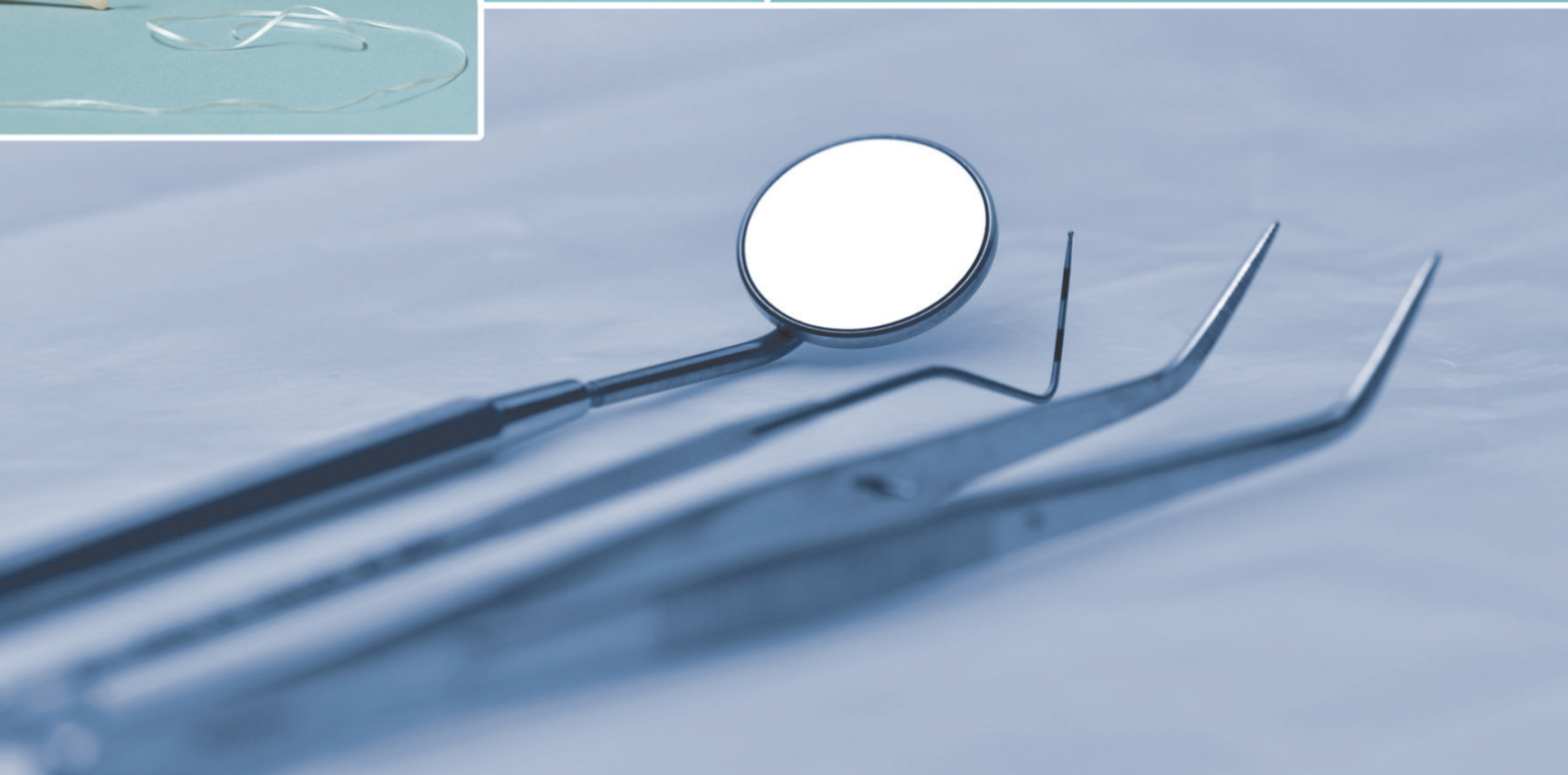
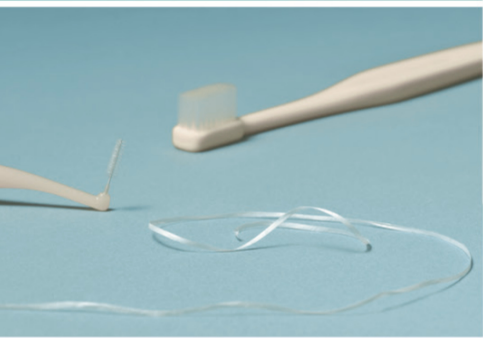


Oral Health Survey 2011

HIGHLIGHTS



Introduction for highlights

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.

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. Similar to Oral Health Survey 2001, the survey methodology followed the basic principles of the WHO recommendation. The following index ages and age groups were selected: (a) 5-year old children; (b) 12-year old students; (c) 35 to 44-year old adults; (d) 65 to 74-year old non-institutionalised older persons (NOP); and (e) the aged 65 and above Social Welfare Department long term care services (LTC) users. The main focus of the report was on two most common but preventable oral diseases, tooth decay (dental caries) and gum disease (periodontal disease).

Measurement of tooth decay experience (DMFT/dmft index)

The DMFT/dmft index is used to present the tooth decay experience in the population. The convention is to use **DMFT** for decay experience of permanent teeth, and **dmft** for decay experience in primary teeth. 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 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.

Measurement of gum disease (index teeth, half mouth and full mouth)

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 loss of attachment (the total amount of structural breakdown). 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.

Gum health of an individual is assessed by dividing all teeth in his/her 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.

The use of only index teeth in each of the six sextants may under-estimate the level of gum disease. 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 should ideally be done by examination of all the teeth present. The current international trend is to examine all teeth present in the mouth (called full-mouth examination) or at least all teeth on one side of the mouth (called half-mouth examination). However, full-mouth or half-mouth examination is more time-consuming and could cause more stress to the individual being examined. In this Oral Health Survey, there were time constraints in examining large groups of subjects with minimal interruption to their daily routines in the 12-year old students and the long-term care service users. The long-term care users also had difficulties in tolerating lengthy oral examination. The examination of index teeth by sextants was therefore adopted in these groups. 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.

Community Periodontal Index (CPI) is a presentation of gum health information incorporating the presence of gum bleeding, calculus and pocket depths in one index. Examination is done by sextant and it 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. At the population level, the gum health is assessed by the proportion of population in each category of CPI score. However if 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 is calculated which may give an approximation to the number of teeth affected.

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 examining all teeth in a half-mouth. 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. Readers must therefore exercise caution in comparing gum health information of this survey with previous Hong Kong surveys.

This highlight version contains key results of the Survey only. For detail descriptions of tooth decay and gum disease, their measurement methods in surveys, and detail findings of the Survey, please refer to the full report. The full report can be viewed / downloaded at <http://www.toothclub.gov.hk/>

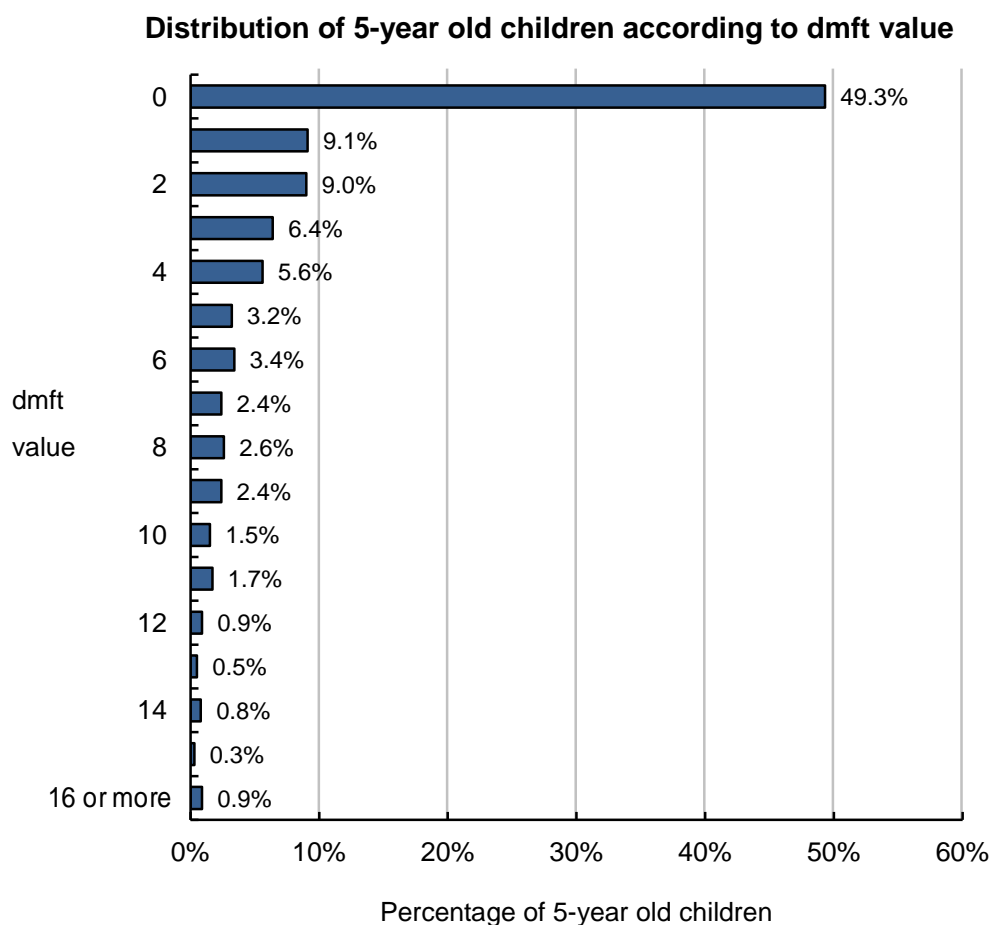
Section 1

5-year old children

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 mean decayed, missing and filled teeth (dmft) value was 2.5. Around half (50.7%) of the children were found to have decay experience with 92.0% of the affected teeth not treated. The distribution of decayed teeth among the children was skewed (Figure 1.1). Around a quarter (26.2%) of the children had four or more teeth with decay experience. This group of children had 81.2% of all the teeth affected by tooth decay.

Figure 1.1



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

The level of tooth decay experience among 5-year old children and the percentage of children affected as found in the 2001 and 2011 surveys are shown in Table 1.1 and Table 1.2.

Table 1.1
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 1.2
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

Dental abscess was present in 5.9% of the 5-year old children. Most of these abscesses were probably associated with extensively decayed teeth. In the 2001 survey, dental abscess was found in 5.7% of children of this age group.

Tooth status – how clean were the teeth?

The cleanliness of the teeth of the 5-year old children was measured by the percentage of tooth surfaces with visible dental plaque. The mean percentage of tooth surfaces with visible dental plaque was 22.1%. In 2001, the corresponding figure was 23.5%.

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

- Around three-quarters (74.5%) of the 5-year old children brushed their teeth twice or more daily. Only 4.7% of them brushed less than once a day.
- Around one-quarter (27.9%) of the parents of 5-year old children always assisted their children in toothbrushing while around two-thirds (62.3%) of parents sometimes did so.
- Up to 94.3% of the parents of 5-year old children reported that their children always used toothpaste when they brushed their teeth. Only half (55.4%) of the parents who reported use of toothpaste knew that the toothpaste used by their children contained fluoride.
- Around three-quarters (74.7%) of parents knew the benefit of fluoride in the prevention of tooth decay. However, half (49.9%) of parents had the misconception that fluoride could prevent gum disease and one-fifth (20.4%) of parents wrongly believed that fluoride was useful in the whitening of teeth.
- Only 8.3% of the parents reported that their 5-year old children snacked three times or more each day.

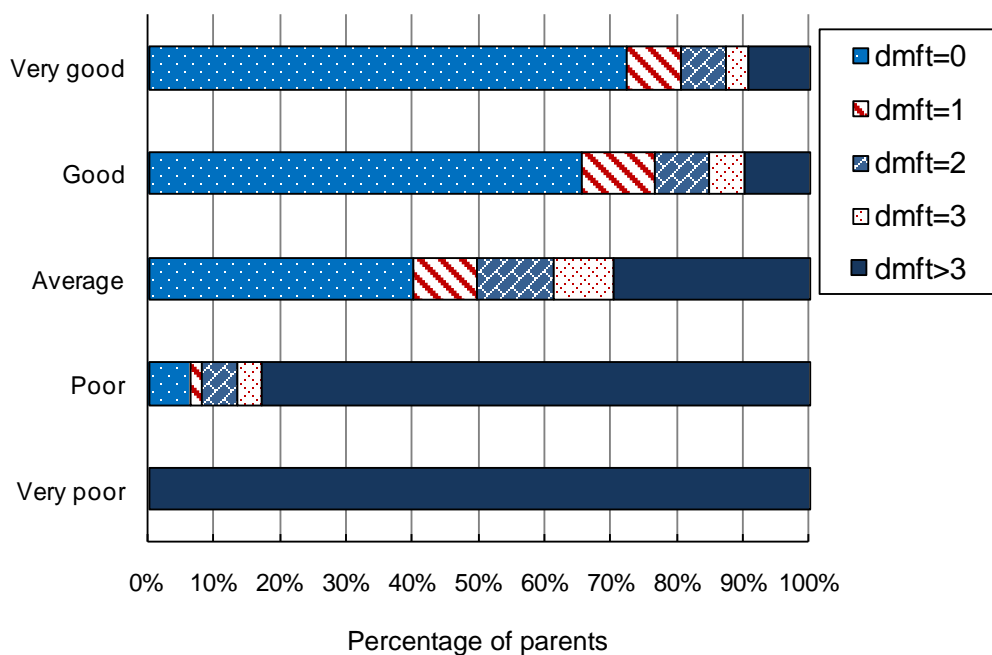
What did the parents know about dental diseases?

- The vast majority (95.4%) of parents knew that *taking too much sugary food or drinks* was a risk factor for tooth decay. Nearly half (47.7%) of them could identify *eating or drinking too frequently* as a risk factor.
- Around half (45.8%) of the parents considered *not rinsing after meal* as a risk factor for tooth decay and more than a quarter (28.9%) of them believed that *lack of calcium* could increase the risk. Both of them are in fact not important risk factors for tooth decay.
- Up to 82.5% of parents could identify *inadequate brushing along the gum line* as a risk factor for gum disease while half (45.9%) of parents knew the risk of *not using dental floss*.
- Among the parents, 39.5% of them knew that *smoking* was a risk factor for gum disease.

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

Up to 49.5% of parents rated their children's oral health as *good* or *very good* while 11.3% rated their children's oral health as *poor* or *very poor*. When the individual dmft values of the 5-year old children were compared with their parents' perceptions of their children's oral health, the parents' perceptions of *very poor* oral health were found to be in agreement with their children's actual oral health conditions, as all of the children so rated by their parents had more than three teeth with decay experience. However, the parents' perceptions of *good* or *very good* oral health were less accurate. 19.4% of the children being rated as *very good* and 23.5% of those being rated as *good* actually had dmft value of 2 or above (Figure 1.2) .

Figure 1.2
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)

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

- One-quarter (25.1%) of the parents had brought their 5-year old children to visit dentist.
- For the children who had visited dentist, 39.9% of the parents reported that the major reason for the latest visit was for checkup.

Table 1.3
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
Check up	39.9%	Checkup	39.9%
Tooth problem	48.5%	Suspect tooth decay	31.6%
		Toothache	12.2%
		Dental trauma	4.7%
Other reasons	11.6%	Other reasons	11.6%

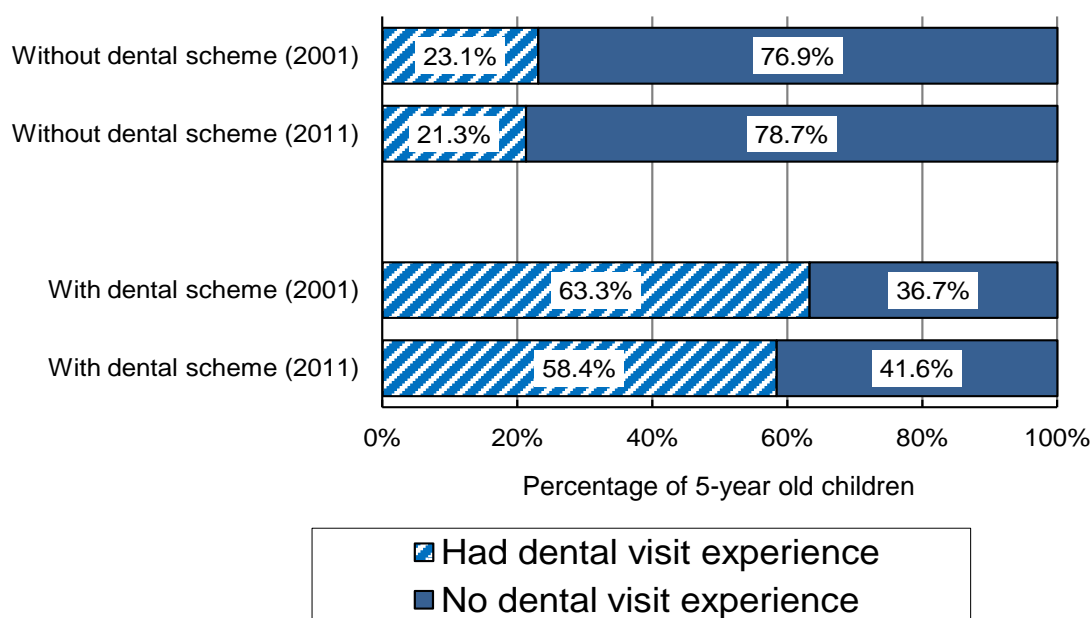
Base: All 5-year old children who had previous dental visit and whose parents responded to the question

2011: (N = 13 000)

- If their children had decayed primary teeth, only 44.9% of the parents preferred to have the teeth restored and 16.8% of them preferred to have the teeth removed. Up to 30.5% of the parents did not know what to do or chose to leave the decayed teeth alone.

- More than half (58.4%) of the parents of those children who were covered by dental scheme had brought their children to visit dentist while only one-fifth (21.3%) of parents of those children without dental scheme coverage had done so. Comparing the findings of this survey with the 2001 survey, there was little change in the proportion of parents who had brought their children to visit dentist in both the group of children covered by parents' dental scheme and the group not covered (Figure 1.3).

Figure 1.3
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)

Summary and 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 only around half of the parents knew that the toothpaste used by their children contained fluoride 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.

Section 2

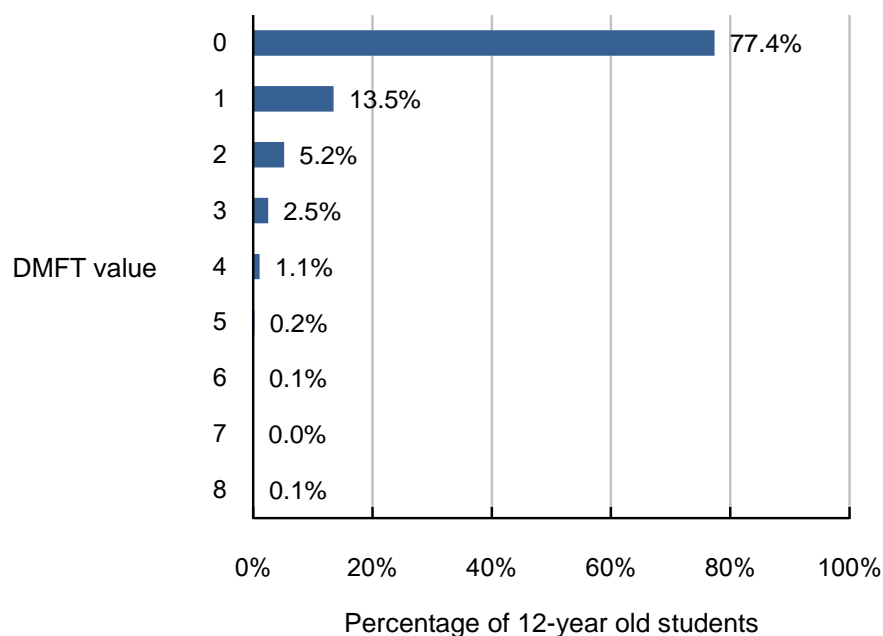
12-year old students

Tooth Status – what was the level of tooth decay experience?

The level of tooth decay experience in the 12-year old students was found to be very low with a mean Decayed, Missing and Filled Teeth (DMFT) value of 0.4. Only 22.6% of the students were found to have decay experience in their permanent teeth. For the students with tooth decay experience, most of them had only one affected tooth (Figure 2.1).

Among the students, most of the decay experience (DMFT) was filled component (FT). Untreated decay (DT) affected only 5.4% of the students.

Figure 2.1
Distribution of 12-year old students according to DMFT value



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 surveys are shown in Table 2.1 and Table 2.2.

Table 2.1
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 2.2
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

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 2.3 and Table 2.4.

Table 2.3
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 2.4
Mean number of sextants with healthy gum, bleeding gum and calculus in 12-year old student

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 with the 2001 survey, the gum condition of the 12-year old student had shown improvement. 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 students (22.4% as compared with 59.5% in the 2001 survey) had calculus.

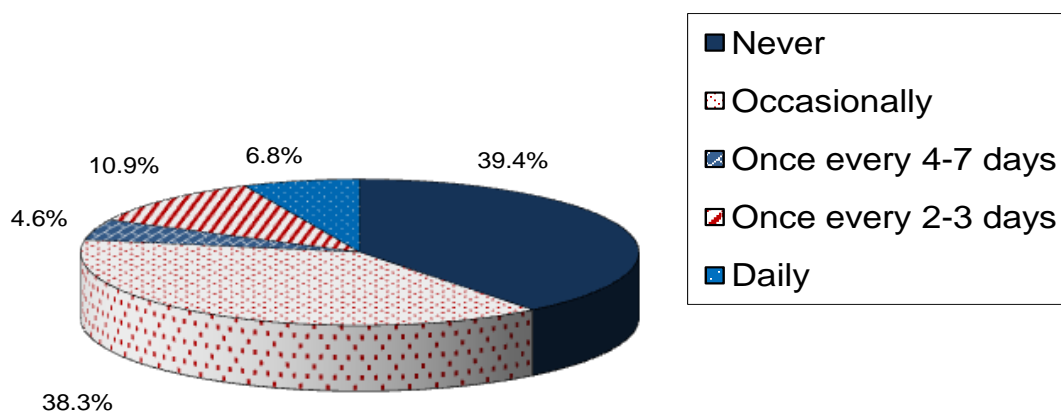
Tooth status – how clean were the teeth?

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 was 27.0%. In 2001, the mean percentage of tooth surfaces with visible dental plaque in the students of this age group was 36.8%. There had been improvement in the cleanliness of the students' teeth.

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

- Majority (80.7%) of the students brushed twice or more a day. Only 2.0% of the students brushed less than once a day.
- Up to 96.1% of the students reported that they always used toothpaste when they brushed their teeth. However, less than half (43.0%) of those who used toothpaste knew that the one they were using contained fluoride.
- Up to 60.6% of the students reported that they had been using dental floss. Most of those who used dental floss did so occasionally (Figure 2.2).
- Only 4.7% of students reported that they snacked three times or more each day.

Figure 2.2
Distribution of 12-year old students according to frequency of using dental floss



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

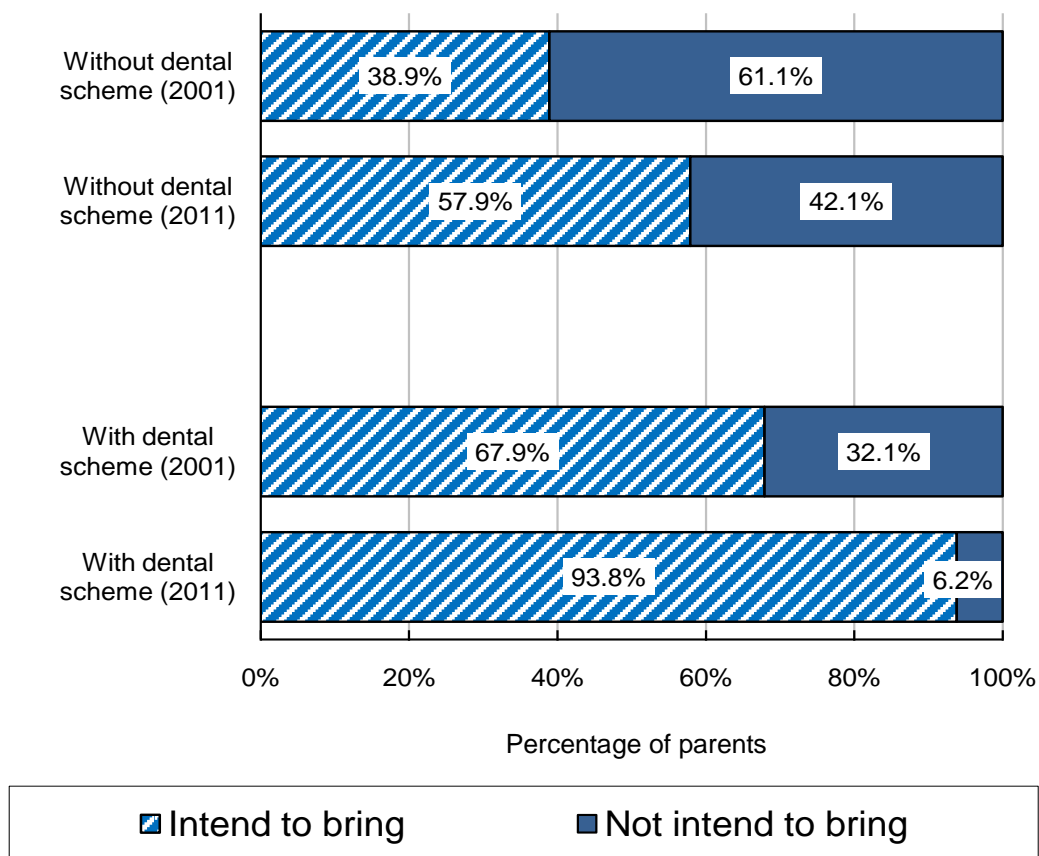
What did the students and their parents know about dental diseases?

- Similar to the finding of the 2001 survey, the vast majority of the students and their parents (95.7% and 93.2% respectively) knew that *taking too much sugary food or drinks* was a risk factor for tooth decay. About half of them (44.6% of students and 48.8% of parents) knew the risk of *eating or drinking too frequently*, as compared with 32.0% of students and 24.0% of parents in 2001.
- Around half of the students and their parents (56.6% and 57.7% respectively) knew that *not brushing the teeth with fluoride toothpaste in the morning and at night* was a risk factor for tooth decay.
- Up to 75.0% of the students and 82.5% of the parents could identify *inadequate brushing along the gum line* as a risk factor for gum disease while 36.7% of the students and 41.8% of their parents knew that *not using dental floss* was a risk factor.
- Around half (56.0%) of the students and about one-third (36.3%) of the parents knew that *smoking* was a risk factor for gum disease.

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

- Around three-quarters of the students and their parents (76.1% and 71.9% respectively) considered regular dental checkup as a way to help prevent tooth decay. At the same time, 64.4% of students and 73.0% of parents considered regular dental checkup as a way to help prevent gum disease.
- Up to 64.1% of parents indicated that they would bring the 12-year old students to seek regular dental checkup. Among the students, 31.8% had already visited the dentist after entering secondary school and the main type of treatment received during the visit was professional tooth cleaning (scaling).
- A vast majority (93.8%) of the parents of those students who were covered by dental scheme indicated that they intended to bring the students to seek regular dental checkup while only 57.9% of parents of those students who were not covered by dental scheme intended to do so. Comparing these findings with those obtained in the 2001 survey, more parents intended to bring the 12-year old students to seek regular dental checkup in both groups (Figure 2.3).

Figure 2.3
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)

Summary and 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 showed that less than half of students who used toothpaste knew whether fluoride was present in the toothpaste they 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 know the benefit of fluoride.

Section 3

35 to 44-year old adults

Tooth loss condition

On average, adults in 2011 had 28.6 teeth which was similar to that of 2001 (28.1 teeth). 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. There were 99.8% adults who had at least 20 teeth (Table 3.1).

Table 3.1
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

Level of tooth decay experience

The mean number of Decayed, Missing and Filled Teeth (DMFT) in 2011 was 6.9. On average, 0.7 decayed teeth (DT) were not treated in adults while 2.8 teeth were filled (FT). When compared with 2001, adults in 2011 had fewer missing teeth (MT) (3.4 in 2011 and 3.9 in 2001) (Table 3.2).

Table 3.2
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

Similar to the survey in 2001, almost all adults had tooth decay experience (96.1% in 2011 and 97.5% in 2001) (Table 3.3).

Table 3.3
Percentage of adults with tooth decay experience in 2001 and 2011

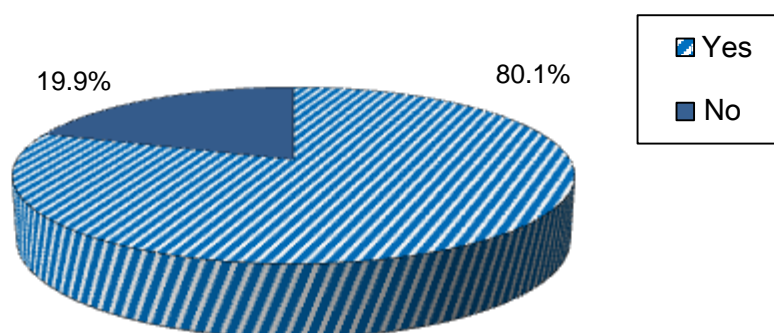
Tooth decay experience	2001 (N = 1 354 700)	2011 (N = 1 062 900)
DMFT	97.5%	96.1%
DT (Decayed)	32.0%	31.2%
MT (Missing)	91.4%	89.7%
FT (Filled)	66.6%	67.4%

Base: All adults

Gum condition

Among all adults, 98.6% of them had bleeding gums on examination. Gum bleeding was common among adults with 80.1% of them having bleeding gums around half or more of their teeth (Figure 3.1). The prevalence of adults with gum pocket of 4 mm or more (39.6%) had decreased when compared with 2001 (46.0%) (Table 3.4).

Figure 3.1
Percentage of adults having half or more of the teeth with bleeding gums



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

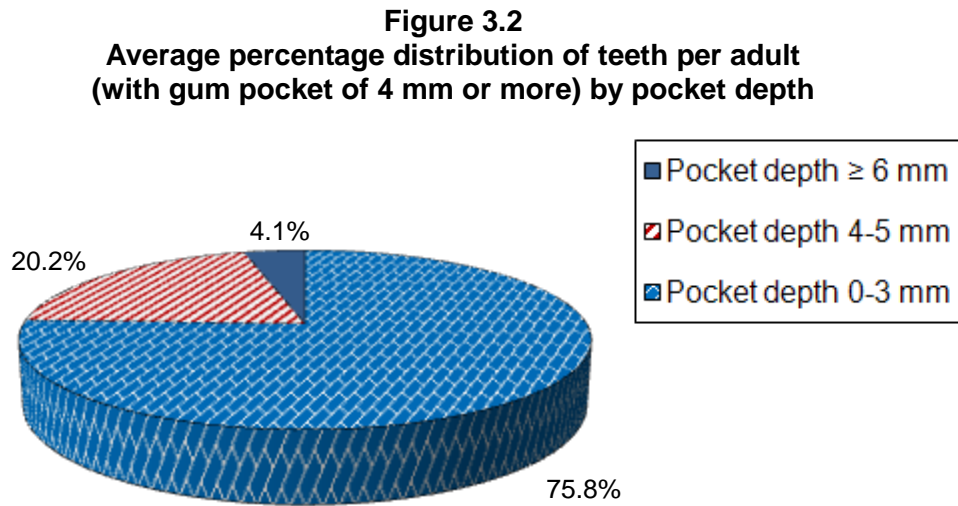
Table 3.4
Percentage of adults according to the highest pocket depth in 2001 and 2011

Highest pocket depth	2001 (N = 1 354 700)	2011 [#] (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

[#] 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 3.2).



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

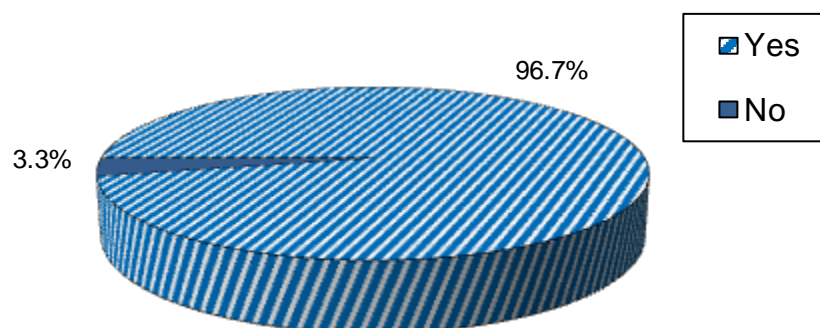
Oral health related behaviours

- The habit of daily interdental cleaning remained inadequate with only 15.4% of adults reported having this habit.
- 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.
- Toothpick (73.6%) and mouthwash (46.0%) were the two common additional measures used by adults to maintain their oral hygiene. For those who used mouthwash, 51.0% of them reported that they used it for *reducing gum inflammation*.
- About 9% of adults reported having snack or food consumption three times or more a day other than their normal meals.
- About 13% of adults had either daily or weekly smoking habit which put them at risk of gum disease, oral cancer and other health problems.

Cleanliness of the teeth

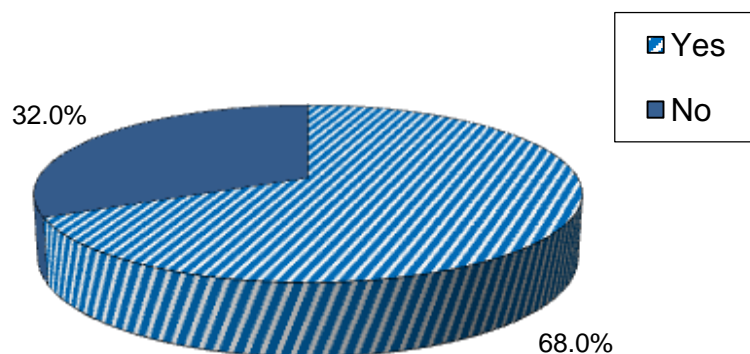
The oral cleanliness of adults was unsatisfactory as 96.7% and 68.0% of them had half or more of their teeth covered with visible dental plaque and calculus respectively (Figures 3.3 and 3.4).

Figure 3.3
Percentage of adults having visible dental plaque on half or more of their teeth



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

Figure 3.4
Percentage of adults having calculus on half or more of their teeth

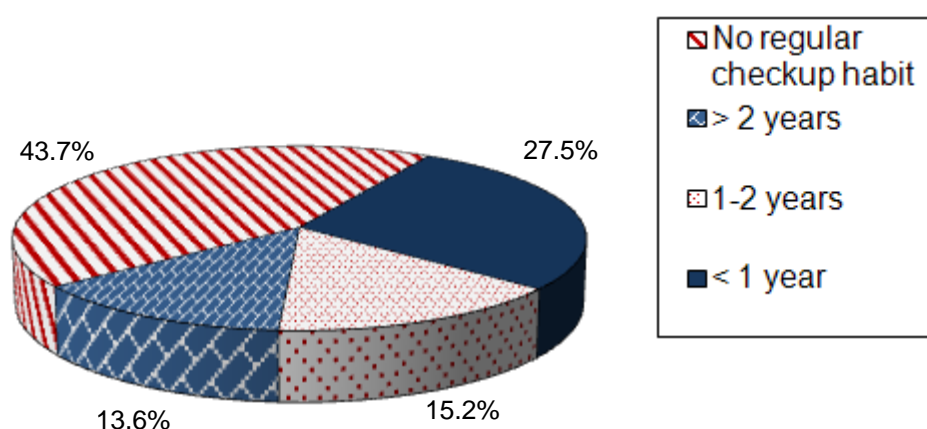


Base: All adults
2011: (N = 1 062 900)

Dental checkup habit

About 56% of the adult population in 2011 reported that they had the habit of seeking regular dental checkup regardless of the time interval (Figure 3.5). The rate of regular dental checkup was more than double when compared with 2001 (26.3%).

Figure 3.5
Percentage of adults according to the dental checkup habit



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

Regular dental checkup not only provides an opportunity for early diagnosis and management of oral diseases but also allows the learning of proper oral hygiene measures from dentists. In order to facilitate the building up of regular dental checkup habit, factors that may influence the establishment of such habit were investigated.

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.

Reasons and beliefs behind the regular dental checkup habit

- A large proportion (80.4%) of regular attenders stated that *'they will go for regular dental checkup in order to have early detection of tooth problems'*.
- Half (50.0%) of the regular attenders went for dental checkup because they believed that *checkup could help in preventing their dental problems or prevention was better than cure*.
- About a quarter (25.1%) of regular attenders sought dental checkup for *keeping their teeth white and clean*.
- *Took full benefit of the dental service which was included in insurance plan / employment benefit* was also a reason reported by 23.0% of regular attenders.

Reasons and beliefs behind the irregular dental checkup habit

- The main reason for adults not seeking regular dental checkup was the *subjective feeling of their teeth as good / no pain / no need* (60.0%).
- Around 60% of irregular attenders thought that *'practising good oral hygiene at home can replace regular scaling'* (61.1%) and they also claimed that *'dare not visit a dentist because the total cost of dental treatments at the end is often unpredictable'* (60.1%).
- *No time* (16.2%) and *problem in appointment booking* (7.9%) were reported as barriers by irregular attenders even they had thought of going for regular dental checkup.

Action taken when experiencing oral symptom

When encountered with severe toothache, i.e. toothache that disturbed sleep, 61.6% of adults visited a dentist. Among adults having bad breath and bleeding gums, only 2.8% and 7.0% of them sought professional dental care respectively. In fact, more than 60% of adults with bleeding gums and mobile teeth 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 3.5).

Table 3.5
Percentage of adults according to
the oral symptom experienced in the 12 months before the survey
and the action taken

Oral symptom	Percentage of action taken by the affected adults			
	No action	Self manage	Doctor / TCM*	Dentist
Bad breath	23.7%	70.9%	2.7%	2.8%
Bleeding gums	61.2%	31.7%	0.0% [§]	7.0%
Sensitivity to hot or cold	48.7%	37.7%	0.4% [§]	12.7%
Mobile teeth	62.7%	12.3%	1.3% [§]	23.8%
Toothache that disturbed sleep	8.9% [§]	28.1%	1.4% [§]	61.6%

Base: Adults who had the specific oral symptom in the 12 months before the survey

Bad breath: (N = 805 300)

Bleeding gums: (N = 640 500)

Sensitivity to hot or cold: (N = 592 300)

Mobile teeth: (N = 157 000)

Toothache that disturbed sleep: (N = 103 500)

* TCM – Traditional Chinese medical practitioners

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

Possible facilitators to seeking professional dental care when experiencing oral symptom

- *Knowing that the symptom was related to their dental / oral health* was the main reason for adults who consulted a dentist for their bad breath (93.4%), bleeding gums (53.5%) or tooth sensitivity (52.5%).
- 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%) and severe toothache (69.8%).

Possible barriers to seeking professional dental care when experiencing oral symptom

- Considering that *the symptom was not a serious problem* (15.3%[§] to 42.0%) and *the symptom would disappear* (5.7%[§] to 25.5%) were common reasons for adults not consulting a dentist when experienced with different oral symptoms.
- Among adults who did not consult a dentist when having severe toothache, 15.1%[§] *felt that the methods they used were more effective than visiting a dentist*.
- For those with bad breath but did not consult a dentist, nearly a quarter (24.3%) of them reported they *did not know that the symptom was related to dental / oral health*.
- Out of the adults who did not consult a dentist when experienced with different oral symptoms, 20.2% to 44.5% *knew that they needed to visit a dentist but encountered some barriers*. Among this group of adults, *no time* (32.1% to 53.6%[§]) was the most commonly reported barrier while *problem with appointment booking* (18.1% to 33.9%) was another possible barrier.

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

Summary and way forward

The result of this survey showed that the level of tooth decay and tooth loss were not major problems in the adult population. However, gum disease was a concern and oral hygiene was far from satisfactory.

Although adults commonly practiced toothbrushing, their oral self-care was not effective. This resulted in the prevalent plaque accumulation and gum bleeding. 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 practiced 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 sign and symptoms. They should be encouraged to seek dental care for prompt disease intervention.

Section 4

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

Tooth loss condition

The mean number of teeth among NOP in 2011 was 19.3 which had increased comparing to 2001 (17.0). About 6% of NOP had total tooth loss and there were about three percentage points decrease. 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. The percentage of NOP having 20 or more teeth increased by about 10 percentage points, and went up to about 60% in 2011 (Table 4.1).

Table 4.1
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

Level of tooth decay experience

The level of tooth decay experience in NOP as measured by the mean number of Decayed, Missing and Filled Teeth (DMFT) was 16.2. When compared with 2001 (17.6), it declined slightly with fewer missing teeth (MT) and more filled teeth (FT) (Table 4.2). The mean number of teeth with untreated decay (DT) per NOP was low (1.3) but DT affected about one-half of NOP (Table 4.3).

Table 4.2
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 4.3
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%

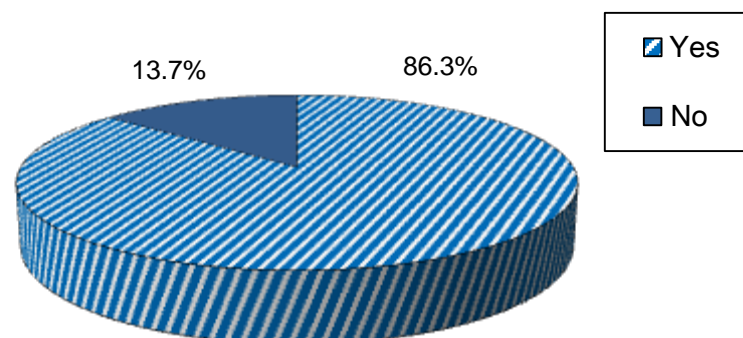
Base: All NOP

Gum condition¹

Gum bleeding was found in nearly all (97.1%) dentate NOP (NOP who had teeth). About 86% of dentate NOP had half or more of their teeth with gum bleeding (Figure 4.1). Gum pockets of 4 mm or more were also common and they were found in about 60% of the dentate NOP (Table 4.4). However, in these 60% dentate NOP, on average each NOP had 39.6% of the remaining teeth with gum pockets of 4 mm or more (Figure 4.2). Gum pockets of 6 mm or more were found only in 8.4% of the remaining teeth.

¹ 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.

Figure 4.1
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)

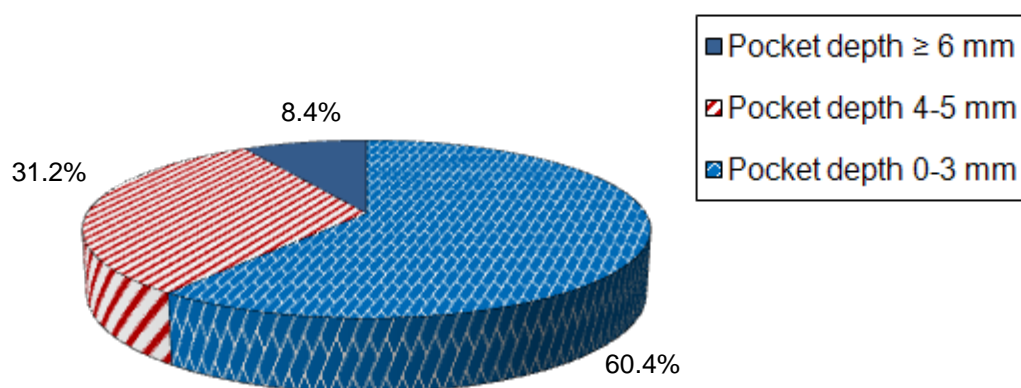
Table 4.4
Percentage of dentate NOP according to
the highest pocket depth in 2001 and 2011

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

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

[#] 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 4.2
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)

Oral health related behaviours

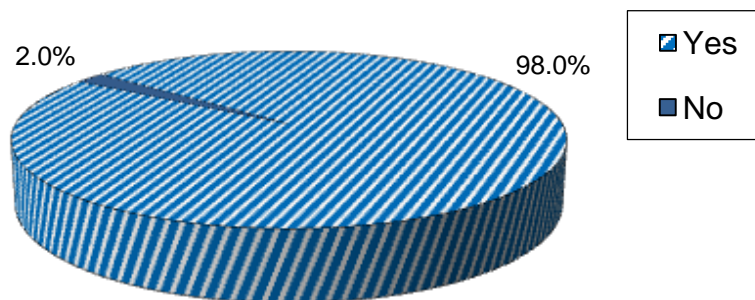
- Majority (95.0%) of dentate NOP brushed their teeth every day. Among dentate NOP, 67.1% brushed twice or more daily.
- Only 12.4% of dentate NOP reported to have daily interdental cleaning habit. Dental floss was used by 7.3% of dentate NOP and interdental brush was used by 6.1% of dentate NOP to clean their teeth on a daily basis.
- About two-thirds (65.0%) of NOP used toothpick and about one-third (30.1%) of NOP used mouthwash as an additional measure to clean their teeth.
- Less than one-tenth (7.2%) of NOP had snack or food consumption three times or more daily other than normal meals.
- Either daily or weekly smoking habit was found in 12.2% of NOP and this put them at a higher risk of gum disease, oral cancer and other health problems.

Cleanliness of the teeth²

Although nearly all dentate NOP brushed their teeth daily, their teeth were not clean enough. It was found that 98.0% and 80.4% of dentate NOP had half or more of their teeth covered with visible dental plaque and calculus respectively (Figures 4.3 and 4.4).

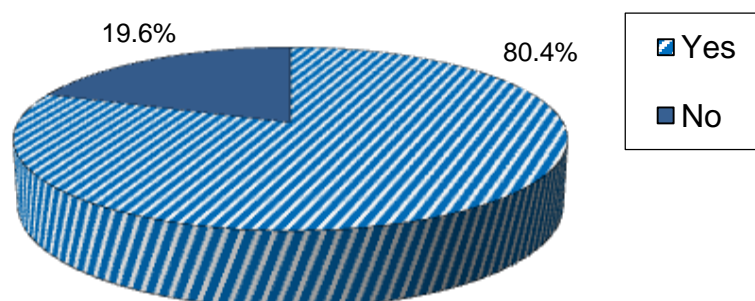
² The measurement was taken in NOP who had gum examination performed. Similar to gum condition, the cleanliness of the teeth in this report was only inferred to 386 200 dentate NOP represented by the NOP with gum examination performed in 2011.

Figure 4.3
Percentage of dentate NOP
having visible dental plaque on half or more of their teeth



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

Figure 4.4
Percentage of dentate NOP
having calculus on half or more of their teeth

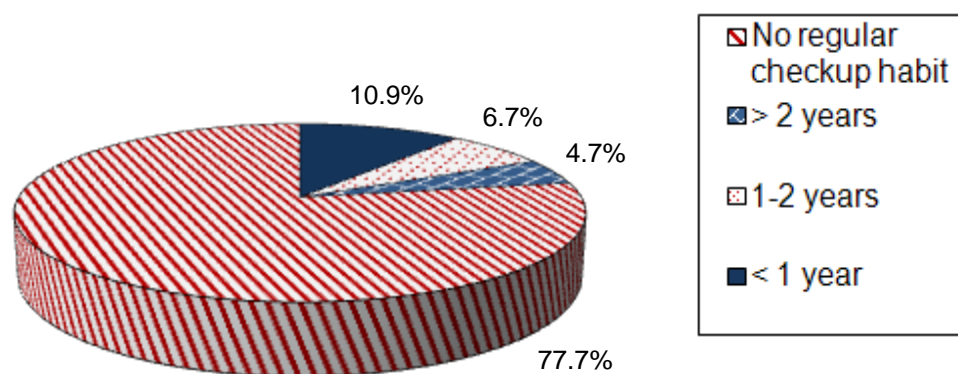


Base: Dentate NOP (represented by the NOP with gum examination performed)
2011: (N = 386 200)

Dental checkup habit

About a quarter (22.3%) of NOP reported that they had regular dental checkup habit (Figure 4.5). That was a marked increase when compared with 10 years ago (9.1%).

Figure 4.5
Percentage of NOP according to the dental checkup habit



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

Factors that may influence the adoption of regular dental checkup habit were investigated in this survey. 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, while the others were defined as having irregular checkup habit.

Reasons and beliefs behind the regular dental checkup habit

- The most common reasons given by NOP were for *prevention of dental problems or prevention was better than cure* (59.0%), and for *keeping teeth healthy* (24.6%).
- Nearly one-fifth (17.9%) of NOP had regular checkup because they wanted to *take full benefit of the dental service which was included in insurance plan or employment benefit*.
- About one-fifth (17.0%) of NOP reported that *reminder from dentist* was a reason.
- Nearly all (96.3%) regular attenders held the belief that *'having regular dental checkup every one to two years will help to keep teeth in good condition'*.
- About three-quarters (74.1%) of regular attenders thought that *'they will go for regular checkup in order to have early detection of tooth problems'*.
- About one-third (35.0%) of regular attenders thought that *'they will go for scaling regularly because of aesthetic reason'*.

Reasons and beliefs behind the irregular dental checkup habit

- The most common reason given by NOP (57.2%) for not seeking regular dental checkup was that *they felt their teeth were good or had no pain or they had no need of dental checkup*.
- About a quarter (25.9%) of NOP mentioned that *charge of dental visit was unaffordable or they did not want to spend money on checkup*.
- A vast majority (92.7%) of irregular attenders thought that *'they will visit a dentist only when in pain or with serious dental problems'*.
- The belief that *'practising good oral hygiene at home can replace regular scaling'* was held by 78.7% of the irregular attenders.
- About two-thirds (65.8%) of irregular attenders claimed that *'dare not visit a dentist because the total cost of dental treatments at the end is often unpredictable'*.

Action taken when experiencing oral symptom

When NOP experienced oral symptom, less than half of them sought professional dental care. A greater proportion of NOP with severe toothache, i.e. toothache that disturbed sleep, sought professional dental care (39.5%) as compared to bad breath (0.8%[§]) and bleeding gums (4.3%) (Table 4.5). 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.

Table 4.5
Percentage of NOP according to
the oral symptom experienced in the 12 months before the survey
and the action taken

Oral symptom	Percentage of action taken by the affected NOP			
	No action	Self manage	Doctor/ TCM*	Dentist
Bad breath	26.4%	69.6%	3.3%	0.8% [§]
Bleeding gums	48.3%	47.4%	0.0% [§]	4.3%
Sensitivity to hot or cold	44.7%	39.4%	0.3% [§]	15.4%
Mobile teeth	59.6%	12.9%	0.8% [§]	26.7%
Toothache that disturbed sleep	19.7%	35.7%	5.1% [§]	39.5%

Base: NOP who had the specific oral symptom in the 12 months before the survey

Bad breath: (N = 230 100)

Bleeding gums: (N = 147 800)

Sensitivity to hot or cold: (N = 214 500)

Mobile teeth: (N = 188 800)

Toothache that disturbed sleep: (N = 63 200)

* TCM - Traditional Chinese medical practitioners

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

Possible facilitators to seeking professional dental care when experiencing oral symptom

- *Knowing that the symptom was related to dental or oral health* was the main reason for NOP to visit a dentist when having bad breath (100.0%[§]) and bleeding gums (63.8%[§]).
- The belief that *only dentist could manage the symptom* was the main reason for NOP to seek professional dental care when having severe toothache (69.3%), mobile teeth (62.5%) and tooth sensitivity (53.4%).

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

Possible barriers to seeking professional dental care when experiencing oral symptom

- The belief that *the symptom was not a serious problem* was one of the main reported reasons for NOP not to seek professional care when having bad breath (26.9%), bleeding gums (37.5%), tooth sensitivity (32.2%) and mobile teeth (25.8%).
- The belief that *the symptom would disappear* was another main reported reason when having bad breath (16.3%), bleeding gums (27.9%), tooth sensitivity (19.5%) and mobile teeth (15.3%).
- Out of NOP who did not consult a dentist when experienced with different oral symptoms, 25.2% to 72.9% *knew that they needed to visit a dentist but encountered some barriers*. Among this group of NOP, the commonly reported reasons were *unaffordable charge* (47.0% to 58.5%) and *reluctance to spend money on dental care* (25.9% to 40.8%).

Summary and way forward

The survey showed that gum disease was a major problem among NOP and their oral hygiene was not good enough. Nearly all NOP had daily brushing habit, but plaque accumulation was prevalent and extensive among them. It reflected that their oral self-care was not effective. Plaque accumulation put them at risk of further developing gum disease. Thus oral self-care of NOP should be improved. 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 complemented with appropriate use of professional dental care e.g. regular dental checkup is recommended.

The survey also showed that while interdental cleaning was not commonly practised among NOP, majority of them used toothpicks. 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 advice 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.

This survey showed that most NOP did not have regular dental checkup and more than half of them did not make use of professional dental care even when they had oral symptom. 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. Some 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.

Section 5

Aged 65 and above users of Social Welfare Department

Long-term Care Services

There was a marked difference in the age composition between the *institutionalised older persons* (IOP) population in 2001 and 2011, with 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 behaviours found in the following tables should not be simply viewed as improvement or deterioration. Users of *Day Care Centres for the Elderly* (D/E) and *Home and Community Care Services* (HCCS) were not studied in 2001 and no comparison can be made. The inclusion of D/E and HCCS users in addition to IOP covered all functionally dependent older persons receiving long-term care (LTC) of the Social Welfare Department.

Tooth loss

IOP had high level of tooth loss with 29.6% having total tooth loss (Table 5.1) and a mean of 9.4 remaining teeth. D/E users had the lowest level of tooth loss among all LTC users with 19.3% having no teeth remaining, and a mean of 12.5 remaining teeth. Total tooth loss affected 26.9% HCCS users and there were 10.8 remaining teeth on average.

Table 5.1
Percentage with total tooth loss
among IOP in 2001 and LTC users in 2011

Level of tooth loss	IOP (2001) N = 46 600	IOP (2011) N = 60 000	D/E (2011) N = 3 230	HCCS (2011) N = 4 480
Had total tooth loss	27.2%	29.6%	19.3%	26.9%

Base: All LTC users

Level of tooth decay experience

On average, each IOP had 3 teeth with untreated decay (DT) among the remaining teeth. Among D/E and HCCS users, each had 2.2 and 2.3 teeth with untreated decay respectively (Table 5.2). Untreated tooth decay affected more than half of the LTC users (Table 5.3).

Table 5.2
Level of tooth decay experience as measured by the DMFT index
among IOP in 2001 and LTC users in 2011

Tooth decay experience	IOP (2001) N = 46 600	IOP (2011) N = 60 000	D/E (2011) N = 3 230	HCCS (2011) N = 4 480
Mean DT (decayed)	2.6	3.0	2.2	2.3
Mean MT (missing)	21.6	22.6	19.5	21.2
Mean FT (filled)	0.3	0.4	1.0	0.9
Mean DMFT	24.5	25.9	22.7	24.3

Base: All LTC users

Table 5.3
Percentage with tooth decay experience as measured by the DMFT index
among IOP in 2001 and LTC users in 2011

Tooth decay experience	IOP (2001) N = 46 600	IOP (2011) N = 60 000	D/E (2011) N = 3 230	HCCS (2011) N = 4 480
DT (decayed)	55.2%	54.5%	55.5%	50.2%
MT (missing)	99.5%	100%	100%	98.3%
FT (filled)	17.0%	17.0%	32.7%	32.6%
DMFT	99.8%	100%	100%	99.7%

Base: All LTC users

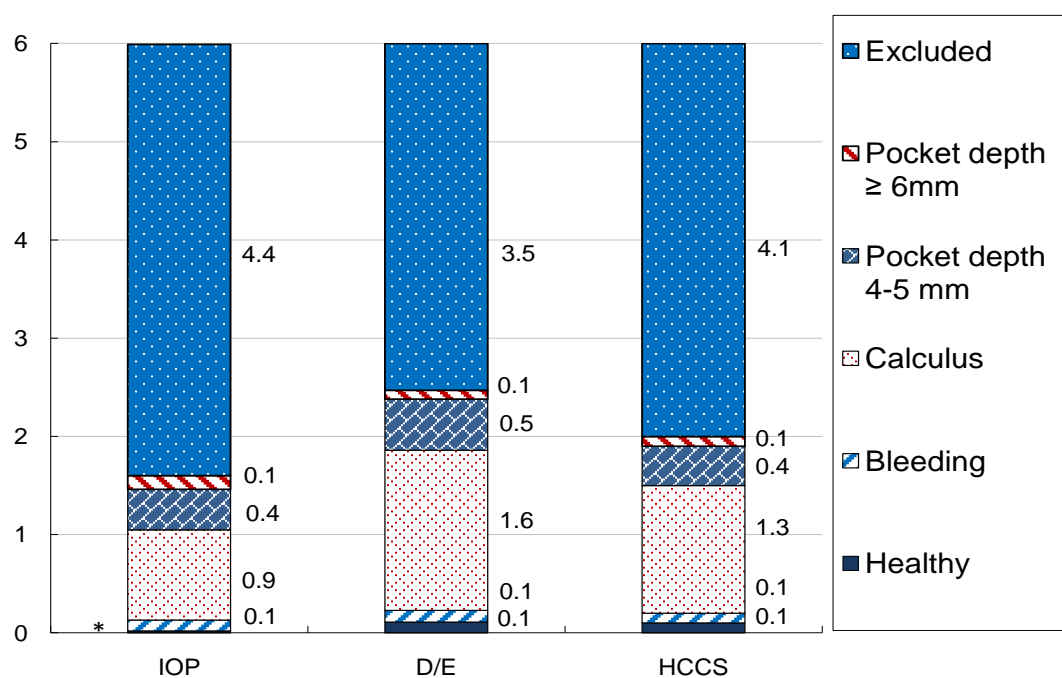
Gum condition

Traditionally, gum health is assessed by dividing all teeth 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.

The gum condition of LTC users in terms of the mean number of sextant affected as measured by the Community Periodontal Index (CPI) is shown in Figure 5.1.

1. The number of valid sextant was low as more than half of the sextants have been excluded due to tooth loss;
2. The most commonly found gum condition was calculus, indicating inadequate oral hygiene care and lack of professional cleaning.

Figure 5.1
Mean number of sextant with different gum condition (CPI score)
among LTC users in 2011



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

Time of last dental visit

LTC users who could respond to the interview were asked '*When was the last time you visit a dentist?*', and the results are shown in Table 5.4. In general, less than half of the LTC users could recall that they had seen a dentist within the previous three years. 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 in 2011 when compared with those in 2001.

Table 5.4
Percentage according to the reported time of last dental visit among IOP in 2001 and LTC users in 2011 who could respond to the interview

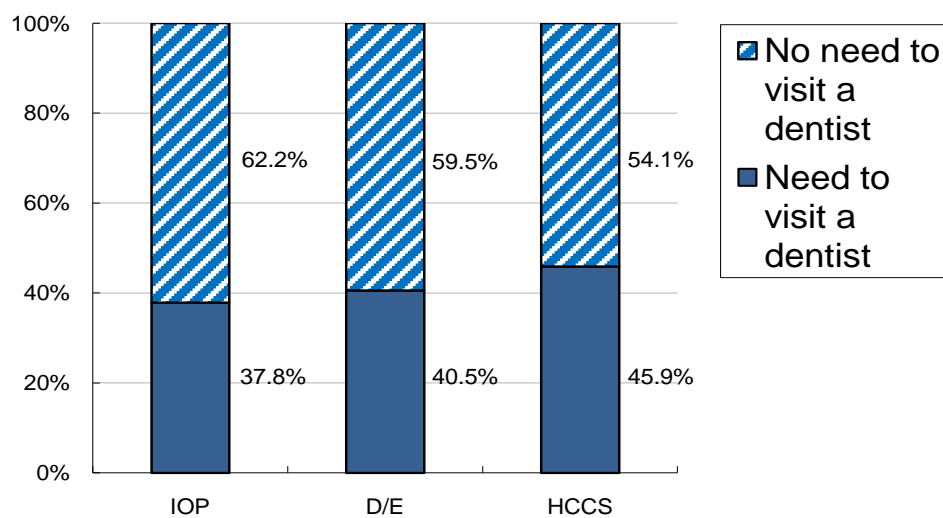
Time of last dental visit	IOP (2001) N = 32 400	IOP (2011) N = 39 300	D/E (2011) N = 2 530	HCCS (2011) N = 3 450
<1 year	8.1%	13.2%	22.7%	18.9%
1-3 years	6.9%	12.4%	11.5%	17.6%
> 3 years	32.1%	30.6%	13.7%	28.3%
never	24.4%	8.1%	6.3%	3.8%
Could not remember	28.5%	35.6%	45.7%	31.4%

Base: All LTC users who could respond to the interview

Perceived need to visit dentist

LTC users who could respond to the interview were asked ‘*Do you want to visit a dentist now?*’ and the results are shown in Figure 5.2. Around 40% of LTC users would like to visit a dentist at the time of the survey.

Figure 5.2
Distribution of LTC users in 2011 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)

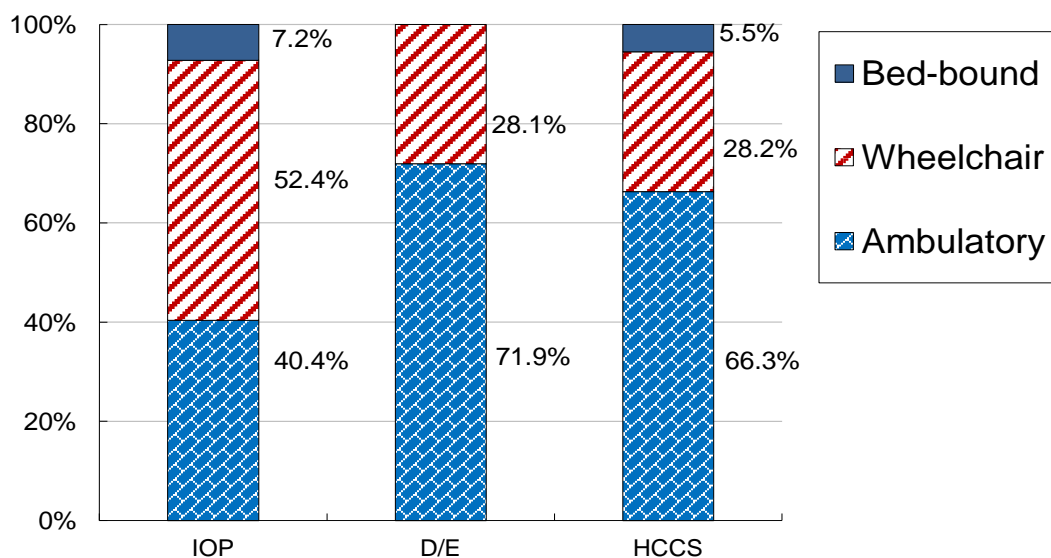
D/E users: (N=2 530)

HCCS users: (N=3 450)

Physical mobility

The assessed physical mobility of LTC users is shown in Figure 5.3. 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 being ambulatory. While as many as 66.3% of HCCS users were ambulatory, around 5% of them were bed-bound.

Figure 5.3
Distribution of LTC users in 2011 according to assessed physical mobility



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

Realistic treatment need

Due to the health condition of the functionally dependent older persons, the course of treatment itself may possibly lead to distress for some of them. It is widely accepted by the dental profession that treatment planning for functionally dependent older persons should be rational rather than technically ideal and not all *assessed treatment need* should be treated. Dentists in this survey made recommendations on treatment upon weighing the potential benefits against risks in dental treatment, and this is referred to as *rational treatment need*. The *realistic treatment need* is the acceptance by the functionally dependent older persons to treatment recommended by the dentist. Those who could not reply or could not make decision were categorized as *unable to respond*.

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(part or all rational need) recommended by dentist. IOP had the lowest level of realistic treatment need (28.9%), the highest proportion with assessed treatment need not recommended by dentists (no rational need), and the highest proportion who accepted nothing recommended by the dentists (Table 5.5 to 5.7).

Table 5.5
Percentage of LTC users in 2011 according to
the level of assessed treatment need

Assessed treatment need	IOP (2011) N = 60 000	D/E (2011) N = 3 230	HCCS (2011) N = 4 480
No assessed need	10.8%	12.1%	5.4%
Had assessed need	89.2%	87.9%	94.6%

Base: All LTC users

Table 5.6
Percentage of LTC users in 2011 according to
the level of rational treatment need

Rational treatment need	IOP (2011) N = 60 000	D/E (2011) N = 3 230	HCCS (2011) N = 4 480
No assessed need	10.8%	12.1%	5.4%
No rational need	18.7%	5.3%	7.0%
Recommended part of assessed need	10.7%	12.2%	6.9%
Recommended all assessed need	59.8%	70.4%	80.8%

Base: All LTC users

Table 5.7
Percentage of LTC users in 2011 according to
the level of realistic treatment need

Realistic treatment need	IOP (2011) N = 60 000	D/E (2011) N = 3 230	HCCS (2011) N = 4 480
No assessed need	10.8%	12.1%	5.4%
No rational need	18.7%	5.3%	7.0%
Unable to respond	9.8%	10.6%	13.7%
Accepted none of rational need	31.9%	18.8%	20.5%
Accepted part of rational need	8.6%	14.4%	5.9%
Accepted all rational need	20.3%	38.9%	47.6%

Base: All LTC users

Summary and way forward

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-institutionalized older persons.

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. The reasons include dentists' consideration of not recommending treatment in some cases and the refusal to receive treatment among some LTC users.

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.

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.

SECTION 6

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/)

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.