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Quality of diabetes care at the largest outpatient clinics in Vilnius

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Background. Essential data on the quality of diabetes care needed for the development of National Diabetes Programme in Lithuania are lacking. The aim of the study was to assess the quality of diabetes care compared to the local guidelines in Vilnius, Lithuania.

Materials and methods. Retrospective data collection covering the period from 2012 to 2013 was performed in 5 Vilnius outpatient clinics assessing process and outcome indicators in type 1 (T1DM) and type 2 diabetes mellitus (T2DM) subjects.

Results. In a sample of 1,719 patients (58.9% women, 92.6% T2DM) the annual HbA1c assessment rate was 88.6%. Glycaemic control was significantly better in T2DM compared to T1DM patients: average HbA1c was 7.0 ± 1.4% vs 9.1 ± 1.8% and HbA1c ≤ 7% in 59 vs 9.4%, respectively ($p < 0.001$); referrals to an endocrinologist were recommended in 56.3% of cases.

Annual screening for diabetic foot, retinopathy, nephropathy, renal function and lipids was performed in 4.6, 24.4, 2.3, 29.3 and 13.2% of patients, respectively, with higher performance rate of retinal screening and urinary microalbumin in T1DM; BMI and blood pressure were recorded for 50.2 and 97.2% of patients, respectively.

Prevalence of nephropathy, polyneuropathy, retinopathy, and angiopathy was 8.4, 36.2, 10.7 and 7.7%, respectively, with the higher prevalence in T1DM.

Conclusions. The analysis revealed good glycaemic control in T2DM, but insufficient in T1DM. Continuous monitoring of diabetes complications and cardiovascular risk factors did not meet the local Diabetes Care Guidelines.

Keywords: quality of diabetes care, diabetes mellitus, average HbA1c

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INTRODUCTION

Diabetes mellitus (DM) is one of chronic conditions, requiring continual comprehensive management to reduce the risk of complications and cardiovascular diseases. National diabetes programmes are build in many countries to organize the accessibility and quality of diabetes care. Lithuania is amongst those countries, where no national diabetes programme is implemented. With a population of approximately 3 million residents, the prevalence of diabetes in Lithuania was 4.9% in 2013 according to the International Diabetes Federation and 3.9% according to the Institute of Hygiene Health Information Centre under the Ministry of Health of the Republic of Lithuania (1, 2). The discrepancy of epidemiological data and the lack of current quality of diabetes care analysis is an important missing part for the National Diabetes Programme, which is currently under development. Data from the Diabetes Experts Panel from Accessing Countries (DEPAC) study showed the average glycated haemoglobin (HbA1c) of 8.45% in type 1 DM (T1DM) and 7.77% in type 2 DM (T2DM) subjects in Lithuania in 2005 (3). The other study at the primary care level showed that the target HbA1c of <7% was achieved in 51% of patients in 2007–2008 (4). Both studies included a randomly selected small number of subjects and covered only some aspects of diabetes care. Recently we have published the data of the comprehensive diabetes care audit, performed at the Vilnius University Hospital Santariškių Klinikos (Santariskiu Clinics) Centre of Family Medicine, where the quality of diabetes care was assessed against the local Diabetes Care Guidelines, using the process and outcome indicators in a sample of 315 patients. The average HbA1c was 6.9% and the proportion of patients reaching the target <7% was 67%, however, patients education, continuous monitoring for complications and cardiovascular risk factors did not meet the local guidelines (5). These data showed that the current guidelines did not secure performance of the described procedures for assessment of diabetes complications and encouraged to expand our research to other Vilnius outpatient clinics in a representative sample of patients.

The aim of our study was to assess the quality of diabetes care against the local Diabetes Care Guidelines and to identify the weakest links in order to address them in the National Diabetes Programme, which is currently being developed.

MATERIALS AND METHODS

Setting. Diabetes management was assessed in the 5 largest public outpatient clinics of Vilnius – the capital of Lithuania with over 500 thousands of inhabitants and 3.25% incidence of diabetes in 2013 for adults above 18 years. Each primary outpatient clinic serves about 60,000 residents. Diabetes care is provided by primary care physicians, diabetes nurses and specialists.

Local Diabetes Care Guidelines. According to the described procedures, HbA1c has to be evaluated every 3 months in all patients with diabetes. General practitioners have to refer patients to an endocrinologist if HbA1c<7% is not reached in 6 months or evaluation for diabetes complications is needed. Diabetes complications and cardiovascular risk factors have to be assessed annually.

Preparation. The study was approved by the Vilnius Regional Bioethics Committee on 11 of February 2014. A standardized data collection form, covering the aspects described in the local Diabetes Care Guidelines, was prepared. One or two researchers, responsible for data collection, were recruited in each clinic. Training workshops were held prior to data collection and later during the process to ensure the quality of data collection.

Sample size and data management. The sample size calculation based on the total number of people, registered with each clinic, the proportion of adults and the percentage of patients with diabetes was done. The total sample size calculated was 1,675 for the 95% confidence level and 5% precision. Systematic random sampling was conducted in the five outpatient clinics. The sampling interval (k) was set according to the number of adults registered with each clinic and the required sample size. A random number was selected between 1 and k. Every kth patient was selected starting from that random number. Data collection was conducted in 3 months (May to July 2014) and covered the period from 2012 until 2013 (inclusive). An electronic database system was used in each clinic to extract data of all adult patients, who had diagnostic codes of type 1 or type 2 diabetes – E10.0–E10.9 or E11.0–E11.9 according to

the International Statistical Classification of Diseases and Related Health Problems, Tenth Revision, Australian Modification (ICD-10-AM). The list of patients was used to randomly select the estimated number of subjects for evaluation.

Data was collected from the clinical notes and the electronic database system into a standardized data collection form. The sampled patients qualified for the review if they: 1) had been attending the clinic for at least 1 year; 2) had diabetes diagnosed for at least 12 months.

The following data was collected:

– Demographic: year of birth, gender, type of diabetes, year of diabetes diagnosis.

– Current glucose lowering therapy.

– Process indicators of the quality of diabetes care:

– Physical examination: body weight, body mass index (BMI), blood pressure (BP).

– Annual performance of plasma creatinine, urine albumin/creatinine ratio or daily microalbuminuria, lipid profile, retinal screening, feet examination.

– HbA1c performance rate.

– Outcome indicators of the quality of diabetes care:

– Glycaemia control.

– Referral rate to an endocrinologist.

– BP control.

– Diabetes complications if they are present in diagnosis or:

• Retinopathy, diagnosed by an ophthalmologist through retinal screening.

• Nephropathy, diagnosed by nephrologists or albumin/creatinine ratio or daily microalbuminuria testing.

• Neuropathy, diagnosed by a neurologist or feet examination.

• Angiopathy, diagnosed by an angiosurgeon.

Lipid control was not used as an outcome indicator due to a very low lipid profile assessment rate.

If data was not found in the clinical notes or the electronic database system, it was considered missing.

Statistical analysis. Statistical analysis was performed with the IBM Statistical Package for the Social Sciences version 19.0 and MS Excel 2010. The results were presented as average ± standard deviation (SD) for continuous variables and as absolute numbers and percentages for categorical variables. The data was checked for normality using the Shapiro–Wilk test. Continuous variables between the groups were compared by the Mann–Whitney U-test (2 groups) and by the Kruskal–Wallis test (>2 groups). Categorical variables were analyzed with the χ^2 test or Fisher's exact test. All *p* values were two-tailed and the level of significance was set to 0.05.

RESULTS

Patient characteristics

There were 1,729 out of 14,363 patients with diabetes selected and included into the analysis – 128 with T1DM and 1,591 with T2DM. The type 2 diabetes subjects were elder, more obese, had a shorter diabetes duration and a higher proportion of women (Table 1).

Diabetes treatment strategy

The highest proportion of T2DM patients – 71.9% were treated with oral antidiabetic agents; 58.7% of them were on metformin monotherapy, 24.1% on combination of metformin and sulphonilurea, 10% on sulphonilurea monotherapy. Dipeptidyl peptidase-4 inhibitors and pioglitazon were administered in combination with other antidiabetic agents for 4.6 and 2.6% of the patients, respectively. Only 0.7% of T2DM patients were treated with glucagon-like peptide-1 receptor agonists. Combination of insulin therapy and oral agents was used in 9.5% of patients, insulin therapy in 11.2%. There were 6.7% of the T2DM subjects controlled with a diet only.

Process indicators of the quality of diabetes care

Body weight and BMI were measured and recorded for about 50% of the subjects, blood pressure in more than 95% in both groups. Adherence to the recommendations for annual check of diabetes related parameters and complications was assessed calculating the number of examinations performed within 2 years. There was a clear tendency of a higher number of screenings performed in a longer period of time: for example, there were 32% of the T1DM and 23.8% of the T2DM subjects assessed for retinopathy annually for 2 consecutive years, but this number increased to 43.8 and 36.6%, respectively, who had screening ones in 2 years. However, there were still 24.2% of the T1DM and 39.7% of the T2DM subjects who were not referred for retinal screening at all in a 2-year period (Table 2). Poor adherence to the local guidelines was noticed for other diabetes related

Table 1. Basic characteristics of the group

		All (N = 1719)	T1DM (N = 128)	T2DM (N = 1591)	*P* value
Gender	Men	707 (41.1%)	64 (50%)	643 (40.4%)	0.034
	Women	1012 (58.9%)	64 (50%)	948 (59.6%)	
Age, years		64.16 ± 13.38	40.04 ± 13.13	66.10 ± 11.37	<0.001
Diabetes duration, years *		8.18 ± 6.94	16.82 ± 11.49	7.49 ± 5.92	<0.001
BMI, kg/m²**		31.94 ± 6.22	23.79 ± 3.74	32.68 ± 5.86	<0.001
BMI ≥ 30 kg/m², % **		559 (64.8)	5 (6.9)	554 (70.0)	<0.001
SBP < 130 mmHg, %***		651 (39.0)	84 (68.9)	567 (36.6)	<0.001
DBP < 80 mmHg, % ***		998 (59.7)	86 (70.5)	912 (58.9)	0.005
Diabetes complications, N (%)					
Polyneuropathy		622 (36.2)	89 (69.5)	533 (33.5)	<0.001
Retinopathy		184 (10.7)	64 (50.0)	120 (7.5)	<0.001
Nephropathy		144 (8.4)	27 (21.1)	117 (7.4)	<0.001
Angiopathy		133 (7.7)	17 (13.3)	116 (7.3)	0.015

* Missing: total 152, T1DM 12, T2DM 140. ** Missing: total 856, T1DM 56, T2DM 800. *** Missing: total 48, T1DM 6, T2DM 42. *P* value compares T1DM and T2DM groups.

parameters: plasma creatinine was performed annually in 29.3%, lipid profile in 13.2%, feet examination in 4.6% of the subjects without difference between the groups (Table 2). The type 1 DM patients were more frequently screened for diabetic nephropathy annually – 10.9% vs 1.6% ($p < 0.001$) and retinopathy 32% vs 23.8% ($p = 0.002$) compared to the T2DM. The proportion of the patients for whom diabetes related parameters were not assessed at all in 2 years was very high: 80.1% for feet examination, 38.5% for retinal screening, 60% for lipid profile, 83.0% for urinary microalbuminuria and 27.4% for plasma creatinine with difference in the T1DM and T2DM groups only for retinal screening and microalbumin assessment (Table 2). There were only 3.3% of the subjects who underwent a complete check for all diabetes related parameters annually.

The estimated HbA1c assessment rate reached 88.6% at least once a year and was one of the highest among other annual checks. There was a significantly higher frequency of the HbA1c measurement in the well controlled T1DM subjects (HbA1c < 7%), compared to that of the T2DM patients ($p = 0.024$), however, such a difference disappeared in other groups irrespectively of the HbA1c value (Table 3). The recommended frequency of the HbA1c measurement every 3 months was achieved only in 2.4% of the T1DM and 3% of the T2DM subjects. The best estimated performance was for measuring and recording blood pressure – 95.3 and 97.4% in T1DM and T2DM, respectively.

There were no difference in adherence to the local guidelines in 2012 and 2013.

Outcome indicators of the quality of diabetes care

The average HbA1c of the total sample was 7.2 ± 1.5% with a significant difference between the groups – 9.1 ± 1.8% in T1DM vs 7.0 ± 1.4% in T2DM ($p < 0.05$). The target HbA1c of <7% was achieved in 55.3% of cases: in 9.4% of the T1DM and in 59.0% of the T2DM subjects. Within the T2DM group the lowest HbA1c was estimated in the patients treated with diet and the highest HbA1c was in the group of combined treatment with insulin and oral medications (Figure). There was a clear relation between HbA1c and diabetes complications: the more complications the higher HbA1c both in the T1DM and T2DM subjects (Table 4). Worsening of HbA1c with diabetes duration was observed in the T2DM subjects with the worst results in the patients with disease lasting for 16–20 years. Contrary, in the T1DM the worst HbA1c was estimated at the first five years and then after 16–20 years of disease (Table 4).

Despite a relatively low proportion of subjects reaching the target HbA1c, only 56.3% of needful referrals to an endocrinologist were performed, as

Table 2. Annual checks for diabetes related parameters

Measure	Recorded N, %		*P* value
	T1DM (N = 128)	T2DM (N = 1591)	
Weight	75 (58.6)	879 (55.3)	0.464
BMI	72 (56.3)	791 (49.7)	0.155
Blood pressure	122 (95.3)	1549 (97.4)	0.165
Feet examination*			0.509
1	24 (18.8)	239 (15.0)	
2	5 (3.9)	74 (4.7)	
Retinal screening (ophthalmologist)*			0.002
0	31 (24.2)	631 (39.7)	
1	56 (43.8)	582 (36.6)	
2	41 (32)	378 (23.8)	
Lipid profile*			0.804
0	80 (62.5)	950 (59.7)	
1	33 (25.8)	430 (27)	
2	15 (11.7)	211 (13.3)	
Plasma creatinine*			0.305
0	29 (22.7)	442 (27.8)	0
1	55 (43)	690 (43.4)	
2	44 (34.4)	459 (28.8)	
Urinary microalbuminuria*			<0.001
0	62 (48.4)	1365 (85.8)	0
1	52 (40.6)	201 (12.6)	
2	14 (10.9)	25 (1.6)	

* Number of examinations within 2 years.

Table 3. HbA1c assessment and referral to an endocrinologist

HbA1c, %	All (N = 1643)	T1DM (N = 123)	T2DM (N = 1520)	*P* value
HbA1c assessment rate (times/2 years)				
<7	4.1 ± 1.80 (N = 950)	5.25 ± 1.60 (N = 12)	4.08 ± 1.80 (N = 938)	0.024
≥7 – <8	4.22 ± 1.85 (N = 316)	3.85 ± 1.94 (N = 27)	4.25 ± 1.85 (N = 289)	0.347
≥8 – <9	4.31 ± 1.77 (N = 169)	4.46 ± 1.90 (N = 28)	4.28 ± 1.75 (N = 141)	0.575
≥9	3.75 ± 1.83 (N = 208)	3.70 ± 1.72 (N = 56)	3.76 ± 1.87 (N = 152)	0.958
Referral rate to an endocrinologist (times/2 years) *				
<7	0.65 ± 0.93	0.75 ± 0.75	0.65 ± 0.93	0.393
≥7 – <8	1.27 ± 1.17	1.15 ± 1.17	1.28 ± 1.18	0.553
≥8 – <9	1.57 ± 1.62	2.32 ± 1.94	1.43 ± 1.51	0.020
≥9	1.66 ± 1.46	1.48 ± 1.64	1.72 ± 1.38	0.093

* Number of patients in different HbA1c groups is the same as in the above part of the table.

recommended by the local guidelines. Theoretically patients with HbA1c ≥ 7% have to consult a specialist each six months, however, the average referral rate in the T2DM subjects did not reach even one visit per year. A similar situation was observed in the T1DM, except of the patients with HbA1c

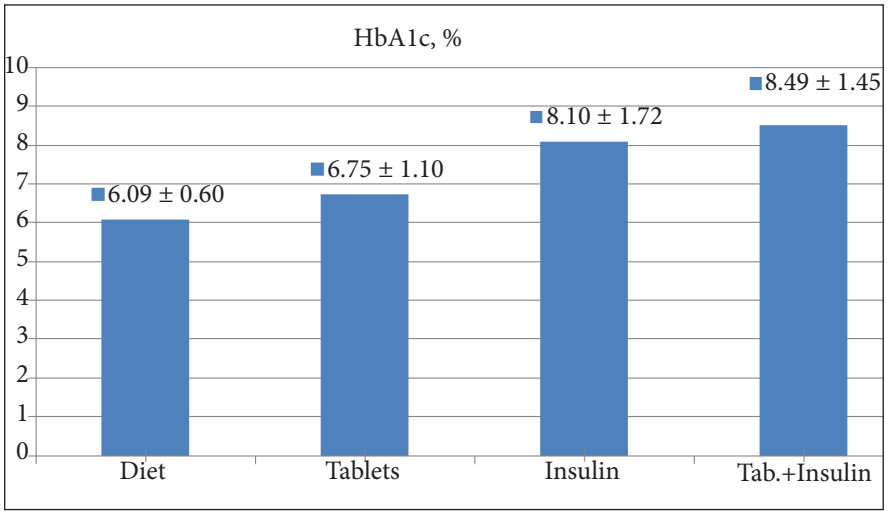

Figure. Difference in HbA1c depending on treatment strategy in the type 2 diabetes subjects group

Table 4. Glycemic control in relation to the diabetes duration and number of complications in the T1DM and T2DM subjects

Diabetes duration, years	HbA1c, %	
	T1DM (N = 116)	T2DM (N = 1451)
0–5	9.46 ± 2.03 (N = 19)	6.26 ± 2.05 (N = 682)
6–10	8.60 ± 1.42 (N = 18)	7.17 ± 1.39 (N = 395)
11–15	8.39 ± 3.99 (N = 24)	7.27 ± 2.32 (N = 257)
16–20	9.75 ± 1.85 (N = 17)	7.50 ± 1.92 (N = 73)
>20	8.83 ± 1.68 (N = 38)	7.44 ± 1.23 (N = 44)
Number of complications	**T1DM (N = 120)**	**T2DM (N = 1517)**
0	8.84 ± 1.93 (N = 22)	6.72 ± 1.13 (N = 882)
1	8.94 ± 1.71 (N = 37)	7.30 ± 1.5 (N = 457)
2	9.29 ± 1.54 (N = 40)	7.63 ± 1.51 (N = 140)
3	9.42 ± 2.16 (N = 21)	8.66 ± 1.94 (N = 38)

between ≥ 8 and <9%, who consulted an endocrinologist once a year. There was a tendency of more frequent referral with worsening of HbA1c in T2DM, but not T1DM (Table 3).

The evaluation of BP control was based on the proportion of subjects with the goal of SBP < 130 mmHg and DBP < 80 mmHg achieved. There were about 70% of the T1DM subjects with BP well controlled, compared to 36.6% for the systolic BP ($p < 0.001$) and 58.9% for the diastolic BP ($p = 0.005$) target reached in the T2DM group (Table 1).

The most prevalent diabetes complication was polyneuropathy estimated in more than a third of all subjects, reaching 69.5% and being twice more frequent in the T1DM compared to 33.5% in the T2DM group ($p < 0.001$). Overall, all complications were more prevalent in the T1DM patients, with retinopathy affecting half, nephropathy 21.1% and angiopathy 13.3% of the subjects, compared to 7.5, 7.4 and 7.3% in the T2DM group, respectively ($p < 0.001$) (Table 1).

DISCUSSION

Our study analysed the quality of diabetes care against the local Diabetes Care Guidelines in the five largest Vilnius outpatient clinics. This is the first comprehensive situation analysis in Lithuania in a representative sample of 1,729 diabetes subjects at the institutions providing primary health care for 441,198 patients, i. e. 69% of the residents of Vilnius area. Information on the current achievement in diabetes care provides directions for National Diabetes Programme development. The main characteristics of our patients were similar to those investigated in comparable studies carried out in Europe (6–10). Patients with T2DM accounted for 93% of the sample, were by 25 years senior and more obese, and had a twice shorter disease duration than those with T1DM.

Our data revealed very good results of annual HbA1c testing, which has reached 88.6%. In comparison, annual HbA1c testing rates were 45% in Luxembourg, 56–58% in Spain, 64–75% in New Zealand and Australia, 68.4% in Finland, 74% in Bosnia and Herzegovina, 86.2% in Estonia, 91% in Germany, 92% in UK, 92–93.5% in Italy (7, 11–18). Relatively better performance of this process indicator in our study can be explained by the incentive payment for HbA1c testing which was implemented in the Lithuanian Health Care System since 2006. However, a recent study of Suija et al. revealed that the optimal HbA1c testing rate does not necessarily warrants better glycaemia control (14). The data from four European countries – Estonia, Finland, Lithuania and Spain – revealed that Lithuania was the leading country for the annual performance of HbA1c (90.6% vs 57.7–86.2%), however, the proportion of patients achieving the target HbA1c ≤ 7% was the lowest compared to those of other countries (49.7 vs 61.9–67.7%) (14). The frequency of HbA1c measurement in our study was almost the same irrespectively of the result. One could anticipate a higher performance rate in poorly controlled subjects that would be an indirect indicator of close monitoring and efforts to adjust treatment.

The related outcome indictor – estimated average HbA1c – was 7.2% in our sample and was higher than the one revealed in the outpatient clinic of Vilnius University Hospital Santariškių Klinikos (Santariskiu Clinics) – 6.9%, but better in comparison to reported 7.4% in several primary care

centres in Lithuania (4, 5). The average HbA1c in the T2DM was significantly better compared to that in the T1DM group – 7.0% vs 9.1%. The results of studies, conducted in T2DM subjects, showed an average HbA1c of 7.5% in Estonia, 6.8–7.2% in Spain, 6.7% in Germany, 7.0% in Greece, 7.1% in Belgium (9–12, 17, 19). Our study revealed a very poor glycaemic control in the T1DM which, however, is in line with the meta-analysis of the registers of 11 countries published by McKnight et al., where the median HbA1c in the T1DM varied from 7.4 to 9.4% (20). Similar data were revealed by the Swedish National Diabetes Register, where an average HbA1c of 8% in the T1DM population was estimated (21).

The estimated worsening of diabetes control with an increasing number of complications, disease duration and intensification of treatment, same as a worse glycaemic control in the patients treated with insulin compared to oral therapy users in the T2DM group, agrees with the previously published data (10, 12, 19).

Our data showed that 55.3% of patients achieved HbA1c < 7% which is worse than the average result in other European countries – 62.6%, reported in the Panorama study (22), but falls in between countries, where the percentage of T2DM patients reaching the target HbA1c ≤ 7 varies from 48.1 to 76.0% (10, 12, 19, 21, 23).

Only 56% of the patients with HbA1c of ≥7% were referred to an endocrinologist which confirms that even when HbA1c is measured, this not always leads to an adequate action taken. And although this study was not designed to assess clinical inertia, a low referral rate irrespectively of a poor HbA1c and increasing HbA1c with a more complex therapy are indirect indicators of such situation.

The frequency of annual checks for diabetes complications showed a poor compliance to the Diabetes Care Guidelines, with the worst performance for urinary microalbumin, especially in the T2DM patients. This may be due to a relatively high cost of this analysis. There was also a clear disagreement between the complications diagnosed and the care provided: for example, diabetic polyneuropathy and angiopathy were estimated in 69.5 and 13.3% of T1DM and 33.5 and 7.3% of T2DM patients, but an annual foot examination was performed only in 3.9 and 4.7% of patients, respectively. Even a simple check such as a BW measurement showed a very poor performance, suggesting an insufficient attention for routine care measures. An insufficient performance of annual checks was also recorded in other countries: performance for BMI varied from 25 to 91%, BP from 67 to 99%, retinal screening from 28 to 58%, plasma creatinine from 27 to 92.5%, urinary microalbuminuria or albumin-creatinin ratio from 24 to 74%, foot examination from 33 to 85% in different studies (7–9, 15, 16, 18, 20, 22, 24, 25). The highest performance of annual checks was reported in UK, where annual national diabetes audits are performed (15).

The most prevalent complication in our study was diabetic polyneuropathy, estimated in more than a third of patients and more than three times prevalent compared to other complications in the T2DM group. This may be related to the fact that symptomatic treatment of neuropathic pain is reimbursed only in case the diagnosis of diabetic neuropathy is present. Data of other studies vary, showing almost equal 10–12% prevalence of microvascular complications reported by Goderis et al. in Belgium, 30–40% rate for retinopathy, 25–28% for nephropathy and about 31% for neuropathy in the T1DM and T2DM subjects in the DEPAC study with noticeable differences between countries (6, 10).

Limitations of the study

Our study represents only the biggest Vilnius public outpatient clinics. Private and small public primary health care institutions were not involved in the study. Such smaller centres take care of about 31% of Vilnius city inhabitants. Also, we do not represent smaller cities and rural areas, where availability of health care resources might be even more limited. This definitely needs further research, which is under development.

In order to assess the long-term diabetes control we were using the threshold of HbA1c < 7%, which is recommended by the local guidelines and is easy to understand and simple to report. However, in the light of recent clinical trial results and subsequent guideline recommendations to individualize clinical goals for HbA1c, selection of an appropriate threshold becomes difficult. Thus the interpretation of current results, if an individualised approach is used, might look in some way different.

CONCLUSIONS

The analysis of quality of diabetes care at the five largest Vilnius outpatient clinics revealed satisfactory glycaemic control, but poor management of diabetes

complications and cardiovascular risk factors. These results put new information and, although the data are regional, when combined with a few previously conducted studies, confirms the weakest links of diabetes care in Lithuania and indicates the direction for improvement. Implementation of quality control procedures, continuous monitoring of the relation between process and outcome indicators, development of the diabetes patients register and electronic database, implementation of the personalized diabetes care approach need to be addressed in the National Diabetes Programme.

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References

1. International Diabetes Federation. IDF Diabetes Atlas[Internet]. 6th ed. Brussels, Belgium: International Diabetes Federation; 2013 [cited 2015 Sep 20]. Available from: http://www.idf.org/diabetesatlas
2. Health Statistics of Lithuania [Internet]. 2013 [cited 2015 Sep 22]. Available from: http://sic.hi.lt/data/la2013.pdf
3. Norkus A, Ostrauskas R, Sulcaite R, Zalinkevicius R. [Specific features of hyperglycaemic treatment of patients with type 1 and type 2 diabetes mellitus in Lithuania and seven countries of Eastern and Central Europe in 2005]. Lithuanian Endocrinology. 2007: 21–29. Lithuanian.
4. Domeikiene A, Iseviciene R, Gedminas L, Valius L. [Management of diabetes mellitus in Lithuania]. LGP (Lithuanian General Practitioner). 2009: 668–673. Lithuanian.
5. Visockiene Z, Siauliene L, Beisyte J, Bukelskienė Z, Lyskoit K, Juchneviciene I, et al. Audit of diabetes care at the centre of Family Medicine of Vilnius University Hospital Santariskiu Klinikos. MTP (Theory and Practice in Medicine). 2014; 20: 387–394. doi:10.15591/mtp.2014.061.
6. Andel M, Grzeszczak W, Michalek J, Medvescek M, Norkus A, Rasa I, et al. A multinational, multi-centre, observational, cross-sectional survey assessing diabetes secondary care in Central and Eastern Europe (DEPAC Survey). Diabet Med. 2008 Oct; 25(10): 1195–203. doi: 10.1111/j.1464-5491.2008.02570.x.
7. Grimaccia F, Kanavos P. Cost, outcomes, treatment pathways and challenges for diabetes care in Italy. Global Health. 2014 Jul 14; 10: 58. doi: 10.1186/1744-8603-10-58.
8. Cutajar J. An evaluation of type 2 diabetes care in the primary care setting. Malta Med J. 2008; 20: 21–8.
9. Liatis S, Papaoikonomou S, Ganotopoulou A, Papazafiropoulou A, Dinos C, Michail M, et al. Management of type 2 diabetes and its prescription drug cost before and during the economic crisis in Greece: an observational study. BMC Endocr Disord. 2014 Mar 5; 14: 23. doi: 10.1186/1472-6823-14-23.
10. Goderis G, Borgermans L, Heyrman J, Broeke CV, Grol R, Boland B, et al. Type 2 diabetes in primary care in Belgium: need for structured shared care. Exp Clin Endocrinol Diabetes. 2009 Sep; 117(8): 367–72. doi: 10.1055/s-0028-1103286.
11. Vinagre I, Mata-Cases M, Hermosilla E, Morros R, Fina F, Rosell M, et al. Control of glycemia and cardiovascular risk factors in patients with type 2 diabetes in primary care in Catalonia (Spain). Diabetes Care. 2012 Apr; 35(4): 774–9. doi: 10.2337/dc11-1679.
12. Oude Wesselink SF, Lingsma HF, Robben PB, Mackenbach JP. Guideline adherence and health outcomes in diabetes mellitus type 2 patients: a cross-sectional study. BMC Health Serv Res. 2015 Jan 22; 15: 22. doi: 10.1186/s12913-014-0669-z.
13. Renard LM, Bocquet V, Vidal-Trecan G, Lair ML, Blum-Boisgard C. Adherence to international follow-up guidelines in type 2 diabetes: a longitudinal cohort study in Luxembourg. PLoS One. 2013 Nov 11; 8(11): e80162. doi: 10.1371/journal.pone.0080162.
14. Suija K, Kivisto K, Sarria-Santamer A, Kokko S, Liseckiene I, Bredehorst M, et al. Challenges of audit of care on clinical quality indicators for hypertension and type 2 diabetes across four European countries. Fam Pract. 2015 Feb; 32(1): 69–74. doi: 10.1093/fampra/cmu078.
15. Health and Social Care Information Center. National Diabetes Audit 2012–2013 Report 1: Care Processes and Treatment Targets [Internet]. 2014 [cited 2015 Sep 22]. Available from: http://www.hscic.gov.uk/catalogue/PUB14970/nati-diab-audi-12-13-care-proc-rep.pdf
16. Bruno G, Bonora E, Miccoli R, Vaccaro O, Rossi E, Bernardi D, et al. Quality of diabetes care in Italy: Information from a large population-based multiregional observatory (ARNO diabetes). Diabetes Care. 2012 Sep; 35(9): e64. doi: 10.2337/dc12-0765.
17. Rätsep A, Kalda R, Lember M. Meeting targets in type 2 diabetes care contributing to good glycaemic

control. A cross-sectional study from a primary care setting in Estonia. Eur J Gen Pract. 2010 Jun; 16(2): 85–91. doi: 10.3109/13814788.2010.481017.
18. Račić M, Kusmuk S, Mašić S, Ristić S, Ivković N, Djukanović L, et al. Quality of diabetes care in family medicine practices i n eastern Bosnia and Herzegovina. Prim Care Diabetes. 2015 Apr; 9(2): 112–9. doi: 10.1016/j.pcd.2014.05.006.
19. Franch-Nadal J, Roura-Olmeda P, Benito-Badorrey B, Rodriguez-Poncelas A, Coll-de-Tuero G, Mata-Cases M; GEDAPS (Primary Care Group for the Study of Diabetes). Metabolic control and cardiovascular risk factors in type 2 diabetes mellitus patients according to diabetes duration. Fam Pract. 2015 Feb; 32(1): 27–34. doi: 10.1093/fampra/cmu048.
20. McKnight JA, Wild SH, Lamb MJE, Cooper MN, Jones TW, Davis EA, et al. Glycaemic control of Type 1 diabetes in clinical practice early in the 21st century: an international comparison. Diabet Med. 2015 Aug; 32(8): 1036–50. doi: 10.1111/dme.12676.
21. Eeg-Olofsson K, Cederholm J, Nilsson PM, Zethelius B, Svensson AM, Gudbjörnsdóttir S, et al. Glycemic control and cardiovascular disease in 7,454 patients with type 1 diabetes: an observational study from the Swedish National Diabetes Register (NDR). Diabetes Care. 2010 Jul; 33(7): 1640–6. doi: 10.2337/dc10-0398.
22. Pablos-Velasco P, Parhofer KG, Bradley C, Eschwège E, Gönder-Frederick L, Maheux P, et al. Current level of glycaemic control and its associated factors in patients with type 2 diabetes across Europe: data from the PANORAMA study. Clin Endocrinol (Oxf). 2014 Jan; 80(1): 47–56. doi: 10.1111/cen.12119.
23. Zafar A, Davies M, Azhar A, Khunti K. Clinical inertia in management of T2DM. Prim Care Diabetes. 2010 Dec; 4(4): 203–7. doi: 10.1016/j.pcd.2010.07.003.
24. Agarwal G, Kaczorowski J, Hanna S. Care for patients with type 2 diabetes in a random sample of community family practices in Ontario, Canada. Int J Family Med. 2012; 2012: 734202. doi: 10.1155/2012/734202.
25. McCrate F, Godwin M, Murphy L. Attainment of Canadian Diabetes Association recommended targets in patients with type 2 diabetes: a study of primary care practices in St John's, Nfld. Can Fam Physician. 2010 Jan; 56(1): e13–9.

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CUKRINIO DIABETO PRIEŽIŪROS KOKYBĖ DIDŽIOSIOSE VILNIAUS MIESTO POLIKLINIKOSE

Santrauka

Įžanga. Esminių duomenų apie cukrinio diabeto priežiūros kokybę Lietuvoje, reikalingų Nacionalinei diabeto programai vykdyti, nepakanka. Mūsų tyrimo tikslas įvertinti diabeto priežiūros kokybės rodiklius Vilniaus mieste ir palyginti su Lietuvoje galiojančiomis diabeto priežiūros rekomendacijomis.

Medžiaga ir metodai. Retrospektyviai surinkti ir įvertinti pirmo (CD1) ir antro (CD2) tipo cukriniu diabetu sergančiųjų, gydytų penkiose didžiausiose Vilniaus miesto poliklinikose, diabeto priežiūros proceso ir gydymo rezultatų rodikliai 2012–2013 metais.

Tyrimo rezultatai. Iš atsitiktinai atrinktų 1 719 diabetu sergančiųjų, 58,9 % sudarė moterys, 92,6 % – sergantieji CD2. Bent kartą per metus glikuotas hemoglobinas (HbA1c) buvo ištirtas 88,6 % pacientų. Nustatyta reikšmingai geresnė glikemijos kontrolė sergantiesiems CD2, palyginti su CD1: vidutinis HbA1c atitinkamai 7,0 ± 1,4% vs. 9,1 ± 1,8 %; pasiektas HbA1c ≤ 7 % – 59 % vs. 9,4 % pacientų ($p < 0,001$); tik 56,3 % pacientų, turinčių indikacijas, nukreipti endokrinologo konsultacijai.

Privalomas kasmetinis ištyrimas dėl diabetinės pėdos, retinopatijos, nefropatijos, inkstų funkcijos ir lipidų atliktas atitinkamai 4,6; 24,4; 2,3; 29,3 ir 13,2 % pacientų, reikšmingai dažniau tiriant CD1 pacientus dėl retinopatijos ir nefropatijos. Kūno masės indeksas ir kraujospūdis registruotas atitinkamai 50,2 ir 97,2 % pacientų.

Nefropatija, polineuropatija, retinopatija ir angiopatija nustatyta atitinkamai 8,4; 36,2; 10,7 ir 7,7 % pacientų, reikšmingai dažniau – CD1 grupėje.

Išvados. Tyrimo metu nustatyta gera glikemijos kontrolė sergantiesiems 2 tipo cukriniu diabetu, tačiau nepakankama sergantiesiems 1 tipo cukriniu diabetu. Diabeto komplikacijų ir kardiovaskulinės rizikos veiksnių ištyrimas, palyginti su Lietuvoje galiojančiomis diabeto priežiūros rekomendacijomis, yra nepakankamas.

Raktažodžiai: cukrinis diabetas, diabeto priežiūros kokybė, vidutinis glikuotas hemoglobinas