ORIGINAL STUDY

Эпидемиология сахарного диабета в Российской Федерации: клинико-статистический анализ по данным Федерального регистра сахарного диабета

© И.И. Дедов[1], М.В. Шестакова[1,2], О.К. Викулова[1,2]

[1]ФГБУ Эндокринологический научный центр Минздрава России, Москва
[2]ФГАОУ ВО Первый МГМУ им. И.М. Сеченова Минздрава России (Сеченовский Университет), Москва

Цель. *Провести анализ основных эпидемиологических характеристик сахарного диабета (СД) в РФ (распространенности, заболеваемости, смертности, продолжительности жизни), состояния компенсации углеводного обмена и распространенности диабетических осложнений (ретинопатии, нефропатии, синдрома диабетической стопы, макрососудистой патологии) по данным регистра СД.*

Материалы и методы. *Объектом исследования является база данных Федерального (ранее Государственного) регистра СД – 79 регионов РФ, включенных в систему онлайн-регистра на 31.12.2016 года.*

Результаты. *Общая численность пациентов с СД в РФ на 31.12.2016 г. составила 4,348 млн человек (2,97% населения РФ), из них: 92% (4 млн) – СД2, 6% (255 тыс.) – СД1 и 2% (75 тыс.) – другие типы СД. Распространенность СД/100 тыс. населения: СД1 – 164,19/100 тыс., СД2 – 2637,17/100 тыс., другие типы СД – 50,62/100 тыс. Показатели смертности/100 тыс. населения при СД1: 2,1/100 тыс., СД2: 60,29/100 тыс., другие типы СД: 0,57/100 тыс. населения. В динамике 2013–2016 гг. зарегистрировано снижение смертности при СД1 на 6,6%, при СД2 – на 3,6%. Продолжительность жизни при СД1: муж. – 50,3 года, жен. – 58,5 лет; при СД2: муж. – 70,1 года, жен. – 75,5 лет. Уровень HbA_{1c} при СД1: <7% – 33,4%, 7–7,9% – 28,3%, 8–8,9% – 16,2%, ≥9,0% – 22,1% пациентов; при СД2: <7% – 52,1%, 7–7,9% – 29,1%, 8–8,9% – 10%, ≥9,0% – 8,7% пациентов.*

Выводы. *Установлено, что в РФ в 2016 г. и в динамике 2013–2016 гг. сохраняется рост распространенности СД, преимущественно за счет СД2; отмечается увеличение количества пациентов с достижением целевого уровня HbA_{1c} менее 7% и уменьшение доли пациентов с выраженной декомпенсацией СД, однако частота исследования ключевого индикатора эффективности терапии неудовлетворительная – менее чем у трети пациентов с СД. В динамике за период 2013–2016 гг. отмечается увеличение продолжительности жизни пациентов с СД2 и снижение смертности при обоих типах СД. Частота диабетических осложнений широко варьирует, что может отражать различия в качестве оказания специализированной помощи в различных регионах.*

Ключевые слова: *сахарный диабет; регистр сахарного диабета; распространенность СД; заболеваемость СД; смертность при СД; распространенность диабетических осложнений*

Epidemiology of diabetes mellitus in the Russian Federation: clinical and statistical report for 2016 according to the federal diabetes registry

Ivan I. Dedov[1], Marina V. Shestakova[1,2], Olga K. Vikulova[1,2]

[1]Endocrinology Research Centre, Moscow, Russia
[2]I.M.Sechenov First Moscow State Medical University, Moscow, Russia

Aim. *We analysed the main epidemiological characteristics of diabetes mellitus (DM) in the Russian Federation (prevalence, incidence, mortality and mean life span), degree of diabetes control, and prevalence of diabetic complications (retinopathy, nephropathy, and diabetic foot syndrome and macrovascular pathology) according to the federal DM registry.*

Materials and methods. *The database of the federal DM registry of 79 regions was included using the online system until 31.12.2016.*

Results. *TThe total number of patients with DM in the Russian Federation on 31.12.2016 was 4.348 million (2.97% of the population), comprising 4 million patients with DM2 (92%), 255,000 with type 1 diabetes (T1DM) (6%), and 75,000 with other types of DM (2%). DM prevalence per 100,000 population was as follows: T1DM, 164.19/100,000; type 2 diabetes (T2DM), 2637.17/100,000; and other types of DM, 50.62/100. The incidence per 100,000 population was as follows: T1DM, 16.15/100,000; T2DM, 154.9/100,000; and other types of DM, 8.65/100,000. Mortality per 100,000 population was as follows: T1DM, 2.1/100,000; T2DM, 60.29/100,000; and other types of DM, 0.57/100,000. Mortality decreased in patients with T1DM by 6.6% and with T2DM by 3.6%. Mean life span in patients with T1DM was 50.3 years for men and 58.5 years for women. Mean life span in patients with T2DM was 70.1 years for men and 75.5 years for women. Glycated haemoglobin*

Received: 15.01.2017. Accepted: 22.02.2017.

Сахарный диабет. 2017;20(1):13-41 doi: 10.14341/DM8664 Diabetes Mellitus. 2017;20(1):13-41

A1c (HbA1c) levels in T1DM was <7% in 33.4%, 7%–7.9% in 28.3%, 8%–8.9% in 16.2%, and ≥9.0% in 22.1% of patients. HbA1c levels in T2DM was <7% in 52.1%, 7%–7.9% in 29.1%, 8%–8.9% in 10%, and ≥9.0% in 8.7% of patients.
***Conclusions**. This study evaluated the increase in DM prevalence in the Russian Federation in 2016 and in the dynamics of 2013–2016, which was mainly due to T2DM. An increase in patients with a target HbA1c level <7% and a decrease in the proportion of patients with severe uncontrolled DM was observed; however, the treatment effectiveness of this key indicator was unsatisfactory, i.e. less than a third of the patients with DM. In the dynamics of 2013–2016, an increase in mean life span for patients with T2DM and mortality reduction in patients with T1DM and T2DM was observed. The frequency of diabetic complications varied widely, which may reflect differences in the quality of specialised care in different regions.*
***Key words:** diabetes mellitus; diabetes registry; prevalence of DM; incidence of DM; mortality in DM; prevalence of diabetic complications*

Diabetes mellitus (DM) is a chronic non-infectious disease, and its prevalence has reached global epidemic [1–4]. The enormous economic costs and social damage associated with the increase in the prevalence of DM and diabetic complications, high disability rate and mortality of this disease, led to the adoption of the United Nations (UN) Resolution in 2006 that declared a worldwide threat of DM and called for the development of national programmes on prevention, treatment and prophylaxis of diabetes and its complications.

Under these conditions, the organisation of a system for recording and monitoring DM indicators became a priority for the first order of national health systems. Thus, the development of the structure of the DM registry, which is a key source of epidemiological data, assumed national significance.

In the Russian Federation, clinical and epidemiological monitoring of DM has been performed since 1996 through the State Registry of DM Patients (SRDP), which is a methodological and organisational reference centre in the Federal State Budgetary Institution Endocrinology Research Centre of the Ministry of Health of Russia [5]. The SRDP was created by the Order of the Ministry of Health of the Russian Federation No. 404 on 10 December 1996 within the framework of the Federal Target Programme 'Diabetes Mellitus.' Over a 20-year period, the work of the registry played a key role in assessing the prevalence of DM and diabetic complications in the Russian Federation [6]. However, until recently, data analysis was conducted statically, representing a single-step cross-section for the period of the end of the calendar year based on the summation of databases of individual subjects in the Russian Federation.

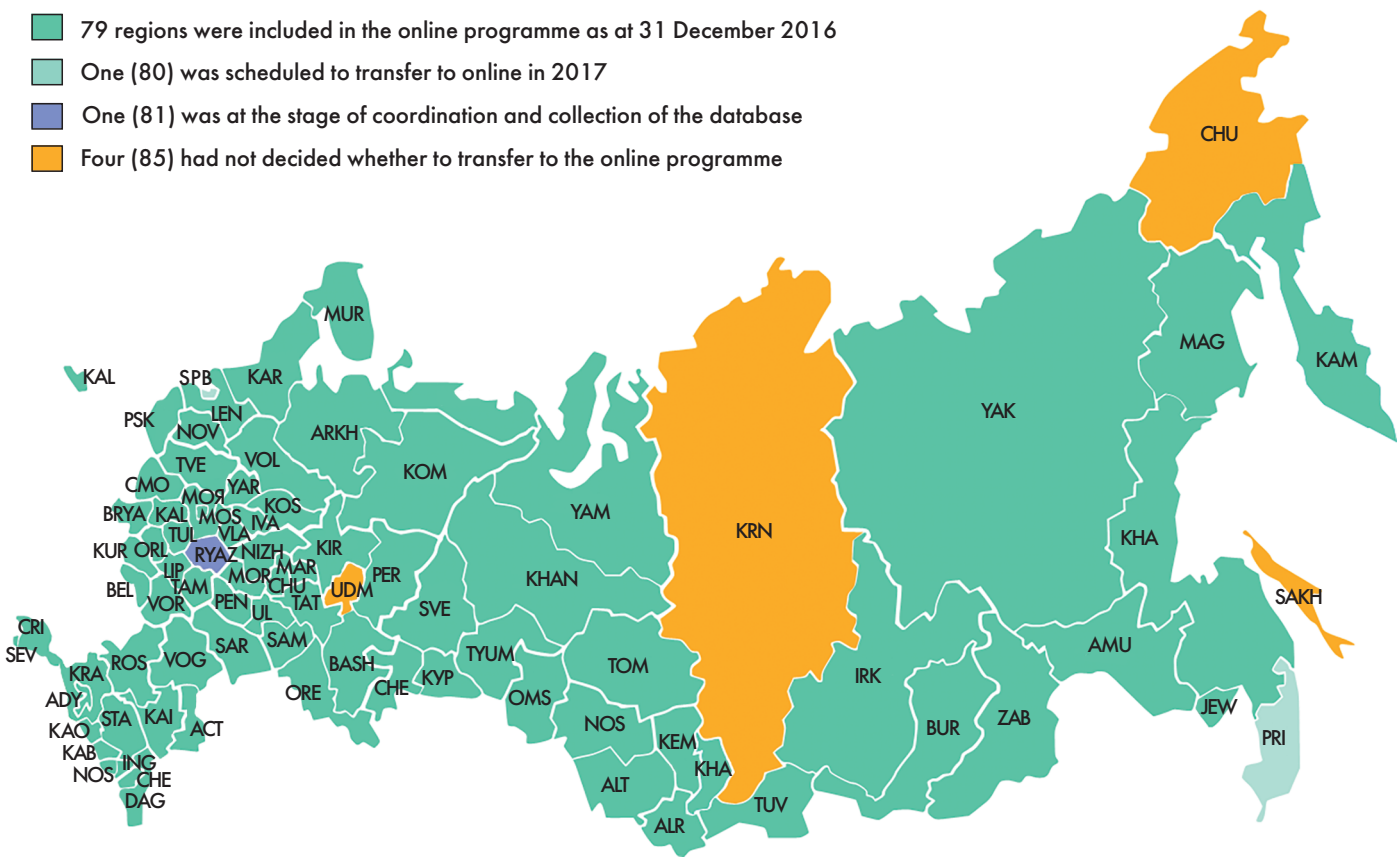


Fig. 1 Regions of the Russian Federation included in the system of the online DM registry as at 31.12.2016

Table 1

Indicators of DM prevalence in different age groups in 79 regions, as at 31 December 2016

79 regions of the Russian Federation	Number of patients				Per 100,000 population		
	T1DM	T2DM	Other types of DM	Total	T1DM	T2DM	Other types of DM
Total	227 514	3 654 182	70 142	3 951 838	164,19	2637,17	50,62
Children	20 468	1261	235	21 964	86,73	5,34	1,00
Adolescents	7748	260	100	8108	203,29	6,82	2,62
Adults	199 298	3 652 661	69 807	3 921 766	179,30	3286,13	62,80

Table 2

Indicators of the incidence of DM in different age groups in 79 regions, as at 12/31/2016

79 regions of the Russian Federation	Number of patients				Per 100,000 population		
	T1DM	T2DM	Other types of DM	Total	T1DM	T2DM	Other types of DM
Total	8516	214 668	11 989	235 173	6,15	154,92	8,65
Children	2780	358	56	3194	11,78	1,52	0,24
Adolescents	306	35	18	359	8,03	0,92	0,47
Adults	5430	214 275	11 915	231 620	4,89	192,77	10,72

Currently, the name of the SRDP has been transformed into a single federal database with authorised online access, which does not require the transfer of databases of regional registry segments. A distinctive feature of the modern registry is the possibility of online data entry and dynamic monitoring of indicators at any level, from an individual institution to a district, region and the Russian Federation as a whole. In addition, a new format of the registry enables system control of important parameters such as regulation of updating information and the quality of the data entered, including monitoring duplicates, entry of erroneous social and demographic characteristics, and therapies that do not meet the modern standards.

The purpose of the new registry system is to increase the efficiency of work as a key scientific and analytical platform to implement organisational and management decisions for the development and improvement of diabetes care in the Russian Federation.

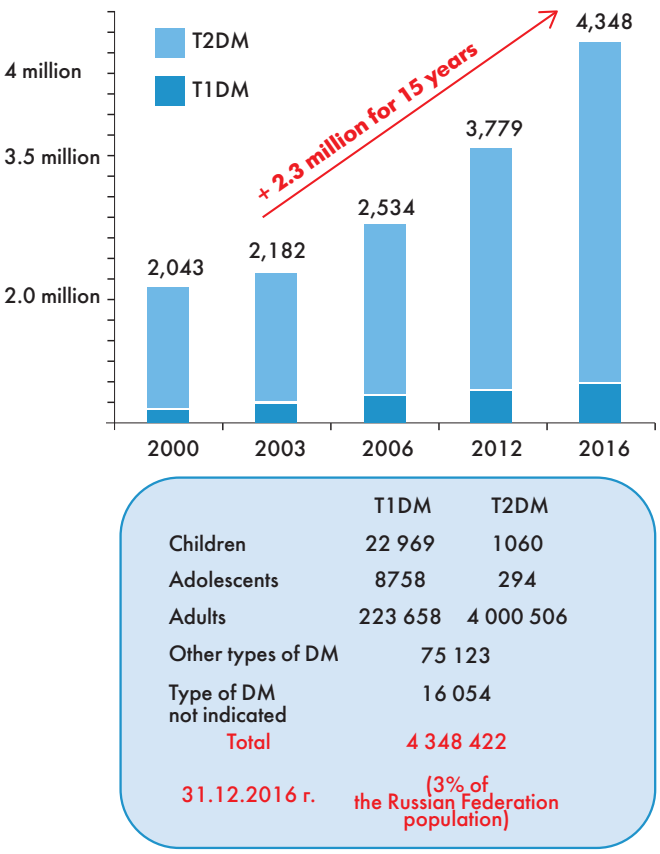


Fig. 2 Total number of DM patients according to the data of the DM registry of the Russian Federation for the period 2000–2016

Materials and Methods

The focus of the study was the database of the Federal DM Registry, comprising 79 regions of the Russian Federation included in the online registry system on 31 December 2016 (Fig. 1). The total number of DM patients in the Russian Federation was calculated using data from the Federal State Statistics Service (Rosstat) [7] on the number of DM patients in six regions that do not use online registry system.

Results

Analysis of prevalence of DM in the Russian Federation

The total number of DM patients in the Russian Federation (85 regions, taking into account six regions according to the Rosstat) on 31 December 2016, was 4.348 million (3% of the Russian Federation population), including: type 2 DM (T2DM) (92%; 4,001,860 people), type 1 DM (T1DM) (6%; 255,385 people), and other types of DM (2%; 75,123 people). In 16,054 patients, the type of DM was not indicated in the database (Fig. 2).

Thus, there has been a stable increase in the prevalence of DM in the Russian Federation, with an increase of 569,000 patients compared with 3.779 million as at 31 December 2012 [6], and an increase of 254 thousand compared with 4094 million patients as at 01/01/2015 [8].

The prevalence rate of DM by age group is presented according to the online registry in 79 regions of the Russian Federation (Table 1). Relevant data on DM prevalence in

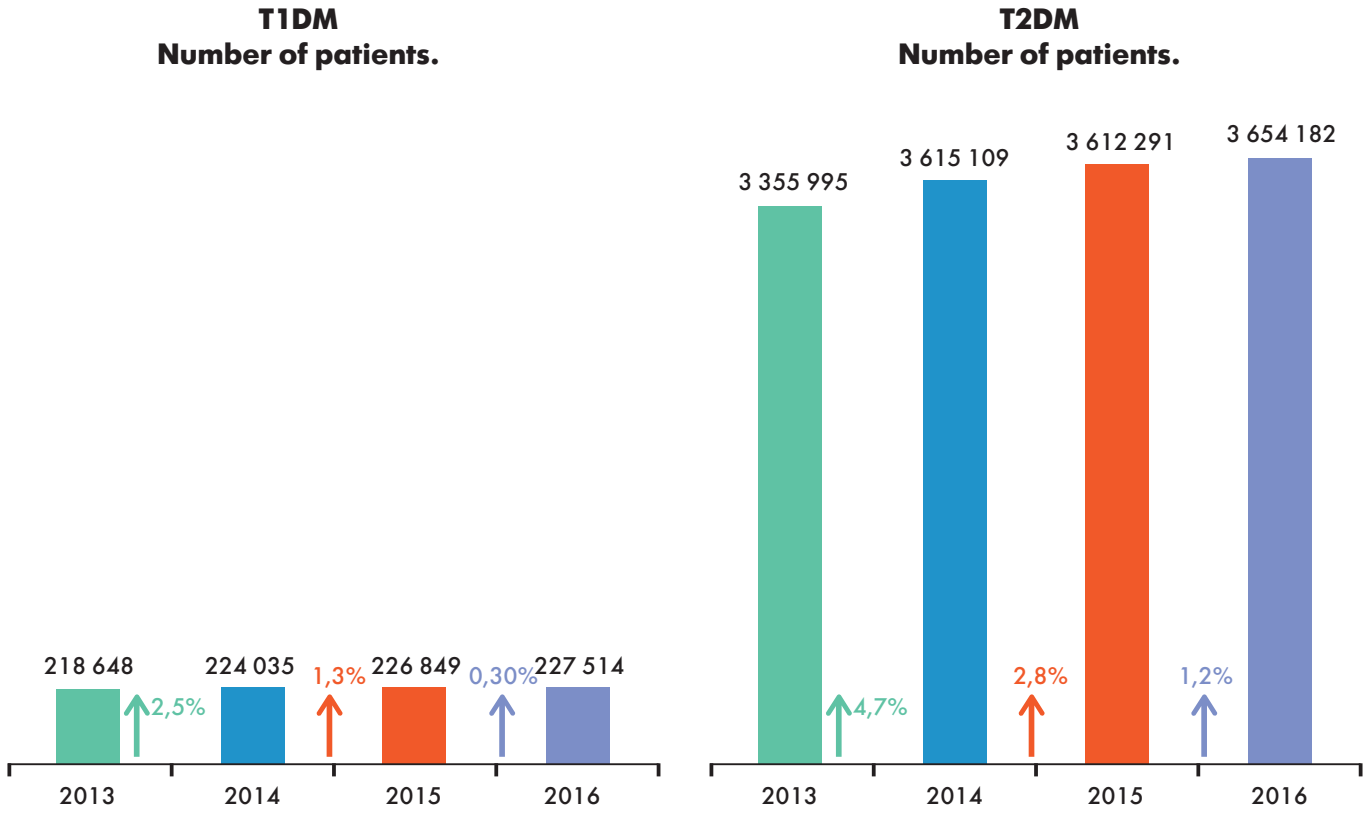


Fig. 3 Dynamics of prevalence of T1DM and T2DM from 2013–2016 in 79 regions of the Russian Federation

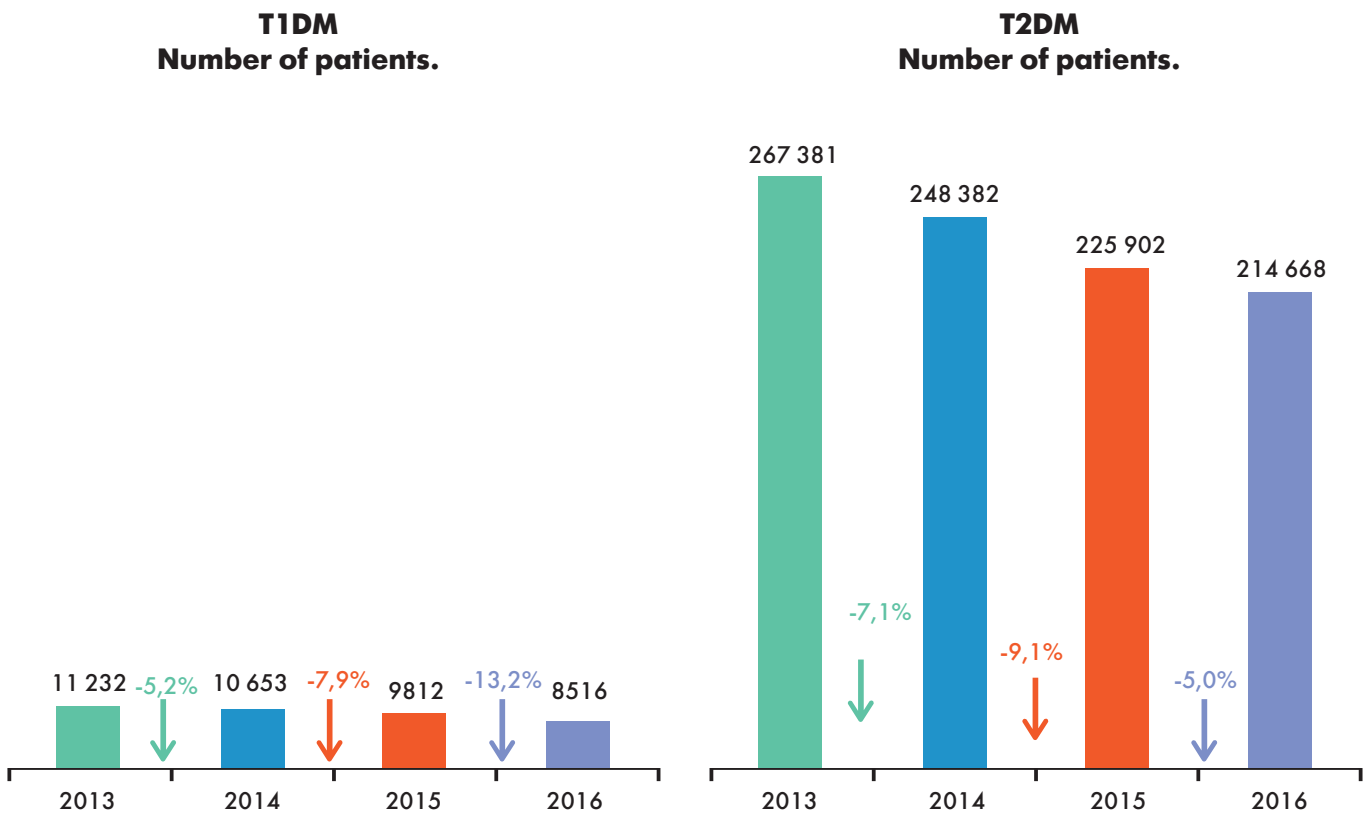


Fig. 4 Dynamics of incidence of T1DM and T2DM from 2013–2016 in 79 regions of the Russian Federation

Table 3

Mortality rates for DM in different age groups in the 79 regions, as at 12/31/2016

79 regions of the Russian Federation	Number of patients				Per 100,000 population		
	T1DM	T2DM	Other types of DM	Total	T1DM	T2DM	Other types of DM
Total	2 964	84 867	823	88 654	2,22	63,66	0,62
Children	11	8	1	20	0,05	0,03	0
Adolescents	4	1	0	5	0,10	0,03	0
Adults	2 949	84 858	822	88 629	2,66	76,35	0,74

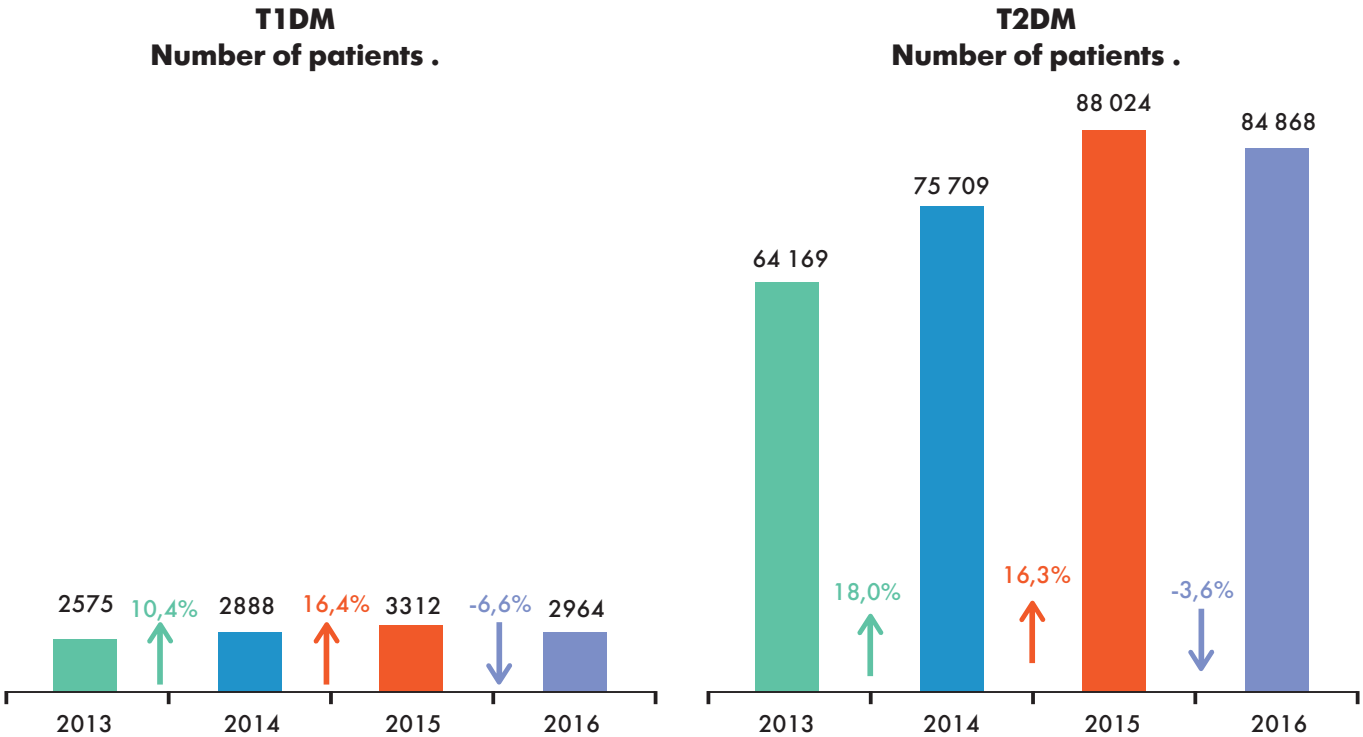


Fig. 5 Dynamics of mortality in patients with T1DM and T2DM in 79 regions of the Russian Federation, 2013–2016

each of the 79 regions are presented in Appendix 1, Tables 1–4, all age groups: children, adolescents and adults, respectively (published as an online application).

The prevalence of DM per 100,000 of the population in different age groups.

Total of all age groups:

T1DM: 164.19 per 100,000 of the population;

T2DM: 2637.17 per 100,000 of the population;

Other types of DM: 50.62 per 100,000 of the population.

There was an increase in the prevalence of DM per 100,000 of the population compared with the data from 2015: T1DM increased from 157.4 to 164.19 per 100,000 of the population, and T2DM increased from 2518.3 to 2637.17 per 100,000 of the population.

In the paediatric age group:

T1DM: 86.73 per 100,000 children;

T2DM: 5.34 per 100,000 children;

Other types of DM: 1.0 per 100,000 children.

There was an increase in the prevalence of T1DM per 100,000 children compared with the data from 2015, from 70.2 to 86.73 per 100,000 children.

In the adolescent age group:

T1DM: 203.29 per 100,000 adolescents;

T2DM: 6.82 per 100,000 adolescents;

Other types of DM: 2.62 per 100,000 adolescents.

There was an increase in the prevalence rate of T1DM per 100,000 adolescents compared with the data from 2015, from 164.1 to 203.29 per 100,000 adolescents. A high prevalence of T2DM among children and adolescents persists (5.3 and 6.8 per 100,000, respectively). This dangerous tendency may result from the high prevalence of overweight and obesity, not only in adults, but also in children and adolescents.

In the adult age group:

T1DM: 179.3 per 100,000 adults;

T2DM: 3286.6 per 100,000 adults;

Other types of DM: 62.8 per 100,000 adults.

In the adult age group, an increase in the prevalence of all types of DM was noted compared with the data from 2015: T1DM increased from 175.2 to 179.3 per 100,000 adults, T2DM increased from 3125.6 to 3286.6 per 100,000 adults, and other types of DM increased from 55.2 to 62.8 per 100,000 adults.

The dynamics of the prevalence of T1DM and T2DM from 2013–2016 according to the online registry in 79 regions of the Russian Federation (Fig. 3).

The primary increase in the prevalence of DM is due to T2DM, which reflects the global tendency in the increase

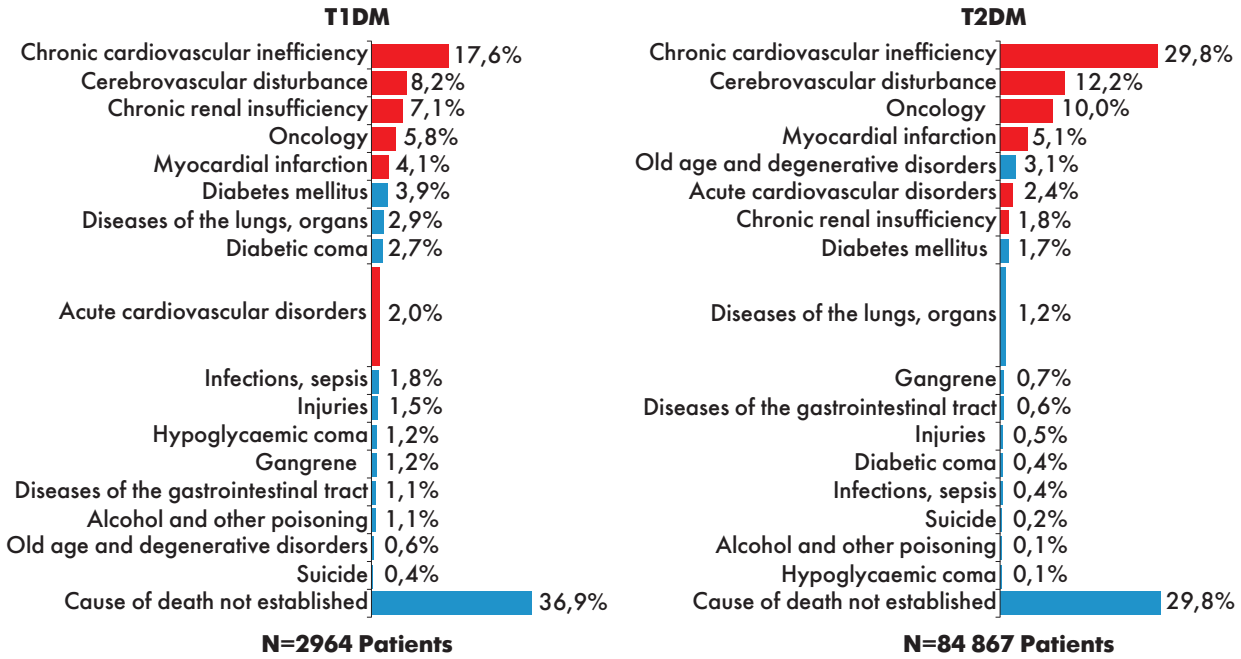


Fig. 6 Structure of mortality of patients with DM in 79 regions of the Russian Federation as at 12/31/16

in the proportion of T2DM among the total number of DM patients.

Despite a decrease in the dynamics of growth of T2DM in 2016 (+1.2%) compared with 2014–2015 (+4.7 and 2.8%, respectively), it is too early to regard this as a sign of a stop in the growth rate. This can be explained by the active work to identify duplicated patients in the registry database (in 2016 more than 80,000 duplicates were removed). However, the marked deterioration in the detection of new cases of T2DM in recent years is the most significant, and is confirmed by data on the reduction of the incidence rate registered (Fig. 4). Thus, the results of a large-scale National Epidemiological Study (NATION) showed that fewer than 50% of patients with T2DM are diagnosed in routine clinical practice. According to this study, the actual prevalence of T2DM in the adult population of Russia is 5.4% of the population, of which more than half (2.9%) accounts for previously unidentified T2DM that was only detected during the study (20% of the glycated hemoglobin (HbA1c) values at the time of diagnosis exceeded 9% [9]). This constitutes an extreme threat for the long-term prognosis of such patients who are not monitored by a doctor, receive no treatment, and therefore have a high risk of development of vascular complications. The NATION results again underscore the necessity to develop government programmes aimed at active screening of T2DM in the population, especially in at-risk groups.

Unlike the increase in prevalence of T2DM, the dynamics of T1DM can be regarded as having plateaued. In terms of prevalence per 100,000 of the population, the prevalence rate of T1DM in all age groups is registered, which again confirms the relative nature of this tendency.

Analysis of incidence of dm in the russian federation

The incidence rates of DM in different age groups are presented according to the online registry in 79 regions of

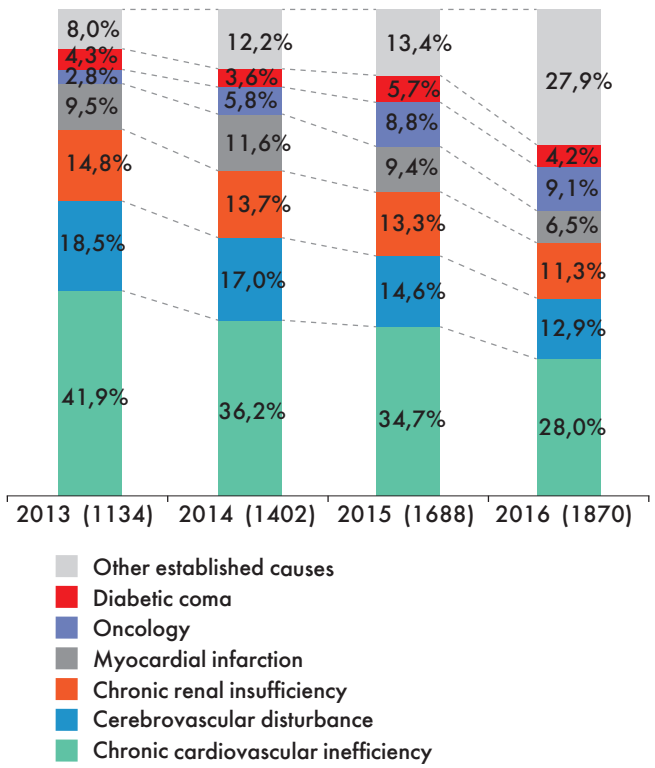
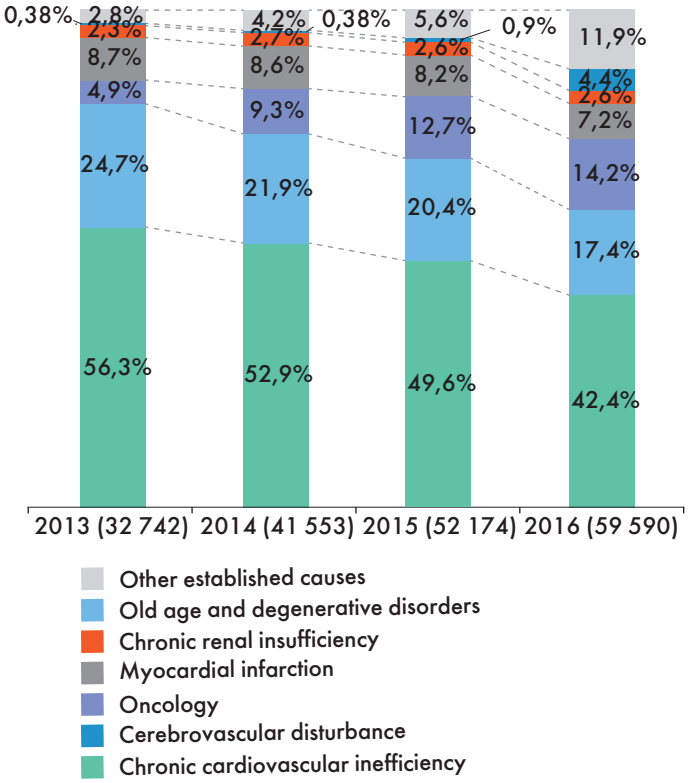


Fig. 7 Dynamics of established causes of death in T1DM, 2013–2016 (as at 12/31/16)

the Russian Federation (Table 2). The indicators of the incidence of DM in each of the 79 regions of the Russian Federation are presented in Appendix 2, Table 1 (published as an online application).

In 79 regions of the Russian Federation in 2016, 235,173 new cases of DM were registered: 8516 patients with T1DM (3.6%), 214,668 patients with T2DM (91.3%), and 11,989 patients with other types of DM (5.1%), In terms of morbidity per 100,000 people, this amounted to:



PFig. 8 The dynamics of established causes of death in T2DM, 2013–2016. (as at 12/31/16)

T1DM: 6.15 per 100,000 of the population;
T2DM: 154.9 per 100,000 of the population;
Other types of diabetes: 8.65 per 100,000 of the population.

Compared with the data of 2015, this was:
T1DM: 6.2 per 100,000 of the population;
T2DM: 152.7 per 100,000 of the population;

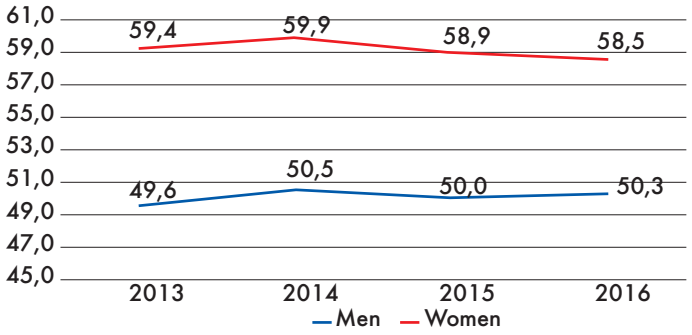


Fig. 9 Dynamics of life expectancy of patients with T1DM in 79 regions of the Russian Federation, 2013–2016

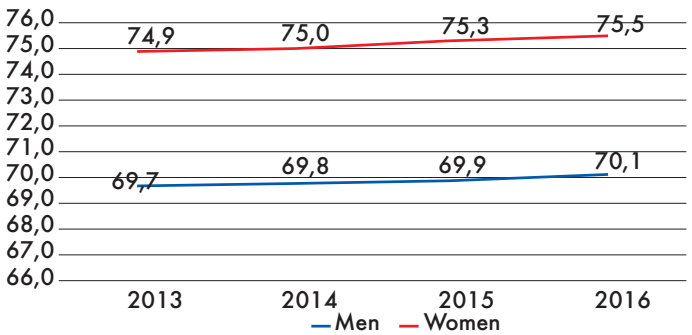


Fig. 10 Dynamics of life expectancy of patients with T2DM in 79 regions of the Russian Federation, 2013–2016

Other types of diabetes: 7.2 per 100,000 of the population.

There was an increase in the incidence of DM per 100,000 of the population in 2016, which was most pronounced for T2DM.

Dynamics of the incidence of T1DM and T2DM from 2013–2016 according to the online registry in 79 regions of the Russian Federation (Fig. 4).

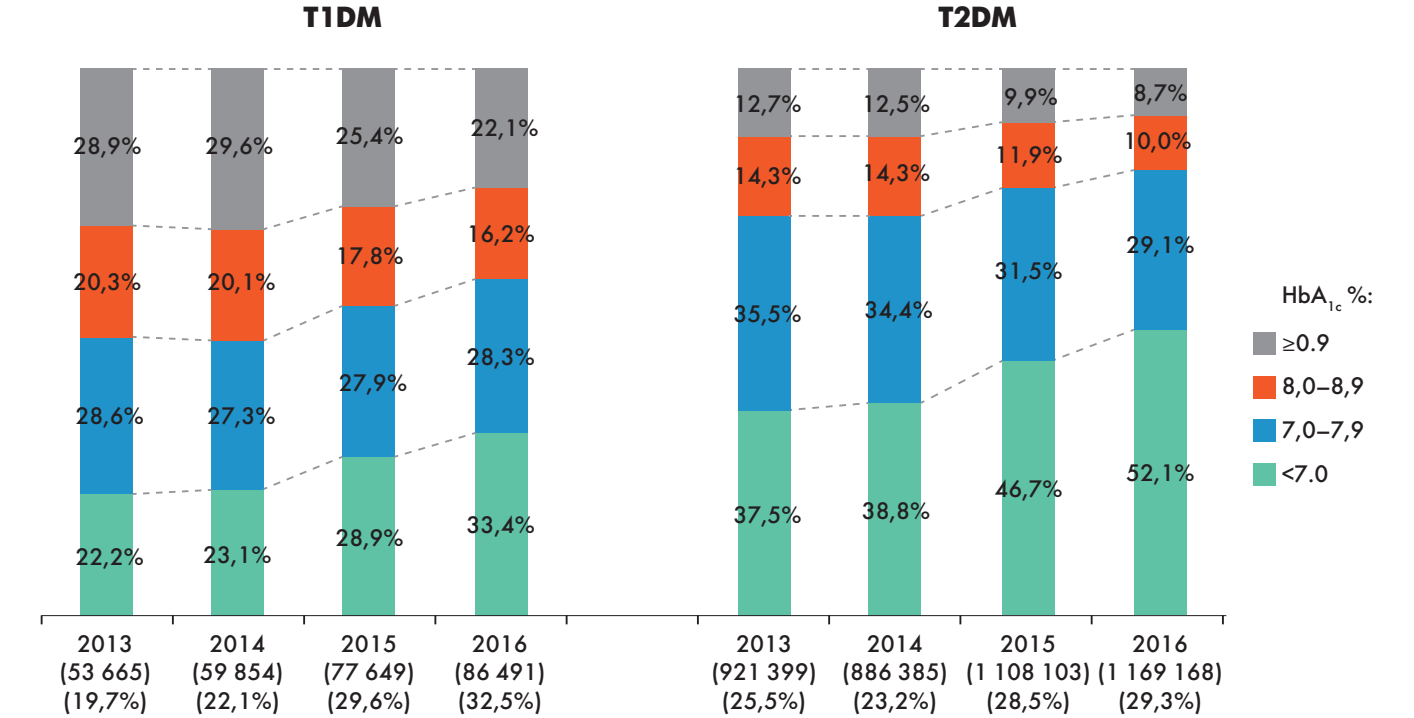


Fig. 11 Distribution of patients by level of HbA1c in the dynamics of 2013–2016

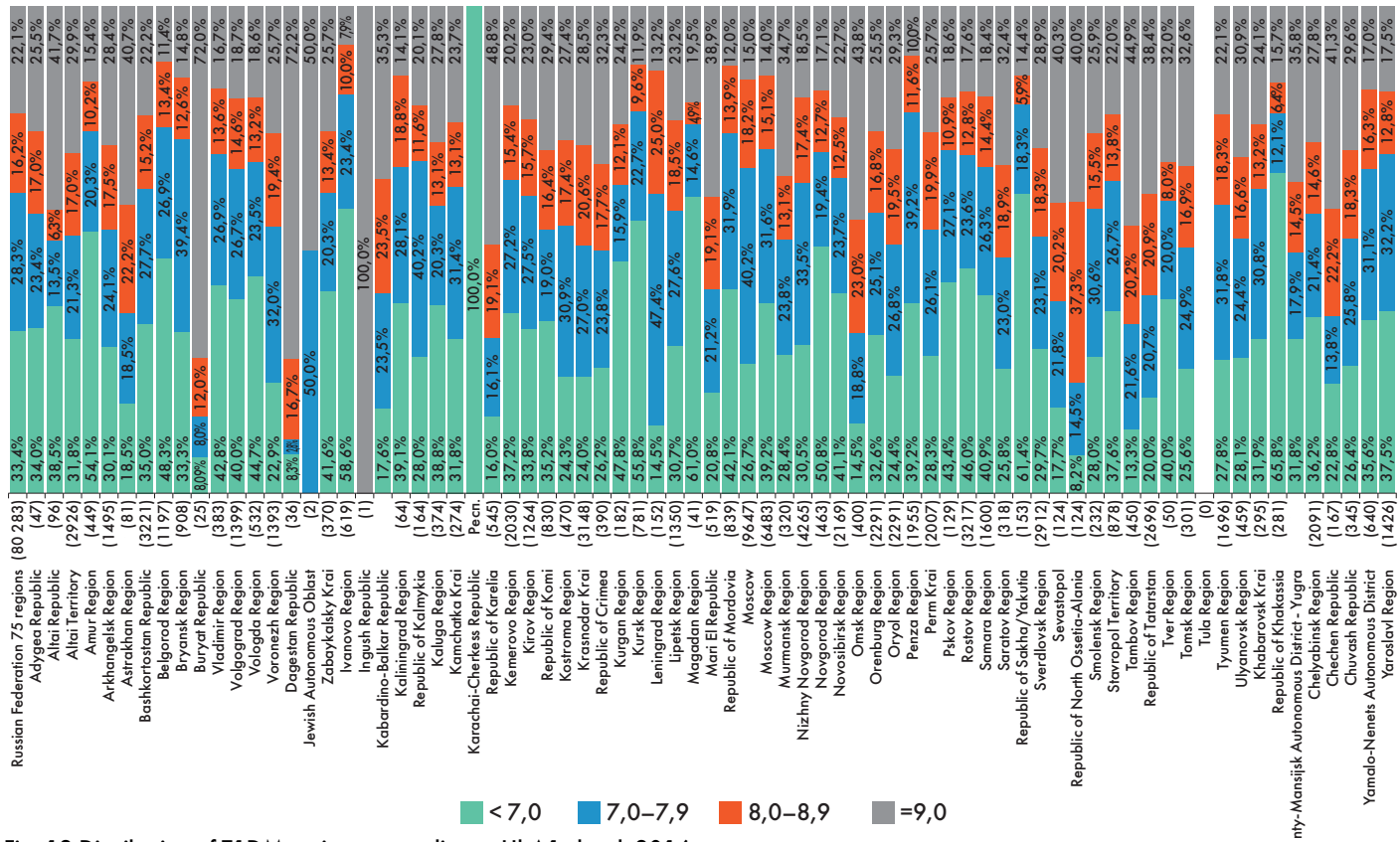


Fig. 12 Distribution of T1DM patients according to HbA1c level, 2016

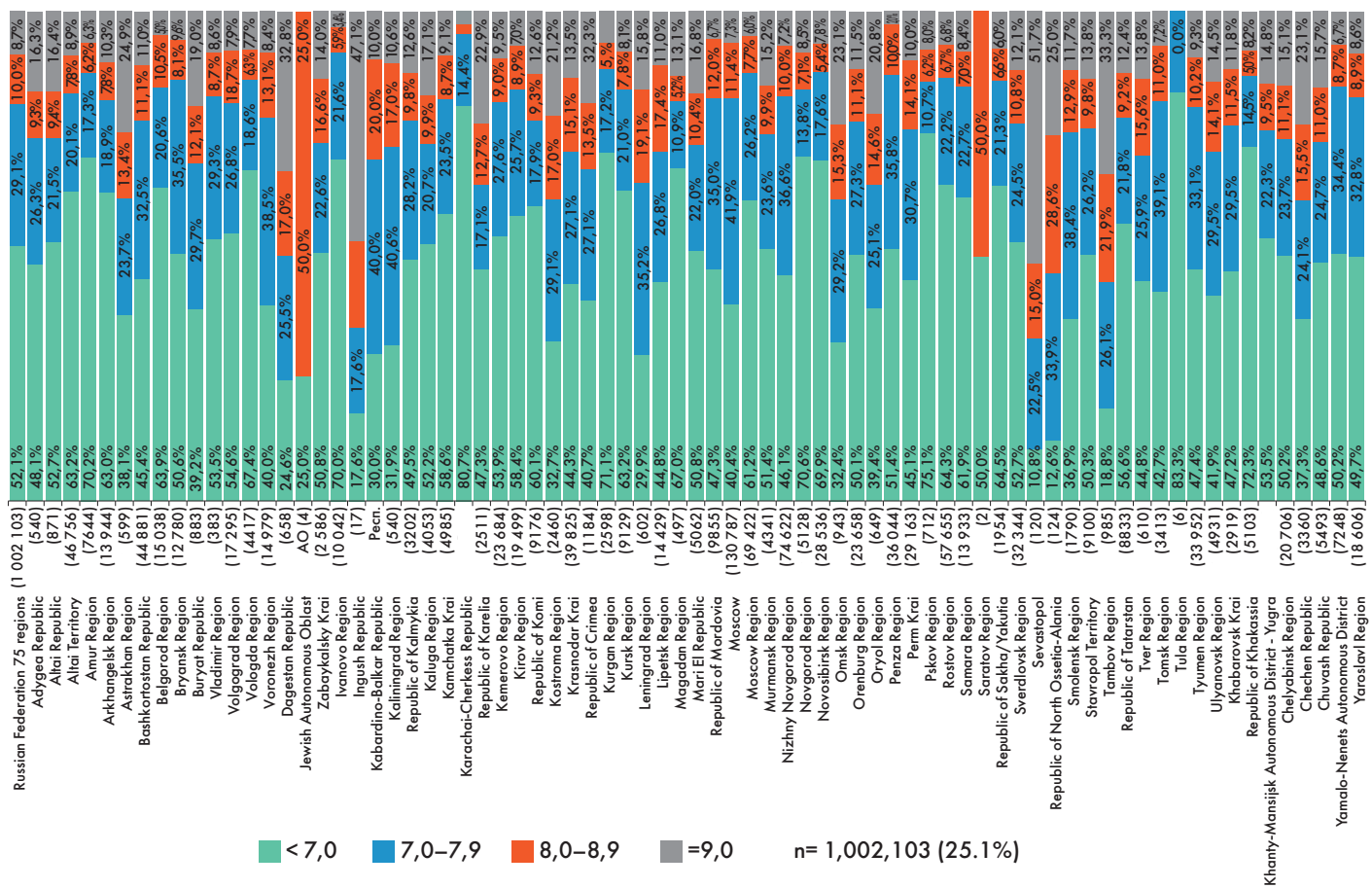


Fig. 13 Distribution of T2DM patients according to HbA1c level, 2016

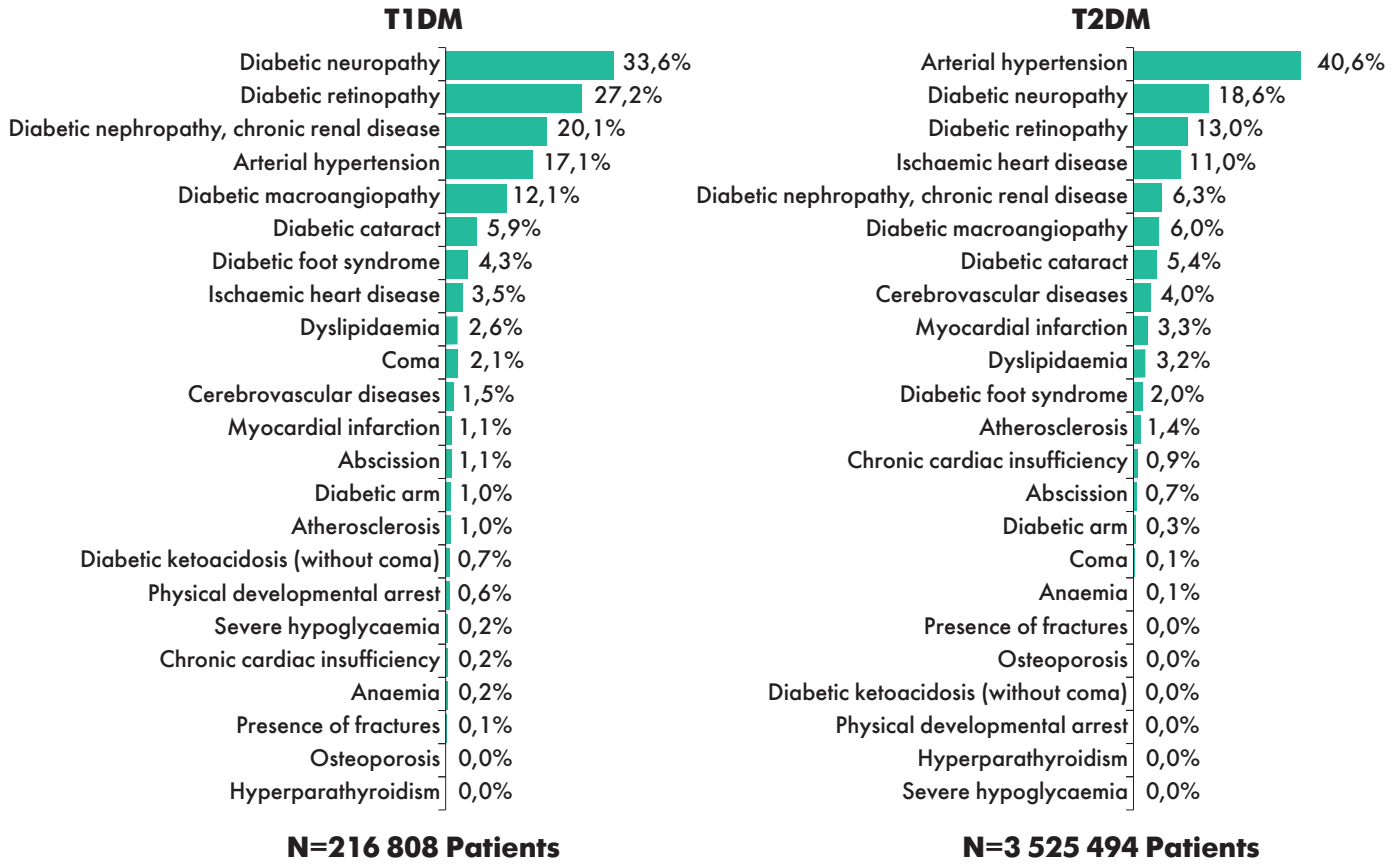


Fig. 14 Distribution of incidence of complications with T1DM and T2DM in 78 regions of the Russian Federation, 2016

When evaluating indicators in dynamics, the continuing decrease in the incidence in absolute values of both T1DM and T2DM becomes evident (Fig. 4). Analysing the cause of this phenomenon does not indicate a true decrease in incidence of DM. The main reasons are the decline of active screening and detection of DM, which is typical for T2DM [9], as well as improper registration of new cases of DM in the registry database. The lack of attention to the registry management in a number of regions is reflected in the artificial lowering of the incidence of DM in the Russian Federation as a whole. This is confirmed by the considerable variability of the indicator in some regions, which cannot be explained by geographical or ethnic differences (especially in relation to T2DM).

TThus, in 2016, the incidence of T1DM varied from 12.86 in the Republic of Karelia and 12.1 in the Republic of Tatarstan, which is two times higher than the average values in the Russian Federation, to 0 in the Republic of Tuva, Saratov Region, Nenets Autonomous Area and the Irkutsk Region, where no new cases of T1DM were registered (Appendix 2, Table 1). T2DM had a similar tendency: the incidence rates ranged from 289.8 in the Kirov region and 289.3 in the Altai Territory, which is 1.9 times higher than the average values for T2DM in the Russian Federation, to 0 in the same regions where no T1DM was registered, i.e. the Republic of Tuva, the Saratov Region, the Nenets Autonomous Area and the Irkutsk Region (Appendix 2, Table 1).

Analysis of mortality in patients with diabetes mellitus in the russian federation.

The mortality rates for DM in different age groups are presented according to the online registry in 79 regions of the Russian Federation (Table 3). The corresponding indicators for each of the 79 regions are presented in Appendix 3, Table 1 (published as an online application).

In the 79 regions of the Russian Federation in 2016, 87,244 DM patients' deaths were registered: 2906 T1DM patients (3.3%), 83,542 T2DM patients (95.8%), 796 patients with other types of DM (0.9%), which in terms of mortality per 100,000 people was as follows:

T1DM: 2.1 per 100,000 of the population;

T2DM: 60.29 per 100,000 of the population;

Other types of DM: 0.57 per 100,000 of the population.

The dynamics of mortality in patients with T1DM and T2DM from 2013–2016 according to the online registry in 79 regions of the Russian Federation (Fig. 5).

When analysing the dynamics of indicators from 2013–2016, for the first time in the last four years, a decrease in mortality was registered for both T1DM (by 6.6%) and T2DM (by 3.6%) (Fig. 5).

The structure of mortality (Fig. 6).

According to the data for 2016, cardiovascular pathology continued be the leading cause of death of patients with DM, for both types of DM. Total chronic cardiovascular insufficiency, cerebrovascular disturbances, myocardial infarction and acute cardiovascular disorders were the cause of death of 31.9% patients with T1DM and

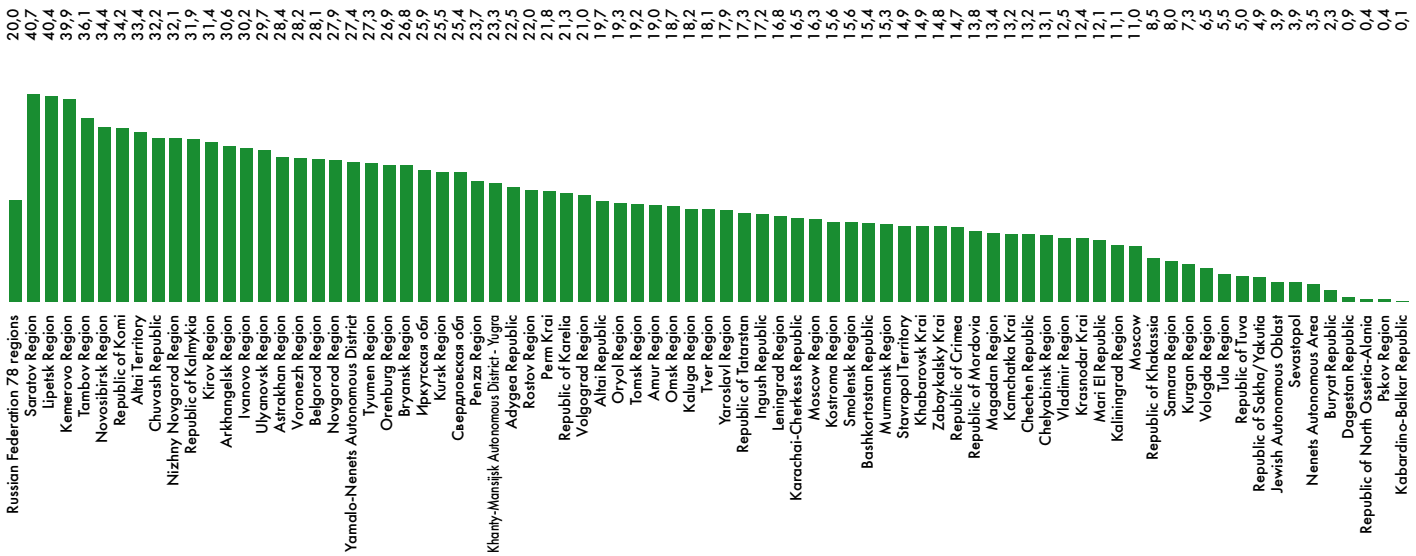


Fig. 15 Prevalence of diabetic nephropathy in T1DM in 78 regions of the Russian Federation, 2016

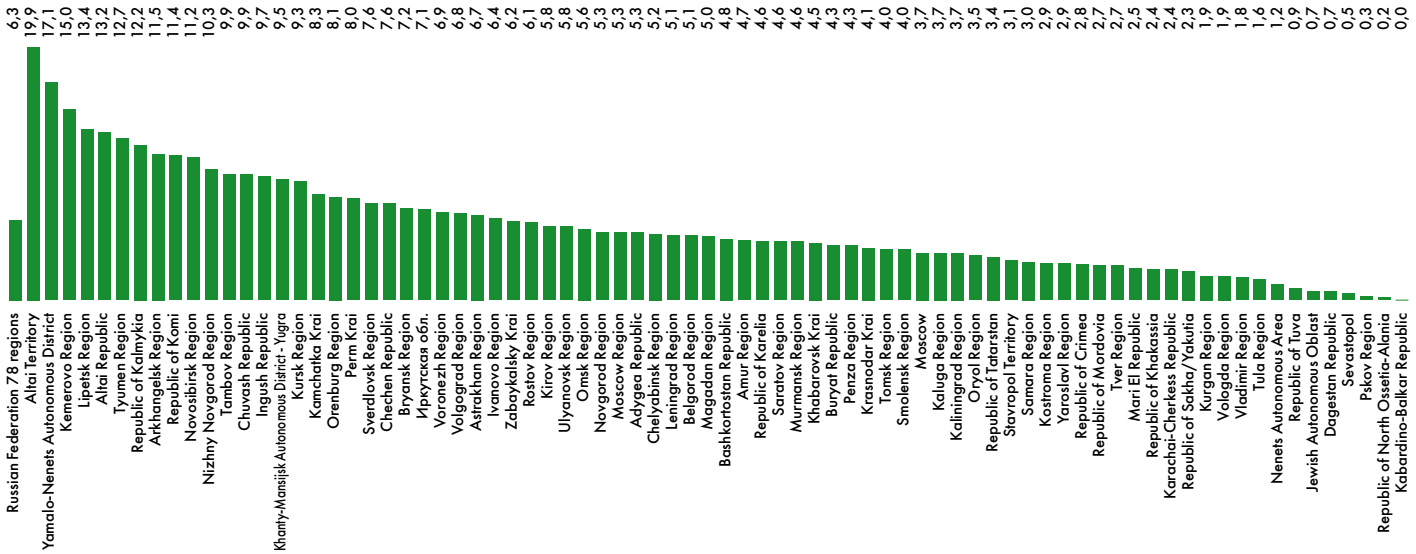


Fig. 16 Prevalence of diabetic nephropathy in T2DM in 78 regions of the Russian Federation, 2016

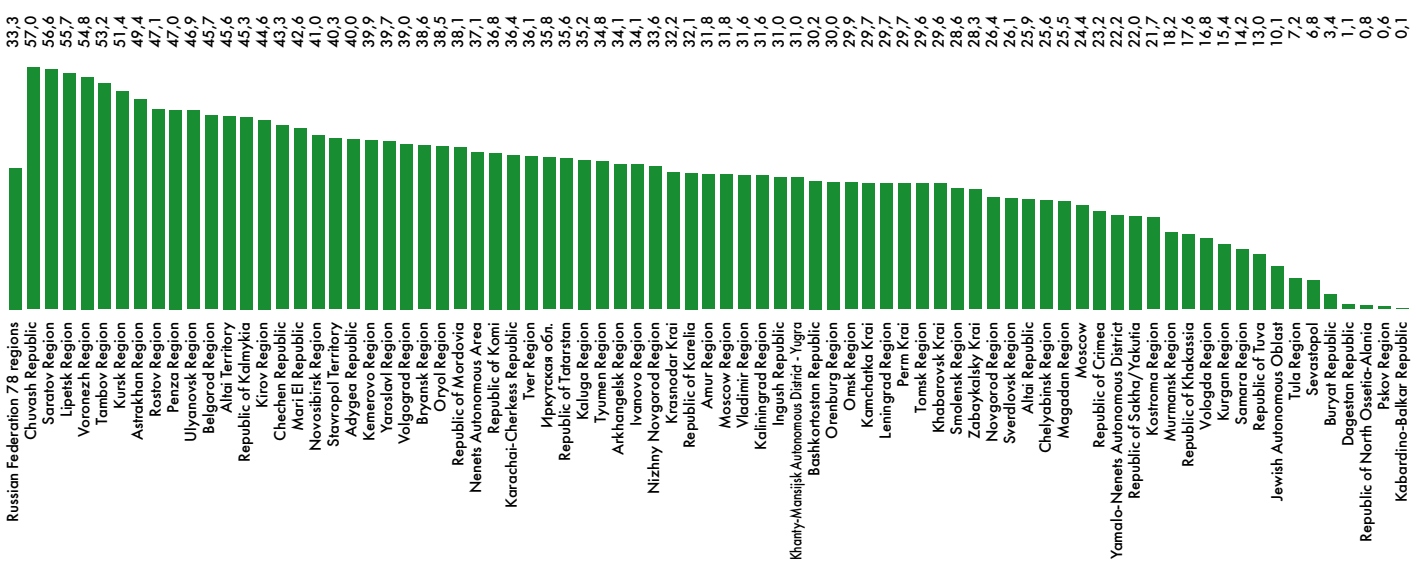


Fig. 17 Prevalence of diabetic retinopathy in T1DM in 78 regions of the Russian Federation, 2016

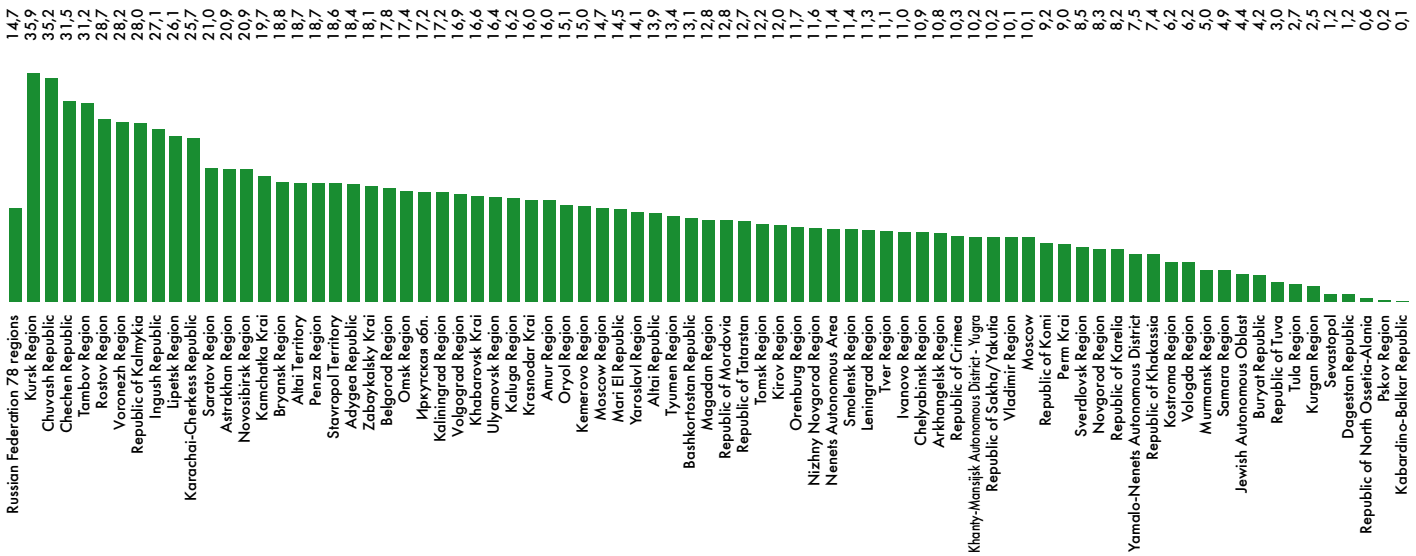


Fig. 18 Prevalence of diabetic retinopathy in T2DM in 78 regions of the Russian Federation, 2016

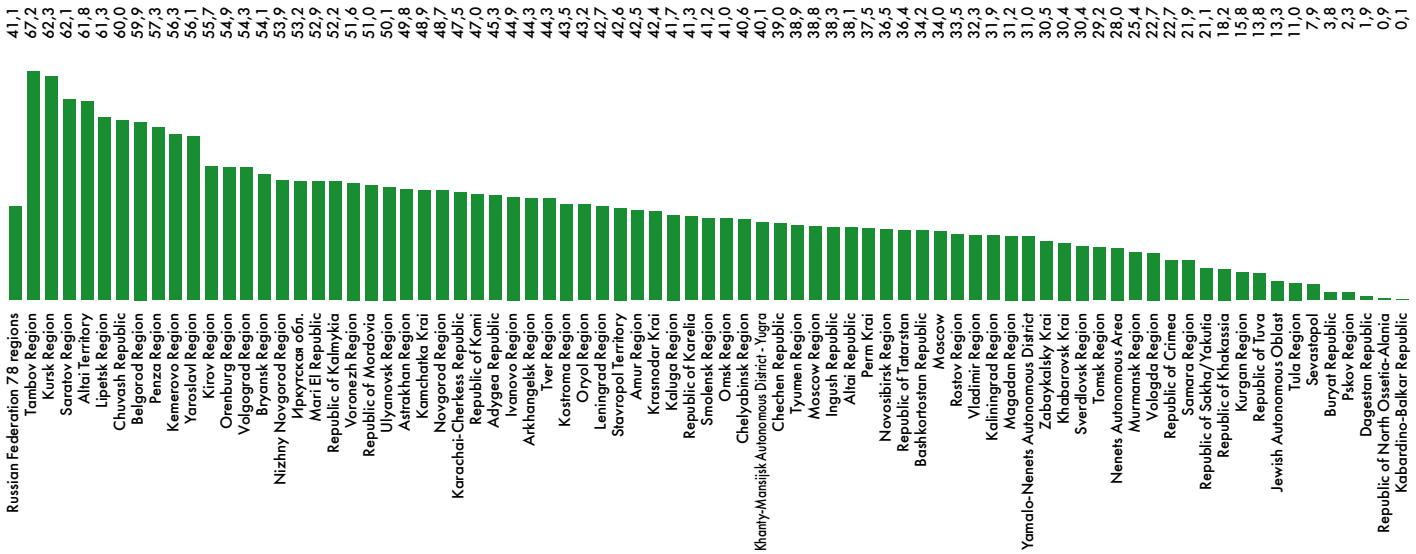


Fig. 19 Prevalence of diabetic neuropathy in T1DM in 78 regions of the Russian Federation, 2016

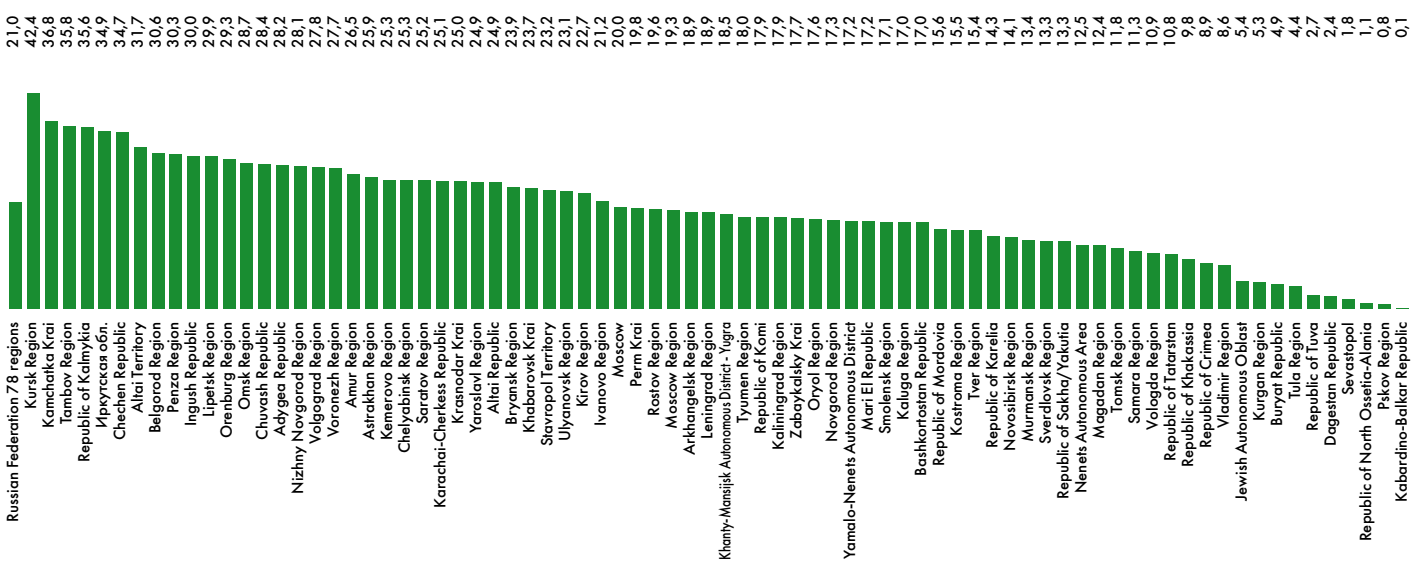


Fig. 20 Prevalence of diabetic neuropathy in T2DM in 78 regions of the Russian Federation, 2016

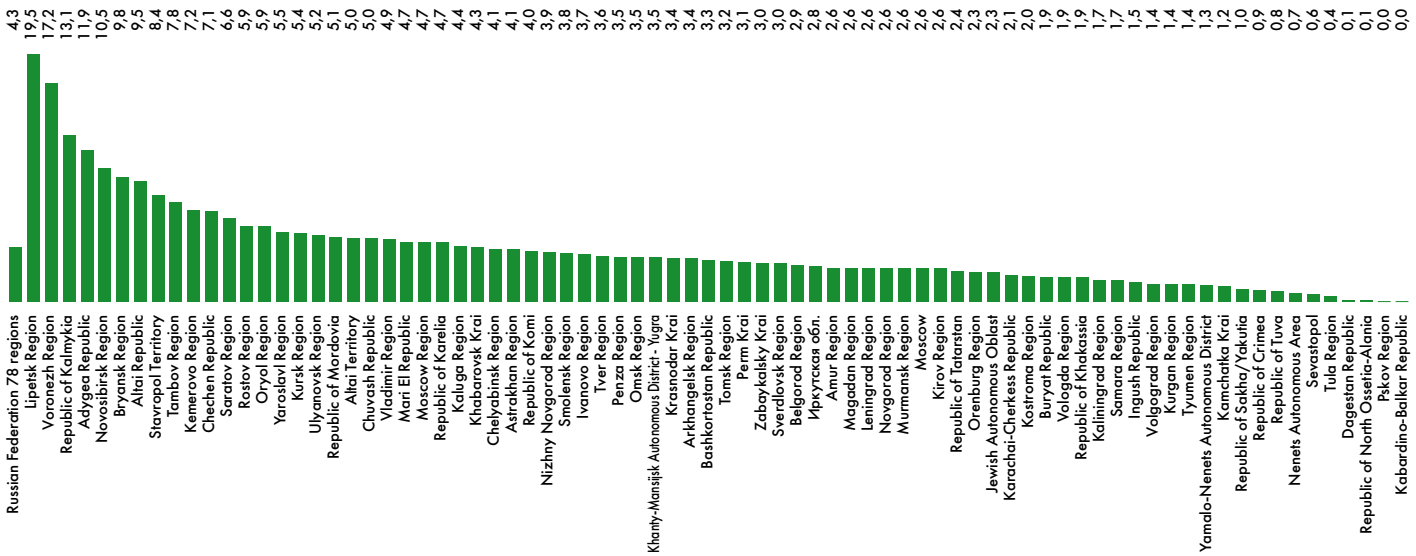


Fig. 21 Prevalence of diabetic foot syndrome in T1DM in 78 regions of the Russian Federation, 2016

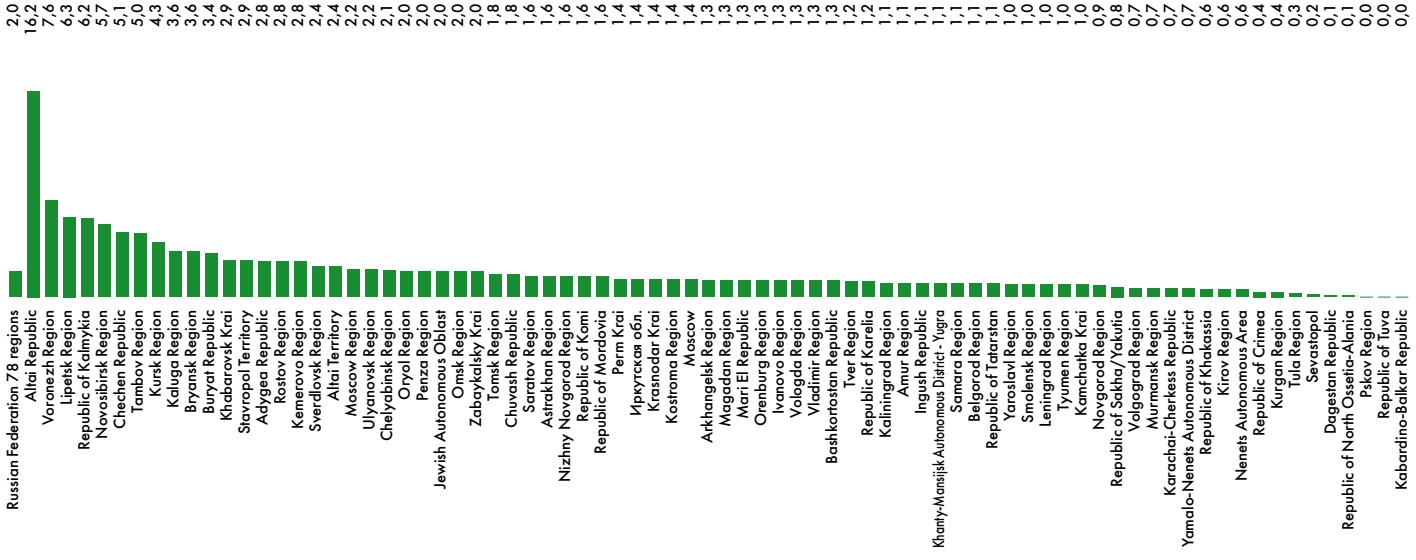


Fig. 22 Prevalence of diabetic foot syndrome in T2DM in 78 regions of the Russian Federation, 2016

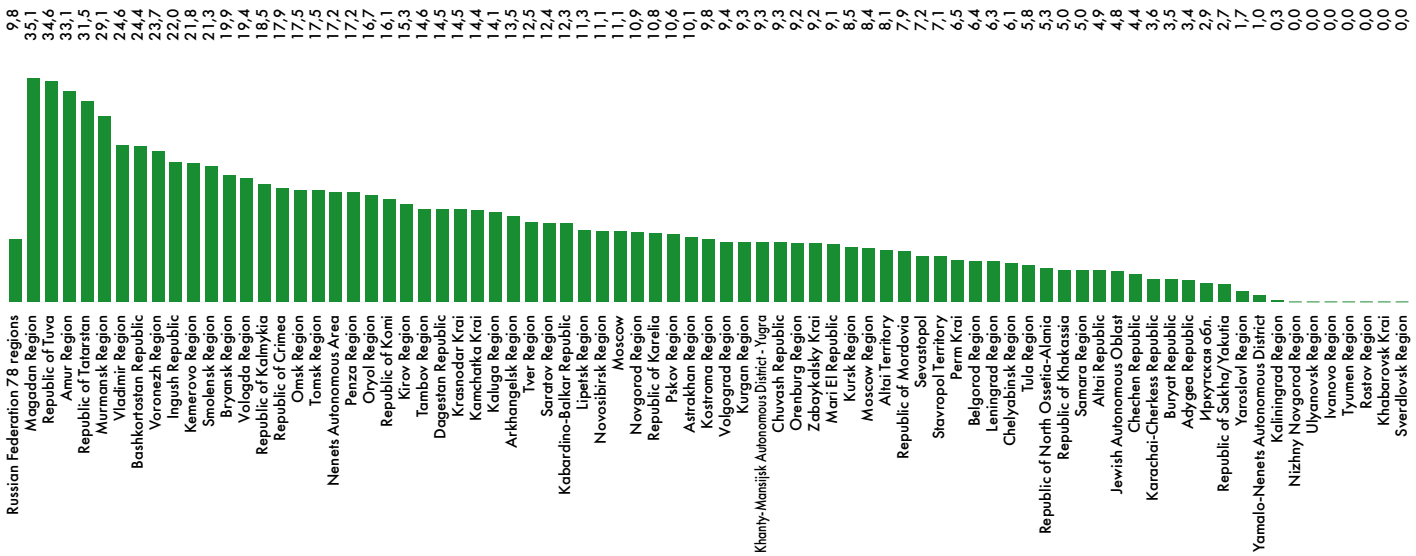


Fig. 23 Prevalence of diabetic macroangiopathy in T1DM in 78 regions of the Russian Federation, 2016

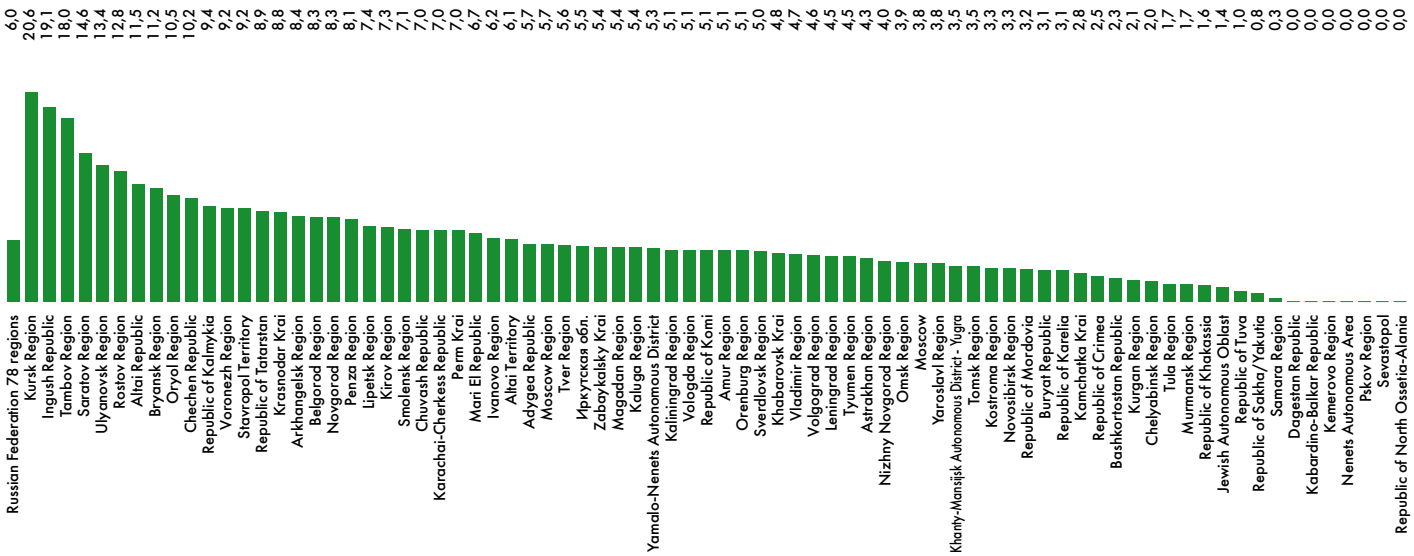


Fig. 24 Prevalence of diabetic macroangiopathy in T2DM in 78 regions of the Russian Federation, 2016

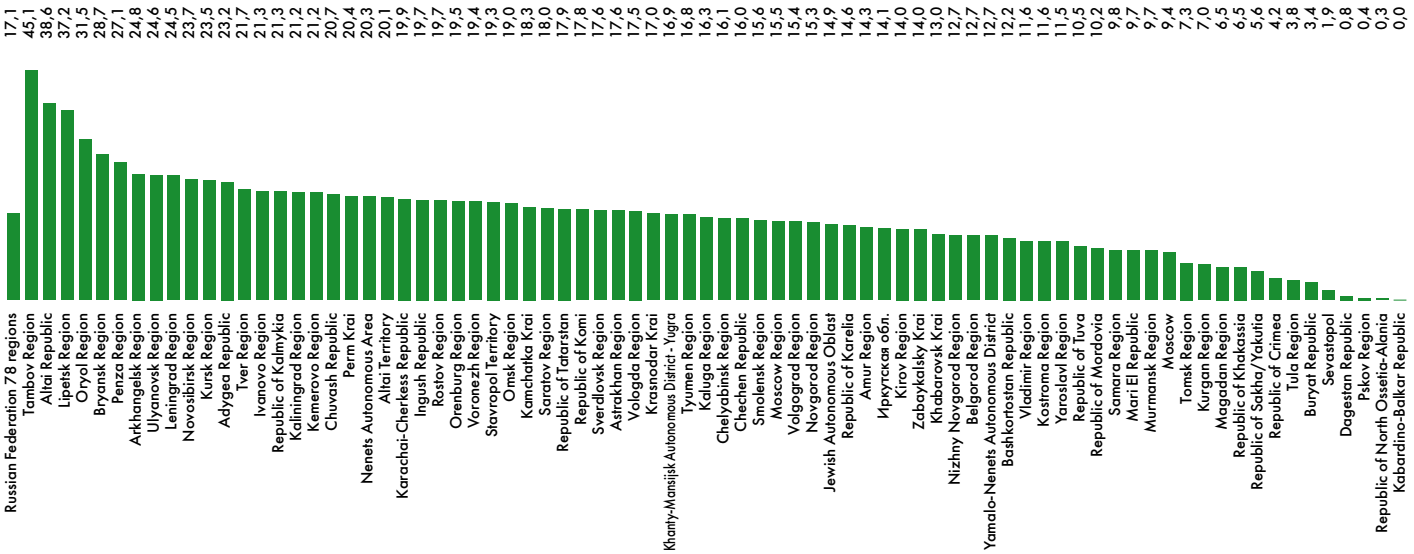


Fig. 25 Prevalence of arterial hypertension in T1DM in 78 regions of the Russian Federation, 2016

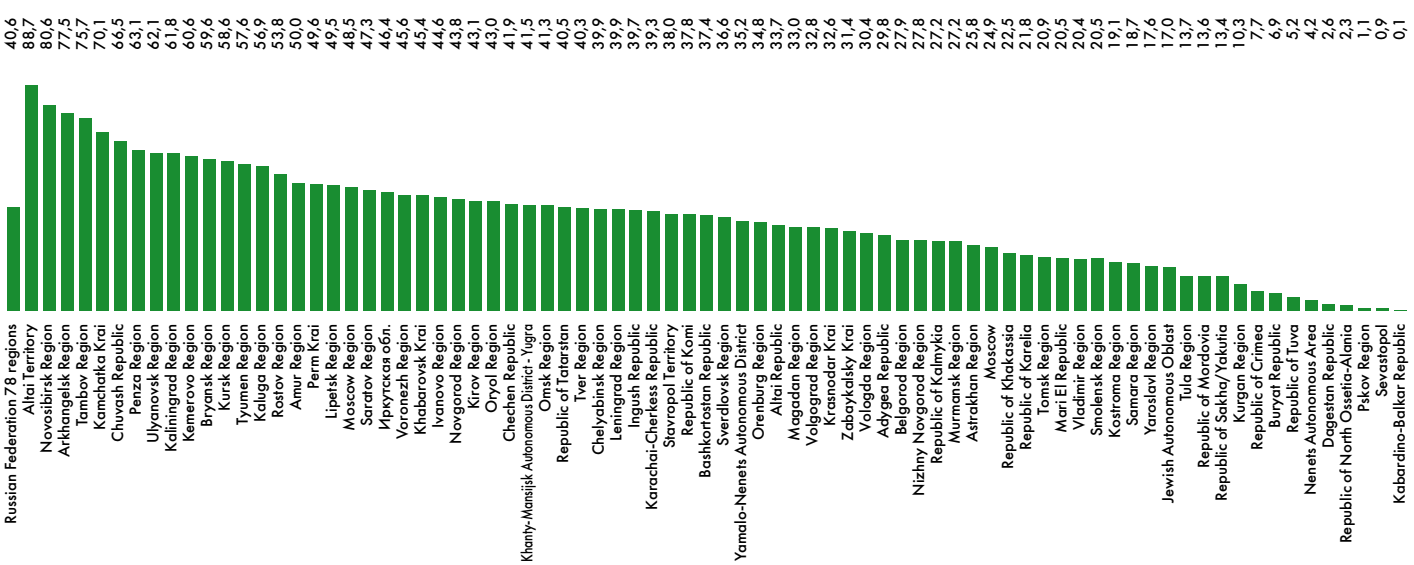


Fig. 26 Prevalence of arterial hypertension in T2DM in 78 regions of the Russian Federation, 2016

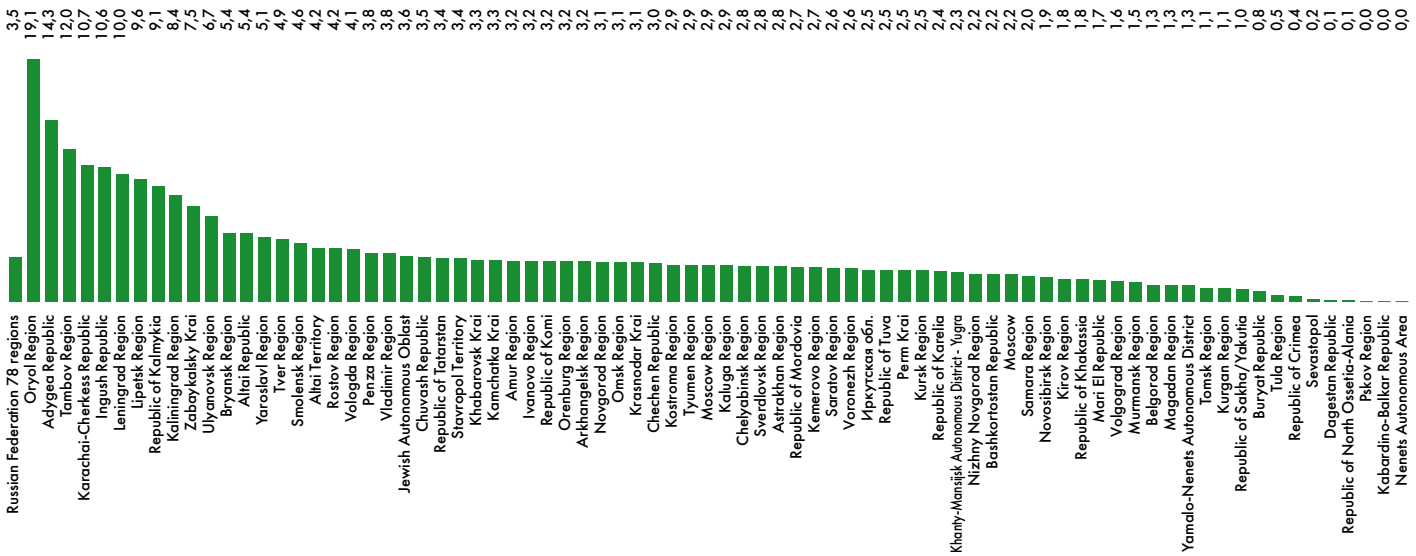


Fig. 27 Prevalence of ischaemic heart disease in T1DM in 78 regions of the Russian Federation, 2016

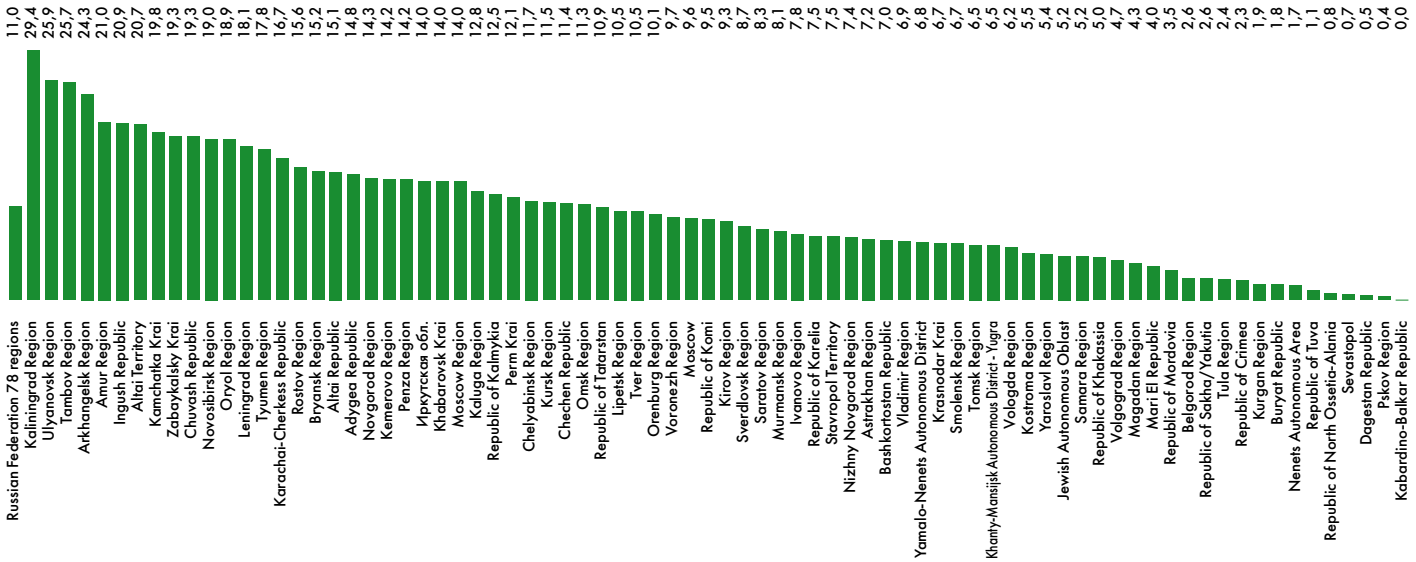


Fig. 28 Prevalence of ischaemic heart disease in T2DM in 78 regions of the Russian Federation, 2016

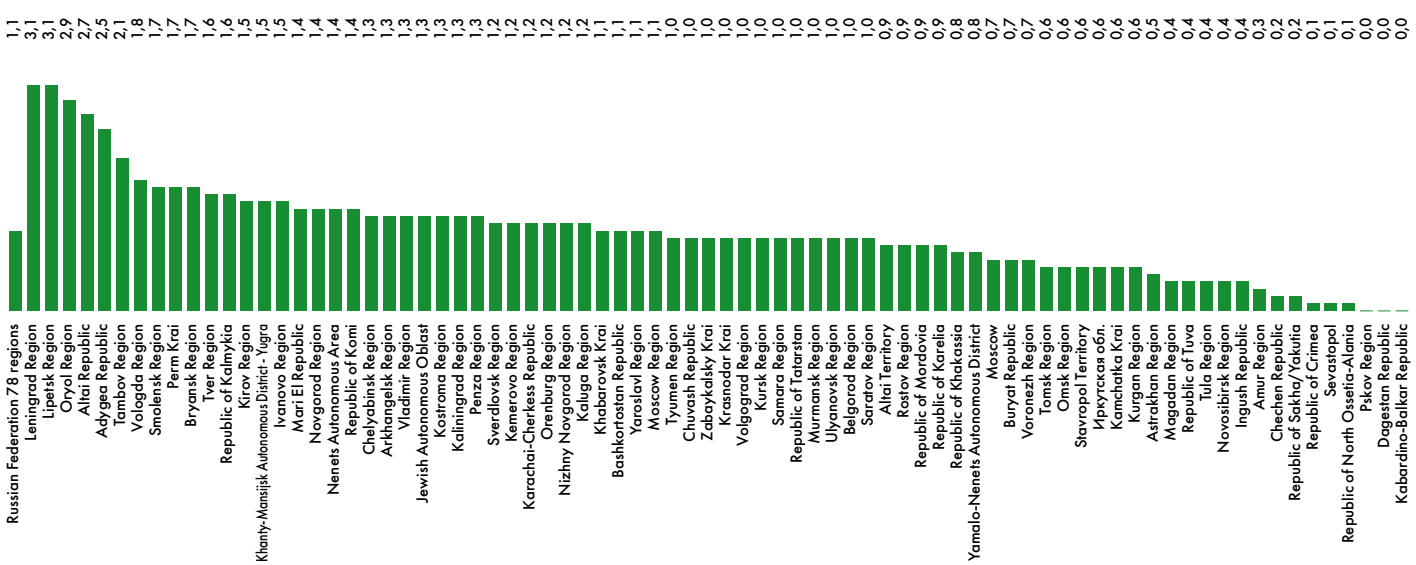


Fig. 29 Prevalence of myocardial infarction in T1DM in 78 regions of the Russian Federation, 2016

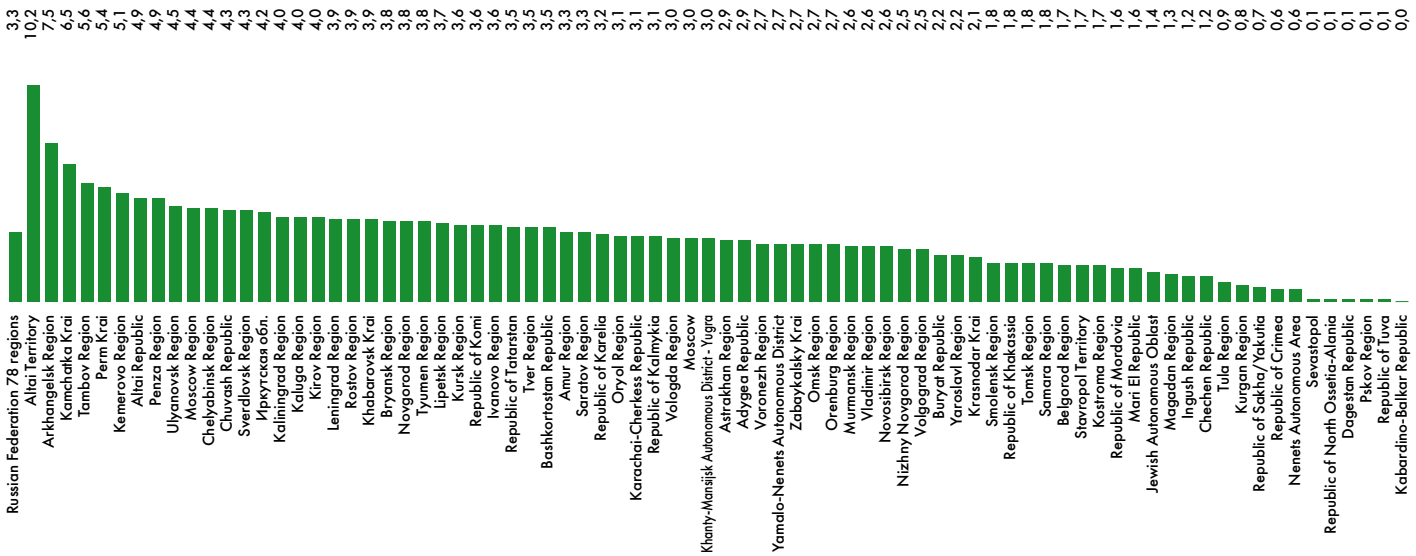


Fig. 30 Prevalence of myocardial infarction in T2DM in 78 regions of the Russian Federation, 2016

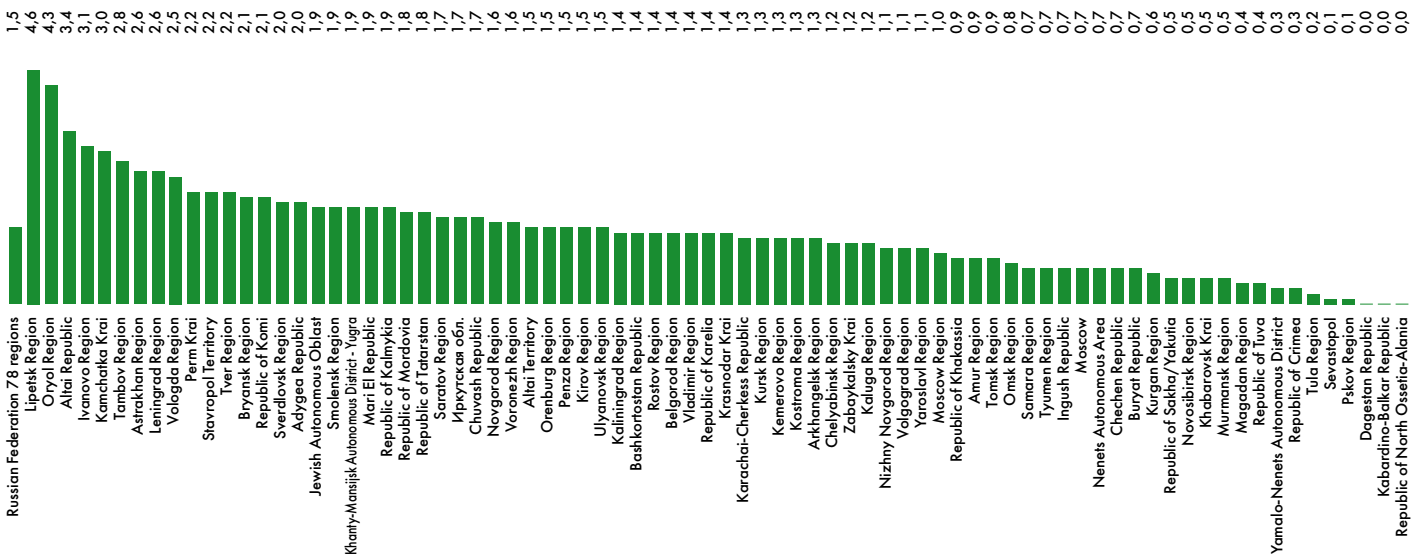


Fig. 31 Prevalence of cerebrovascular diseases in T1DM in78 regions of the Russian Federation, 2016

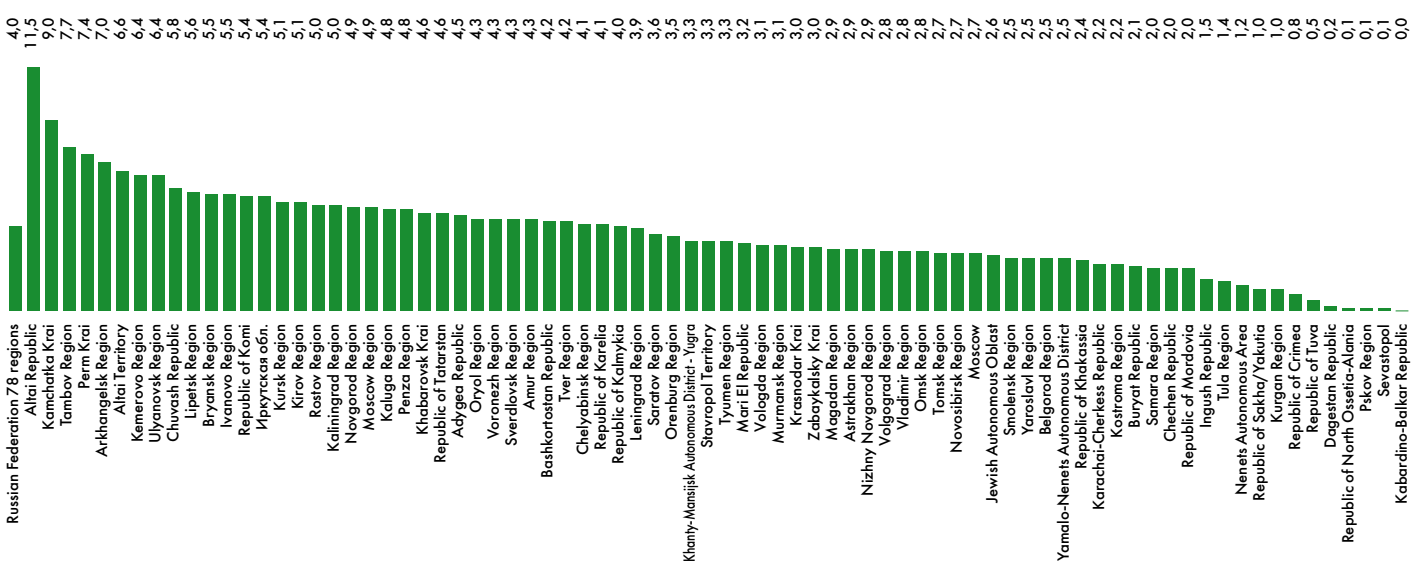


Fig. 32 Prevalence of cerebrovascular diseases in T2DM in 78 regions of the Russian Federation, 2016

49.5% of patients with T2DM. Unknown cause of death was excluded from the analysis (36.9% for T1DM and 29.8% for T2DM); however, the proportion of cardiovascular complications in the structure of mortality of patients with DM increased even more significantly, up to 47% for T1DM and 67% for T2DM (Figs. 7 and 8, respectively), confirming the importance of early diagnosis and therapeutic approaches aimed at correcting cardiovascular risk in DM patients. The second highest cause of death for patients with T2DM was oncological pathology (10.0%), and its share in the mortality structure continues to grow (in 2015 it was 8.42%), and for T1DM, this was terminal renal insufficiency (7.1%). In T1DM, a higher percentage of severe complications was noted, such as diabetic complications (2.7%), hypoglycaemia (1.8%), coma, sepsis (1.8%) and gangrene (1.2%), compared with T2DM (0.4%, 0.1%, 0.4%, 0.7%, respectively) which, along with the poorest indicators of carbohydrate metabolism control (Fig. 11), explains the significantly lower life expectancy values for this disease.

Analysis of life expectancy in patients with diabetes mellitus in the russian federation

Life expectancy of patients with T2DM and T2DM from 2013–2016 according to the online registry in 79 regions of the Russian Federation is shown in Figs. 9 and 10.

In the dynamics of life expectancy indicators, significant differences in patients with T1DM and T2DM were noted. For T2DM, there was a steady positive dynamic towards an increase in life expectancy in the period 2013–2016 from 69.7 to 70.1 years in men, and 74.9 to 75.5 years in women (Fig. 10), whose life expectancy exceeds the average values in the population of the Russian Federation. The life expectancy of men with T1DM can be regarded as stable with a tendency to increase from 49.6 to 50.3 years, while in women, a negative dynamic with a decrease in life expectancy from 59.4 to 58.5 years was noted over the four years (Fig. 9).

These data differ from those obtained in the period 2007–2012, indicating a significant increase in life expectancy for both T2DM and T1DM [6] that requires further analysis and interpretation. Nevertheless, it is obvious that significantly poorer indicators of carbohydrate metabolism control (77% of patients with T1DM did not reach the target HbA1c levels) and a higher mortality rate due to coma, gangrene and sepsis, which are the complications associated with unsatisfactory metabolic control, are significant factors for these negative tendencies.

Analysis of the state of carbohydrate metabolism compensation (HbA_{1C} level)

The distribution of patients by HbA1c level in the dynamics of 2013–2016 (Fig. 11) is presented according to the online registry for 76 regions of the Russian Federation (in three regions—the Irkutsk Region, the Nenets Autonomous Area and the Republic of Tuva—the indicator was not entered in the registry, and the Saint Petersburg region was not included in the analysis due to the incomplete database in the online registry).

In the period 2013–2016 there was a persistent tendency to improve carbohydrate metabolism in both types of DM, for example, an increased number of patients with a target HbA1c level <7% to 52.1% for T2DM and 33.4% for T1DM, and a decreased number of patients with severe decompensation of DM with an HbA1c level ≥9.0%, up to 8.7% for T2DM and 22.1% for T1DM. However, the possibility of direct extrapolation of these data to the general population of DM patients in the Russian Federation is limited, since less than one-third of patients entered into the registry had HbA1c examined, that is, 32.5% with T1DM and 29.3% with T2DM.

General tendencies do not always reflect the real situation and requires targeted assessment of the dynamics in a particular region. This is confirmed by a very high variability of HbA1c, depending on the region for both T1DM (Fig. 12) and T2DM (Fig. 13).

Control of HbA1c requires monitoring in DM patients, both clinically, to assess the effectiveness of hypoglycaemic therapy and timely decision-making on the need for its intensification, and organisational, as a target indicator of the quality of diabetes care. For this purpose, it is necessary not only to improve the quality of HbA1c data entry into the registry (in 100% of patients), but also, first of all, to increase the availability of HbA1c measurement, regardless of the patient's place of residence, and increase the frequency of measurement.

The frequency of measuring HbA1c level is important for DM patients, and is determined by the provision of algorithms for specialised medical care for DM patients, and is required once every 3 months [10].

Analysis of prevalence of complications

The distribution of the frequency of diabetic complications in T1DM and T2DM according to 78 regions of the Russian Federation (the region of Saint Petersburg was not included in the analysis of complications due to an incomplete online database) is shown in Fig. 14.

- In T1DM, diabetic neuropathy was recorded in 33.6%, diabetic retinopathy in 27.2%, nephropathy in 20.1%, hypertension in 17.1%, diabetic macroangiopathy in 12.1%, diabetic foot syndrome in 4.3%, ischaemic heart disease (CHD) in 3.5%, cerebrovascular disorders in 1.5%, and myocardial infarction in 1.1% of patients.
- In T2DM, hypertension was most frequently recorded in 40.6%, diabetic neuropathy in 18.6%, diabetic retinopathy in 13.0%, ischaemic heart disease (CHD) in 11.0%, diabetic nephropathy in 6.3%, macroangiopathy in 6.0%, cerebrovascular disorders in 4.0%, myocardial infarction in 3.3%, and diabetic foot syndrome in 2.0% of patients.

When analysing the prevalence of diabetic complications, it was found that, according to the registry, the incidence of complications was significantly lower than according to the studies with active screening [11–12], including those obtained by examining patients in the mobile diagnostic and treatment module of the

Diabetes Centre of Federal State Budgetary Institution Endocrinology Research Centre [6].

These differences are, of course, affected by the objective features of the registry's operation, where data are recorded by appealability, i.e. only identified cases of DM and complications, which can underestimate the level of their prevalence.

Nevertheless, it is difficult to explain the significant variability in the frequency of complications by other causes, except for differences in the quality of diabetes care and insufficient attention to registry management in a number of regions.

The key factor determining the recorded incidence of complications is availability of specialised diabetes care at the primary level, namely, the presence of retinopathy rooms, treatment rooms for diabetic foot, and the availability of cardiology functional diagnostics in the region. Thus, a low incidence of complications (as good as 0% in a number of regions) may indicate an absence or inefficiency of these structures in the region, as well as non-compliance with key standards for the examination of target organs in DM patients no less than once per year and more often for at-risk groups.

This is especially important for diagnosing the initial reversible stage of complications which does not cause vivid clinical symptoms and complaints in the patient. The initial stages of diabetic complications can be effectively detected only through active appointment to specialised professionals (ophthalmologist, podiatrist) and regular performance of screening for microalbuminuria and assessment of glomerular filtration rate in all DM patients (at least once per year) [10], which is often not performed in routine clinical practice.

It should be emphasised that in many regions, in patients with T2DM, a lower incidence of not only microvascular (retinopathy, nephropathy) but also macrovascular complications was recorded, as well as diabetic foot syndrome. This cannot highlight the real situation, given the many additional factors of target organ damage in DM2, such as old age, a longer history of concomitant hypertension, dyslipidaemia, and a higher incidence of obesity. It is important to note that the actual incidence of complications in T2DM is seriously underestimated in the existing system of diabetes care [13]. Unlike patients with T1DM who are historically perceived as a high-risk cohort requiring more frequent examination, patients with T2DM often remain beyond the field of view of endocrinologists. This poses a serious threat both in terms of late diagnostics of pathology at pronounced stages, when efficiency of treatment is much lower, and in to significantly larger extent of social and economic damage, given the prevalence of patients with T2DM [14].

Since 2016, the online registry system has introduced a function of automated reports that enable the incidence and quarterly dynamics of diabetic complications to be estimated, including those detected for the first time and, crucially important, indicating the stage at the time of diagnosis. The report can be performed both for the region as a whole, and for each health facility, which enables the efficiency of their work to be evaluated. From this point of view, the registry becomes a key indicator of the quality of rendering specialised care that enables the efficiency of diabetes services in the regions to be monitored.

Diabetic nephropathy

Diabetic nephropathy was recorded in 20.1% of patients with T1DM and 6.3% of patients with T2DM.

The incidence of nephropathy ranged widely from 0.1% (the Republic of Kabardino-Balkaria) to 40.7% (the Saratov Region) in T1DM (Fig. 15), and from 0% (Republic of Kabardino-Balkaria) to 19, 9% (Altai Territory) in T2DM (Fig. 16).

Diabetic retinopathy

Diabetic retinopathy was recorded in 27.2% of patients with T1DM and 13.0% of patients with T2DM.

The incidence rate of diabetic retinopathy ranged from 0.1% (the Republic of Kabardino-Balkaria) to 57% (Chuvash Republic) in T1DM (Fig. 17), and from 0.1% (the Republic of Kabardino-Balkaria) to 35.9% (Kursk Region) (Fig. 18) in T2DM.

Diabetic neuropathy

Diabetic neuropathy was recorded in 33.6% of patients with T1DM and 18.6% of patients with T2DM.

The incidence rate of neuropathy ranged from 0.1% (the Republic of Kabardino-Balkaria) to 67.2% (Tambov Region) (Fig. 19) in T1DM, and from 0.1% (the Republic of Kabardino-Balkaria) to 42.4% (Kursk Region) (Fig. 20) in T2DM.

Diabetic foot syndrome

Diabetic foot syndrome was recorded in 4.3% of patients with T1DM and 2% of patients with T2DM.

The incidence rate of diabetic foot syndrome ranged from 0% (the Republic of Kabardino-Balkaria) to 19.5% (Lipetsk Region) (Fig. 21) in T1DM, and from 0% (the Republic of Kabardino-Balkaria) to 16.2% (the Republic of Altai) (Fig. 22) in T2DM.

Diabetic macroangiopathy

Diabetic macroangiopathy was recorded in 12.1% of patients with T1DM and 6% of patients with T2DM.

The incidence rate of macroangiopathy ranged from 0% (Sverdlovsk Region) to 35.1% (Magadan Region) (Fig. 23) in T1DM, and from 0% (the Republic of North Ossetia-Alania) to 20.6% (Kursk Region) (Fig. 24) in T2DM.

Arterial hypertension

Arterial hypertension was registered in 17.1% of patients with T1DM and 40.6% of patients with T2DM.

The incidence rate of hypertension ranged from 0% (the Republic of Kabardino-Balkaria) to 45.1% (Tambov Region) (Fig. 25) in T1DM, and from 0.1% (the Republic of Kabardino-Balkaria) to 88.7% (Altai Territory) (Fig. 26) in T2DM.

Ischaemic heart disease

Ischaemic heart disease was registered in 3.5% of patients with T1DM and in 11.0% of patients with T2DM.

The incidence rate of ischaemic heart disease ranged from 0% (Nenets Autonomous Area) to 19.1% (Oryol Region) (Fig. 27) in T1DM, and from 0% (the Republic of Kabardino-Balkaria) to 29.4% (Kaliningrad Region) (Fig. 28) in T2DM.

Myocardial infarction

Myocardial infarction was recorded in 1.1% of patients with T1DM and 3.3% of patients with T2DM.

The incidence rate of myocardial infarction ranged from 0% (the Republic of Kabardino-Balkaria) to 3.1% (Leningrad Region) (Fig. 29) in T1DM, and from 0% (the Republic of Kabardino-Balkaria) to 10.2% (the Republic of Altai) (Fig. 30) in T2DM.

Cerebrovascular diseases

Cerebrovascular diseases were recorded in 1.5% of patients with T1DM and 4.0% of patients with T2DM.

The incidence rate of cerebrovascular diseases ranged from 0% (Republic of North Ossetia-Alania) to 4.6% (Lipetsk Region) (Fig. 31) in T1DM, and from 0% (the Republic of Kabardino-Balkaria) to 11.5% (the Republic of Altai) (Fig. 32) in T2DM.

Conclusion

In assessing the data of the DM registry, the year 2016 became the focus since most of the regions of the Russian Federation transferred to the online format, which is a fundamentally new system of approach to registry management based on the creation of a dynamic database that enables multilevel monitoring of key clinical and epidemiological indicators.

In the Russian Federation in 2016 and from 2013–2016, the prevalence of DM grew persistently, mainly due to T2DM. There was a significant increase in the number of patients achieving a target HbA1c level of <7%, as well as a decrease in the proportion of patients with severe DM decompensation with HbA1c ≥9.0%; however, the frequency of measurement of this key indicator of treatment efficiency is unsatisfactory, as it was measured in less than a third of DM patients. This requires action to increase the availability of HbA1c monitoring. In the dynamics for the period 2013–2016, an increased life expectancy for patients with T2DM and a reduction in mortality in both types of DM was noted. The incidence of diabetic complications varied widely from region to region, which may reflect to a greater extent the differences in the quality of specialised primary care rather than geographical or ethnic determinants.

The new online registry system is a highly functional information and analytical platform with broad analysis capabilities, which can be used by health authorities as a key tool for assessing the current status, and planning and optimising the diabetes care in certain regions and in the Russian Federation as a whole.

Additional information

Financing of the work

The work was performed within the framework of the state task of the Ministry of Health of the Russian Federation No. AAAA-A16-116011100138-5.

Conflict of interest

The authors declare the absence of obvious and potential conflicts of interest related to the publication of this article.

Participation of authors

Shestakova M.V., Vikulova O.K. - analysis and interpretation of the study results, writing an article; Dedov I.I. - final analysis of the results and editing of the manuscript text.

Благодарности:

ЗАО «Астон Консалтинг» за техническое сопровождение регистра СД в онлайн-формате.

Всем медицинским специалистам (врачам, медицинским сестрам, регистраторам данных), ведущим активную работу по заполнению базы данных регистра СД.

Appendices

Appendix 1

Table 1

PREVALENCE OF DIABETES MELLITUS IN ALL AGE GROUPS ACCORDING TO THE DATA OF THE ONLINE REGISTRY IN 79 REGIONS OF THE RUSSIAN FEDERATION, 2016

Region	Number of patients				Per 100,000 population			
	T1DM	T2DM	Other types of diabetes	Total	T1DM	T2DM	Other types of diabetes	Total
Russian Federation 79 regions	227 514	3 654 182	70 142	3 951 838	164.19	2637.17	50.62	2851.98
Adygea Republic	808	12 692	404	13 904	178.97	2811.20	89.48	3079.65
Altai Republic	293	3780	160	4233	136.18	1756.82	74.36	1967.36
Altai Territory	4049	83 920	2357	90 326	170.36	3530.84	99.17	3800.36
Amur Region	1006	22 200	1091	24 297	124.86	2755.41	135.41	3015.68
Arkhangelsk Region	2341	38 143	5594	46 078	207.12	3374.77	494.94	4076.83
Astrakhan Region	1485	28 334	792	30 611	145.78	2781.59	77.75	3005.13
Bashkortostan Republic	6544	96 024	75	102 643	160.74	2358.70	1.84	2521.28
Belgorod Region	2727	47 041	614	50 382	175.92	3034.64	39.61	3250.16
Bryansk Region	2473	40 730	234	43 437	201.76	3322.89	19.09	3543.73
Buryat Republic	808	28 127	152	29 087	82.26	2863.43	15.47	2961.16
Vladimir Region	2126	46 000	300	48 426	152.16	3292.37	21.47	3466.01
Volgograd Region	3780	73 855	376	78 011	148.47	2900.90	14.77	3064.14
Vologda Region	5149	32 001	677	37 827	433.53	2694.40	57.00	3184.94
Voronezh Region	4666	70 528	9677	84 871	199.96	3022.44	414.70	3637.10
Dagestan Republic	301	5379	80	5760	9.98	178.37	2.65	191.00
Jewish Autonomous Oblast	308	4829	9	5146	185.41	2906.93	5.42	3097.76
Zabaykalsky Krai	2186	25 426	484	28096	201.84	2347.71	44.69	2594.25
Ivanovo Region	1907	38 353	1803	42063	185.17	3724.18	175.08	4084.43
Ingush Republic	278	6273	49	6600	58.80	1326.84	10.36	1396.01
Irkutsk Region	2992	62 240	830	66 062	124.01	2579.58	34.40	2737.98
Kabardino-Balkar Republic	626	4750	1	5377	72.60	550.88	0.12	623.60
Kaliningrad Region	1630	23 909	193	25732	166.93	2448.59	19.77	2635.29
Republic of Kalmykia	322	8008	289	8619	115.52	2873.00	103.68	3092.21
Kaluga Region	1789	29 289	174	31 252	177.17	2900.56	17.23	3094.96
Kamchatka Krai	328	7903	92	8323	103.76	2500.03	29.10	2632.89
Karachai-Cherkess Republic	751	10 109	122	10 982	160.54	2160.98	26.08	2347.60
Republic of Karelia	1699	24 742	1281	27 722	269.74	3928.08	203.37	4401.19
Kemerovo Region	3746	64 770	1057	69 573	137.84	2383.33	38.89	2560.06
Kirov Region	2081	45 033	4928	52 042	160.39	3470.82	379.81	4011.02
Republic of Komi	1528	27 104	3467	32 099	178.33	3163.28	404.63	3746.25
Kostroma Region	1322	17 876	48	19 246	202.93	2744.03	7.37	2954.33
Krasnodar Krai	8789	153 810	2223	164 822	159.40	2789.54	40.32	2989.26
Republic of Crimea	2931	26 200	163	29 294	153.69	1373.81	8.55	1536.04
Kurgan Region	1322	21 346	80	22 748	153.38	2476.63	9.28	2639.30
Kursk Region	2252	29 805	431	32 488	201.07	2661.12	38.48	2900.67
Leningrad Region	4994	37 041	66	42 101	280.74	2082.29	3.71	2366.74
Lipetsk Region	2921	32 128	132	35 181	252.66	2779.02	11.42	3043.09
Magadan Region	230	4499	60	4789	157.16	3074.24	41.00	3272.40
Mari El Republic	917	18 890	25	19 832	133.70	2754.19	3.65	2891.53
Republic of Mordovia	1401	22 046	7	23 454	173.51	2730.31	0.87	2904.69
Moscow	19 021	303 004	1152	323 177	154.26	2457.43	9.34	2621.04
Moscow Region	13 020	214 797	4393	232 210	177.90	2934.93	60.02	3172.85
Murmansk Region	1247	19 879	520	21646	163.61	2608.20	68.23	2840.04
Nenets Autonomous Area	143	1850	434	2427	326.20	4220.08	990.01	5536.29
Nizhny Novgorod Region	5515	119 466	4591	129 572	169.16	3664.30	140.82	3974.28
Novgorod Region	1281	15 285	47	16613	208.06	2482.57	7.63	2698.26
Novosibirsk Region	3932	79 296	2054	85 282	142.35	2870.72	74.36	3087.43

Region	Number of patients				Per 100,000 population			
	T1DM	T2DM	Other types of diabetes	Total	T1DM	T2DM	Other types of diabetes	Total
Omsk Region	3367	48 412	811	52 590	170.18	2446.95	40.99	2658.12
Orenburg Region	3954	59 556	894	64 404	198.22	2985.62	44.82	3228.66
Oryol Region	1628	22 537	147	24 312	214.29	2966.48	19.35	3200.12
Penza Region	2317	43 069	454	45 840	171.79	3193.36	33.66	3398.82
Perm Krai	4139	75 176	1431	80 746	157.11	2853.62	54.32	3065.05
Pskov Region	623	5881	28	6532	96.38	909.84	4.33	1010.56
Rostov Region	6060	121 352	355	127 767	143.06	2864.78	8.38	3016.22
Samara Region	4774	74 740	333	79 847	148.91	2331.27	10.39	2490.57
Saint Petersburg	10 706	128 687	3073	142 466	204.87	2462.58	58.81	2726.26
Saratov Region	3892	73 427	35	77 354	156.46	2951.80	1.41	3109.67
Republic of Sakha/Yakutia	1099	20 508	70	21 677	114.52	2136.94	7.29	2258.75
Sverdlovsk Region	8174	13 3095	382	141651	188.78	3073.78	8.82	3271.38
Sevastopol	212	265	4	481	50.93	63.66	0.96	115.55
Republic of North Ossetia-Alania	913	13 024	20	13957	129.73	1850.67	2.84	1983.25
Smolensk Region	2498	31 134	865	34 497	260.58	3247.76	90.23	3598.57
Stavropol Territory	3959	65 778	1683	71 420	141.31	2347.88	60.07	2549.26
Tambov Region	2691	41 704	787	45 182	256.21	3970.69	74.93	4301.84
Republic of Tatarstan	7529	109 066	471	117 066	194.61	2819.17	12.17	3025.95
Tver Region	2971	38 796	718	42 485	227.71	2973.46	55.03	3256.19
Tomsk Region	1232	28 206	223	29 661	114.42	2619.52	20.71	2754.65
Tula Region	2840	48 323	381	51 544	188.52	3207.75	25.29	3421.56
Republic of Tuva	238	1223	8	1469	75.40	387.47	2.53	465.41
Tyumen Region	2318	41 983	600	44 901	159.35	2886.17	41.25	3086.77
Ulyanovsk Region	1976	38 215	94	40 285	157.12	3038.67	7.47	3203.27
Khabarovsk Krai	1398	24 409	199	26 006	104.75	1829.00	14.91	1948.67
Republic of Khakassia	731	15 487	106	16 324	136.18	2885.16	19.75	3041.09
Khanty-Mansijsk Autonomous District - Yugra	2609	49 899	904	53 412	160.38	3067.39	55.57	3283.35
Chelyabinsk Region	5343	75 309	437	81 089	152.63	2151.25	12.48	2316.35
Chechen Republic	463	13 347	30	13 840	33.21	957.34	2.15	992.70
Chuvash Republic	1250	25 834	171	27 255	101.08	2089.07	13.83	2203.98
Yamalo-Nenets Autonomous District	921	13 627	581	15 129	172.44	2551.38	108.78	2832.59
Yaroslavl Region	2724	43 403	59	46 186	214.17	3412.42	4.64	3631.23

Table 2

PREVALENCE RATE OF DM IN THE PEDIATRIC AGE GROUP ACCORDING TO THE DATA OF THE ONLINE REGISTRY IN 79 REGIONS OF THE RUSSIAN FEDERATION, 2016

Region	Number of patients			Per 100,000 population		
	T1DM	T2DM	Other types of diabetes	T1DM	T2DM	Other types of diabetes
Russian Federation 79 regions	20468	1261	235	86.73	5.34	1.00
Adygea Republic	42	8	3	52.12	9.93	3.72
Altai Republic	24	0	0	41.70	0.00	0.00
Altai Territory	410	14	3	97.59	3.33	0.71
Amur Region	123	0	2	80.50	0.00	1.31
Arkhangelsk Region	264	1	4	134.05	0.51	2.03
Astrakhan Region	165	11	1	85.85	5.72	0.52
Bashkortostan Republic	939	3	1	122.19	0.39	0.13
Belgorod Region	168	22	2	69.95	9.16	0.83
Bryansk Region	187	20	0	96.62	10.33	0.00
Buryat Republic	47	11	1	21.07	4.93	0.45
Vladimir Region	133	49	3	62.38	22.98	1.41
Volgograd Region	306	33	1	75.39	8.13	0.25

Region	Number of patients			Per 100,000 population		
	T1DM	T2DM	Other types of diabetes	T1DM	T2DM	Other types of diabetes
Vologda Region	282	28	1	133.71	13.28	0.47
Voronezh Region	398	25	24	119.54	7.51	7.21
Dagestan Republic	49	13	1	6.59	1.75	0.13
Jewish Autonomous Oblast	6	1	0	18.40	3.07	0.00
Zabaykalsky Krai	223	15	8	96.61	6.50	3.47
Ivanovo Region	160	4	0	102.35	2.56	0.00
Ingush Republic	41	38	0	30.71	28.47	0.00
Irkutsk Region	255	7	0	52.68	1.45	0.00
Kabardino-Balkar Republic	66	4	0	37.83	2.29	0.00
Kaliningrad Region	90	7	0	56.81	4.42	0.00
Republic of Kalmykia	15	1	0	26.01	1.73	0.00
Kaluga Region	162	1	0	105.15	0.65	0.00
Kamchatka Krai	57	0	0	103.65	0.00	0.00
Karachai-Cherkess Republic	30	8	1	32.75	8.73	1.09
Republic of Karelia	148	12	5	138.69	11.25	4.69
Kemerovo Region	429	0	4	86.36	0.00	0.81
Kirov Region	211	4	4	98.38	1.87	1.87
Republic of Komi	184	4	6	114.16	2.48	3.72
Kostroma Region	99	13	1	89.79	11.79	0.91
Krasnodar Krai	896	50	16	94.81	5.29	1.69
Republic of Crimea	165	65	1	52.42	20.65	0.32
Kurgan Region	117	9	0	75.68	5.82	0.00
Kursk Region	209	9	2	120.73	5.20	1.16
Leningrad Region	72	16	1	28.99	6.44	0.40
Lipetsk Region	116	18	1	64.02	9.93	0.55
Magadan Region	23	0	2	89.55	0.00	7.79
Mari El Republic	99	2	0	79.56	1.61	0.00
Republic of Mordovia	122	2	2	105.69	1.73	1.73
Moscow	2099	83	49	124.92	4.94	2.92
Moscow Region	1364	12	16	118.94	1.05	1.40
Murmansk Region	73	13	1	55.67	9.91	0.76
Nenets Autonomous Area	16	4	1	158.70	39.67	9.92
Nizhny Novgorod Region	559	3	3	111.39	0.60	0.60
Novgorod Region	99	4	0	99.39	4.02	0.00
Novosibirsk Region	485	9	8	103.43	1.92	1.71
Omsk Region	412	14	1	116.38	3.95	0.28
Orenburg Region	384	6	2	103.31	1.61	0.54
Oryol Region	23	6	0	19.99	5.22	0.00
Penza Region	195	0	1	98.21	0.00	0.50
Perm Krai	457	6	1	92.80	1.22	0.20
Pskov Region	51	3	0	51.81	3.05	0.00
Rostov Region	640	29	1	96.96	4.39	0.15
Samara Region	411	109	0	81.44	21.60	0.00
Saint Petersburg	1015	30	14	141.78	4.19	1.96
Saratov Region	345	14	0	89.74	3.64	0.00
Republic of Sakha/Yakutia	49	26	0	21.88	11.61	0.00
Sverdlovsk Region	696	25	3	90.57	3.25	0.39
Sevastopol	57	0	0	89.99	0.00	0.00
Republic of North Ossetia-Alania	144	19	0	104.35	13.77	0.00
Smolensk Region	44	66	2	31.71	47.57	1.44
Stavropol Territory	267	43	7	54.94	8.85	1.44
Tambov Region	148	2	0	101.56	1.37	0.00
Republic of Tatarstan	615	26	1	89.93	3.80	0.15
Tver Region	92	16	1	45.86	7.98	0.50
Tomsk Region	141	0	1	74.68	0.00	0.53

Region	Number of patients			Per 100,000 population		
	T1DM	T2DM	Other types of diabetes	T1DM	T2DM	Other types of diabetes
Tula Region	201	58	1	97.47	28.12	0.48
Republic of Tuva	0	0	0	0.00	0.00	0.00
Tyumen Region	349	8	2	121.33	2.78	0.70
Ulyanovsk Region	168	0	1	88.80	0.00	0.53
Khabarovsk Krai	178	8	1	77.89	3.50	0.44
Republic of Khakassia	14	0	0	12.87	0.00	0.00
Khanty-Mansijsk Autonomous District - Yugra	259	1	10	73.46	0.28	2.84
Chelyabinsk Region	376	52	5	60.21	8.33	0.80
Chechen Republic	52	4	0	11.41	0.88	0.00
Chuvash Republic	128	11	1	58.57	5.03	0.46
Yamalo-Nenets Autonomous District	98	4	0	81.40	3.32	0.00
Yaroslavl Region	232	19	0	116.00	9.50	0.00

Table 3

PREVALENCE RATE OF DM IN THE ADOLESCENT AGE GROUP ACCORDING TO THE DATA OF THE ONLINE REGISTRY IN 79 REGIONS OF THE RUSSIAN FEDERATION, 2016

Region	Number of patients			Per 100,000 population		
	T1DM	T2DM	Other types of diabetes	T1DM	T2DM	Other types of diabetes
Russian Federation 79 regions	7748	260	100	203.29	6.82	2.62
Adygea Republic	18	0	0	131.65	0.00	0.00
Altai Republic	11	0	0	141.32	0.00	0.00
Altai Territory	165	3	1	249.75	4.54	1.51
Amur Region	40	3	3	163.84	12.29	12.29
Arkhangelsk Region	114	2	1	367.90	6.45	3.23
Astrakhan Region	49	1	4	174.65	3.56	14.26
Bashkortostan Republic	372	6	0	296.36	4.78	0.00
Belgorod Region	67	0	0	169.30	0.00	0.00
Bryansk Region	71	3	0	217.40	9.19	0.00
Buryat Republic	23	5	0	71.75	15.60	0.00
Vladimir Region	52	5	0	150.38	14.46	0.00
Volgograd Region	89	2	1	130.53	2.93	1.47
Vologda Region	105	9	2	332.51	28.50	6.33
Voronezh Region	169	3	9	292.22	5.19	15.56
Dagestan Republic	9	4	0	6.31	2.80	0.00
Jewish Autonomous Oblast	0	4	0	0.00	83.47	0.00
Zabaykalsky Krai	93	3	0	251.17	8.10	0.00
Ivanovo Region	63	0	0	257.12	0.00	0.00
Ingush Republic	16	1	0	66.41	4.15	0.00
Irkutsk Region	127	6	0	169.77	8.02	0.00
Kabardino-Balkar Republic	37	2	0	117.85	6.37	0.00
Kaliningrad Region	45	2	4	175.21	7.79	15.57
Republic of Kalmykia	9	2	0	99.55	22.12	0.00
Kaluga Region	62	4	0	252.00	16.26	0.00
Kamchatka Krai	20	0	0	220.36	0.00	0.00
Karachai-Cherkess Republic	13	2	0	80.18	12.34	0.00
Republic of Karelia	46	6	0	268.43	35.01	0.00
Kemerovo Region	164	1	4	212.58	1.30	5.18
Kirov Region	99	2	5	293.68	5.93	14.83
Republic of Komi	50	0	3	192.93	0.00	11.58
Kostroma Region	57	2	1	326.11	11.44	5.72
Krasnodar Krai	314	9	2	204.28	5.86	1.30
Republic of Crimea	56	9	0	118.22	19.00	0.00
Kurgan Region	43	0	0	174.27	0.00	0.00

Region	Number of patients			Per 100,000 population		
	T1DM	T2DM	Other types of diabetes	T1DM	T2DM	Other types of diabetes
Kursk Region	100	3	0	329.66	9.89	0.00
Leningrad Region	40	3	0	94.78	7.11	0.00
Lipetsk Region	59	3	0	196.31	9.98	0.00
Magadan Region	9	1	2	204.31	22.70	45.40
Mari El Republic	24	2	1	127.99	10.67	5.33
Republic of Mordovia	34	2	0	163.90	9.64	0.00
Moscow	837	22	12	286.17	7.52	4.10
Moscow Region	490	14	5	280.35	8.01	2.86
Murmansk Region	41	3	0	196.04	14.34	0.00
Nenets Autonomous Area	2	0	0	117.72	0.00	0.00
Nizhny Novgorod Region	204	4	1	250.01	4.90	1.23
Novgorod Region	34	1	0	220.24	6.48	0.00
Novosibirsk Region	166	8	4	244.30	11.77	5.89
Omsk Region	123	1	0	238.88	1.94	0.00
Orenburg Region	118	4	1	202.96	6.88	1.72
Oryol Region	15	2	1	75.47	10.06	5.03
Penza Region	79	0	0	234.42	0.00	0.00
Perm Krai	159	7	4	204.84	9.02	5.15
Pskov Region	21	1	0	132.48	6.31	0.00
Rostov Region	245	5	2	218.39	4.46	1.78
Samara Region	142	5	1	179.25	6.31	1.26
Saint Petersburg	349	8	4	329.07	7.54	3.77
Saratov Region	157	8	1	234.42	11.94	1.49
Republic of Sakha/Yakutia	29	2	1	78.36	5.40	2.70
Sverdlovsk Region	257	9	0	227.91	7.98	0.00
Sevastopol	18	0	2	191.90	0.00	21.32
Republic of North Ossetia-Alania	44	1	0	178.07	4.05	0.00
Smolensk Region	33	1	0	146.69	4.45	0.00
Stavropol Territory	120	12	5	141.15	14.11	5.88
Tambov Region	70	3	1	256.55	11.00	3.67
Republic of Tatarstan	220	7	0	196.28	6.25	0.00
Tver Region	43	0	1	131.93	0.00	3.07
Tomsk Region	59	0	0	193.11	0.00	0.00
Tula Region	90	3	0	254.93	8.50	0.00
Republic of Tuva	1	0	0	7.48	0.00	0.00
Tyumen Region	101	1	0	256.28	2.54	0.00
Ulyanovsk Region	77	2	0	243.28	6.32	0.00
Khabarovsk Krai	53	1	0	156.70	2.96	0.00
Republic of Khakassia	7	0	0	43.61	0.00	0.00
Khanty-Mansijsk Autonomous District - Yugra	99	3	7	185.96	5.64	13.15
Chelyabinsk Region	137	4	1	141.35	4.13	1.03
Chechen Republic	17	1	0	22.77	1.34	0.00
Chuvash Republic	51	1	2	143.88	2.82	5.64
Yamalo-Nenets Autonomous District	35	0	0	175.67	0.00	0.00
Yaroslavl Region	71	1	1	229.00	3.23	3.23

Table 4

PREVALENCE RATE OF DM IN THE ADULT AGE GROUP ACCORDING TO THE DATA OF THE ONLINE REGISTRY IN 79 REGIONS OF THE RUSSIAN FEDERATION, 2016

Region	Number of patients			Per 100,000 population		
	T1DM	T2DM	Other types of diabetes	T1DM	T2DM	Other types of diabetes
Russian Federation 79 regions	199 298	3 652 661	69 807	179.30	3286.13	62.80
Adygea Republic	748	12 684	401	209.39	3550.75	112.26

Region	Number of patients			Per 100,000 population		
	T1DM	T2DM	Other types of diabetes	T1DM	T2DM	Other types of diabetes
Altai Republic	258	3780	160	172.21	2523.01	106.79
Altai Territory	3474	83 903	2353	183.75	4437.96	124.46
Amur Region	843	22 197	1086	134.13	3531.83	172.80
Arkhangelsk Region	1963	38 140	5589	217.55	4226.90	619.41
Astrakhan Region	1271	28 322	787	159.20	3547.46	98.58
Bashkortostan Republic	5233	96 015	74	164.71	3022.14	2.33
Belgorod Region	2492	47 019	612	196.16	3701.17	48.17
Bryansk Region	2215	40 707	234	221.60	4072.61	23.41
Buryat Republic	738	28 111	151	101.49	3865.65	20.76
Vladimir Region	1941	45 946	297	168.87	3997.45	25.84
Volgograd Region	3385	73 820	374	163.38	3562.99	18.05
Vologda Region	4762	31 964	674	503.81	3381.73	71.31
Voronezh Region	4099	70 500	9644	210.99	3628.96	496.42
Dagestan Republic	243	5362	79	11.41	251.86	3.71
Jewish Autonomous Oblast	302	4824	9	234.61	3747.47	6.99
Zabaykalsky Krai	1870	25 408	476	229.40	3116.93	58.39
Ivanovo Region	1684	38 349	1803	198.35	4516.90	212.36
Ingush Republic	221	6234	49	70.11	1977.81	15.55
Irkutsk Region	2610	62 227	830	140.78	3356.55	44.77
Kabardino-Balkar Republic	523	4744	1	79.68	722.74	0.15
Kaliningrad Region	1495	23 900	189	188.68	3016.39	23.85
Republic of Kalmykia	298	8005	289	140.55	3775.50	136.30
Kaluga Region	1565	29 284	174	188.30	3523.50	20.94
Kamchatka Krai	251	7903	92	99.58	3135.54	36.50
Karachai-Cherkess Republic	708	10 099	121	196.68	2805.42	33.61
Republic of Karelia	1505	24 724	1276	297.42	4885.91	252.16
Kemerovo Region	3153	64 769	1049	147.08	3021.32	48.93
Kirov Region	1771	45 027	4919	168.78	4291.18	468.79
Republic of Komi	1294	27 100	3458	193.21	4046.39	516.33
Kostroma Region	1166	17 861	46	222.64	3410.44	8.78
Krasnodar Krai	7579	153 751	2205	171.66	3482.44	49.94
Republic of Crimea	2710	26 126	162	175.41	1691.01	10.49
Kurgan Region	1162	21 337	80	170.22	3125.70	11.72
Kursk Region	1943	29 793	429	211.99	3250.48	46.80
Leningrad Region	4882	37 022	65	328.03	2487.57	4.37
Lipetsk Region	2746	32 107	131	290.63	3398.17	13.86
Magadan Region	198	4498	56	170.31	3869.05	48.17
Mari El Republic	794	18 886	24	146.31	3480.14	4.42
Republic of Mordovia	1245	22 042	5	185.47	3283.59	0.74
Moscow	16 085	302 899	1091	155.30	2924.47	10.53
Moscow Region	11 166	214 771	4372	186.19	3581.28	72.90
Murmansk Region	1133	19 863	519	185.70	3255.58	85.06
Nenets Autonomous Area	125	1846	433	389.93	5758.49	1350.72
Nizhny Novgorod Region	4752	119 459	4587	177.52	4462.73	171.36
Novgorod Region	1148	15 280	47	229.30	3052.04	9.39
Novosibirsk Region	3281	79 279	2042	147.44	3562.51	91.76
Omsk Region	2832	48 397	810	180.04	3076.82	51.50
Orenburg Region	3452	59 546	891	220.59	3805.04	56.94
Oryol Region	1590	22 529	146	254.48	3605.82	23.37
Penza Region	2043	43 069	453	182.99	3857.65	40.57
Perm Krai	3523	75 163	1426	170.66	3641.03	69.08
Pskov Region	551	5877	28	103.55	1104.51	5.26
Rostov Region	5175	121 318	352	149.40	3502.51	10.16
Samara Region	4221	74 626	332	160.98	2846.06	12.66
Saint Petersburg	9342	128 649	3055	212.14	2921.38	69.37

Region	Number of patients			Per 100,000 population		
	T1DM	T2DM	Other types of diabetes	T1DM	T2DM	Other types of diabetes
Saratov Region	3390	73 405	34	166.49	3605.12	1.67
Republic of Sakha/Yakutia	1021	20 480	69	146.12	2931.01	9.87
Sverdlovsk Region	7221	133 061	379	209.38	3858.18	10.99
Sevastopol	137	265	2	39.88	77.14	0.58
Republic of North Ossetia-Alania	725	13 004	20	134.00	2403.55	3.70
Smolensk Region	2421	31 067	863	303.62	3896.14	108.23
Stavropol Territory	3572	65 723	1671	160.13	2946.40	74.91
Tambov Region	2473	41 699	786	281.89	4753.23	89.60
Republic of Tatarstan	6694	109 033	470	217.85	3548.36	15.30
Tver Region	2836	38 780	716	264.67	3619.10	66.82
Tomsk Region	1032	28 206	222	120.36	3289.65	25.89
Tula Region	2549	48 262	380	201.52	3815.43	30.04
Republic of Tuva	237	1223	8	118.77	612.88	4.01
Tyumen Region	1868	41 974	598	165.66	3722.48	53.03
Ulyanovsk Region	1731	38 213	93	166.96	3685.73	8.97
Khabarovsk Krai	1167	24 400	198	108.84	2275.70	18.47
Republic of Khakassia	710	15 487	106	172.36	3759.61	25.73
Khanty-Mansijsk Autonomous District - Yugra	2251	49 895	887	184.36	4086.54	72.65
Chelyabinsk Region	4830	75 253	431	173.79	2707.64	15.51
Chechen Republic	394	13 342	30	45.61	1544.65	3.47
Chuvash Republic	1071	25 822	168	108.99	2627.83	17.10
Yamalo-Nenets Autonomous District	788	13 623	581	200.11	3459.55	147.54
Yaroslavl Region	2421	43 383	58	232.59	4167.82	5.57

Appendix 2

Table 1

INCIDENCE RATE OF DM ACCORDING TO THE DATA OF THE ON-LINE REGISTRY IN 79 REGIONS OF THE RUSSIAN FEDERATION, 2016

Region	Number of patients				Per 100,000 population			
	T1DM	T2DM	Other types of diabetes	Total	T1DM	T2DM	Other types of diabetes	Total
Russian Federation 79 regions	8516	214 668	11 989	235 173	6.15	154.92	8.65	169.72
Adygea Republic	18	382	39	439	3.99	84.61	8.64	97.24
Altai Republic	7	231	8	246	3.25	107.36	3.72	114.33
Altai Territory	229	6876	402	7507	9.63	289.30	16.91	315.85
Amur Region	54	1500	344	1898	6.70	186.18	42.70	235.57
Arkhangelsk Region	127	2998	1036	4161	11.24	265.25	91.66	368.15
Astrakhan Region	87	2353	128	2568	8.54	231.00	12.57	252.10
Bashkortostan Republic	320	8264	83	8667	7.86	202.99	2.04	212.89
Belgorod Region	86	3160	97	3343	5.55	203.85	6.26	215.66
Bryansk Region	75	3122	57	3254	6.12	254.70	4.65	265.47
Buryat Republic	26	2133	75	2234	2.65	217.15	7.64	227.43
Vladimir Region	59	2542	46	2647	4.22	181.94	3.29	189.45
Volgograd Region	149	4930	212	5291	5.85	193.64	8.33	207.82
Vologda Region	116	1526	108	1750	9.77	128.49	9.09	147.35
Voronezh Region	214	6405	1364	7983	9.17	274.48	58.45	342.11
Dagestan Republic	50	1003	13	1066	1.66	33.26	0.43	35.35
Jewish Autonomous Oblast	1	37	0	38	0.60	22.27	0.00	22.88
Zabaykalsky Krai	85	896	54	1035	7.85	82.73	4.99	95.57
Ivanovo Region	77	2945	266	3288	7.48	285.97	25.83	319.27
Ingush Republic	6	271	0	277	1.27	57.32	0.00	58.59
Irkutsk Region	0	0	0	0	0.00	0.00	0.00	0.00
Kabardino-Balkar Republic	22	471	0	493	2.55	54.62	0.00	57.18

Region	Number of patients				Per 100,000 population			
	T1DM	T2DM	Other types of diabetes	Total	T1DM	T2DM	Other types of diabetes	Total
Kaliningrad Region	9	462	3	474	0.92	47.31	0.31	48.54
Republic of Kalmykia	16	423	20	459	5.74	151.76	7.18	164.67
Kaluga Region	83	2106	9	2198	8.22	208.56	0.89	217.67
Kamchatka Krai	24	507	20	551	7.59	160.38	6.33	174.30
Karachai-Cherkess Republic	13	474	3	490	2.78	101.33	0.64	104.75
Republic of Karelia	81	1573	175	1829	12.86	249.73	27.78	290.38
Kemerovo Region	182	4768	392	5342	6.70	175.45	14.42	196.57
Kirov Region	94	3760	777	4631	7.24	289.79	59.89	356.92
Republic of Komi	69	2055	976	3100	8.05	239.84	113.91	361.80
Kostroma Region	48	977	8	1033	7.37	149.97	1.23	158.57
Krasnodar Krai	455	9969	386	10810	8.25	180.80	7.00	196.05
Republic of Crimea	99	1974	19	2092	5.19	103.51	1.00	109.70
Kurgan Region	53	2312	11	2376	6.15	268.25	1.28	275.67
Kursk Region	63	1836	37	1936	5.62	163.93	3.30	172.85
Leningrad Region	40	921	13	974	2.25	51.77	0.73	54.75
Lipetsk Region	64	1586	20	1670	5.54	137.19	1.73	144.45
Magadan Region	11	265	9	285	7.52	181.08	6.15	194.75
Mari El Republic	52	1563	7	1622	7.58	227.89	1.02	236.49
Republic of Mordovia	82	1627	6	1715	10.16	201.50	0.74	212.40
Moscow	548	15198	205	15951	4.44	123.26	1.66	129.37
Moscow Region	570	12068	763	13401	7.79	164.89	10.43	183.11
Murmansk Region	48	1072	70	1190	6.30	140.65	9.18	156.13
Nenets Autonomous Area	0	0	0	0	0.00	0.00	0.00	0.00
Nizhny Novgorod Region	291	7612	715	8618	8.93	233.48	21.93	264.33
Novgorod Region	43	899	7	949	6.98	146.01	1.14	154.14
Novosibirsk Region	187	3840	393	4420	6.77	139.02	14.23	160.02
Omsk Region	66	644	11	721	3.34	32.55	0.56	36.44
Orenburg Region	218	5054	111	5383	10.93	253.36	5.56	269.86
Oryol Region	10	472	10	492	1.32	62.13	1.32	64.76
Penza Region	116	3247	130	3493	8.60	240.75	9.64	258.99
Perm Krai	219	4972	560	5751	8.31	188.73	21.26	218.30
Pskov Region	38	351	1	390	5.88	54.30	0.15	60.34
Rostov Region	304	8573	72	8949	7.18	202.38	1.70	211.26
Samara Region	259	6443	113	6815	8.08	200.97	3.52	212.57
Saint Petersburg	123	2020	136	2279	2.35	38.66	2.60	43.61
Saratov Region	0	0	0	0	0.00	0.00	0.00	0.00
Republic of Sakha/Yakutia	16	1046	4	1066	1.67	108.99	0.42	111.08
Sverdlovsk Region	388	9713	172	10273	8.96	224.32	3.97	237.25
Sevastopol	6	13	0	19	1.44	3.12	0.00	4.56
Republic of North Ossetia-Alania	26	705	1	732	3.69	100.18	0.14	104.01
Smolensk Region	57	833	4	894	5.95	86.89	0.42	93.26
Stavropol Territory	75	2075	74	2224	2.68	74.06	2.64	79.38
Tambov Region	16	323	11	350	1.52	30.75	1.05	33.32
Republic of Tatarstan	468	7879	27	8374	12.10	203.66	0.70	216.45
Tver Region	40	1163	28	1231	3.07	89.14	2.15	94.35
Tomsk Region	60	1366	67	1493	5.57	126.86	6.22	138.66
Tula Region	43	1305	12	1360	2.85	86.63	0.80	90.28
Republic of Tuva	0	0	0	0	0.00	0.00	0.00	0.00
Tyumen Region	120	3170	151	3441	8.25	217.93	10.38	236.56
Ulyanovsk Region	67	2313	18	2398	5.33	183.92	1.43	190.68
Khabarovsk Krai	59	1193	43	1295	4.42	89.39	3.22	97.04
Republic of Khakassia	36	1328	10	1374	6.71	247.40	1.86	255.97
Khanty-Mansijsk Autonomous District - Yugra	137	3257	534	3928	8.42	200.21	32.83	241.46
Chelyabinsk Region	252	6562	202	7016	7.20	187.45	5.77	200.42

Region	Number of patients				Per 100,000 population			
	T1DM	T2DM	Other types of diabetes	Total	T1DM	T2DM	Other types of diabetes	Total
Chechen Republic	27	882	11	920	1.94	63.26	0.79	65.99
Chuvash Republic	61	1912	16	1989	4.93	154.61	1.29	160.84
Yamalo-Nenets Autonomous District	38	662	15	715	7.11	123.95	2.81	133.87
Yaroslavl Region	138	3300	69	3507	10.85	259.45	5.42	275.73

Appendix 3.

Table 1

MORTALITY IN DM ACCORDING TO THE DATA OF THE ONLINE REGISTRY IN 79 REGIONS OF THE RUSSIAN FEDERATION, 2016

Region	Number of patients				Per 100,000 population			
	T1DM	T2DM	Other types of diabetes	Total	T1DM	T2DM	Other types of diabetes	Total
Russian Federation 79 regions	2906	83542	796	87244	2.10	60.29	0.57	62.96
Adygea Republic	9	121	2	132	1.99	26.80	0.44	29.24
Altai Republic	4	79	0	83	1.86	36.72	0.00	38.58
Altai Territory	74	2837	63	2974	3.11	119.36	2.65	125.13
Amur Region	20	731	14	765	2.48	90.73	1.74	94.95
Arkhangelsk Region	38	1108	69	1215	3.36	98.03	6.10	107.50
Astrakhan Region	32	759	9	800	3.14	74.51	0.88	78.54
Bashkortostan Republic	134	3675	0	3809	3.29	90.27	0.00	93.56
Belgorod Region	40	1637	15	1692	2.58	105.60	0.97	109.15
Bryansk Region	69	1188	3	1260	5.63	96.92	0.24	102.79
Buryat Republic	2	180	0	182	0.20	18.32	0.00	18.53
Vladimir Region	32	783	2	817	2.29	56.04	0.14	58.48
Volgograd Region	67	2117	6	2190	2.63	83.15	0.24	86.02
Vologda Region	65	490	5	560	5.47	41.26	0.42	47.15
Voronezh Region	94	2403	119	2616	4.03	102.98	5.10	112.11
Dagestan Republic	2	28	0	30	0.07	0.93	0.00	0.99
Jewish Autonomous Oblast	0	3	0	3	0.00	1.81	0.00	1.81
Zabaykalsky Krai	25	431	2	458	2.31	39.80	0.18	42.29
Ivanovo Region	36	1095	26	1157	3.50	106.33	2.52	112.35
Ingush Republic	0	19	0	19	0.00	4.02	0.00	4.02
Irkutsk Region	0	0	0	0	0.00	0.00	0.00	0.00
Kabardino-Balkar Republic	0	9	0	9	0.00	1.04	0.00	1.04
Kaliningrad Region	12	202	0	214	1.23	20.69	0.00	21.92
Republic of Kalmykia	1	126	1	128	0.36	45.20	0.36	45.92
Kaluga Region	27	874	2	903	2.67	86.55	0.20	89.43
Kamchatka Krai	4	197	5	206	1.27	62.32	1.58	65.17
Karachai-Cherkess Republic	2	43	0	45	0.43	9.19	0.00	9.62
Republic of Karelia	23	389	1	413	3.65	61.76	0.16	65.57
Kemerovo Region	72	2151	11	2234	2.65	79.15	0.40	82.20
Kirov Region	23	1740	88	1851	1.77	134.11	6.78	142.66
Republic of Komi	35	916	46	997	4.08	106.91	5.37	116.36
Kostroma Region	21	401	1	423	3.22	61.55	0.15	64.93
Krasnodar Krai	146	4284	30	4460	2.65	77.70	0.54	80.89
Republic of Crimea	21	276	2	299	1.10	14.47	0.10	15.68
Kurgan Region	5	313	0	318	0.58	36.32	0.00	36.90
Kursk Region	55	887	4	946	4.91	79.20	0.36	84.46
Leningrad Region	29	195	0	224	1.63	10.96	0.00	12.59
Lipetsk Region	58	714	1	773	5.02	61.76	0.09	66.86

Region	Number of patients				Per 100,000 population			
	T1DM	T2DM	Other types of diabetes	Total	T1DM	T2DM	Other types of diabetes	Total
Magadan Region	0	24	0	24	0.00	16.40	0.00	16.40
Mari El Republic	24	664	1	689	3.50	96.81	0.15	100.46
Republic of Mordovia	42	765	0	807	5.20	94.74	0.00	99.94
Moscow	123	4959	5	5087	1.00	40.22	0.04	41.26
Moscow Region	160	5969	32	6161	2.19	81.56	0.44	84.18
Murmansk Region	6	312	2	320	0.79	40.94	0.26	41.99
Nenets Autonomous Area	0	0	0	0	0.00	0.00	0.00	0.00
Nizhny Novgorod Region	83	4058	82	4223	2.55	124.47	2.52	129.53
Novgorod Region	29	458	1	488	4.71	74.39	0.16	79.26
Novosibirsk Region	58	2323	40	2421	2.10	84.10	1.45	87.65
Omsk Region	19	593	5	617	0.96	29.97	0.25	31.19
Orenburg Region	66	2008	9	2083	3.31	100.66	0.45	104.42
Oryol Region	2	89	1	92	0.26	11.71	0.13	12.11
Penza Region	44	1595	7	1646	3.26	118.26	0.52	122.04
Perm Krai	75	2531	20	2626	2.85	96.07	0.76	99.68
Pskov Region	0	4	0	4	0.00	0.62	0.00	0.62
Rostov Region	82	3662	5	3749	1.94	86.45	0.12	88.50
Samara Region	89	1939	3	2031	2.78	60.48	0.09	63.35
Saint Petersburg	11	188	1	200	0.21	3.60	0.02	3.83
Saratov Region	0	0	0	0	0.00	0.00	0.00	0.00
Republic of Sakha/Yakutia	6	225	0	231	0.63	23.45	0.00	24.07
Sverdlovsk Region	114	2793	8	2915	2.63	64.50	0.18	67.32
Sevastopol	1	8	0	9	0.24	1.92	0.00	2.16
Republic of North Ossetia-Alania	0	2	0	2	0.00	0.28	0.00	0.28
Smolensk Region	23	324	0	347	2.40	33.80	0.00	36.20
Stavropol Territory	27	718	9	754	0.96	25.63	0.32	26.91
Tambov Region	10	366	7	383	0.95	34.85	0.67	36.47
Republic of Tatarstan	151	3122	4	3277	3.90	80.70	0.10	84.70
Tver Region	30	502	2	534	2.30	38.47	0.15	40.93
Tomsk Region	16	604	1	621	1.49	56.09	0.09	57.67
Tula Region	28	456	1	485	1.86	30.27	0.07	32.19
Republic of Tuva	0	0	0	0	0.00	0.00	0.00	0.00
Tyumen Region	30	1259	7	1296	2.06	86.55	0.48	89.10
Ulyanovsk Region	33	1130	1	1164	2.62	89.85	0.08	92.56
Khabarovsk Krai	11	362	0	373	0.82	27.13	0.00	27.95
Republic of Khakassia	10	515	3	528	1.86	95.94	0.56	98.36
Khanty-Mansijsk Autonomous District - Yugra	28	772	6	806	1.72	47.46	0.37	49.55
Chelyabinsk Region	99	2151	3	2253	2.83	61.44	0.09	64.36
Chechen Republic	5	185	0	190	0.36	13.27	0.00	13.63
Chuvash Republic	22	882	2	906	1.78	71.32	0.16	73.26
Yamalo-Nenets Autonomous District	9	136	1	146	1.69	25.46	0.19	27.34
Yaroslavl Region	63	1488	0	1551	4.95	116.99	0.00	121.94

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Информация об авторах [Authors Info]

Дедов Иван Иванович, д.м.н., профессор, академик РАН [**Ivan I. Dedov**, MD, PhD, Professor]; адрес: 117036, Москва, улица Дм. Ульянова, д. 11 [address: 11 Dm. Ulyanova street, Moscow, 117036 Russian Federation]; телефон: 8 (495) 500-00-90; ORCID: http://orcid.org/0000-0002-8175-7886; eLibrary SPIN: 5873-2280; e-mail: dedov@endocrincentr.ru.

Шестакова Марина Владимировна, д.м.н., профессор, академик РАН [Marina V. Shestakova, MD, PhD, Professor]; ORCID: http://orcid.org/0000-0003-3893-9972; eLibrary SPIN: 7584-7015; e-mail: nephro@endocrincentr.ru. Викулова Ольга Константиновна, к.м.н., доцент [Olga K. Vikulova, MD, PhD, associate professor]; eLibrary SPIN: 9790-2665; ORCID: http://orcid.org/0000-0003-0571-8882; e-mail: gos.registr@endocrincentr.ru.

Цитировать:

Дедов И.И., Шестакова М.В., Викулова О.К. Эпидемиология сахарного диабета в Российской Федерации: клинико-статистический отчет по данным Федерального регистра сахарного диабета // Сахарный диабет. — 2017. — Т. 20. — №1. — С. 13-41. doi: 10.14341/DM8664

To cite this article:

Dedov II, Shestakova MV, Vikulova OK. Epidemiology of diabetes mellitus in Russian Federation: clinical and statistical report according to the federal diabetes registry. *Diabetes mellitus*. 2017;20(1):13-41. doi: 10.14341/DM8664