

# Diabetes mellitus in Asia

Despite having used different methodologies, authors who have estimated the future global trends in the frequency of diabetes mellitus generally agree that Asia is the major site of a rapidly emerging epidemic of diabetes.<sup>1,2</sup> In this issue of the *Hong Kong Medical Journal*, six articles address the challenge and special features of diabetes mellitus in Asia.<sup>3-8</sup>

India and China are, and will remain, the leading countries in terms of the number of people with diabetes mellitus in the year 2025. Among the 10 leading countries in this respect, five are in Asia. Although only a moderate increase in the total population in China is expected in the next 25 years, China is estimated to contribute almost 38 million people to the global burden of diabetes in the year 2025. India, due to its immense population size and high diabetes prevalence, will contribute 57 million.<sup>1</sup> These figures are based on estimated population growth, population ageing, and urbanisation, but they do not take into account changes in other diabetes-related risk factors. For this reason, the figures are likely to be conservative estimates.

An increasing incidence of type 2 diabetes mellitus in children and teenagers has been documented in Japan, and is associated with obesity and a family history of diabetes.<sup>9</sup> Although not as high as in Japan, the prevalence of type 2 diabetes is also on the increase in adolescents in Hong Kong.<sup>10</sup> Thus, what is a problem for the minority of youth in the world as a whole, is becoming a problem of the majority in Asia, making all current predictions for the future load of diabetes seem optimistic. It is very likely that lifestyle changes that result in reduced physical activity and excess calorie intake underlie the epidemic. Whether these changes augment a highly prevalent natural propensity for diabetes has not yet been confirmed by genetic studies.<sup>7</sup> In this issue, Lee et al<sup>3</sup> conclude that obesity, rather than insulin resistance seems to be the strongest link to glucose intolerance and other features of the metabolic syndrome in Hong Kong Chinese. Their results, however, indicate that the criteria of the World Health Organization (WHO) for overweight<sup>11</sup> are too high to identify persons at risk of the development of diabetes, hypertension, and dyslipidaemia in a Chinese population. The authors recommend lowering the WHO cut-off body mass index value for overweight in Chinese populations, but do not opt for

a particular value. As similar results have been obtained in Japan, the value of 23 kg/m<sup>2</sup> may be an appropriate cut-off point for overweight in Asian populations of slender build. Diabetes in Asia has other special features. Type 1 diabetes has a low incidence, and markers of autoimmune  $\beta$ -cell destruction are found in less than one fifth of Chinese children.<sup>8</sup> This finding formed the basis for introducing the new category of 'idiopathic type 1 diabetes' which appears in the latest classifications of the American Diabetes Association (ADA) and the WHO.<sup>12,13</sup>

The Asian-Pacific Type 2 Diabetes Group has recently recommended the use of the new WHO and ADA diabetes diagnostic criteria. However, a substantial proportion of Japanese and Hong Kong Chinese people with diabetes have been found to have a normal fasting plasma glucose level, but an abnormal 2-hour post-load plasma glucose level.<sup>3</sup> Measuring the amount of glycated haemoglobin HbA<sub>1c</sub> as well as fasting plasma glucose appears to increase the sensitivity for diagnosing diabetes. However, using the oral glucose tolerance test (OGTT) remains a cheaper and technologically simpler option, and is not as cumbersome as is frequently described. The ADA decision to drop the OGTT in favour of measuring the fasting plasma glucose level alone, needs to be supported by data on the prognostic significance of each test in Asian populations. Such data have been gathered in Europe, Mauritius, Fiji, and Nauru, where the 2-hour post-load plasma glucose level was found to be a better predictor of mortality.<sup>14,15</sup>

Urbanisation is likely to continue in Asia, but diabetes need not be the price to pay for affluence. Lifestyle, however, is notoriously resistant to change, and public health measures that have been taken so far have been insufficiently systematic and indecisive. Improving public health remains an urgent need, as the looming epidemic of diabetes and its complications threatens to drain finite health care resources. The primary and secondary prevention of diabetic complications is achievable by ensuring good glycaemic control and screening regularly for major complications.<sup>16-21</sup> And in Hong Kong, effective patient education, periodic assessment, and a built-in mechanism to ensure the compliance of both patients and physicians to the treatment protocol have been shown to improve

the outcome of diabetes.<sup>22</sup> This structured approach needs a suitable framework and in this issue of the *Journal*, Chan<sup>8</sup> describes the implementation of the shared care model in Hong Kong. Stable patients are discharged into community clinics after structured assessments have been made, and they are followed up according to a mutually agreed protocol between diabetes specialists and general practitioners. These patients return to the hospital clinics for periodic assessments. This approach could ease the burden of specialised services, while still ensuring that specialist services are accessible to the majority of diabetic patients.

The articles in this themed issue are a testament to the importance already accorded to diabetes in Asia and augurs well for concerted intervention aimed at averting the epidemic and for minimising its impact in the future.

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## References

- King H, Aubert RE, Herman WH. Global burden of diabetes, 1995-2025. *Diabetes Care* 1998;21:1414-31.
- Amos AF, McCarty, Zimmet P. The rising global burden of diabetes and its complications: estimates and projections to the year 2010. *Diabet Med* 1997;14(Suppl):7S-85S.
- Lee ZS, Critchley JA, Chan JC, et al. Obesity is the key determinant of cardiovascular risk factors in the Hong Kong Chinese population: cross-sectional clinic-based study. *HKMJ* 2000;6:13-23.
- Cockram CS. The epidemiology of diabetes mellitus in the Asia-Pacific region. *HKMJ* 2000;6:43-52.
- Ko GT. Diagnosing diabetes mellitus in the Asian population. *HKMJ* 2000;6:53-9.
- Leung GM, Lam KS. Diabetic complications and their implications on health care in Asia. *HKMJ* 2000;6:61-8.
- So WY, Ng MC, Lee SC, Sanke T, Lee HK, Chan. Genetics of type 2 diabetes mellitus. *HKMJ* 2000;6:69-76.
- Chan JC. Heterogeneity of diabetes mellitus and diabetes care in the Hong Kong Chinese population. The Chinese University of Hong Kong-Prince of Wales Hospital Diabetes Research and Care Group. *HKMJ* 2000;6:77-84.
- Kitagawa T, Owada M, Urakami T, Tajima N. Epidemiology of type 1 (insulin-dependent) and type 2 (non-insulin-dependent) diabetes mellitus in Japanese children. *Diabetes Res Clin Pract* 1994;24(Suppl):7S-13S.
- Wong GW. Insulin-dependent diabetes mellitus in southern Chinese children. An overview. *J Paediatr Child Health* 1994;30:490-1.
- Obesity: preventing and managing the global epidemic. Report of a WHO consultation on obesity. Geneva: World Health Organization;1998. Report No.: WHO/NUT/NCD/98.1.
- American Diabetes Association. Report of the expert committee on the diagnosis and classification of diabetes mellitus. *Diabetes Care* 1997;20:1183-97.
- Definition, diagnosis and classification of diabetes mellitus and its complications. Report of a WHO Consultation. Geneva: World Health Organization;1999. Report No.: WHO/NCD/NCS/99.2.
- DECODE Study group. Glucose tolerance and mortality: comparison of WHO and American Diabetes Association diagnostic criteria. *Lancet* 1999;354:617-21.
- Shaw JE, Hodge AM, de Courten M, et al. Isolated post-challenge hyperglycemia confirmed as a risk factor for mortality. *Diabetologia* 1999;42:1050-4.
- Diabetes Control and Complications Trial Research Group. The effect of intensive treatment of diabetes on the development and progression of long-term complications in insulin-dependent diabetes mellitus. *N Engl J Med* 1993;329:977-86.
- UK Prospective Diabetes Study Group. Intensive blood-glucose control with sulphonylureas or insulin compared with conventional treatment and risk of complications in patients with type 2 diabetes (UKPDS 33). *Lancet* 1998;352:837-53.
- UK Prospective Diabetes Study Group. Tight blood pressure control and risk of macrovascular and microvascular complications in type 2 diabetes: UKPDS 38. *BMJ* 1998;317:703-13.
- Randomised placebo-controlled trial of lisinopril in normotensive patients with insulin-dependent diabetes and normoalbuminuria or microalbuminuria. The EUCLID Study group. *Lancet* 1997;349:1787-92.
- Pyorala K, Pedersen TR, Kjekshus J, Faegeman O, Olsson AG, Thorgeirsson G. Cholesterol lowering with simvastatin improves prognosis of diabetic patients with coronary heart disease: a subgroup analysis of the Scandinavian Simvastatin Survival Study (4S). *Diabetes Care* 1997;20:614-20.
- Early Treatment Diabetic Retinopathy Study Research Group. Early photocoagulation for diabetic retinopathy. *Ophthalmology* 1991;98(Suppl):766S-785S.
- So WY, Chan JC, Cheung M, et al. Effects of provision of structured care on mortality in diabetic patients [abstract]. *Diabetes* 1998;48(Suppl 1):A369.

## Editorial note

The Diabetes Division of the Hong Kong Society for Endocrinology, Metabolism, and Reproduction has published a statement for health professionals on type 2 diabetes mellitus on page 105 of this issue.