INFLUENCE OF AGE, PERIOD, AND COHORT FACTORS ON THE DYNAMICS OF TYPE 2 DIABETES INCIDENCE AMONG ADULTS IN LITHUANIA, 2002-2013

Implementation period: 2014

Aim: to analyse type 2 diabetes incidence dynamics by applying an age-period-cohort model analysis.

Tasks:

1. To determine the influence age, period, and cohort factors on type 2 diabetes incidence dynamics in Lithuania during 200-2013 separately; 2. To determine the influence age, period, and cohort factor combinations on type 2 diabetes incidence dynamics in Lithuania during 200-2013; 3. To compare the possibilities between statistical packages GLIM 3.77 and Stata 12 with regard to conducting an age-period-cohort analysis.

Material and methods.

The data used for the study was gathered from the Compulsory Health Insurance information system "SVEIDRA" the Statistics Lithuania. Incidence rates per 100,000 residents were directly standardised, using the Lithuanian population average for 2002-2013. The age-period-cohort model was applied in order to assess the influence of separate time factors and their combinations on the type 2 diabetes incidence.

Results.

Incidence rates among men increased from 199.9 cases (2002) to 403 cases (2013) per 100,000 males, while female incidence increased from 301.6 cases (2002) to 436.6 cases (2013) per 100,000 females. The annual average percent change in incidence rates during 2002-2013 for men and women was 4.9% and 1.7%, respectively. Among both sexes, incidence rates increased greatly with age, peaking at 63-65 years of age and slowly decreasing afterwards. In APC analysis, it was found that out of separate time factors, age was of most importance (male LR (chi2)=259.32, $p<0.001$; female LR (chi2)=367.05, $p<0.001$) followed by the birth cohort (male LR (chi2)=128.25, $p<0.001$; female LR (chi2)=171.47, $p<0.001$). Male and female incidence data was best explained by the full model which included all three time factors (age, period, and cohort) (male LR (chi2)=539.86, $p<0.001$; female LR (chi2)=566.25, $p<0.001$).

Conclusions.

Female type 2 diabetes incidence rates were higher than male incidence rates throughout the period of 2002-2013. The type 2 diabetes incidence dynamics were non-monotonic among both sexes and increased during the last years of investigation. Type 2 diabetes incidence dynamics by age were similar among men and women (incidence increases until the age of 63-65, then slowly decreases in the oldest age groups).

Age and birth cohort had the most effect on the type 2 diabetes incidence rates during 2002-2013 among both men and women. Period by itself did not have a statistically significant effect. Naturally, the identified combination of time factors which had the most effect on type 2 diabetes incidence was age and cohort, which potentially indicates the presence of physiological, age-related and external changes typical to certain generations. The data was best fit by the full model, consisting of age, period, and cohort (with applied constraints to solve the identification problem).

Contacts: N. Lipunova, tel.: (370 5) 277 3302, e-mail: nadezda.lipunova@hi.lt