

40.1 Diabetes epidemiology

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Global prevalence estimates (WHO) suggest that there are currently 140 million individuals with diabetes mellitus (DM) worldwide. This figure is expected to more than double, to 300 million, by 2025. Taking a global perspective, the major burden comes from type 2 DM. While type 1 DM accounts for 15-20% of total DM in Caucasians, this figure is well below 5% for non-Caucasian populations.

Both type 1 and type 2 DM appear to have genetic and environmental determinants although the relative contributions and nature of these determinants are different for each type.

Type 1 DM shows a rising incidence globally. Incidence rates vary from 1-2/100,000/yr in low incidence areas, such as the Asia-Pacific Region, to 20-30/100,000/yr in certain Caucasian populations. The lower incidence in Asia may be partly explained by a lower incidence of the autoimmune form of the disease. Rising prevalence rates of type 2 DM have reached epidemic proportions in many parts of the world. The Asia-Pacific Region is at the forefront of this epidemic. Prevalence rates of approximately 40% have been documented among adult Nauruans and urbanised Australian aborigines and Papua New Guineans.

Longitudinal data from Da Qing, China indicate a trebling of prevalence between 1986 and 1994. Age-standardised prevalence rates in most urbanised or industrialized Asian populations are in the region of 8-10%, but remain lower in populations which remain traditional, or are in the earlier stages of industrialisation.

The rising prevalence of type 2 DM is most strongly associated with aging, increasing indices of obesity, physical inactivity and urbanisation. A positive family history is also a strong determinant, particularly in young patients. Type 2 DM is being seen with increasing frequency in the young and is often associated with other components of the Metabolic Syndrome.

The situation with regard to type 2 DM, particularly in the Asia-Pacific Region, poses an increasing threat to health care systems. Morbidity and excess mortality, associated with long-term diabetic complications are already exacting an enormous toll. The sheer scale of the problem means that effective prevention and treatment measures require centralised effort with the engagement of governments. The treatment of type 2 DM in the Asia-Pacific Region is often inadequate and the resulting poor glycaemic control further exacerbates the problem posed by long-term complications. Urgent action is mandatory.

40.2 Childhood diabetes mellitus

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Although childhood diabetes mellitus is the second most common chronic disease in the West, it is rare in Chinese with an incidence of 1-2 per 100,000 children under 15 years of age. In diabetic patients of childhood onset, we have found that amino acid residue 57 of the DQ β chain is unlikely to have a major effect on diabetes susceptibility in Chinese. The mitochondrial DNA A to G 3243 mutation was only found in one out of over 60 patients we have tested. Analysis of insulin gene linked polymorphic region in Chinese diabetic patients revealed that all of them had class 1 VNTR alleles but the prevalence was not different from control subjects. About 20% of the patients had onset of disease under 5 years of age and these children require special care. Most of patients are treated with twice daily combination of short-acting and intermediate-acting insulin while older patients are on intensive treatment regime with multiple insulin injections. Renal complications were found in 11.8% of 76 diabetic patients of childhood onset with a mean duration of diabetes of 10.3 $\pm$ 7.8 years. Two patients developed microalbuminuria only after 2 years of disease. Hypertension was found to be a significant risk factor for the development of diabetic renal complication. Although clinical neuropathy is rare in childhood, subclinical neuropathy could be detected on electrophysiological studies in 68% of diabetic children followed up in our clinic. Multi-disciplinary teams in the management of diabetic children are available in most hospitals under the administration of the Hospital Authority. Attempts have been made to improve the awareness of childhood diabetes in the community and in schools. In recent years, camping has been promoted both for recreation as well as education for our diabetic children and parents.