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The demand for health education among patients with diabetes

Constant growth of the sick rate in diabetes causes that patients with diabetes constitute larger and larger percentage of the total population of sick people in our country and the problems have growing significance in medical practice.

Diabetes is one of the most frequently occurring diseases in the world. It is classified as a contemporary social and civilization disease. It is a protracted disease of metabolism, progressing with primary disorders of carbohydrate management and secondary disorders of grease and protein transmutation. Globally it concerns approximately 5% of the population. Diabetes is a disease that leads to the severe complications which are the causes of disability, inability to work, increased sickness and death rate and, most of all, handicapped quality of life.

Epidemiological examinations prove that more than half of people suffering from diabetes die due to serious cardiovascular complications e.g., heart attack or stroke. This is one of the leading issues of modern medicine (2, 3). Since diabetes is characterized as a protracted and incurable disease, essential for its progress and therapy is education of the patient. Education in diabetes is treated as one of the basic elements of the disease therapy. Its role in the process of treatment, not only of diabetes but also other diseases, was noticed 50 years ago. One of the founders of the contemporary diabetology claimed that 'the sick who know the most live the longest'. The term therapeutic education was introduced by WHO in the document 'Health in Europe 21'. Education should enable patients to acquire abilities that will allow them to maintain possibly the highest quality of life in spite of their disease. It is a constant process constituting an integral part of health care. Education of the sick with diabetes is the cheapest, the simplest and the most efficient method of treatment and preventing from complications. The subject of education is the patient. Its objective, on the other hand, is helping the sick and their families in understanding the nature of the disease and its treatment, in cooperating with medical staff and maintaining high quality of life. The proper treatment of diabetes is

only possible when the patient possesses the knowledge supply and suitable capabilities to cope with the disease (1, 4).

The objective of the study was to determine the demand for health education among patients with diabetes by means of evaluating the level of their knowledge.

MATERIAL AND METHODS

The study was carried out from June to September 2001 in diabetology clinics of the Health Care Centre and Provincial Diabetology Clinic in Lublin. The study included 130 people suffering from diabetes (54 people with type 1 diabetes and 76 with type 2 diabetes) at the age ranging from 18 to 96 with the disease duration ranging from one year to above 20 years. The research method was a survey questionnaire, and the technique – a diagnostic survey. The degree of demand for health education was examined with the use of the survey questionnaire, especially designed for these reasons. The survey questionnaire contained a personal details section including: gender, age, height, body mass, type of diabetes, education, professional activity, residence, material situation and disease duration. It consisted of 54 questions exploring the knowledge about: the nature of the disease, method of treatment, self-control, lifestyle and sources of knowledge about diabetes, participation in educational meetings and trainings concerning the subject of disease proceedings and self-evaluation of the level of knowledge.

RESULTS

Among 130 subjects there were 63 female (48.5%) and 67 male (51.5%) representatives. The age of the respondents was classified in the following groups: in age groups of 18–31 and 32–42 there were 10 people (7.7%), 30 people were classified to two groups of people aged 43–53 and 54–64 (23.1%), the group aged 65–75 was represented by 40 respondents, aged 76–86 – 6 people (4.6%) and 4 people at the age of 87–96 (3.1%). 20.0% of the subjects had a university education 43.1% – A level education, 21.5% – technical, while 15.4% – elementary education. The total of 66.9% of the people were pensioners, 27.7% were professionally active, whereas only 5.4% of them were unemployed. The highest rate of the respondents lived in the city (71.5%), as compared to 28.5% of the villagers. The majority of the subjects (88.5%) lived with families, while only 11.5% lived alone. The study shows that more than half of the total (58.5%) had type 2 diabetes. The remaining percentage, 41.5%, suffered from type 1 (insulin dependent) diabetes. The duration of the disease was differentiated. The largest group (29.2%) had been sick for the period of time ranging from one year to 5 years. The second leading group included the sick with the period of disease from 6 to 10 years, which constituted 27.7%. In 16.9%

of the respondents the period of the disease was from 11 to 15 years. Whereas the remaining percentage were those patients who had been sick for 16–20 years (3.1%) and more than 20 years (8.5%). One of the essential elements of diabetes therapy is the reduction of the excessive body mass, as overweight, and, most of all, obesity are both disadvantageous, prognostic factors in this disease. During the realization of the survey the information concerning height and body mass of the patients with diabetes were collected. With the use of these data the Body Mass Index (BMI) was counted for each patient. Having analyzed the BMI it was observed that 35.4% of the subjects were overweight as BMI > 25. Mainly women constituted this group. As many as 28.6% of the patients suffered from obesity (BMI > 30) with males predominant in this group. 2.3% of the sick had a sizeable obesity with BMI > 40. This factor concerned especially females.

It turned out that the majority of the respondents (68.5%) undergo regular treatment in diabetology clinic. The methods of coping with diabetes vary according to the patients. The research results reveal that more than half of the subjects (58.5%) take oral anti-diabetic medicines, 50.8% of the patients only follow dietetic recommendations, and 43.1% of the sick take insulin. Only 17.7% of the respondents take both insulin and oral anti-diabetic medicines.

Apart from the applied pharmacology of crucial importance in the treatment of diabetes is education of patients aiming at recognizing the nature of the disease and its risk factors, which guarantees aware participation in the therapy process. The results show that 45.4% of the patients believe that type 1 diabetes is connected with pancreas beta-cells lesion and the loss of ability to produce and secrete insulin. On the other hand, 26.2% of the patients maintain that type 1 diabetes is concerned with the production of insufficient amount of insulin essential for keeping glucose concentration in blood at the proper level. As many as 28.5% do not know what type 1 diabetes is all about. As for type 2 diabetes the results are quite similar. It appears that the majority of the subjects (60.8%) define type 2 diabetes as a disease concerning the production of insufficient amount of insulin essential for keeping glucose concentration in blood at the proper level. More than ¼ of the respondents (26.1%) do not know what type 2 diabetes is concerned with, whereas only 13.1% claim that type 2 diabetes is connected with pancreas beta-cells lesion and the loss of ability to produce and secrete insulin. Among the risk factors of diabetes occurrence the patients typically mention: obesity (71.5%), genetic factors (67.7%), diet rich in animal fat (45.4%), diet consisting of huge amounts of simple carbohydrates (44.6%) as well as further diseases e.g., hyperthyroidism (41.5%); then follow factors such as: blood hypertension (38.5%), high level of cholesterol (27.7%), alcohol overuse (26.1%), smoking tobacco products (25.4%) and diet rich in cellulose (15.4%).

The aim of the treatment is, among others, keeping the level of glucose at proper perimeters. The dangers are connected with the chance of the occurrence of hyperglycemia or hypoglycemia. It is essential, thus, to know the symptoms that can occur in these states as well as to control glycaemia. Among numerous symptoms occurring in

the state of hyperglycemia the patients most frequently mention: stupor and somnolence (60.8%), presence of acetone with huge amount of sugar in urine and dryness of mucous membranes of an oral cavity (48.5%), feeling of hunger (46.1%), state of excitement and irritability (38.5%), scent of fermented fruit in voided air (36.1%), muscle trembling, convulsions (36.1%), nausea and vomiting (28.5%) and lack of acetone in urine (2.3%). The major symptoms of hypoglycemia, according to the patients, are: feeling of hunger (63.1%), skin paleness and sweating (60.8%), stupor and somnolence (55.4%), heart palpitation (51.5%), muscle trembling and convulsions (43.8%), headaches (38.5%), dryness of mucous membranes of an oral cavity (29.2%), nausea and vomiting (13.8%), scent of fermented fruit in voided air (6.1%) and, finally, presence of acetone with huge amount of sugar in urine (5.4%).

One of the significant elements of education of patients with diabetes is nutrition. The knowledge of the rules of healthy nutrition is inevitable. As results from the study, a large majority of the patients (88.5%) believe that meals should be eaten regularly. On the other hand, 77.7% of the patients maintain that eating 4 to 5, or even 6 meals a day is necessary, with the emphasis put on the adjustment of their energetic value to the organism demand. However, 26.1% of the patients claim that meals do not need to be eaten regularly, but it is important to have a meal after taking the medicine reducing glucose concentration in blood. The smallest group of the respondents (10.0%) believe that it is not necessary to avoid sugar, sweet cakes etc. It turned out that the majority of the patients (40.8%) did not know what carbohydrate exchange is. The patients most frequently mentioned the following products recommended in nutrition of patients with diabetes: lean meat, fish and poultry (93.1%), dark bread (80.8%), fresh fruit and vegetables (77.7%), light milk and its products (73.1%), plant oils and margarine (71.5%).

What is also of primary importance for the process of patients' education is their knowledge about late complications occurring in diabetes. The studies show that these complications may involve various organs and systems. The patients mentioned complications concerning: eyes (93.1%), kidneys (73.8%), blood circulation system (60.8%). Nearly half of the subjects (46.9%) assume that such complications can also include the nervous system. Slightly fewer number of the subjects mentioned such organs as the bladder (22.3%) and abdomen (10.8%).

Not only good settlement of diabetes, maintenance of proper glucose concentration in blood but also the knowledge about recommendations concerning the kind and frequency of control examinations have the decisive significance in prevention against protracted complications of diabetes. The obtained data indicate that the people suffering from diabetes should undergo the following examinations: eye bottom examination at the ophthalmologist (80.8%), blood pressure measurement (54.6%), static electrocardiogram (49.2%), urine test for albumin (47.7%), neurological examination (30.8%). In the patients' opinion at least once half a year the glyated hemoglobin Hb A_{1c} measurement (49.2%) should be made. According to 33.8% of the patients the measurement of the level of lipids in blood serum is needed, while 31.5% claim that it is necessary to examine

pulse in feet. What results from the survey is the fact that, although the patients indicate the necessity of controlling glycated hemoglobin, more than a half of the respondents (54.6%) do not know this term. Only 26.9% knew that this was a blood glucose control for the past three months, while 13.1% thought it was the sugar level on an empty stomach with only 5.4% of the sick regarding it as an average sugar level for the period of 24 hours.

While discussing the issue of the patients' education we cannot forget about the people who educate and the sources of knowledge about diabetes. In the survey the patients most frequently mentioned their diabetologist as the source of information about the disease – 61.5% of the respondents (Fig. 1). A special emphasis was put upon the self-evaluation of the patients' level of knowledge about diabetes. The results reveal that only 6.1% of the respondents evaluated the state of their own knowledge as very good (Fig. 2).

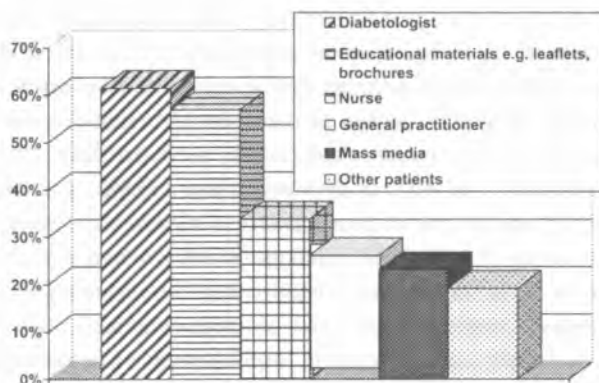


Fig. 1. Sources of knowledge about diabetes according to patients

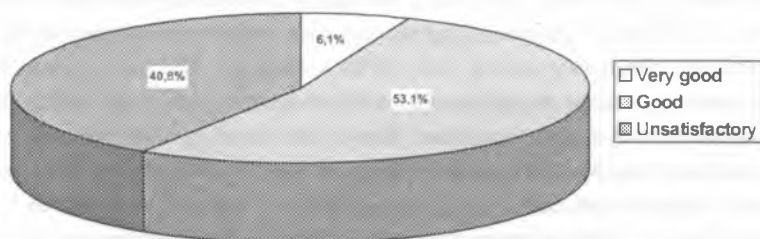


Fig. 2. Self-evaluation of the level of knowledge among patients with diabetes

DISCUSSION

In recent years a considerable body of evidence has been gathered to support the idea of the existence of close connections between the degree of metabolic settlement of diabetes and the quality of professional trainings. What has also been shown was the benefits resulting from treating education as one of the therapy elements. It has been proved that it enables efficient prevention against acute and protracted complications. Teaching patients self-control and self-care reduces the frequency of hospitalization due to diabetes as well as the degree of disability and the number of premature deaths. Regular evaluation of current knowledge supply about the disease and ability to use it in everyday life is of primary significance for the successful education (1, 4).

In the survey discussed here the patients' knowledge about diabetes was evaluated. The patients answered correctly the question about the nature of diabetes in 45.4% cases as far as type 1 diabetes is concerned and in 60.8% about type 2 diabetes. More than a half of the respondents (54.6%) do not know what diabetes is. 39.2% of the respondents, however, gave wrong definitions of diabetes. These are not satisfactory results that would indicate good knowledge about the nature of the disease. Among the major symptoms of diabetes a large majority of the patients mentioned: increased thirst (89.2%), growth in the amount of passed urine (85.4%), body mass change (73.8%) and dermal symptoms e.g. itching (41.5%). These are the correct answers. Only few mentioned wrong answers such as: difficult breathing (23.8%) and swellings (10.8%). When asked: 'Which of the following symptoms occur in the state of hyperglycemia?' the majority of the respondents gave the correct answer, naming: stupor and somnolence (60.8%), dryness of mucous membranes of the oral cavity and dehydration (48.5%), scent of fermented fruit in voided air (36.1%) as well as nausea and vomiting (28.5%).

As for the symptoms of hypoglycemia the correct answers include: feeling of hunger (63.1%), the state of excitement and irritability (42.3%), headaches (38.5%) and muscles trembling (43.8%). The knowledge supply was going up together with the education of the subject and the disease duration, and the older the patient was at the moment of the disease diagnosing the lower was the level of his knowledge. The fact of more extensive knowledge about the disease among younger, better-educated patients as well as those suffering from diabetes for a longer period of time is confirmed by other authors (2, 4, 5).

The nutrition of people suffering from diabetes was the subject of numerous studies (5). We can conclude that the style of nourishment of the sick is varied and depends mostly on the type of diabetes, existence of obesity, besides, the disease duration and the existence of any complications etc. In all probability patients with insulin-dependent diabetes follow nutrition recommendations in a greater extent than in those who are not forced to take insulin. This fact was partially confirmed by the research results. The knowledge of nourishment rules is more extensive among insulin-dependent patients than the ones not taking insulin. Naturally it is not known whether the knowledge is applied in practice. Some authors notify that as few as 10-15% of the sick make use of dietetic

recommendations in their ordinary lives (5). The correct selection of answers to questions about recommended products can be the evidence of following the rules of dietetic nutrition by the patients. These patients recommend the following products: lean meat, poultry, fish, fresh fruit and vegetables, dark bread and light milk and its products. This group of patients recognizes the need for regular meals, with their number ranging from 4 to 6 per 24 hours at the proper caloric values. A certain group of patients with type 2 diabetes and with obesity gives wrong answers saying that it is possible to eat in an irregular way in diabetes as well as that it is not necessary to avoid sugar, sweet cakes, honey and sweet liquids in their diet.

The survey shows that the knowledge of the patients about the complications in diabetes is not sufficient. This conclusion is also confirmed by the studies carried out by other authors (2, 3). Numerous patients give incorrect answers claiming that the late complications in diabetes are predominantly concerned with liver, bladder and abdomen. Others gave correct answers mentioning kidneys, blood circulation and nervous systems.

Analyzing medical care of the people with diabetes we can describe it as insufficient. The American Diabetes Association and health care standards recommend that each patient suffering from diabetes should seek eye bottom ophthalmologist consultation and make neurological examination as well as the following laboratory tests: levels of total cholesterol, HDL and triglycerides, urine test for albumin at least once a year and glycated hemoglobin test once every three months. The patient down with diabetes should have blood pressure measurement taken as well as physical examination of feet done during each doctor's consultation. The frequency of medical consultations is not determined. Petzoldt recommends to consult doctors once a month on average. The above recommendations are not known to all the patients, as follows from the study. No person admitted making all the tests and examinations that should be made in each patient with diabetes at least once every six months or once a year. The examination they underwent most frequently included: eye bottom ophthalmologist examination, blood pressure measurement and static electrocardiogram. As for the tests recommended to be taken every six months the leading one, according to the patients, is glycated hemoglobin test.

Only 6.1% of the patients evaluated their knowledge about diabetes at a very good degree. It is the group of patients treated with insulin that is under permanent or temporary care of diabetology clinic. It turns out that this result is identical with the one given in literature by several authors. The number of people who described the state of their knowledge as unsatisfactory was also surprising. It constituted 40.7% of the total, the majority of them were treated with oral hypoglycemic medications.

In spite of the growing consciousness of both medical staff and patients about the role of education in diabetes treatment we should conclude that the average sick man in everyday practice does not have any checked or supplemented range of information about the disease. The obtained results indicate too poor commitment of doctors and nurses to the process of modern diabetes treatment. The analysis of the opinions col-

lected in the survey among people with diabetes suggests that the organizers of diabetological health care should urgently increase the accessibility and intensity of their educational activities. What is necessary in current conditions and at the same time relatively easy to introduce is the organization of the patients-oriented trainings during their subsequent visits. The role of educators should be played by both doctors, nurses and dietetics specialists. The completed analysis of the study showed that education of people suffering from diabetes is essential for the effectiveness of prevention and treatment of this disease that affects the growing percentage of population.

CONCLUSIONS

Having analyzed the research material the following conclusions were drawn:

1. Patients with type 1 and type 2 diabetes have an insufficient level of knowledge about the nature of the disease. Over half of the patients (54.6%) do not know the mechanisms of this disease.

2. Style of nourishment of the sick with diabetes depends primarily on the type of diabetes. People with type 1 diabetes show the knowledge of nutrition rules in a greater extent than patients with type 2 diabetes.

3. The level of patients' knowledge about the complications in diabetes is unsatisfactory. None of the patients could enumerate all the organs and systems most frequently affected by complications in diabetes or the symptoms of hypoglycemia and hyperglycemia.

4. The recommendations concerning the kind and frequency of taking control examinations are not known to all the people suffering from diabetes. None of the respondents was able to specify all the recommended examinations and tests that should be taken at least once a year or once every six months.

5. The commitment of medical staff to the process of patients' education is insufficient as compared to the demand. Only 26.1% of GPs and 33.8% of nurses gave their patients any piece of information about coping with diabetes.

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SUMMARY

Education of the sick with diabetes has been a stable element of treatment for plenty of years. However, the system of trainings related to this disease is still not perfect and the knowledge of patients about this subject is insufficient. The objective of the study was to determine the demand for health education among patients with diabetes by means of evaluating the level of their knowledge. The study included 130 people suffering from diabetes at the age from 18 to 96 with the disease duration ranging from one year to above 20 years. The level of patients' knowledge about this disease was examined with the use of the survey questionnaire, especially designed for these reasons. The applied survey consisted of 54 questions of which a substantial part was concerned with general information about people suffering from diabetes. Further sections of the survey explored the knowledge about the nature of the disease, its complications, self-control, lifestyle and contained the questions concerning the sources of the acquired knowledge on this subject, participation in educational meetings and trainings concerning the issue of coping with diabetes as well as self-evaluation of the level of knowledge. The survey shows that 54.6% of the respondents cannot explain the mechanisms of type 1 diabetes, while 39.2% of the patients do not know the nature of type 2 diabetes. None of the patients was able to enumerate all the symptoms of hypoglycemia and hyperglycemia or the organs and systems most frequently affected by complications. More than 1/3 of the subjects did not know the proper nutrition rules in diabetes. None of the respondents was able to specify correctly all the control examinations and tests that should be taken at least once a year or once every six months. Only 6.1% of the patients evaluated their

knowledge about diabetes at a very good degree, while 53.1% of them defined it as good. They were mostly insulin dependent patients under the care of diabetology clinics. However, as many as 40.8% of the respondents considered their level of knowledge unsatisfactory. The research results showed that the leading source of knowledge about the nature of the disease and ways of coping with it were diabetologists (61.5%), followed by nurses (33.8%) and general practitioners (26.1%). The survey results indicate the need for the increased accessibility and intensity of the educational activities in diabetological health care.

Zapotrzebowanie na edukację zdrowotną wśród pacjentów z cukrzycą

Edukacja chorego na cukrzycę jest od wielu lat stałym elementem leczenia. Nadal jednak system szkoleń w zakresie tej choroby jest niedoskonały, a wiedza chorych na ten temat niewystarczająca. Celem pracy było określenie stopnia zapotrzebowania na edukację zdrowotną wśród pacjentów z cukrzycą poprzez ocenę poziomu ich wiedzy. Badaniami objęto 130 chorych na cukrzycę w wieku od 18 do 96 lat z czasem trwania choroby od roku do ponad 20 lat. Stan wiedzy pacjentów na temat tego schorzenia oceniono przy pomocy specjalnie przygotowanego kwestionariusza ankiety. Zastosowana ankieta obejmowała 54 pytania z których część dotyczyła ogólnych informacji o chorych na cukrzycę. Dalsza część ankiety badała wiedzę w zakresie istoty tej choroby, powikłań, samokontroli, stylu życia oraz zawierała pytania dotyczące źródeł zdobytej wiedzy na jej temat, udziału w spotkaniach edukacyjnych i szkoleniach dotyczących postępowania w cukrzycy oraz samooceny poziomu wiedzy. Z badań wynika, że 54,6% chorych nie potrafi wyjaśnić, na czym polega cukrzyca typu 1. Również 39,2% pacjentów nie zna istoty cukrzycy typu 2. Nikt z chorych nie potrafił bezbłędnie wskazać wszystkich objawów występujących w stanie hiperglikemii lub hipoglikemii, jak również narządów i układów, w których najczęściej występują późne powikłania. Ponad 1/3 badanych nie zna zasad prawidłowego żywienia w cukrzycy. Żaden z chorych nie potrafił poprawnie wskazać wszystkich badań kontrolnych, które powinny być wykonywane u niego przynajmniej raz w roku lub co pół roku. Tylko 6,1% ankietowanych uznało stan swojej wiedzy o cukrzycy za bardzo dobry, natomiast jako dobry – 53,1% pacjentów. Byli to w większości chorzy leczeni insuliną, znajdujący się pod opieką poradni diabetologicznych. Z kolei aż 40,8% badanych oceniło stan swojej wiedzy o chorobie jako niezadowolający. Wyniki badań wykazały, że najczęściej respondenci uzyskiwali informacje na temat istoty choroby i postępowania w cukrzycy od lekarzy diabetologów (61,5%), znacznie rzadziej od pielęgniarek (33,8%) i lekarzy rodzinnych (26,1%). Uzyskane wyniki badań wskazują na pilną potrzebę zwiększenia dostępności i intensywności działań edukacyjnych w leczeniu diabetologicznym.