

Predictors of poor glycaemic control in older patients with type 2 diabetes mellitus

Shariff-Ghazali Sazlina^{1,2}, MBBS, MMed, Ismail Mastura³, MBBS, MMed, Ai Theng Cheong¹, MBBS, MMed, Adam Bujang Mohamad⁴, BSc, MBA, Haniff Jamaiyah⁵, MD, MCommHealth, Ping Yein Lee¹, MBBS, MMed, Syed Abdul Rahman Syed Alwi⁶, MBBS, MMed, Boon How Chew¹, MD, MMed

INTRODUCTION We assessed the predictors of poor glycaemic control among older patients with type 2 diabetes mellitus (T2DM) in Malaysia.

METHODS This cross-sectional study used the data of 21,336 patients aged ≥ 60 years with T2DM from the Adult Diabetes Control and Management Registry 2008–2009.

RESULTS Predictors of poor glycaemic control were: age groups 60–69 years (odds ratio [OR] 1.96, 95% confidence interval [CI] 1.66–2.33) and 70–79 years (OR 1.43, 95% CI 1.20–1.71); Malay (OR 1.53, 95% CI 1.41–1.66) and Indian (OR 1.32, 95% CI 1.19–1.46) ethnicities; T2DM durations of 5–10 years (OR 1.46, 95% CI 1.35–1.58) and > 10 years (OR 1.75, 95% CI 1.59–1.91); the use of oral antidiabetic agents only (OR 5.86, 95% CI 3.32–10.34), insulin only (OR 17.93, 95% CI 9.91–32.43), and oral antidiabetic agents and insulin (OR 29.42, 95% CI 16.47–52.53); and elevated blood pressure (OR 1.10, 95% CI 1.01–1.20), low-density lipoprotein cholesterol (OR 1.48, 95% CI 1.38–1.59) and triglycerides (OR 1.61, 95% CI 1.51–1.73). Hypertension (OR 0.71, 95% CI 0.64–0.80), hypertension and dyslipidaemia (OR 0.68, 95% CI 0.61–0.75), pre-obesity (OR 0.89, 95% CI 0.82–0.98) and obesity (OR 0.76, 95% CI 0.70–0.84) were less likely to be associated with poor glycaemic control.

CONCLUSION Young-old and middle-old age groups (i.e. < 80 years), Malay and Indian ethnicities, longer T2DM duration, the use of pharmacological agents, and elevated blood pressure and lipid levels were associated with poor glycaemic control. The presence of comorbidities, pre-obesity and obesity were less likely to be associated with poor glycaemic control.

Keywords: diabetes mellitus, glycaemic control, Malaysia, older patients, registry

INTRODUCTION

Type 2 diabetes mellitus (T2DM) among older persons is an increasing global health problem in both developed and developing countries, including Malaysia.⁽¹⁾ Changes in lifestyle and a demographic shift toward an ageing population have contributed to the increased prevalence of T2DM in older patients. This causes significant morbidity, disability and mortality, resulting in increased healthcare costs to both the patient and the community.^(2,3) It has been predicted that the global cost of diabetes mellitus will increase from USD 376 billion in 2010 to USD 490 billion in 2030.⁽¹⁾

The goal of T2DM management is to delay the onset of complications associated with the disease and impede disease progression; this is achieved mainly through glycaemic control and other cardiovascular disease risk control.^(4,5) Unfortunately, glycaemic control remains poor, ranging between 40% and 60% worldwide.^(6–10) Studies have shown that poor glycaemic control is associated with male gender,⁽¹¹⁾ Malay and Asian Indian ethnicities,^(11,12) the presence of T2DM complications,^(11,13) elevated low-density lipoprotein cholesterol (LDL-C) level,^(11,13,14) insulin use⁽¹⁴⁾ and non-adherence to medications.⁽¹⁵⁾ However, few studies have focused on T2DM in patients aged ≥ 60 years. Management of T2DM in older patients differs from that in

younger patients, because the former group usually has more comorbidities and disabilities due to age-related changes and an increased susceptibility to hypoglycaemia.⁽¹⁶⁾

The proportion of Malaysians aged ≥ 60 years is on the rise (6.6% in 2000 to 7.4% in 2010).⁽¹⁷⁾ Since longevity is associated with an increased risk of non-communicable diseases such as diabetes mellitus,^(18,19) it is not unexpected that the proportion of persons with non-communicable diseases is also on the rise. In a study conducted in 2010, Malaysia was reported to have the tenth highest proportion of people living with diabetes mellitus (11.6%), higher than Singapore (10.2%), the United Kingdom (3.6%) and Australia (5.7%).⁽²⁰⁾ The prevalence of T2DM among Malaysians aged > 30 years has increased from 8.2% in 1996 to 14.9% in 2006.⁽²¹⁾ This prevalence has been shown to increase with age, with the highest proportion recorded among patients aged 60–64 years (26.1%). Expenditure on diabetes mellitus accounted for 16% (USD 600,000) of the Malaysian healthcare expenditure in 2010.⁽²²⁾ The greatest expenditure was among patients aged ≥ 60 years and this expenditure is projected to increase to USD 1 million by 2030.⁽²²⁾

Glycaemic control among Malaysian adults with T2DM remains poor. The proportion of patients aged ≥ 18 years with glycosylated haemoglobin (HbA1c) level $\geq 7.0\%$, in both primary

¹Department of Family Medicine, Faculty of Medicine and Health Sciences, ²Institute of Gerontology, Universiti Putra Malaysia, Serdang, Selangor, ³Seremban 2 Health Clinic, Seremban, Negeri Sembilan, ⁴Biostatistics Unit, ⁵Clinical Epidemiology Unit, National Clinical Research Centre, Ministry of Health, Kuala Lumpur, ⁶Department of Family Medicine, Faculty of Medicine and Health Sciences, Universiti Malaysia Sarawak, Kuching, Sarawak, Malaysia

Correspondence: Dr Sazlina Shariff-Ghazali, Associate Professor, Department of Family Medicine, Faculty of Medicine and Health Sciences, Universiti Putra Malaysia, 43400, Serdang, Selangor, Malaysia. sazlina@upm.edu.my