

Research: Epidemiology

Prevalence of diabetes in Poland: a combined analysis of national databases

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Abstract

Aims To assess the number of people with diabetes in Poland using combined national sources and to evaluate the usefulness of data from an insurance system for epidemiological purposes.

Methods The data were collected from four sources: 1) 2013 all-billing records of the national insurance system comprising people of all age groups undergoing procedures or receiving services in primary healthcare, specialist practices and hospitals and also those receiving drugs; 2) an epidemiological study, NATPOL, that involved the assessment of people with undiagnosed diabetes; 3) the RECEPTOmetr Sequence study on prescriptions; and 4) regional child diabetes registries.

Results In 2013, 1.76 million people (0.98 million women and 0.79 million men) had medical consultations (coded E10–E14) and 2.13 million people (1.19 million women and 0.94 million men) purchased drugs or strip tests for diabetes. A total of 0.04 million people who used medical services did not buy drugs. In total, the number of people with diabetes in the insurance system was 2.16 million (1.21 million women and 0.95 million men), which corresponds to 6.1% (95% CI 6.11–6.14) of women and 5.1% (95% CI 5.12–5.14) of men. Including undiagnosed cases, the total number of people with diabetes in Poland was 2.68 million in 2013.

Conclusion The estimated prevalence of diabetes (diagnosed and undiagnosed cases) in Poland is 6.97%. Data from the national insurance system with full coverage of the population can be treated as a reliable source of information on diseases with well-defined diagnosis and treatment methods, combined with an assessment of the number of undiagnosed individuals.

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Introduction

Diabetes is a metabolic disease characterized by hyperglycaemia resulting from defects in insulin secretion, insulin action or both. Because of the high prevalence and serious consequences primarily associated with diseases of the coronary arteries, brain, kidney, retina and lower limbs, diabetes is an important medical, social and economic problem [1–4]. According to estimates from 2015, diabetes remains the 12th most prevalent disease in the world, with

the highest and constantly increasing burden (a shift from 15th place in 2005), and with the total number of people with the disease accounting for >55.8 million disability-adjusted life-years.

According to the eighth edition of the International Diabetes Federation's *Diabetes Atlas*, in 2017, the number of people in Europe with diabetes was 58 million: 8.8% of the population aged 20–70 years [4]. Diabetes prevalence varies among countries: from 4.3% in Ireland, to 7.6% in Poland (2.23 million), and up to 13.3% in Serbia in the age group 20–79 years [3]. Analysis conducted by the WHO in 2000 estimated the number of people with diabetes in Poland

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What's new?

- The present study is a unique attempt to assess diabetes prevalence in one of the biggest countries in Central and Eastern Europe.
- The prevalence of diabetes estimates presented to date rely on studies covering selected populations in different regions of Poland.
- The present analysis was conducted on the basis of a complete database of contracted medical services and reimbursed drugs from the only public insurance in the country and from population studies (NATPOL and POLSENIOR), and led to a diabetes prevalence estimate of 6.97%.
- The study shows the high burden of diabetes and the need for a complete diabetes register for monitoring health needs and diabetes control.

to be 2.523 million in the age group 25–74 years, and predicted that this number would have increased by 20% by 2030 [6,7].

In the case of Type 2 diabetes, the prevalence increase seems to be an effect of urbanization and lifestyle changes, as well as the result of aging populations. All these factors will result in higher morbidity and consequences related to the length and quality of life, disability and healthcare costs [8–13]. Higher healthcare costs are also related to untreated diabetes and damage, dysfunction and failure of eyesight, and kidney, nerve, heart and blood vessel function [14,15]. The cause of Type 1 diabetes (insulin-dependent diabetes mellitus) is insulin deficiency caused by the self-destruction of β cells. In recent years, there has been a sharp increase in the incidence of Type 1 diabetes in children, possibly attributable to unidentified environmental factors [16,17].

Analysis and estimates of the population with diabetes carried out so far have been based on different sources, such as national registries, studies and surveys of a representative sample populations at country or regional level, clinic or hospital registers, government reports and various data collection systems, or they have been calculated based on models from neighbouring countries with similar economic development and healthcare because of the lack of relevant sources [1,18,19].

Determination of the number of people who currently have diabetes represents necessary information for rational planning of healthcare needs and allocation of resources according to evidence-based decision-making [20,21] and is also essential in order to maintain control of healthcare costs [4,22,23]. In Central and Eastern European countries, however, diabetes prevalence is based on rough estimates and there is a lack of reliable data. The reason for this is the poor quality of medical statistics which, combined with

insufficient healthcare access, makes the prevalence estimation extremely challenging. The primary goal of the present analysis, therefore, was to estimate, on the basis of information from several available sources, the number of people with diabetes in Poland, one of the largest countries in Central and Eastern Europe.

Materials and methods

For the present study we used four data sources: (1) billing records of the national public insurance system, the National Health Fund (NHF); (2) the RECEPTometr Sequence study on prescriptions; (3) the results of two epidemiological studies, NATPOL (*Ogólnopolskie Badanie Rozpowszechnienia Czynn timer Rzyka Chorób Układu Krążenia*) [24] and POLSENIOR (*Aspekty medyczne, psychologiczne, socjologiczne i ekonomiczne starzenia się ludzi w Polsce*) [25]; and (4) regional child diabetes registries.

It was assumed that the number of people who had diabetes and who were aware of having the disease would be reflected by the total number of people using healthcare for treatment of the disease. The number of people with undiagnosed diabetes was estimated on the basis of the NATPOL and POLSENIOR studies.

National Health Fund dataset

Determination of the number of people using public healthcare for treatment of diabetes was based on two values from the NHF database for 2013 (dataset includes information for each person): (1) services and (2) drugs.

Service data included the number of people undergoing procedures or receiving services at in- and outpatient centres, contracted and reimbursed by the NHF, with International Classification of Diseases (ICD)-10 codes E10–E14 (visits to primary healthcare centres or outpatient specialist practices and hospitalizations) recorded as the main or concurrent diagnosis. Health services for diabetes analysed in the study included all categories of treatment: hospitalizations and outpatient specialty healthcare (which report nearly 100% of visits) and primary care, which reports only a portion of the total number of visits. Assessment of the percentage of primary care visits was challenging; however, we may assume that this bias could be corrected for by using the number of people who purchased drugs and blood tests [NHF – personal communication].

The data on drugs comprised the number of people who received drugs with Anatomical Therapeutic Chemical (ATC) classification codes A10, V04, V07 reimbursed by NHF (in the Polish system a refund for a strip test can be given only after diabetes diagnosis). The NHF database covers almost the entire population of Poland accessing the public health sector.

Datasets of services and drugs were combined using unique personal ID numbers. A person with diabetes was defined as

a person whose personal ID was found to at least one of the above datasets (services and drugs); i.e. they had a service coded by doctor as E10–E14 or had purchased reimbursed drugs or glucose blood tests (ATC codes: A10, V04, V07).

RECEPTOmetr Sequence study

RECEPTOmetr, available since 2011, is a commercial continuous data tool for monitoring of physician prescriptions based on a monthly survey of a sample of close to 2.5 million prescriptions. Data are collected automatically from the pharmacy systems of a nationwide panel of 800 (5.5% of 14 500 pharmacies in Poland). The structure of surveyed pharmacies is controlled for: (1) 16 geographical measures: regions; (2) three classes of location size: cities of $\geq 100\,000$ inhabitants, cities of up to 100 000 inhabitants and rural areas; (3) three types of pharmacy locations in cities that determine the client structure: pharmacies next to medical institutions, in shopping malls and on main streets and local/community pharmacies.

The dataset does not contain national ID numbers, which makes it impossible to match the data directly to the NHF database; however, it can identify multiple prescriptions per person using unique person identifiers without de-anonymizing the person. The age structure (in age groups) of the population observed in the RECEPTOmetr database does not deviate more than $\pm 0.8\%$ in comparison to the age structure reported in the NHF data. RECEPTOmetr data were compared with data reported in the NHF. The comparisons were made at the level of drug product brand, formulation, strength and package size. The average, volume-weighted deviation of volume of A10 products reported in RECEPTOmetr vs NHF data in 2013 was 1.4%.

Based on the data on purchased diabetes medicines and glucose blood tests (ATC codes: A10, V04, V07) from RECEPTOmetr and data on the total number of people who bought any drug reimbursed by the NHF, we estimated the total number of people who purchased diabetes prescriptions (either reimbursed or not) across the country.

Child diabetes registries in Poland

Data from four regional registers (Łódź, Podlasie, Pomorze and Śląsk ‘*voivodships*’) covering $\sim 27\%$ of the population with Type 1 diabetes at age 0–14 years were used in the study. In the analysis, we compared the number of children recorded in registries and the number in the NHF database to assess data coherence in these two sources [16,17].

NATPOL study

The NATPOL study in 2011 covered a representative sample (2411 examined persons, participation rate 67%) of Polish citizens aged 18–79 years. Diabetes was diagnosed based on the results of blood tests and interviews. Respondents who

did not report being diagnosed with diabetes and whose fasting blood glucose level measured during two visits was ≥ 7 mmol/l were considered as being unaware of having diabetes. Blood glucose was measured using the enzymatic method [hexokinase and glucose-6-phosphate dehydrogenase (Abbott Laboratories, Chicago, IL, USA); Architect c8000 analyser (Abbott Laboratories)]. Diabetes unawareness was identified for 2.39% (95% CI 1.63–3.50) of males and 0.68% (95% CI 0.39 to 1.19) of females. In both sexes, the unawareness prevalence was 1.52% (95% CI 1.09–2.10). Data from the NATPOL study have been published [24] and also came directly from the principal investigator of the study (T.Z.).

POLSENIOR study

The POLSENIOR study examined a representative sample of 5695 people (response rate 43%) aged ≥ 65 years in Poland in 2008–2011. Diabetes diagnosis was based on information from individuals on having diabetes and fasting glycaemia (blood glucose ≥ 7 mmol/l) measured during one visit (enzymatic photometric UV determination). In total, 17.9% of people were aware of having diabetes and 4.0% were not. In the age group ≥ 80 years, the prevalence of unawareness was 3.79% (95% CI 2.93–4.64) [25].

Statistical analysis

Results of the analysis of NHF databases are presented as numbers and percentages, crude and age-standardized. The direct method was used to standardize diabetes prevalence. We used the WHO European age structure as a standard, the same for men and women [26]. The group comprising all people with diabetes consisted of three subgroups: 1) people with diabetes according to NHF records, 2) individuals aged 18–79 years, who were unaware of having diabetes identified in the NATPOL study, and 3) individuals aged ≥ 80 years, who were unaware of having diabetes identified in the POLSENIOR study. To estimate the variance in the total number of individuals with diabetes, we estimated the variance in each of these groups. Assuming the Poisson distribution of the number of individuals in each group, the total variance was obtained as the sum of three variances [27]. In calculating variance in the NATPOL study, we took into account the sampling design effect which is the effect of the complex sampling method applied [28]. In the case of the POLSENIOR study, we had to assume simple sampling because of the lack of the design effect parameter. Based on estimated variance, the CIs of the prevalence of people with diabetes were estimated. Data from RECEPTOmetr and children’s registries were used only for comparison of the data with information from the NHF, and not used for calculation of the total prevalence of diabetes in Poland.

Data for populations were taken from the Central Statistical Office, Demographic Yearbook of Poland [29]. Analysis

was performed using MS Excel, Microsoft, USA and SPSS v.21, IBM, USA.

Results

According to the NHF registers, in 2013, the number of people with medical consultations described with diabetes codes E10–E14 was 1.76 million (0.98 million women and 0.79 million men). The number of people purchasing drugs or strip tests for diabetes, however, was greater than the number of medical appointments (~0.35 million more people) and, in 2013, it reached 2.13 million people: 1.19 million women and 0.94 million men. Not every person who used medical services bought drugs; the number of such persons was 0.04 million.

In total, on the basis of the data on medical consultations and reimbursed drugs, the number of people with diabetes in Poland in 2013 was 2.16 million, 1.21 million women and 0.95 million men. This equates to 5.65% (95% CI 5.64–5.65) of the population, 6.13% (95% CI 6.12–6.14) of women and 5.13% (95% CI 5.12–5.14) of men (Tables 1 and 2).

According to the RECEPTOmetr Sequence database, the percentage of people who bought any diabetes drugs (A10) was 7.9%, and diabetes drugs or strip tests accounted for 9.5% of all pharmacy sales. The total number of people who bought any drug reimbursed by the Polish national health system was 23 340 291 (information from the NHF). Recalculation from the RECEPTOmetr sample to represent the whole country resulted in a total of 2.22 million people who bought drugs or strip tests in 2013. We may therefore estimate the number of people who purchased drugs outside the NHF system (i.e. not reimbursed) to be 90 000.

The data on the number of children with Type 1 diabetes for the 2013 year originated from scientific university registries, established in 1989 for four 'voivodships' (administrative areas), in which 26.7% of the total Polish population of children aged < 14 years lived in 2013 [16,17].

In these databases, 2084 children with Type 1 diabetes were registered, while in the NHF database (in the same four voivodships), there were 2083 children.

To the number of people diagnosed with diabetes, we added people who were not aware of having the disease but were likely to have it according to blood glucose levels. This number was estimated taking into account the results of the NATPOL study (at age 18–79 years) and the POLSENIOR study (age ≥80 years). Combining the number of people benefiting from medical services or drugs financed by the NHF, people paying for drugs out of their own pockets and people unaware of having the disease (according to the NATPOL and POLSENIOR studies) resulted in the total percentage of people with diabetes in Poland in 2013 being ~6.97% (Table 3).

Discussion

According to the results of the present study, the number of people with diabetes was estimated to be 2.68 million, of whom 2.17 million were aware and 0.51 million were unaware that they had diabetes.

The study is a unique attempt to analyse a complete database of contracted medical services and reimbursed drugs for people with diabetes maintained by the only public insurance fund in Poland. This was complemented by the use of additional data sources covering further groups of people with the disease.

According to a survey of the adult Polish population conducted by Statistics Poland, the percentage of people who reported having diabetes diagnosed by a doctor was set at ~6.6% of the population aged ≥15 years [2]. A slightly lower prevalence of diabetes was estimated in SCREENPOL-2 (5.4%) [31]. In that study, diabetes was diagnosed according to the WHO diabetes standards that were set in 1999 [32]. Where diabetes was determined on the basis of biochemical analysis, the prevalence was higher, and reached 6.7% in the NATPOL study (2011) and 6.8% in the WOBASZ study (2003–2005) [33]. The International Diabetes Federation estimated the number people aware of their diabetes to be 1.870 million people (6.5%) and those not aware 1.105 million [4]; however, it considered only people aged 20–70 years. The results of the POLSENIOR study were very close to the estimates of the present study in relation to the age group >65 years [25].

Table 1 Prevalence of diabetes in Poland in 2013, based on healthcare provided by the National Health Fund

	People with diabetes	Population	Crude prevalence, % (95% CI)	Standardized prevalence *, % (95% CI)
Men	955 996	18 634 367	5.13 (5.12–5.14)	4.68 (4.67–4.69)
Women	1 217 620	19 868 029	6.13 (6.12–6.14)	4.31 (4.30–4.32)
Total	2 173 616	38 502 396	5.65 (5.64–5.65)	4.50 (4.49–4.50)

*Age adjusted to WHO European standard population.

Table 2 Percentage of population with medical consultation* related to diabetes and drugs for diabetes reimbursed by the National Health Fund by age group and sex

Age group	Percentage of people with medical consultation for diabetes			Percentage of people buying reimbursed drugs or strip tests for diabetes			Both [†]		
	Women	Men	Total	Women	Men	Total	Women	Men	Total
0–4 years	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.0
5–9 years	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
10–14 years	0.2	0.3	0.2	0.4	0.3	0.4	0.3	0.4	0.3
15–19 years	0.3	0.3	0.3	0.4	0.3	0.3	0.4	0.3	0.5
20–25 years	0.4	0.4	0.4	0.8	0.3	0.5	0.6	0.4	0.4
25–30 years	0.4	0.3	0.4	0.9	0.4	0.6	0.9	0.4	0.6
30–35 years	0.5	0.5	0.5	1.0	0.6	0.8	1.0	0.5	0.8
30–35 years	0.6	0.8	0.7	1.0	0.9	1.0	1.0	1.0	1.0
40–45 years	1.0	1.6	1.3	1.3	1.8	1.6	1.3	1.9	1.6
45–50 years	1.7	2.8	2.2	2.0	3.3	2.7	2.1	3.4	2.8
50–55 years	3.2	4.8	4.0	3.8	5.7	4.7	3.9	5.8	4.8
55–60 years	6.1	8.2	7.1	7.3	9.5	8.4	7.4	9.8	8.6
60–65 years	10.5	12.4	11.3	12.4	14.3	13.3	12.5	14.7	13.5
65–70 years	15.5	16.5	16.0	18.0	19.1	18.6	18.3	19.5	18.8
70–75 years	19.1	18.2	18.7	22.3	21.3	22.0	22.7	21.7	22.3
75–80 years	20.8	18.6	20.0	24.7	22.4	23.9	25.2	22.9	24.3
80–85 years	20.3	18.2	19.6	24.9	22.6	24.1	25.5	23.2	24.7
85–90 years	17.7	16.5	17.3	22.7	21.2	22.3	23.4	22.0	22.9
90–95 years	14.3	14.0	14.2	19.3	18.9	19.2	20.1	19.6	19.9
95–100 years	10.7	10.5	10.7	15.2	15.4	15.2	16.1	16.1	16.1
>100 years	6.5	3.9	6.0	10.0	6.6	9.4	10.6	7.2	10.0
Total	4.9	4.3	4.6	6.0	5.0	5.6	6.1	5.1	5.7

*Medical consultation defined as a service provided by a physician with the purpose of diagnosis or treatment in primary or secondary care, or hospital.

[†]Last three columns contain percentage of people who received medical consultation or bought a drug for diabetes.

Table 3 Prevalence of diabetes in Poland in 2013, including data on healthcare usage (National Health Fund, RECEPTometr, Children Registries), and number of people unaware that they have diabetes, assessed in the population studies NATPOL and POLSENIOR

	Data source			
	Data from National Health Fund			
	Number of people with diabetes	Number of population	Crude prevalence, % (95% CI)	NATPOL People with undiagnosed diabetes, % (95% CI) POLSENIOR People with undiagnosed diabetes, % (95% CI)
Aware of presence of diabetes				
Men (all ages)	951 741	18 634 367	5.13 (5.12–5.14)	
Women (all ages)	1 212 228	19 868 029	6.13 (6.12–6.14)	
Men and women (all ages)	2 163 969	38 502 396	5.65 (5.64–5.65)	
Unaware of presence of diabetes				
Men aged 18–79 years				2.39 (1.63–3.50)
Women aged 18–79 years				0.68 (0.39–1.19)
Men and women aged ≥80 years				3.79 (2.93–4.64)
Total				6.97 (6.96–6.98)

Studies in which the outcome was based on an objective assessment of blood glucose (NATPOL and WOBASZ) showed that the proportion of men with undiagnosed

diabetes exceeded that of women. According to the European Health Interview Survey (EHIS) conducted by Statistics Poland, the number of women reporting diagnosed diabetes

was higher than the number of men, which may suggest a greater awareness of the disease among women and perhaps a higher detection rate; this was also found in the NATPOL study [24,30]. The 2017 Global Burden of Disease Study estimated the percentage of people with diabetes to be 4.73% (95% CI 4.27–5.16), or 1.73 million people [34].

The number of people with diabetes estimated using data from medical consultations was ~350 000 lower than the number of people with diabetes obtained from data on reimbursed drugs and test strips used in diabetes care. This may be an effect of not reporting diabetes during a consultation, even if the prescription is issued at that time. Another possible reason is incomplete reporting with ICD codes of single visits in primary care.

Unfortunately, because of the insufficient quality of ICD coding for type of diabetes in NHF databases it was not possible to present the data separately for Type 1 and Type 2 diabetes.

The NHF database and the regional registers of the diabetes population aged 0–14 years have a high degree of similarity, and above all are complementary. Such close agreement may be seen as a positive corroboration of the completeness of the NHF data. The coding in the NHF database is based on ICD-10 (insulin-dependent diabetes mellitus) which is not always equivalent to the diagnosis of Type 1 diabetes (insulin-dependent diabetes with positive antibodies); however, in the paediatric population, diagnosis coded with ICD-10 and diagnosis of Type 1 diabetes overlapped by almost 100% [16,17].

Data from the RECEPTometr study enabled us to estimate the number of people buying diabetes drugs or strip tests using a different methodology for gathering data in addition to use of the NHF, and the results from both these sources were very close. The main methodological advantage was the possibility to confirm the data estimated from the NHF system through the use of another data system.

Estimation of the numbers of people unaware they had diabetes was based on two representative national epidemiological studies with measurement of fasting glucose level at two visits (NATPOL) and at one visit (POLSENIOR) [24,25]. Despite the high participation rate in the NATPOL study, it is very difficult to assess the bias caused by non-participation. Research studies described in the literature show that a single measurement of glucose level or a lack of objective measurements more often leads to underestimation than overestimation of the proportion of people with diabetes [35]. The eighth edition of the *Diabetes Atlas* presents various percentages of people unaware of having diabetes depending on the definition of diabetes used. Results based on HbA_{1c} values show that 20% of people were unaware that they had diabetes, 27% were unaware based on fasting glucose values and 44–61% were unaware based on oral glucose tolerance tests [4].

The adopted criteria for diagnosing diabetes based on reimbursement data have some limitations. There is a

possibility that not all people with diabetes received a medical consultation or purchased diabetes medication by prescription; however, this is not very likely in a yearly observation. It is possible that a person with health insurance may use private medical services and may purchase drugs at full price without an NHF refund. The private health market is rapidly changing. From 2013 to 2016 the number of people who had private insurance increased from 0.8 million to 1.8 million people (increasing from 2% to 5% of the total population). According to a study by Statistics Poland in 2016, a proportion as high as 96.0% of the Polish population had public health insurance and 6.5% had additional private health insurance [36,37]; however, it seems that the under-estimation of the number of people using private medical services will be minor, since even when the medical service was provided by doctor's surgery without an NHF contract, this doctor can still issue a reimbursed prescription, and this way it is registered in the system. Our estimation of the number of non-reimbursed prescriptions showed that this group was relatively small.

The estimation of the percentage of people not eligible for national healthcare in Poland raises many problems. According to information given by the NHF in November 2013, the percentage of such people was estimated at 7.5%, mainly young people without official employment. Unfortunately, the authors were not able to assess the stability of this proportion in 2013, or the persistence of the population with such status. This indicator could refer to the specific day on which the verification was performed and therefore can vary over time. Furthermore, some people may have been entitled to public healthcare in 2013 and may have used their right to have their treatment reimbursed, and then might have lost that right as a result of verification conducted by NHF during this period. They might also have paid insurance tax (individually or through their employer) and then returned to the public healthcare system in 2013, and thus were included in our analysis. Because of the many doubts in this area, these issues were ignored in our analysis, although this is undoubtedly an important challenge for the completeness of further estimates.

The limitations associated with the present analysis show the need to establish a reliable system for health assessment and for the collection of medical data, which would then support decision-making through reliable, easily accessible reports on serious diseases. The analysis was conducted on the basis of the most complete database of public health insurance and on the results of epidemiological studies assessing both those diagnosed with diabetes and those unaware of their diabetes. The analysis based on NHF databases is a valuable and objective way to identify the disease burden in the population when the health problem is not sufficiently represented in mortality data. In relation to population studies, this method shows a better completeness of data for diseases with simple diagnostic criteria treated predominantly in the public healthcare system. It is also

faster and cheaper. This is limited to people with diagnosed disease and to people who are beneficiaries of the public healthcare system, and therefore requires supplementation with data from additional sources. In Poland, however, the latter issue will change because, from January 2017, primary healthcare has been available free for all citizens, and, since January 2018, the health insurance system has granted access to primary health care to all on equal terms.

In the present analysis, we combined data from epidemiological studies with claims data from the national health insurance system for the first time and may have improved the prevalence estimates for Central and Eastern Europe. The healthcare and statistical systems of Central and Eastern European countries originate from the same model of healthcare used during the period of communism, which included universal health insurance (although this was sometimes theoretical because of low economic development) and have inherent problems with regard to the assessment of disease prevalence. In countries where reporting stayed centralized and with similar access to care, the method used in the present study may be appropriate. Estimates from Poland, the biggest country in Central and Eastern Europe, may improve the assessment of disease burden for the region.

In conclusion, the prevalence of diabetes in Poland, estimated on the basis of the complete national public insurance register and the records of the number of reimbursed medical consultations and drug purchases, combined with the assessment of the size of the undiagnosed group, was determined to be 6.97% of the total population.

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Competing interests

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