

Non-Communicable Diseases Watch

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衛生防護中心
Centre for Health Protection



衛生署
Department of Health

Grow Old with All Your Teeth

Key Messages

- ※ Regardless of age, oral health is integral to general health and quality of life. Despite advances in oral health care and treatment, oral diseases remain highly prevalent and affect health of billions of people worldwide, particularly older persons.
- ※ Among older people, poor oral health has been particularly evident in terms of tooth loss, dental caries experience and periodontal (gum) disease.
- ※ The process of ageing may directly or indirectly increase the risk of oral diseases. High prevalence of co-morbidity and the resulting poly-pharmacy may as well play a role in the development of oral diseases in older people. In addition, significant (but modifiable) risk factors, such as suboptimal oral hygiene, poor dietary practice and excessive free sugar intake, smoking and alcohol use, also contribute to their poor oral health.
- ※ In Hong Kong, the Oral Health Survey 2011 revealed that the oral health conditions of non-institutionalised older persons aged 65-74 were not so bad. They had slightly more teeth retained and the level of tooth decay experience showed a slight decline when compared with 10 years ago. However, gum disease remained a major problem.
- ※ Actually oral diseases do not have to be part of getting older and can be prevented. Teeth and gums can be kept healthy through daily self-care and appropriate professional dental care. It is important to clean teeth thoroughly, establish good dietary habits as well as refrain from smoking and alcohol use. On the other hand, seeking regular professional dental care is also crucial for early diagnosis and management of oral diseases, as well as obtaining individualised advice to improve oral hygiene skills. Heed the signs and symptoms of oral diseases and seek early professional dental care accordingly.

Grow Old with All Your Teeth

Oral health means more than good teeth. It refers to a state of being free from mouth or facial pain, tooth decay or loss, periodontal (gum) disease, oral infection and sores, and other diseases that limit an individual's capacity in biting, chewing, smiling, speaking, and affect psychological wellbeing.¹ Regardless of age, oral health is integral to general health and quality of life. Despite advances in oral health care and treatment, oral diseases remain highly prevalent, affecting billions of people worldwide.²

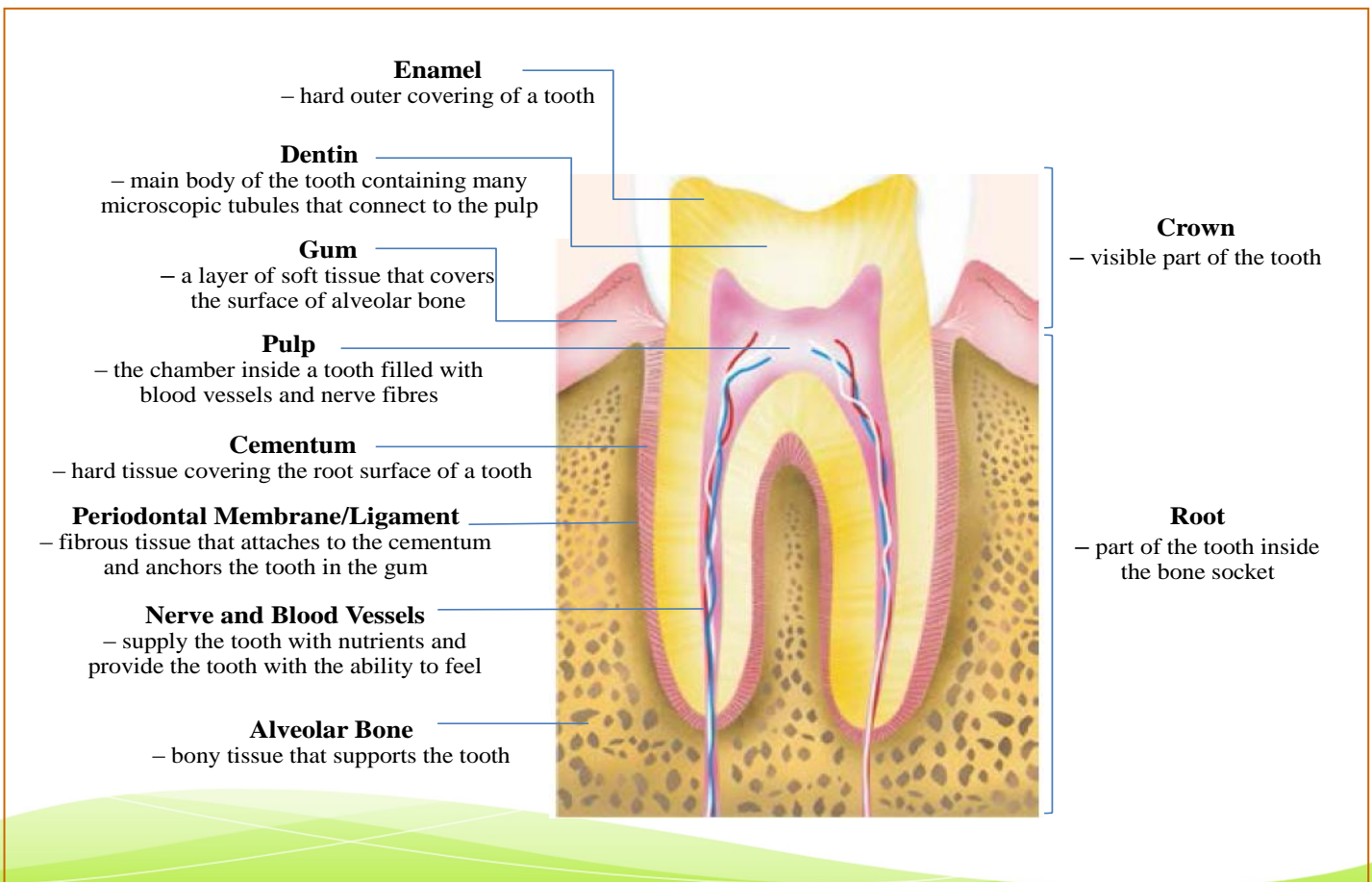
Age-related Oral Changes

The optimal functioning of the oral cavity largely depends on the integrity of the dentition and supporting structures, such as the gum, periodontal ligament and alveolar bone (Figure 1). With ageing, a number of physiological and pathological changes can take place in the mouth.³⁻⁵

Teeth change in structure and appearance as they age. While some wear of teeth is expected after years of biting and chewing as a person grows old, age-related changes in teeth would make them more vulnerable to erosions, cracks and cavities.^{5,6} Ageing can result in a series of changes in the pulp such as diminished pulp space; growth of calcifications; reduced number of cells, blood vessels and nerve supply. All these can interfere with tissue nutrition and reduce teeth's healing potential. Increased thickness of cementum and age-related changes in dentine could impair the ability to sense insult, reducing the chance of older people to seek early dental care.^{4,6}

Gums may also shrink with age, leaving tooth roots more exposed and more susceptible to decay and infection.⁵ Progressive loss of periodontal ligament fibres and alveolar bone mass with ageing would increase the risk of loose tooth and subsequent loss.^{3,5}

Figure 1: Anatomy of a tooth and its supporting structures



Saliva provides important protection to the teeth, gums and oral lining due to its cleansing, lubricating and antibacterial properties. It also contains calcium and phosphates which helps to remineralise the teeth. As a person grows old, salivary production and flow tend to reduce which can increase the risk of dry mouth (xerostomia), dental erosion, gum disease and oral infections.^{7,8}

Apart from age-related changes, the presence of co-morbidity (such as diabetes, cardiovascular diseases and gastrointestinal diseases) and poly-pharmacy may play a role in the development of oral diseases (in particular xerostomia) in older people.⁹ Nevertheless, some risk factors of oral health problems are modifiable, including poor oral hygiene, poor dietary practice (especially excessive free sugar intake which is an important determinant of dental caries), smoking and alcohol use. In all ages including people >65 years old, the evidence suggests a positive association between amount of free sugars intake and dental caries.¹⁰ Smoking is the most important preventable risk factor for the development of oral diseases, including periodontal disease and oral cancer. Smoking is associated with excessive destruction of the periodontal tissues, resulting in bone loss, pocket formation, and premature tooth loss. Compared to non-smokers, smokers were 5 to 6 times as likely to develop destructive periodontal disease.¹¹ A meta-analysis in 2008 also found that smokers were 3.4 times as likely to develop oral cancer compared to non-smokers.¹² Alcohol is a cancer-causing substance, and the carcinogenic effect on oral tissue is the same for beer, wine or spirits. Compared with non- or occasional drinkers, light drinkers (consuming ≤ 1 drink per day) had 17% increased risk of oral cancer while heavy drinkers (consuming ≥ 4 drinks per day) had 4.6 times the risk of oral cancer.¹³

Global Overview of Oral Health Conditions in Older People

Globally, experience of oral problems is common among older people, such as tooth loss, dental caries and periodontal disease.¹⁴

Tooth loss

In older people, the inter-relationships between nutritional deficiency and severe tooth loss are particularly pronounced. Declining chewing function is, in a large part, responsible for older people to have limited food choice and avoid high-fibre foods (such as fruit and vegetables) but consuming predominantly easy-to-chew and highly processed foods, which in turn may affect nutritional status and general health.¹⁵⁻¹⁷ Retention of at least 20 natural teeth is generally considered necessary for functioning dentition.^{18,19} However, the World Health Organization estimates that approximately 30% of people aged 65-74 worldwide have no natural teeth.¹ Severe dental caries and periodontal disease are the major reasons for tooth extraction (loss).¹⁹

Dental caries

Dental caries occurs when acidic metabolites of oral bacteria dissolve enamel and dentin. For older people, they are also a caries-active group with similar or higher levels of new caries formation than children and adolescents.^{20, 21} Large-scale prospective cohort studies of community-dwelling older people (aged 50 and above from the United States, Canada and South Australia) observed that the 3-year coronal caries incidence ranged from 45% to 59%. For root surface caries, the corresponding incidence ranged from 29% to 44%.²²

Periodontal disease

Periodontal disease is a chronic infection caused by bacteria residing in the plaque on subgingival tooth surfaces. It has two entities: gingivitis and periodontitis. Gingivitis is simple gum inflammation that can be reversed with good oral hygiene. Periodontitis occurs when gingival inflammation progresses to involve tooth supporting structures, which may lead to dental pocket formation and ultimately tooth loss. In western community-dwelling older people, prevalence of moderate to severe periodontal disease with pocket depth of 4 mm or more varied between 79% (Germany, 60 to 69 years) and 82% (Denmark, 65 to 74 years).²³

Oral Health Status of Non-institutionalised Older Persons in Hong Kong

The Department of Health (DH) conducted the second Oral Health Survey (OHS) 2011, 10 years after the first territory-wide survey in 2001, to collect pertinent information on oral health status (and oral health related behaviors) of the people in Hong Kong. As the OHS 2011 revealed, non-institutionalised older persons aged 65-74 had slightly more teeth retained and the level of tooth decay experience showed a slight decline when compared with 10 years ago. However, gum disease remained a major problem.²⁴

Tooth Loss

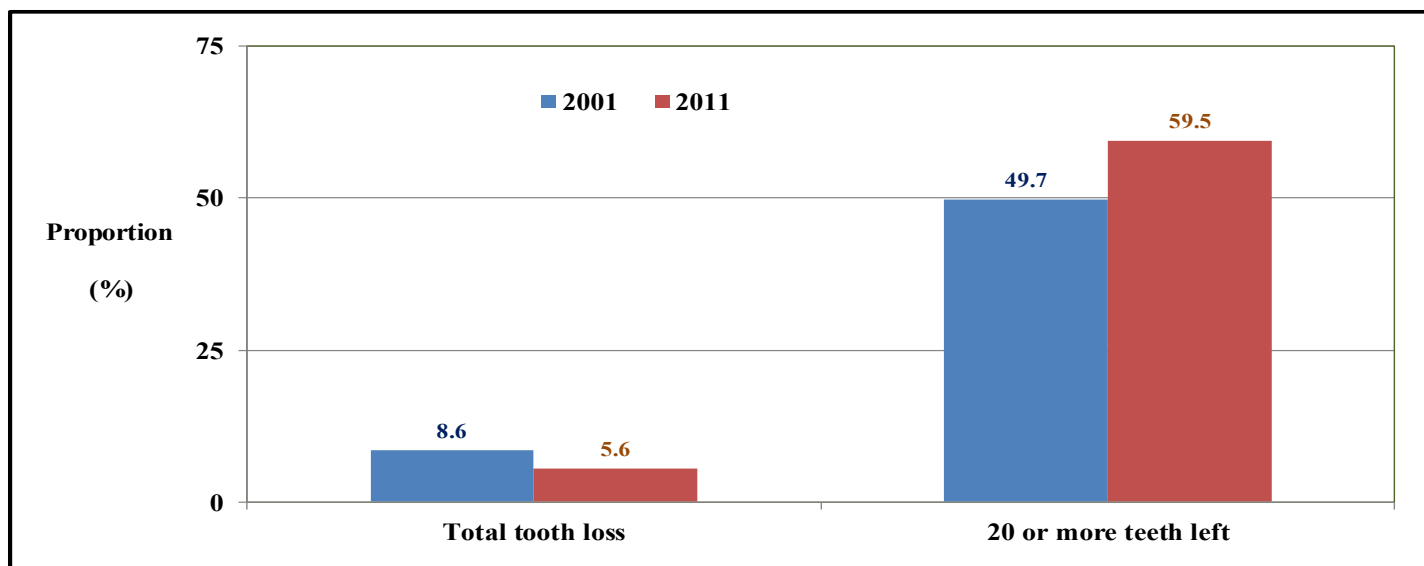
As shown in Figure 2, the proportion of non-institutionalised older persons aged 65-74 who had lost all their teeth reduced from 8.6% in 2001

to 5.6% in 2011. The proportion of older persons retaining at least 20 natural teeth increased from 49.7% to 59.5% over the same period. Overall, over three-fifths (63.2%) had dental prostheses in their mouths, which were about 5 percentage points lower than that in 2001 (68.1%).²⁴

Tooth Decay Experience

The level of tooth decay experience was measured by the Decayed, Missing and Filled Teeth (DMFT) index, and nearly all non-institutionalised older persons aged 65-74 (99.3%) had tooth decay experience and about one-half (47.8%) had untreated tooth decay. The mean DMFT in 2011 (16.2) declined when compared with 2001 (17.6) (Table 2).²⁴

Figure 2: Proportion of non-institutionalised older persons aged 65-74 with total tooth loss and 20 or more teeth left in 2001 and 2011



Base: All non-institutionalised older persons aged 65-74.

Source: OHS 2011, Department of Health.

Table 2: Level of tooth decay experience as measured by the DMFT index among non-institutionalised older persons aged 65-74 in 2001 and 2011

Tooth decay experience	2001	2011
Mean DT (Decayed)	1.3	1.3
Mean MT (Missing)	15.1	12.7
Mean FT (Filled)	1.2	2.3
Mean DMFT	17.6	16.2

Base: All non-institutionalised older persons aged 65-74.

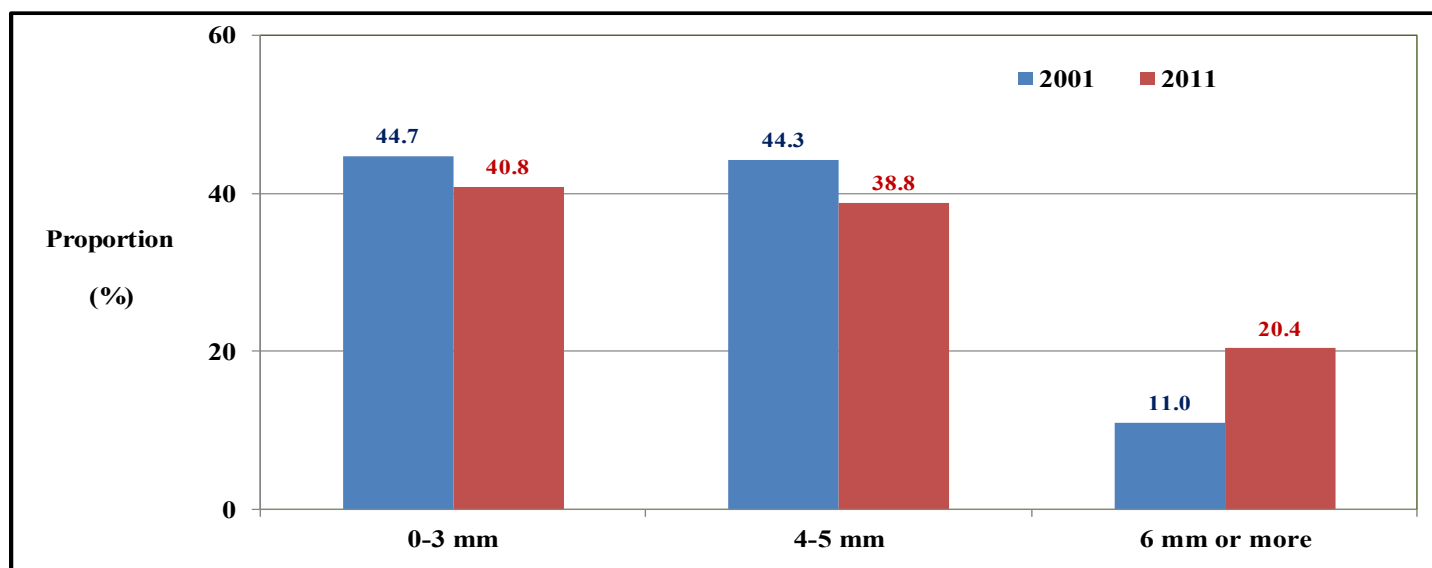
Source: OHS 2011, Department of Health.

Gum Condition

Among the dentate non-institutionalised older persons aged 65-74, 97.1% of them had bleeding gums and about 86% had half or more of their teeth with bleeding gums. Gum pockets were also common that about 60% of them had gum pockets

of 4 mm or more. As shown in Figure 3, the proportion of older persons having gum pockets of 6 mm or more nearly doubled from 11.0% in 2001 to 20.4% in 2011.²⁴

Figure 3: Proportion of gum condition among dentate non-institutionalised older persons aged 65-74 by highest pocket depth in 2001 and 2011



Base: Dentate non-institutionalised older persons aged 65-74 (represented by those with gum examination performed).

Note: The diagnostic methodology was extended to include all teeth in half of the mouth in 2011 instead of including only index teeth in 2001.

Source: OHS 2011, Department of Health.

Taking Proper Care of Teeth and Gums

Oral diseases are usually progressive and cumulative. However, they do not have to be a part of getting older and can be prevented. The cornerstone to keep teeth and gums healthy is through self-care on a daily basis and seeking appropriate professional dental care (Box 1). Denture wearing is common

among the older persons as a large proportion of them had tooth loss. To prevent tooth decay and infection arising from denture wearing, denture wearers should also clean their complete or partial dentures as carefully as they would look after natural teeth.

Box 1: Lifestyle conducive to good oral health

Clean the teeth thoroughly

- Brush teeth twice a day for about 2 minutes with fluoridated toothpaste and a soft-bristle brush with the size appropriate to the size of the oral cavity. For older people who have difficulty in using a manual toothbrush, they may find powered toothbrush easier to use. Replace toothbrush every 3 months, when bristles become frayed and worn, or after illness (such as upper respiratory tract infection).²⁵
- Perform interdental cleaning daily with dental floss or interdental brush, according to individual's oral conditions.
- Learn and use proper tooth brushing and flossing techniques. The Oral Health Education Unit of DH has produced a series of videos demonstrating the proper methods of tooth brushing and flossing. Public can view these videos at http://www.toothclub.gov.hk/en/en_home_dv.html.

Establish good dietary habits

- Reduce excessive frequency of food or drinks intake and do not nibble food or sip drinks continuously. This can allow time for saliva to remineralise the teeth.
- Reduce sugar intake. For optimal dental health, WHO recommends adults to limit free sugar intake to less than 5% of total energy intake each day.¹⁰
- Avoid consuming acidic food and drinks to prevent tooth enamel to be eroded. Avoid biting on hard food (such as nuts, bones and shells) to prevent tooth fracture.
- Keep the mouth hydrated by drinking plain water.

No smoking

- Smokers can call the Integrated Smoking Cessation Hotline of DH at 1833 183 for free smoking advice and help.

Refrain from alcohol use

- People should not start drinking if they do not drink at all. Those who choose to drink alcoholic beverages should limit their drink to minimise alcohol-related harm.

Heed the signs and symptoms of oral diseases

- Be aware of any signs and symptoms that may signal problems with gums (such as red, swollen, tender, bleeding or receding gums), teeth (such as painful or difficulty chewing, loose or sensitive teeth), and mouth (such as bad breath, dryness in mouth or throat, mouth sore that does not heal, numbness of the tongue or other parts of the mouth). If in doubt, consult a family doctor or dentist.

In order to maintain the hygiene of the mouth and dentures, the removable dentures should be taken out for cleaning every night to remove food particles and plaque. First, fill the washing basin with some water to prevent accidental drop and fracture of the dentures. Then, apply some detergent onto toothbrush and clean every surface of the dentures, followed by rinsing with water. Finally, immerse the cleaned dentures into a cup of water overnight. Of note, avoid using toothpaste to clean dentures as the coarse particles in the toothpaste may scratch the denture surfaces and enhance plaque accumulation.²⁵ For any questions about the dentures, or if they stop fitting or become damaged, contact a dentist. Also, be sure to schedule regular dental checkups to see if the dentures continue to fit properly. Furthermore, people with pre-existing chronic diseases (e.g. diabetes) should manage and keep the diseases under control (e.g. maintaining blood glucose at an optimal level to reduce the risk of oral infections). Many medications (prescription medication, over the counter drugs, vitamins and supplements) have oral side effects, in particular dry mouth. Patients should let their family doctors and dentists know about the medications they are taking or plan to take, and learn more how to limit the side effects on oral health.

Remember, it is never too old to take good care of our teeth and gums. With proper care, our teeth and gums can stay healthy throughout our life. For more information on common dental problems and oral health care tips, please visit <http://www.toothclub.gov.hk/>.

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Elderly Health Care Voucher Scheme



The Elderly Health Care Voucher Scheme (the Scheme) has been launched since 2009 to subsidise eligible elders to use primary care services provided by private healthcare professionals, including dentists.

Under the Scheme, elderly people aged 70 or above and holding a valid Hong Kong Identity Card or Certificate of Exemption issued by the Immigration Department of the Hong Kong Special Administrative Region can make use of the vouchers to settle the service charges of dental services provided by private dentists enrolled under the Scheme. In addition to curative services, vouchers can also be used for preventive care services such as dental check. For the list of dentists enrolled in the Scheme, it can be found from the eHealth System (Subsidies) at <https://apps.hcv.gov.hk/EN/Index.htm>. To know more about the Scheme, please visit the Scheme's website at <http://www.hcv.gov.hk>.

Furthermore, the Community Care Fund Elderly Dental Assistance Programme also provides subsidies for eligible elders needing dentures and other related dental services. For more information about the Programme, including scope of subsidised services, target beneficiaries and application methods, please visit <http://www.hkda.org>.

Non-Communicable Diseases (NCD) WATCH is dedicated to promote public's awareness of and disseminate health information about non-communicable diseases and related issues, and the importance of their prevention and control. It is also an indication of our commitments in responsive risk communication and to address the growing non-communicable disease threats to the health of our community. The Editorial Board welcomes your views and comments. Please send all comments and/or questions to so_dp3@dh.gov.hk.

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