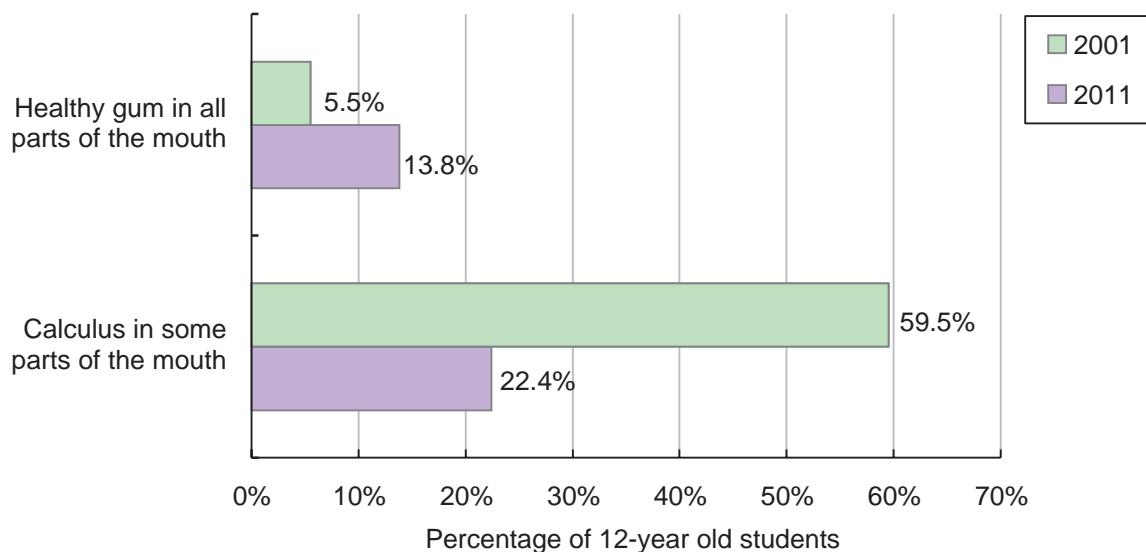
Gum condition	Healthy gum	No calculus but bleeding gum	Calculus present
Mean number of sextants (6 sextants per person)	3.5	2.1	0.4

Base: All 12-year old students who received examination on gum condition  
2011: (N = 55 900)



Comparing the results of this survey to the 2001 survey, the gum condition of the 12-year old students had shown improvement. In the present survey, a larger proportion of students (13.8% as compared with 5.5% in the 2001 survey) had healthy gum in all parts of their mouth and a smaller proportion of them (22.4% as compared with 59.5% in the 2001 survey) had calculus present in some parts of the mouth (Figure 4.2).

**Figure 4.2**  
Percentage of 12-year old students according to gum condition  
in 2001 and 2011



Base: All 12-year old students who received examination on gum condition

2001: (N = 66 600)

2011: (N = 55 900)

**The level of tooth decay experience was very low among the 12-year old students.**

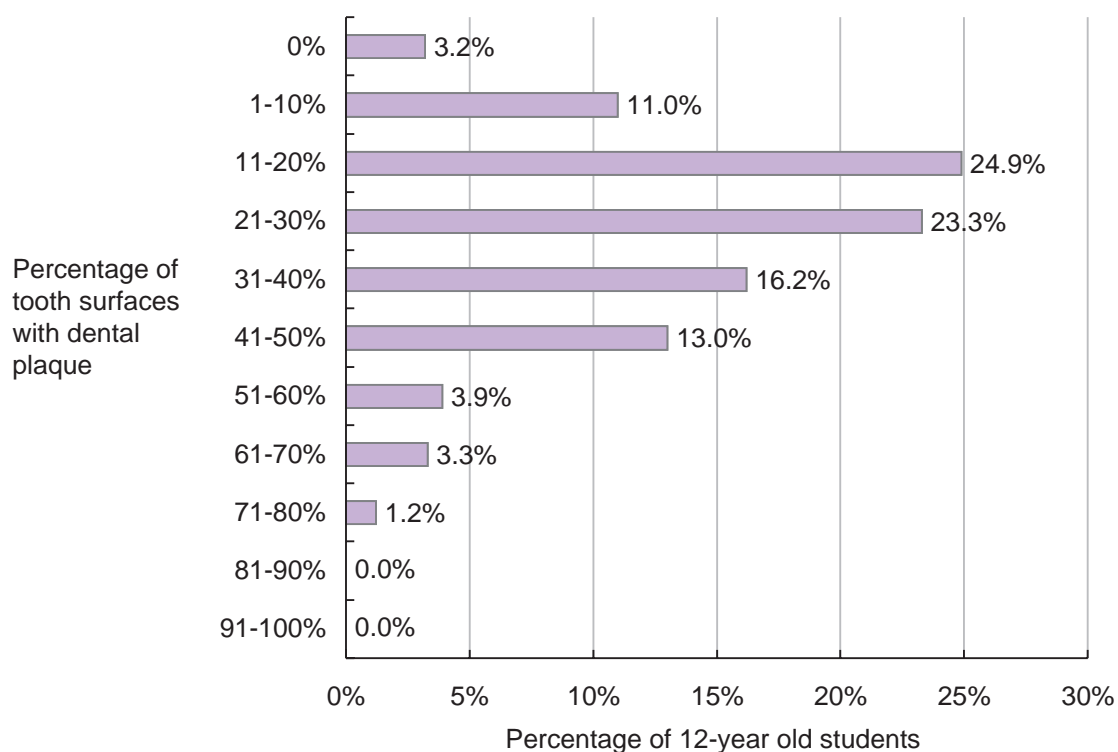
When compared with 2001, both the level of tooth decay experience and the proportion of students affected by decay experience had dropped. Most of the students with decay experience had only one tooth affected and a large proportion of the decayed teeth were already treated.

**The gum health of 12-year old students had shown improvement when compared with 2001.** More students had healthy gum and fewer students had calculus. There is still room for further improvement as bleeding gum remained to be found in some parts of the mouth of most students.

**Tooth status - how clean were the teeth?**

The cleanliness of the teeth of the 12-year old students was measured by the percentage of tooth surfaces with visible dental plaque. The mean percentage of tooth surfaces with visible dental plaque in the 12-year old students was 27.0% and the distribution of students according to the percentage is shown in Figure 4.3. Only 8.4% (4 700) of the students were found to have visible dental plaque on more than 50% of their tooth surfaces.

**Figure 4.3**  
**Distribution of 12-year old students according to level of teeth cleanliness as measured by the percentage of tooth surfaces with visible dental plaque**



Base: All 12-year old students  
 2011: (N = 56 900)

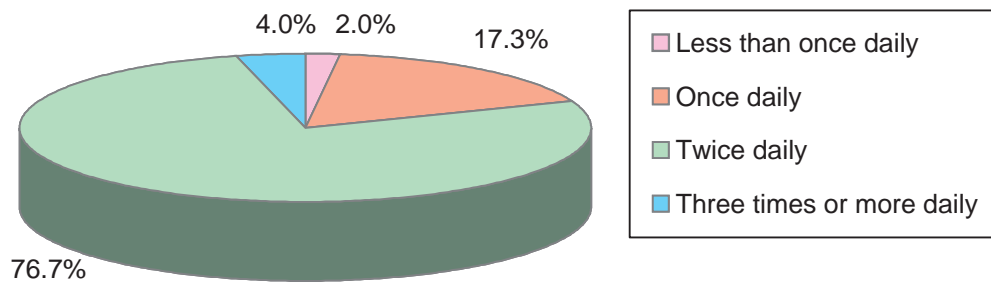
Comparing the findings of this survey with the 2001 survey, there was improvement in the level of teeth cleanliness of the 12-year old students. The mean percentage of tooth surfaces with visible dental plaque had dropped from 36.8% to 27.0% and the proportion of students with visible dental plaque on more than half of their tooth surfaces had dropped from 28.7% to 8.4%.

## How did the 12-year old students practise oral self-care?

### Toothbrushing - how often did the students brush?

The toothbrushing habit among 12-year old students is shown in Figure 4.4. Only 2.0% (1 100) of the students reported that they brushed less than once a day. Up to 80.7% (45 900) of the students brushed twice or more a day and the proportion of such students had increased when compared with 2001 (Figure 4.5).

**Figure 4.4**  
Distribution of 12-year old students  
according to the toothbrushing frequency



Base: All 12-year old students  
2011: (N = 56 900)

**Figure 4.5**  
**Distribution of 12-year old students according to**  
**the toothbrushing frequency in 2001 and 2011**

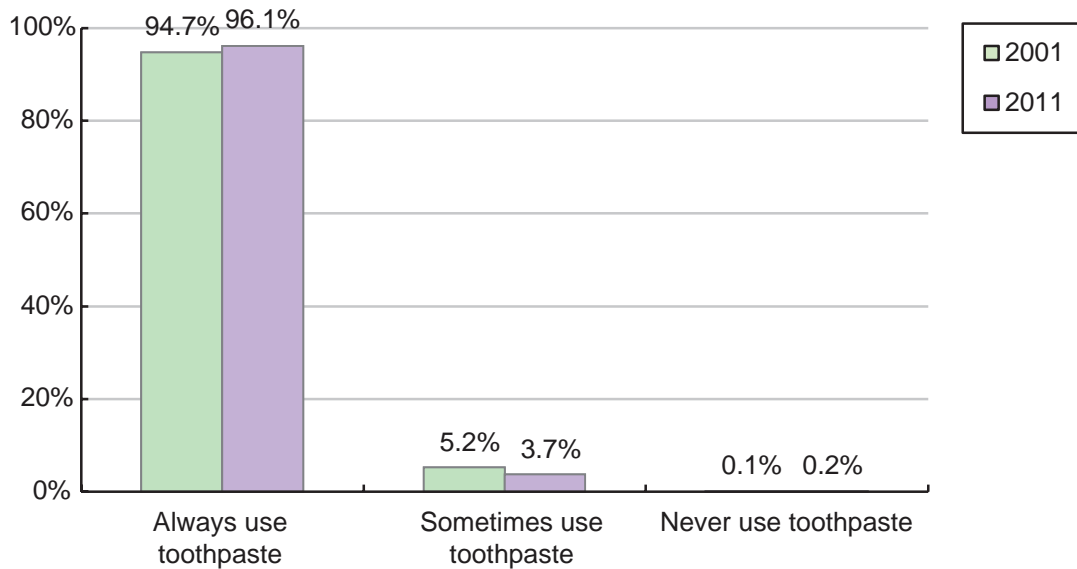


Base: All 12-year old students  
2001: (N = 67 100)  
2011: (N = 56 900)

### Toothbrushing - was fluoride toothpaste used?

Among the 12-year old students, 96.1% (54 700) of them reported that they always used toothpaste when they brushed their teeth. Similar finding was observed in the 2001 survey (Figure 4.6).

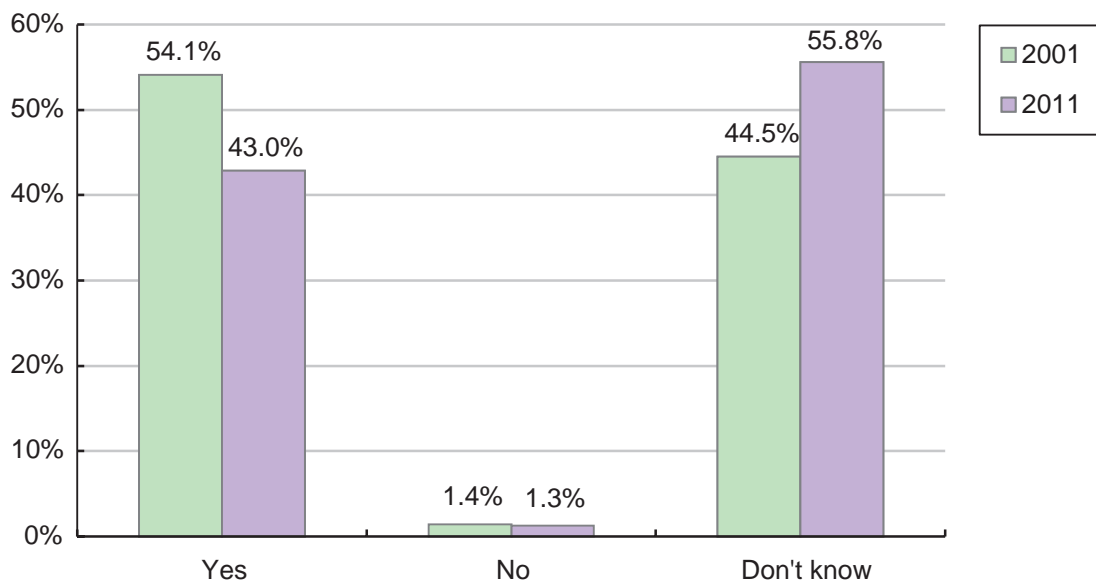
**Figure 4.6**  
Distribution of 12-year old students according to  
use of toothpaste in 2001 and 2011



Base: All 12-year old students  
2001: (N = 67 100)  
2011: (N = 56 900)

Students who used toothpaste were further asked if the toothpaste they had been using contained fluoride. Only 43.0% (24 400) of them reported that the toothpaste they used contained fluoride while 55.8% (31 600) of them did not know whether fluoride was present or not. Comparing the result of this survey to the 2001 survey, more 12-year old students were not sure if their toothpaste contained fluoride (Figure 4.7).

**Figure 4.7**  
**Distribution of 12-year old students according to their knowledge on whether their toothpaste contained fluoride in 2001 and 2011**

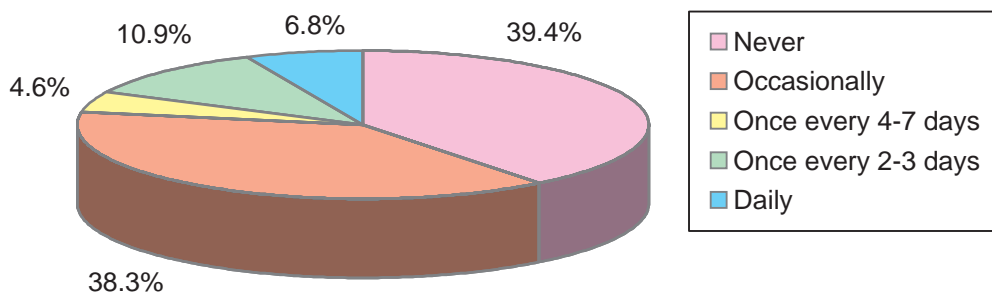


Base: All 12-year old students who responded to the question  
 2001: (N = 67 100)  
 2011: (N = 56 700)

**Flossing – did the students use dental floss?**

Up to 60.6% (34 500) of the students reported that they had used dental floss as compared with 23.9% in 2001. However, most of the students who used dental floss only did so occasionally (Figure 4.8).

**Figure 4.8**  
**Distribution of 12-year old students according to**  
**frequency of using dental floss**

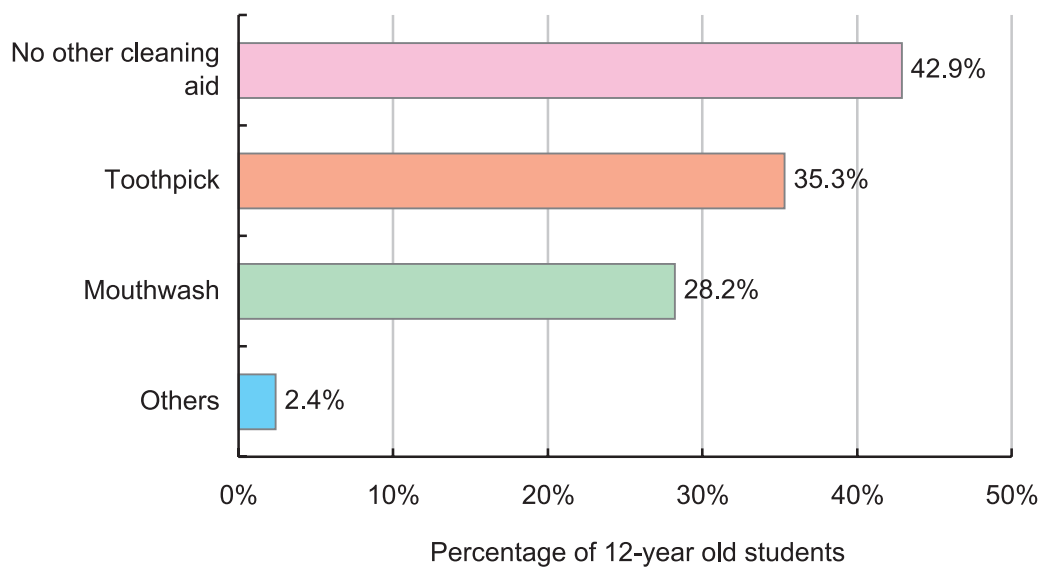


Base: All 12-year old students  
 2011: (N = 56 900)

**Did the students use additional oral cleaning aids?**

Students were asked whether they used any additional oral cleaning aids to clean their teeth and the results are shown in Figure 4.9. The proportion of students who reported use of toothpick and mouthwash in this survey (35.3% used toothpick and 28.2% used mouthwash) and the last survey in 2001 (40.4% used toothpick and 28.3% used mouthwash) were similar.

**Figure 4.9**  
**Percentage of 12-year old students**  
**according to use of oral cleaning aids**  
**(Multiple answers)**



Base: All 12-year old students  
 2011: (N = 56 900)

**The toothbrushing habit of the 12-year old students was good.** Most of the students brushed their teeth twice a day and nearly all of them used toothpaste. Half of the students, however, were not sure if their toothpaste contained fluoride.

**Up to 60.6% of the student used dental floss.** Most of them, however, were only occasional users.



## Snacking habit

Students were asked to report how frequently they snacked between meals. One-third of the students reported that they snacked at least once daily but only 4.7% (2 700) snacked three times or more per day (Table 4.7).

**Table 4.7**  
Distribution of 12-year old students according to snacking frequency

Snacking habit	Percentage of students (N = 56 900)
No daily snacking habit	67.5%
Snack once per day	19.0%
Snack 2 times per day	8.9%
Snack 3 times or more per day	4.7%

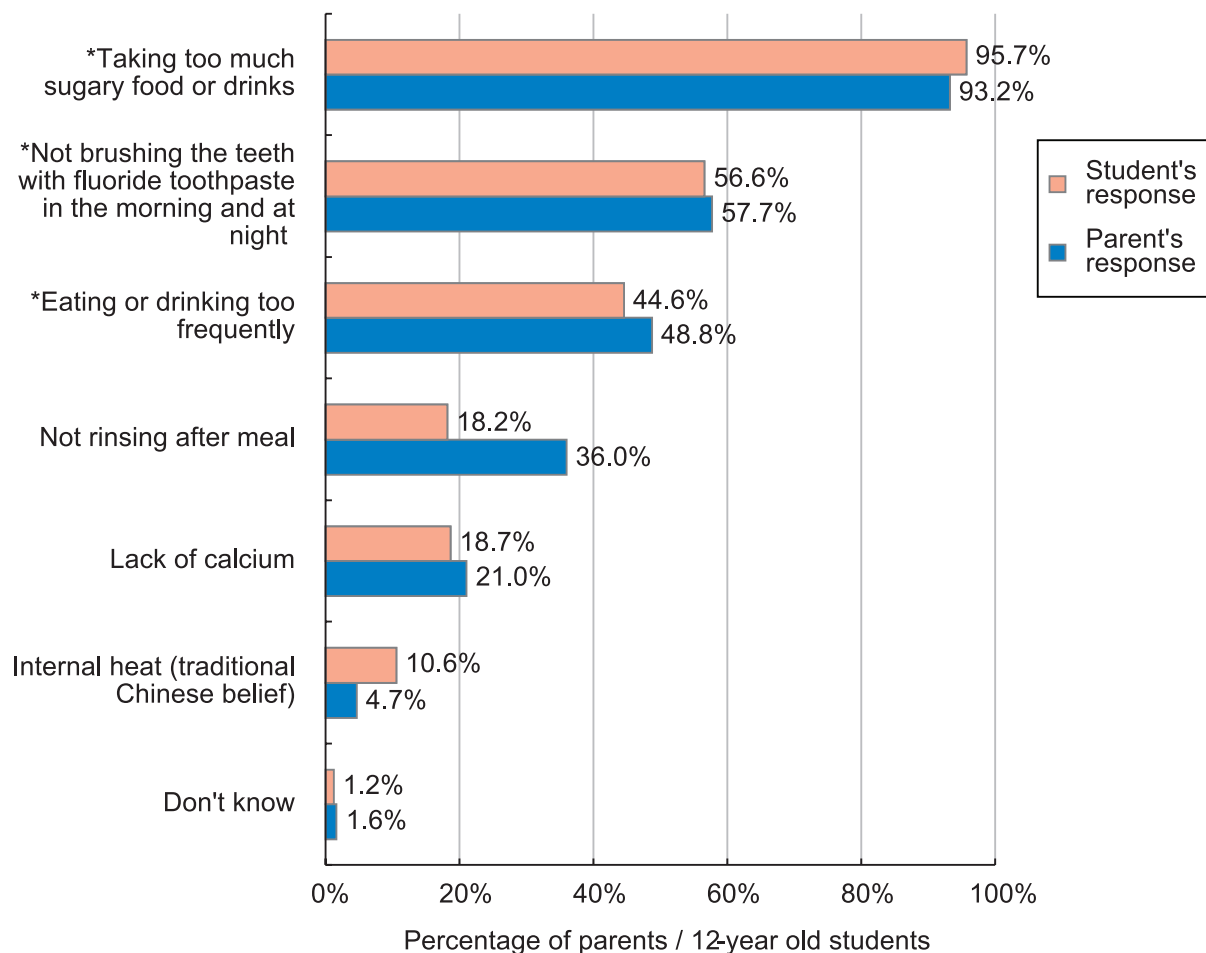
Base: All 12-year old students

## What did the students and their parents know about dental diseases?

### What did the students and their parents know about the factors which might increase the risk of tooth decay?

Students and parents were asked what they considered were factors which might increase the risk of tooth decay and the results are shown in Figure 4.10. The students and parents basically shared similar set of beliefs. The vast majority of them in both groups knew that *taking too much sugary food or drinks* could increase the risk of tooth decay. About half of the students and a similar proportion of parents could identify *not brushing the teeth with fluoride toothpaste in the morning and at night* and *eating or drinking too frequently* as risk factors for decay. Only small proportions of both students and parents had the misconceptions that *lack of calcium* and *internal heat (traditional Chinese belief)* were risk factors. There was, however, one area in which the students and parents differed in their perceptions. Only 18.2% (10 200) of students had the misconception that *not rinsing after meal* was a risk factor for tooth decay but up to 36.0% (20 500) of parents held that belief.

**Figure 4.10**  
**Percentage of 12-year old students and their parents**  
**according to the perceived factors which might increase the risk of tooth decay**  
**(Multiple answers)**



\*Relevant factors

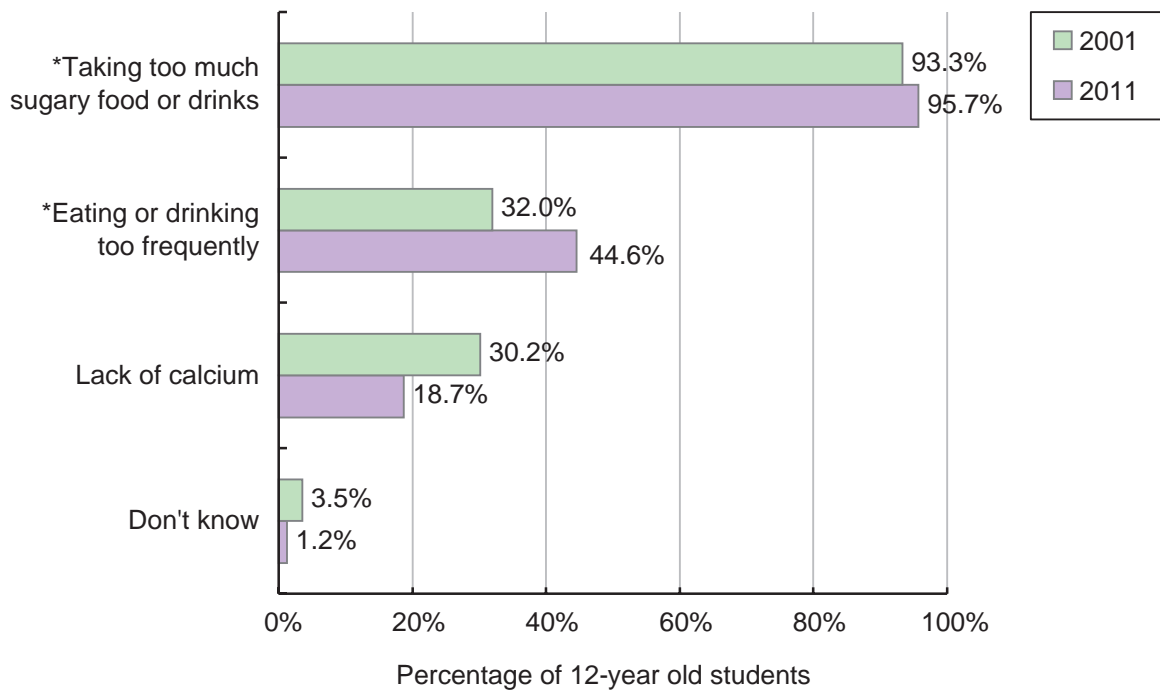
Base: All parents / 12-year old students who responded to the question

Parents: (N = 56 900)

Students: (N = 56 200)

Comparing the findings of this survey to the 2001 survey on the perceptions of 12-year old students (Figure 4.11) and their parents (Figure 4.12) on risk factors for tooth decay, more students as well as parents were aware of the fact that *eating or drinking too frequently* was a risk factor for tooth decay while fewer of them considered *lack of calcium* as a risk factor.

**Figure 4.11**  
**Percentage of 12-year old students according to the perceived factors**  
**which might increase the risk of tooth decay in 2001 and 2011**  
**(Multiple answers)**



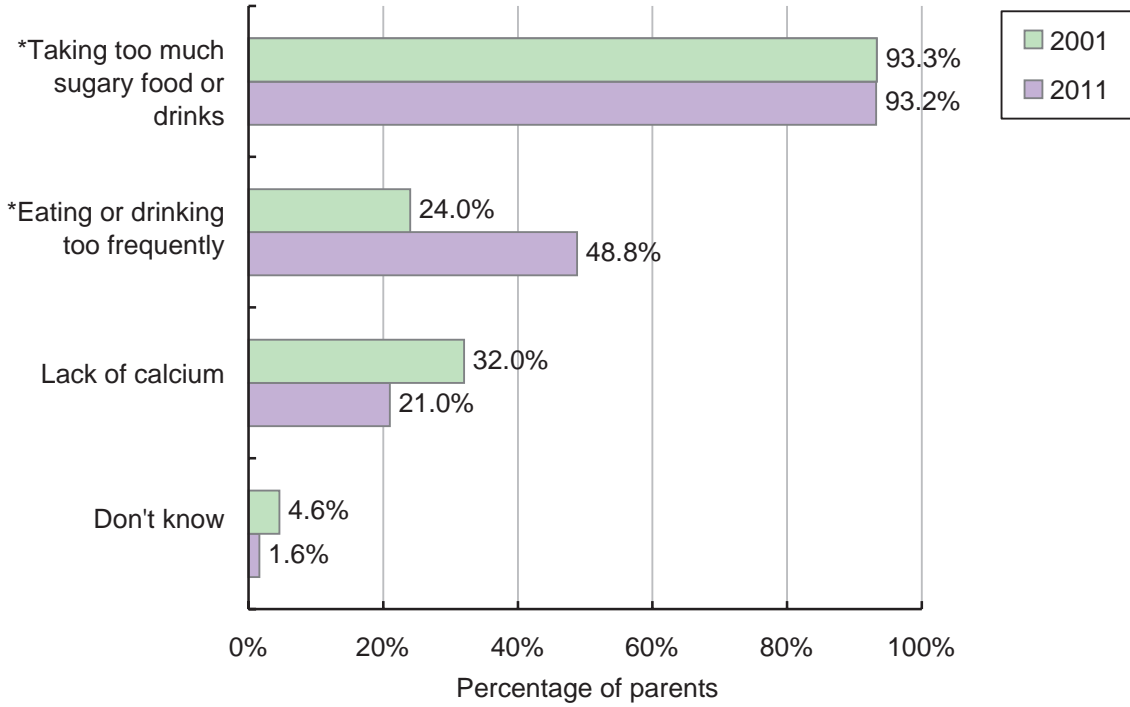
\*Relevant factors

Base: All 12-year old students who responded to the question

2001: (N = 67 100)

2011: (N = 56 200)

**Figure 4.12**  
**Percentage of parents of 12-year old students according to the perceived factors which might increase the risk of tooth decay in 2001 and 2011 (Multiple answers)**



\*Relevant factors

Base: All parents of 12-year old students who responded to the question

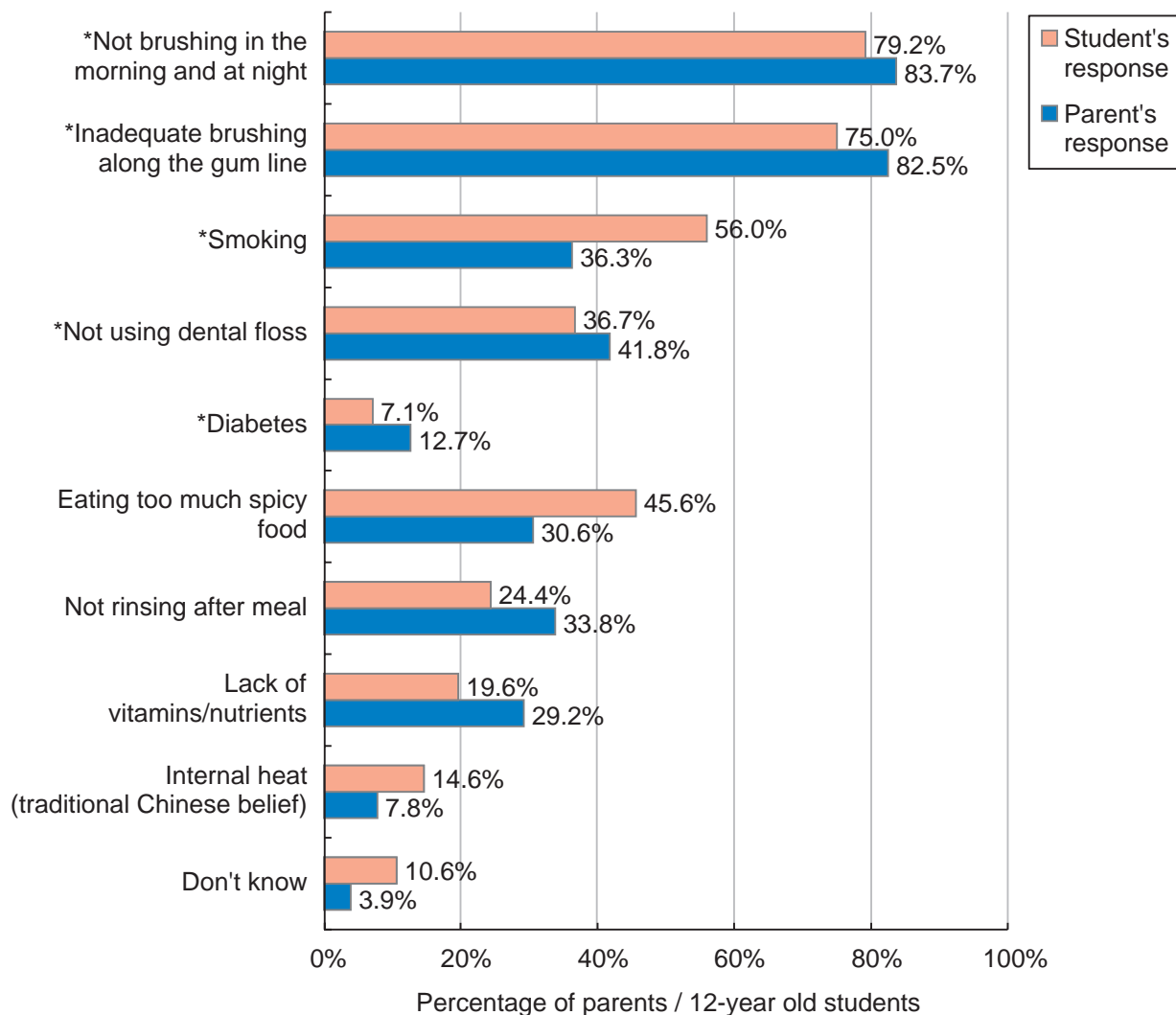
2001: (N = 67 100)

2011: (N = 56 900)

### What did the students and their parents know about the factors which might increase the risk of gum disease?

Students and parents were asked what they considered were factors which might increase the risk of gum disease and the results are shown in Figure 4.13. Similar proportion of students and parents perceived *not brushing in the morning and at night, inadequate brushing along the gum line* and *not using dental floss* as risk factors for gum disease. Around half of the students and one-third of the parents knew that *smoking* was a risk factor for gum disease.

**Figure 4.13**  
**Percentage of 12-year old students and their parents**  
**according to the perceived factors which might increase the risk of gum disease**  
**(Multiple answers)**



\*Relevant factors

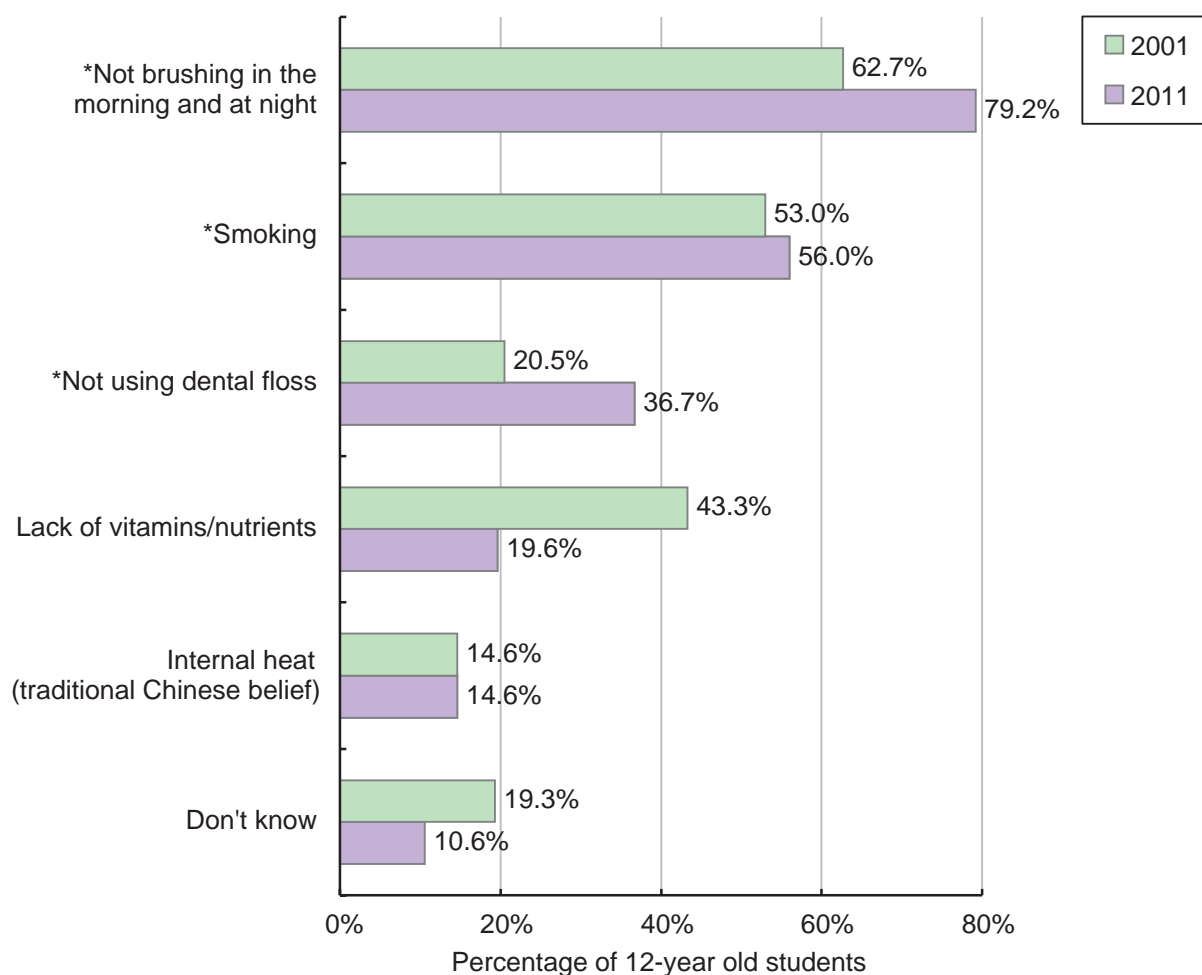
Base: All parents / 12-year old students who responded to the question

Parents: (N = 56 900)

Students: (N = 56 300)

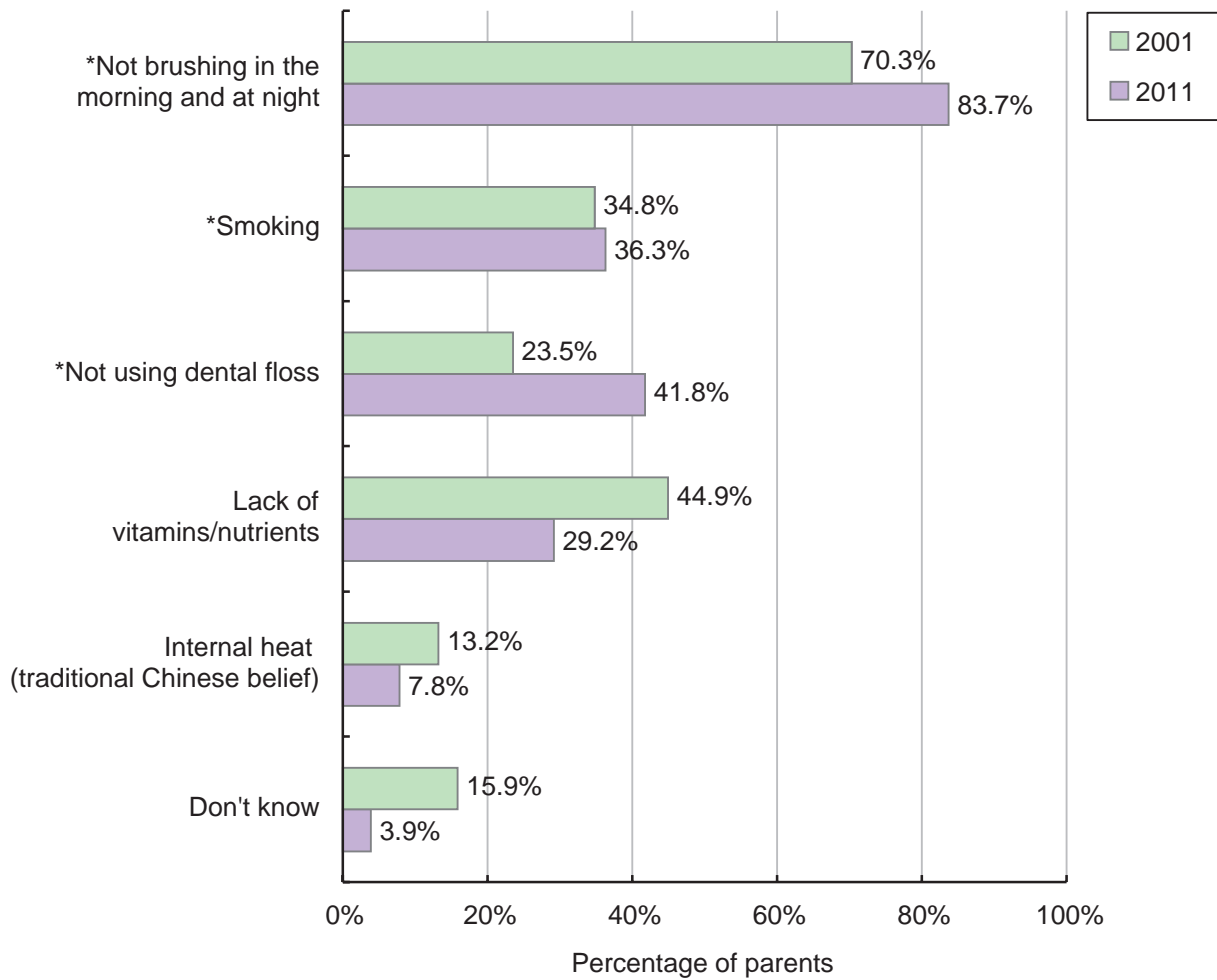
Comparing the findings of this survey to the 2001 survey, larger proportions of students as well as parents were aware of the fact that *not brushing in the morning and night* and *not using dental floss* were risk factors for gum disease. At the same time, there was a drop in both groups in the proportion of them who believed that *lack of vitamins /nutrients* was a risk factor (Figures 4.14 and 4.15).

**Figure 4.14**  
**Percentage of 12-year old students**  
**according to the perceived factors which might increase the risk of gum disease**  
**in 2001 and 2011**  
**(Multiple answers)**



\*Relevant factors  
 Base: All 12-year old students who responded to the question  
 2001: (N = 67 100)  
 2011: (N = 56 300)

**Figure 4.15**  
**Percentage of parents of 12-year old students**  
**according to the perceived factors which might increase the risk of gum disease**  
**in 2001 and 2011**  
**(Multiple answers)**



\*Relevant factors

Base: All parents of 12-year old students who responded to the question

2001: (N = 67 100)

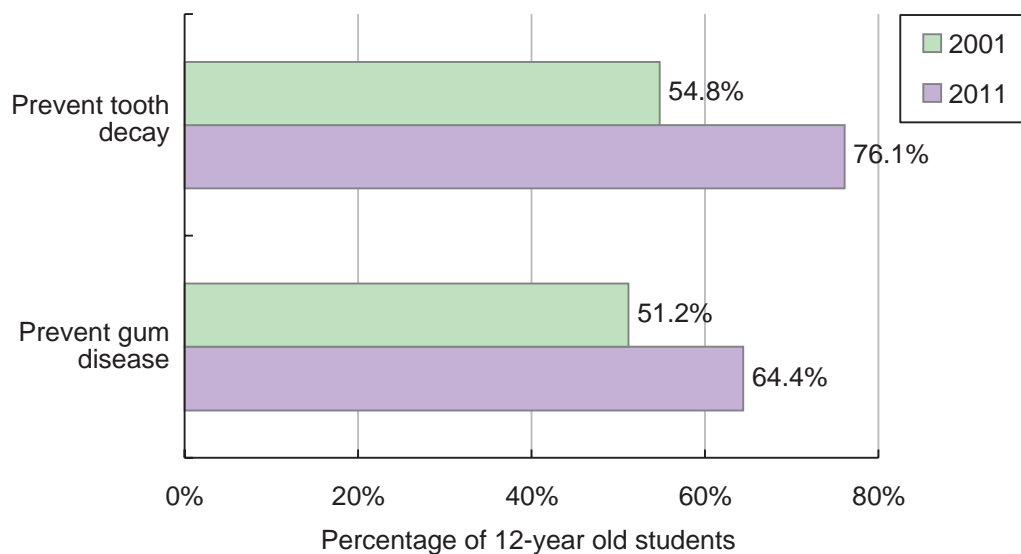
2011: (N = 56 900)

**Did the students and their parents consider regular checkup as a way to help prevent tooth decay and gum disease?**

Around three-quarters of 12-year old students and a comparable proportion of their parents considered regular dental checkup as a way to help prevent tooth decay. When the same question was asked on prevention of gum disease, more parents believed in the benefit of regular checkup when compared with the students.

Comparing the result of this survey to the 2001 survey, more 12-year old students and their parents believed in the value of dental checkup in the prevention of both tooth decay and gum disease (Figures 4.16 and 4.17).

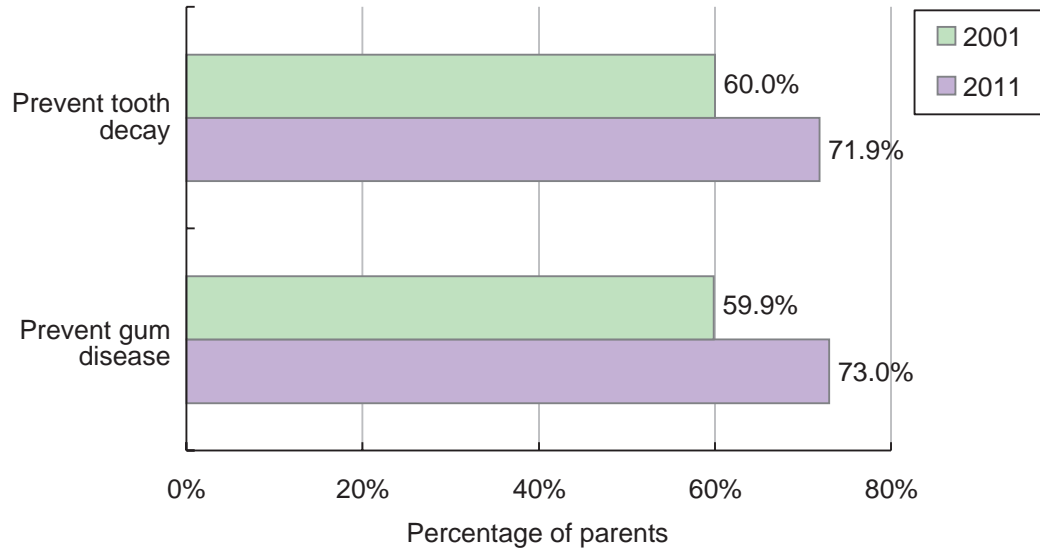
**Figure 4.16**  
**Percentage of 12-year old students according to the usefulness of dental checkup in the prevention of tooth decay and gum disease in 2001 and 2011**



Base (prevention of tooth decay): All 12-year old students who responded to the question  
 2001: (N = 67 100)  
 2011: (N = 56 100)  
 Base (prevention of gum disease): All 12-year old students who responded to the question  
 2001: (N = 67 100)  
 2011: (N = 56 400)



**Figure 4.17**  
**Percentage of parents of 12-year old students according to the usefulness of dental checkup in the prevention of tooth decay and gum disease in 2001 and 2011**

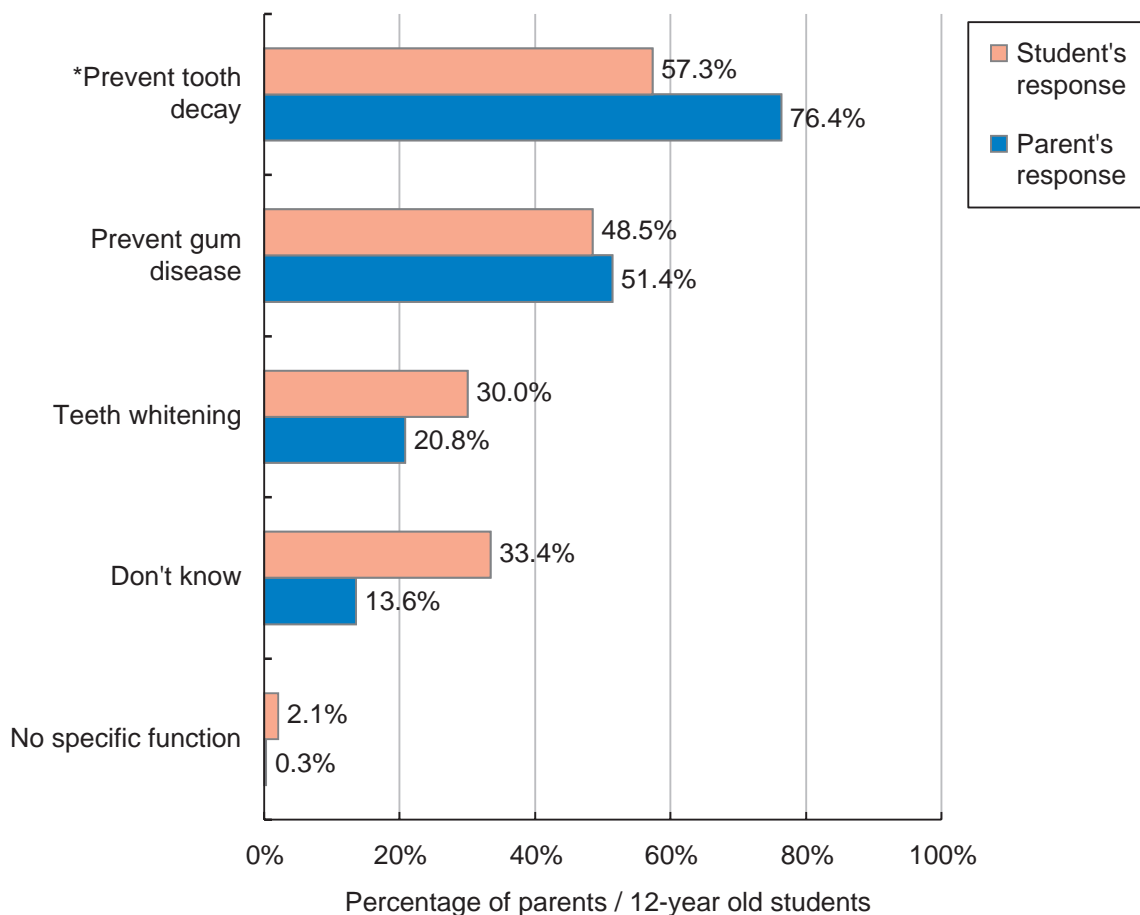


Base: All parents of 12-year old students who responded to the question  
 2001: (N = 67 100)  
 2011: (N = 56 900)

**Did the students and their parents know about the benefit of fluoride ?**

The perceived benefit of fluoride as reported by 12-year old students and their parents are shown in Figure 4.18. Only 57.3% (32 300) of the students and 76.4% (43 400) of parents knew the benefit of fluoride in prevention of tooth decay. On the other hand, around half of the students and a similar proportion of parents had the misconception that fluoride was used to prevent gum disease while 30.0% (16 900) of students and 20.8% (11 800) of parents thought that fluoride was useful in teeth whitening.

**Figure 4.18**  
**Percentage of 12-year old students and their parents**  
**according to their knowledge on the benefits of fluoride**  
**(Multiple answers)**



\* Relevant benefit

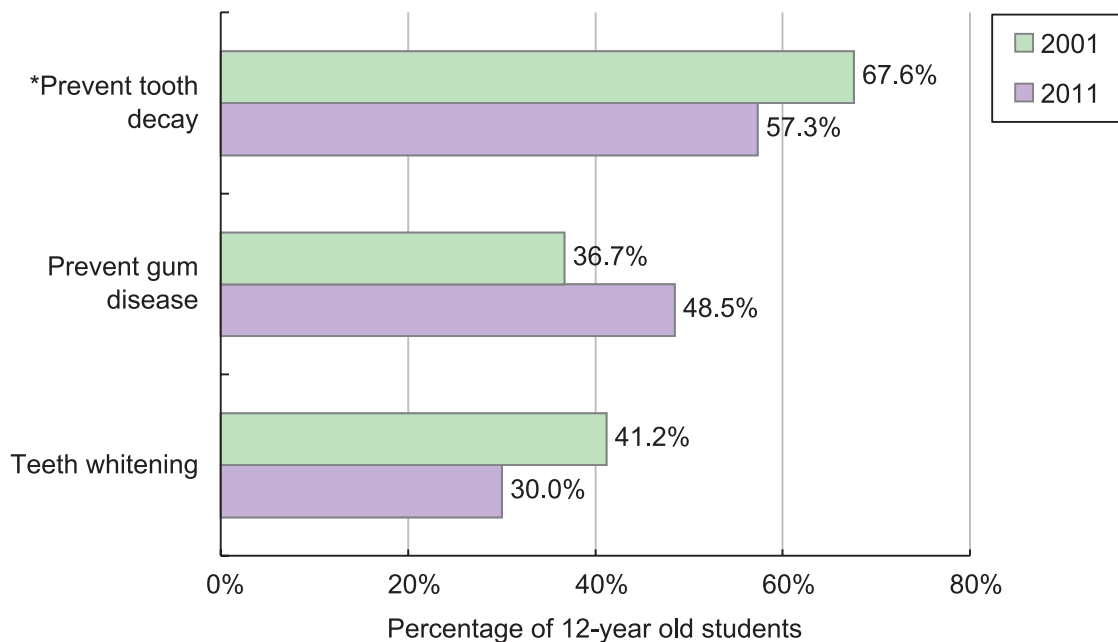
Base: All parents / 12-year old students who responded to the question

Parents: (N = 56 900)

Students: (N = 56 400)

Comparing the findings of this survey and the 2001 survey, the proportion of 12-year old students who knew the benefit of fluoride in prevention of tooth decay had dropped. In addition, more 12-year old students as well as their parents had the misconception that fluoride was useful for the prevention of gum disease. On the other hand, a smaller proportion of students and parents had the misconception that fluoride was useful in teeth whitening (Figures 4.19 and 4.20).

**Figure 4.19**  
**Percentage of 12-year old students according to their knowledge**  
**on the benefits of fluoride in 2001 and 2011**  
**(Multiple answers)**



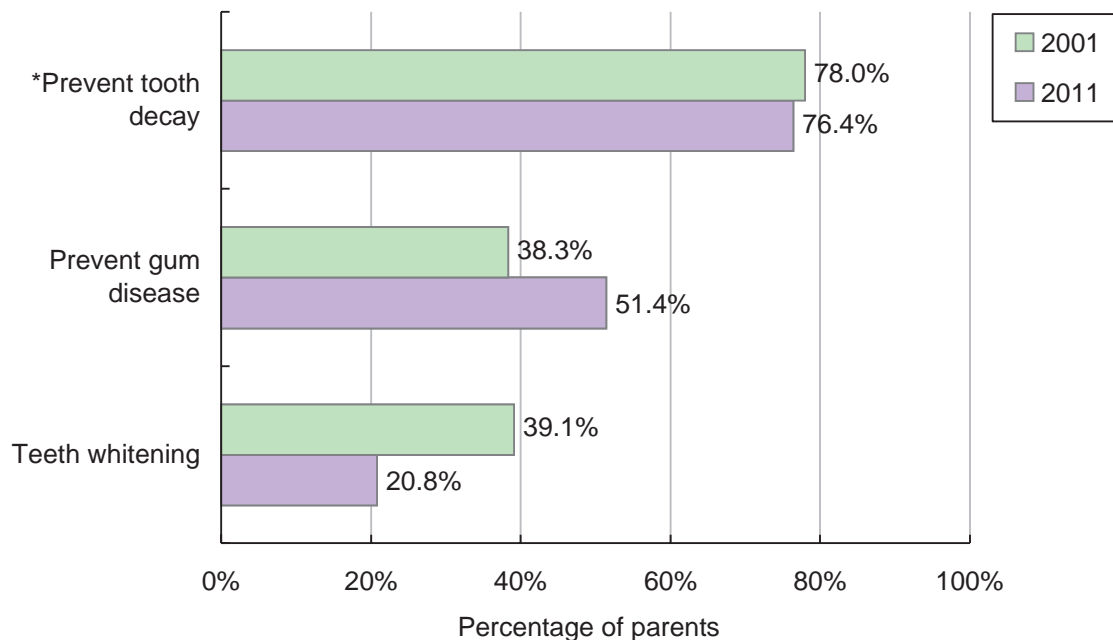
\* Relevant benefit

Base: All 12-year old students who responded to the question

2001: (N = 67 100)

2011: (N = 56 400)

**Figure 4.20**  
**Percentage of parents according to their knowledge**  
**on the benefits of fluoride in 2001 and 2011**  
**(Multiple answers)**



\* Relevant benefit  
 Base: All parents of 12-year old student  
 2001: (N = 67 100)  
 2011: (N = 56 900)

**Compared with 2001, more students and parents had relevant knowledge on the risk factors for tooth decay and gum disease.** Many of them, however, still did not know the benefit of fluoride in the prevention of tooth decay.

**Up to three-quarters of the students and parents considered regular checkup as a way to help prevent tooth decay.** More parents believed in the benefit of regular checkup in the prevention of gum disease when compared with the students.

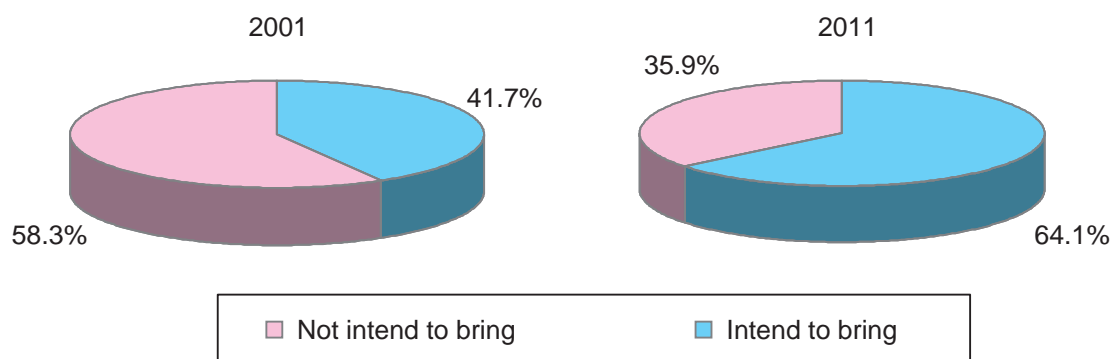
## What was the pattern of utilisation of oral health care services among the 12-year old students?

### Did the parents intend to bring the 12-year old students to seek regular dental checkup?

In Hong Kong, most primary school children receive oral health care in the School Dental Care Service of the Department of Health and the participation rate was over 90%. Some of the children might receive care from other dentists. The 12-year old students covered in this survey had just finished primary school and most of them would likely have received some form of oral health care in the past.

Parents were asked whether they intended to bring the 12-year old students to seek regular dental checkup and 64.1% (36 400) of them indicated that they would do so. This was an improvement from the findings of the 2001 survey where only 41.7% of parents gave the same response (Figure 4.21).

**Figure 4.21**  
Distribution of parents according to whether they intended to bring their 12-year old students to seek regular dental checkup in 2001 and 2011



Base: All parents of 12-year old students  
2001: (N = 67 100)  
2011: (N = 56 900)

### How many students had visited the dentist after entering secondary school?

Up to 31.8% (18 100) of the 12-year old students had visited the dentist after entering secondary school. This was an increase from the 20.9% found in the last survey in 2001.

The types of treatment received by the 12-year old students during these dental visits are shown in Table 4.8. Majority of them received professional tooth cleaning (scaling). A smaller proportion of students received curative treatment such as filling, orthodontic treatment and removal of teeth.

**Table 4.8**  
**Type of treatment received in latest dental visit by 12-year old students**  
**who visited dentist after entering secondary school**

Type of treatment received	Percentage of students (N = 18 000)
Professional tooth cleaning	90.5%
Filling	18.1%
Orthodontic treatment	13.3%
Removal of teeth (including removal of permanent teeth for orthodontic reason and removal of primary teeth)	15.2%
Root canal treatment	2.5%
Others	3.9%

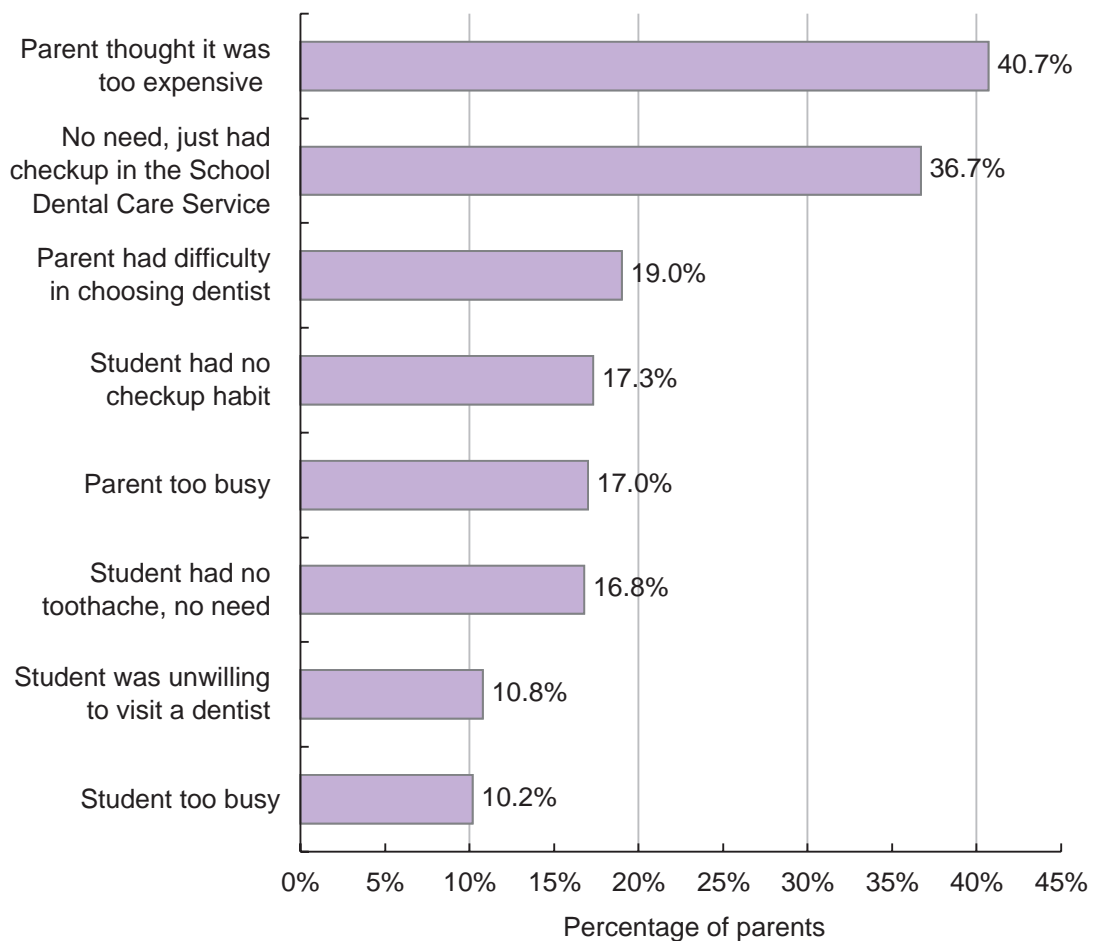
Base: All 12-year old students who received dental treatment after entering secondary school and answered the question

## What were the barriers to students seeking oral health care services after entering secondary school ?

### What were the reasons for parents not intending to bring the 12-year old students to seek regular dental checkup ?

Parents who did not intend to bring the 12-year old students to seek regular dental checkup after entering secondary schools were asked for the reasons for not doing so. *Parent thought it was too expensive* and *no need as the student just had checkup in School Dental Care Service* were the most commonly reported reasons (Figure 4.22).

**Figure 4.22**  
**Percentage of parents according to their reported reasons of not intending to bring the 12-year old students to seek regular dental checkup (Multiple answers)**



Base: All parents of 12-year old students who responded to the question  
 2011: (N = 20 400)

Comparing the findings of this survey to the 2001 survey on the parents who did not intend to seek regular dental checkup for the students, up to 61.0% of them in 2001 indicated that dental checkup was too expensive but in the present survey the proportion of such parents had dropped to 40.7%. In addition, in the 2001 survey 38.9% of the no checkup parents indicated that they had no perceived need due to the absence of pain in the students. In the present survey, only 16.8% of such parents gave this response.

### **What was the proportion of 12-year old students covered by parents' dental schemes?**

Around 26.8% (15 300) of the parents of the 12-year old students reported that they had dental scheme coverage and 82.5% (12 600) of such coverage were provided by employers. Among the parents with dental scheme coverage, 64.1% (9 800) of them indicated that the students were also covered. This was equivalent to 17.2% of all 12-year old students.

In 2001, only 16.0% of parents had dental scheme coverage and 14.3% of all students were covered. There had been a rise in the proportion of parents and students who were covered.

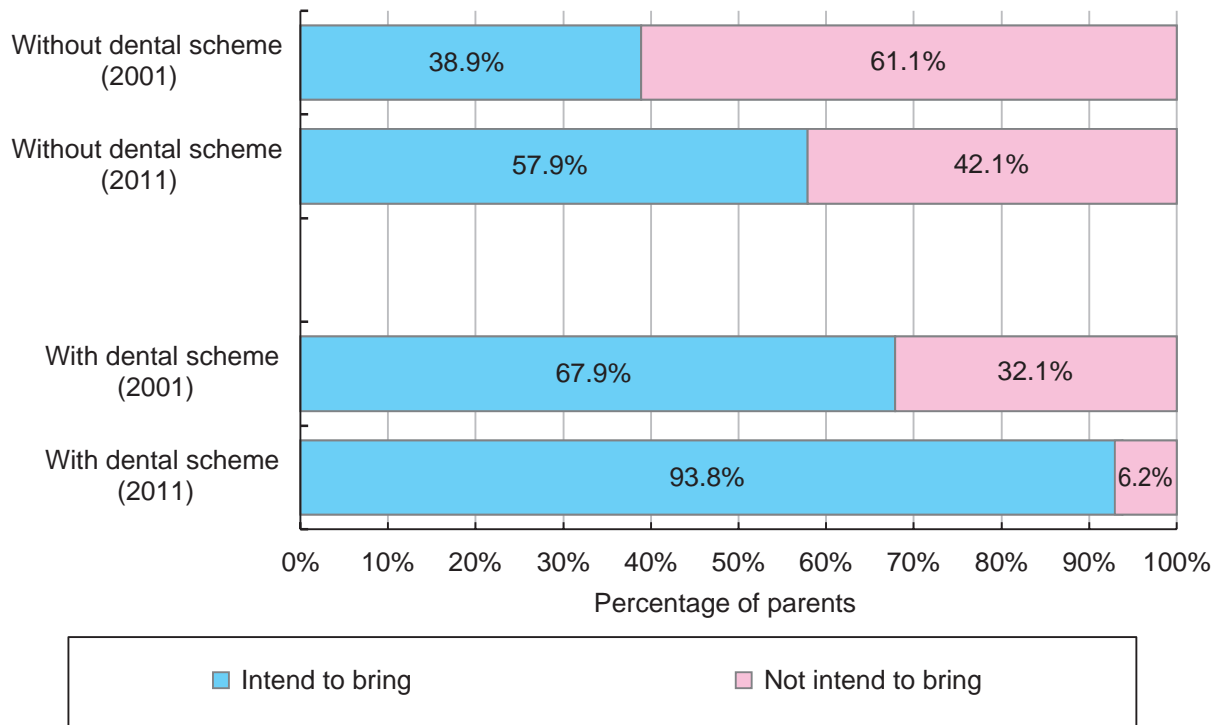
### **Dental Scheme and parents' intention to bring the students to seek regular dental checkup**

Up to 93.8% (9 100) of the parents of those students who were covered by dental scheme reported the intention to bring the students to seek regular dental checkup while only 57.9% (27 300) of parents of those students who were not covered by dental scheme intended to do so.

Comparing the finding of this survey to the 2001 survey, more parents intended to bring the students to seek regular dental checkup in both the covered and non-covered group (Figure 4.23).



**Figure 4.23**  
**Distribution of parents of 12-year old students according to**  
**whether they intended to bring the students to seek regular dental checkup**  
**in 2001 and 2011**



Base (without dental scheme): All parents of those 12-year old students not covered by dental scheme who answered the questions

2001: (N = 57 500)

2011: (N = 47 100)

Base (with dental scheme): All parents of those 12-year old students covered by dental scheme who answered the questions

2001: (N = 9 600)

2011: (N = 9 800)

**Two-thirds of the parents intended to bring the 12-year old students to seek regular dental check up.** Up to 31.8% of the students had already visited the dentist after entering secondary school and the treatment they received were mostly professional tooth cleaning.

**Parents had a greater tendency to bring the 12-year old students to regular dental checkup if the students were covered by dental scheme.** Among those parents who did not intend to bring the students to seek regular dental checkup, 40.7% of them considered the cost as one of the reasons.

**Compared with 2001, more parents intended to bring the 12-year old students to seek regular dental checkup in both the group covered by dental scheme and the group not covered by dental scheme.**

## Chapter 4 – Summary

**The dental condition of 12-year old students was very good.**

There was very little tooth decay experience among the 12-year old students. For the students with decay experience, most of them had only one affected tooth and a large proportion of the decay were already treated.

**The gum condition of the 12-year old students had improved when compared with 2001.** There had been a drop in the proportion of students having calculus.

**The oral health care habits of the 12-year old students were generally satisfactory.**

Both the students and their parents had improved knowledge on the risk factors for tooth decay and gum disease. The toothbrushing habit of the students was good and there had been improvement in the cleanliness of the teeth as measured by the percentage of tooth surfaces covered by visible dental plaque. More students had been using dental floss but most of them only did so occasionally. There is the need to encourage them to develop a daily flossing habit.

**Two-thirds of the parents intended to bring the 12-year old students to seek regular dental checkup.** Parents had a greater tendency to bring the students to seek regular dental checkup if the students were covered by dental scheme. Compared with 2001, the proportion of parents who intended to bring the students to regular dental checkup had increased in both the group with dental scheme and the group not covered.

## Way forward

It was the finding of the 2001 survey that the level of tooth decay experience was on a downward trend. Such a trend continued in the past decade and tooth decay experience was found to have further dropped to a very low level. In addition, improvement was noted in the gum health, the oral health knowledge and the self oral care habit of the 12-year old students. Besides the students, parents were also found to have better oral health knowledge. A larger proportion of them believed in the value of regular dental checkup and more of them indicated that they intended to bring the students to checkup.

While positive development has been observed, there is still room for improvement. Although there had been a drop in the proportion of students having calculus, most students still had bleeding gum in parts of their mouths. Many of them only used floss occasionally and there is a need to further motivate them to adopt a daily flossing habit. The survey also showed that, despite the improvement over the years, a sizable proportion of students and parents were still unaware of the fact that frequent eating or drinking was a risk factor for tooth decay. In addition, only half of the students could relate smoking to gum disease. The harmful effect of frequent eating and drinking on the teeth and smoking on the gum should be reinforced by the dental profession to the students and their parents in future oral and general health education.

While tooth decay is not a great concern for this age group, it is important to keep vigilant to prevent it from developing when the students grow up. The survey shows that, compared with ten years ago, smaller proportions of students and their parents knew whether fluoride was present in the toothpaste the students used. Their knowledge on the benefit of fluoride was also inadequate. Effort should be made to strengthen the concept of use of fluoride toothpaste and to let the students and their parents know the benefit of fluoride.

# CHAPTER 5

## 35 to 44-year old adults

### **Introduction**

The 35 to 44-year old age group is an index age group recommended by the WHO for monitoring the oral health conditions of adults. In this Oral Health Survey, data were collected to monitor the oral health status and dental service utilisation patterns of those in this age group. The information collected will be used for oral health care planning and oral health promotion in the future.

### **Survey objectives**

The objectives of the survey of the 35 to 44-year old adult population were:

1. to assess the oral health conditions;
2. to collect information on the oral health care behaviour together with the related barriers and facilitators; and
3. to assess the oral health needs, including dental treatment need, need related to oral health care behaviour and oral health knowledge.

### **Sample design**

A sample of 8 514 addresses in Hong Kong was randomly selected by systematic replicate sampling approach. For sample selection, records of quarters in the Frame of Quarters maintained by the Census and Statistics Department were first sorted by geographical area and type of quarters (records of area segments are sorted by geographical area only). The addresses of quarters were drawn systematically to form replicates according to a fixed sampling interval after selecting a random start number, and 17 replicates were selected. All the 35 to 44-year old adults living in these addresses (excluding foreign domestic helpers, inmates of institutions and persons living on board vessels) were identified for the oral health survey.

## Data collection method

A household interview was first carried out in the sample of addresses to identify 35 to 44-year old adults and to conduct the first questionnaire interview. A random sample of these adults was then invited to participate in a follow-up clinical oral examination and the second questionnaire interview conducted later by an outreaching fieldwork team (each comprised a dentist and a dental surgery assistant). Clinical oral examinations were performed by dentists using portable equipment, either at the home of the selected subjects or at a designated examination centre set up by the Department of Health.

To ensure consistency among multiple examiners and interviewers on recording the survey data, training and calibration sessions were arranged prior to fieldwork. Follow-up calibration sessions were performed during the fieldwork so as to minimise the variability among the examiners and interviewers.

## Enumeration results

Among the addresses in the sample, a total of 1 160 persons aged 35 to 44 were found and 530 of them participated in oral examinations, representing a response rate of 46%. Since more intensive subject recruitment strategy was employed, the response rate was much higher than the last survey conducted in 2001 (27%). Comparisons of the oral health related data such as dental checkup habit and oral hygiene habit were made between the adults who had the clinical oral examination and those who had not. In general, the differences were insignificant.

After grossing up, the survey estimates can be inferred to those of the study population (1 062 900 persons\*) during the survey period.

\* An estimate of 1 062 900 land-based non-institutionalised adults (excluding foreign domestic helpers, inmates of institutions and persons living on board vessels) aged 35-44 was sourced from the findings of the General Household Survey for Q1 2011 conducted by the Census and Statistics Department.

Based on the previous oral health survey experience, some new information was collected in this survey on the oral health status (especially the gum health) and oral health behaviour (especially the barriers and facilitators) of the adults. No comparison was made for information not available in the 2001 survey. Readers who wish to have a summary of the survey findings and conclusions can go directly to the quick reference sections in green text boxes.

## What was the oral health status of 35 to 44-year old adults in Hong Kong?

### Tooth status - how many teeth were there?

Each adult had an average of 28.6 teeth and 99.8% (1 060 600) of them had at least 20 teeth (Table 5.1). There is no internationally agreed minimum acceptable number of teeth. For comparison purpose, the presence of 20 teeth has been used as the arbitrary minimum number of teeth. Both the number of teeth retained and the proportion of adults with 20 or more teeth were similar to those of 2001 (28.1 teeth and 99.2% with at least 20 teeth). In the present survey, no subject was found to have total tooth loss.

**Table 5.1**  
Percentage of adults with at least 20 teeth left in 2001 and 2011

Number of teeth left	2001 (N = 1 354 700)	2011 (N = 1 062 900)
≥ 20 teeth left	99.2%	99.8%

Base: All adults

Tooth loss was not a major problem among adults. On average, adults had 28.6 teeth and no adult was found to suffer total tooth loss in the present survey.

### Tooth status - what was the level of tooth decay experience?

The level of tooth decay experience as measured by the Decayed, Missing and Filled Teeth (DMFT) index is summarised in Table 5.2. The mean DMFT value among the adult population was 6.9. The mean number of teeth with untreated decay (DT) was small (0.7). When compared with 2001, adults had fewer missing teeth (MT) (3.4 in 2011 and 3.9 in 2001) while the mean number of filled teeth (FT) (2.8) and decayed teeth (DT) (0.7) remained unchanged as a decade ago. Similar to the survey in 2001, almost all adults had tooth decay experience (96.1% in 2011 and 97.5% in 2001) (Table 5.3).

**Table 5.2**  
Level of tooth decay experience as measured by the DMFT index among adults in 2001 and 2011

Tooth decay experience	2001 (N = 1 354 700)	2011 (N = 1 062 900)
Mean DMFT	7.4	6.9
Mean DT (Decayed)	0.7	0.7
Mean MT (Missing)	3.9	3.4
Mean FT (Filled)	2.8	2.8

Base: All adults

**Table 5.3**  
Percentage of adults with tooth decay experience in 2001 and 2011

Tooth decay experience	2001 (N = 1 354 700)	2011 (N = 1 062 900)
DMFT	97.5%	96.1%
DT (Decayed)	32.0%	31.2%
MT (Missing)	91.4%	89.7%
FT (Filled)	66.6%	67.4%

Base: All adults



The presence of retained root in a person's mouth is a result of severe crown decay with the root being left behind. The mean number of retained root in the adult population was found to be 0.1. Retained root was found in a smaller proportion of adults in 2011 (7.5%, 79 900) (Table 5.4).

**Table 5.4**  
**Percentage of adults with retained root in 2001 and 2011**

Adults with retained root	2001 (N = 1 354 700)	2011 (N = 1 062 900)
Percentage	9.6%	7.5%

Base: All adults

On average, adults had 0.1 teeth with decayed or filled root surface (DF-root) (Table 5.5). Although the prevalence of DF-root surface was low among adults (4.0%, 42 000), three-quarters of the root surface decay were untreated (Table 5.6).

**Table 5.5**  
**Level of root surface decay experience among adults in 2001 and 2011**

Root surface decay experience	2001 (N = 1 354 700)	2011 (N = 1 062 900)
Mean DF-root	0.1	0.1
Mean D-root (Decayed)	< 0.05	< 0.05
Mean F-root (Filled)	< 0.05	< 0.05

Base: All adults

**Table 5.6**  
**Percentage of adults with root surface decay experience in 2001 and 2011**

Root surface decay experience	2001 (N = 1 354 700)	2011 (N = 1 062 900)
DF-root	4.2%	4.0%
D-root (Decayed)	3.4%	3.0%
F-root (Filled)	1.0%	0.9% <sup>§</sup>

Base: All adults

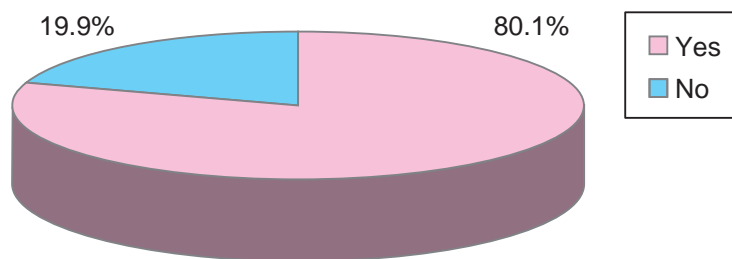
<sup>§</sup> This estimate was compiled based on a very small sample. Readers are advised to interpret this estimate with caution.

The mean DMFT value among the adult population was 6.9. When compared with 2001, adults had fewer missing teeth (3.4 mean MT in 2011 and 3.9 mean MT in 2001) while the mean number of filled teeth (2.8) and decayed teeth (0.7) remained unchanged as a decade ago.

### Gum condition - what was the level of gum bleeding?

Among all adults, 98.6% (1 048 000) of them had bleeding gums on examination. There were 80.1% (851 500) of adults having half or more of their teeth with bleeding gums (Figure 5.1).

**Figure 5.1**  
Percentage of adults having half or more of the teeth with bleeding gums



Base: All adults  
2011: (N = 1 062 900)

## Gum condition - what was the level of gum pocket?

In the present survey, a larger proportion of adults had no gum pocket of 4 mm or more (60.4% as compared with 54.0% in 2001) (Table 5.7). Around 10% (104 100) of adults had gum pocket of 6 mm or more. The prevalence of adults with gum pocket of 4 mm or more had decreased when compared with 2001.

**Table 5.7**  
Percentage of adults according to  
the highest pocket depth in 2001 and 2011

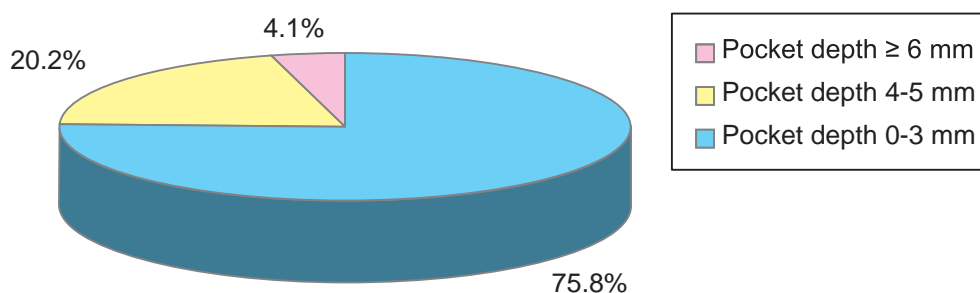
Highest pocket depth	2001 (N = 1 354 700)	2011 <sup>#</sup> (N = 1 062 900)
0-3 mm	54.0%	60.4%
4-5 mm	38.9%	29.8%
≥ 6 mm	7.1%	9.8%
Total	100.0%	100.0%

Base: All adults

<sup>#</sup> The diagnostic methodology was extended to include all teeth in half of the mouth in 2011 instead of including only index teeth in 2001.

Among adults with the highest pocket depth of 4 mm or more, over 75% of their teeth had pocket depth of 0-3 mm. Gum pocket of 6 mm or more occurred only in 4.1% of their teeth (Figure 5.2).

**Figure 5.2**  
Average percentage distribution of teeth per adult  
(with gum pocket of 4 mm or more) by pocket depth



Base: Adults with gum pocket of 4 mm or more  
2011: (N = 421 300)

### Gum condition - what was the loss of attachment level?

Comparing the results of this survey with 2001, a lower proportion of adults in 2011 had loss of attachment (LOA) of 4 mm or more (51.8% in 2011 and 67.0% in 2001) (Table 5.8). For adults with LOA of 4 mm or more, majority of them had attachment loss of 4-5 mm.

**Table 5.8**  
Percentage of adults according to  
the level of loss of attachment (LOA) in 2001 and 2011

Level of LOA	2001 (N = 1 354 700)	2011 <sup>#</sup> (N = 1 062 900)
0-3 mm	33.0%	48.2%
4-5 mm	50.2%	40.5%
6-8 mm	12.3%	8.4%
9-11 mm	3.1%	1.7%
≥ 12 mm	1.4%	1.2%
Total	100.0%	100.0%

Base: All adults

<sup>#</sup> The diagnostic methodology was extended to include all teeth in half of the mouth in 2011 instead of including only index teeth in 2001.

Comparing the two surveys done in 2001 and 2011, there was a change in the examination method in which gum examination was extended to include not only index teeth in parts of the mouth but all teeth in half of the mouth (details see Chapter 1). As more teeth were included in the new method, it should increase the sensitivity resulting in a higher chance of disease detection. The 2011 survey actually came up with a result where a smaller proportion of adults had gum pockets and LOA sites greater than or equal to 4 mm. Such reduction in disease prevalence reflected that there was an improvement in gum condition of the adults in the past decade.

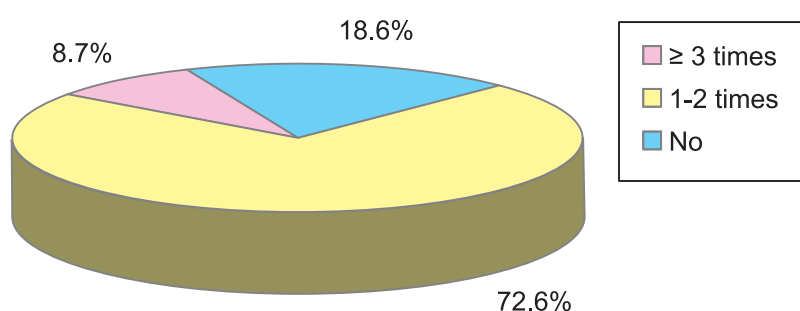
**Two-fifths of adults were found to have gum pockets of 4 mm or more.** When compared with 10 years ago, a smaller proportion of adults had gum pockets and LOA sites of 4 mm or more were found. However, **gum bleeding was prevalent among the adult population** as about 80% of them had half or more of their teeth with bleeding gums which indicated high susceptibility to breakdown of tooth-supporting structures.

## What were the oral health related behaviours among adults?

### Dietary habit - how often did adults snack or consume food?

It was found that 72.6% (772 000) adults reported having snack or food consumption once or twice daily other than normal meals. Only 8.7% (93 000) of adults snacked or consumed food three times or more a day (Figure 5.3).

**Figure 5.3**  
Percentage of adults according to daily frequency of snacking or food consumption other than normal meals

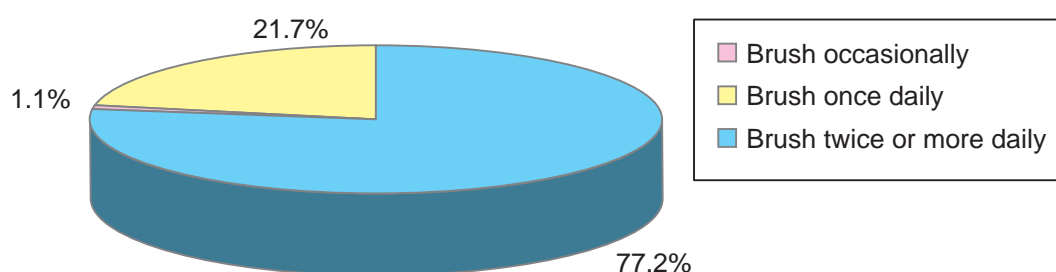


Base: All adults  
2011: (N = 1 062 900)

### Oral hygiene habit - how often did adults brush their teeth?

Similar to a decade ago, nearly 99% (1 051 200) of adults brushed their teeth every day. Majority of them brushed twice or more a day (77.2% in 2011 and 78.2% in 2001) while one-fifth of adults only brushed once a day (21.7% in 2011 and 20.9% in 2001) (Figure 5.4).

**Figure 5.4**  
Percentage of adults according to toothbrushing habit



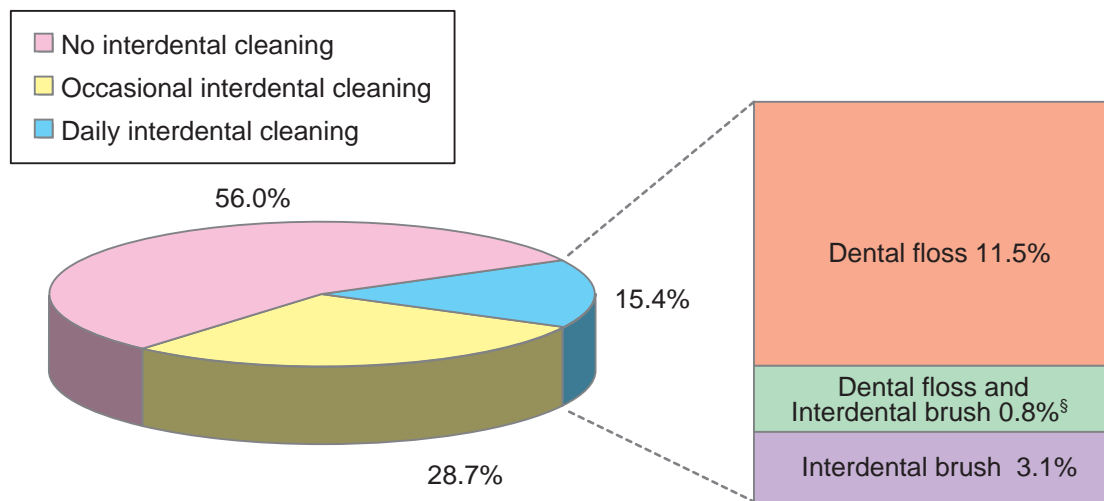
Base: All adults  
2011: (N = 1 062 900)

Among those who brushed their teeth, 99.1% (1 053 400) of them always brushed with toothpaste.

**Oral hygiene habit - did adults have interdental cleaning habit?**

Irrespective of the methods they used, 44.0% (467 800) of adults reported that they had the habit of cleaning interdental surfaces of their teeth (Figure 5.5). Flossing was the most common practice whereas interdental brushing alone was reported by fewer adults. As compared with 2001, adults who flossed daily had slightly increased from 10.7% (2001) to 12.3% (2011). However, only 3.8% (40 700) of adults in 2011 used interdental brush on a daily basis.

**Figure 5.5**  
**Percentage of adults according to**  
**the interdental cleaning habit**



Base: All adults  
 2011: (N = 1 062 900)

<sup>§</sup> This estimate was compiled based on a very small sample. Readers are advised to interpret this estimate with caution.

### Oral hygiene habit - were adults using other oral hygiene measure?

Up to 90.5% (962 100) of adults reported using additional measure(s) to maintain their oral hygiene. Toothpick (73.6%, 782 700) and mouthwash (46.0%, 489 100) were the two common additional measures used (Table 5.9). For those who used mouthwash, 51.0% (249 200) of them reported that they used it for *reducing gum inflammation*.

**Table 5.9**  
Percentage of adults according to  
the habit of using other oral hygiene measure  
(Multiple answers)

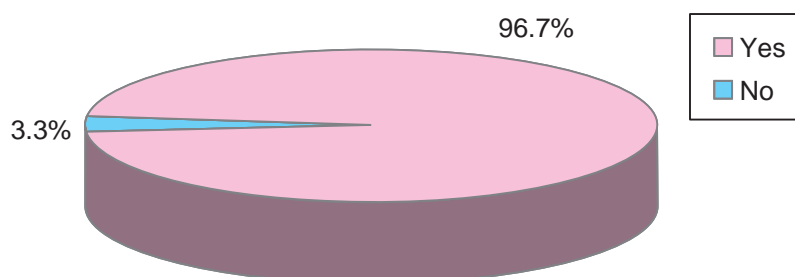
Habit of using other oral hygiene measure	Percentage (N = 1 062 900)
Toothpick	73.6%
Mouthwash	46.0%
Salt water	10.2%

Base: All adults

### Oral hygiene condition - how clean were adults' teeth?

The level of accumulation of visible dental plaque and calculus deposition were assessed to measure the cleanliness of the teeth. There were 96.7% (1 027 600) of adults having half or more of their teeth covered with visible dental plaque (Figure 5.6) while 62.3% (662 600) of adults had visible dental plaque on all their teeth.

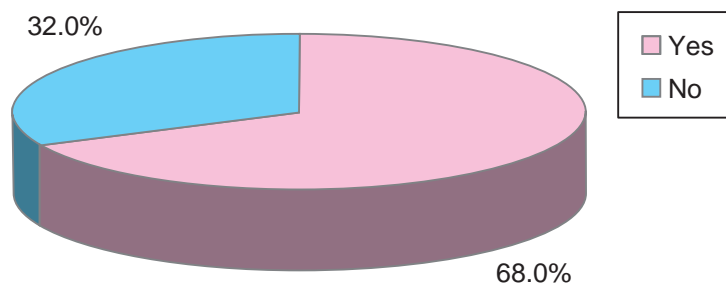
**Figure 5.6**  
Percentage of adults having visible dental plaque on half or more of their teeth



Base: All adults  
2011: (N = 1 062 900)

Regarding the level of calculus deposition, 68.0% (722 400) of adults had calculus on half or more of their teeth (Figure 5.7) and 11.6% (123 200) of adults had calculus on all teeth.

**Figure 5.7**  
Percentage of adults having calculus on half or more of their teeth



Base: All adults  
2011: (N = 1 062 900)

Although most adults brushed their teeth daily, almost all of them had half or more of their teeth covered with visible dental plaque. Four-fifths of adults had bleeding gums around half or more of their teeth. This reflected that **their oral hygiene measures were ineffective in maintaining gum health.**

**Majority of adults did not practise proper interdental cleaning.** As toothbrushing cannot remove interdental plaque, it should be complemented with proper interdental cleaning.

Around three-quarters of adults used toothpick while only less than half of the adults used floss and interdental brush. **Proper interdental cleaning by flossing or interdental brushing should be stressed.**

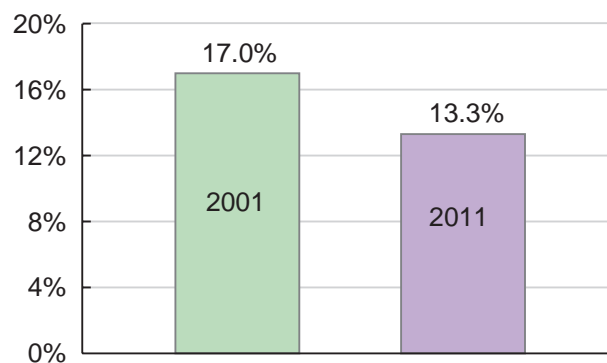
Nearly half of the adult population used mouthwash. However, they should be aware that **the use of mouthwash is no substitute for effective mechanical removal of plaque by toothbrushing and interdental cleaning.** Moreover, different mouthwashes are designed for different purposes in the control of tooth decay or gum disease. **Correct usage of suitable mouthwash under professional advice is recommended.**



## Smoking habit - what was the smoking prevalence among adults?

About 13% (141 800) of adults reported they had smoking habit, either daily or weekly. This finding was comparable to that of the Behavioural Risk Factor Survey conducted around the same period<sup>1</sup>. When compared with the percentage of adults with smoking habit in 2001 (17.0%), around four percentage points reduction was observed in the present survey (Figure 5.8).

**Figure 5.8**  
Percentage of adults with smoking habit in 2001 and 2011



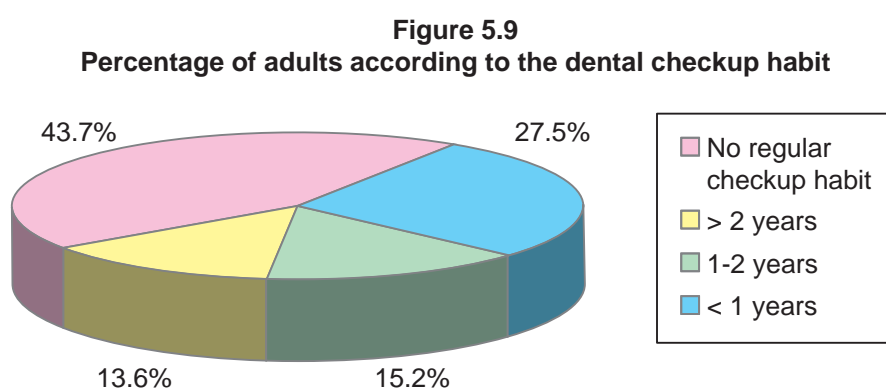
Base: All adults  
2001: (N = 1 354 700)  
2011: (N = 1 062 900)

**More than 10% of adults had smoking habit.** Smoking is a risk factor for gum disease, oral cancer and other health problems. Dentists could play an important role in conveying a smoke-free lifestyle and the delivery of smoking cessation advice during dental visits.

<sup>1</sup> Behavioural Risk Factor Survey, April 2011. Hong Kong SAR: Department of Health; 2012.

### Utilisation of oral health care services - how many adults had the habit of seeking regular dental checkup?

In this survey, adults with habit of seeking regular dental checkup were defined as those who attended a dental clinic regularly for checkup and cleaning of teeth in the absence of any oral pain or problems. The proportion of adults with regular dental checkup habit in 2011 (56.3%) was more than double when compared with 2001 (26.3%). When broken down into specific intervals, 27.5% (292 400) of them had their dental checkup within one year interval while 42.7% (454 100) of them had it within two years interval (Figure 5.9).



Base: All adults  
2011: (N = 1 062 900)

### Utilisation of oral health care services - how many adults had experienced oral symptom and did they consult a dentist?

The adults were asked whether they had oral symptoms in the past 12 months and the ways they managed their symptoms.

Among the adult population, around 10% (103 500) of them reported having toothache that disturbed sleep and around 76% (805 300) of the adults reported having bad breath. Similar findings were observed in 2001.

Regarding the utilisation of oral health care services, when there was oral symptom, 61.6% (63 800) of adults with toothache that disturbed sleep visited a dentist. Among adults having bad breath and bleeding gums, only 2.8% (22 600) and 7.0% (45 000) of them sought professional dental care respectively. In fact, more than 60% of adults with bleeding gums (61.2%, 392 300) and mobile teeth (62.7%, 98 400) chose to ignore these symptoms and took no action. More adults in 2011 would self-manage their tooth sensitivity (37.7%) than in 2001 (28.0%) (Table 5.10). When asked about the methods they used, the most frequent answer was *use of desensitising toothpaste* (59.0%, 131 600 of those with tooth sensitivity).

**Table 5.10**  
**Percentage of adults according to**  
**the oral symptom experienced in the 12 months before the survey and the action taken**  
**in 2001 and 2011**

Oral symptom		Percentage with oral symptom (All adults)	Percentage of action taken by the affected adults			
			No action	Self manage	Doctor / TCM*	Dentist
Bad breath	2001	74.3%	15.4%	76.2%	4.5%	3.9%
	2011	75.8%	23.7%	70.9%	2.7%	2.8%
Bleeding gums	2001	59.5%	57.2%	36.2%	1.2%	5.4%
	2011	60.3%	61.2%	31.7%	0.0% <sup>§</sup>	7.0%
Sensitivity to hot or cold	2001	54.5%	57.8%	28.0%	0.0%	14.2%
	2011	55.7%	48.7%	37.7%	0.4% <sup>§</sup>	12.7%
Mobile teeth	2001	23.5%	56.3%	10.8%	0.9%	32.0%
	2011	14.8%	62.7%	12.3%	1.3% <sup>§</sup>	23.8%
Toothache that disturbed sleep	2001	15.4%	9.2%	35.5%	7.9%	47.4%
	2011	9.7%	8.9% <sup>§</sup>	28.1%	1.4% <sup>§</sup>	61.6%

Base: All adults

2001: (N = 1 354 700)

2011: (N = 1 062 900)

The bases for specified oral symptoms refer to adults who had the corresponding specified oral symptoms in the 12 months before the survey.

\* TCM – Traditional Chinese medical practitioners

<sup>§</sup> This estimate was compiled based on a very small sample. Readers are advised to interpret this estimate with caution.

**Utilisation of oral health care services - what were the treatment needs among adults and did they intend to seek dental care?**

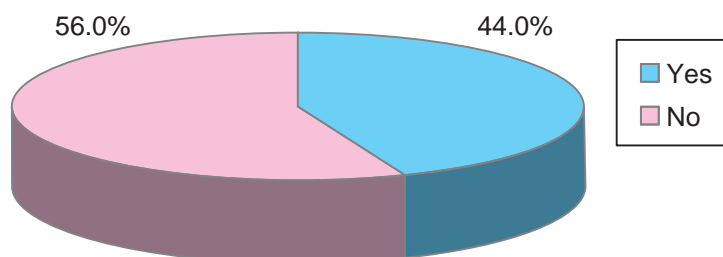
The two highest assessed treatment needs, based on the clinical examination in the survey, were scaling (97.5%, 1 036 800) and filling (24.7%, 262 000). The lowest assessed needs were complex treatments including replacement of missing teeth and root canal treatment. The treatment needs perceived by adults were found to be smaller than the assessed needs across most treatment items (Table 5.11).

**Table 5.11**  
**Percentage of adults according to**  
**the perceived and assessed dental treatment needs in 2001 and 2011**  
**(Multiple answers)**

Dental treatment need	2001 (N = 1 354 700)		2011 (N = 1 062 900)	
	Perceived	Assessed	Perceived	Assessed
Scaling	18.4%	95.9%	31.0%	97.5%
Filling	22.5%	27.4%	10.2%	24.7%
Extraction	5.5%	11.9%	2.2%	12.6%
Replacement of missing teeth	7.8%	8.2%	2.1%	3.4%
Root canal treatment	2.5%	1.6%	2.1%	1.6%

Base: All adults

**Figure 5.10**  
**Percentage of adults according to**  
**the intention of visiting a dentist when having perceived treatment need**



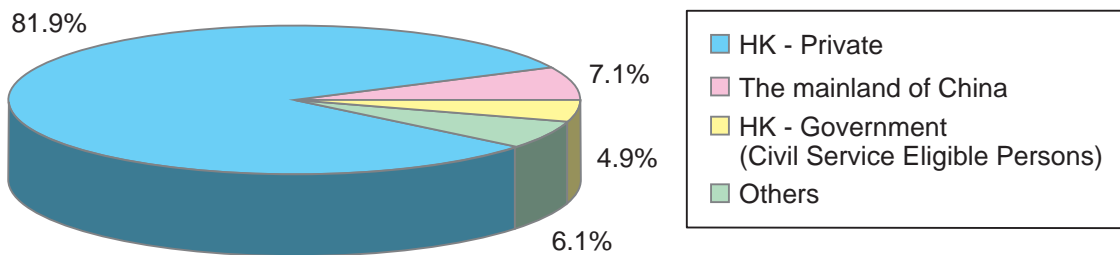
Base: Adults who had at least one perceived treatment need  
 2011: (N = 480 500)

Not all the adults with perceived treatment needs intended to visit a dentist. Out of all who had at least one perceived dental treatment need, only 44.0% (211 500) planned to visit a dentist as soon as possible (Figure 5.10).

### Utilisation of oral health care services - where did they usually go for dental visit?

Among the adults who had seen a dentist before, 81.9% (822 400) of them visited private dental clinics in Hong Kong and 7.1% (71 300) of adults visited dental clinics in the mainland of China (Figure 5.11).

**Figure 5.11**  
Percentage of adults who had visited a dentist according to the type of dental clinic visited



Base: Adults who had ever visited a dentist  
2011: (N = 1 004 100)

**The overall checkup rate among adults had improved as compared with 10 years ago.** However, more than 40% of the adult population still did not have regular checkup habit.

**Except for toothache that disturbed sleep, most of the adults did not seek dental care when oral symptom arose.** This was especially common for milder oral symptoms such as bad breath, gum bleeding and tooth sensitivity.

**Even with perceived need for dental treatments, majority of adults did not intend to seek dental care immediately** and preferred to delay their dental visits.

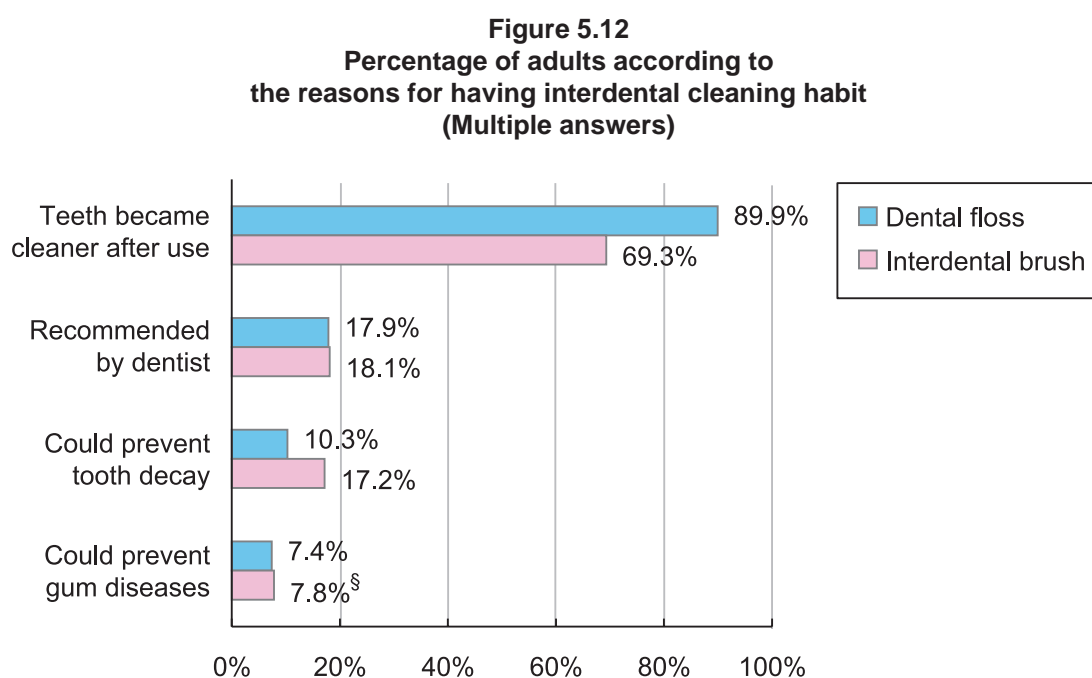
## What were the facilitators and barriers affecting adults to adopt the desirable oral health related behaviours?

In this survey, the facilitators and barriers to the use of interdental cleaning devices, utilisation of oral health care services including regular dental checkup and dental visit for managing oral symptom were investigated.

These identified possible facilitators and barriers could provide information for the planning of individual oral health education and community-based oral health promotion.

### What were the facilitators and barriers to interdental cleaning habit?

*Perception of having cleaner teeth after performing interdental cleaning* was the most common reason for adults to maintain their interdental cleaning habit (Figure 5.12). More adults correlated their habit of flossing or using interdental brush to the *prevention of tooth decay* rather than to *prevent gum disease*.



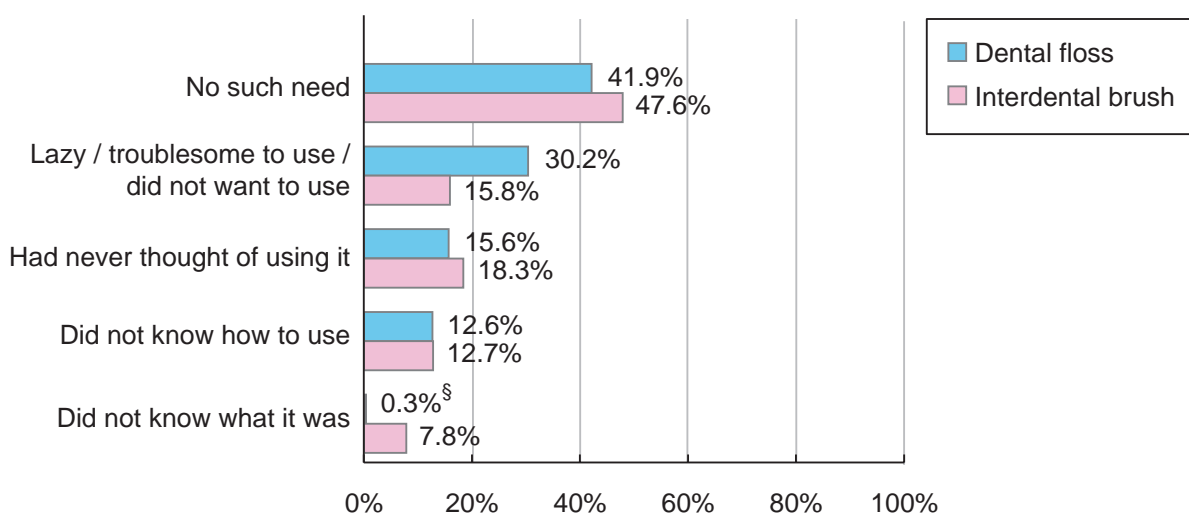
Base (Dental floss): Adults who had the habit of using dental floss 2011: (N = 422 800)

Base (Interdental brush): Adults who had the habit of using interdental brush 2011: (N = 116 200)

<sup>§</sup> This estimate was compiled based on a very small sample. Readers are advised to interpret this estimate with caution.

Having *no such need* was the most common reason reported by adults for not flossing (41.9%, 268 400) or not using interdental brush (47.6%, 450 600). While dental floss was known by most adults, there were 7.8% (73 700) of adults who actually *did not know what interdental brush was*. More than one-tenth of adults reported *lack of skill* as the reason of not using dental floss (12.6%, 80 900) and interdental brush (12.7%, 119 900) (Figure 5.13).

**Figure 5.13**  
Percentage of adults according to  
the reasons for not having interdental cleaning habit  
(Multiple answers)



Base (Dental floss): Adults who did not have the habit of using dental floss  
2011: (N = 640 100)

Base (Interdental brush): Adults who did not have the habit of using interdental brush  
2011: (N = 946 700)

<sup>§</sup> This estimate was compiled based on a very small sample. Readers are advised to interpret this estimate with caution.

**The perception of having cleaner teeth after performing interdental cleaning might be an important motive associated with this habit.**

**Among those adults who did not have interdental cleaning habit, 40% did not perceive the need to do so.** The awareness of daily interdental cleaning for maintaining oral health should be promoted. Over 10% of adults did not clean their interdental space because they *did not know how to do it*. Dentists, through direct skill transfer, could play an important role in guiding the individual to adopt effective interdental cleaning measures.

### What were the facilitators and barriers to regular dental checkup habit?

Adults who made dental visits within two years interval, in the absence of any oral problem, were defined as those who had regular checkup habit in the following section. Comparisons were made between groups of adults classified as regular and irregular attenders according to this definition.

For adults with the habit of seeking regular dental checkup, half of them believed that *checkup could help in preventing dental problems or prevention was better than cure*. Whereas, 28.5% (129 600) regular attenders had checkup for *keeping teeth healthy* while 25.1% (114 000) regular attenders went for *keeping teeth white and clean*. About a quarter of adults attended regularly because they *took full benefit from their entitlement to insurance plan / employment benefit* (Table 5.12).

**Table 5.12**  
**Percentage of adults according to**  
**the reasons for seeking regular dental checkup at least once every two years**  
**(Multiple answers)**

Reasons for seeking regular dental checkup	Percentage
For prevention of dental problems or prevention was better than cure	50.0%
For keeping teeth healthy	28.5%
Help keeping teeth white and clean	25.1%
Took full benefit of the dental service which was included in insurance plan / employment benefit	23.0%
Dentist reminded to have regular checkup	8.5%

Base: Adults who had regular dental checkup at least once every two years  
 2011: (N = 454 100)



When asked about the reasons why they did not seek dental checkup regularly, 60.0% (365 200) of irregular attenders felt that *their teeth were good / had no pain or they had no need* to have regular dental checkup (Table 5.13). This was also an important reason quoted by the adult irregular attenders in 2001 (29.3%, 292 500).

A proportion of the irregular attenders claimed that they did *think of going for regular checkup but had encountered problems. No time* (16.2%, 98 400) and *charge was unaffordable / didn't want to spend money on checkup* (14.7%, 89 500) were the two main barriers mentioned.

**Table 5.13**  
**Percentage of adults according to**  
**the reasons for not seeking regular dental checkup at least once every two years**  
**(Multiple answers)**

Reasons for not seeking regular dental checkup		Percentage
Teeth were good / no pain / no need		60.0%
Did think of going for regular checkup, however:	No time	16.2%
	Charge was unaffordable / did not want to spend money on checkup	14.7%
	Problem with appointment booking	7.9%

Base: Adults without regular dental checkup at least once every two years  
 2011: (N = 608 800)

All adults, irrespective of their checkup habit, were asked whether they had a certain thought or belief towards regular dental checkup. These thoughts or beliefs were potential facilitators or barriers related to dental checkup identified from a preceding qualitative study on adults of 35-44 years old. Percentages of regular and irregular attenders with the respective thoughts or beliefs are shown in Table 5.14.

**Table 5.14**  
**Percentage of adults according to**  
**the thoughts and beliefs towards regular dental checkup**

Thoughts and beliefs towards regular dental checkup	Regular attenders (N = 454 100)	Irregular attenders (N = 608 800)
Will go for regular checkup in order to have early detection of tooth problems (為咗及早發現牙齒嘅問題，而定期去牙醫度檢查牙齒)	80.4%*	40.3%*
Will go for scaling regularly because of aesthetic reason (為咗整靚棚牙，而定期去牙醫度洗牙)	45.0%*	20.0%*
Practising good oral hygiene at home can replace regular scaling (只要勤力啲刷牙同埋打理棚牙，就唔駛定期去洗牙啦)	15.1%*	61.1%*
Dare not visit a dentist because the total cost of dental treatments at the end is often unpredictable (睇親牙醫都唔知要俾幾多錢先至出得返嚟，令你唔敢隨便去睇牙)	34.0%*	60.1%*

Base (Regular attenders): Adults with regular dental checkup at least once every two years

Base (Irregular attenders): Adults without regular dental checkup at least once every two years

\* With statistical difference at the 5% level of significance

When comparing to adults without regular checkup, a significantly larger proportion of regular attenders held the thoughts or beliefs that they:

- *'Will go for regular checkup in order to have early detection of tooth problems'*
- *'Will go for scaling regularly because of aesthetic reason'*

On the other hand, significantly larger proportion of irregular attenders had the thoughts or beliefs that they:

- *'Practising good oral hygiene at home can replace regular scaling'*
- *'Dare not visit a dentist because the total cost of dental treatments at the end is often unpredictable'*

Possible facilitators for regular dental checkup were the *belief in effectiveness of dental checkup for oral disease prevention, subsidies in form of insurance plan or employment benefit, and the desire to keep healthy, clean and white teeth*. The thoughts and beliefs held in adults that might have facilitated their adoption of regular dental checkup habit included *'will go for regular checkup in order to have early detection of tooth problems'* and *'will go for scaling regularly because of aesthetic reason'*.

The potential barriers for regular dental checkup were the *subjective feeling of having good oral health, no time and the concern of unaffordable cost*. The thoughts and beliefs held in adults that might have deterred their adoption of regular dental checkup habit included *'practising good oral hygiene at home can replace regular scaling'* and *'dare not visit a dentist because the total cost of dental treatments at the end is often unpredictable'*.

### What were the facilitators and barriers to seeking professional dental care when adults experienced oral symptom?

When adults were aware of their oral symptoms, they seldom sought professional dental care. They either ignored the symptoms or used their own ways to manage the symptoms (Table 5.10). To understand the facilitators and barriers of seeking professional dental care, both adults who did or did not seek professional dental care for their oral symptoms were asked for the reasons behind their decision.

Over 90% (21 100) of adults who consulted a dentist because of their bad breath knew that *the symptom was related to their dental / oral health*. The *belief in dentist as the only person who could manage their symptom* was the main reason behind adults who had consulted a dentist when they experienced mobile teeth (77.6%, 29 000) and severe toothache, i.e. toothache that disturbed sleep (69.8%, 44 500) (Table 5.15).

**Table 5.15**  
Percentage of adults according to  
the reasons of visiting a dentist when having oral symptom in the 12 months before the survey  
(Multiple answers)

Oral symptom	Knew that this symptom was related to dental / oral health	Believed that only dentist could manage this symptom	Experienced pain and discomfort	Afraid of deterioration of the condition
Bad breath (N = 22 600)	93.4%	36.5% <sup>§</sup>	†	†
Bleeding gums (N = 45 000)	53.5%	43.6%	3.3% <sup>§</sup>	9.8% <sup>§</sup>
Sensitivity to hot or cold (N = 75 200)	52.5%	37.1%	10.0% <sup>§</sup>	0.0% <sup>§</sup>
Mobile teeth (N = 37 300)	18.5% <sup>§</sup>	77.6%	0.0% <sup>§</sup>	9.7% <sup>§</sup>
Toothache that disturbed sleep (N = 63 800)	15.6% <sup>§</sup>	69.8%	13.2% <sup>§</sup>	3.3% <sup>§</sup>

Base: Adults who consulted dentist when they had the specific oral symptom in the 12 months before the survey

† This option was not available.

§ This estimate was compiled based on a very small sample. Readers are advised to interpret this estimate with caution.

A number of adults with oral symptom *knew that they needed to seek professional dental care but were hindered from doing so because of certain barriers*. For adults with bleeding gums, 42.0% (250 000) of them considered *the symptom was not a serious problem* and 24.3% (145 000) of them thought that *the symptom would disappear*. About 15%<sup>§</sup> (6 000) of adults with severe toothache *felt that the methods they used were more effective than visiting a dentist*. For those with bad breath, nearly a quarter of them (190 300) did not consult a dentist because they *did not know that the symptom was related to dental / oral health* (Table 5.16).

**Table 5.16**  
**Percentage of adults according to**  
**the reasons of not visiting a dentist when having oral symptom in the 12 months**  
**before the survey**  
**(Multiple answers)**

Oral symptom	Knew that they needed to visit a dentist but encountered some barriers	The symptom was not a serious problem	The symptom would disappear	Did not know that the symptom was related to dental / oral health	Felt that the methods they used were more effective than visiting a dentist
Bad breath (N = 782 700)	20.2%	27.4%	15.0%	24.3%	5.1%
Bleeding gums (N = 595 600)	23.5%	42.0%	24.3%	3.6%	3.5%
Sensitivity to hot or cold (N = 517 100)	24.1%	32.9%	25.5%	2.5%	6.1%
Mobile teeth (N = 119 700)	44.2%	22.2%	17.8%	4.6% <sup>§</sup>	5.2% <sup>§</sup>
Toothache that disturbed sleep (N = 39 700)	44.5%	15.3% <sup>§</sup>	5.7% <sup>§</sup>	3.7% <sup>§</sup>	15.1% <sup>§</sup>

Base: Adults who did not consult dentist when they had the specific oral symptom in the 12 months before the survey

<sup>§</sup>This estimate was compiled based on a very small sample. Readers are advised to interpret this estimate with caution.

*No time* was the most commonly reported barrier among adults with different oral symptoms while *problem with appointment booking* was another possible barrier. When adults had severe toothache, besides *no time*, *not sure which dentist was good* was another commonly reported barrier for seeking professional dental care (Table 5.17).

**Table 5.17**  
**Percentage of adults with oral symptom in the 12 months before the survey who knew that they needed dental care according to the barriers they encountered (Multiple answers)**

Oral symptom	No time	Problem with appointment booking	Charge was unaffordable	Afraid of visiting a dentist	Not sure which dentist was good
Bad breath (N = 158 400)	42.6%	25.0%	19.0%	13.9%	2.1% <sup>§</sup>
Bleeding gums (N = 140 200)	42.7%	18.1%	23.8%	20.1%	4.8% <sup>§</sup>
Sensitivity to hot or cold (N = 124 700)	32.1%	27.5%	20.8%	26.3%	6.1% <sup>§</sup>
Mobile teeth (N = 53 000)	37.1%	33.9%	26.8%	11.5% <sup>§</sup>	8.2% <sup>§</sup>
Toothache that disturbed sleep (N = 17 700)	53.6% <sup>§</sup>	19.6% <sup>§</sup>	17.1% <sup>§</sup>	0.0% <sup>§</sup>	26.8% <sup>§</sup>

Base: Adults who knew that they needed to visit dentist when they had the specific oral symptom in the 12 months before the survey but did not consult a dentist

<sup>§</sup> This estimate was compiled based on a very small sample. Readers are advised to interpret this estimate with caution.

The ability to *relate one's oral symptom to their dental health* was important for adults to seek dental care. That was the main reason for adults with bad breath, bleeding gums and tooth sensitivity to consult a dentist. *Trust in dentist as the only person who could manage their symptoms* might have encouraged adults to seek professional help. However, *not sure which dentist was good* could also be a barrier for seeking professional dental care.

A large proportion of adults with bleeding gums or tooth sensitivity considered that *the symptom was not a serious problem or would disappear*. *No time* was an important barrier for seeking professional dental care when adults experiencing different oral symptoms and this might be further aggravated by their *problem in booking an appointment* against their tight personal schedule. *Unaffordable charge* was another barrier to dental visit across different oral symptoms.

## What was the oral health knowledge of adults?

The establishment of healthy oral health behaviour by a person may be influenced by the person's correct understanding of oral diseases. Same as 10 years ago, adults were asked about the causes and preventive methods of tooth decay and gum diseases. In this survey, minor changes were made to some of the wordings of the 2001 questionnaire but the changes were designed in a way to allow for the comparison of the answers between the two surveys.

## What did adults know about the cause and prevention of tooth decay?

Majority of adults in 2011 could relate *improper cleaning of teeth* (79.3%, 842 600) and *frequent intake of sweet food* (78.5%, 834 400) with tooth decay. However, *bacteria / dental plaque* and *frequent snacking / consumption of food* were only cited by 10.1% (107 300) and 11.7% (124 000) of adults respectively. *Intake of sour food*, which was the cause of tooth wear, was seen as the cause of tooth decay by 22.8% (242 700) of adults (Table 5.18).

**Table 5.18**  
Percentage of adults according to  
the perceived factors leading to tooth decay in 2001 and 2011  
(Multiple answers)

2001 (N = 1 354 700)		2011 (N = 1 062 900)	
Perceived factors	Percentage	Perceived factors	Percentage
* Improper cleaning of teeth	58.7%	* Improper cleaning of teeth	79.3%
* Eating too much candies / sweet food	75.1%	* Frequent intake of sweet food	78.5%
Sour food	9.1%	Intake of sour food	22.8%
* Too frequent food / drink intake	1.6%	* Frequent snacking / consumption of food	11.7%
* Dental plaque / bacteria	3.6%	* Bacteria / dental plaque	10.1%
* No regular dental checkup	1.0%	* Irregular dental attendance / scaling	4.6%
Don't know	7.0%	Don't know	1.8%

Base: All adults

\* Relevant factors

When compared with the knowledge held by adults in 2001, more adults were able to cite the relevant factors as the cause of tooth decay.



Regarding the methods they would use to prevent tooth decay, *proper cleaning of teeth* was the most common one mentioned by 83.9% (891 300) of adults. About 32% (343 800) of adults suggested *reducing sweet food consumption* to prevent tooth decay while even fewer adults (9.9%, 104 800) mentioned *reducing the snacking / food consumption frequency*. *Regular dental attendance / scaling* was also mentioned by 33.0% (350 800) of adults as a way to prevent tooth decay. Around 17% (182 400) of adults mentioned *using fluoride toothpaste* as the preventive measure. The percentages of adults who were able to cite relevant methods to prevent tooth decay were higher in this survey when compared with those in 2001 (Table 5.19). It is worth noting that although 21.3% (226 500) of adults mentioned *using mouthwash* to prevent tooth decay, majority of them (87.7%, 198 600) did not know what active ingredient to look for in the control of dental decay.

**Table 5.19**  
**Percentage of adults according to**  
**the perceived methods to prevent tooth decay in 2001 and 2011**  
**(Multiple answers)**

2001 (N = 1 354 700)		2011 (N = 1 062 900)	
Perceived methods	Percentage	Perceived methods	Percentage
* Proper cleaning of teeth	83.6%	* Proper cleaning of teeth	83.9%
* Seek regular dental checkup	15.2%	* Regular dental attendance / scaling	33.0%
* Reduce consumption of candies / sweet food	23.5%	* Reduce consumption of sweet food	32.3%
Use commercial mouthwash	8.0%	Use mouthwash	21.3%
* Use fluoride toothpaste	1.5%	* Use fluoride toothpaste	17.2%
Rinse with water / salt water	14.2%	Rinse with salt water / water	14.5%
* Reduce frequency of food / drink intake	1.7%	* Reduce frequency of snack / food consumption	9.9%
Don't know	6.9%	Don't know	2.8%

Base: All adults

\* Relevant factors

### What did adults know about the cause and prevention of gum disease?

There were 44.7% (475 500) of adults who related *improper cleaning of teeth* to gum disease but only 17.8% (189 700) of adults mentioned *bacteria / dental plaque* as the cause. At the same time, there were 30.0% (319 300) of adults who believed that *internal heat (traditional Chinese belief)* was the cause of gum disease. When compared with 2001, fewer adults in 2011 were *unsure about the causes* of gum disease (Table 5.20).

**Table 5.20**  
**Percentage of adults according to**  
**the perceived factors leading to gum disease in 2001 and 2011**  
**(Multiple answers)**

2001 (N = 1 354 700)		2011 (N = 1 062 900)	
Perceived factors	Percentage	Perceived factors	Percentage
* Improper cleaning of teeth	37.9%	* Improper cleaning of teeth	44.7%
Internal heat (traditional Chinese belief)	26.8%	Internal heat (traditional Chinese belief)	30.0%
* Dental plaque / bacteria	11.3%	* Bacteria / dental plaque	17.8%
Accumulation of calculus	5.2%	Calculus deposition	8.9%
* No regular dental checkup	2.7%	* Irregular dental attendance / scaling	5.5%
* Smoking	1.0%	* Smoking	4.3%
Don't know	24.5%	Don't know	15.6%

Base: All adults

\* Relevant factors

When asked about the methods they would use to prevent gum disease, some adults were able to cite relevant methods including *proper cleaning of teeth* (47.9%, 509 600), *regular dental attendance / scaling* (23.5%, 250 200) and *stop smoking* (4.3%, 46 100). Although 15.4% (163 800) of adults mentioned *using mouthwash*, majority of them (95.1%, 155 800) did not know what active ingredient to look for to prevent gum disease. Methods lacking scientific support such as the *avoidance of certain food or alcohol* were also mentioned by 19.2% (204 000) of adults. More adults in 2011 were able to mention methods that were relevant to prevent gum disease than in 2001 (Table 5.21).

**Table 5.21**  
**Percentage of adults according to**  
**the perceived methods to prevent gum disease in 2001 and 2011**  
**(Multiple answers)**

2001 (N = 1 354 700)		2011 (N = 1 062 900)	
Perceived methods	Percentage	Perceived methods	Percentage
* Proper cleaning of teeth	40.9%	* Proper cleaning of teeth	47.9%
* Seek regular dental checkup	14.5%	* Regular dental attendance / scaling	23.5%
Avoid certain food	10.5%	Avoid certain kind of food (cold / sour / sweet / spicy / fried / hard food) or alcohol	19.2%
Use of commercial mouthwash	5.6%	Use mouthwash	15.4%
Rinse with water / salt water	5.9%	Rinse with salt water / water	8.3%
Take traditional Chinese medicine / herbal tea	5.5%	Take traditional Chinese medicine / herbal tea / visit traditional Chinese medical practitioners	3.8%
Use fluoride toothpaste	†	Use fluoride toothpaste	8.9%
Use medicated toothpaste	2.9%	Use medicated toothpaste	1.7%
* Avoid smoking	1.1%	* Stop smoking	4.3%
Don't know	33.1%	Don't know	25.1%

Base: All adults

\* Relevant factors

† This option was not available.

When compared with the knowledge held by adults in 2001, improvements were noted in more adults being able to cite factors related to the cause and prevention of tooth decay and gum disease. However, knowledge on low snacking / food consumption frequency, use of fluoride toothpaste, proper cleaning to remove plaque, regular checkup and smoke-free lifestyle was far from satisfactory.

Some beliefs or misconceptions were not related to desirable oral health behaviour. The use of salt water / water to prevent tooth decay and the avoidance of certain food for gum disease were common practices among adults. These were considered ineffective by the dental profession.

Oral health education should be geared towards clarification of the misconceptions and enhancement of the understanding on effective means to prevent tooth decay and gum disease.

## Chapter 5 – Summary

The level of tooth decay experience of adults, including crown and root surface decay, showed slight improvement as compared with 10 years ago. Tooth loss was not a major problem among adults. However, gum disease remained as the main concern. Majority of adults had bleeding gums around half of their teeth while a large proportion of them had gum pockets.

Oral hygiene condition of adults was unsatisfactory as nearly all of them had visible dental plaque on half or more of their teeth and majority of them had calculus deposition on half or more of their teeth. Daily toothbrushing habit was well established but interdental cleaning habit was not popular yet. Majority of adults used toothpick and nearly half of them used mouthwash as additional oral hygiene measures.

The prevalence of smoking in adults was lower than ten years ago but it still put adults at a higher risk to gum disease, oral cancer and other health problems.

Preventive knowledge possessed by adults was limited to cleaning of teeth and reducing consumption of sweet food. Knowledge on low snacking or food consumption frequency, use of fluoride toothpaste, proper cleaning to remove plaque, regular checkup and smoke-free lifestyle was far from satisfactory.

Despite the increase in dental checkup rate, more than 40% of the adult population still did not have regular checkup habit. Majority of adults did not seek professional care for the management of oral symptoms unless when they had toothache that disturbed sleep.

Possible facilitators and barriers for performing interdental cleaning and utilisation of oral health care services were investigated. These included the perceived need to carry out oral health behaviour, the ability to relate oral symptom to oral health, the possession of insurance plan or employment benefit, the belief that oral self-care could replace dental care and the worry of unpredictable dental cost, etc.

## Way forward

Good oral health can be achieved by proper oral self-care together with appropriate use of professional care. The importance of dental checkup should be emphasised as both toothbrushing and interdental cleaning require manual skill specific to the individual. Dentist should be able to provide personalised guidance for individuals. Oral self-care cannot replace regular dental checkup.

A large proportion of adults used toothpick while only a small proportion of them practised regular interdental brushing or flossing. It is necessary to stress that using toothpick cannot replace daily flossing or interdental brushing. In addition, it should also be made clear that the use of mouthwash cannot replace mechanical removal of plaque. Dentist should give individualised advice on the usage of suitable mouthwash for effective control of tooth decay and gum disease. The potential of dentists to convey a healthy lifestyle without smoking and the delivery of effective anti-smoking advice should be further encouraged.

Tooth decay and gum disease are silent diseases that can progress with or without signs and symptoms. Gum bleeding can be an early sign of gum disease and sensitivity of the tooth can be a symptom of tooth decay. In this survey, a large proportion of adults considered these signs and symptoms as minor problems that would disappear. As a result, the adults might delay the seeking of professional care and they might miss the chance to manage the underlying oral problems. Delay in management can also lead to costly complex treatment which should have been prevented at an early stage. More effort should be made to keep the population aware of the possible implications of oral signs and symptoms. They should be encouraged to seek dental care for prompt disease intervention.

## CHAPTER 6

### 65 to 74-year old non-institutionalised older persons (NOP)

#### **Introduction**

This Chapter presents the key survey findings of the 65 to 74-year old non-institutionalised older persons (NOP). WHO has recommended that both active and housebound older persons of this age group should be included. The functionally dependent older persons were also included in this survey and the key findings are presented in Chapter 7.

#### **Survey objectives**

The objectives of the survey of the 65 to 74-year old NOP were:

1. to assess the oral health conditions;
2. to collect information on the oral health care behaviours together with the related barriers and facilitators; and
3. to assess the oral health needs, including dental treatment needs, needs related to oral health care behaviours and oral health knowledge.

#### **Sample design**

A sample of 8 514 addresses in Hong Kong was randomly selected by systematic replicate sampling approach. For sample selection, records of quarters in the Frame of Quarters maintained by the Census and Statistics Department were first sorted by geographical area and type of quarters (records of area segments are sorted by geographical area only). The addresses of quarters were drawn systematically to form replicates according to a fixed sampling interval after selecting a random start number, and 17 replicates were selected. All the 65 to 74-year old NOP in these addresses (excluding foreign domestic helpers, inmates of institutions, persons living on board vessels and persons aged 65 to 74 receiving long-term care services under Social Welfare Department) were recruited for the oral health survey.

## Data collection method

A household interview was first carried out in the sample of addresses to identify 65 to 74-year old NOP and to conduct the first questionnaire interview. They were then invited to participate in the follow-up clinical oral examination and the second questionnaire interview conducted later by an outreaching fieldwork team (each comprised a dentist and a dental surgery assistant). Clinical oral examinations were performed by dentists using portable equipment, either at the home of the selected subjects or at a designated examination centre set up by the Department of Health.

To ensure consistency among multiple examiners and interviewers on recording the survey data, training and calibration sessions were arranged prior to fieldwork. Follow-up calibration sessions were performed during the fieldwork so as to minimise the variability among the examiners and interviewers.

## Enumeration results

Among the addresses in the sample, a total of 1 108 NOP were found and 576 of them participated in oral examinations, representing a response rate of 52%. Since more intensive subject recruitment strategy was employed, the response rate was much higher than the last survey conducted in 2001 (30%). Comparisons of the oral health related data such as dental checkup habit and oral hygiene habit were made between NOP who had the clinical oral examination and those who had not. In general, the differences were insignificant.

After grossing up, the survey estimates can be inferred to the study population (450 800 persons\*) during the survey period.

The fieldwork experience of this survey revealed that most NOP subjects had good general health, communication ability, cooperation and physical mobility. In general, they had no difficulty in undergoing the questionnaire interviews and clinical oral examination. Only a very small proportion of NOP (0.2%<sup>§</sup>) had the questionnaires answered via family members due to poor health.

\* An estimate of 450 800 land-based non-institutionalised persons aged 65 to 74 (excluding foreign domestic helpers, inmates of institutions, persons living on board vessels and persons aged 65 to 74 receiving long-term care services under Social Welfare Department) was sourced from the findings of the General Household Survey for Q1 2011 conducted by the Census and Statistics Department.

<sup>§</sup> This estimate was compiled based on a very small sample. Reader are advised to interpret this estimate with caution.



In addition to the data collected in the previous oral health survey, more information was collected in this survey to improve our understanding of the oral health status (especially the gum health) and oral health related behaviours (especially the barriers and facilitators) of NOP. No comparison was made for the information not available in the 2001 survey. Readers who wish to have a summary of the survey findings can go directly to the quick reference sections in green text boxes.

## What was the oral health status of 65 to 74-year old non-institutionalised older persons (NOP) in Hong Kong?

### Tooth status - how many teeth were there?

The proportion of NOP who had lost all their teeth had reduced from 8.6% in 2001 to 5.6% in 2011 (Table 6.1). The mean number of teeth among NOP in 2011 (19.3) has increased when compared with 2001 (17.0). As there is no internationally agreed minimum acceptable number of teeth, the presence of 20 teeth has been used as the arbitrary minimum number of teeth for comparison purpose. In this survey, 59.5% (268 100) of NOP had 20 or more teeth which were about 10 percentage points higher when compared with 2001 (49.7%).

**Table 6.1**  
Percentage of NOP according to the number of teeth in 2001 and 2011

Tooth number	2001 (N = 445 500)	2011 (N = 450 800)
Total tooth loss	8.6%	5.6%
≥ 20 teeth left	49.7%	59.5%

Base: All NOP

### Tooth status - how many NOP had their missing teeth replaced?

Irrespective of the type of prostheses used, 63.2% (284 900) of NOP had dental prostheses in their mouths which were about five percentage points lower than that in 2001 (Table 6.2).

**Table 6.2**  
Percentage of NOP with different types of dental prostheses in 2001 and 2011

Type of dental prostheses	2001 (N = 445 500)	2011 (N = 450 800)
With any prostheses	68.1%	63.2%
With dental bridges	30.2%	31.4%
With removable partial dentures	33.6%	35.5%
With full dentures	19.8%	11.2%
With dental implants	*	2.5%

Base: All NOP

\* This parameter was not measured.

**Tooth status - what was the level of tooth decay experience?**

The tooth decay experience of NOP as measured by the DMFT index is tabulated in Table 6.3. The mean DMFT of NOP in this survey was 16.2 which declined slightly when compared with 2001 (17.6). The mean number of untreated decay (DT) was low (1.3) and it was the same as 2001. However, NOP in this survey had fewer missing teeth (MT) (12.7 in 2011 and 15.1 in 2001) but more filled teeth (FT) (2.3 in 2011 and 1.2 in 2001). Similar to 10 years ago, almost all NOP (> 99%) had tooth decay experience and about one-half of NOP had untreated tooth decay (Table 6.4).

**Table 6.3**  
Level of tooth decay experience as measured by the DMFT index among NOP  
in 2001 and 2011

Tooth decay experience	2001 (N = 445 500)	2011 (N = 450 800)
Mean DMFT	17.6	16.2
Mean DT (Decayed)	1.3	1.3
Mean MT (Missing)	15.1	12.7
Mean FT (Filled)	1.2	2.3

Base: All NOP

**Table 6.4**  
Percentage of NOP with tooth decay experience in 2001 and 2011

Tooth decay experience	2001 (N = 445 500)	2011 (N = 450 800)
DMFT	99.4%	99.3%
DT (Decayed)	52.9%	47.8%
MT (Missing)	98.1%	98.1%
FT (Filled)	40.3%	59.5%

Base: All NOP

The presence of retained root in the mouth is a result of the severe crown decay with the root being left behind. Retained roots were found in about one-fourth of NOP (Table 6.5). Compared with 2001, the proportion of NOP with retained root had decreased by 5.4 percentage points while the mean number of retained roots reduced from 0.6 to 0.5.

**Table 6.5**  
Percentage of NOP with retained root in 2001 and 2011

NOP with retained root	2001 (N = 445 500)	2011 (N = 450 800)
Percentage	30.2%	24.8%

Base: All NOP

The average number of teeth with root surface decay experience (DF-root) was 0.5 (Table 6.6) and most of them were untreated. About one-fourth of NOP had root surface decay experience (DF-root) (Table 6.7). In general, the level of root surface decay experience was similar to 10 years ago.

**Table 6.6**  
Level of root surface decay experience among NOP in 2001 and 2011

Root surface decay experience	2001 (N = 445 500)	2011 (N = 450 800)
Mean DF-root	0.4	0.5
Mean D-root (Decayed)	0.3	0.4
Mean F-root (Filled)	< 0.05	0.06

Base: All NOP

**Table 6.7**  
Percentage of NOP with root surface decay experience in 2001 and 2011

Root surface decay experience	2001 (N = 445 500)	2011 (N = 450 800)
DF-root	22.6%	24.6%
D-root (Decayed)	21.5%	21.8%
F-root (Filled)	3.1%	4.1%

Base: All NOP

**The degree of tooth loss in NOP had decreased when compared with 10 years ago.**

The proportion of NOP who had lost all their teeth dropped from 8.6% to 5.6% while the mean number of teeth present in NOP population increased from 17.0 to 19.3.

**The level of tooth decay experience also decreased** with the mean number of

Decayed, Missing and Filled teeth (DMFT) dropping from 17.6 to 16.2. Although on average each NOP had a low number of teeth with untreated decay (1.3), untreated tooth decay affected about one-half of NOP.

**Most of the root surface decay of NOP was untreated.** About 25% of NOP had root

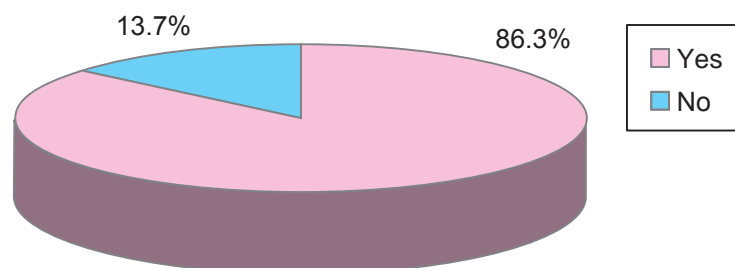
surface decay with the majority of decay being untreated.

**Gum condition - what was the level of gum bleeding?**

NOP who had no teeth or who had some specific medical conditions, e.g. bleeding disorder, were excluded from the gum examination. In this report, gum condition was only inferred to 386 200 dentate NOP (NOP who had teeth) represented by the NOP with gum examination performed in 2011.

Among these dentate NOP, 97.1% (375 200) had bleeding gums and about 86% (333 400) had half or more of their teeth with bleeding gums (Figure 6.1).

**Figure 6.1**  
Percentage of dentate NOP having half or more of the teeth with bleeding gums



Base: Dentate NOP (represented by the NOP with gum examination performed)  
2011: (N = 386 200)

**Gum condition - what was the level of gum pocket?**

Around 40% (157 500) of dentate NOP in this survey had no pocket of 4 mm or more (Table 6.8). The remaining 60% dentate NOP had, on average, 39.6% of their teeth with gum pockets of 4 mm or more (Figure 6.2). Gum pockets of 6 mm or more were found only in 8.4% of the remaining teeth.

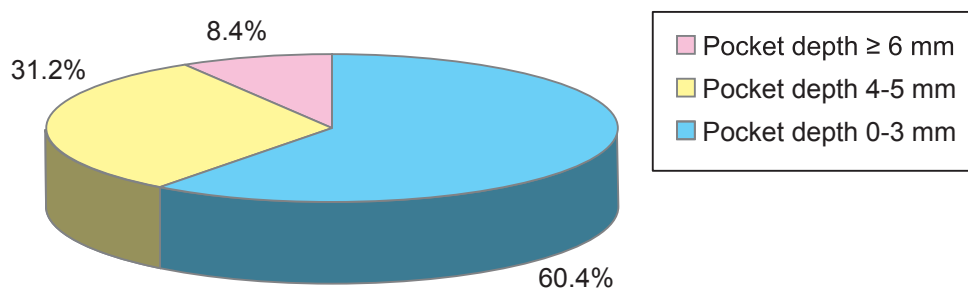
**Table 6.8**  
**Percentage of dentate NOP according to the highest pocket depth in 2001 and 2011**

Highest pocket depth	2001 (N = 358 700)	2011 <sup>#</sup> (N = 386 200)
0-3 mm	44.7%	40.8%
4-5 mm	44.3%	38.8%
≥ 6 mm	11.0%	20.4%
Total	100.0%	100.0%

Base: Dentate NOP (represented by the NOP with gum examination performed)

<sup>#</sup> The diagnostic methodology was extended to include all teeth in half of the mouth in 2011 instead of including only index teeth in 2001.

**Figure 6.2**  
**Average percentage distribution of teeth per dentate NOP (with gum pocket of 4 mm or more) by pocket depth**



Base: Dentate NOP with gum pocket of 4 mm or more  
 2011: (N = 228 700)

Compared with 10 years ago, there was a rise in the proportion of dentate NOP who had gum pockets of 6 mm or more (20.4% in 2011 and 11.0% in 2001) (Table 6.8). The observed increase, apart from the possibility of a deterioration of the gum condition among NOP, could partly be explained by the change in the examination method (from index teeth to all teeth in half of mouth) and more remaining teeth in NOP.

### Gum condition - what was the loss of attachment level?

Over 90% (349 600) of dentate NOP had loss of attachment (LOA) of 4 mm or more. About 50% (182 900) of dentate NOP had attachment loss of 6 mm or more (Table 6.9).

**Table 6.9**  
**Percentage of dentate NOP according to**  
**the level of loss of attachment (LOA) in 2001 and 2011**

Level of LOA	2001 (N = 358 700)	2011 <sup>#</sup> (N = 386 200)
0-3 mm	8.3%	9.5%
4-5 mm	39.9%	43.2%
6-8 mm	36.3%	30.6%
9-11 mm	10.7%	11.4%
≥ 12 mm	4.8%	5.4%
Total	100.0%	100.0%

Base: Dentate NOP (represented by the NOP with gum examination performed)

<sup>#</sup> The diagnostic methodology was extended to include all teeth in half of the mouth in 2011 instead of including only index teeth in 2001.

Gum conditions in this green text box referred to the dentate NOP (NOP who had teeth) represented by the NOP with gum examination performed.

**Gum pockets were common in dentate NOP.** About 60% of dentate NOP had gum pockets of 4 mm or more. Notwithstanding that, among them only 8.4% of the remaining teeth per NOP had pockets of 6 mm or more. However, about 86% of dentate NOP had half or more of their teeth with bleeding gums. **Gum inflammation was prevalent and extensive in dentate NOP** which put them at risk of further developing gum disease and breakdown of tooth-supporting tissue.

### Oral mucosal condition

Mucosal conditions were uncommon in NOP (0.4%<sup>§</sup>, 1 600). Denture-related stomatitis\* and white-coloured mucosal patch were the only types of mucosal conditions found in this survey.

\* Refer to the Glossary

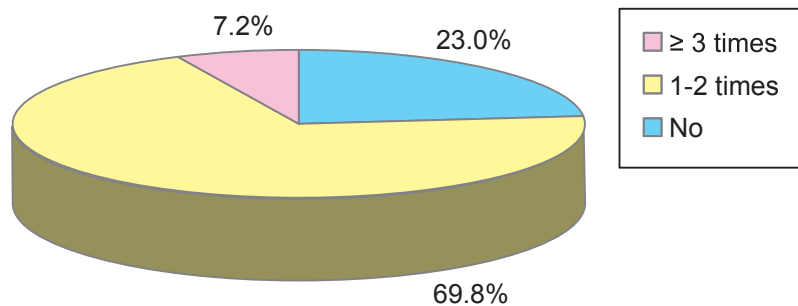
<sup>§</sup> This estimate was compiled based on a very small sample. Readers are advised to interpret this estimate with caution.

## What were the oral health related behaviours among NOP?

### Dietary habit - how often did NOP snack or consume food?

About 70% (314 500) of NOP reported having snack or food consumption once to twice daily other than normal meals. Only 7.2% NOP reported having snack or food consumption three times or more a day (Figure 6.3).

**Figure 6.3**  
Percentage of NOP according to daily frequency of snacking or food consumption other than normal meals

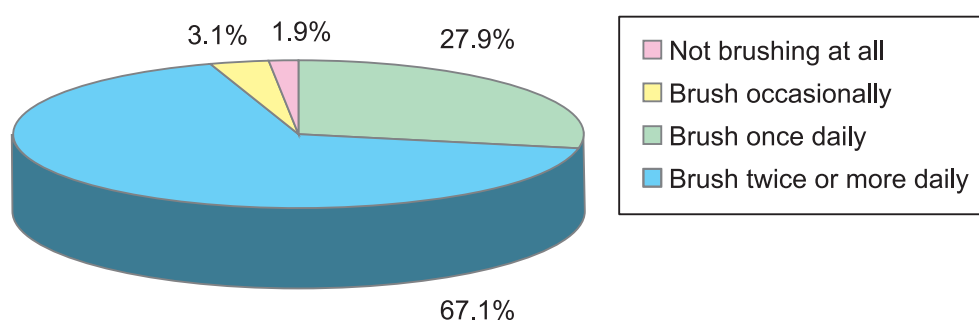


Base: All NOP  
2011: (N = 450 800)

### Oral hygiene habit - how often did the dentate NOP brush their teeth?

Majority (95.0%, 404 300) of dentate NOP brushed their teeth every day, and about 70% (285 400) of dentate NOP brushed twice or more daily (Figure 6.4). For those who brushed their teeth (417 500), 99.6% (415 800) used toothpaste. Compared with 10 years ago, there was a rise in the proportion of dentate NOP brushing occasionally (from 0.3% to 3.1%) and not brushing at all (from 1.0% to 1.9%).

**Figure 6.4**  
Percentage of dentate NOP according to toothbrushing habit



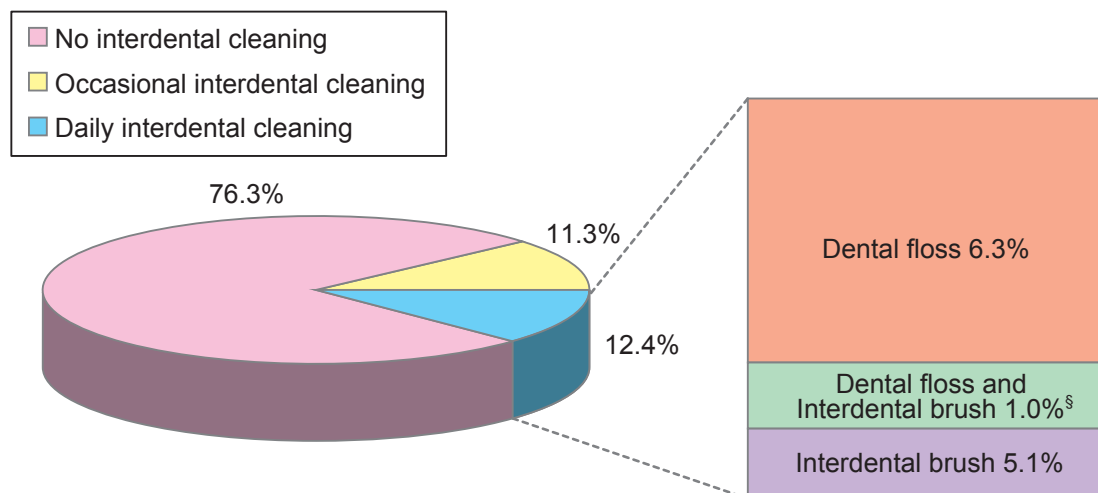
Base: Dentate NOP  
2011: (N = 425 500)



**Oral hygiene habit - did the dentate NOP have interdental cleaning habit?**

Among dentate NOP, 23.7% (100 700) reported that they had the habit of cleaning interdental surfaces of their teeth (Figure 6.5). Around 12% (52 800) of dentate NOP performed interdental cleaning daily. In these 12% NOP, about 60% of them used dental floss (7.3%) and about one half used interdental brush (6.1%) on a daily basis. The proportion of dentate NOP who flossed daily had increased when compared with 2001 (1.6%).

**Figure 6.5**  
**Percentage of dentate NOP according to the interdental cleaning habit**



Base: Dentate NOP  
 2011: (N = 425 500)

<sup>§</sup> This estimate was compiled based on a very small sample. Readers are advised to interpret this estimate with caution.

### Oral hygiene habit - were NOP using other oral hygiene measure?

In addition to toothbrushing, flossing and interdental brushing, 85.4% (385 000) NOP used other means to clean their teeth. Toothpicks and mouthwash were the two most commonly used oral hygiene measures (Table 6.10). The two major reported reasons for using mouthwash were *reducing gum inflammation* (50.6%, 68 700) and *having a cleaner feeling after use* (47.0%, 63 900).

Among the NOP denture wearers (189 500), 88.4% (167 400) used toothbrush to clean the dentures every day. About a quarter (25.4%, 48 200) of them supplemented cleaning with the use of denture cleanser. Nearly 80% (151 500) of them removed their dentures every day before sleep.

**Table 6.10**  
**Percentage of NOP according to**  
**the habit of using other oral hygiene measure**  
**(Multiple answers)**

Habit of using other oral hygiene measure	Percentage (N = 450 800)
Toothpick	65.0%
Mouthwash	30.1%
Salt water	16.4%

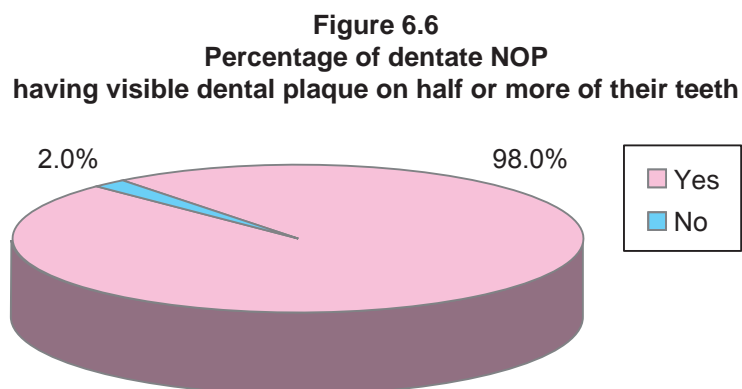
Base: All NOP

### Oral hygiene condition - how clean were NOP's teeth?

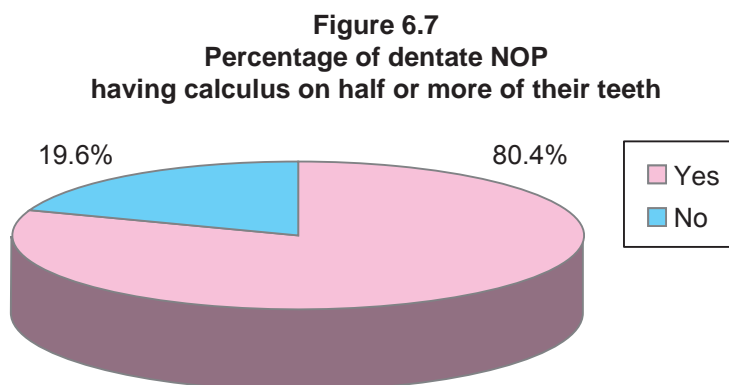
Oral cleanliness and the effectiveness of oral hygiene practices were measured by the level of visible dental plaque and calculus. The measurement was taken in NOP who had gum examination performed. As those NOP who had no teeth or who had some specific medical conditions were excluded from the gum examination, the cleanliness of the teeth in this report was only inferred to 386 200 dentate NOP represented by the NOP with gum examination performed in 2011.

Amongst these dentate NOP, 98.0% (378 400) had visible dental plaque found on at least half of their teeth (Figure 6.6). Nearly 80% of them (79.8%, 308 100) were found to have plaque on every tooth.

Regarding the level of calculus deposition, 80.4% (310 600) of dentate NOP had calculus present on at least half of their teeth (Figure 6.7). Close to one-third (31.9%, 123 100) of them had all their teeth covered with calculus.



Base: Dentate NOP (represented by the NOP with gum examination performed)  
2011: (N = 386 200)



Base: Dentate NOP (represented by the NOP with gum examination performed)  
2011: (N = 386 200)

**The oral hygiene practices among NOP were ineffective in maintaining gum health.**

Although 95.0% of the dentate NOP brushed their teeth daily, among dentate NOP represented by the NOP with gum examination performed, nearly all of them had visible dental plaque on half or more of their teeth, and about 86% of them had half or more of their teeth with bleeding gums.

**There was a rise in the proportion of dentate NOP who only brushed their teeth occasionally or even not brushed at all.**

**The habit of daily interdental cleaning was uncommon among NOP.** Only about a quarter of dentate NOP reported that they had interdental cleaning habit. Among them, about half of them did it on a daily basis. Promotion on interdental cleaning should be embarked on.

**Most of the NOP denture wearers had a habit of cleaning their removable denture daily.** Majority of them used toothbrush to clean the dentures and about 25% of them used denture cleanser as an adjunct.

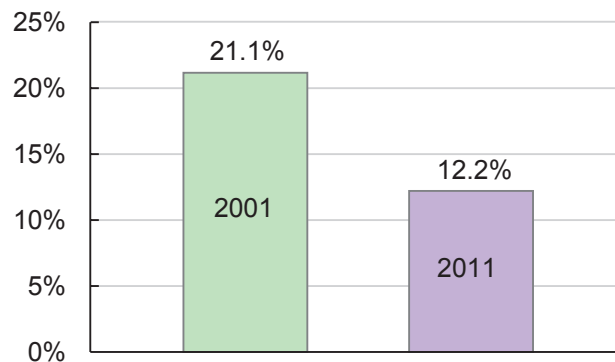
**The use of toothpick was popular among NOP** in contrast to the uncommon use of proper interdental cleaning devices. It reflected the need to emphasise that **proper interdental cleaning should be done by flossing or interdental brushing.**

**Nearly one-third of NOP used mouthwash.** However, use of mouthwash is no substitute for effective mechanical removal of plaque by toothbrushing and interdental cleaning. Moreover, different mouthwashes are designed for different purposes in the control of tooth decay or gum disease. **Correct usage of suitable mouthwash under professional advice should be promoted.**

### Smoking habit - what was the smoking prevalence among NOP?

About 12% (55 200) of NOP reported that they had smoking habit, either daily or weekly and there were nine percentage points reduction when compared with 2001 (Figure 6.8).

**Figure 6.8**  
**Percentage of NOP with smoking habit in 2001 and 2011**



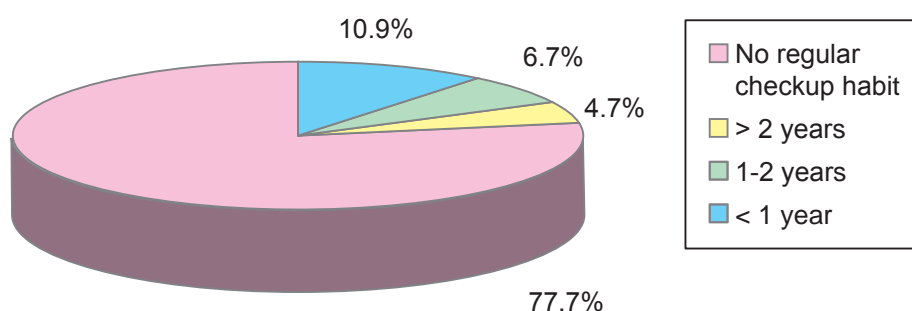
Base All NOP  
2001: (N = 445 500)  
2011: (N = 450 800)

**Although the prevalence of smoking habit among NOP decreased**, such unhealthy behaviour continues to put those NOP who smoke at a higher risk of gum disease, oral cancer and other health problems. Dentists could play an important role in the delivery of smoking cessation advice during their dental visits.

### Utilisation of oral health care services - how many NOP had the habit of seeking regular dental checkup?

In this survey, NOP with regular dental checkup habit were defined as those who attended a dental clinic regularly for checkup and cleaning of teeth in the absence of any oral pain or problems. It was found that 22.3% (100 700) of the NOP population had dental checkup habit and the percentage increased markedly when compared with 2001 (9.1%). When broken down into specific intervals, 10.9% (49 300) of NOP had their dental checkup within one year interval while 17.7% (79 600) of NOP had it within two years interval (Figure 6.9).

**Figure 6.9**  
Percentage of NOP according to the dental checkup habit



Base: All NOP  
2011: (N = 450 800)

### Utilisation of oral health care services - how many NOP had experienced oral symptom and did they consult a dentist?

NOP were asked whether they had oral symptoms in the past 12 months and the ways they managed them. The oral symptoms ranged from mild discomfort such as bad breath to severe toothache that disturbed sleep. Among the NOP population, around half of them reported having bad breath and 14.0% (63 200) of them reported having toothache that disturbed sleep (Table 6.11). Similar findings were observed in 2001.

When NOP experienced oral symptom, less than half of them sought professional dental care. For those NOP who had severe toothache, only 39.5% (25 000) visited a dentist. For those NOP who had bleeding gums and bad breath, the proportion who sought professional dental care was as low as 4.3% (6 400) and 0.8%<sup>§</sup> (1 700) respectively. It appeared that a larger proportion of NOP sought professional dental care when they had severe discomfort and a larger proportion of NOP delayed the seeking of professional dental care when experiencing milder discomfort. This pattern was also observed in 2001.

**Table 6.11**  
**Percentage of NOP according to**  
**the oral symptom experienced in the 12 months before the survey and the action taken**  
**in 2001 and 2011**

Oral symptom		Percentage with oral symptom (All NOP)	Percentage of action taken by the affected NOP			
			No action	Self manage	Doctor / TCM*	Dentist
Bad breath	2001	59.7%	25.6%	69.3%	3.7%	1.3%
	2011	51.1%	26.4%	69.6%	3.3%	0.8% <sup>§</sup>
Bleeding gums	2001	28.6%	46.4%	43.5%	4.0%	6.1%
	2011	32.8%	48.3%	47.4%	0.0% <sup>§</sup>	4.3%
Sensitivity to hot or cold	2001	40.9%	51.2%	37.2%	2.0%	9.6%
	2011	47.6%	44.7%	39.4%	0.3% <sup>§</sup>	15.4%
Mobile teeth	2001	42.4%	63.9%	10.2%	0.7%	25.1%
	2011	41.9%	59.6%	12.9%	0.8% <sup>§</sup>	26.7%
Toothache that disturbed sleep	2001	14.7%	15.0%	37.4%	7.5%	40.1%
	2011	14.0%	19.7%	35.7%	5.1% <sup>§</sup>	39.5%

Base: All NOP

2001: (N = 445 500)

2011: (N = 450 800)

The bases for specified oral symptoms refer to NOP who had the corresponding specified oral symptoms in the 12 months before the survey.

\* TCM – Traditional Chinese medical practitioners

<sup>§</sup> This estimate was compiled based on a very small sample. Readers are advised to interpret this estimate with caution.

### Utilisation of oral health care services - what were the treatment needs among NOP and did they intend to seek dental care?

Similar to gum condition and oral hygiene condition, the assessed treatment need for scaling in this report was only inferred to 386 200 dentate NOP represented by the NOP with gum examination performed in 2011. For the other treatment needs, they were inferred to all NOP.

About 96% (369 000) of dentate NOP, represented by the NOP with gum examination performed, were assessed to have a need of scaling. Based on clinical examination of all NOP, the assessed treatment need of filling (34.6%, 155 900) was lower, and the lowest assessed needs were complex treatments including replacement of missing teeth and root canal treatment. The treatment need perceived by NOP was found to be much lower than the assessed need across most treatment items (Table 6.12).

**Table 6.12**  
**Percentage of NOP according to**  
**the perceived and assessed dental treatment needs in 2001 and 2011**  
**(Multiple answers)**

Dental treatment need	2001 (N = 445 500)		2011 (N = 450 800)	
	Perceived	Assessed	Perceived	Assessed
Scaling	3.9%	98.3%*	15.2%	95.5%*
Filling	8.7%	32.6%	8.3%	34.6%
Extraction	8.6%	36.1%	6.1%	28.2%
Replacement of missing teeth	22.2%	36.6%	7.2%	25.4%
Root canal treatment	1.1%	3.4%	0.3% <sup>§</sup>	5.2%

\* Base (Assessed need for scaling): Dentate NOP represented by the NOP with gum examination performed  
 2001: (N = 358 700)  
 2011: (N = 386 200)

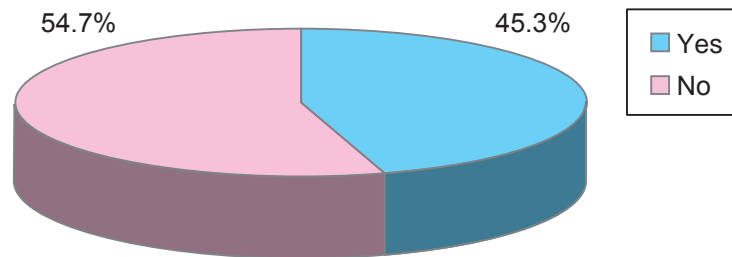
Base (Other treatment needs): All NOP

<sup>§</sup> This estimate was compiled based on a very small sample. Readers are advised to interpret this estimate with caution.



Not all NOP with perceived treatment need intended to visit a dentist. Out of all who had at least one perceived dental treatment need, only 45.3% (74 800) intended to visit a dentist as soon as possible (Figure 6.10).

**Figure 6.10**  
Percentage of NOP according to the intention of visiting a dentist when having perceived treatment need

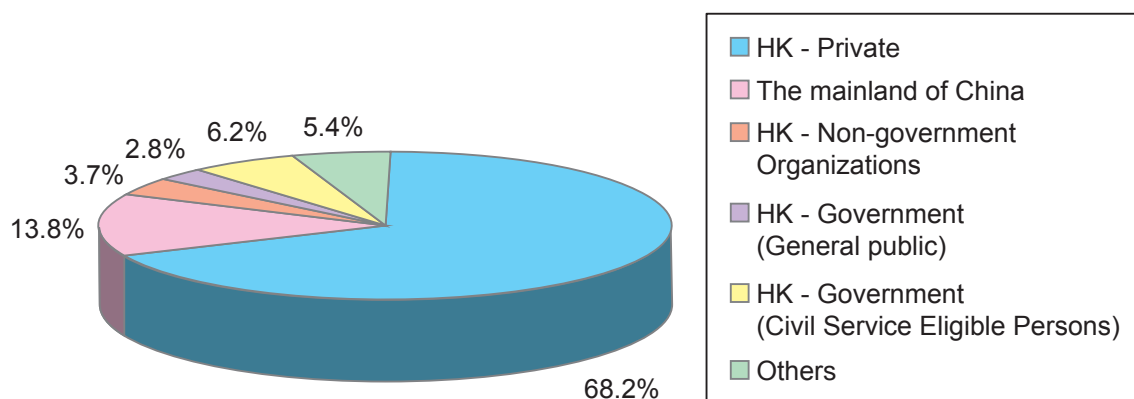


Base: NOP who had at least one perceived treatment need  
2011: (N = 165 000)

### Utilisation of oral health care services - where did they usually go for dental visit?

Private dental clinics in Hong Kong were the most common places for NOP (68.2%, 290 400) to seek dental care, followed by dental clinics in the mainland of China (13.8%, 58 700) (Figure 6.11). A small proportion (2.8%, 11 800) of NOP used the general public service offered by government dental clinics.

**Figure 6.11**  
Percentage of NOP who had visited a dentist according to the type of dental clinic visited



Base: NOP who had ever visited a dentist  
2011: (N = 425 500)

**About one-fifth of the NOP population had dental checkup habit and the proportion increased when compared with 2001.** However, majority of NOP population did not have regular checkup habit.

**Despite experiencing oral symptoms, less than half of the affected NOP sought professional dental care.** Even with severe toothache that disturbed sleep, only about 40% visited a dentist. For those NOP who had milder discomfort such as bad breath, gum bleeding, more than 95% of them delayed the seeking of professional dental care.

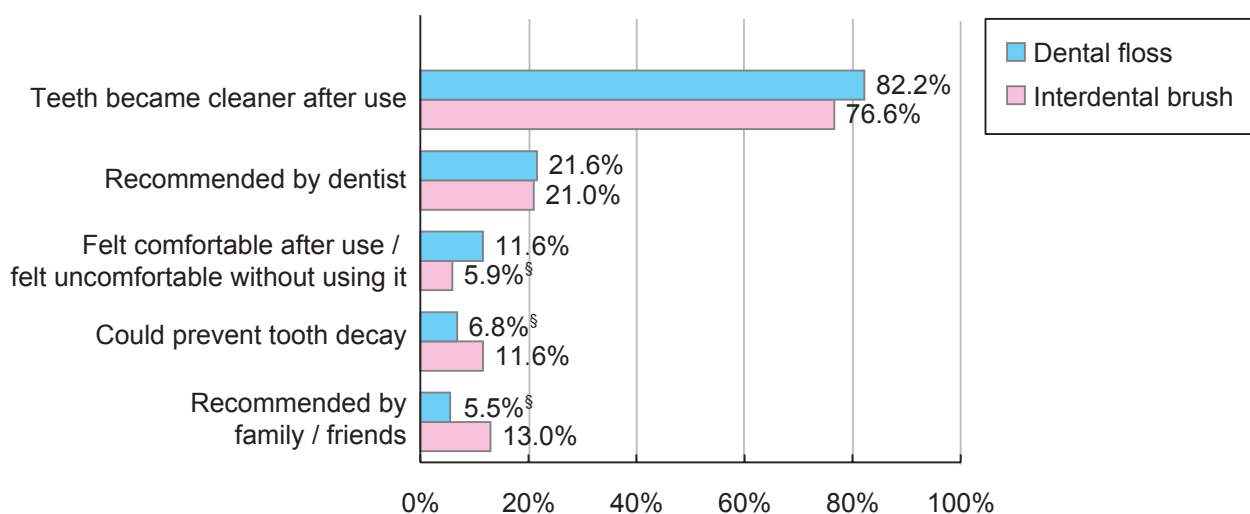
## What were the facilitators and barriers affecting NOP to adopt the desirable oral health related behaviours?

In this survey, the facilitators and barriers to interdental cleaning habit, regular dental checkup habit and dental visit for managing oral symptom were investigated. These identified possible facilitators and barriers could provide some information for the planning of individual and community-based oral health promotion.

### What were the facilitators and barriers to interdental cleaning habit?

The two most common reasons for dentate NOP to have a habit of using dental floss or interdental brush were *teeth became cleaner after use* and *recommended by dentist* (Figure 6.12).

**Figure 6.12**  
Percentage of dentate NOP according to the reasons for having interdental cleaning habit (Multiple answers)



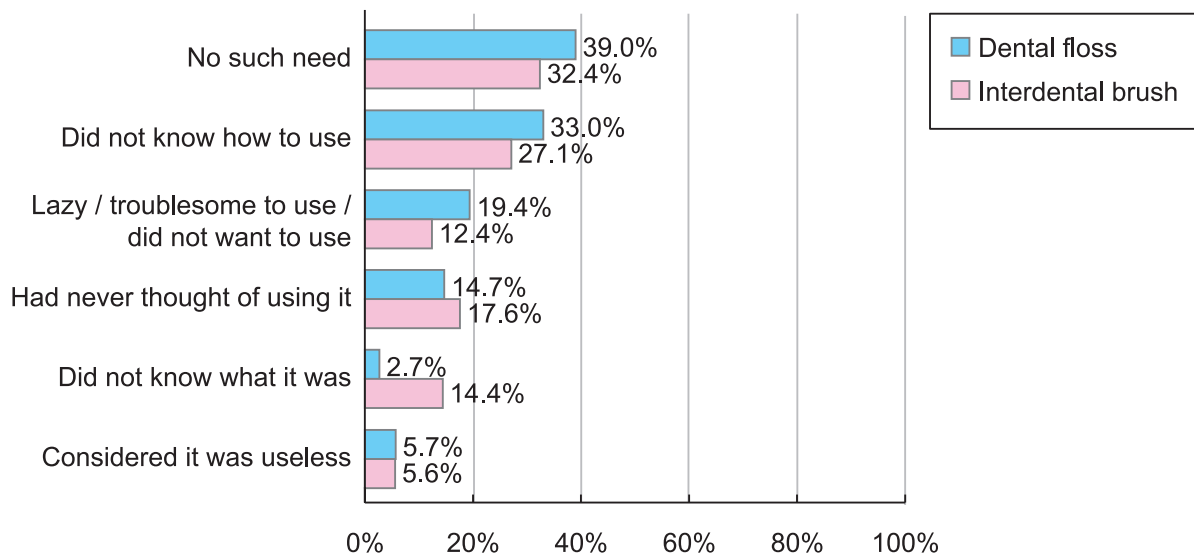
Base (Dental floss): Dentate NOP who had the habit of using dental floss  
2011: (N = 61 600)

Base (Interdental brush): Dentate NOP who had the habit of using interdental brush  
2011: (N = 56 800)

<sup>§</sup> This estimate was compiled based on a very small sample. Readers are advised to interpret this estimate with caution.

The two most common barriers for dentate NOP to have a habit of using dental floss and interdental brush were the feelings of *no such need* and *did not know how to use* (Figure 6.13). It was noted that about 15% (52 700) of NOP did not use an interdental brush because they *did not know what the device was*.

**Figure 6.13**  
**Percentage of dentate NOP according to**  
**the reasons for not having interdental cleaning habit**  
**(Multiple answers)**



Base (Dental floss): Dentate NOP who did not have the habit of using dental floss  
 2011: (N = 360 800)

Base (Interdental brush): Dentate NOP who did not have the habit of using interdental brush  
 2011: (N = 365 600)

The possible facilitators for dentate NOP to have a habit of using dental floss and interdental brush might be *the perception of having cleaner teeth* and *recommendation by dentist*.

The possible barriers for dentate NOP to have a habit of using these two interdental cleaning devices might be *no perceived need of interdental cleaning* and *lack of knowledge on the usage of the dental floss and interdental brush*. It was also noted that about 15% of them did not use an interdental brush because *they did not know what it was*.

### What were the facilitators and barriers to regular dental checkup habit?

For analysis purpose, NOP with regular checkup habit were defined as those who made dental visits within two years interval in the absence of any oral problem. Comparisons were made between groups of NOP classified as regular and irregular attenders according to this definition.

When these NOP were asked about the reasons why they sought regular dental checkup, the main reasons given were for *prevention of dental problems or prevention was better than cure* (59.0%, 47 000) and for *keeping teeth healthy* (24.6%, 19 600). The next two commonly reported reasons were related to the availability of *dental insurance plan or employment benefit* (17.9%, 14 300) and *reminder from dentist* (17.0%, 13 600) (Table 6.13).

**Table 6.13**  
**Percentage of NOP according to**  
**the reasons for seeking regular dental checkup at least once every two years**  
**(Multiple answers)**

Reasons for seeking regular dental checkup	Percentage
For prevention of dental problems or prevention was better than cure	59.0%
For keeping teeth healthy	24.6%
Took full benefit of the dental service which was included in insurance plan / employment benefit	17.9%
Dentist reminded to have regular checkup	17.0%
Had a good and trustworthy dentist	4.2% <sup>§</sup>

Base: NOP who had regular dental checkup at least once every two years  
 2011: (N = 79 600)

<sup>§</sup> This estimate was compiled based on a very small sample. Readers are advised to interpret this estimate with caution.

Among those NOP without regular checkup habit (371 200), the most common reason given for not seeking regular dental checkup was that *they felt their teeth were good / no pain / no need* (57.2%, 212 400). About a quarter (25.9%, 96 100) of irregular attenders also mentioned *charge was unaffordable / did not want to spend money on checkup* (Table 6.14).

**Table 6.14**  
**Percentage of NOP according to**  
**the reasons for not seeking regular dental checkup at least once every two years**  
**(Multiple answers)**

Reasons for not seeking regular dental checkup		Percentage
Teeth were good / no pain / no need		57.2%
Did think of going for regular checkup, however:	Charge was unaffordable / did not want to spend money on checkup	25.9%
	No time	4.3%
	Afraid of seeing dentist	6.7%
	Did not know which dentist was good	4.9%
	Problem with appointment booking	4.6%
	Compromised mobility / poor accessibility / need companion to go together	3.6%
	Finding dental treatments painful	2.5%

Base: NOP without regular dental checkup at least once every two years  
 2011: (N = 371 200)

All NOP irrespective of their checkup habit were asked whether they had certain thoughts or beliefs towards regular dental checkup. These thoughts or beliefs were potential barriers or facilitators to dental checkup identified from a preceding qualitative study on NOP. Percentages of regular and irregular attenders with the respective thoughts or beliefs are shown in Table 6.15.

**Table 6.15**  
**Percentage of NOP according to**  
**the thoughts and beliefs towards regular dental checkup**

Thoughts and beliefs towards regular dental checkup	Regular attenders (N = 79 600)	Irregular attenders (N = 371 200)
Having regular dental checkup every one to two years will help to keep teeth in good condition (每一兩年去檢查下嘞牙齒，洗下牙，棚牙就可以keep得好啲同健康啲)	96.3%*	40.1%*
Will go for regular checkup in order to have early detection of tooth problems (為咗及早發現牙齒嘅問題，而定期去牙醫度檢查牙齒)	74.1%*	21.0%*
Will go for scaling regularly because of aesthetic reason (為咗整靚棚牙，而定期去牙醫度洗牙)	35.0%*	7.9%*
Practising good oral hygiene at home can replace regular scaling (只要勤力啲刷牙同埋打理棚牙，就唔駛定期去洗牙啦)	25.5%*	78.7%*
Will visit a dentist only when in pain or with serious dental problems (棚牙有痛先要去睇牙，無事無痛就梗係唔駛去睇牙啦)	44.3%*	92.7%*
Dare not visit a dentist because the total cost of dental treatments at the end is often unpredictable (睇親牙醫都唔知要俾幾多錢先至出得返嚟，令你唔敢隨便去睇牙)	33.1%*	65.8%*

Base (Regular attenders): NOP with regular dental checkup at least once every two years

Base (Irregular attenders): NOP without regular dental checkup at least once every two years

\* With statistical difference at the 5% level of significance

When comparing to NOP without regular dental checkup habit, a significantly larger proportion of regular NOP attenders held the thoughts or beliefs that:

- *'Having regular dental checkup every one to two years will help to keep teeth in good condition'*
- *'Will go for regular checkup in order to have early detection of tooth problems'*
- *'Will go for scaling regularly because of aesthetic reason'*

On the other hand, a significantly larger proportion of irregular NOP attenders held the thoughts or beliefs that:

- *'Practising good oral hygiene at home can replace regular scaling'*
- *'Will visit a dentist only when in pain or with serious dental problems'*
- *'Dare not visit a dentist because the total cost of dental treatments at the end is often unpredictable'*

The possible facilitators for NOP having regular dental checkup were the *belief in the effectiveness of dental checkup for preventing oral diseases, subsidy in form of dental insurance plan or employment benefit, and reminder from the dentist*. The thoughts and beliefs that *'having regular dental checkup every one to two years will help to keep teeth in good condition'*, *'will go for regular checkup in order to have early detection of tooth problems'* and *'will go for scaling regularly because of aesthetic reason'* might have facilitated their adoption of this habit.

Possible barriers to regular dental checkup were the *subjective feeling of having good oral health and cost concern of dental visits*. A variety of barriers concerning the dental services were also identified. They included *dental fear, unaccommodating dental service, unpleasant past experience and access problem*. The thoughts and beliefs that *'practising good oral hygiene at home can replace regular scaling'*, *'will visit a dentist only when in pain or with serious dental problems'* and *'dare not visit a dentist because the total cost of dental treatments at the end is often unpredictable'* might have deterred the adoption of regular dental checkup habit among NOP.



## What were the facilitators and barriers to seeking professional dental care when NOP experienced oral symptom?

To understand the facilitators and barriers to seeking professional dental care, both NOP who did or did not seek professional dental care for their oral symptom were asked for their reasons behind their decision.

Regarding the reasons why NOP visited a dentist when having oral symptom, the commonly reported reasons were *knew that the symptom was related to dental / oral health* and *believed that only dentist could manage the symptom* (Table 6.16).

**Table 6.16**  
Percentage of NOP according to  
the reasons of visiting a dentist when having oral symptom in the 12 months before the survey  
(Multiple answers)

Oral symptom	Knew that this symptom was related to dental / oral health	Believed that only dentist could manage this symptom	Experienced pain and discomfort	Dental service was covered by insurance plan / employment benefit
Bad breath (N = 1 700)	100.0% <sup>§</sup>	55.4% <sup>§</sup>	†	0.0% <sup>§</sup>
Bleeding gums (N = 6 400)	63.8% <sup>§</sup>	23.4% <sup>§</sup>	0.0% <sup>§</sup>	12.9% <sup>§</sup>
Sensitivity to hot or cold (N = 32 900)	26.5%	53.4%	5.2% <sup>§</sup>	8.7% <sup>§</sup>
Mobile teeth (N = 50 400)	16.6%	62.5%	7.0% <sup>§</sup>	1.6% <sup>§</sup>
Toothache that disturbed sleep (N = 25 000)	31.1%	69.3%	5.7% <sup>§</sup>	5.8% <sup>§</sup>

Base: NOP who consulted dentist when they had the specific oral symptom in the 12 months before the survey

† This option was not available.

§ This estimate was compiled based on a very small sample. Readers are advised to interpret this estimate with caution.

For NOP who did not seek professional dental care when having oral symptom, the common reasons included the beliefs that *the oral symptom was not a serious problem* and that *the symptom would disappear* (Table 6.17).

Some NOP did not seek professional help because *they had never linked their symptoms to their dental or oral health*. This was most common among NOP with the experience of bad breath (18.1%, 41 400).

**Table 6.17**  
**Percentage of NOP according to**  
**the reasons of not visiting a dentist when having oral symptom in the 12 months**  
**before the survey**  
**(Multiple answers)**

Oral symptom	Knew that they needed to visit a dentist but encountered some barriers	The symptom was not a serious problem	The symptom would disappear	Did not know that the symptom was related to dental /oral health	Preferred using other methods	Felt that the methods they used were more effective than visiting a dentist
Bad breath (N = 228 400)	25.2%	26.9%	16.3%	18.1%	4.6%	4.8%
Bleeding gums (N = 141 400)	26.0%	37.5%	27.9%	3.8%	2.5% <sup>§</sup>	3.0%
Sensitivity to hot or cold (N = 181 600)	33.8%	32.2%	19.5%	1.4% <sup>§</sup>	4.8%	6.7%
Mobile teeth (N = 138 400)	47.0%	25.8%	15.3%	0.9% <sup>§</sup>	4.0%	0.7% <sup>§</sup>
Toothache that disturbed sleep (N = 38 200)	72.9%	7.2% <sup>§</sup>	9.9% <sup>§</sup>	0.0% <sup>§</sup>	14.0%	11.5%

Base: NOP who did not consult dentist when they had the specific oral symptom in the 12 months before the survey  
<sup>§</sup> This estimate was compiled based on a very small sample. Readers are advised to interpret this estimate with caution.

A large proportion of NOP did think of visiting a dentist for their prevailing symptom but they had encountered barrier(s) which prevented them from receiving the appropriate care. The barriers that precluded NOP from seeing a dentist are tabulated in Table 6.18. The common reasons for NOP to delay their dental visits were *unaffordable charges* and *did not want to spend money on dental care*.

**Table 6.18**  
**Percentage of NOP with oral symptom in the 12 months before the survey who knew that they needed dental care according to the barriers they encountered (Multiple answers)**

Oral symptom	Charge was unaffordable	Did not want to spend money on dental care	Problem with appointment booking	Afraid of visiting a dentist	No time
Bad breath (N = 57 500)	58.5%	35.6%	14.4%	13.3%	9.0%
Bleeding gums (N = 36 700)	50.2%	32.9%	17.0%	17.3%	6.9% <sup>§</sup>
Sensitivity to hot or cold (N = 61 300)	53.6%	25.9%	18.8%	14.5%	15.4%
Mobile teeth (N = 65 100)	47.0%	30.9%	17.6%	12.3%	7.1%
Toothache that disturbed sleep (N = 27 900)	48.9%	40.8%	13.1% <sup>§</sup>	12.8% <sup>§</sup>	8.3% <sup>§</sup>

Base: NOP who knew that they needed to visit dentist when they had the specific oral symptom in the 12 months before the survey but did not consult a dentist

<sup>§</sup> This estimate was compiled based on a very small sample. Readers are advised to interpret this estimate with caution.

Possible facilitators for seeking professional dental care when having oral symptom e.g. bad breath, tooth sensitivity, tooth mobility and severe toothache were the ability *to relate one's oral symptom to their dental or oral health* and the belief that *dentist was the only person who could manage the problem*.

Possible barriers for seeking professional dental care when having oral symptom included the beliefs that *the oral problem was not serious in nature* and *the symptom would disappear*. A large proportion of NOP mentioned that they knew they needed to visit a dentist but encountered some barriers. The main reported barriers were *unaffordable charge* and *reluctance to spend money on dental care*.

## What was the oral health knowledge of NOP?

Similar to 2001, NOP were asked about the causes and preventive methods of tooth decay and gum diseases. In this survey, minor changes were made to some of the wordings of the 2001 questionnaire but the changes were designed in a way to allow for the comparison of the answers between the two surveys.

### What did NOP know about the cause and prevention of tooth decay?

Majority of NOP related tooth decay to *frequent intake of sweet food* (55.2%, 248 800) and *improper cleaning of teeth* (54.0%, 243 300). Only a small proportion (1.5% to 3.7%, 6 600 to 16 500) of NOP in 2011 knew the other relevant factors leading to tooth decay, namely *irregular dental attendance / scaling, bacteria / dental plaque and frequent snacking / consumption of food*. It was noted that *intake of sour food*, which was the cause of tooth wear, was regarded as a cause of tooth decay by an increased proportion of NOP (from 3.1% in 2001 to 11.8% in 2011). However, higher proportion of NOP could cite the relevant factors as the cause of tooth decay when compared with 2001 (Table 6.19).

**Table 6.19**  
Percentage of NOP according to  
the perceived factors leading to tooth decay in 2001 and 2011  
(Multiple answers)

2001 (N = 445 500)		2011 (N = 450 800)	
Perceived factors	Percentage	Perceived factors	Percentage
* Eating too much candies / sweet food	46.6%	* Frequent intake of sweet food	55.2%
* Improper cleaning of teeth	36.2%	* Improper cleaning of teeth	54.0%
Sour food	3.1%	Intake of sour food	11.8%
* Too frequent food / drink intake	0.8%	* Frequent snacking / consumption of food	3.7%
* Dental plaque / bacteria	0.8%	* Bacteria / dental plaque	3.4%
* No regular dental checkup	0.3%	* Irregular dental attendance / scaling	1.5%
Don't know	28.1%	Don't know	15.8%

Base: All NOP

\* Relevant factors

Most NOP (68.0%, 306 600) reported *proper cleaning of teeth* as a preventive method for tooth decay. Only 3.2% (14 300) of NOP could mention *use of fluoride toothpaste* as a prevention method. In fact, only a small proportion of NOP knew the other relevant methods for tooth decay prevention such as *reduce frequency of snack / food consumption* (1.5%, 6 500) and *regular dental attendance / scaling* (8.3%, 37 300). An increased proportion of NOP reported that *use of mouthwash* (from 3.9% in 2001 to 13.2% in 2011) was for tooth decay prevention, however, majority of them (90.7%, 53 800) did not know what active ingredient to look for in the control of dental decay. Nevertheless, higher percentage of NOP could mention the relevant factors for prevention of tooth decay when compared with 2001 (Table 6.20).

**Table 6.20**  
**Percentage of NOP according to**  
**the perceived methods to prevent tooth decay in 2001 and 2011**  
**(Multiple answers)**

2001 (N = 445 500)		2011 (N = 450 800)	
Perceived methods	Percentage	Perceived methods	Percentage
* Proper cleaning of teeth	51.3%	* Proper cleaning of teeth	68.0%
* Reduce consumption of candies / sweet food	19.8%	* Reduce consumption of sweet food	24.9%
Rinse with water / salt water	9.8%	Rinse with salt water / water	15.7%
Use commercial mouthwash	3.9%	Use mouthwash	13.2%
* Seek regular dental checkup	3.6%	* Regular dental attendance / scaling	8.3%
* Use fluoride toothpaste	0.3%	* Use fluoride toothpaste	3.2%
* Reduce frequency of food / drink intake	0.3%	* Reduce frequency of snack / food consumption	1.5%
Don't know	30.9%	Don't know	15.1%

Base: All NOP  
 \* Relevant factors

### What did NOP know about the cause and prevention of gum disease?

Similar to 10 years ago, the two most common causes of gum disease cited by NOP were *internal heat (traditional Chinese belief)* (37.4%, 168 500), and *improper cleaning of teeth* (20.5%, 92 600). Besides *improper cleaning of teeth*, a small proportion of NOP knew other relevant factors leading to gum disease such as *bacteria / dental plaque* (4.4%, 19 800) and *irregular dental attendance / scaling* (1.1%, 4 800). Only 0.6%<sup>§</sup> (2 700) of NOP were able to mention *smoking* as a factor leading to gum disease (Table 6.21).

**Table 6.21**  
**Percentage of NOP according to**  
**the perceived factors leading to gum disease in 2001 and 2011**  
**(Multiple answers)**

2001 (N = 445 500)		2011 (N = 450 800)	
Perceived factors	Percentage	Perceived factors	Percentage
Internal heat (traditional Chinese belief)	29.0%	Internal heat (traditional Chinese belief)	37.4%
* Improper cleaning of teeth	12.2%	* Improper cleaning of teeth	20.5%
* Dental plaque / bacteria	3.5%	* Bacteria / dental plaque	4.4%
Accumulation of calculus	2.5%	Calculus deposition	2.4%
* No regular dental checkup	1.1%	* Irregular dental attendance / scaling	1.1%
* Smoking	0.8%	* Smoking	0.6% <sup>§</sup>
Don't know	44.5%	Don't know	32.1%

Base: All NOP

\* Relevant factors

<sup>§</sup> This estimate was compiled based on a very small sample. Readers are advised to interpret this estimate with caution.

Regarding the preventive methods for gum diseases, the most commonly reported factor was *proper cleaning of teeth* (28.9%, 130 200) which was much higher than 2001 (9.2%, 40 900). A small proportion of NOP (5.1%, 22 800) could mention the relevant factor *regular dental attendance / scaling* to prevent gum disease. In this survey, a small percentage of NOP (5.8%, 26 000) also mentioned *using mouthwash* but none of them knew what active ingredient to look for to prevent gum disease. There was an increased proportion of NOP who mentioned *avoid certain kind of food or alcohol* (from 10.3% in 2001 to 26.7% in 2011), however which was not considered a relevant factor for prevention of gum disease (Table 6.22). In general, a larger proportion of NOP knew the relevant factors as the causes and prevention of gum disease when compared with 2001. However, it should be noted that still more than 30% (144 700) of NOP did not know anything about it.

**Table 6.22**  
**Percentage of NOP according to**  
**the perceived methods to prevent gum disease in 2001 and 2011**  
**(Multiple answers)**

2001 (N = 445 500)		2011 (N = 450 800)	
Perceived methods	Percentage	Perceived methods	Percentage
* Proper cleaning of teeth	9.2%	* Proper cleaning of teeth	28.9%
Avoid certain food	10.3%	Avoid certain kind of food (cold / sour / sweet / spicy / fried / hard food) or alcohol	26.7%
Rinse with water / salt water	5.1%	Rinse with salt water / water	5.8%
Use commercial mouthwash	2.2%	Use mouthwash	5.8%
Take traditional Chinese medicine / herbal tea	7.8%	Take traditional Chinese medicine / herbal tea / visit traditional Chinese medical practitioners	5.6%
* Seek regular dental checkup	3.4%	* Regular dental attendance / scaling	5.1%
* Avoid smoking	0.0%	* Stop smoking	0.1% <sup>§</sup>
Don't know	62.1%	Don't know	41.4%

Base: All NOP

\* Relevant factors

<sup>§</sup> This estimate was compiled based on a very small sample. Readers are advised to interpret this estimate with caution.



When compared with 2001, there was an increased proportion of NOP who could mention the relevant factors related to the causes and preventive methods for tooth decay and gum disease. However, knowledge of NOP on proper cleaning of teeth, regular dental checkup, use of fluoride toothpaste, reduction of snack / food consumption and smoke-free lifestyle was still far from satisfactory. Less than 30% of NOP knew that proper cleaning of teeth could prevent gum disease. A small proportion of NOP could relate regular dental checkup to tooth decay and gum disease (< 9%). Only a very small percentage of NOP knew that fluoride toothpaste (3.2%) and reduction of snack / food consumption frequency could prevent tooth decay (1.5%) and smoking was related to gum disease (0.6%<sup>§</sup>).

On the other hand, an increased proportion of NOP mentioned intake of sour food as a cause of tooth decay. They also reported that avoid certain kind of food or alcohol as a preventive method for gum disease. These answers mentioned by NOP were however not relevant factors.

## Chapter 6 – Summary

When compared with a decade ago, NOP had slightly more teeth retained and the level of tooth decay experience showed a slight decline. However, gum disease was still a major problem in NOP. Gum inflammation was prevalent and extensive. Majority of NOP had half or more of their teeth with gum bleeding. A large proportion of NOP also had gum pockets.

The oral hygiene of NOP was unsatisfactory as almost all of them had visible dental plaque on half or more of their teeth. Nearly all NOP brushed their teeth daily and most of them brushed twice or more a day, but interdental brushing habit was not common among NOP. On the other hand, a large proportion of NOP used toothpick and mouthwash as additional oral hygiene measures. Some facilitators and barriers to the interdental brushing habit were identified which were related to the recommendation from dentists, the belief in usefulness of such habit and the possession of skills in mastering the devices.

Although smoking prevalence has decreased, more than one-tenth of NOP still smoked which put them at a higher risk of gum disease, oral cancer and other health problems.

A larger proportion of NOP knew the relevant causes and preventive methods for tooth decay and gum disease when compared with 10 years ago. However, knowledge of NOP on proper cleaning of teeth, regular dental checkup, use of fluoride toothpaste, reduction of snack / food consumption and smoke-free lifestyle was still far from satisfactory.

Only about one-fifth of NOP had regular dental checkup habit and more than half of NOP did not make use of professional dental care when having oral symptom. Some possible facilitators and barriers to the utilisation of oral health care services were identified. These included the ability to relate the symptom to oral health, perceived severity of the oral symptom, perceived need and benefit of professional help, cost concern and reminder from dentist, etc.

## Way forward

Dentist's input is indispensable in effective oral self-care because dentist can provide personalised guidance for individuals especially the manual skill of toothbrushing and interdental cleaning. Oral self-care of NOP was not effective, and therefore oral self-care complemented with appropriate use of professional dental care, e.g. regular dental checkup is recommended.

For improving oral self-care of NOP, proper interdental cleaning through the use of dental floss and interdental brush should be promoted. Interdental brush may be a better option for this age group as gum recession is common. The interdental space can be large enough after gum recession such that it can accommodate an interdental brush for cleaning that area. Moreover, it requires less manual dexterity to manipulate an interdental brush as compared with flossing. In fact, the skill needed for using interdental brush and toothpick is similar.

In addition to toothpicks, a large proportion of NOP also used mouthwash. As use of mouthwash is no substitute for mechanical removal of plaque by toothbrushing and interdental cleaning, correct usage of suitable mouthwash under professional advices should be emphasised.

Only a very small proportion of NOP knew that use of fluoride toothpaste, reduction of snack / food consumption and cessation of smoking could help to prevent dental diseases. Appropriate messages should be included in future oral health education activities for adopting lifestyle conducive to good oral health. Dentists are also in a good position to deliver smoking cessation advice during the dental visits.

Utilisation of oral health care services by NOP was low. As a result they could miss the chance to have preventive care and prompt treatment of oral diseases. They would also lose the opportunity to receive individualised advice to improve their oral hygiene skills. Therefore proper use of professional dental care among NOP should be promoted. The possible facilitators and barriers to seeking professional dental care for NOP were investigated in this survey and the findings may provide useful hints for the promotion of utilisation of oral health care services in this group.

## CHAPTER 7

# Aged 65 and above users of Social Welfare Department Long-term Care Services

### Introduction

Functionally dependent older persons requiring additional support on their daily activities may apply for long-term care (LTC) services from the Social Welfare Department (SWD). Since 2003, the SWD has adopted a Standardised Care Need Assessment Mechanism for eligibility screening for subsidised LTC services, to ascertain the care needs, and to match the older persons with appropriate services. LTC services under the purview of SWD can be broadly divided into three categories:

- Residential care services
- Centre-based community support services – Day care centres or units for the Elderly (D/E)
- Home-based community support services – Enhanced Home and Community Care Services and Integrated Home Care Services (HCCS)

Functionally dependent older persons covered in this survey included all aged 65 and above users of the three categories of LTC services. The group receiving residential care services is equivalent to the institutionalised older persons (IOP) group in the Oral Health Survey conducted in 2001, and they are also referred to as IOP in the remainder of this report. The present survey had extended the coverage to include D/E and HCCS users. Under the Government's policy to support "*ageing in the community as the core, institutional care as back-up*", the proportion of functionally dependent older persons receiving community support services is expected to increase. The inclusion of functionally dependent older persons receiving community support services allowed investigation of their oral health needs.

The Report on Oral Health Survey 2001 cautioned that the dental treatment needs of IOP identified based on criteria used for the adults and healthy and independent older persons might not be realistic. For instance, the use of dental prostheses requires attention in self-care and cleaning, which may not be user-friendly for IOP who are incapable of taking care of themselves. The health condition of the IOP had not been taken into account in the assessment of dental treatment need in 2001. Hence, the course of treatment itself, such as the removal of teeth or the filling of decayed teeth, may possibly lead to distress for some IOP. It is now widely accepted that treatment planning for functionally dependent older persons should be rational rather than technically ideal. The major determining factors of the realistic treatment need are the dentists' perceived capacity of the functionally dependent older persons to receive treatment, and the willingness of the functionally dependent older persons and their families to accept treatment. While standard epidemiological oral health information and assessed dental treatment needs were collected for comparison and monitoring, the present survey attempted to evaluate treatment need at the levels of dentists' recommendation to treat and the willingness of the older persons to receive treatment.

## Survey objectives

The objectives of the survey were:

1. to describe the oral health status;
2. to describe the oral self-care routines;
3. to investigate the perception of problems related to oral status and oral functions; and
4. to describe and compare dental treatment needs as assessed by dentists and perceived by the functionally dependent older persons.

A brief description on the survey methods employed is presented in the following paragraphs. Readers who wish to go direct to survey findings can proceed to quick reference sections found in green text boxes.

## Sample design

The lists of service providers were downloaded from the website of SWD for use as sampling frames. It was confirmed with SWD that the lists were up-to-date for the purpose.

### Number of LTC service providers included in the sampling procedure \*

LTC Service	Provider
Residential care homes	934 homes
Day care centres or units	59 centres
Enhanced home and community care services	24 teams
Integrated home care services (frail cases only)	60 teams

\* As at end of December 2010

The samples of LTC users were drawn in clusters with LTC service providers as a unit from the lists downloaded from the website of SWD, using a scientific sampling method.

## Data collection method

The same data collection procedures were performed on three categories of LTC users selected. Data on personal particulars and medical history were obtained from the personal record kept by the LTC service providers with the consent of the selected older persons.

Data on oral health status were collected by clinical examination performed by a team of dentists. Clinical examination for IOP and D/E users was performed at the selected residential care homes or day care centres using portable equipments. Examination for HCCS users was performed at the living quarters of the selected older persons.

Data on personal behaviour, experiences related to oral health and oral health service were collected through structured interview conducted by a team of trained dental surgery assistants.

Training sessions were arranged for both the examining dentists and dental surgery assistants to familiarise them with the data collection methods and to calibrate them to ensure consistency.

## Enumeration results

### Residential care homes

A total of 24 residential care homes were invited to participate in the survey with 18 of them agreed to participate. Due to difficulties in conducting the survey on all residents in large homes, a sub-sample of residents was drawn from homes with more than 50 residents. A total of 815 IOP were invited to participate in the survey, with 498 consents received.

At the end of the survey, a total of 443 IOP were clinically examined and 269 of them were interviewed. Those who could not be interviewed had problems either in understanding the questions or in giving responses. With statistical adjustment and weighting, the final results could be inferred to some 60 000 older persons living in residential care homes. Information collected through the structured interview were inferred to 39 300 of this group.

### Day care centres or units for the elderly

Twenty day care centres/units were selected and invited to participate in the survey with 14 out of the 20 selected centres or units agreed to participate. A total of 967 users, including full-time and part-time users were invited to participate in the survey, with 527 consents received.

At the end of the survey, a total of 444 D/E users were clinically examined and 348 of them were interviewed. With statistical adjustment and weighting, the final results could be inferred to some 3 230 older persons receiving care in D/E. Information collected through the structured interview were inferred to 2 530 of this group.

### Home-based community support services

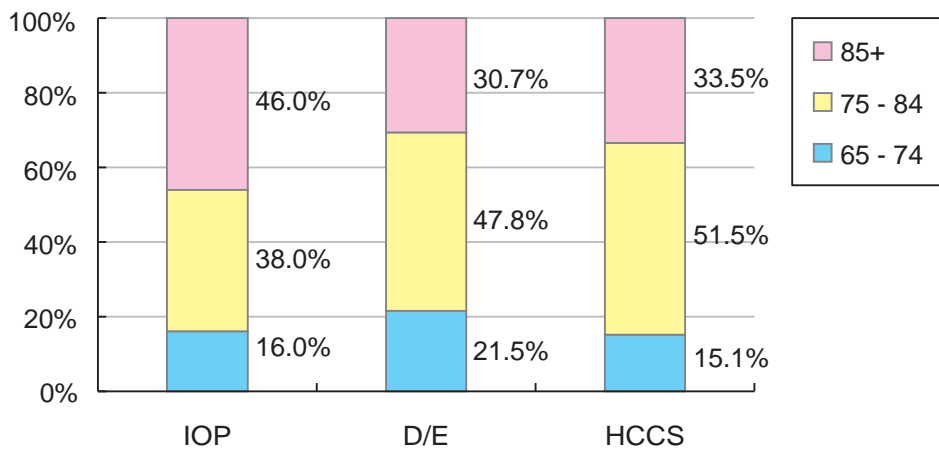
Twelve teams providing Enhanced Home and Community Care Services (EHCCS) and 31 teams providing Integrated Home Care Services (IHCS) were invited to participate in the survey. Eight out of the 12 selected EHCCS teams and 24 out of the 31 selected IHCS teams agreed to participate. The IHCS is serving two types of cases, frail and ordinary cases. Only the frail cases under the IHCS were invited. A total of 826 HCCS users were invited to participate in the survey, with 383 consents received.

At the end of the survey, a total of 347 HCCS users were clinically examined and 278 of them were interviewed. With statistical adjustment and weighting, the final results could be inferred to some 4 480 older persons receiving EHCCS or IHCS. Information collected through the structured interview were inferred to 3 450 of this group.

## What were the characteristics of frail older persons receiving different long-term care services?

The age distribution of the three categories of LTC users is shown in Figure 7.1. The youngest age group (65-74) constituted the minority group in all three categories of LTC users. The majority group was *aged 85 and above* among IOP and *aged 75-84* among D/E and HCCS users.

**Figure 7.1**  
Distribution of LTC users according to age



Base: All LTC users  
 IOP: (N = 60 000)  
 D/E users: (N = 3 230)  
 HCCS users: (N = 4 480)



Information on the medical conditions of LTC users was collected from the user record provided by the LTC providers and is summarised in Table 7.1. The prevalence of medical conditions in general was similar for the three categories of LTC services. The most common medical condition was hypertension. This was similar to the results of the Census and Statistics Department Thematic Household Survey Report No.40. There were relatively higher proportions of stroke and dementia sufferers among D/E users compared to IOP and HCCS users.

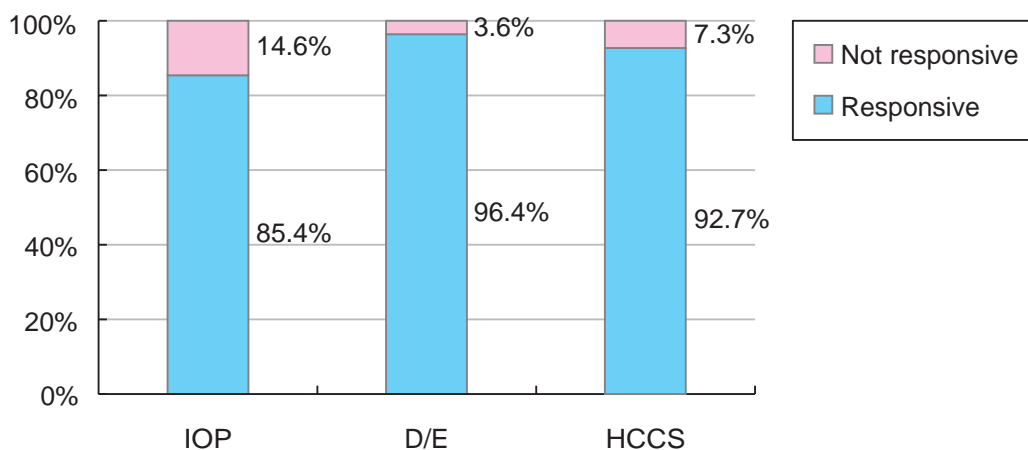
**Table 7.1**  
**The occurrence of the most commonly recorded medical conditions**  
**among LTC users**  
**(Multiple answers)**

Medical condition	IOP (N = 60 000)	D/E (N = 3 230)	HCCS (N = 4 480)
Hypertension	57.7%	59.2%	48.1%
Stroke	32.5%	40.0%	25.2%
Diabetes	23.6%	28.5%	22.3%
Dementia	19.3%	30.1%	13.1%
Heart diseases	14.0%	20.6%	14.5%
Parkinson's disease	6.6%	8.0%	4.7%
Depression	4.1%	9.7%	3.4%
Psychiatric disorders	2.9%	5.0%	2.0%

Base: All LTC users

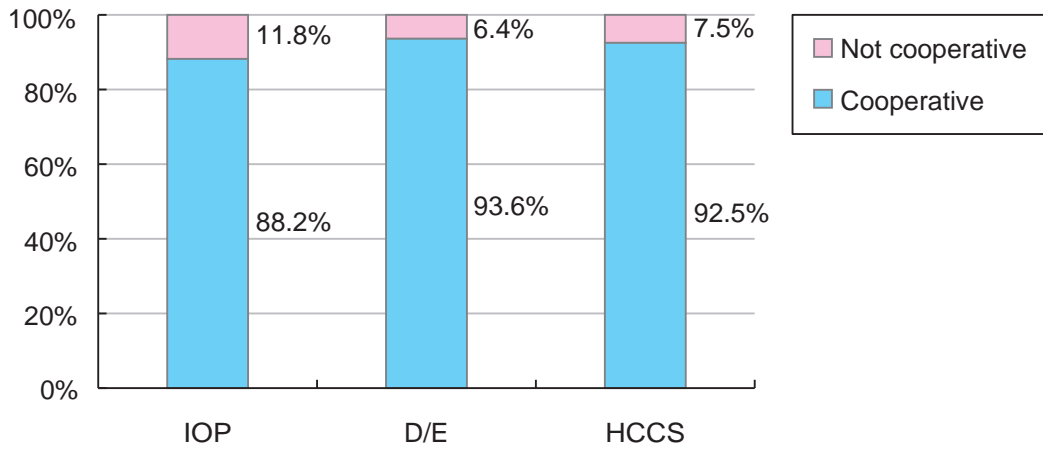
Upon the completion of examination, the examining dentists assessed the cognitive and physical status of LTC users based on the encounter. Figure 7.2 and Figure 7.3 show the assessed responsiveness and cooperation of LTC users respectively. D/E users had the highest proportion assessed as responsive and cooperative while IOP had the lowest proportion among the three categories. Figure 7.4 shows the assessed communication ability and IOP had the lowest proportion with clear communication. The assessed physical mobility is shown in Figure 7.5. IOP had more difficulties in mobility as less than half of them were ambulatory, compared with more than two-thirds of D/E and HCCS users. While as much as 66.3% (2 970) of HCCS users were ambulatory, 5.5% (250) of them were bed-bound.

**Figure 7.2**  
**Distribution of LTC users according to ability to respond**  
**as assessed by the examining dentists**



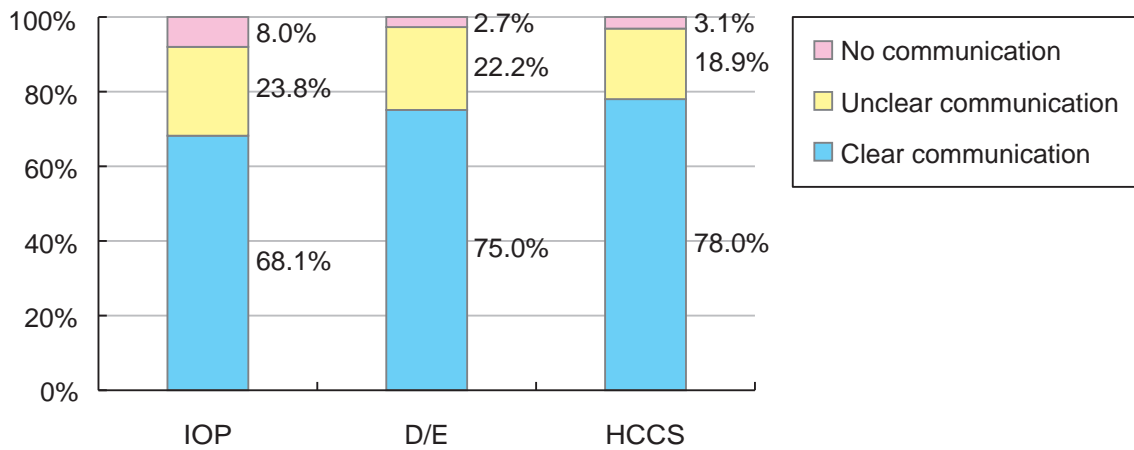
Base: All LTC users  
 IOP: (N = 60 000)  
 D/E users: (N = 3 230)  
 HCCS users: (N = 4 480)

**Figure 7.3**  
**Distribution of LTC users according to ability to cooperate**  
**as assessed by the examining dentists**



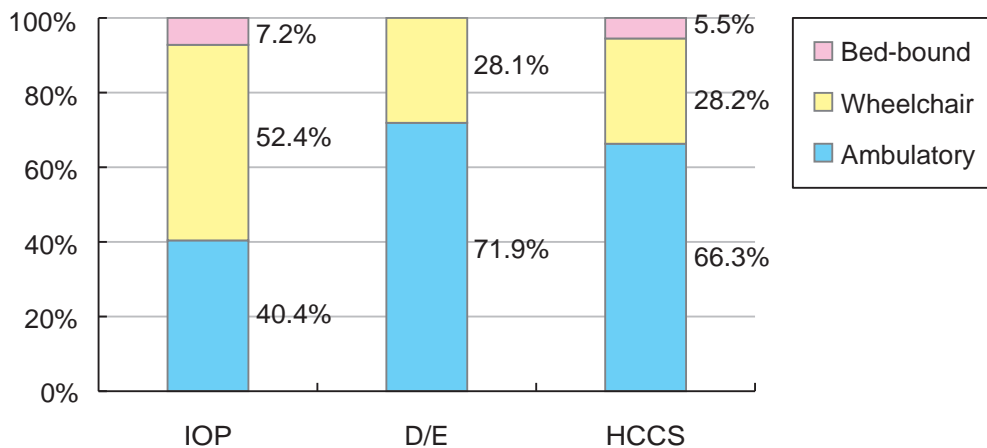
Base: All LTC users  
 IOP: (N = 60 000)  
 D/E users: (N = 3 230)  
 HCCS users: (N = 4 480)

**Figure 7.4**  
**Distribution of LTC users according to ability to communicate**  
**as assessed by the examining dentists**



Base: All LTC users  
 IOP: (N = 60 000)  
 D/E users: (N = 3 230)  
 HCCS users: (N = 4 480)

**Figure 7.5**  
**Distribution of LTC users according to physical mobility**  
**as assessed by the examining dentists**



Base: All LTC users  
 IOP: (N = 60 000)  
 D/E users: (N = 3 230)  
 HCCS users: (N = 4 480)

IOP was the group of LTC users with the highest proportion in the oldest age group (85 and above), with more severe functional dependence and higher proportion with physical mobility difficulties. All these factors posed challenges to the provision of dental care to IOP.

The proportion of D/E users with dementia was the highest among all three categories of LTC users but the proportions with better responsiveness and cooperation assessed by dentists were also the highest.

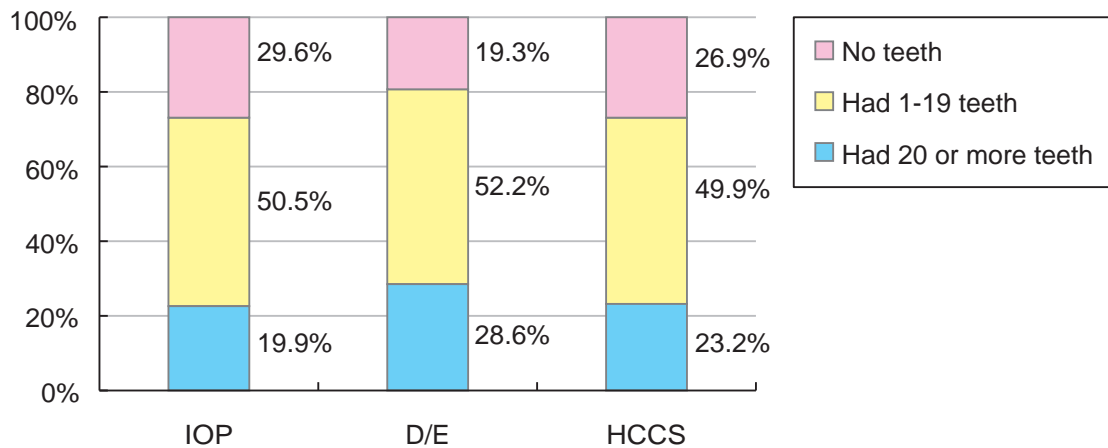
The characteristics of HCCS users seemed to be a mix between those of IOP and D/E users. Some of them were physically more mobile and may be able to access conventional dental care. On the other hand, those who were bed-bound were not captive as IOP and may also be a challenge to the dental profession in the provision of dental care.

## What was the oral health status of 65-year old and above LTC users in Hong Kong?

### Tooth status - how many teeth were there?

The degree of tooth loss and the presence of retained root (severely broken down tooth with only the root left behind) among LTC users are summarised in Figure 7.6 and Figure 7.7 respectively. There is no internationally agreed minimum acceptable number of teeth. For comparison purpose, the presence of 20 teeth has been used as the arbitrary minimum number of teeth. IOP had the highest degree of tooth loss as the proportion of total tooth loss (had no teeth) was the highest and the proportion with 20 or more remaining teeth was the lowest. Each IOP had 9.4 remaining teeth on average. D/E users had the lowest degree of tooth loss with a mean of 12.5 remaining teeth and HCCS users were somewhat in between with a mean of 10.8 remaining teeth.

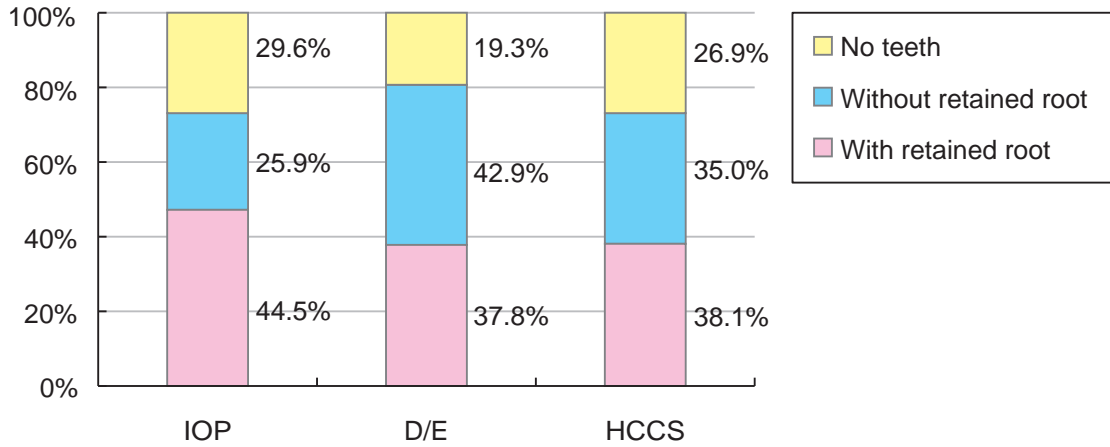
**Figure 7.6**  
Distribution of LTC users according to the number of remaining teeth



Base: All LTC users  
 IOP: (N = 60 000)  
 D/E users: (N = 3 230)  
 HCCS users: (N = 4 480)

The proportions of D/E and HCCS users with retained root were similar but the proportion of IOP with retained root was obviously higher (Figure 7.7).

**Figure 7.7**  
**Distribution of LTC users according to the presence of retained root**



Base: All LTC users  
 IOP: (N = 60 000)  
 D/E users: (N = 3 230)  
 HCCS users: (N = 4 480)

### Tooth status - replacement of missing teeth

There was a decreasing trend in the use of dental prostheses with increasing age among IOP (Table 7.2). The use of bridge and partial denture decreased with increasing age. However, the wearing of full denture increased with age.

The use of dental prostheses among D/E and HCCS users was different from that of IOP, as both groups had increased use of dental prostheses with increasing age. Both the use of partial and full dentures increased with increasing age in both groups.

**Table 7.2**  
Percentage and number of LTC users with dental prostheses  
(Multiple answers)

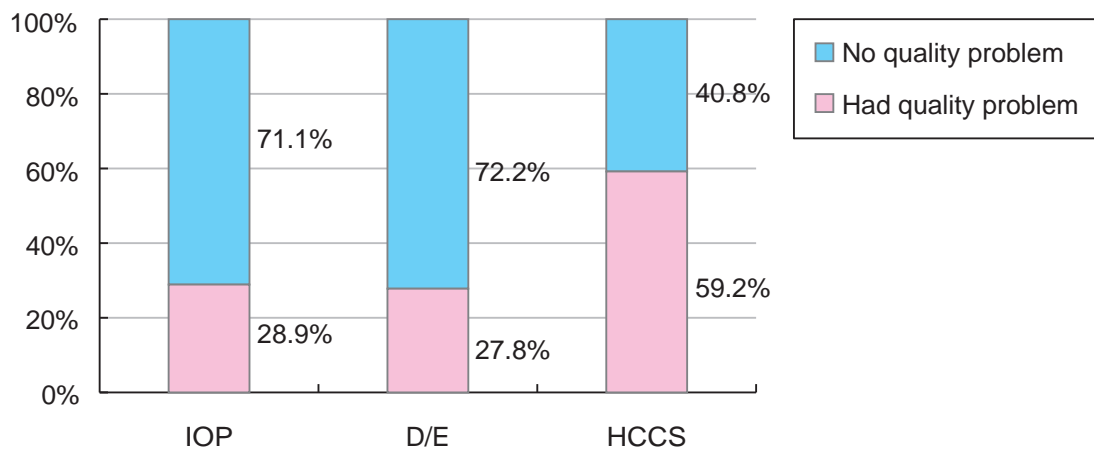
Age group	Type of prosthesis	IOP (N = 60 000)	D/E (N = 3 230)	HCCS (N = 4 480)
65-74	With any prostheses	53.3%	46.2%	38.2%
	With bridge	25.5%	22.6%	14.7%
	With partial denture	20.3%	26.4%	19.4%
	With full denture	14.6%	10.2%	16.5%
	With dental implant	<0.05%	<0.05%	<0.05%
75-84	With any prostheses	44.1%	61.2%	53.2%
	With bridge	9.7%	23.2%	15.0%
	With partial denture	17.1%	26.9%	21.9%
	With full denture	25.4%	28.8%	27.3%
	With dental implant	0.3%	0.7%	<0.05%
85+	With any prostheses	39.2%	69.2%	66.7%
	With bridge	3.1%	14.3%	10.6%
	With partial denture	14.7%	33.5%	24.7%
	With full denture	30.6%	39.4%	47.9%
	With dental implant	0.7%	<0.05%	1.1%
All age	With any prostheses	43.3%	60.4%	55.5%
	With bridge	9.2%	20.3%	13.5%
	With partial denture	16.5%	28.8%	22.4%
	With full denture	26.1%	28.0%	32.6%
	With dental implant	0.4%	0.3%	0.4%

Base: All LTC users

Removable full and partial dentures being worn by the LTC users were assessed by the examining dentists for problems. Quality problems refer to problems including looseness, ill-fitting and broken parts assessed and in general need rectification by repair or replacement. Cleanliness problems need improvement in daily oral hygiene and denture care. The results are summarised in Figures 7.8 to 7.11.

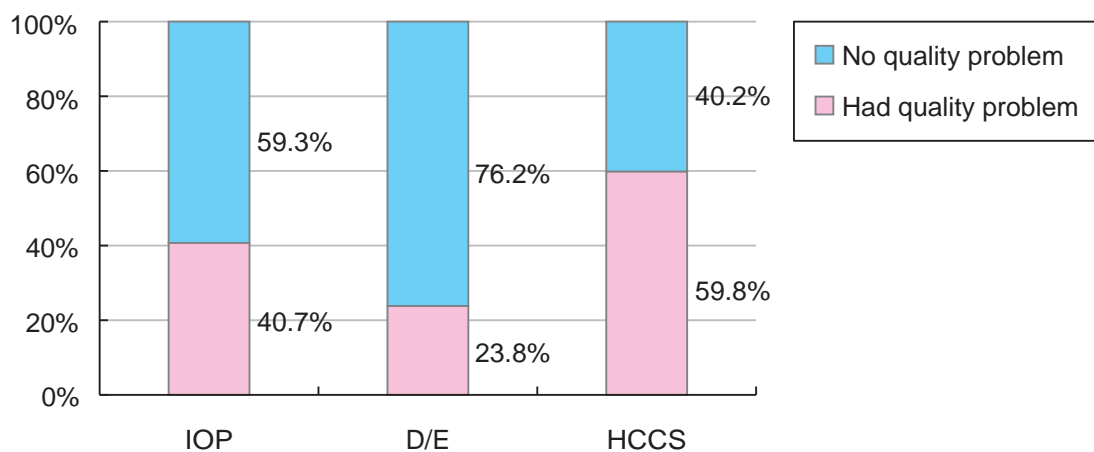
More HCCS users had quality problems in their dentures compared with the other two categories of LTC users, while more IOP had cleanliness problems with their dentures among the three groups.

**Figure 7.8**  
Quality problems of full dentures being worn by LTC users



Base: All LTC users and wearers of full denture  
 IOP: (N = 15 600)  
 D/E users: (N = 910)  
 HCCS users: (N = 1 460)

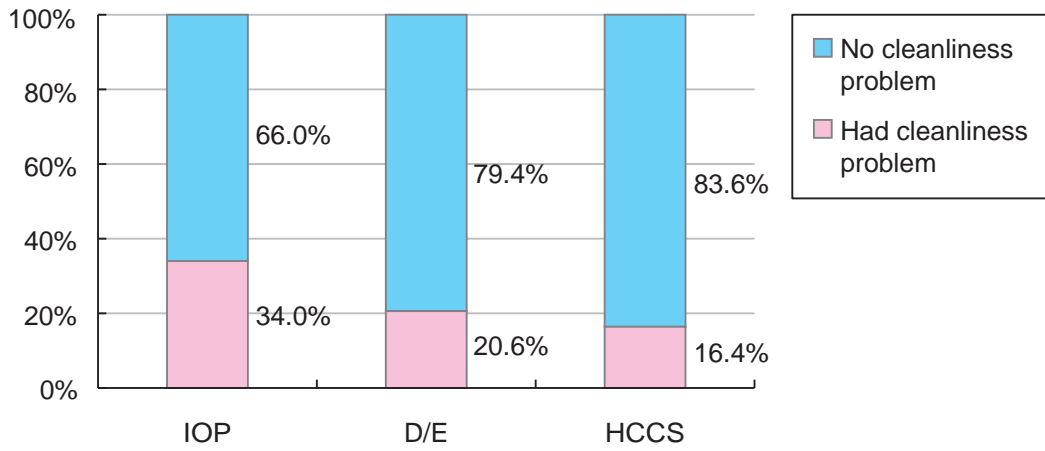
**Figure 7.9**  
Quality problems of partial dentures being worn by LTC users



Base: All LTC users and wearers of partial denture  
 IOP: (N = 9 900)  
 D/E users: (N = 930)  
 HCCS users: (N = 1 010)

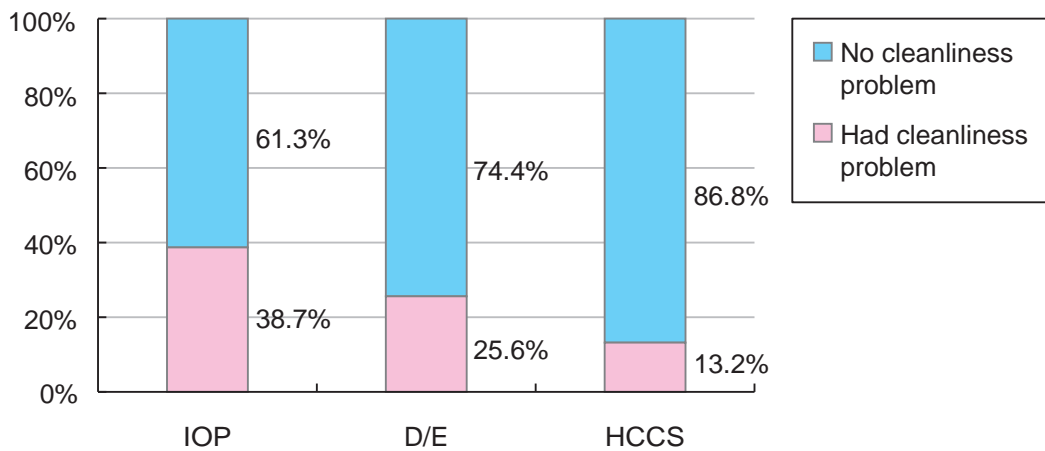


**Figure 7.10**  
**Cleanliness problems of full dentures being worn by LTC users**



Base: All LTC users and wearers of full denture  
 IOP: (N = 15 600)  
 D/E users: (N = 910)  
 HCCS users: (N = 1 460)

**Figure 7.11**  
**Cleanliness problems of partial dentures being worn by LTC users**

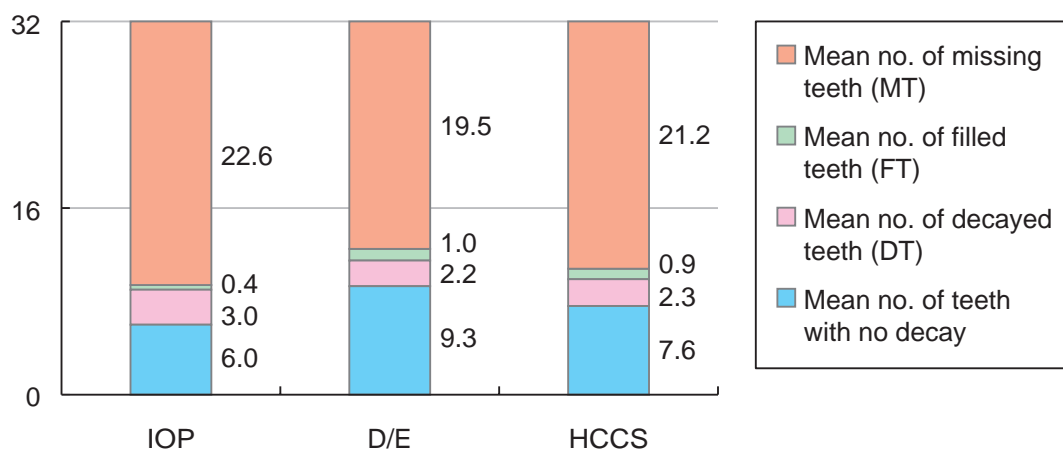


Base: All LTC users and wearers of partial denture  
 IOP: (N = 9 900)  
 D/E users: (N = 930)  
 HCCS users: (N = 1 010)

**Tooth status - what was the level of tooth decay experience?**

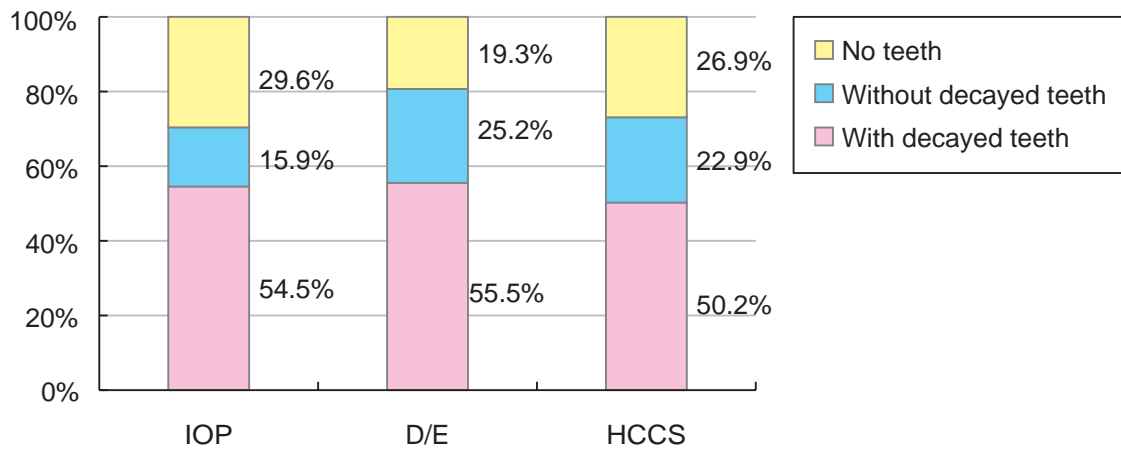
The mean number of teeth with different tooth decay experience among LTC users is shown in Figure 7.12. The proportion of LTC users affected by tooth decay is shown in Figure 7.13 and the tooth decay experience of LTC users as measured by the DMFT index is shown in Table 7.3. The level of decay experience on exposed root surfaces (DF-root) is shown in Table 7.4. Almost all LTC users had tooth loss (MT). At this age, it is difficult to ascertain how many of these teeth loss were due to tooth decay and how many were due to gum disease. Readers are cautioned not to attribute all MT in this population to tooth decay. More than half of the LTC users had untreated decay (DT) in their remaining teeth. Some decay was so extensive that only the root of the tooth was retained, and the mean number of retained root (R-root) is shown in Table 7.4. Among IOP, an average of 9.4 teeth remained in the mouth, 3.0 (DT in Table 7.3) were decayed including 2.0 (R-root in Table 7.4) that were so decayed that only the roots were left behind. Tooth decay was less severe among HCCS users as an average of 2.3 (DT in Table 7.3) of the 10.8 remaining teeth were decayed, and 1.4 (R-root in Table 7.4) were retained roots. Tooth decay was the least severe among D/E users with 2.2 (DT in Table 7.3) decayed teeth in the 12.5 remaining teeth, with 1.4 (R-root in Table 7.4) retained roots.

**Figure 7.12**  
**Mean number of teeth with different tooth decay experience among LTC users**



Base: All LTC users  
 IOP: (N = 60 000)  
 D/E users: (N = 3 230)  
 HCCS users: (N = 4 480)

**Figure 7.13**  
Proportions of LTC users affected by untreated tooth decay



Base: All LTC users  
 IOP: (N = 60 000)  
 D/E users: (N = 3 230)  
 HCCS users: (N = 4 480)

**Table 7.3**  
Level of tooth decay experience as measured by the DMFT index among LTC users

LTC	Tooth decay experience	DT (Decayed)	MT (Missing)	FT (Filled)	DMFT
IOP	Mean	3.0	22.6	0.4	25.9
	% affected	54.5%	100%	17.0%	100%
D/E	Mean	2.2	19.5	1.0	22.7
	% affected	55.5%	100%	32.7%	100%
HCCS	Mean	2.3	21.2	0.9	24.3
	% affected	50.2%	98.3%	32.6%	99.7%

Base: All LTC users  
 IOP: (N = 60 000)  
 D/E users: (N = 3 230)  
 HCCS users: (N = 4 480)

**Table 7.4**  
**Level of root surface decay experience among LTC users**

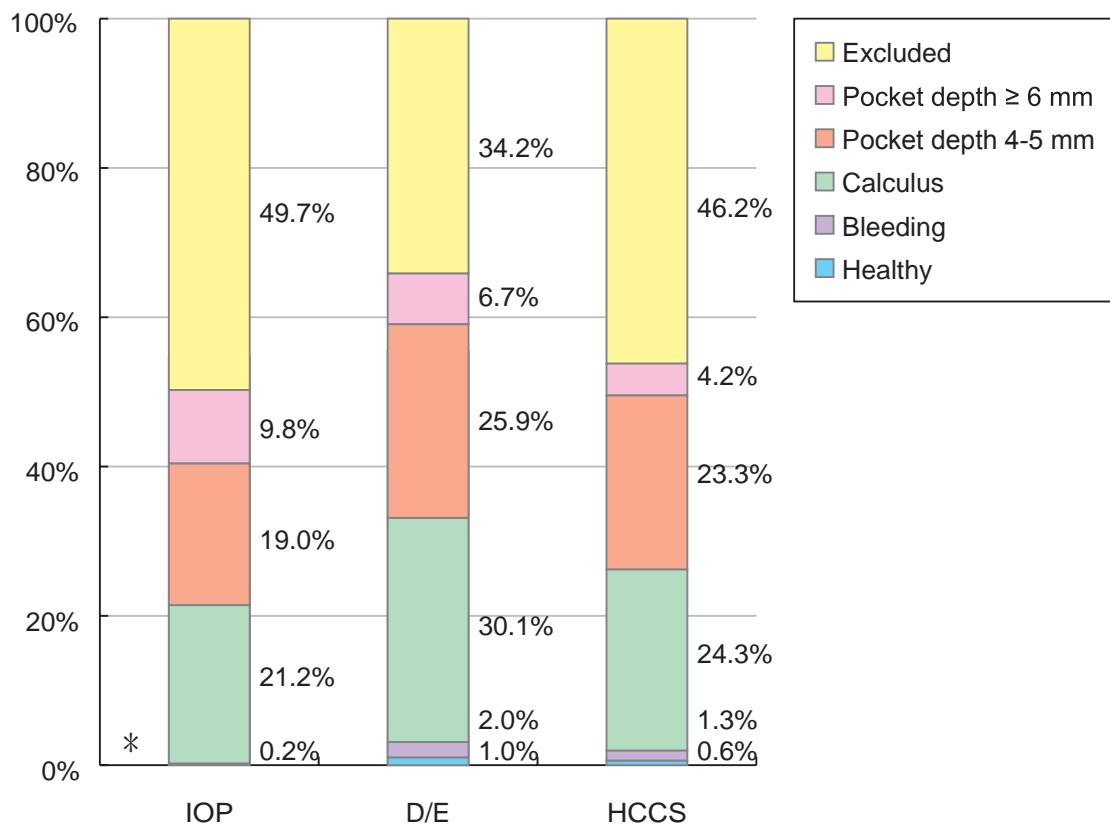
LTC	Root surface decay experience	D-root (Decayed root)	F-root (Filled root)	DF-root (Root decay experience)	R-root (Retained root)
IOP	Mean	0.7	0.1	0.8	2.0
	% affected	30.8%	4.3%	33.7%	44.5%
D/E	Mean	0.6	0.1	0.7	1.4
	% affected	31.0%	6.5%	34.4%	37.8%
HCCS	Mean	0.6	0.1	0.6	1.4
	% affected	28.0%	6.8%	33.3%	38.1%

Base: All LTC users  
 IOP: (N = 60 000)  
 D/E users: (N = 3 230)  
 HCCS users: (N = 4 480)

**Gum condition as measured by the Community Periodontal Index (CPI)**

The gum health among LTC users measured in the individual level is shown in Figure 7.14. The proportion of LTC users with gum pockets was 28.8% among IOP (17 300), 32.6% among D/E users (1 060), and 27.5% among HCCS users (1 240).

**Figure 7.14**  
**Distribution of LTC users according to the maximal Community Periodontal Index (CPI) score**

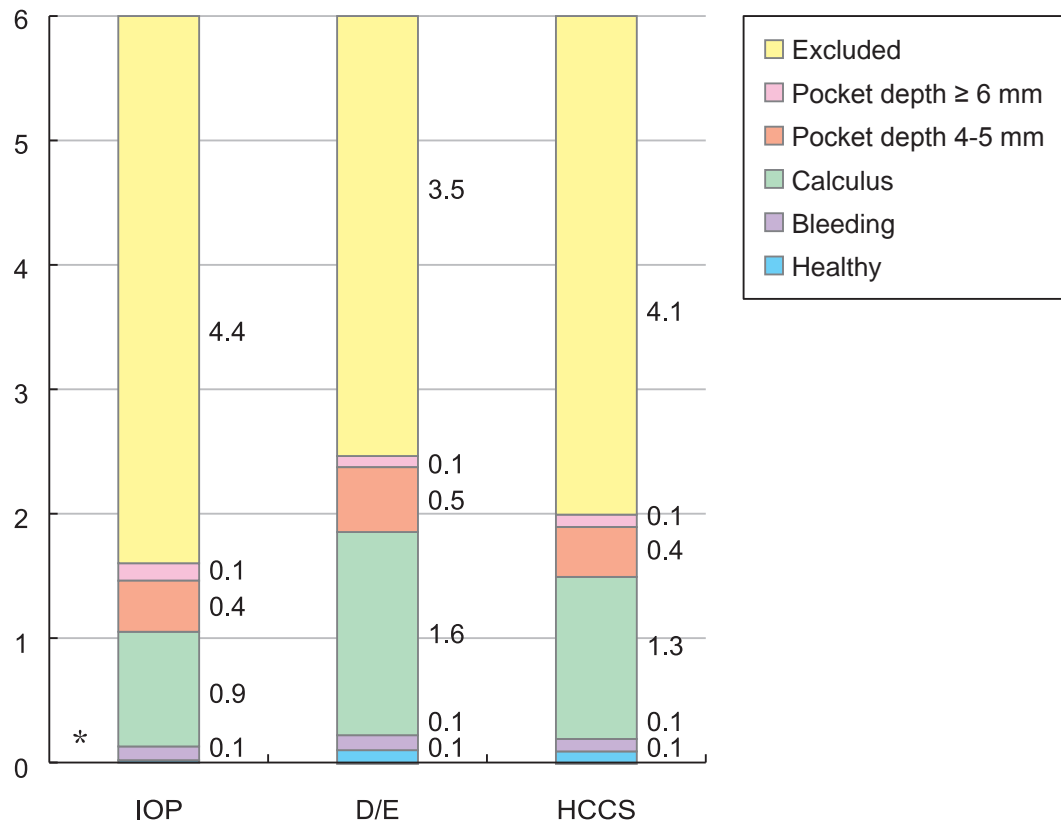


Base: All LTC users  
 IOP: (N = 60 000)  
 D/E users: (N = 3 230)  
 HCCS users: (N = 4 480)

\* "Healthy" category in IOP < 0.05 %

The gum health measured in the sextant level is shown in Figure 7.15. The mean numbers of sextants with gum pockets were 0.5 (among IOP and HCCS users) and 0.6 (among D/E users).

**Figure 7.15**  
**Mean number of sextant with different gum condition (CPI score)**  
**among LTC users**



Base: All LTC users  
 IOP: (N = 60 000)  
 D/E users: (N = 3 230)  
 HCCS users: (N = 4 480)

\* "Healthy" category in IOP < 0.05 sextant

The presentation of the mean number of sextant with different gum health status (CPI score) in Figure 7.15 illustrates the following points:

1. the number of valid sextant was low as more than half of the sextants had been excluded due to tooth loss; and
2. the most commonly found gum condition was in fact calculus, indicating inadequate oral hygiene care and lack of professional cleaning.

## Oral mucosal condition

Oral mucosa was examined by visual examination only and no diagnosis is given as no laboratory investigation was performed. Table 7.5 summarises the conditions observed.

Mucosal conditions were found in around 10% of LTC users (6 490 IOP, 400 D/E users, 450 HCCS users). The most commonly occurred mucosal condition was abscess at the apical region, most likely related to tooth decay. The second most commonly occurred conditions were related to denture wearing, in the form of stomatitis\*, denture-related hyperplasia\* or ulcers.

**Table 7.5**  
**Percentage of LTC users with oral mucosal conditions found**  
**(Multiple conditions)**

Oral mucosal condition	IOP (N = 60 000)	D/E (N = 3 230)	HCCS (N = 4 480)
No mucosal condition found	89.2%	87.5%	90.0%
Denture-related conditions			
Stomatitis*	0.1%	2.2%	0.6%
Hyperplasia*	0.8%	0.5%	1.5%
Ulcers	0.8%	1.7%	0.4%
Coloured mucosal patches			
Red	0.6%	0.1%	0.9%
White	0.4%	0.7%	<0.05%
Pigmented	0.1%	<0.05%	0.2%
Angular cheilitis*	0.4%	0.5%	0.9%
Abscess/sinus (Apical regions)	6.4%	4.5%	3.6%
Abscess (Gingival margin)	0.7%	1.4%	1.1%
Ulcers	0.5%	0.8%	0.5%
Dry mucosa	<0.05%	0.8%	<0.05%
Others	0.1%	0.8%	0.2%

Base: All LTC users

\* Refer to glossary for definition of terms

### **IOP**

IOP had high level of tooth loss as shown by the higher proportion of IOP with total tooth loss (29.6%) and a higher mean number of missing teeth (mean MT = 22.6). Among an average of 9.4 remaining teeth, 3.0 teeth had untreated decay including 2.0 teeth that were severely broken down with only the root left behind. With 54.5% of IOP suffering from untreated decay, 6.4% of IOP was found with abscess at the apical region possibly related to severe decay.

More than half of the IOP with some remaining teeth had gum pocket, and an average of 0.5 sextants out of the 1.6 non-excluded sextants had gum pockets.

While the degree of tooth loss increased with age, the use of dental prostheses (mainly dental bridge and partial denture) decreased with age among IOP. More than one-third of the dentures had cleanliness problem, and a higher proportion of partial dentures had quality problems than full dentures among IOP.

### **D/E users**

D/E users had the lowest level of tooth loss among all LTC users with 19.3% had no tooth remaining, and a mean MT of 19.5. Among the mean of 12.5 remaining teeth, 2.2 teeth had untreated decay including 1.4 retained roots. With 55.5% of D/E users suffering from untreated decay, 4.5% of D/E users had abscess at the apical region.

Around half of the D/E users with some remaining teeth had gum pocket, and an average of 0.6 sextants out of the 2.5 non-excluded sextants had gum pockets.

The use of dental prostheses increased with age among D/E users. There were relatively fewer problems in dentures of D/E users.



**HCCS users**

The degree of tooth loss among HCCS users was somewhat in between IOP and D/E users, with 26.9% had no tooth remaining and a mean MT of 21.2. The mean number of teeth with untreated decay (DT) was 2.3 among 10.8 remaining teeth, and 1.4 of these 2.3 untreated decayed teeth were retained root (R-root). With 50.2% affected by untreated decay, apical abscess affected 3.6% of HCCS users.

Gum pocket also affected around half of the HCCS users with some remaining teeth, with an average of 0.5 sextants out of 1.9 non-excluded sextants had gum pocket.

The use of dental prostheses also increased with age among HCCS users. There were higher proportions of quality problems in both partial and full dentures of HCCS users compared to the other two groups of LTC users.

## Was there any difference in oral health status between the groups of LTC users who could respond to the interview and the groups who could not?

A number of LTC users enumerated could not respond to the questionnaire due to their inability to comprehend or express. The comparison of key oral health indicators between the *could* and *could not* groups in all LTC categories are shown in Table 7.6. The only statistically significant difference found was the higher mean number of teeth with untreated decayed (DT) in the *could not* group of D/E users than the *could* group.

**Table 7.6**  
Key variables on oral health status between LTC users enumerated who could respond to the interview and those who could not

Oral health status	IOP		D/E		HCCS	
	Could (N = 269)	Could not (N = 174)	Could (N = 348)	Could not (N = 96)	Could (N = 278)	Could not (N = 69)
Mean DT	2.7	2.8	1.8*	3.2*	2.3	2.4
Mean MT	22.4	23.4	19.9	19.8	20.9	22.3
% with DT	52.4%	52.9%	52.9%	58.3%	50.4%	47.8%
Mean FT	0.5	0.4	1.0	0.8	0.9	0.7
Mean DMFT	25.6	26.6	22.7	23.7	24.1	25.3
% with gum pockets	53.4%	51.5%	47.0%	51.0%	53.2%	42.9%
% edentulous	30.5%	29.3%	21.0%	19.8%	25.2%	30.4%
% with $\geq 20$ teeth	20.4%	18.4%	27.0%	28.1%	25.2%	20.3%
Mean D-root	0.7	0.6	0.5	0.6	0.5	0.5

\* With statistical difference at the 5% level of significance

Base: All LTC users enumerated  
IOP: (N = 443)  
D/E users: (N = 444)  
HCCS users: (N = 347)

## What was the experience in oral health problems among those who could respond to the interview?

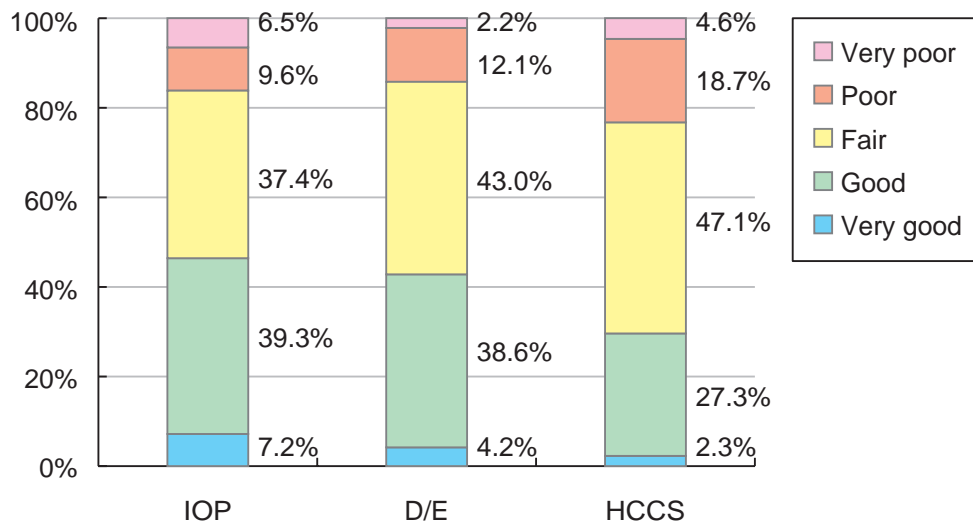
Aside from assessing the level of tooth decay and gum disease in LTC users, it was also the objective of the Oral Health Survey to have a better understanding of oral health in terms of their perception of well being and the perceived oral functions. Part of the structured interview was designed to investigate their experience of oral health and functional problems.

**Note:**

The following sections provide information on the experience, behaviour, knowledge and attitude among the LTC users who could respond to the interview, and therefore represented only the findings of this sub-group of LTC users.

LTC users were asked to respond to the question ‘How do you feel about your oral health status?’ on a five-point scale, and the results were summarised in Figure 7.16. Majority of LTC users answered *very good*, *good* to *fair*. However, HCCS users were obviously different from the other two categories of LTC users that relatively fewer HCCS users answered *very good* and *good* and more answered *very poor* and *poor*.

**Figure 7.16**  
Distribution of LTC users who could respond to the interview according to their perceived oral status



Base: All LTC users who could respond to the interview  
 IOP: (N = 39 300)  
 D/E users: (N = 2 530)  
 HCCS users: (N = 3 450)

## Perceived oral problems

The presence of oral problems perceived by LTC users was evaluated by asking them whether they had experienced certain oral problem in the previous one month from a list of oral problems.

The occurrence of perceived oral health problems among LTC users are shown in Table 7.7.

Various oral problems were reported by 4.5% (1 730 with bleeding gums) to 27.3% (10 540 with appearance problem) of IOP. *Bleeding gums* and *tooth* sensitivity were relatively less common problems. It is worth noting that the problems reported by most IOP were *appearance problem of teeth or denture* and *speech problem of teeth or denture*. The problem of *oral pain* was reported by 14.5% (5 620) of IOP.

Various oral problems were reported by 6.5% (160 with bleeding gums) to 19.2% (490 with appearance problem) of D/E users. Again, *appearance problem of teeth or denture* was the most commonly reported oral problems by D/E users.

Various oral problems were reported by 9.5% (330 with bad breath) to 32.5% (1 110 with chewing difficulty) of HCCS users. The more commonly perceived problems were *chewing difficulty*, *appearance problem of teeth or denture* and *speech problem of teeth or denture*.

Comparing the three categories of LTC users, HCCS users consistently had a higher proportion in reporting oral problems.

**Table 7.7**  
**Perceived oral problems among LTC users**  
**who could respond to the interview**  
**(Multiple answers)**

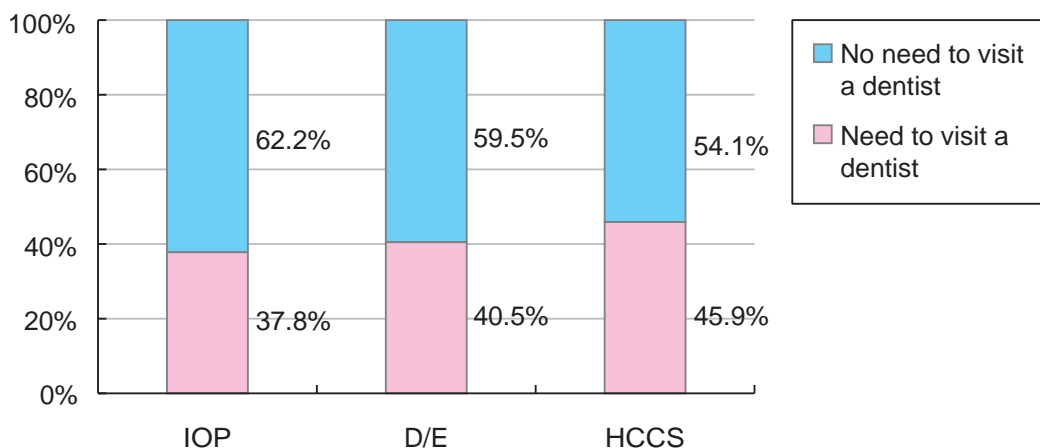
Perceived oral problem	IOP (N = 39 300)	D/E (N = 2 530)	HCCS (N = 3 450)
Bleeding gums	4.5%	6.5%	13.7%
Mobile teeth	16.8%	14.0%	16.0%
Sensitive to hot/cold	7.6%	9.4%	17.8%
Bad breath	10.8%	12.0%	9.5%
Dry mouth	17.0%	13.0%	20.0%
Pain in mouth	14.5%	15.4%	22.2%
Chewing difficulty	17.5%	15.0%	32.5%
Discomfort on eating	16.3%	17.0%	20.8%
Denture-caused chewing problem	10.8%	13.1%	20.1%
Speech problem of teeth / denture	18.4%	12.9%	22.4%
Appearance problem of teeth / denture	27.3%	19.2%	28.3%

Base: All LTC users who could respond to the interview.

**Perceived need to visit a dentist**

LTC users were asked 'Do you want to visit a dentist now?' and the results are shown in Figure 7.17. HCCS users also reported a relatively higher perceived need to visit a dentist.

**Figure 7.17**  
**Distribution of LTC users who could respond to the interview**  
**according to the perceived need to visit a dentist**



Base: All LTC users who could respond to the interview  
 IOP: (N = 39 300)  
 D/E users: (N = 2 530)  
 HCCS users: (N = 3 450)

Overall, HCCS users had more dissatisfaction with their oral health status as more of them reported *very poor* or *poor* in assessment of their own oral health compared with the other two groups. Consistently more HCCS users had perceived oral problems and more of them perceived the need to visit a dentist.

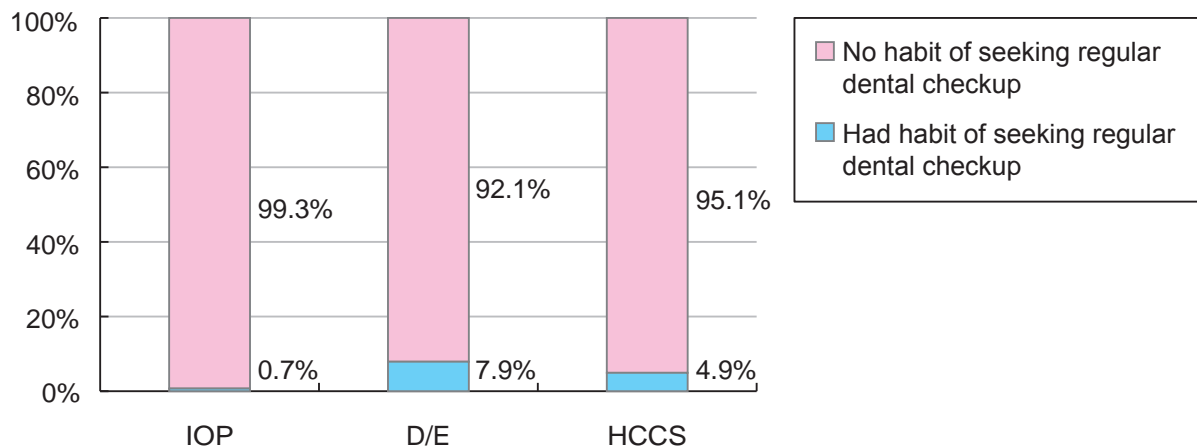
*Appearance problem of teeth or denture* was a commonly reported problem among all LTC users.

## What was the pattern of utilisation of oral health care services like among 65-year old and above LTC users?

### How many LTC users had the habit of seeking regular dental checkup?

LTC users were asked ‘Do you visit the dentist regularly for checkup?’, and the results are shown in Figure 7.18. The habit of regular dental checkup was not common among LTC users, especially among IOP.

**Figure 7.18**  
Distribution of LTC users who could respond to the interview according to the reported habit of seeking regular dental checkup



Base: All LTC users who could respond to the interview

IOP: (N = 39 300)

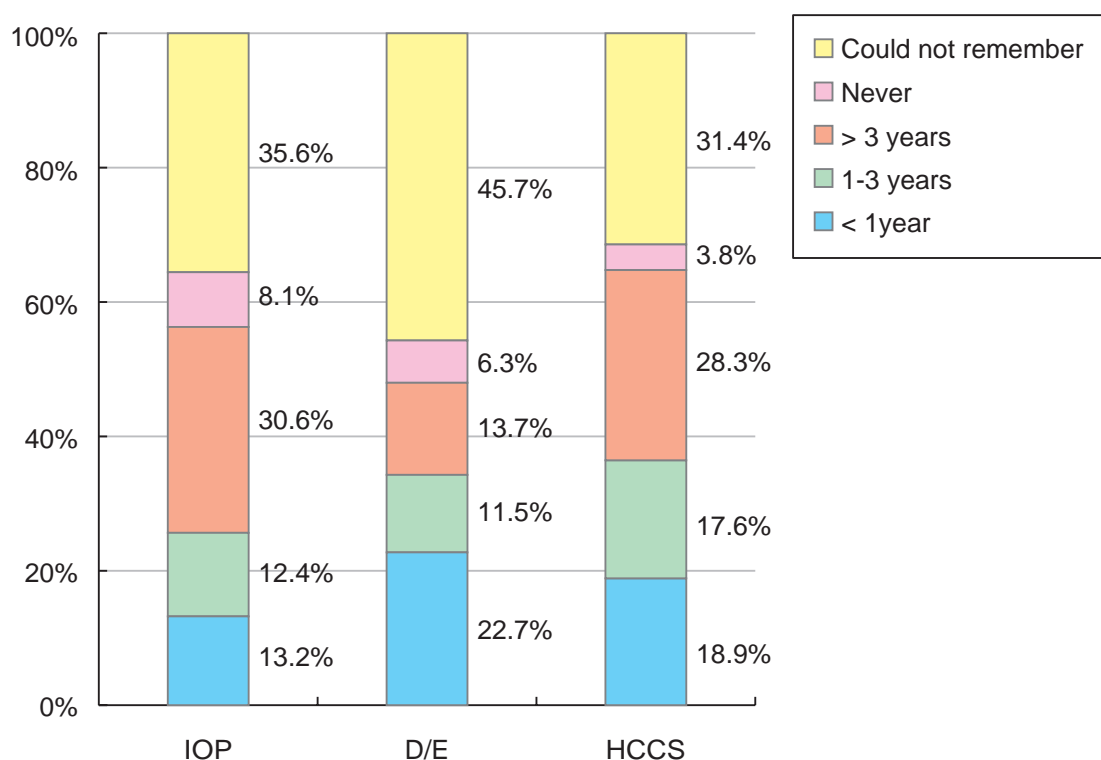
D/E users: (N = 2 530)

HCCS users: (N = 3 450)

**When was the last dental visit made by the LTC users?**

LTC users were asked ‘*When was the last time you visit a dentist?*’, and the results are shown in Figure 7.19. In general, less than half of the LTC users could recall that they had visited a dentist within the previous three years. More HCCS users had visited a dentist within three years, followed by D/E users and IOP.

**Figure 7.19**  
**Distribution of LTC users who could respond to the interview according to the reported time of last dental visit**



Base: All LTC users who could respond to the interview  
 IOP: (N = 39 300)  
 D/E users: (N = 2 530)  
 HCCS users: (N = 3 450)

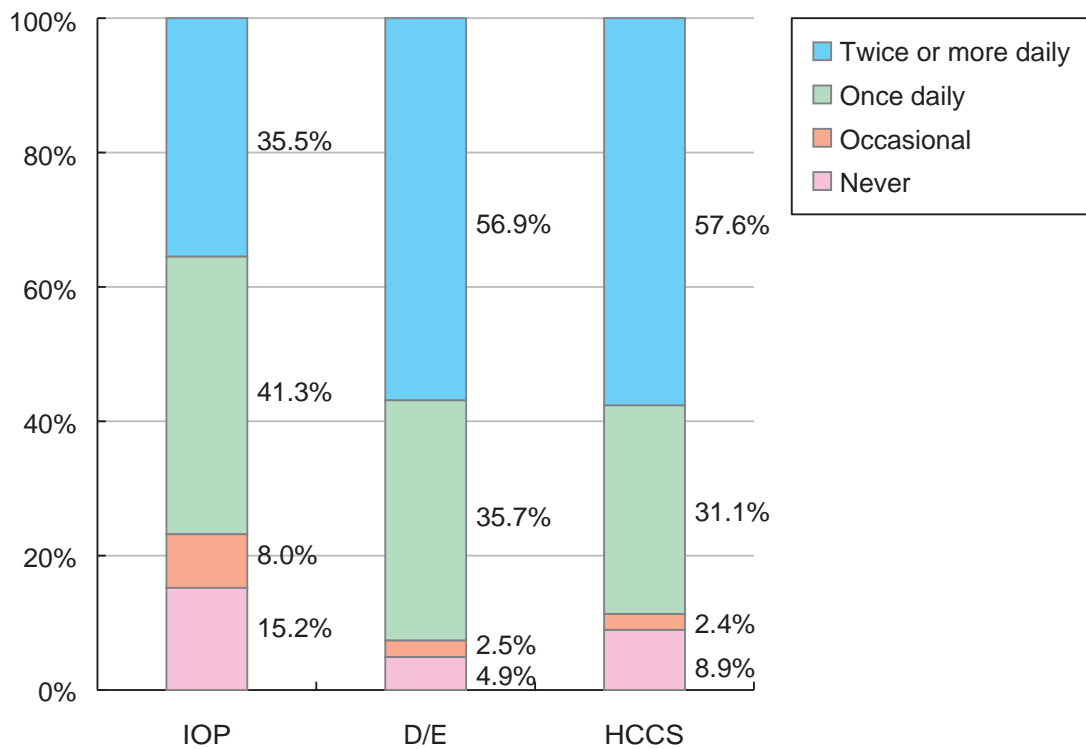


## What were the oral health related behaviour of 65-year old and above LTC users?

### Toothbrushing - how often did the dentate LTC users brush?

Dentate LTC users (those with remaining teeth) were asked 'How often do you brush your teeth?' and the responses were summarised in Figure 7.20. Daily toothbrushing (once or more) was reported by majority of dentate LTC users, with IOP had the lowest proportion (76.8%, 21 500) and D/E users had the highest proportion (92.6%, 1 900).

**Figure 7.20**  
Distribution of dentate LTC users who could respond to the interview according to the reported toothbrushing habit



Base: All dentate LTC users who could respond to the interview

IOP: (N = 28 000)

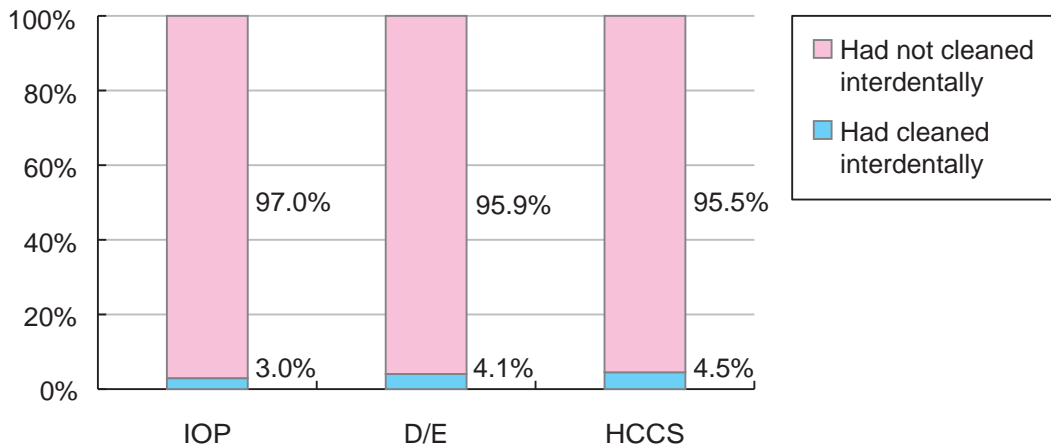
D/E users: (N = 2 050)

HCCS users: (N = 2 550)

**How many dentate LTC users practiced interdental cleaning?**

Dentate LTC users (those with remaining teeth) were asked ‘*Have you cleaned interdentally by floss or by interdental brush in the previous week?*’, and the results are shown in Figure 7.21. Interdental cleaning was not very common among all dentate LTC users.

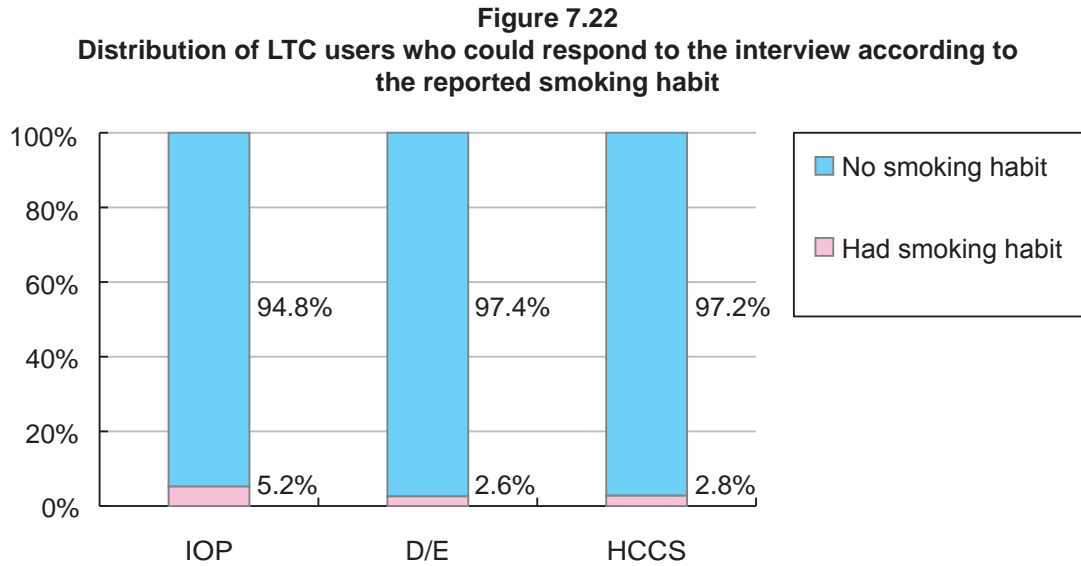
**Figure 7.21**  
**Distribution of dentate LTC users who could respond to the interview according to the reported interdental cleaning habit**



Base: All dentate LTC users who could respond to the interview  
 IOP: (N = 28 000)  
 D/E users: (N = 2 050)  
 HCCS users: (N = 2 550)

**Smoking habit**

When asked ‘Do you have smoking habit?’, less than 6% of LTC users (5.2%, 2 050, IOP; 2.6%, 70 D/E users; 2.8%, 100 HCCS users) reported the habit of smoking (Figure 7.22).



Base: All LTC users who could respond to the interview  
 IOP: (N = 39 300)  
 D/E users: (N = 2 530)  
 HCCS users: (N = 3 450)

Oral self-care among LTC users cannot be regarded as satisfactory as 15.2% of IOP and 8.9% of HCCS users never brushed their teeth. Interdental cleaning was also a very rare self-care practice. The habit of seeking regular dental checkup was uncommon. The above oral self-care referred to those who could respond to the questionnaire only. For those who were unable to respond, it is highly likely that they were also not able to perform oral self-care. Their oral hygiene would be dependent on the practice of their caregivers.

## What was the realistic dental treatment need of LTC users?

In the Oral Health Survey on IOP in 2001, it was pointed out that the dental treatment need assessed using the same criteria for adults and comparatively healthy older persons is not realistic for functionally dependent older persons. At the time of planning, there were still no internationally recognised criteria in the determination of realistic treatment need for functionally dependent older persons. However, a consensus has been reached among the dental profession in factors that should be considered in planning treatment for this specific population. The consensus in the professional literature was translated into the following criteria in deciding different level of treatment needs in this Oral Health Survey.

### **Assessed treatment need**

According to the World Health Organization recommendation, tooth-based treatment was planned on the basis of crown and root status, the periodontal status, and mobility of the tooth. In general, treatment should be performed to:

- Eliminate pain / discomfort or to promote comfort
- Eliminate untreated decay
- Treat discoloration of a tooth, or a developmental defect
- Treat tooth defects due to trauma, abrasion, erosion or attrition
- Replace unsatisfactory fillings.

### **Rational treatment need (Dentists' recommendations)**

The examining dentist's recommendation to provide the assessed treatment to individual LTC users was determined according to the examiner's assessment of the medical condition, physical status and oral status in a benefit-risk analysis. The individual's expression of reluctance / refusal to dental treatment was NOT considered at this stage. The general principles were (1) the subjective complaints must be addressed; (2) the potential risks must be weighed against the potential benefits of treatment; (3) the subject's ability to maintain oral hygiene and factors affecting the treatment prognosis should be taken into account.

**Realistic treatment need (Acceptance of dentists' recommendations)**

If the examining dentist considered that the individual was able to communicate and make decision, the rational treatment need was presented to the individual and the individual's acceptance of treatment was recorded as the realistic treatment need. Those who could not reply or could not make decision were categorised as *unable to respond*.

The distribution of LTC users according to their assessed need, rational need and realistic need was summarised in Figures 7.23 to 7.25. Assessed treatment need was common in all LTC users, with the highest proportion in HCCS users (94.6%, 4 240) assessed to be in need of dental treatment. The realistic treatment need was lowest in IOP as only 28.9% (17 310) accepted part or all of the dental treatment recommended by the examining dentists, compared with 53.3% (1 720) of D/E and 53.5% (2 400) of HCCS users.

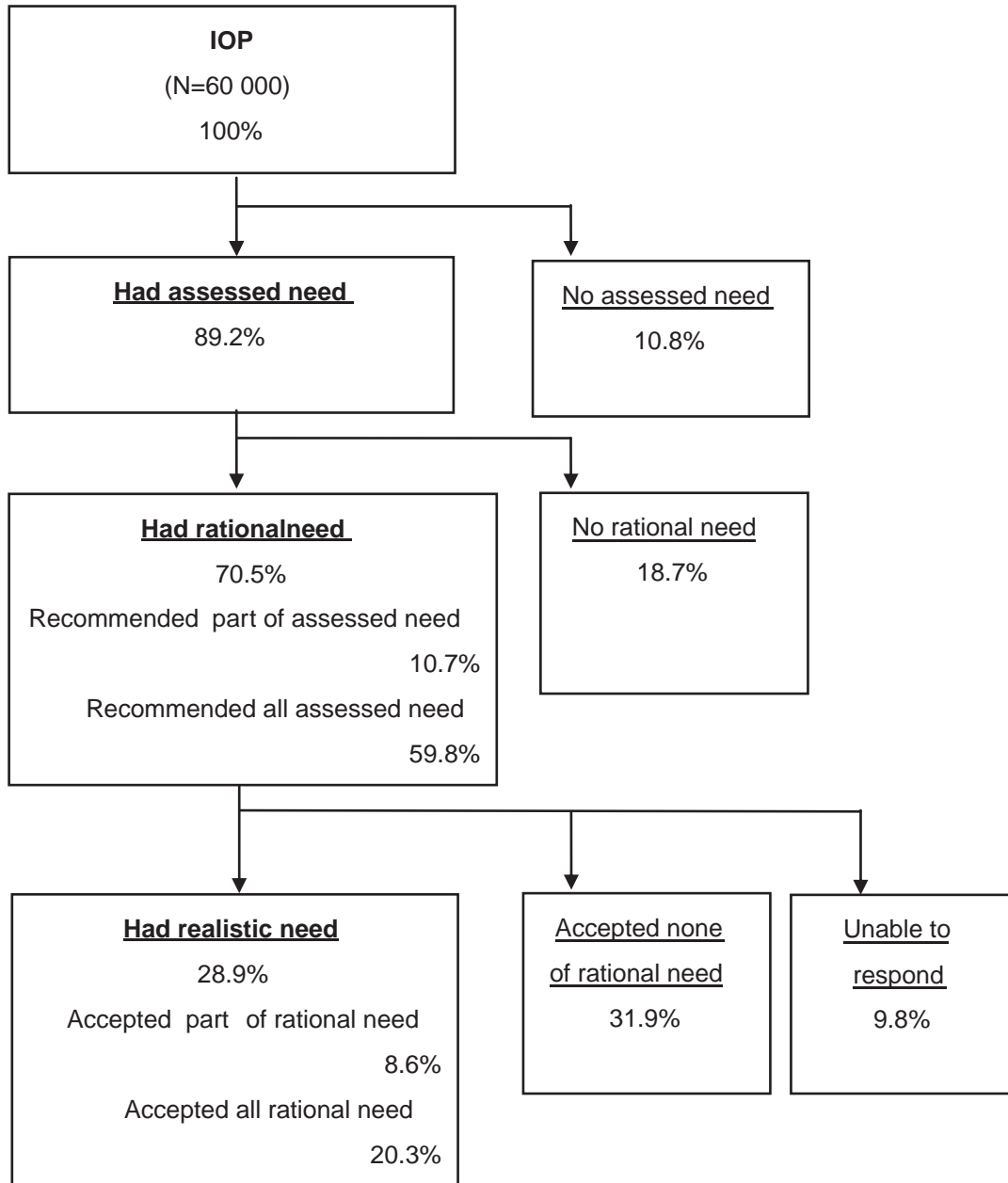
Dentists might not recommend to treat if the risks of treatment outweigh the benefits or if the anticipated treatment is difficult due to poor cooperation and complicated medical conditions. Previous low exposure to formal dental care and acceptance of tooth loss with ageing may account for the low acceptance of dental treatment

The discrepancy between assessed need and realistic need among IOP was mainly refusal to receive treatment (accepted none = 31.9%, 19 130), followed by a higher tendency for dentists' not recommended to treat (18.7%, 11 220).

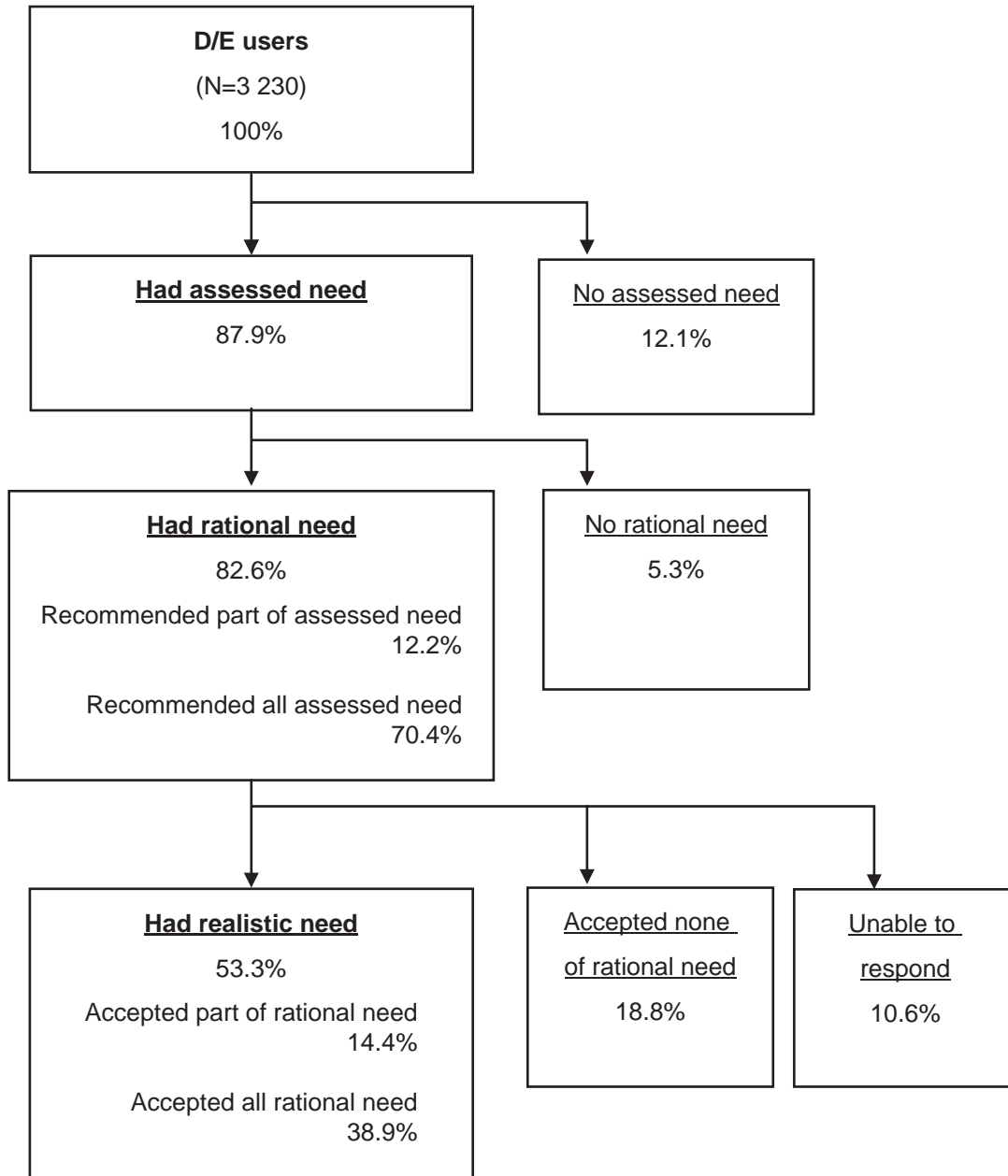
Among D/E users, the major discrepancy between assessed need and realistic need was also refusal to receive treatment (accepted none = 18.8%, 610), followed by unable to respond (10.6%, 340).

Similar to D/E users, the main difference between assessed need and realistic need among HCCS users was refusal to receive treatment (accepted none = 20.5%, 920), followed by unable to respond (13.7%, 610).

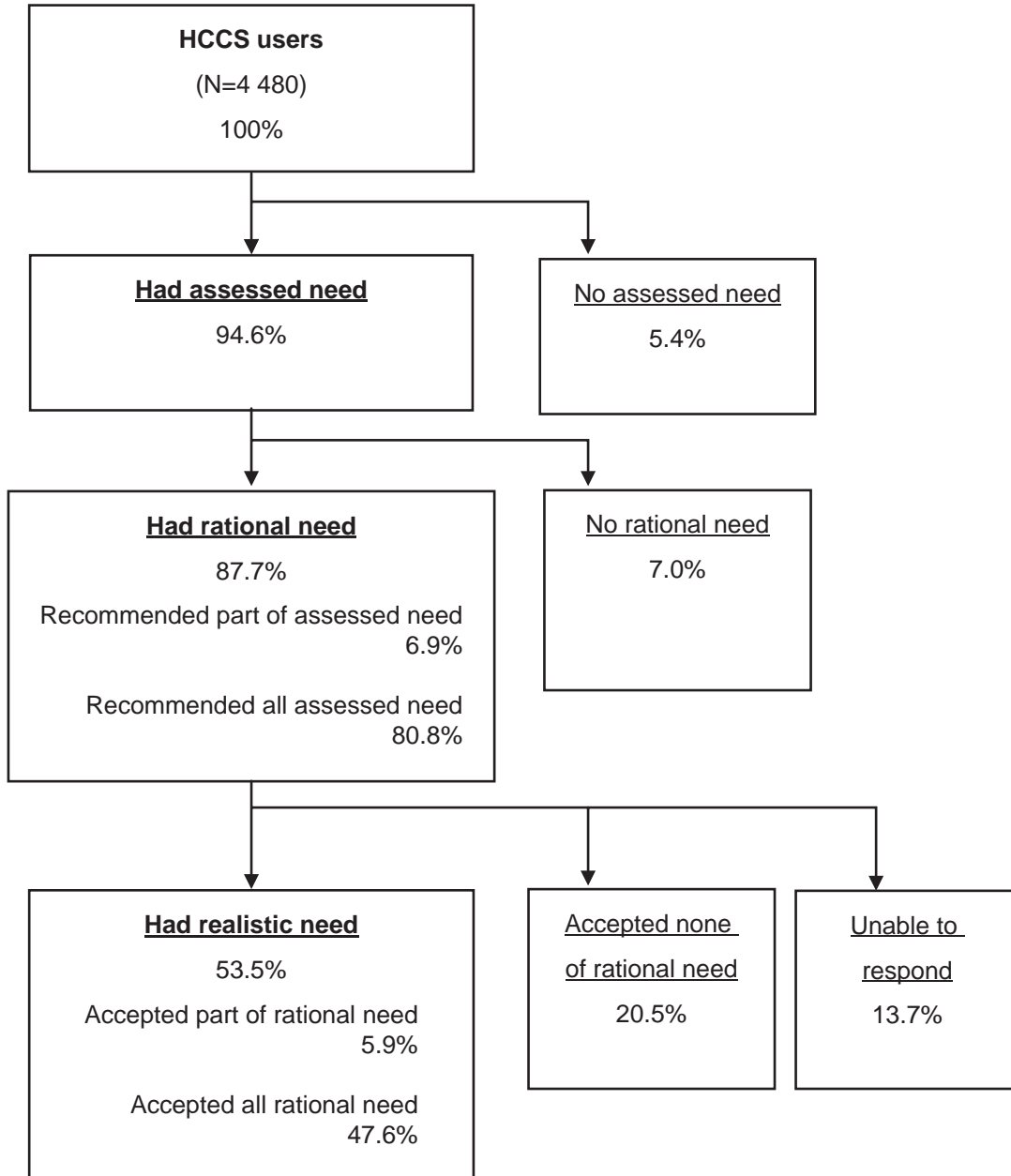
**Figure 7.23**  
Dental treatment need of IOP



**Figure 7.24**  
Dental treatment need of D/E users



**Figure 7.25**  
Dental treatment need of HCCS users





The needs of different treatment items at different levels were summarised in Table 7.8.

Among IOP, '*new denture*' was the treatment item least recommended by dentists as the rational need constituted 63.0% of the assessed need. The next least recommended treatment item was '*scaling*', where rational need was 81.9% of the assessed need. Acceptance by IOP was lowest for '*extraction*', where realistic need constituted only 28.3% of the rational need. The next least accepted treatment was '*new denture*', where realistic need was 30.8% of the rational need.

The trend in D/E users was similar to IOP. The treatment least recommended by dentists was '*new denture*', where the proportions of rational need in assessed need were 71.5%. The treatment item least accepted was '*extraction*', with 41.7% of rational need being realistic need.

Among HCCS users, the treatment least recommended by dentists was '*root canal treatment*'. It had very low level of assessed need and affected relatively few HCCS users. The next least recommended treatment item was '*new denture*'. Rational need for '*new denture*' comprised 78.2% of the assessed need. The least accepted treatment was also '*new denture*', with 45.8% of rational need being realistic need.

IOP and HCCS users had similar level of total tooth loss (Figure 7.6) but fewer IOP than HCCS users were using full denture (Table 7.2). Hence it is natural to find a higher level of assessed need for new denture in IOP. However, a lower proportion of assessed need for new denture among IOP was recommended by dentists compared to HCCS users. The use of full denture requires considerable oral neuro-muscular control and the examining dentists might not recommend new denture treatment when the concerned IOP was found to be physically or cognitively impaired even if the IOP had total tooth loss with no denture. On the other hand, the assessed need for new denture was high in HCCS users although many of them were already using dentures (Table 7.2). This may be related to the common occurrence of quality problems in the dentures being used (Figures 7.8 and 7.9).

**Table 7.8**  
**Percentages of LTC users according to the assessed, rational and realistic needs**  
**as assessed by dentists in various treatment items**

LTC	Treatment item	Assessed need	Rational need	Realistic need	Rational / Assessed need	Realistic / Rational need
IOP	Scaling	57.6%	47.2%	17.9%	81.9%	37.9%
	Filling	37.7%	32.4%	11.1%	85.9%	34.3%
	Extraction	47.5%	39.2%	11.1%	82.5%	28.3%
	Repair denture	11.0%	10.4%	5.9%	94.5%	56.7%
	New denture	70.0%	44.1%	13.6%	63.0%	30.8%
	Crown	0.1%	0.1%	<0.05%	100%	N/A
	Root canal treatment	4.2%	3.5%	1.8%	83.3%	51.4%
D/E	Scaling	74.1%	67.6%	44.7%	91.2%	66.1%
	Filling	37.9%	37.7%	22.3%	99.5%	59.2%
	Extraction	41.3%	34.8%	14.5%	84.3%	41.7%
	Repair denture	13.7%	11.6%	6.4%	84.7%	55.2%
	New denture	47.4%	33.9%	15.1%	71.5%	44.5%
	Crown	0.1%	0.1%	<0.05%	100%	N/A
	Root canal treatment	2.4%	2.4%	2.2%	100%	91.7%
HCCS	Scaling	66.0%	61.5%	39.0%	93.2%	63.4%
	Filling	33.2%	33.1%	23.9%	99.7%	72.2%
	Extraction	40.3%	37.7%	18.6%	93.5%	49.3%
	Repair denture	28.1%	27.4%	19.6%	97.5%	71.5%
	New denture	52.2%	40.8%	18.7%	78.2%	45.8%
	Crown	<0.05%	<0.05%	<0.05%	N/A	N/A
	Root canal treatment	1.8%	1.4%	1.3%	77.8%	92.9%

Base: All LTC users  
 IOP: (N = 60 000)  
 D/E users: (N = 3 230)  
 HCCS users: (N = 4 480)  
 N/A: Not applicable

The realistic treatment need was similar between D/E users (53.3%) and HCCS users (53.5%) in terms of percentage of LTC users accepting treatment. IOP had the lowest level of realistic treatment need (28.9%). IOP had the highest proportion with assessed treatment need not recommended by dentists, and the highest proportion who accepted nothing recommended by the dentists.

With respect to individual treatment items, new denture was the category least recommended by the dentists.

Extraction and new denture were least accepted in all three categories of LTC users.

## Chapter 7 – Summary

The rationale of focusing on LTC users as a distinct group in the Oral Health Survey was the possible deleterious effects of lack of oral self-care and the inability to access professional care on oral health. **The present survey found that the level of untreated decay was higher among LTC users even fewer teeth were remaining** than the relatively younger and healthier non-institutionalised older persons (see Chapter 6).

**There was a high level of assessed dental treatment need among the LTC users due to the high level of active dental diseases. While the level of assessed dental treatment need was high among the LTC users, the realistic treatment need was shown to be lower.** New denture and extraction had low levels of realistic need despite the high levels of assessed need. The reasons include dentists' consideration of not recommending treatment in some cases and the refusal to receive treatment among some LTC users.

There were perceived functional problems of unsatisfactory appearance, difficulties in chewing and discomfort on eating. There was perceived need to visit dentist. Yet regular dental checkup was uncommon and relatively few LTC users had visited a dentist in the previous three years. **Due to the functional limitation of LTC users in accessing conventional dental care, it is likely that most of the needs for care were not met by the existing dental care system.**

## What was the level of oral health of Hong Kong IOP in 2011 when compared with 2001?

The only comparable representative oral health data available for the LTC users population was the IOP group included in the Oral Health Survey 2001. The results of the surveys in 2001 and 2011 were compared in the following section.

The age distributions of IOP in 2001 and 2011 are shown in Table 7.9. There was a marked difference in the age composition between the IOP population in 2001 and that in 2011. There was a lower proportion of IOP in the youngest age group (65-74) and a higher proportion of IOP in the oldest age group (85+) in 2011.

**Table 7.9**  
**Age distribution of IOP in 2001 and 2011**

Age group	2001 (N = 46 600)	2011 (N = 60 000)
85+	29.9%	46.0%
75-84	38.7%	38.0%
65-74	31.4%	16.0%

Base: All IOP

Under the current Government's Policy of '*ageing in the community as the core, institutional care as back-up*', there should be an increasing proportion of physically frail and medically compromised persons among IOP. Information on medical conditions, cognitive and physical status of the 2001 IOP population was not collected so this cannot be compared with the 2011 IOP. However, there was an obviously higher proportion of the oldest sub-group among the 2011 IOP. It is logical to expect that more IOP in 2011 had physical and cognitive impairments than those in 2001. These were two distinct groups of older persons and their oral health status could not be directly compared. Any difference in oral status or behaviour should not be simply viewed as improvement or deterioration.

The number of remaining teeth and the presence of retained root among IOP in 2001 and 2011 are shown in Table 7.10. There was a higher proportion of IOP with total tooth loss and a lower proportion with 20 or more teeth in 2011. This may be related to the increased proportion of IOP aged 85+.

**Table 7.10**  
**Tooth status of IOP in 2001 and 2011**

Tooth status	2001 (N = 46 600)	2011 (N = 60 000)
No remaining teeth	27.2%	29.6%
20+ remaining teeth	24.1%	19.9%
With retained roots	46.0%	44.5%

Base: All IOP

The use of dental prostheses among IOP in 2001 and 2011 are shown in Table 7.11.

**Table 7.11**  
**Percentage of IOP with dental prostheses in 2001 and 2011**  
**(Multiple answers)**

Type of dental prosthesis	2001 (N = 46 600)	2011 (N = 60 000)
Had any prostheses	48.2%	43.3%
Had bridge	14.0%	9.2%
Had partial denture	14.9%	16.5%
Had full denture	28.2%	26.1%
Had dental implant	Not collected	0.4%

Base: All IOP

The levels of tooth and root decay experience among IOP in 2001 and 2011 are shown in Tables 7.12 to 7.15. There were 9.4 teeth remaining among IOP in 2011, fewer than the 10.3 teeth remaining in 2001. Despite with fewer teeth remaining, more teeth were affected by untreated decay among IOP in 2011.

**Table 7.12**  
Level of tooth decay experience as measured by the DMFT index  
among IOP in 2001 and 2011

Tooth decay experience	2001 (N = 46 600)	2011 (N = 60 000)
Mean DMFT	24.5	25.9
Mean DT (Decayed)	2.6	3.0
Mean MT (Missing)	21.6	22.6
Mean FT (Filled)	0.3	0.4

Base: All IOP

**Table 7.13**  
Percentage of IOP with tooth decay experience in 2001 and 2011

Tooth decay experience	2001 (N = 46 600)	2011 (N = 60 000)
DMFT	99.8%	100%
DT (Decayed)	55.2%	54.5%
MT (Missing)	99.5%	100%
FT (Filled)	17.0%	17.0%

Base: All IOP

**Table 7.14**  
**Level of root surface decay experience among IOP in 2001 and 2011**

Root surface decay experience	2001 (N = 46 600)	2011 (N = 60 000)
Mean DF-root	0.4	0.8
Mean D-root (Decayed)	0.4	0.7
Mean F-root (Filled)	<0.05	0.1

Base: All IOP

**Table 7.15**  
**Percentage of IOP with root surface decay experience in 2001 and 2011**

Root surface decay experience	2001 (N = 46 600)	2011 (N = 60 000)
DF-root	23.6%	33.7%
D-root (Decayed)	22.7%	30.8%
F-root (Filled)	1.0%	4.3%

Base: All IOP

The gum condition of IOP in 2001 and 2011 are shown in Table 7.16.

**Table 7.16**  
**Gum condition as measured by the maximal Community Periodontal Index among IOP in 2001 and 2011**

Gum condition (Maximal CPI score)	2001 (N = 46 600)	2011 (N = 60 000)
Healthy	0.1%	<0.05%
Bleeding	<0.05%	0.2%
Calculus	24.7%	21.2%
Pocket depth 4-5 mm	18.2%	19.0%
Pocket depth ≥ 6 mm	6.5%	9.8%
Excluded	50.4%	49.7%

Base: All IOP



The toothbrushing habit among IOP in 2001 and 2011 are shown in Table 7.17. There was little change in the proportion of IOP who reported the habit of daily toothbrushing.

**Table 7.17**  
**Percentage of dentate IOP according to reported toothbrushing habit**  
**in 2001 and 2011**

Toothbrushing habit	2001 (N = 21 700)	2011 (N = 28 000)
Never	13.0%	15.2%
Occasional	2.8%	8.0%
Daily	84.1%	76.8%

Base: All dentate IOP who could respond to questionnaire

The reported dental checkup habit among IOP in 2001 and 2011 is shown in Table 7.18. The habit of regular dental checkup has been very low in both 2001 and 2011.

**Table 7.18**  
**Percentage of IOP according to the reported habit**  
**in regular dental checkup in 2001 and 2011**

Habit of regular dental checkup	2001 (N = 32 400)	2011 (N = 39 300)
Had regular checkup	2.8%	0.7%

Base: All IOP who could respond to questionnaire

The time of last dental visit among IOP in 2001 and 2011 is shown in Table 7.19. In recent years, a few outreach dental teams were formed to deliver outreaching dental care to IOP and D/E users in Hong Kong. This might have accounted for the higher proportion of dental visits within the previous 3 years among IOP of 2011 when compared to those in 2001.

**Table 7.19**  
**Percentage of IOP according to the reported time of last dental visit**  
**in 2001 and 2011**

Time of last dental visit	2001 (N = 32 400)	2011 (N = 39 300)
< 1 year	8.1%	13.2%
1-3 years	6.9%	12.4%
> 3 years	32.1%	30.6%
Never	24.4%	8.1%
Could not remember	28.5%	35.6%

Base: All IOP who could respond to questionnaire

## Way forward

With the increasing retention of teeth in the future older generations, an even higher level of assessed dental treatment need will be found if preventive measures are not implemented.

**Proactive prevention must start as early as possible, preferably before receiving LTC service, targeting groups at high risk to functional impairment so that the level of assessed treatment need in future LTC user populations can be reduced.**

The prevention of dental diseases initiated at early stage of functional impairment must be continuous no matter the functionally dependent older persons is residing at home, attending day care centre, or living in residential care home. **The importance of preventive oral care must be promoted to people involved in the care of functionally dependent older persons.** These people include family members, formal caregivers and other health professionals.

With increasing proportion of LTC users with impaired physical mobility, **it is necessary to develop outreaching dental care to meet the needs of this population.** The realistic treatment need of LTC users must be borne in mind in planning dental care programmes for this population. **The targets and financial arrangements of any dental programme should be set according to the realistic treatment need.**

# CHAPTER 8

## Overview

*Oral health means more than good teeth; it is integral to general health and essential for well-being.*

World Health Organization ([http://www.who.int/oral\\_health/policy/en/](http://www.who.int/oral_health/policy/en/))

Summarising the results of the Oral Health Survey 2011, we conclude that the level of oral health in Hong Kong in terms of the degree of tooth loss is among the best compared with many developed countries. If everyone wants to be minimally affected by oral health-related discomforts and maintain a dentition good enough for physiological and social needs at old age, emphasis should be put on prevention and promotion of healthy habits. Prevention will bring improvement in oral health to the Hong Kong community and reduce the financial burden from costly complex dental treatment on a population scale.

The negative consequence of poor oral health is not just limited to the oral cavity. An increasing amount of research is showing the association of oral health with a number of systemic health conditions. In very young children, tooth decay, infections and abscesses may affect the developing permanent teeth as well as the health and development of the affected children. In functionally dependent older persons, the accumulation of plaque and bacteria in the oral cavity as a result of poor daily oral hygiene may be hazardous to their health. Even among the adults and functionally independent older persons, pain and discomforts arising from oral health conditions can be very distressing to daily living, as reflected in the local saying *‘toothache is worse than a major illness’* ‘牙痛慘過大病’. Disabilities arising from oral problems may affect performance at school among children and lead to work hour loss in adults. To prevent future tooth loss, toothache and negative impact on daily life of the Hong Kong population, findings from the Oral Health Survey 2011 indicated that some beliefs and habits should be modified.

The Oral Health Survey 2011 revealed that majority of the adult and older populations had various degrees of tooth decay and gum disease. The survey also found that the Hong Kong population tended to ignore oral symptoms and delayed the seeking of dental care even for severe problems such as pain that disturbed sleep. As explained in Chapter 1 of this Report,

the delay would only result in further deterioration leading to more suffering, more complex and costly treatment, or even extraction of teeth. The prevention of tooth loss must start with prevention and early treatment of dental diseases. This can be accomplished only if people in Hong Kong visit dentist regularly for checkup even though they believe that their oral health status is good.

Although a variety of oral hygiene aids has been used by Hong Kong people, the Oral Health Survey 2011 found that the current tooth cleaning practice was not effective in removing plaque to prevent tooth decay and gum disease. Dentists can be partners in prevention of oral diseases by providing individualised advice on daily tooth cleaning, dietary and other oral health-related habits at the regular checkup visit. The very low levels of tooth decay and gum problem among 12-year old children illustrated that promotion of proper habits and professional prevention by the School Dental Care Service (SDCS) were effective in reducing the extent of dental diseases. With a good foundation laid down by the SDCS, there is a good prospect that tooth loss in the future adults and older persons be further reduced.

Another finding from the Oral Health Survey 2011 is the decreased awareness to the benefits of fluoride by the community. The World Health Organization stated that *'long-term exposure to an optimal level of fluoride results in fewer dental cavities in both children and adults'*. Dentists are partners in advising the appropriate use of fluoride at both community and individual levels.

Appropriate dietary habit, in terms of reducing the frequency of sugar-containing food or drink intake, is also beneficial to oral health. Avoidance of smoking may also help to prevent gum disease and oral cancers. Different sectors must work together to develop a culture that value the significance of oral health in overall general health.

The current adults and non-institutionalised older persons are shouldering great responsibilities in taking care of the younger generations in the positions of parents and grandparents. They are also the main workforce as formal or informal caregivers of functionally dependent persons. Proper partnership with dentists to improve oral self-care not only can help the current adults and older populations to improve their own oral health, but also can help to improve the oral health of young children and functionally dependent people whom they are taking care of.

Like many countries in the world, the older population in Hong Kong will increase dramatically in the coming decades. The present survey revealed that there were perceived functional problems of unsatisfactory appearance, difficulties in chewing and discomfort on eating among LTC users. They also had perceived need to visit dentist. Yet regular dental checkup was uncommon and relatively few LTC users had visited a dentist in the previous three years. With difficulties in accessing traditional dental care due to impaired physical mobility, it is necessary to develop outreaching dental care to meet the needs of this population. At the time of this survey, there were discrepancies between assessed and realistic dental treatment needs. The discrepancies were due to dentists' decision of not to treat when risks outweigh possible benefits, and the low propensity to receive dental care among some LTC users. Active prevention must start early to prevent the development of high levels of dental diseases and treatment need in future LTC users.

## Epilogue

It may be tempting to compare the oral health of Hong Kong in 2011 to other developed countries, similar to what had been done in OHS 2001. The WHO is no longer comparing the oral health of 35- to 44-year old adults in the Country / Area Profile Project (<http://www.mah.se/capp/>) as in 2001. International comparison is increasingly difficult due to diversities in age-range and subject selection criteria in different oral health surveys. Such comparison was also not made in the report of oral health surveys conducted in other countries such as UK, Australia and Canada. It is more meaningful in the local context to compare the results of the current survey with those obtained in OHS 2001. This comparison has been made in Chapter 3 through Chapter 7.

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## GLOSSARY

Angular cheilitis	An inflammatory lesion at the corner of the mouth, and often occurs on both sides. The condition may be caused by nutritional deficiencies, fungal infections, or (less commonly) bacterial infections.
Bridge	A dental prosthesis used to replace a tooth or teeth which is cemented on a natural tooth or teeth nearby and which is not intended for removal by the individual.
Calculus	Hard deposits on teeth formed as a result of the hardening (deposition of calcium compound) of dental plaque. The presence of calculus makes removal of dental plaque more difficult.
CPI Index	Community Periodontal Index – the index recommended by the World Health Organization in the measurement of gum disease. See Chapter 1.
D/E	Day care centres / units for the elderly under the purview of the SWD
Dental plaque	The thin, sticky, colourless film of bacterial material which collects around the teeth and which is implicated in causing tooth decay and gum disease.
Denture	A removable dental prosthesis which replaces missing natural teeth in one jaw. When natural teeth are still remaining in that jaw, the denture is called a partial denture. Full denture is used to replace complete tooth loss in one jaw.
Denture-related hyperplasia	A benign reactive overgrowth of soft tissue due to chronic irritation from the border of poorly fitting dentures.
Denture-related stomatitis	Inflammation of the mucous lining due to chronic irritation of poorly fitting or dirty dentures.
Dentate	Having one or more natural teeth (as opposed to being edentulous).
DMFT index	The index recommended by the World Health Organization in the measurement of tooth decay, by adding the number of decayed teeth (DT), missing teeth (MT), and filled teeth (FT) together. See Chapter 1.
Edentulous	Having no natural teeth (as opposed to being dentate).
EHCCS	Enhanced Home and Community Care Services under the purview of the SWD
Fissure Sealant	A material, usually a resin, which has been placed in the pits and fissures (grooves) of teeth to protect against the development of decay.

Functional dependence	Need help from others to perform functions related to daily living (see Independence)
HCCS	Home and community care services
IHCS	Integrated Home Care Services under the purview of the SWD
Independence	Independence is commonly understood as the ability to perform functions related to daily living – i.e. the capacity of living independently in the community with no and/or little help from others. (WHO 2002)
IOP	Institutionalised older persons, i.e. LTC users residing in residential care homes licensed by the SWD
LTC	Long-term care services provided by the SWD
Root	The part of the tooth which is usually below the level of the gum. It may become exposed due to the recession of gums associated with the loss of gum attachment.
Scaling	Professional teeth cleaning.
Sextant	All teeth are divided into six segments called sextant for examination and recording of the gum condition. The six sextants are (1) upper right back teeth; (2) upper front teeth; (3) upper left back teeth; (4) lower left back teeth; (5) lower front teeth; and (6) lower right back teeth.
SWD	Social Welfare Department
WHO	World Health Organization

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