The importance of oral health for the systemic well being of an ageing population.

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The proportion of adults over the age of 60 years is expanding rapidly across European Union countries, including the Republic of Ireland. As the older population has grown faster than the total population, the proportion of older persons relative to the rest of the population has increased considerably (Figure 1). This trend mirrors the arrival of the “baby boomer” generation into early old age and will have wide ranging effects on social, political and economic spheres as well as presenting significant challenges for healthcare delivery and public healthcare policy.

Figure 1: Graph illustrating population demographic trends 2002-2025

Increasingly, it is accepted that there are interrelationships between oral health and general health, particularly chronic diseases of aging. Current information suggests that the burden of oral healthcare for an ageing population is rising sharply. It is apparent that a number of oral diseases have risk factors in common with systemic diseases such as smoking, age and glycaemic control. However, there is also a burgeoning interest in the possibility of a bidirectional relationship between oral disease, particularly inflammation of the periodontal tissues (periodontal disease), and cardiovascular disease, diabetes mellitus and respiratory disease.

Inflammation plays an important role in the pathogenesis of atherosclerosis, and low grade chronic systemic inflammation is thought to be related to adverse cardiovascular outcomes. Observational studies have shown that periodontal disease is associated with an increased risk of myocardial infarction and stroke, although a causal link has not yet been proven. Periodontal disease refers to a group of conditions which cause inflammation and destruction of the structures which support the teeth. The aetiology of these conditions involves the presence of pathogenic gram-negative bacteria in dental plaque which trigger a host immune response which itself can further damage tissues. Chronic periodontal disease is characterised by multiple potential bacteraemia events which may allow periodontal pathogens to migrate to non-oral tissues including atheromatous plaques. In addition, it has been shown that atherothrombogenic mediators such as C-reactive proteins are elevated in periodontal disease thus providing a possible relationship with cardiovascular disease.

Evidence has also established that improvements in oral health and treatment of periodontal
It is recognised that periodontal disease is more prevalent and more severe in patients with Type 2 diabetes mellitus than those without. Diabetes is a well characterised risk factor as it is believed to promote periodontal disease through an exaggerated inflammatory response to the periodontal microflora. The subgingival microflora in patients with periodontitis who have diabetes mellitus is generally similar to that observed in patients with periodontitis who do not have a diagnosis of diabetes. It is thought that the formation of advanced glycation end-products in diabetics and their subsequent receptor binding causes a series of self-sustaining proinflammatory events. A number of proinflammatory cytokines produced in the inflamed tissues, including tumour necrosis factor, interleukin 6 and interleukin 1, antagonize insulin through inhibitory phosphorylation. These mediators gain access to the circulation via the periodontal microcirculation and can affect tissues and organs at distant sites. In addition, enhanced apoptosis is observed in diabetics presenting as delayed wound healing. Therefore, enhanced inflammation leading to tissue destruction and diminished repair of damaged tissue may contribute to the periodontal tissue destruction seen in patients with diabetes. More recent research has suggested a bidirectional relationship between these two conditions with the presence of periodontal inflammation acting as a risk factor for poor glycaemic control. Limited evidence would also suggest that the effective treatment of periodontal diseases in diabetic patients improves glycaemic control and may reduce the likelihood of diabetic complications.

Bacterial species that normally do not colonize the oropharynx can cause health care associated pneumonia, and the oral cavity has been suggested as an important reservoir for these respiratory pathogens. Elderly patients in nursing homes often have poor oral health due to difficulties in maintaining a sufficient level of personal oral hygiene and difficulties in accessing professional dental care. Hence, a relationship between poor oral hygiene and bacterial pneumonia or lower respiratory tract infections has been suggested in the literature. A plausible mechanism of health care–associated pneumonia could be aspiration of oral pathogens into the lungs. Recent evidence suggests improved oral hygiene and frequent professional oral care can reduce the progression or occurrence of respiratory tract diseases in high-risk elderly people living in nursing homes and intensive care units.

Diet plays a key role in disease prevention in older age, as poor diets have been linked to illnesses such as osteoporosis, atherosclerosis and bowel disease. Although nutritional state is influenced by factors such as age, socio-economic status and general health, it would appear that dental status is also highly significant. Poor oral health and loss of teeth, can have very significant negative effects on dietary intake and nutritional status for elderly patients. The American Dietetic Association recently stated that oral health and nutrition have a synergistic bidirectional relationship. There is evidence that good oral health generally has very positive effects on nutritional intake of older adults. Given that there is certainly a unidirectional, and possibly a bidirectional, link between oral and general health, the benefits of a disease-free mouth to older adults are considerable. However, utilization of dental services by elderly patients is low, particularly within Ireland. In 2003, 85% of people aged 65 years and older held medical cards which entitled them to free dental care, but only 14% of these patients availed of these services. Some of the barriers that elderly patients may encounter to receiving dental care may include their own negative perceptions of dental treatment, anxiety, reduced mobility, physical impairment, medical complications and communication problems.

As our population continues to age it is important that we remove the barriers which discourage our elderly patients from seeking routine dental care. Given the high prevalence of treatable dental disease in the older population, the importance of dental screening for both free living and institutionalised elders cannot be overemphasised. In fact, Poulsen et al. have recently recommended that oral examinations should be part of routine hospital admission procedures for geriatric patients. The importance of dental care is often underestimated within the overall medical care for our frail elders and a more holistic approach must be encouraged. Oral health must be considered within overall patient management and integrated into more wide reaching public healthcare policy as recommended by the World Health Organisation. In addition, provision of care should be encouraged within the primary healthcare setting where it can be delivered by family practitioners working in practice.

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References