The situation of people suffering from diabetes in Poland. Needs of changes in the health care system

Sytuacja osób chorych na cukrzycę w Polsce. Potrzeby zmian systemu opieki zdrowotnej

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KEYWORDS:

- diabetes mellitus
- socioeconomic status
- access to care
- public policy
- new technologies

ABSTRACT

Diabetes mellitus affects about 3 million Poles, which is almost 8% of the population. It belongs to the national health priorities defined in the regulation of the Minister of Health. If poorly controlled, it leads to the development of many serious complications, both acute and chronic. It excludes people who are often of productive age from an effective, satisfactory life, and therefore causes an increase in public costs due to health and social insurance, and a decrease in state budget revenues from production and consumption. The aim of this study was to review and present current challenges and public policies proposals to mitigate the burden of diabetes mellitus. Population prevention addressed to the entire population, with particular emphasis on vulnerable groups; early diagnosis of diabetes and its effective treatment; and support for patients preventing disability and exclusion, were identified as measures which should help to reduce the burden of diabetes mellitus.

SŁOWA KLUCZOWE:

- cukrzyca
- status społeczno-ekonomiczny
- dostęp do opieki zdrowotnej
- polityka publiczna
- nowe technologie

STRESZCZENIE

Cukrzyca dotyka około 3 milionów Polaków, czyli prawie 8% populacji. Należy do krajowych priorytetów zdrowotnych, określonych w rozporządzeniu Ministra Zdrowia. Źle kontrolowana prowadzi do rozwoju wielu ciężkich powikłań, zarówno ostrych jak i przewlekłych. Wyklucza ona z efektywnego, satysfakcjonującego życia ludzi będących często w wieku produkcyjnym, dlatego jest przyczyną wzrostu kosztów publicznych z tytułu ubezpieczeń zdrowotnych czy społecznych oraz spadku wpływów do budżetu państwa z tytułu produkcji i konsumpcji. Celem badania był przedstawienie aktualnych wyzwań i propozycji polityk publicznych mających na celu złagodzenie obciążenia cukrzycą. Obniżeniu tych kosztów powinny służyć działania podjęte w obszarach: prewencji populacyjnej adresowanej do całej populacji ze szczególnym uwzględnieniem grup wrażliwych, wczesnej diagnostyki cukrzycy i efektywnego jej leczenia oraz wsparcia chorych zapobiegającego niepełnosprawności i wykluczeniu.

Introduction

Diabetes is a very diverse group of metabolic diseases characterized by high blood glucose levels that damage tissues and organs. Diabetes has been recognized by the World Health Organization (WHO) as the first non-infectious epidemic of the 21st century. It is a common cause of disability (blindness, kidney failure, neuropathy, amputation of limbs) and is conducive to cardiovascular diseases (1).

According to WHO data, the prevalence of diabetes in the world among adults increased from 4.7% in 1980 to 8.5% in 2014, and it is predicted that in 2045 there will be 700 million diabetics worldwide (1).

In Poland, over 3 million people (i.e., 8% of the population) suffer from diabetes, of which 750,000 are is not aware of it. It is estimated that in 2030 it will be 4.2 million people (2). The COVID-19 pandemic resulted in substantial restrictions in access to healthcare. That was manifested by the decrease in the number of patients receiving out- and in-patient health services; a lower number of newly diagnosed cases and more serious condition of those patients that were hospitalized (3). High number of not diagnosed cases, further elevated by restrictions and delays in healthcare provision, must be of concern.

The risk of developing diabetes is strongly related to socioeconomic status. At the same time, through the health,

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social and economic consequences related to the course and complications of this disease, it contributes to the deepening of social exclusion of people suffering from it (4).

Aim and methods

The aim of this study was to present current challenges and identify public policies proposals to mitigate the burden of diabetes mellitus.

The research utilizes the narrative revive approach to identify current challenges and identify public policies proposals to mitigate the burden of diabetes mellitus. A material for review was selected based on search terms: "diabetes mellitus", "socioeconomic status", "access to care", "public policy", "new technologies". Only papers published in recent 10 years were included.

Characteristics of the disease

Diabetes is currently believed to be a group of metabolic diseases characterized by hyperglycemia resulting from a secretory defect (progressive failure of β-cells of the pancreatic islets) and/or the action of insulin in peripheral tissues (insulin resistance).

There are basically 4 types of diabetes:

1) type 1 diabetes mellitus – developing as a result of autoimmune destruction of insulin-producing β-cells of the pancreas,
2) type 2 diabetes – resulting from the progressive loss of the pancreatic β-cells ability to properly secrete insulin, preceded by tissue resistance to insulin,
3) other non-specific types of diabetes (e.g., in the course of diseases of the exocrine pancreas, drug-induced, endocrinopathy, etc.),
4) hyperglycemia in pregnancy (diabetes in pregnancy and gestational diabetes).

Type 2 diabetes accounts for more than 80% of diabetes cases, and the last two types of diabetes are very rare (1-3%) (5).

The main risk factors for the most common type 2 diabetes in the population are excess body weight, low physical activity, and poor diet. The prevalence of these problems in the population, both in children and adults, means that nowadays we record more and more cases of type 2 diabetes (6). As the research results show, the lifestyle of most Poles is not favorable for health. Twenty percent of children are overweight or obese; seventy percent of adolescents have sufficient, weak or very poor physical capacity, and one fifth of this group has elevated blood pressure. Almost 80% of students have incorrect body posture. At the same time, 75% of parents declare that their child eats fast food and drinks sweetened beverages at least every second or third day or more. Over 60% of children experience shortness of breath after climbing stairs for 3 minutes. These statistics deprive children of a chance for a healthy childhood and a healthy future (7).

There is a significant increase in the number of children and adults developing autoimmune diabetes (type 1). In the last decade, the average annual increase in the incidence in Poland amounts to 10%. In the group of the youngest children (0-4 years), the incidence of type 1 diabetes has increased by 360% in the last 15 years (8). This has led to a situation in which type 1 diabetes is one of the most common chronic diseases among children attending educational institutions, and the only one whose specificity requires uninterrupted control and active therapeutic measures during the child's stay in the institution (9). This phenomenon is a challenge for the education system, as the legal regulations in force and the practice of their application do not guarantee children suffering from type 1 diabetes the possibility of full participation in educational and upbringing activities. It is problematic to identify the person responsible for controlling the child's blood glucose levels during his stay at school and for insulin dosing. Failure to provide childcare in an educational institution often leads to the exclusion of one of the parents from the labor market, which reduces the socio-economic status of the family and generates costs in the social security system (10).

Burden on the health system

Diabetes mellitus is a disease in which 95% of daily therapeutic decisions are made by the patient or their caregiver. The condition for their effectiveness, and thus effective treatment of the disease, is to provide the patient with knowledge, competences and skills, and to provide him with support in the ongoing management of the disease. The system based on single, unrelated health services is not conducive to achieving this goal. Currently, people with diabetes in Poland do not feel well educated enough and are not aware of the mechanisms of glycemic control. This leads to frequent complications which are costly to health and social security systems. The results of scientific research and current recommendations indicate the need to coordinate services addressed to patients with diabetes within the so-called an interdisciplinary team including a family doctor, diabetologist, educational nurse, dietitian and psychologist (11, 12, 13).

The average annual NHF expenditure on diagnostics and therapy for a diabetic patient is over 80% (PLN 2,400) higher than for a non-diabetic patient. Diabetes is also a huge financial burden for patients. The average annual drug expenditure borne by patients with type 2 diabetes exceeds PLN 1,000 per month. The average costs of treatment with the use of modern therapies, giving a chance for a productive, active life of a patient with type 1 diabetes, are close to the amount corresponding to the minimum remuneration for work (2, 10, 14).

The availability of modern therapies for patients with type 1 diabetes is limited. Treatment of diabetes enabled the discovery of insulin in 1921-1922 by Canadians – Frederic Grant Banting and Karol Herbert Best (15). Since then, tremendous progress has been made in the diagnosis and treatment of diabetes, but there is still much research in this area. For many years, the primary goal of treating type 2 diabetes has been to lower blood glucose levels, now the accompanying goal has become the reduction of cardiovascular risk, because this disease is accompanied by other risk factors for cardiovascular diseases, such as: lipid disorders, obesity, and arterial hypertension (16). After the publication of CVOT (cardiovascular outcome trials), it turned out that the use of modern drugs can reduce the number of cardiovascular events. This happens even when the blood glucose level is very similar to the standard therapy. It has been shown that achieving the therapeutic target (HbA1c levels) with the new drug is more effective than when the same target is achieved with older drugs (metformin, sulphonylureas, α-glucosidase inhibitors, thiazolidinediones, insulin). It was also observed that

in patients who used new drugs, e.g., phlosines or incretin drugs, the cardiovascular prognosis was better than in the group using old-generation drugs, even if their glycemia level was similar (17, 18). All these new therapies are available in Poland, but not all of them are reimbursed from public funds or the reimbursement concerns only a small group of patients, which of course causes a problem with their widespread use due to the high cost of such therapy.

The availability of reimbursed personal insulin pumps, pump accessories and continuous glucose monitoring (CGM) systems is limited to the age of 26, and then the necessary equipment and components of CGM systems are only partially reimbursed. After the age of 26, only some elements of insulin pump accessories are partially reimbursed. This has serious health and social consequences. The research carried out in Poland clearly shows that access to new technologies – ensuring the safety and comfort of diabetes self-control – is available mainly to people from larger cities and more affluent ones. Thanks to insulin pumps integrated with CGM systems, children can safely participate in classes in educational institutions, extracurricular activities or trips, and their parents can be professionally active. People from larger cities and more affluent also have more recommended follow-up visits (e.g., ophthalmological, psychological, nephrological, neurological). In view of the high costs of therapy, especially after losing the right to its reimbursement, patients use suboptimal solutions that carry a higher risk of complications (19).

Partial reimbursement of CGM or the lack of reimbursement of pumps with CGM and the intranasal form of glucagon (which is not a barrier for the child's guardian in an educational institution, and thus allows him to function safely there), generates or actually increases the already existing inequalities in health, which, according to the National Program, we should prevent health (10, 14).

Health policies addressing diabetes mellitus

Diabetes excludes people of working age from an effective, fulfilling life. It is the reason for the decline in revenues to the state budget from production and consumption and the increase in public costs from health and social insurance. Therefore, the primary goal of the changes should be to reduce the health, social and economic costs of diabetes and its complications.

Diabetes mellitus is one of the top 10 causes of disability in the world. It excludes people of working age from an effective, satisfying life. It is the cause of an increase in public costs due to health and social insurance, and a decrease in revenues to the state budget from production and consumption. This proves the value of health not only for the individual or his family, but for society as a whole. It should be remembered that health is also an economic value, a kind of natural wealth of the population (20). Therefore, the primary goal of the changes should be to reduce the health, social and economic costs of diabetes and its complications.

Actions taken in the following three areas should help to achieve the indicated goals:

1. population prevention based on the principle of selective universalism – addressed to the entire population, with particular emphasis on vulnerable groups (21, 22),
2. early diagnosis of diabetes and its effective treatment,
3. support for patients to prevent disability and exclusion.

Prevention

As part of the first of these areas, it is important to conduct pro-health public policies, e.g., in the field of food and nutrition or physical activity. In this aspect, the need to significantly reduce the supply of sugar in the diet of children and adolescents, as well as to monitor the diet available in collective nutrition (including the offer of commercial establishments, e.g., in educational institutions), and to establish and gradually tighten standards, control their compliance and effectively sanction breaches of applicable regulations (22). It may also be helpful to further limit the physical and economic availability of products with a high sugar content (e.g., introducing a minimum selling age of so-called energy drinks at 15 years, sugar tax) (23), limiting the physical and economic availability of highly processed food products (e.g., by means of fat tax, legal regulations excluding the use of trans fats, by regulating the portion size of fast-food products) (24), or by promoting consumption and ensuring the supply of alternative products to products with high sugar content and highly processed (e.g., by introducing the requirement to provide water in mass caterers – free of charge or at a price significantly lower than other drinks) (22, 24). The activities carried out may also include the introduction of a requirement to provide employees with a place to eat a meal prepared by them, as an alternative to using the fast-food offer or rushing consumption of highly processed food at the workplace (22).

If the sugar levy is introduced, the funds from it should be allocated to activities aimed at increasing the health value, such as :

- health prophylaxis in schools, concerning healthy eating, physical activity, protection against addictions, the value of healthy sleep, rest and social support,
- creating an obesity prevention and treatment clinic among children and adolescents and obesity treatment centers in adults,
- diabetes consultations with the establishment of a treatment plan by an interdisciplinary team,
- creation of coordinated diabetes care (interdisciplinary team AOS-POZ),
- periodic educational services in the field of self-monitoring of patients with diabetes (25).

In order to increase physical activity, measures should be taken to improve urban and architectural planning, encouraging and creating conditions for increasing the daily physical activity of residents (e.g., by providing commonly accessible green areas, the requirement to provide conveniently located bicycle parking spaces in residential buildings and utility buildings public) (24) and the elimination of economic and other barriers to access to activities and sports facilities by people from disadvantaged groups (e.g., by ensuring that children with type 1 diabetes can participate in activities without the constant presence of a parent or guardian) (22, 24).

In addition to conducting pro-health public policies, it is also important to promote a healthy lifestyle with an emphasis on a healthy childhood. It is necessary to increase the effectiveness of health education taking place in educational institutions (e.g., by increasing the attractiveness of classes, training educators, ensuring coherence of the content provided with other activities, including the diet in the institution) (22), as well as ensuring that children and adolescents spent at least one hour (60 minutes) each day in outdoor physical activity (22). It is also important to promote drinking water and to ensure free and unlimited

access to drinking water in educational institutions (e.g., by installing "drinkers" supplied with tap water while limiting the availability of sweetened beverages on the premises of the institution) (22). Intervention schemes should also be developed in the event of the problem of obesity in a child, including coordinated actions of teachers, a school educator addressed to the student and his family. Lack of willingness to cooperate on the part of parents should be reported by the school to the appropriate social welfare center (22, 24). The conducted activities should also prevent discrimination of obese people, and directed at people with obesity problems should include work on self-esteem and agency which gives the opportunity to change the lifestyle (22).

Early diagnosis

In the area of early diagnosis of diabetes and its effective treatment, it is important to conduct screening tests, including monitoring the health of the population in terms of the risk of civilization diseases (e.g., by extending the scope of occupational medicine examinations in relation to people performing work involving little physical activity, including office work, reliable preparation of the so-called health balance in the case of children and adolescents) (26) and monitoring the effectiveness of diabetes and pre-diabetes treatment (e.g., by linking the service provider's remuneration with indicators showing the effectiveness of therapy and possible disease progression) (26).

It is also necessary to ensure coordination of care for patients with diabetes, e.g., through the development of management and communication patterns including primary care physicians, AOS, and inpatient treatment (11, 27, 28). Health care services themselves should be provided within specialist, interdisciplinary therapeutic teams, which include a diabetologist, nurse, health educator, dietitian and psychologist (11, 27, 28). It is also important to define appropriate principles for remunerating service providers, which will take into account the awarding of benefits provided in accordance with the latest recommendations (process indicators) and the results achieved as a result (result indicators) (30). In order to improve the quality of diabetes services, training of medical professionals in lifestyle medicine should be organized.

It should also be remembered to educate the population, the patient and his relatives about the risk factors for diabetes, the importance of a healthy lifestyle (diet, physical activity, use of stimulants) and complications of poorly controlled diabetes (22, 24, 27), as well as the provision of psychosocial and social needs. Supporting the family and the person with diabetes, in particular by providing assistance in the adaptation of the child and family to living with the disease (10, 29).

However, the most important thing seems to be to constantly expand the catalog of reimbursed medical technologies, both medicinal products and medical devices, and to take into account the guidelines and recommendations of international and European scientific societies in the reimbursement indications. When making reimbursement decisions, apart from clinical aspects, social and economic aspects of the consequences of limiting access to these technologies should also be taken into account (e.g., by reimbursing new forms of glucagon, the administration of which is not associated with concerns among school staff and other caregivers of children and adolescents with type 1 diabetes) (10, 31). From the patient's perspective, it is important to remove financial barriers to access to the recommended diabetes therapy, e.g., by improving the economic availability of new drugs for the treatment of type 2 diabetes, ensuring reimbursement of personal insulin pumps and CGM systems for people over 26 years of age, ensuring the availability of nasal glucagon (Baquismi) for diabetics treated with insulin, or reimbursement of insulin injection needles in an amount ensuring the possibility of their single use (10, 32).

Patient support

In terms of supporting patients, preventing disability and exclusion, efforts should be made to ensure continuity of care over the patient, minimizing the risk of complications. The activities that can be undertaken in this area include the provision of specialist training, continuous education and counseling in the field of insulin therapy, techniques of self-monitoring of glycaemia in everyday conditions, physical effort, and infections, which in the diagnosis are the tasks of a doctor, and then an educator or a diabetes nurse (11, 27, 28). It is also important to provide standardized continuous education and training for patients with diabetes self-control (11, 27, 28) and self-management educational services for patients with diabetes and their caregivers (10, 11, 27). It is also necessary to provide care for a child with type 1 diabetes in an educational institution, which is possible by educating teachers about chronic diseases occurring in children and adolescents, rewarding them for being active in work with young people (e.g., by running school fruit gardens – vegetables or activities aimed at increasing physical activity) (10, 29), and also thanks to the development of standards of care for a child suffering from type 1 diabetes in an educational institution – educational institutions cannot ignore the fact that they are attended by children who require special support, and the systemic deficiencies should not lead to a decision to resign from work of a parent caring for a child during their stay at school (10, 29).

Conclusions

There are several activities that can be implemented by the legislator, public institutions or service providers, thanks to which it is possible to achieve the indicated goal. They can be grouped into three areas: population prevention based on the principle of selective universalism, early diagnosis of diabetes and effective treatment as well as support for patients preventing disability and exclusion.

Their implementation may lead to strengthening the health potential – economic and social capital – of the Polish population and reducing the number of type 2 diabetes cases.

The measures taken should improve the outcomes of diabetes treatment, prevent complications leading to the burdensome health and social security system, and generate profits from people's productivity with diabetes.

In this context, one should not forget about activities for the professional activation of parents-guardians of children with type 1 diabetes. Importantly, thanks to their implementation, it is also possible to equalize opportunities for people from various socio-economic groups, and thus reduce social inequalities in health.

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