

Diabetes Control in Mongolia: Facts and Needs

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Noncommunicable diseases (NCDs), commonly known as chronic or life-style related diseases are the major global causes of both morbidity and mortality. Almost one third of global deaths in 2015 were due to NCDs. The four major NCDs (cardiovascular disease (CVD), cancer, chronic respiratory disease and diabetes) account for about 80% of total NCD deaths and share four common modifiable risk factors: unhealthy diet, lack of physical activity, smoking and alcohol consumption [1]. As a one of the major NCDs, prevalence of diabetes mellitus is increasing worldwide. The estimated number of people with diabetes worldwide increased to 417 million by 2016, as reported by the International Diabetes Federation (IDF), and that number is expected to reach more than 642 million by 2040 [2].

Mongolia, the seventh largest country in Asia (by land area) only has a population of 3 million, making it the least densely populated country in the world. Since the 1990s it has experienced rapid demographic and epidemiological transitions, as in many emerging economies. These transitions led to the lifestyle of the population dramatically changing from nomadic to urban. Before the 1950s there were no recorded documentations about diabetes in Mongolia. However, the first nationwide prevalence study conducted in 1999 showed that 3.1% of the population has diabetes, and 9.1% have impaired glucose tolerance (IGT) as evaluated by 2 hour, 75 gram oral glucose tolerance test (OGTT) [3].

In 2005, 2009 and 2013 the Mongolian government with collaboration of the World Health Organization (WHO) and support of the Millennium Challenge Account Mongolia (USA) conducted the nationwide STEPwise approach to Surveillance (STEPS) survey of NCD and injury risk factors. According to this study, prevalence of diabetes was 6.9% of the population and those with impaired fasting glucose (IFG) was 8.3% [4]. However, there are several limitations for NCD STEPS survey. Firstly, the age of the subjects was limited to 25-64 years old, but most diabetes cases occur in the senior population. Secondly, the fasting blood plasma was used to evaluate hyperglycemia risks among subjects. By WHO and IDF recommendations, fasting blood glucose and glycated hemoglobin (HbA1c) or OGTT should be used to evaluate diabetes. The objective of NCD STEPS survey was to evaluate hyperglycemia risks, therefore, in some points of view these data cannot give proper evidence of diabetes prevalence.

The Mongolian Diabetes Association (MDA) established in 2003, focuses on improving the patient's quality of life, glycemic control and medical service policy with collaboration of government and/or nongovernment organizations. According to a randomized study on diabetes control conducted in 2003, more than 80% of patients in Mongolia had an HbA1c level above 7.5%, which indicates poor glycemic control [5]. There are several explanations for such negative results: (1) even though the Mongolian government covers all expenditures

on glucose-lowering drugs and insulin to all registered patients from the state budget, there is a lack of dosages to most of patients due to systematic disarrangements of budget sharing to secondary hospitals; (2) diabetes is a disease with a very high burden on patients, their families and the country's economy, and since the majority of registered patients have middle or lower income, taking sufficient dosages of glucose-lowering drugs and insulin by patient is not common; (3) the lack of human resources in primary and secondary hospitals specialized in endocrinology and diabetes. Currently in the Mongolian healthcare sector only endocrinologists are serving patients with diabetes. Mongolia still lacks podiatrists, dietitians, physical trainers and diabetic educators. Although in 2005 the MDA with support of WHO organized a nationwide training to raise up diabetic educators, the limitation of job positions in secondary hospitals for those specialists did not allow them to find work. Hence, the shortage of specialized health workers in the field of endocrinology and diabetes results in a short contact time between doctors and the patients.

Cross-sectional studies conducted in 2013 by the MDA revealed that the prevalence of diabetic retinopathy was 29.3% and a risk factor for diabetic retinopathy was elevated fasting blood glucose (OR = 2.9, $p = 0.001$). The prevalence of diabetic nephropathy was 14.8% and risk factors for diabetic nephropathy were HbA1C (OR = 4.57, $p = 0.034$), systolic blood pressure (OR = 2.55, $p = 0.032$), diabetes duration (OR = 1.1, $p = 0.0021$) and age (OR = 1.03, $p = 0.0006$). The prevalence of diabetic peripheral neuropathy was 71.0%, sudomotor autonomic neuropathy was 65.1% and cardiovascular autonomic neuropathy was 52.7% among diabetic patients. Moreover, impotence in males was 76.8%. Risk factors for neuropathy were age (OR = 1.07, $p = 0.0001$), diabetes duration (OR = 1.07, $p = 0.024$) and hyperglycemia (OR = 1.11, $p = 0.039$) by logistic regression analysis. Prevalence of peripheral artery disease, diabetes related foot ulcer and amputation were 32.1, 10.4 and 1.0%, respectively. Foot amputation was associated with being male ($p < 0.05$), diabetes duration ($p < 0.01$), hyperglycemia ($p < 0.01$), hyperlipidemia ($p < 0.01$) and hypercoagulation ($p < 0.05$). Prevalence of minor or toe amputation was 32%, below knee amputation was 8% and above knee amputation was 56% among all amputations [6]. This long list of chronic complications had one common cause: POOR GLYCEMIC CONTROL.

So, what do we need to do to prevent such a devastating disease with a high burden to both patients and country? As a

researcher, and faculty at the Mongolian National University of Medical Sciences, I think we need to change the whole system of health service once for all. Although the Ministry of Health enacted preventive policies through introducing free rapid blood sugar tests to every person with health insurance aged 40 years and above and made a decision to cover over 50% of out-of-pocket expenses on four types of oral diabetes medications from the Health Insurance Fund, Mongolia still has a large need to establish proper registration procedures of patients with diabetes, to offer various choices for glucose-lowering drugs and insulin and to create collaborative diabetes teams including podiatrists, dietitians, educators, etc. in secondary hospitals. By pursuing these achievable action points, Mongolia can work toward preserving the quality of life for its people and bringing more sustainability to its future.

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