Mortality Trends in Patients with Diabetes Mellitus, 1994 to 2011

Background

Recent studies suggest that mortality rates in Diabetes Mellitus (DM) patients declined to a greater extent than mortality rates in the general population. [1;2] Moreover, the current life expectancy of DM patients might be comparable with the life expectancy of the general population.[2] This study focuses on the causes and the extent of this trend. Regarding the cause of the decline, we hypothesize that the trend is due to better treatment (introduction of treatment protocols, use of statins and antihypertensives) reducing fatal cardiovascular disease among DM patients. Considering the extent of the decline, we expect to find this trend in all western countries. In particular, this research focuses on mortality trends in DM patients in a Western European Country (the Netherlands).

Question

What is the trend in mortality rates among DM patients in comparison to mortality rates in the general population in the period 1994 through 2011 in the Netherlands? To what extent is this trend explained by changes related to treatment regime?

Datasets

The Netherlands
The dataset of the Nijmegen Monitoring Project (NMP) will be used to estimate mortality rates among DM patients in the Netherlands. This dataset contains longitudinal data of DM patients of 11 general practices in the Eastern part of the country. Possibly, the mortality status of patients who moved will be retrieved (to prevent selection bias, i.e. some patients may have moved because of their illness and died just a few months later). These rates will be compared to mortality rates in the general population from the Central Bureau of Statistics.

Design

Prospective dynamic cohort study.

Methods

For each year, Standardized Mortality Rates (SMRs) for all cause mortality and for Coronary Heart Disease (CHD) mortality will be calculated for the total population and for men and women separately. Proportional hazards models will be used to estimate the association between factors related to treatment (medication, systolic blood pressure, diastolic blood pressure, HbA1C, ratio total cholesterol/HDL cholesterol, total cholesterol, LDL cholesterol, MDRD, smoking, BMI) and mortality (all cause and CHD). In particular, the effect of statins (introduced in the Netherlands in the year..) on mortality rates will be estimated. Known confounders (age, duration of DM, co-morbidity) will also be included into the models.

Reference List

(1) Gregg EW, Qiuping G, Cheng YJ, et al. Mortality Trends in Men and Women with Diabetes, 1971 to 2000. Annals of Internal Medicine 2007; 147(3):149-155.

(2) Lutgers HL, Gerrits EG, Sluiter WJ, et al. Life Expectancy in a Large Cohort of Type 2 Diabetes Patients Treated in Primary Care (ZODIAC-10). Plos One 2009; 4(8):1-7.