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Original Research Article

The mortality of patients with diabetes mellitus in Latvia 2000–2012

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ARTICLE INFO

Article history:

Received 7 November 2012

Accepted 24 April 2014

Available online 27 June 2014

Keywords:

Diabetes mellitus

Mortality indicators

ABSTRACT

Background and objective: In Latvia, like in other European countries, the incidence of diabetes mellitus is increasing and so it is important to find out what the trends in the mortality of diabetes mellitus in Latvia are. The aim of this study was to calculate the mortality indicators of diabetes patients in Latvia from 2000 to 2012 and compare mortality among diabetes mellitus patients with mortality among the population of Latvia.

Materials and methods: The study was carried out with a quantitative statistical analysis approach. In the study, all the registered patients with diabetes mellitus from 2000 to 2012 were included.

Results: Mortality in a population with diabetes decreased statistically significantly from 57.76 per 1000 py in 2000 to 45.33 per 1000 py in 2012. In the general population of Latvia, there were no statistically significant changes; the mortality in 2000 was 13.56 per 1000 py, in 2012 – 14.24 per 1000 py. The age-standardised mortality ratio of the population with diabetes and the population of Latvia decreased from 1.71 (95% CI = 1.62–1.81) in 2000 to 1.23 (95% CI = 1.19–1.27) in 2012.

Conclusions: In Latvia the mortality of patients with diabetes exceeds mortality in the general population. Mortality rates are higher for men and older patients, however, compared to mortality in the general population, diabetes increases the risk of death; especially for women and for younger patients. There is a tendency that the mortality indicators of patients with diabetes and mortality indicators in the general population are becoming closer.

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Peer review under responsibility of Lithuanian University of Health Sciences.



1. Introduction

The International Diabetes Federation has estimated that 35 million adults had diabetes mellitus in Europe in 2011 and it is likely that there will be 43 million (increase will be 23%) in 2030. The estimated prevalence of diabetes mellitus differs and varies among the countries from 2.8% in Albania to 9.8% in Portugal [1]. The prevalence of diabetes mellitus was 3.8% in Latvia at the end of 2012 (79 122 patients with diabetes mellitus) [2]. With the increasing incidence of diabetes mellitus, the mortality of these patients is becoming a more and more important problem. Diabetes mellitus is in fourth and fifth place in the structure of causes of death in Europe. The studies show that diabetes mellitus patients have a higher risk of death than people without diabetes mellitus [3–13]. Most patients with diabetes mellitus die from disease related complications – about 50% of patients with diabetes mellitus die of cardiovascular diseases, 10–20% of renal insufficiency [14]. The aim of high quality diabetes care is to remove or prevent the complications of diabetes, thereby reducing the diabetes-related premature death risk. Consequently, the diabetic patient mortality or survival indicators can serve as diabetes care quality criteria [15].

In developed countries, the overall age-standardised mortality in the population is decreasing, while age-standardised mortality among diabetes mellitus patients is increasing [16,8,17]. Geiss et al. [17] found out that the age-standardised mortality of persons with diabetes mellitus is two times higher than the age-standardised mortality of non-diabetic persons. Several previous studies have shown higher relative mortality rates observed in younger age groups of type 2 diabetes mellitus patients; it suggests the relative importance of this cause compared to other causes, particularly in younger age groups. Older people, whose total mortality risk is higher, have a lower diabetes-specific death risk [13].

However, research has not shown consistency, because it has been observed in several studies that the mortality indicators are decreasing [12,13,18] not only in the general population but also among diabetes mellitus patients, which could be a sign of diabetes care improvement. However, mortality is also decreasing in the general population in many countries. Therefore, it is not self-evident that the decrease of mortality indicators among people with diabetes is consequences of better care. If preferred it can only reflect trends in the general population. Therefore, studies often use the term “relative mortality” or “relative mortality rate,” which indicates how many times the mortality among patients with diabetes mellitus exceeds mortality in the general population [4,6,7,10,11,13] or mortality among people who do not have diabetes [3,5,8,9,12].

In Latvia, like in other European countries, the incidence of diabetes mellitus is increasing and it is important to find out what the trends in mortality of diabetes mellitus in Latvia are and to compare them with trends in mortality in the general population.

The aim of this study was to calculate the mortality indicators of diabetes mellitus patients in Latvia from 2000 to 2012 and compare mortality among diabetes mellitus patients with mortality among the population of Latvia.

2. Materials and methods

The study was carried out with a quantitative statistical analysis approach. Included in the study, were all the patients with diabetes mellitus, who from 2000 to 2012, have been in the records of the “Register of patients with particular diseases, including patients with diabetes mellitus” (hereinafter – The Register of diabetes). In Latvia the Register of diabetes was launched in 1997 by Latvian Association of Endocrinologists. Since 2004 it has been under the supervision of institutions subordinate to the Ministry of Health. Currently the Register of diabetes is a part of the united Register of patients with particular diseases. The Centre for Disease Prevention and Control is the register administrator and holder. The register activity is stipulated by the regulations of The Cabinet of Ministers of the Republic of Latvia which requires that family doctors and endocrinologists give information to the register at least once a year by filling in a special form about each patient with diabetes mellitus that they take care of. The number of registered patients with diabetes mellitus is growing and hence the completeness of the register is also growing every year, so data from the first four years of the register were not included. Since 2009 the information in the Register of diabetes has been compared to the reimbursed medicine database maintained by The National Health Service. As a result of the comparison lists of patients who receive reimbursed medicine for diabetes are obtained, but there is a lack of information about them in the Register of diabetes. Information is entered in the Register of diabetes in collaboration with physicians, so the register staff estimate that the register coverage is ~90% of all patients with diabetes mellitus who receive state reimbursed medicine. Data from the Death causes database of the Centre for Disease Prevention and Control about the number of persons who died from 2000 to 2012 were also used, as well as Central Statistical Bureau data about the average number of the population of Latvia in 2000–2012 by gender and age groups.

Mortality was calculated as a rate per 1000 person-years (py). Death cases of patients with diabetes mellitus that were in the record of the register were considered a case, regardless of the cause of death. In total from 2000 to 2012 there were 34 072 death cases (12 351 for men and 21 721 for women) and the population included in the study was 691 042 person-years (229 447 for men and 461 575 for women) [2].

To calculate the mortality indicators of the general population of Latvia data were used from the Death causes database of the Centre for Disease Prevention and Control about the number of persons who died from 2000 to 2012 and officially published data on the website of the Central Statistical Bureau about the average number of the population of Latvia corresponding to the certain period of time which are recalculated according to Population Census 2011 [19]. By dividing the mortality among patients with diabetes by the mortality in the general population, the so-called relative mortality rate was obtained. All parameters were calculated separately for men and women. In addition, since the age structure of patients with diabetes and the population of Latvia differ significantly, diabetes patients are older (more than 90% of those registered are type 2 diabetic patients [2]),

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