Diabetes in the UK: The Rising Prevalence of Diabetes and Associated Mortality

These combined effects of diabetes are double jeopardy for the 21st century.

BY SATH NAG, MRCP; AND VINCENT CONNOLLY, FRCP

The prevalence of diabetes is increasing globally. According to estimates from the World Health Organization,[1] approximately 300 million people worldwide will have diabetes by 2025. The brunt of this explosion will be felt by developing nations, with an anticipated 170% increase in prevalence.

The rising incidence of obesity due to an increasingly sedentary lifestyle and the continued dominance of fast food are extremely concerning. The projected estimate of people with diabetes is, at best, conservative. The true number will almost certainly be influenced by the impact of obesity, the rate of urbanization of developing countries and the increasing number of young overweight people with type 2 diabetes. Inevitably, this global pandemic will increase the burden of cardiovascular disease (CVD) and chronic kidney disease (CKD), both of which cause considerable morbidity and account for most of the mortality in diabetic subjects (Table 1).

DIABETES PREVALENCE IN THE UK

The prevalence of diabetes is between 1.6% and 2.5% in the United Kingdom.[2-5] These figures were derived from select populations with known diabetes. Extrapolation of these estimates to the rest of the country may not be altogether straightforward. Socioeconomic deprivation, the ethnicity of communities and the quality of data in local diabetes registers influence regional prevalence rates. Registers are a vital source of information in epidemiological diabetes studies. While they have limitations in that only the prevalence of known diabetes can be determined, they are nevertheless useful for estimating the burden of diabetes in communities and facilitating health care planning.

> A diabetes register is a vital source of information for both diabetes prevalence and mortality.

The South Tees district in Northeast England comprises the local government areas of Middlesbrough and Redcar & Cleveland. A population-based district diabetes register has been available since 1994.

Clinical and demographic data for the diabetes register is collected prospectively from all adult and pediatric secondary care diabetes clinics and general practice records. The diabetes register is a vital source of information for both diabetes prevalence and mortality in the region.

The prevalence of diabetes in the South Tees district has steadily risen. Between 1995 and 2002, a 105% increase was seen in the number of people with known diabetes.[6] The age-standardized prevalence rate of diagnosed diabetes increased from 1.34 (95% CI, 1.30-1.39) in 1995 to 2.73 (95% CI, 2.67-2.79) in 2002.There were significant increases in prevalence across all age groups, however, prevalence was highest in those aged between 60 and 79 years. Prevalence was also higher in men compared with women. The scale of the increase and the magnitude of change are likely to reflect a true increase in prevalence. But, earlier diagnosis, better ascertainment and improved survival of diabetic subjects are likely to contribute to the rising prevalence of the disease.

The Diabetes National Service Framework (NSF) document was produced in 2001 by the UK Department of Health.[7] This framework established a structured approach

TABLE 1. BURDEN OF MORTALITY ATTRIBUTABLE TO DIABETES

Excess Mortality (%)*	Area
2% to 3%	Poorest Countries
5.2%	Globally
8%	US, Canada, Middle East

In people aged 35 to 64 years, death can be attributed to diabetes in anywhere from 6% to 27% of the population.

** Estimates for the year 2000. The estimates were obtained by using a computerized generic formal disease model (DisMod II) used by the World Health Organization.*

Source: *Diabetes Care*. 2005;28:2130-2135.

to diabetes care that is standardized across the country. The Diabetes NSF is structured around 12 key standards that will be implemented by 2013.These standards define optimum care for children and adults with diabetes, and it emphasizes clinical care, identification of people with diabetes and the prevention of type 2 diabetes in the UK population.

The anticipated global pandemic of diabetes caused a paradigm shift in the approach to diabetes, with increasing emphasis on earlier detection and prevention strategies. Identifying prediabetes, which encompasses impaired glucose tolerance and impaired fasting glycemia, is a key step in altering the course of diabetes in at-risk populations. African-Americans, American Indians and Asians from the Indian subcontinent have a high prevalence of diabetes and stand to gain the most from diabetes screening programs. The Diabetes Prevention Program highlighted the efficacy of lifestyle and dietary changes in retarding the onset of overt diabetes in subjects with prediabetes.[8] These findings need to be adopted with renewed vigour to contain the current worldwide pandemic of diabetes.

MORTALITY IN DIABETES

Diabetes is a major risk factor for CVD and is associated with premature death. Much of the excess mortality is due to cardiovascular causes. Ischemic heart disease is the leading cause of death in patients with diabetes. Cardiovascular mortality in diabetes is inextricably linked to CKD, and it is another potent risk factor for CVD in both diabetic and nondiabetic individuals.[9]

Mortality data from the diabetic population in South Tees showed excess death in patients with type 1 and type 2 diabetes, regardless of sex or age. Excess mortality was most pronounced in both men and women with type 1 diabetes where the risk of death compared with the nondiabetic local population was nearly six times greater in women and nearly three times greater in men.[10]

THE SIGNIFICANCE OF CKD IN DIABETES

The prevalence of CKD is increasing worldwide.[11] End-stage renal disease is strongly associated with cardiovascular mortality, and CVD accounts for over half of the deaths in patients undergoing hemodialysis.[12,13] Diabetes is an important predictor of CKD[14] and the risk of death from CVD increases with deteriorating microalbuminuria and proteinuria in both type 1 and type 2 diabetes.[15,16] Diabetes increased the risk of end-stage renal failure by nearly 12-fold and the economic burden of diabetic renal disease is therefore significant.[17,18] The rising prevalence of diabetes worldwide will add to this burden.

There is an urgent need to identify diabetic patients with CKD. This enables early and aggressive management of conventional cardiovascular risk factors such as hypertension and dyslipidemia that amplify the cardiovascular risks of CKD. The National Kidney Foundation has produced clinical practice guidelines for the evaluation, stratification and classification of this disease.[11] Guidelines recommend the use of estimated glomerular filtration rate to quantify renal function, which is a more precise measurement than serum creatinine. Taken alone, the latter is influenced by diet, muscle mass, extra renal elimination and tubular secretion.[19]

These guidelines aid the identification and treatment of individuals with early kidney disease who are at high risk of progressive CKD, cardiovascular events or death. Strategies need to be developed to provide the individuals identified with quality medical care to possibly slow the progression of CKD and ischemic heart disease.

We are experiencing the largest noncommunicable disease epidemic of our time. The projected increase in diabetes prevalence is staggering and will have a significant impact on health resources globally. Efforts need to focus on stemming the tide of diabetes and obesity, or diabesity, with health promotion programs targeted at both individuals and populations at risk. An aging population with diabetes will inevitably increase the burden of both microvascular and macrovascular complications. An aggressive approach to diabetes prevention and cardiovascular risk factor management is essential if the morbidity and mortality associated with diabetes is to be reduced. ■

Sath Nag, MRCP is a consultant endocrinologist at James Cook University Hospital, Middlesbrough, UK. He can be reached at sath.nag@stees.nhs.uk.

DIABETES REACHES EPIDEMIC PROPORTIONS AMONG THE POOR IN NEW YORK CITY

A recent *New York Times* feature has spotlighted the soaring prevalence of diabetes among New York City residents. According to city health officials who are referring to the crisis as a bona fide epidemic, an estimated 800,000 adults in the city are living with the disease. In fact, according to the report, on any given day more than half of the rooms of the Montefiore Medical Center in the Bronx are filled with patients suffering with diabetic microvascular and macrovascular complications.

Entire neighborhoods in the Bronx and Brooklyn have been affected, leaving doctors to fear what will happen within a generation. The public health system could become overwhelmed, hospitals inundated and schools forced to deal with how to accommodating more diabetic children, according to the article.

Even with this frightening prospect, public health officials appear to be the only ones who are taking notice. They say that the situation in New York City shows where the rest of the world may be headed if diabetes remains unchecked. The city has a diabetes rate one-third higher than that of the rest of the United States, with new cases being diagnosed at double the national average.

The Centers for Disease Control and Prevention estimate that one in three children born in this country 5 years ago will become diabetic in their lifetime. Among Latinos, that rate is one in two.

There are many factors that contribute to New York City being a likely place for the diabetes epidemic to take hold: There is a large population of poor and obese; and it has a growing number of Latinos, as well as Asians who get the disease at lower weights than those of other ethnicities. Eating a "typical Western diet," the article said, also plays a part for many of the city's newer immigrants who are especially vulnerable. And certainly there are the same factors that plague the rest of the country: an aging population; high intake of nutrient-poor, calorie-rich foods; and a culture that makes exercise increasingly difficult and promotes oversized portions.

TABLE 1. A TALE OF TWO CITIES

	Upper East Side	East Harlem
Population	206,921	106,706
Race*	H 6%, B 2% W 84%, O 8%	H 55%, B 33%, W 6%, O 6%
Median Income	$74,446	$20,111
Living in poverty	6.2%	38.2%
Rate of obesity	7%	31%
Rate of diabetes	1%	16%
Diabetes hospitalizations	84 per 100,000	828 per 100,000
Diabetes deaths	10 per 100,000	47 per 100,000

*H = Hispanic, B = Black, W = White, O = Other

Source: New York City Department of Health and Mental Hygiene

And the disease is not even-handed when dealing its blows. In New York City, diabetes is much more prevalent in the poor and ethnically diverse neighborhoods north of 96th Street, for example, than it is on the Upper East Side (see Table 1).

"Either we fall apart or we stop this," said Thomas R. Frieden, MD, commissioner of the New York City Department of Health and Mental Hygiene, in the report. ■

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Vincent Connolly, FRCP is a consultant endocrinologist at James Cook University Hospital, Middlesbrough, UK.

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