

## Abstract

Chronic kidney disease (CKD) is a major global public health problem. Recent studies reported that diabetes and prediabetes are risk factors for developing CKD; however, the exact glycated hemoglobin (HbA1c) cut-off value for prediabetes remains controversial. In this study, we aimed to examine the relationship between HbA1c levels and subsequent CKD development in greater detail than previous studies. Longitudinal data of annual checkups of 7,176 Japanese non-diabetic people (male: 40.4%) from 1998 to 2022 was analyzed. HbA1c values were categorized into <5.0%, 5.0%–5.4%, 5.5%–5.9%, and 6.0%–6.4%. CKD was defined as an estimated glomerular filtration rate <60 ml/min/1.73 m<sup>2</sup>. The descriptive statistics at study entry showed that higher HbA1c values were associated with male, older, overweight or obese, hypertensive, or dyslipidemic people. During a mean follow-up of 7.75 person-years, 2,374 participants (male: 40.0%) developed CKD. The Weibull accelerated failure time model was selected because the proportional hazards assumption was violated. The adjusted time ratios of developing CKD for HbA1c levels of 5.5%–5.9% and 6.0%–6.4% compared with 5.0%–5.4% were 0.97 (95% confidence interval: 0.92–1.03) and 1.01 (95% confidence interval: 0.90–1.13), respectively. There was no association between HbA1c in the prediabetic range and subsequent CKD development.