



Trends of Disease Burden Consequent to Diabetes in Older Persons in Hong Kong: Implications of Population Ageing

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Funded by:



香港賽馬會慈善信託基金
The Hong Kong Jockey Club Charities Trust

Project Partners:



Executive summary

The prevalence of diabetes is increasing worldwide in both developed and developing countries. One of the risk factors for diabetes is being older. In Hong Kong, the prevalence of diabetes among the older population (aged 65 and above) was six times that among the younger population (aged 18 to 64) in 2003-2004. Even if there is no increasing trend in the age-specific prevalence of diabetes, the number of older people who have diabetes can be expected to increase owing to the larger number of older people who are most at risk of developing the disease. As a result, Hong Kong will experience increasingly larger numbers of older people with diabetes in the future. An examination of the trend in prevalence, incidence, mortality and morbidity would enable estimates of the consequences of the ageing population in Hong Kong. This report estimates the current and future burden of the disease for older people.

Prevalence

According to self-reported past doctor diagnosis, there is no clear evidence of either an increasing or decreasing trend in the prevalence of diabetes among older people in Hong Kong between 1995 and 2004. The latest findings showed that the prevalence of self-reported diabetes in the community-dwelling population aged 65 and above was 13.5% in 2003-2004. However, this estimate was likely under-reported. According to self-reported data, plus the oral glucose tolerance test (OGTT), about 21.4% of people aged 65 to 84 had diabetes in 2004-2005, of which 28.6% (45.0% men, 13.3% women) were unaware that they had diabetes. The prevalence of diabetes among the population aged 65 and above in Hong Kong was comparable to that in the United States, the United Kingdom and Australia.

People aged 65 and above made up 50% of the diagnosed adult cases of diabetes in 2006. Based on the prevalence of self-reported diabetes, the number of cases for people aged over 65 was estimated to increase between 2000 and 2004 from 0.09 million to 0.11 million mainly due to the increase in the number of older people. This number would be expected to increase to 0.30 million by 2036, more than double the number of cases, and to 0.42 million including undiagnosed cases.

People with the condition of pre-diabetes (defined as having impaired glucose tolerance (IGT) or impaired fasting glucose (IFG)) are at substantially higher risk of developing diabetes than those with normal glucose tolerance. Older people have a higher prevalence of pre-diabetes than younger people. A survey identified 17.9% of those aged 65 to 84 as having pre-diabetes in 2004-2005. Action must be taken to prevent these pre-diabetes cases from becoming diabetes cases.

Incidence

There is not much information on the local trend in incidence of diabetes. Based on self-reported doctor-diagnosed diabetes, a cohort study in 1991-1992 found 37.3 per 1,000 subjects aged 70 and older reported diabetes over 3 years, i.e. an annual incidence of 12.4 per 1,000 per year. This estimate was higher than other countries.

Mortality

Diabetes is the ninth most common cause of mortality among the population aged over 65 in Hong Kong, accounting for 1.4% of deaths among the older population in 2007. In 2007, mortality rates from diabetes were 43.2 per 100,000 for males and 56.5 for females aged 65 and above after adjusting for age differences. However, these do not include all potential complications. The age-standardised mortality rates were quite stable between 1981 and 1998, increasing sharply in the late 1990's but generally decreasing from 2001 to 2007. This is different

from the United States which has had an increasing trend since 1981.

As many people would have been recorded as dying from another cause which was itself a complication of diabetes, the indirect cost of diabetes would be better measured by deaths attributable to diabetes. The relative risk (from overseas) of all-cause mortality among people with diabetes compared to those without was 1.38 for males and 1.40 for females aged 60 to 69, and 1.13 for males and 1.19 for females aged 70 and above. This translates into around 673 deaths attributable to diabetes in older people in Hong Kong in 2006 (that is, a rate of 79.0 per 100,000 population).

Morbidity

In 2006, among the diabetes related hospital discharges for all ages, 56% were for people aged 65 and above. In general, older people had a longer length of stay than younger people. For outpatient visits, older people with diabetes had an 81% higher likelihood of having doctor consultations than those without.

Complications related to diabetes are common. Between 2002 and 2006, more than half of the public hospital admissions for diabetes involved complications. Older people had a higher proportion (58%) of complications than younger adults (46%). Survey data revealed that in 2004-2005, over half of those aged 65 to 84 with known diabetes had elevated fasting blood glucose implying that there was poor control of diabetes which could lead to further complications. These complications, in particular vision problems and amputation, affect activities of daily living (ADL).

Disability

Older people with diabetes were 1.8 to 4.1 times (depending on different tasks) more likely than those without diabetes to report some difficulty with ADL. More older people with diabetes reported difficulty in at least one of the three functional domains (26.0% compared with 14.8% of those without). Those aged over 70 with diabetes had a 50% to 70% greater chance of mild to severe functional limitation than those without diabetes.

Cognitive impairment

There is evidence from overseas that older people with diabetes are more likely to have impaired cognitive function than those without diabetes. In Hong Kong, some evidence has supported such an association among community-dwelling older people. However, the evidence supporting a relationship between diabetes and dementia is inconclusive.

Quality of life

Older people with diabetes generally had poorer quality of life than those without, regardless of the measurement tool. Based on self-rated health, more older people with diabetes reported their health to be poorer than other people of the same age. In addition, the probability of having depressive symptoms was higher among older people with diabetes compared to those without.

Economic burden

As well as costs due to increased risk of other diseases and complications, there are also health care costs associated with diabetes. Direct costs include medical costs such as hospitalisation, doctor consultations and medicines. Indirect costs include costs of dealing with disability, costs from loss of work and costs of premature mortality.

The attributable direct cost of diabetes in Hong Kong was estimated at about HK\$1.4 billion in 2006 for those aged 65 and above. This is a conservative estimate which does not include private sector care. The cost of hospital care contributed to most of the costs amounting to HK\$1.2 billion in 2006, which was near 80% of the total diabetes attributable hospital cost for the adult population. The economic burden in the public sector due to diabetes in the population aged 65 and above will increase to HK\$3.5 billion in 2036 (at 2006 prices) which is more than double the current cost.

Although the dollar value was not estimated, there will be economic implications for dealing with functional and cognitive impairment resulting from poorly controlled diabetes in older people. The resulting disability cost would be higher in the older population than in the younger one.

Conclusion

1. Diabetes exerts high costs on the health care system and the population, especially older people who are at the highest risk of developing the disease. All of these costs will predictably increase in the future as the population ages. The increasing number of older people will increase the number of cases and the age profile of people with diabetes will also increase leading to a higher degree of dependency and more co-morbidities. According to the data examined, a large number of existing older people with diabetes are not being diagnosed and, among those diagnosed, a large number do not have adequate control of their blood sugar levels.

Every opportunity should be taken by health care providers to find cases of diabetes among older people, to ensure that all diagnosed cases are well controlled and monitored for the development of complications.

2. Apart from underscoring the importance of the prevention of diabetes and its complications, the findings have specific implications for caring for older people with diabetes, and for adopting an elder-oriented approach:

- Comprehensive geriatric assessment covering physical, functional, psychological, nutritional and social domains needs to be carried out to guide the management plan, in view of the increased predisposition to functional and cognitive impairment, dementia, depression and poor quality of life of older people with diabetes, in addition to the current diabetes complications screening.
- There is a need to consider care in the context of a social unit, recognizing that a proportion of the older population is less able to achieve lifestyle modification; less able to manage complex drug regimes (and therefore more prone to adverse drug effects); less able to cope with multiple service providers at multiple sites; and less able to handle gadgets and information technology. Care would ideally be provided in a user friendly and convenient community setting integrating medical and social activities for management and maintenance.
- The need for eye care and monitoring for retinopathy is particularly important since vision affects independence and quality of life.
- There is a need to consider the trajectory of the disease in the context of increasing frailty and the proximity to end of life, in management of the disease versus the usual 'static' system based approach governed by guidelines.

**The full report will be published in June 2009.*