

# Impact of poor oral health on general health

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Perayaan Sambutan Hari Keputeraan  
Kebawah Duli Yang Maha Mulia Paduka Seri Baginda Sultan  
dan Yang Di-Pertuan Negara Brunei Darussalam  
Yang Ke-66 Tahun

*'Nikmat Kesihatan Asas Kesejahteraan  
Negara'*

*'Luxury of Health is the Foundation  
Nation's Welfare'*

Oral health is a fundamental component of general health and well-being. With good oral health, individuals can talk clearly, smile and eat efficiently. Moreover, good oral health is also important in overall quality of life, self-esteem and self-confidence towards the society. However, oral diseases are very common and their impact on both society and the individual are significant.

The two most common oral diseases are dental caries (decay) and periodontal (gum) disease. Dental caries and periodontal disease are major causes of tooth loss. Complete loss of natural teeth is prevalent and mainly affects the elderly. Other oral diseases may include dental trauma from injuries, oral infectious diseases and oral cancer. In Brunei Darussalam, a study done in the late 1990s, the incidence of decayed, missing or filled teeth (DMFT) in primary dentition was 7.1% among five year old children, 86% of which were untreated at the time of survey. Among older children (12

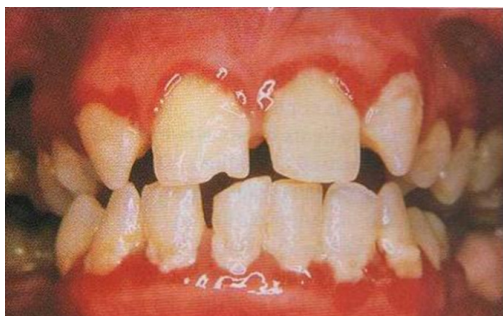
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**Fig. 1: Severe dental caries affecting the upper teeth.**

years old), the DMFT was 4.8% and 82% were untreated.<sup>1</sup> Therefore, more needs to be done to increase awareness and reduce the incidence of DMFT not just in children but also in the adult population.

Dental caries (Figure 1) is an infection that causes demineralisation and destruction of the dental hard tissues (enamel, dentine and cementum), usually through the production of acid by bacterial fermentation of carbohydrate accumulated on the surface of a tooth. Dental caries mostly affects children below 12 years of age and generally can be prevented through good oral hygiene.



**Fig. 2: Generalised gingivitis affecting the upper and lower gums.**

Gingivitis (Figure 2) is the inflammation of the gums or gingiva. It commonly occurs due to the accumulation of bacteria-containing plaque on the teeth. Gingivitis is a non-destructive type of periodontal disease. If left untreated, gingivitis can progress to periodontitis, which is more serious and it is a destructive type of periodontal disease that can eventually lead to teeth loss. The classical symptoms of gingivitis are bleeding gums on brushing, swelling, inflammation, and also bright red coloured gums.

Apart from causing dentition damage and destruction resulting in poor oral health, there are also other associated complications. These includes effect on general health, cardiovascular diseases and control of diabetes mellitus.

#### **A) Connection between periodontal disease and diabetes mellitus**

There is a two-way connection between diabetes mellitus and periodontal disease. Not only are patients with diabetes more susceptible to periodontal disease, the presence of periodontal disease also affects blood glucose control.

Some studies have reported that periodontal diseases contribute to problems with glycaemic control, therefore compromising the health of patients with diabetes mellitus. <sup>2</sup> The chronic release of cytokines such as those associated with periodontitis interferes with the action of insulin

and results in metabolic alterations. Other studies have investigated the relationship between periodontal disease and insulin resistance. <sup>3</sup> In addition, periodontal infection also contributes to hyperglycemia and complicates metabolic control in diabetes mellitus. <sup>4</sup>

#### **B) Connection between oral infection and cardiovascular/cerebrovascular diseases**

Oral infections especially periodontal diseases have been reported to increase the risk for cardiovascular disease. <sup>2</sup> There is potential for oral bacteria and other infectious agents and their effects to be linked with heart disease and stroke.

Bacteria originating in oral mucosa may directly infect blood vessel walls. Such infection may not cause any symptoms, but may affect local vascular inflammation and injury. This will then cause the lipid-rich plaques and atherosclerosis to be developed in the blood vessel walls. Bacteria or other infectious agents may also interact with white blood cells or platelets, both of which incorporate into the developing atherosclerotic plaque. Liver production of other pro-inflammatory or pro-coagulant molecules may also be stimulated by the bacterial products in the blood. During the coagulation process, platelets would become trapped in the growing clot or thrombus. Minimal thrombus formation is one of the main factors in the development of atherosclerotic plaques. As atherosclerotic plaques enlarge, the lumen of the coronary blood vessels become narrowed and occluded. Eventually, the blood supply to the heart muscle is compromised resulting in myocardial ischaemia and, in some cases myocardial infarction.

#### **C) Periodontal disease and adverse pregnancy outcomes**

Untreated periodontal disease may contribute to adverse outcomes of pregnancy as a consequence of a chronic oral bacterial infection. Periodontal disease has been investigated as a potential risk factor for preterm labour. Offenbacher *et al.* found that pregnant women with severe periodontal disease are 7.5 times more likely to go into labour

prematurely.<sup>5</sup>

Products generated by periodontal bacteria in the mother may reach the general circulation, cross the placenta, and harm the foetus. In addition, the response of maternal immune system to the infection elicits the continued release of inflammatory mediators, growth factors, and other potent cytokines, which may directly or indirectly interfere with foetal growth and delivery.

#### **D) Periodontal disease and respiratory diseases**

People who have bacteria in the mouth, particularly individuals that suffer from periodontal disease, are more probable to suffer from respiratory diseases, particularly pneumonia. This is due to inhalation of bacteria from the oral cavity to cause pulmonary infection. People who have periodontal disease due to long-term smoking are even more susceptible to respiratory disease particularly pneumonia. Even though evidence of a causal relationship between oral and respiratory diseases was not apparent, but decreased numbers of oral microbial seems to benefit patients at risk of pneumonia.<sup>6</sup>

#### **E) Periodontal disease and Alzheimer's disease**

As suggested by researchers, there is a positive association between periodontal disease and the risk of cognitive dysfunction associated with Alzheimer's disease in healthy individuals as well as in those who already are cognitively impaired.<sup>7</sup> They have also suggested that cognitively normal subjects with periodontal disease are at a higher risk of lower cognitive function compared to cognitively normal subjects with little or no periodontal disease.

#### **F) Periodontal disease and renal disease**

In patients with renal disease, a positive correlation between markers for a systemic immune response and the severity of periodontal disease has been examined. Thus, periodontitis may contribute to the systemic inflammatory burden in renal disease.<sup>8</sup>

#### **Impacts of poor oral health on the quality of life**

Oral health affects individuals both physically and psychologically. It also has an impact on their growth, appearance, eating, sleeping, self-confidence and social life, as well as their feelings of social well-being.

Poor oral health makes an individual's appearance to be less attractive, less in self-esteem and also affects their quality of life as a whole. Missing or decayed teeth and poor-fitting dentures can affect an individual's self-conscious and lead to loss of confidence and social isolation.

#### **OVERVIEW**

Tooth decay and periodontal disease are the most common oral diseases in dentistry and these can both cause pain and infection as well as eventual tooth loss. These oral discomforts often results in loss of sleep and disruption to family life, finally causing loss of working days and days of schooling. Moreover, acute dental infection can lead to swelling and severe dental pain and in severe cases can be life-threatening. An individual with chronic infection also experience unpleasant tastes and smells. It can also results in absence from work and school. Normally people with very poor oral health can have an effect on their food choices and those with missing teeth can have an adverse impact on nutritional status and social life.

Dental treatment has become more accessible and much more acceptable by the community due to their awareness towards good oral health. Nonetheless, extensive treatment can still be stressful, especially to the younger children. In Brunei, many children still have dental extractions due to poor oral health which are commonly done under general anaesthetic. Dental extraction, especially multiple is a distressing experience and can be an unavoidable risk to life. In addition, with the higher risk of hospitalisation and frequent loss of school days will consequently reduce the ability to learn for the children with severe decayed teeth.

Financially, dental treatment can be expensive for the individual and healthcare service. In addition, the indirect costs are also a significant financial burden to the society, which include the time off work to seek for dental treatment and loss of incomes.

It is vitally important for every individual including medically-compromised patients, young children and pregnant women to practice good dental hygiene. The key prevention messages includes:

- *Brushing teeth at least twice a day using adult fluoridated toothpaste*
- *Flossing in between teeth once a day*
- *Avoid frequent food snacking in between meals*
- *Have a regular dental visit for every 6 months or as recommended by the dentist or dental nurses*

**NOTE:** This talk was presented at the 2012 Knowledge Convention which carried a theme '*Nikmat Kesehatan Asas Kesejahteraan Negara*' or '*Luxury of Health is the Foundation Nation's Welfare*'

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