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Results of Specialized Ambulatory Diabetes Care Among Diabetes Patients at the Level of Primary Health Care – in the Light of Nationwide Research*

Rezultaty ambulatoryjnej specjalistycznej opieki diabetologicznej wśród pacjentów chorych na cukrzycę na poziomie podstawowej opieki zdrowotnej – w świetle badań ogólnopolskich

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Abstract

Background. The availability of health services, understood as the ease of access to a given service or help, is a basic element of the operation of the health care system. In the case of people suffering from diabetes, availability of medical services, alongside the duration of the disease and social-economic status, has been deemed as a factor which determines the risk of diabetes-related complications. Research shows that specialized care may delay the development of diabetes complications, therefore it has been assumed that this care should be available to all patients. Combined diabetes patient care management, based on cooperation between general practitioners and specialists, is regarded as an effective way of improving the care of this group of patients.
Objectives. The paper presents the results of specialized ambulatory care among diabetes patients.
Material and Methods. Research materials were obtained from 1366 families and 1986 patients with diabetes, aged above 16 years, within the scope of NCSR grant no. 6P05D02320. Tests included directed interviews, assessment of relative fitness and independence of patients, anonymous questionnaires conducted among patients and their families and medical data analysis. The frequency analysis was carried out using the chi-square test of independence.
Results. The research has shown that specialized care provided by diabetes health care centers is not used by more than half of people suffering from diabetes (60.3%). People who state that they use the care provided by doctors in diabetes health care centers in the majority of cases follow most of the recommendations related to nutrition ($p = 0.00000$) and foot care ($p = 0.00698$), however they more frequently smoke ($p = 0.04209$). The findings among the patients who use specialist care most often included complete physical efficiency ($p = 0.01821$) and self-sufficiency ($p = 0.00001$), no requirements for treatment of additional diseases ($p = 0.00551$), normal body weight ($p = 0.00655$), and blood pressure ($p = 0.00589$) and lack of knowledge of health indicators essential in diabetes treatment ($p = 0.00004$). People using the care provided by doctors in diabetes health care centers more often function in a better social situation and living conditions ($p = 0.01859$) and do not have any difficulty accessing medical services ($p = 0.00000$).
Conclusions. The research showed positive results among patients using specialized care within the scope of blood pressure, body weight, better foot care, compliance with nutrition recommendations and a lower demand for professional care (**Adv Clin Exp Med 2012, 21, 1, 63–68**).

Key words: specialized care, results, diabetes.

Streszczenie

Wprowadzenie. Podstawowym elementem działania systemu opieki zdrowotnej jest dostępność świadczeń zdrowotnych. Dla osób chorych na cukrzycę dostępność usług medycznych została uznana za czynnik determinujący ryzyko powikłań cukrzycy. Badania dowodzą, że korzystanie z opieki specjalistycznej może pozwolić na opóźnienie

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rozwoju powikłań cukrzycy. Łączone zarządzanie opieką nad chorym na cukrzycę, oparte na współpracy lekarza rodzinnego i specjalisty, uważa się za skuteczny sposób doskonalenia opieki nad tą grupą chorych.
Cel pracy. W pracy przedstawiono rezultaty ambulatoryjnej opieki specjalistycznej wśród chorych na cukrzycę na poziomie podstawowej opieki zdrowotnej.
Materiał i metody. Badania do celów pracy przeprowadzono w ramach projektu KBN nr 6P05D02320, wśród 1986 pacjentów z losowo wybranych 61 zakładów podstawowej opieki zdrowotnej w kraju. Badania obejmowały: ukierunkowany wywiad pielęgniarski, anonimowy kwestionariusz ankiety dla pacjentów, relatywną ocenę sprawności i samodzielności, analizę dokumentacji lekarza rodzinnego.
Wyniki. Badania wykazały, że z opieki specjalistycznej realizowanej przez poradnie diabetologiczne/cukrzycowe nie korzysta więcej niż co drugi chory na cukrzycę (60,3%). Osoby, które deklarują korzystanie z opieki lekarza w poradni diabetologicznej najczęściej respektują większość zaleceń dotyczących żywienia (p = 0,00000), troski o stopy (p = 0,00698), są w pełni sprawne (p = 0,01821) i samodzielne (p = 0,00001), nie wymagają leczenia z powodu chorób dodatkowych (p = 0,00551), mają w granicach normy masę ciała (p = 0,00655), ciśnienie krwi (p = 0,00589), lecz doświadczają 3 i więcej zdarzeń wskazujących na brak stabilności glikemii (p = 0,00000) oraz mają podwyższone stężenie kreatyniny w surowicy krwi (p = 0,03155), glikozurię (p = 0,00324) i zbyt małą znajomość wskaźników zdrowia istotnych w leczeniu cukrzycy (p = 0,00004). Wśród tej grupy chorych stwierdzono także większą liczbę przeprowadzonych badań, wymaganych w procesie kontroli jakości leczenia cukrzycy (p = 0,0077) i mniejsze, umiarkowane zapotrzebowanie na profesjonalną opiekę (p = 0,00000).
Wnioski. Wśród pacjentów korzystających z opieki specjalistycznej badania wykazały pozytywne rezultaty dotyczące ciśnienia krwi, masy ciała, lepszą troskę o stopy, respektowanie zaleceń z zakresu żywienia i mniejsze zapotrzebowanie na profesjonalną opiekę (**Adv Clin Exp Med 2012, 21, 1, 63–68**).

Słowa kluczowe: opieka specjalistyczna, rezultaty, cukrzyca.

The availability of health services [1], understood as the ease of access to a given service or help [2], is a basic element of the operation of the health care system. In the case of people suffering from diabetes, availability of medical services, alongside the duration of the disease and social-economic status, has been deemed as a factor which determines the risk of diabetes-related complications [3]. Research shows that specialized care may delay the development of diabetes complications, therefore it has been assumed that this care should be available to all patients and in particular to patients suffering from type 1 diabetes [3]. Combined diabetes patient care management, based on cooperation between general practitioners and specialists, is regarded as an effective way of improving the care of this group of patients [4].

The paper presents the results of specialized ambulatory care among diabetes patients at the level of primary health care.

Material and Methods

For the purpose of this work, the research was carried out on the basis of:

– a guided nurse interview by means of which the following information was obtained: place of living, marital status, source of living, education, psycho-somatic disturbances, social functioning, knowledge of health indicators important in diabetes treatment, knowledge of the disease, health behavior required in diabetes treatment, family situation, social and living situation and expectations,

– a relative assessment of fitness and independence of the patients,

– an analysis of the medical records. This included information provided by the GP on: age, sex, type of diabetes, duration of illness, treatment methods, self-control, results of tests carried out within the previous 12 months (total cholesterol, cholesterol HDL, fasting glycemia, glycosuria, microalbuminuria or proteinuria, creatinine, glycated hemoglobin, body mass, height, blood pressure, waist circumference, trochanters measurements) and accompanying diseases which require treatment,

– an anonymous questionnaire focused on obtaining patients' opinions on: access to medical services, satisfaction with health care, life, care and medical treatment and participation in treatment.

A frequency analysis was carried out using the chi-square test of independence. If conditions for using the chi-square test of independence were not fulfilled (at least one of the expected values was less then 5), the neighboring rows and columns were combined into a table with more than four fields, and the four-fielded table was then subjected to a Fisher's exact test. The relation between ordinal features was also tested using Spearman's rank correlation coefficients. The significance of these coefficients was verified using an appropriate Student's t-test. All tested hypotheses were verified at the level of significance $\alpha = 0.05$. Precise values of the significance level ("p") were calculated.

For the purposes of this work, the research was carried out on 1,986 patients with diabetes from 61 randomly chosen national primary health service units, within the scope of NCSR grant no.

6P05D02320, managed by the author of this work. Research materials were obtained from patients aged above 16 years old, living in the area of work of a social and family nurse and are registered on the list of the local GP. The youngest patient was 17 years old and the oldest was 96 years old. The majority of the tested population consisted of women (63.4%), people aged above 65 (59%) and patients living in urban areas (57.7%). The most numerous group of the tested patients consisted of pensioners (49.5%). Slightly more than every third patient indicated disability pension as the source of living (37.2%) and 9.3% of the patients indicated a job or a farm as their source of income. The vast majority of people interviewed were married (61.3%). Almost every third patient was a widow or a widower (30.3%).

The vast majority of the patients took only oral drugs (56.8%), every fifth patient took only insulin (20%), and almost every fifth patient took insulin and oral drugs (18.5%), while only 4.7% of the patients were on a diet.

Analysis of the medical records shows that diabetes type 1 was found in 11.6% of the patients and diabetes type 2 was found in 51.4%, while 32.9% of the patients were treated without defining the type of diabetes. No information about diabetes type was found in the case of 4.1% of the patients.

A pronounced majority of the patients were characterized by elementary or incomplete elementary education (56.2%). Vocational education was found in 15.1% of the patients, secondary school education was found in 23.8%, and higher education was found in 4% of the patients. No information about education was found in the 0.9% of the patients.

Results

The research has shown that specialized care provided by diabetes health care centers is not used by more than half of people suffering from diabetes (60.3%). Care provided by specialists/diabetologists is most often used by patients residing within the area of the Podlaskie region (80%)

Table 1. Using doctor consultations and help provided in diabetes health care centers by diabetes patients

Tabela 1. Korzystanie chorych na cukrzycę z porady i pomocy lekarza w poradni diabetologicznej

Province (Województwo)	Uses the services provided by doctors in diabetes health care centers (Korzystający z pomocy lekarza w poradni diabetologicznej)					
	yes		no		no answer	
	n	%	n	%	n	%
Dolnośląskie	7	8.44	72	86.74	4	4.82
Kujawsko-Pomorskie	44	26.3	94	56.3	29	17.4
Lubelskie	28	17.4	120	74.5	13	8.1
Lubuskie	7	14.6	40	83.3	1	2.1
Łódzkie	58	23.9	157	64.6	28	11.5
Małopolskie	37	38.5	51	53.1	8	8.4
Mazowieckie	24	21.6	65	58.6	22	19.8
Opolskie	40	25.6	111	71.2	5	3.2
Podkarpackie	34	59.7	15	26.3	8	14.0
Podlaskie	100	80.0	23	18.4	2	1.6
Pomorskie	32	47.1	27	39.7	9	13.2
Śląskie	13	18.6	54	77.1	3	4.3
Świętokrzyskie	73	50.3	52	35.9	20	13.8
Warmińsko-Mazurskie	53	24.5	152	70.4	11	5.1
Wielkopolskie	23	21.9	64	61.0	18	17.1
Zachodniopomorskie	23	17.0	101	74.8	11	8.2
Total in Poland (Suma)	596	30.0	1198	60.3	192	9.7

and least often by those from the Dolnośląskie region (8.4%) (Table 1). People who state that they use the care provided by doctors in diabetes health care centers in the majority of cases respect most of the recommendations related to nutrition (p = 0.00000) and foot care (p = 0.00698), however they more frequently smoke (p = 0.04209). Findings among the patients who use specialist care most often included complete physical efficiency (p = 0.01821) and self-sufficiency (p = 0.00001), no requirements for treatment for additional diseases (p = 0.00551), normal body weight (p = 0.00655), waist circumference (p = 0.00000) and blood pressure (p = 0.00589) and also experiencing 3 or more incidents indicating a lack of stability of blood glucose levels (p = 0.00000), and an increase in the blood serum creatinine content (p = 0.03155), glycosuria (p = 0.00324), and a lack of knowledge of health indicators essential in diabetes treatment (p = 0.00004).

People using the care provided by doctors in diabetes health care centers more often function in a better social situation and living conditions (p = 0.01859), fully participate in family, married, professional and social life as well as in social organizations (p = 0.00000) and do not have any difficulties accessing medical services (family doctors, family nurses, specialists, ophthalmologists, dentists or laboratories) (p = 0.00000). Also, a greater number of examinations which are required in the process of diabetes treatment monitoring have been found among this group of patients (p = 0.00777) and a lower, moderate demand for professional care (p = 0.00000).

Patients who report that they use specialized care, in contrast to the people who do not use specialized/diabetes care, more often express expectations within the scope of education (p = 0.01411), care provided by families (p = 0.00351) and family doctors (p = 0.03585). A lack of opinion on the quality of care (p = 0.03584), deficit or lack of satisfaction with their participation in diabetes treatment (p = 0.04124) and the effects of treatment (p = 0.01949) have been also more often found among this group of patients.

Discussion

One of the factors which indicates modern diabetes treatment is the provision of care which takes into account the participation of specialized care [4, 5], which among other things aims at: diagnostics and monitoring of the development of late diabetes complications, education, management of patients with clinically evident diabetes complications and diabetes treatment in pregnant women as well as management of patients who take insulin [5].

A lack of use of the care provided by specialists among people who report difficulties accessing medical services (family doctors, family nurses, specialists, ophthalmologists, dentists and laboratories) indicates the limited availability of specialized health services for this group of patients and limitations within the scope of the operation of the health care system [1, 2]. However, a lower level of diagnostics among patients using only the care provided by family doctors may result from fewer diagnostic opportunities and options in comparison to the conditions in which specialized care is provided (often at hospitals which have a diagnostic suite at their disposal) [6].

Lack of compliance with recommendations related to nutrition, foot care, significantly higher blood pressure, gynoidal obesity, 3 or more medical conditions which require treatment and also a deficit of diagnostic examinations, all of which are more often found among the patients who do not use ambulatory diabetes care, make it possible to claim that the health care system that operates in Poland does not include the established health care standards to a sufficient extent [7, 8] and is not accessible enough to those most in need [1]. A significant deficit related to the social functioning of patients, which is more often found among the patients who do not use specialized care, may be an indication of the specialized care deficit [8, 9], existing health problems [6] and the negative influence of the disease on the activity of patients in their professional, family and social lives.

Incidents indicating a lack of blood glucose level stability (hypoglycemia, hyperglycemia, hospitalization requirement or incapacity to work due to illness), more often found among the people who use the care provided by specialists, signal the difficulties that patients have in monitoring blood glucose level, to which a lack of knowledge of health indicators is also conducive, and may generate critical opinions about patients' satisfaction with the effects of diabetes treatment and participation in diabetes treatment, and may also generate their expectations within the scope of education and the care provided by family doctors and families.

A greater demand for professional care due to a lack of expected health behaviors and medical conditions which accompany diabetes and require treatment as well as abnormal blood pressure and body weight among the patients who do not use the care provided by specialists proves that health condition is not a decisive factor in accessing medical care [10]. Greater requirement for the provision of professional care among the patients who do not use specialized care proves that in the

care of people suffering from diabetes, simplified care (without the participation of specialists) in basic health care leads to an increase in social and emotional difficulties as well as direct and indirect financial costs [11], and also confirms the thesis related to the ever existing problem of providing care to chronic patients, although it is common knowledge that organized care of chronic patients is conducive to lowering the costs [12, 13].

The increasing number of patients suffering from diabetes which leads to a gradually growing demand for diabetes care, which is also caused by higher expectations related to the quality of life and demand for more effective and coordinated health care services, results in the increased importance of attention devoted to activities aimed at decreasing the differences in the quality of care, decreasing unnecessary and improper care, improving the process of treating patients with complications and promoting independence, self-care and openness to cooperation [8].

A better health condition, positive results related to blood pressure and body weight, better foot care and compliance with the recommendations concerning nutrition and a lower requirement for care among the patients covered by specialized care prove that combined care provided by family doctors in cooperation with specialists may result in an optimization of the results of diabetes care, increased availability of health care services to diabetes patients and lowering the ever increasing costs of care and diabetes-related burden [14, 15].

However, increasing the availability of specialized services to poor, non-self-sufficient people and ensuring fair access to health care require other strategies than increasing the level of payment [9], especially since the patients deprived of specialized care more often function in unfavorable social and family situations and living conditions and are not able to overcome the economic barrier on their own.

Improvement in the results of care of diabetes patients is not possible without cooperation between family doctors and specialists, education of the patients and improved funding of health services [16]. In the event of a lack of access to documented care results, it is also difficult to determine the actual condition of care and the changes achieved within the scope of the operation of a health care team [16].

The specialized care results presented in the paper make it possible to state that a greater possibility of making an appointment for a consultation with a specialist may be more efficient than other factors which determine the efficiency of the operation of the health care system and the number and duration of consultations with only one doctor [6].

The author concluded that most diabetes patients do not use specialist ambulatory diabetes care. Using specialized care significantly differentiates the situation of the group of patients. The research showed positive results among patients using specialized care within the scope of blood pressure, body weight, better foot care, compliance with nutrition recommendations and lower demand for professional care. In the operation of the Polish health care system, introducing diabetes care standards, improving the monitoring of treatment results and preventing complications require making specialized care within basic health care more easily accessible to patients.

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