Forecasting Tunisian type 2 diabetes prevalence to 2027: validation of a simple model

Abstract

Most projections of type 2 diabetes (T2D) prevalence are simply based on demographic change (i.e. ageing). We developed a model to predict future trends in T2D prevalence in Tunisia, explicitly taking into account trends in major risk factors (obesity and smoking). This could improve assessment of policy options for prevention and health service planning. The IMPACT T2D model uses a Markov approach to integrate population, obesity and smoking trends to estimate future T2D prevalence. We developed a model for the Tunisian population from 1997 to 2027, and validated the model outputs by comparing with a subsequent T2D prevalence survey conducted in 2005. The model estimated that the prevalence of T2D among Tunisians aged over 25 years was 12.0% in 1997 (95% confidence intervals 9.6%–14.4%), increasing to 15.1% (12.5%–17.4%) in 2005. Between 1997 and 2005, observed prevalence in men increased from 13.5% to 16.1% and in women from 12.9% to 14.1%. The model forecast for a dramatic rise in prevalence by 2027 (26.6% overall, 28.6% in men and 24.7% in women). However, if obesity prevalence declined by 20% in the 10 years from 2013, and if smoking decreased by 20% over 10 years from 2009, a 3.3% reduction in T2D prevalence could be achieved in 2027 (2.5% in men and 4.1% in women). This innovative model provides a reasonably close estimate of T2D prevalence for Tunisia over the 1997–2027 period. Diabetes burden is now a significant public health challenge. Our model predicts that this burden will increase significantly in the next two decades. Tackling obesity, smoking and other T2D risk factors