PhUSE 2015

Paper PP22

Change in Prevalence and Distribution of Diabetes Mellitus Type I and Type II over Time in the Netherlands

Jetty A. Overbeek, PHARMO Institute for Drug Outcomes Research, Utrecht, the Netherlands
Fernie J.A. Penning-van Beest, PHARMO Institute for Drug Outcomes Research, Utrecht, the Netherlands
Eric C.J. van Dongen, Novo Nordisk B.V., Alphen aan den Rijn, the Netherlands
Ron M.C. Herings, PHARMO Institute for Drug Outcomes Research, Utrecht, the Netherlands

ABSTRACT

As the development of diabetes mellitus (DM) type II (T2DM) is related to age and obesity, population changes over time with respect to these factors may have changed the prevalence and distribution of T1DM and T2DM in the Netherlands. Based on our General Practitioner (GP) Database and the Out-patient Pharmacy Database we have quantified the trend in prevalence and distribution of T1DM and T2DM in the Netherlands. For all patients, diabetes treatment at a single date each year from 2005-2012 was assessed. For patients with a GP recorded diagnosis for T1DM or T2DM, distribution of T1DM/T2DM was stratified by treatment. This distribution of DM type by treatment was applied to the treatment of patients with no GP recorded DM type to assess the distribution of T1DM/T2DM. The results show that prevalence of DM increased and relatively more patients were diagnosed with T2DM. These changes can be explained by the ageing Dutch population, better survival, more obesity and early detection of T2DM.

INTRODUCTION

As the development of diabetes mellitus (DM) type II (T2DM) is related to age and obesity, population changes over time with respect to these factors may have changed the prevalence and distribution of DM type I (T1DM) and T2DM in the Netherlands. The objective of this study was to quantify the trend in prevalence and distribution of T1DM and T2DM in the Netherlands.

METHODS

DATA SOURCES

Data were obtained from the PHARMO Database Network. This network links drug dispensing records to hospital discharge records and other data sources such as general practitioner (GP) data using probabilistic linkage[1,2]. For this study, the GP Database and the Out-patient Pharmacy Database were used. The GP Database comprises data from electronic patient records registered by GPs. The records include information on diagnoses and symptoms, laboratory test results, referrals to specialists and healthcare products/drug prescriptions. The Out-patient Pharmacy Database comprises GP or specialist prescribed healthcare products dispensed by the out-patient pharmacy.

STUDY DESIGN & STUDY POPULATION

For each year in the study period (2005-2012) a cross-sectional study was performed in which September 30 of that year was used as the index date. Per year, all patients with ≥2 antidiabetic dispensing (ATC code A10) within 183 days anywhere prior to or at September 30 were selected from the Out-patient Pharmacy Database and defined as patients with DM. Patients with at least three months history prior to and three months follow-up after September 30 were included in the study cohort.

PREVALENCE

Per year, prevalence of DM was calculated in the Out-patient Pharmacy Database. This proportion was multiplied by the number of persons in the Netherlands who received a drug prescription in that year according to Statistics

Netherlands[3], in order to obtain the number of patients with DM in the Netherlands. By dividing this number by the total number of patients in the Netherlands the prevalence of DM in the Netherlands was obtained.

DIABETES TREATMENT

PHARMO developed a standard SAS macro that converts dispensing records (one record per dispensing including date, patient id and ATC code) into episodes of use of specific medications, either on ATC level, or predetermined drug class level. For the current study all antidiabetic drug dispensings were used. The treatment episode that included September 30 of that year was defined as diabetes treatment of that year.

DISTRIBUTION OF T1DM AND T2DM

For patients with a GP recorded diagnosis for T1DM or T2DM, distribution of T1DM/T2DM was stratified by diabetes treatment. This distribution of DM type by treatment was applied to the treatment of patients with no GP recorded DM type to assess the distribution of T1DM/T2DM for all patients included in the study cohort. Distribution of T1DM and T2DM was analysed using standard SAS procedures like PROC FREQ, PROC TRANSPOSE and PROC SQL.

RESULTS

The prevalence of DM in the Netherlands increased from 38 per 1000 males and 40 per 1000 females in 2005 to 54 per 1000 males and 52 per 1000 females in 2012. The distribution of T1DM versus T2DM among patients with DM changed from 15% versus 85% in 2005 to 8% versus 92% in 2012. Among patients with T1DM mean (±SD) age decreased from 48 (±22) years in 2005 to 44 (±22) years in 2012. Among patients with T2DM mean age increased from 63 (±12) years in 2005 to 67 (±12) years in 2012.

CONCLUSION

This study describes the epidemiology of DM in the Netherlands over 2005-2012. Prevalence of DM increased and relatively more patients were diagnosed with T2DM. These changes can be explained by the ageing Dutch population, better survival, more obesity and early detection of T2DM. Furthermore, the introduction of the T2DM care program in 2005 probably has led to a better registration of T2DM patients.

REFERENCES

1. Herings RMC, Pedersen L. Pharmacy-based Medical Record LInkage Systems. In: Strom BL, Kimmel SE, Hennessy, eds. Pharmacoepidemiology. 5th ed. Oxford, UK: Wiley Blackwell; 2012: 270-86.
2. van Herk-Sukel MP, Lemmens VE, Poll-Franse LV, Herings RM, Coebergh JW. Record linkage for pharmacoepidemiological studies in cancer patients. Pharmacoepidemiol Drug Saf 2012; 21(1): 94-103.
3. StatLine - electronic databank of Statistics Netherlands http://statline.cbs.nl/Statweb/?LA=en (accessed April 15, 2015)

CONTACT INFORMATION

Your comments and questions are valued and encouraged. Contact the author at:

Author Name: Jetty A. Overbeek
Company: PHARMO Institute for Drug Outcomes Research
Address: Van Deventerlaan 30-40
City / Postcode: 3528 AE, Utrecht
Work Phone: +31 (0)30 7440 810
Fax: -
Email: jetty.overbeek@pharmo.nl
Web: www.pharmo.com