Oral diseases qualify as a major public health problem owing to their high prevalence and incidence and pose a great burden on a disadvantaged and socially marginalized population. Many changes in disease pattern are taking place in developing countries. The prevalence of infectious diseases and nutritional deficiencies is progressively declining; on the other hand, a concomitant increase is noted in the prevalence of chronic non-communicable diseases (NCD). Examples of such diseases are Diabetes mellitus, cardiovascular disease and cancer. The epidemiological transition is now clearly seen in the Eastern Mediterranean Region. Factors contributing to the speed of this change mainly include the lifestyle characteristics. Obesity has become more prevalent and food energy availability has generally risen beyond requirements, with a trend towards increased sugar consumption in most member states.

Diabetes mellitus is a common and growing global health problem. It is highly prevalent in Asian communities. Hong Kong, Pakistan and Singapore are among the countries with the highest prevalence of diabetes in the adult population. According to the World Health Organization, 366 million people are projected to have diabetes by the year 2030. World wide adult diabetes prevalence was 4.0% in 1995 and is expected to increase up to 5.4% by the year 2025. In 2000; India had 31.7 million people affected with Diabetes, whereas Pakistan had 5.2 million people affected with Diabetes (Figure 1) and this number is estimated to increase up to 13.9 million in the year 2030.1

In a recent questionnaire-based survey, 17% of a population in Karachi reported having to have diabetes.2 This is similar to the prevalence reported in earlier WHO surveys of Diabetes mellitus. Pakistan has an adult diabetic prevalence rate of 18%, whereas Sweden has an adult prevalence rate of 2% of Diabetes and Saudi Arabia has a prevalence rate of 25% (WHO).

Diabetes prevalence in Pakistan is high: 12% of people above 25 years of age suffer from the condition. When one considers the associated risk factors present in Pakistani Society, the large number of people with Diabetes is no surprise. Obesity tops the list.

The prevalence of Diabetes mellitus and its relationship to age and obesity was estimated in the rural town of Shikarpur in the Sindh Province of Pakistan by a population-based survey in 1994 by Sher et al.3 In this survey, the prevalence of Diabetes was 16.2% in men and 11.7% in women. Central obesity and positive family history were strongly associated with Diabetes, as was the prevalence of hypertension.3

According to the National Diabetic Prevalence Survey in collaboration with WHO, in Pakistan from 1994 to 1998, the prevalence of type-II Diabetes is 13.9% in rural Sindh. This is higher in urban Sindh being 16.5% for type-II Diabetes.

A recent study in Pakistan regarding oral health knowledge, attitudes, practices and sources of information for diabetic patients revealed lack of knowledge about relationship of Diabetes with oral complications. Oral hygiene measures were found to be deficient, with only 2% brushing three times a day and 22% brushed twice daily.4

The strong correlation between several oral diseases and chronic diseases is primarily a result of the common risk factors. Periodontal disease is associated with Diabetes mellitus and has been considered a common complication of diabetes. Diabetes mellitus is one of the strongest systemic risk factors for periodontal disease.
Periodontitis can also be considered a complication of both types of diabetes. Poor diabetic control exacerbates the risk even further.

Periodontitis progresses more rapidly in poorly controlled diabetes and early onset of diabetes is seen as a risk factor for more severe periodontal disease. On the other hand, diabetics who control their diabetes and oral health through self-care and regular professional care are at a much lower risk for periodontitis and eventual tooth loss.

Given the ‘right’ concurrence of risk factors, a person with periodontitis can experience significant destruction of tooth-supporting bone; ultimately resulting in tooth loss. Poorly controlled diabetes is an important risk factor for periodontitis. Occurrence of gingivitis and periodontitis is sometimes the first sign that the person has diabetes. As severe periodontitis can lead to the loss of teeth, it is important that patients with diabetes practice good oral hygiene and have regular dental checkups so that problems can be detected quickly.

People with well-controlled diabetes who have good oral hygiene are not at an increased risk of periodontitis. However, their susceptibility to periodontitis is significantly increased when their diabetes is poorly controlled; particularly, if they also smoke. Recent epidemiological evidence shows that the prevalence of diabetes in patients with periodontitis is significantly greater (by two times) than in people without periodontitis.

Inflammation is a major component in the pathogenesis of diabetes and periodontal diseases. Research suggests that periodontal disease, as an infectious process with a prominent inflammatory component, can adversely affect the metabolic control of diabetes.

The epidemiological literature suggests that the most frequently reported symptoms in diabetic patients in relation to the oral cavity are poor oral hygiene, inflammation of gums (gingivitis), oral candidiasis, calculus and pocket formation, dental caries, non-carious tooth surface loss, periapical abscess, taste impairment, burning mouth syndrome, rhomboid glossitis, denture stomatitis, angular cheilitis, hyposalivation, halitosis, and oro-antral fistula. This shows that diabetes mellitus, as a metabolic disorder, markedly affects the oral health.

Another study by Sandberg, in 2000, showed that diabetics suffered from xerostomia had advanced periodontitis sites and also showed more initial caries lesions as compared to non-diabetics. Diabetics showed a greater need for periodontal treatment, caries prevention and prosthetic correction. The meta-analysis by Khader showed that patients with diabetes had significantly worse oral hygiene as they showed more severe periodontitis, measured as higher average plaque index (PI), higher average gingival index (GI) and more clinical attachment loss, but they exhibited the same extent of periodontal disease.

Perception of self-efficacy among diabetics is of significance in relation to dental health education. Dental personnel can enhance dental self-efficacy by providing models of oral health behavior and by verbal persuasion including encouragement and provision of positive feedback to patients. A recent study on diabetics in Pakistan also suggested an association between counseling by physicians and positive practices towards oral health by patients, with 53.4% of counseled patients brushing two to three times daily while only 22.3% of uncounseled patients brushed two to three times per day.

The recent data increase in the incidence of diabetes mellitus cases has resulted in a major public health challenge. However, evidence suggests that approximately one-third of diabetes cases remain undiagnosed. It is a well-established fact that early detection and appropriate metabolic management of affected individuals can significantly delay the development of most complications. A recent American study revealed that individuals with a self-reported family history of diabetes, hypertension, high cholesterol levels and clinical evidence of periodontal disease bear a probability of 27-53% of having undiagnosed diabetes with Mexican-American men exhibiting the highest probability (53%) and white women the lowest (27%). Their analysis showed that as the presence of reported risk factors increased, the probability of having undiagnosed diabetes also increased. Furthermore, when periodontal disease (defined as a combination of clinical attachment level and pocket depth) was included in the model, the probability increased further. For example, a 45-year-old individual with a family history of diabetes, and personally being hypertensive and hypercholesterolemic bears a probability of having undiagnosed diabetes of 13-32% and when periodontal disease as a risk factor is added in the model, the probability almost doubles from 27% to 53% among the different races/ethnic groups.

Patient data collected by the dentist through conscientious history taking and clinical oral examination should disclose patients with the above-mentioned combination of risk indicators for diabetes. These findings suggest that the dental office could provide an important opportunity to identify individuals unaware of their diabetic status.

Thus, in future studies it would be worthwhile to screen for unidentified diabetes as suggested by Borrell. The results indicate that the dental surgery or dental clinic could serve as a health care center for screening of unidentified cases, i.e. dental examination could offer an opportunity to identify individuals unaware of their diabetic status.
In such populations, particularly where the prevalence of Diabetes is high, measures which raise the patient's awareness of the importance of oral health in management of Diabetes may prove to be a cost-effective means of reducing the overall burden of the disease in the community.

REFERENCES