

Editorial

The burden of the complications of diabetes mellitus

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Diabetes mellitus (DM) is an important global cause of mortality, morbidity, and health-system costs,^(1,2) with significant increases in its prevalence and number of cases in the last 30 years. It constitutes one of the four non-communicable diseases (NCDs) targeted for action by world leaders. According to WHO estimates, in 2014 there were 422 million adults with DM aged 18 years or older, with around half in the WHO South-East Asia and Western Pacific Regions.⁽³⁾ The prevalence of DM and the number of adults with DM in low- and middle-income countries have over the last decade increased at a greater rate than in high-income countries. The global DM prevalence increased by more than 100% in men and by 60% in women, resulting in a predominance of males with DM in 2014 as compared with a higher DM female prevalence in 1980.⁽⁴⁾

In 2012, there were a total of 3.7 million deaths, of which 34% were in age groups below 70 years. Of these 3.7 million deaths, 1.5 million were caused by DM and 2.2 million by poorly controlled blood glucose, which increased the risks of cardiovascular and other diseases. The percentage of deaths under the age of 70 years caused by high blood glucose is higher in low- and middle-income countries than in high-income countries.⁽³⁾

In Indonesia, the 2007 and 2013 data reported by the Basic Health Research showed a prevalence of DM of 6.9% for 2013, which is twice its prevalence in 2007.⁽⁵⁾

According to the Noncommunicable Diseases Risk Factor Collaboration (NCD-RisC),

the onset of type 2 DM should be prevented or delayed to reduce its global health and economic impact, since type 2 DM patients constitute the majority of cases worldwide. Overweight, obesity, and lack of physical activity account for a large proportion of the global burden of DM.⁽⁶⁾ The burden of DM increases in proportion to its complications and therefore control measures are an important goal for the prevention of the complications of DM.

A number of factors may be noted that may be responsible for the higher increase in DM prevalence in low-income and middle-income countries as compared with high-income countries and the almost stationary DM prevalence in Europe, particularly in the northwestern parts. One factor is the substantial and relatively greater increase in adiposity as an important risk factor for DM in many low-income and middle-income countries than in Europe and high-income Asia Pacific countries, especially in women.⁽⁷⁾

Another factor may be genetic susceptibility to DM or the occurrence of alterations in phenotype that are the result of inadequate fetal and childhood nutrition and growth.^(4,8) A third factor may be that the better resourced health systems of Europe and other high-income countries are able to effect an earlier diagnosis of DM in high-risk individuals, and use lifestyle and dietary modification or drugs to prevent or delay its onset.⁽⁹⁾

The complications of poorly controlled DM frequently affect the patient's health adversely and are commonly life-threatening, with acute complications significantly contributing to

mortality, costs and poor quality of life. In the long term DM may result in cardiovascular, ocular, renal and neurologic disorders.⁽¹¹⁾ In regard to DM complications such as end-stage renal disease, cardiovascular events, lower-extremity amputations or pregnancy complications, there are no global estimates, although these conditions impact significantly at individual and population levels, making DM a serious threat to population health.⁽³⁾

DM and its complications cause substantial economic loss to patients and their families, either directly through medical costs such as increasingly higher out-of-pocket health-care payments, or indirectly through loss of earnings, associated with loss of productivity from disability and premature mortality. The high costs of care increase the risk of catastrophic medical expenditure.⁽¹⁰⁾ This economic burden also affects the national and global health systems and economies, with a negative impact on the national gross domestic product (GDP)^(3,10) The International Diabetes Federation (IDF) estimates that in the period between 2003 and 2013 the total global health-care expenditure on DM increased more than three times as a result of the increased number of individuals with DM and increased per capita expenditure on DM.⁽¹¹⁾

Therefore population-based interventions are urgently needed, i.e. to prevent DM, increase the number of DM cases that are detected earlier, and prevent or delay the complications of DM through lifestyle and pharmacological interventions.

Ultimately, whether or not it is advisable to institute targeted interventions for high risk individuals, depends largely on the local context, such as the availability of human and financial resources, as well as essential equipment and technology, to manage DM at the primary-care level. Ideally, DM management should be part of NCD management and included in a universal health coverage package of essential services. DM management remains a top priority issue for the more than 420 million DM cases, although prevention is of importance. The WHO recommends a multidisciplinary approach,

comprising patient education, medication, and consistent follow up.

In addition, structured education programs, such as dose-adjusted for normal eating (DAFNE) for individuals with type 1 DM, may improve life expectancy, DM related complications, and hypoglycemic awareness, and reduce the financial burden of disease management.⁽¹²⁾ There is also an urgent need for structured self-management programs for delivery to large numbers of individuals, since 80–90% of cases are type 2 DM, which is linked to obesity and lifestyle. Other measures include strengthening the primary healthcare system response to NCDs, including diabetes and implementation of guidelines and protocols for improved diagnosis and management of DM in primary health care. Furthermore, policies and programs should be established to ensure equal opportunities for accessing essential diagnostic and management technologies. Finally, essential medicines such as human insulin should be made available and affordable to all who need them.

The most important modifiable risk factors for type 2 DM are overweight, obesity, lack of physical activity and unhealthy dietary practices. Smoking also increases the risk of both type 2 DM and its complications. Control of these factors may decrease the occurrence of type 2 DM and reduce the complications of all types of DM. Apart from promotion of a healthy diet and physical activity, reducing cigarette exposure will reduce DM complications and may result in reductions in type 2 DM.

Preventive measures for DM, such as life style changes, should be widely disseminated, particularly for high-risk individuals. These efforts may steadily reduce the complications of DM and the burden to be borne by the patient, the family, and the government.



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