

EXPECTATIONS OF PATIENTS AT RISK OF DIABETES-RELATED FOOT DISEASES DURING THE COVID-19 PANDEMIC

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Summary

Introduction: In Poland, treatment of patients with diabetes usually focuses on the control of metabolic and cardiovascular disorders, and less frequently on the control of other long-term complications, including diabetes-related foot disease (DFD). The aim of the study was to assess the motivational factors and expectations of patients seeking screening for the risk of DFD.

Material and methods: We invited volunteers over 40 years of age, with or without type 2 diabetes, to participate in this cross-sectional screening study. We conducted recruitment during the COVID-19 pandemic and recurring periods of restrictions in 2020–2022. Screening diagnostics offered included blood tests, chronic arterial disease screening (ABI, TBI, TcPO₂), sensory loss screening protective function (assessment of pressure sensation with the Semmes-Weinstein vein and assessment of temperature sensation), and pedobarography. Subjects' expectations were assessed using the patient request form questionnaire, and their health perception was assessed using the list of health criteria.

Results: Of the 143 subjects, only 85 met the inclusion criteria and were included in the analysis. 35.3% of people had DFD. People at risk of diabetes and DFD expect to receive early screening for foot disease, according to the guidelines. They expect appropriate tests to be carried out, the results to be discussed, along with the expected course of the disease, including possible complications. Respondents' expectations and perceptions of health depended on the duration and severity of the disease, not on COVID-related restrictions.

Conclusions: We should take organizational actions that will enable people with diabetes to control not only metabolic and cardiological disorders, but also to prevent and diagnose foot diseases.

Key words: screening, diabetes-related foot diseases (DFD), patient request form, list of health criteria.

Introduction

Among the serious, long-term complications of diabetes are foot disorders, previously called diabetic foot syndrome. According to the definition updated by the International Working Group on the Diabetic Foot, these disorders are now called diabetes-related foot disease (DFD). They include at least one of the following symptoms: peripheral neuropathy, peripheral artery disease (PAD), infection, ulcer(s), neuro-osteoarthropathy, gangrene, or amputation, and they apply to patients with current or previously diagnosed diabetes [1]. In clinical practice, advanced stages of DFD are most often observed in the form of ulcerations, ischaemia or necrosis, and foot deformities [2–5]. They are difficult to treat and may lead to limb amputation or even threaten the patient's life [6, 7]. This is because most patients are diagnosed very late, usually when irreversible complications occur. As many as 95% of patients with vascular leg ulcers have their feet and vascular system examined only when the wound develops [4, 5].

Meanwhile, both Polish [2, 8] and international [9, 10] guidelines recommend systematic foot examinations in diabetic patients, including screening for diabetic peripheral neuropathy (DPN) and PAD. It is recommended to perform them for the first time after approximately 5 years of type 1 diabetes and immediately after the diagnosis of type 2 diabetes, and then repeat them with a frequency depending on the risk level, but at least once a year as part of the so-called annual check-up of a diabetic patient [8, 9]. In Poland, management of diabetics, especially type 2 diabetics, usually focuses on the control of metabolic and cardiovascular disorders, and less frequently on the control of other long-term complications, including DFD. Therefore, we planned screening tests in the risk group. In this part of the study, we adopted the hypothesis that patients with diabetes and glycaemic disorders expect early screening diagnostics, an explanation of the disease and its causes (in the context of DFD), information on the course of the disorder, and support in coping with the problem.

The aim of the study was to assess the motivational factors and expectations of patients seeking screening for the risk of DFD.

Material and methods

In this cross-sectional study, we invited volunteers over the age of 40 years, with or without type 2 diabetes, willing to be tested for free for disorders such as DPN and PAD. We invited people to take part in the study through leaflets and information posters left in visible places in primary health care facilities and hospitals, as well as information provided by doctors to people from the risk group. We planned recruitment for the period March 2020 to March 2021, but due to the global COVID-19 pandemic and periods of restrictions, we extended the study period until 2022. Due to the pandemic, we did not carry out the previously planned “white weekends” or “white days” campaigns, during which we intended to examine a larger number of people without prior registration and referral.

The diagnostics we offered included capillary blood test (fasting glucose, triglycerides, total cholesterol), PAD screening (palpation of foot pulse, ankle-brachial index, ABI; toe-brachial index, TBI; transcutaneous oxygen pressure, $TcPO_2$), DPN screening test (loss of protective sensation including: assessment of pressure perception with a Semmes-Weinstein monofilament and assessment of temperature perception), and a pedobarographic examination assessing the distribution of pressure on the sole of the foot.

In addition, all subjects completed questionnaires assessing their expectations related to participation in the study, showing their attitude towards their own health condition and their specific quality of life related to the occurrence of symptoms of lower limb ischaemia. These were the following questionnaires, all in Polish: Intermittent Claudication Questionnaire (ICQ) [11], the patient request form questionnaire (PRF) [12, 13], and the list of health criteria (LHZ) (*Pl. lista kryteriów zdrowia – LKZ*) [12].

The Polish version of the ICQ is a specific tool for assessing the quality of life of patients with intermittent claudication. The Intermittent Claudication Questionnaire comprises 16 questions. Patients evaluate the degree of influence intermittent claudication has on their life, and specific point values are assigned to each answer. The maximum number of points to score with answers to the questions is 80. To arrive at the final result of the questionnaire, the total number of points scored in all the questions should be presented in a scale of 0 to 100, according to the following formula: number of points obtained/80 \times 100. The higher the score, the lower the quality of life (with 0 being the best possible score and the best possible quality of life/

best health status, and 100 being the worst score and the worst possible quality of life/worst possible health screening result).

The Polish version of the PRF (Salmon and Quine) adapted by Juczyński [12] contains 18 statements describing the reasons why the patient consulted a doctor. The patient request form questionnaire is used to assess the extent to which a patient seeks assistance in explaining the disease and obtaining information regarding treatment and emotional support. For each statement, one of three answers regarding the reasons for the visit is selected: yes (2 points), I am not sure (1 point), or no (0 points). The higher the score on a given scale, the greater the expectations in this regard. The questionnaire is filled out before the visit, to learn about the patient's expectations.

The list of health criteria according to Juczyński consists of 24 statements describing various dimensions of physical, mental, and social health. The list shows what dimensions of health are of greatest value to the respondent and how he or she understands the concept of “health”. It can be useful in activities that modify health behaviours, in therapy, rehabilitation, and in situations where it is worth establishing the goals that guide a person when making health-related decisions [12].

Statistical analysis

Characteristics of the group were presented using basic descriptive statistics. Normality of distribution was verified using the Shapiro-Wilk test. We used the Kruskal-Wallis test to compare non-parametric data. A correlation analysis was also performed between the indicators of the LKZ questionnaire and the group of healthy people (without DFD features) and sick people (with DFD features). For this purpose, rank-biserial correlation analysis was performed. We considered the value of $p < 0.05$ to be significant. We performed all calculations in Statistica 10 (StatSoft, Tulsa, OK, USA).

Results

Of the 143 subjects, only 85 met the inclusion criteria (despite the recommendation, most subjects were not fasting on the day of the examination). The characteristics of the study group are presented in Table 1. Foot disorders were diagnosed in 30 (35.3%) subjects, including 20 with diabetes and 10 without diabetes, but with blood glucose above normal. Leg pain while walking was reported by 33 (38.8%) subjects. The average value of the ICQ index was low, amounting to 10.56 (in the entire group), and after taking into account only people with disorders it was 27.97. This value indicated a good quality of life and a low impact of the symptoms on the patients' functioning.

Table 1. Characteristics of the study group

Parameters	X (SD)	Me	Min–Max	SK	K	S-W test	p-value
Age (years)	58.59 (11.88)	56.00	40.00–88.00	0.48	–0.58	0.95	< 0.001
Gender*	Male, n = 31 (36.5%); Female, n = 54 (63.5%)						
Comorbidities (diagnosed)*	Yes, n = 63 (74.1%); No, n = 22 (25.9%)						
Hypertension	Yes, n = 49 (57.6%); No, n = 36 (42.4%)						
Heart attack in the past	Yes, n = 14 (16.5%); No, n = 71 (83.5%)						
Stroke in the past	Yes, n = 7 (8.2%); No, n = 78 (91.8%)						
Peripheral arterial disease	Yes, n = 4 (4.7%); No, n = 81 (95.3%)						
Retinopathy	Yes, n = 6 (7.1%); No, n = 79 (92.9%)						
Nephropathy	Yes, n = 8 (9.4%); No, n = 77 (90.6%)						
Type 2 diabetes	Yes, n = 26 (30.6%); No, n = 59 (69.4%)						
Diabetes duration (months)	40.20 (42.2)	20.00	1.00–120.00	7.16	57.24	0.26	< 0.001
Diabetes duration (years)	3.35 (3.52)	2.00	0.08–10.00	7.16	57.24	0.26	< 0.001
Smoking duration (years)	16.19 (15.35)	15.00	0.00–55.00	0.56	–0.69	0.89	< 0.001
Smoker/past smoker/passive smoker/non-smoker*	n = 25 (29.4%)/n = 26 (30.6%)/n = 8 (9.4%)/n = 26 (30.6%)						
BMI [kg/m ²]	26.95 (4.29)	26.77	19.04–39.95	0.38	–0.14	0.97	< 0.001
Below normal/normal/above normal*	n = 0 (0.0%)/n = 27 (31.8%)/n = 58 (68.2%)						
Glucose level [mg/dl]	99.94 (25.65)	97.00	45.00–197.00	1.07	2.88	0.92	< 0.001
Below normal/normal/above normal*	n = 5 (5.8%)/n = 44 (51.8%)/n = 36 (42.4%)						
Cholesterol level [mg/dl]	198.45 (41.71)	194.00	112.00–292.00	0.26	–0.81	0.97	< 0.001
Below normal/normal/above normal*	n = 0 (0.0%)/n = 30 (35.3%)/n = 55 (64.7%)						
Triglycerides level [mg/dl]	192.69 (84.41)	165.00	78.00–508.00	1.56	3.08	0.87	< 0.001
Below normal/normal/above normal*	n = 0 (0.0%)/n = 30 (35.3%)/n = 55 (64.7%)						
SBP (right arm)	140.88 (22.19)	140.00	100.00–190.00	0.11	–0.78	0.98	0.004
SBP (left arm)	136.05 (21.80)	135.00	100.00–185.00	0.33	–0.59	0.97	0.025
DBP (right arm)	87.57 (11.03)	90.00	60.00–110.00	–0.29	–0.47	0.97	< 0.001
DBP (left arm)	86.55 (10.80)	90.00	60.00–110.00	–0.28	–0.45	0.97	< 0.001
SBP (right DPA)	127.84 (35.71)	130.00	0.00–200.00	–1.28	2.17	0.90	< 0.001
SBP (left DPA)	128.49 (39.42)	130.00	0.00–200.00	–1.27	2.01	0.91	< 0.001
SBP (right PTA)	131.10 (32.21)	135.00	30.00–195.00	–0.78	1.03	0.95	0.004
SBP (left PTA)	130.06 (32.72)	140.00	20.00–205.00	–0.85	1.17	0.95	< 0.001
SBP (right toe)	132.26 (46.72)	133.00	30.00–227.00	–0.51	1.07	0.96	0.006
SBP (left toe)	134.40 (46.67)	130.00	35.00–253.00	0.11	0.75	0.96	0.005
ICQ sum	8.45 (15.84)	0.00	0.00–55.25	1.87	2.05	0.59	< 0.001
ICQ index	10.56 (19.81)	0.00	0.00–69.07	1.87	2.05	0.59	< 0.001

DBP – diastolic blood pressure, DPA – dorsalis pedis artery, ICQ – intermittent claudication questionnaire, K – kurtosis, Me – median, Min–Max – minimum and maximum distribution value, PTA – posterior tibial artery, p – value of significance, SBP – systolic blood pressure, SD – standard deviation, SK – skewness, S-W – value of the Shapiro-Wilk test, X – mean

* Data presented as numbers and percentages.

All subjects most expected an explanation of the disease and its causes, and then information about the tests performed and their results. The least expectations concerned the provision of support. In all areas,

respondents with diagnosed DFD had significantly higher expectations (Table 2). Moreover, expectations for an explanation of the disease increased with age ($r = 0.23$, $p = 0.035$) and duration of diabetes ($r = 0.26$,

Table 2. Scoring analysis of the patient request form questionnaire in the group with and without diabetes-related foot disease

Item	DFD	No DFD	All	Kruskal-Wallis test, p-value			
No. Reasons for my visit and participation in screening today							
2 I want to talk to my doctor about my problem	1.1	0.7	0.8	0.87	< 0.001		
6 I want the doctor to present me with the probable further course of my disease	1.3	0.8	1.0				
7 I want to know if I'm likely to have problems in the future	1.7	1.7	1.7				
12 I want the examination to determine the cause of my health condition	1.2	0.7	0.9				
15 I want to find out what the symptoms I have mean	1.2	0.6	0.8				
18 I want to find out what the treatment is	1.0	0.5	0.7				
EXP: Expectations for an explanation of the disease	7.42	5.10	5.81				
	$r = 0.41, p < 0.001$						
1 I want advice on my nervous condition	0.7	0.3	0.4			0.69	< 0.001
3 I would feel better if I could talk about my feelings	0.9	0.4	0.6				
5 I have emotional problems for which I need help	0.7	0.2	0.4				
9 I want the doctor to explain my emotional problems	0.7	0.3	0.4				
13 I'm going through a difficult time, so I'd like some support	0.9	0.2	0.4				
17 I want someone to encourage me in a difficult moment	1.1	0.4	0.6				
SUP: Expectations to get support	4.85	1.80	2.73				
	$r = 0.39, p < 0.001$						
4 I want to know the results of medical tests carried out	1.8	1.9	1.9	0.90	< 0.001		
8 I want my doctor to discuss my test results	1.7	1.8	1.6				
10 I want confirmation of my previous diagnosis	0.7	0.4	0.6				
11 I want to be referred to a specialist	1.2	0.5	0.7				
14 I want advice about the medicines I take	0.6	0.3	0.4				
16 I want to know about the possible side effects of my disease	1.3	0.7	0.9				
INF: Expectation to receive information about tests and treatment	7.40	5.30	5.90				
	$r = 0.36, p < 0.001$						

$p = 0.017$). Similarly, expectations regarding obtaining information about test results, respectively, for age ($r = -0.23, p = 0.032$) and duration of diabetes ($r = 0.30, p = 0.005$). Expectations of support increased with the duration of diabetes ($r = 0.30, p = 0.000$), the presence of cardiovascular complications, including heart attack ($r = 0.28, p = 0.009$), in men ($r = 0.28, p = 0.009$), and with fasting glycaemia and triglyceride levels ($r = 0.27, p = 0.012$ and $r = 0.29, p = 0.006$). The respondents' expectations also depended on the way they defined the concept of "being healthy". People who defined health as "not feeling any physical discomfort" had significantly higher expectations in all areas. The remaining relationships are presented in Table 3.

The analysis of the LKZ questionnaire scores showed a correlation with the presence of DFD disorders: a negative correlation of statements 5, 6, and 11 (these dimensions had higher scores and greater importance in people without DFD symptoms) and a positive correlation of statements 12 and 24 (these dimensions had higher scores and greater importance

in people with DFD symptoms). Items 18 and 19 were characterized by a lack of inter-group variability, so it was impossible to perform analyses (Table 3).

Defining the concept of "being healthy" also depended on some sociodemographic and clinical variables, i.e.:

- defining health as "do not feel any physical discomfort" was significantly more common in patients with a longer period of diabetes ($r = 0.54, p < 0.001$), with diabetes complications, including heart attack ($r = 0.31, p = 0.004$) and PAD ($r = 0.30, p = 0.005$), higher fasting glycaemia ($r = 0.29, p = 0.006$), older people ($r = 0.26, p = 0.018$), and men ($r = 0.027, p = 0.013$),
- the definition of "feel good" was significantly more common in people diagnosed with PAD ($r = 0.54, p < 0.001$),
- the definition "have the right body weight" was significantly less common in older people ($r = 0.33, p = 0.002$) and in those with a higher BMI ($r = -0.23, p = 0.036$),

Table 3. Scoring analysis of the list of health criteria questionnaire in the group with and without diabetes-related foot disease correlation analysis of the list of health criteria and patient request form questionnaire

Item	Scores (x ±SD)			Two-rank correlation of LKZ with DFD		Correlation of LKZ with PRF fields					
	DFD	No DFDs	All	$r_{(rd)}$	p	EXP		SUP		INF	
Being healthy for me means						r	p	r	p	r	p
1 Live to a ripe old age	0.9 ±1.4	1.3 ±1.8	1.2 ±1.7	0.04	0.745	-0.10	0.362	-0.03	0.763	-0.10	0.371
2 Feel happy most of the time	0.8 ±1.6	1.5 ±1.9	1.3 ±1.8	-0.19	0.077	-0.10	0.384	-0.12	0.268	-0.12	0.283
3 Be able to get along well with other people	0.0 ±0.0	0.0 ±1.0	0.0 ±1.0	-0.20	0.071	0.05	0.678	-0.02	0.860	0.09	0.423
4 Be able to solve my problems	0.0 ±0.0	0.0 ±1.0	0.0 ±1.0	-0.12	0.265	0.07	0.521	0.12	0.291	0.11	0.331
5* Eat properly	1.0 ±1.0	1.0 ±1.0	0.0 ±1.0	-0.25	0.019	-0.07	0.504	-0.18	0.107	0.03	0.786
6* Take care of rest and sleep	0.0 ±2.0	0.0 ±1.0	1.0 ±1.0	-0.22	0.046	-0.32	0.003#	-0.27	0.013#	-0.17	0.126
7 Drink little or no alcohol at all	0.0 ±0.0	0.0 ±1.0	0.0 ±1.0	0.21	0.057	0.03	0.757	0.01	0.945	0.13	0.248
8 Do not smoke	0.0 ±0.0	0.0 ±1.0	0.0 ±1.0	0.09	0.435	-0.11	0.321	-0.15	0.178	-0.13	0.243
9 To be at the right body weight	0.6 ±0.0	0.0 ±1.0	0.0 ±1.0	-0.14	0.189	-0.09	0.396	-0.10	0.349	-0.03	0.779
10 Only exceptionally take medications	0.7 ±1.3	0.4±1.0	0.5 ±1.1	0.09	0.397	-0.17	0.129	-0.09	0.403	-0.14	0.196
11* Be in a good mood	3.8 ±1.3	1.3 ±1.6	1.2 ±1.5	-0.24	0.025	-0.08	0.491	0.01	0.942	-0.02	0.870
12** Not feel any physical discomfort	0.0 ±1.7	1.5 ±2.0	2.2 ±2.2	0.57	<0.001	0.30	0.006#	0.33	0.002#	0.23	0.039#
13 Be able to work without tension and stress	0.6 ±0.2	0.5 ±1.3	0.4 ±1.1	0.20	0.071	-0.15	0.174	-0.14	0.204	-0.23	0.037#
14 Do not get sick, at most rarely from flu, indigestion	0.0 ±1.1	0.5 ±1.2	0.5 ±1.1	-0.13	0.228	0.20	0.069	0.23	0.034#	0.28	0.009
15 Have healthy eyes, hair, skin	0.2±0.0	0.1 ±0.5	0.2 ±0.5	-0.09	0.418	0.03	0.786	-0.01	0.936	-0.04	0.727
16 Be able to adapt to changes in life	0.3 ±0.5	0.5 ±1.3	0.4 ±1.1	-0.16	0.146	-0.10	0.370	-0.14	0.214	-0.12	0.285
17 Be able to enjoy life	0.0±0.7	0.9 ±1.6	0.8±1.4	-0.20	0.060	-0.08	0.456	-0.14	0.194	-0.21	0.050#
18 To be responsible	0.0 ±0.0	0.0 ±0.0	0.0±0.0	-	-	-	-	-	-	-	-
19 Be able to control my feelings and drives	1.4 ±0.0	0.0 ±0.0	0.0±0.0	-	-	-	-	-	-	-	-
20 Have all body parts functional	0.2±1.6	1.1±1.8	1.2±1.7	0.18	0.090	0.22	0.046	0.29	0.007#	0.17	0.110
21 Accept myself, know my capabilities and shortcomings	0.8±0.8	0.2±0.8	0.2±0.8	0.09	0.420	0.27	0.013#	0.10	0.350	0.24	0.026#
22 Have a job, various interests	2.6±1.8	0.2±1.7	0.4±1.1	-0.04	0.691	-0.18	0.097	-0.13	0.222	-0.14	0.206
23 Feel good	2.6±1.9	2.1±2.2	2.3±2.1	0.10	0.347	0.13	0.250	0.09	0.416	0.09	0.415
24** Almost never having to go to the doctor	0.0±1.2	0.2±0.8	0.3±0.9	0.24	0.025	-0.02	0.859	-0.09	0.398	-0.03	0.791

DFD – diabetes-related foot disease, EXP – expectations for explanation of the disease and its causes, INF – expectations for information about tests performed and their results, LKZ – list of health criteria, PRF – patient request form questionnaire, SUP – expectations of obtaining support, X (SD) – mean (standard deviation)

* Negative correlation, higher LKZ score in people without DFD

** Positive correlation, higher LKZ score in people with DFD

Statistically significant correlation of LKZ with PRF

- the definition “be able to work without tension and stress” was more common in overweight and obese people ($r = 0.32$, $p = 0.003$),
- the definition “have all body parts functional” was significantly more common with age ($r = 0.31$, $p = 0.004$),
- the definition “live to a ripe old age” was more common in patients with hypertension ($r = 0.26$, $p = 0.015$).

Discussion

Despite the small sample size and limitations related to the COVID-19 pandemic, in this pilot study we showed that there is a great need for screening patients with type 2 diabetes for DFD. The first part of the analysis, published elsewhere [14], showed that peripheral complications of diabetes are extremely common, with many patients remaining unaware of their disorders and untreated despite their high risk of ulcers. The actual frequency of all forms of DFD is significantly higher than the number of cases recorded by family physicians and diabetologists [14–16], who most often diagnose only symptomatic cases and disorders visible to the naked eye [4, 5, 14]. In this section, we showed that people at risk were interested in participating in screening tests and willingly participated in them on their own initiative and without a doctor’s referral. Subjects primarily expected diagnostic tests and a discussion of the results obtained. They wanted to know if they would have problems in the future. Moreover, people diagnosed with diabetes expected an explanation of the expected course of the disease and information about possible complications. However, they expected emotional support to a lesser extent. The main intention of the subjects was to search for reliable information and knowledge about the disease, its course, and potential complications, which may mean that these aspects were previously neglected. Previous assessment of the knowledge of diabetics showed a lack of knowledge of DFD risk factors and foot care principles, as well as incorrect practices [17–21]. Patients with disorders used incorrect techniques of skin care, shortening nails, or removing calluses [19]. Moreover, they did not consider aspects related to feet as an element of diabetes self-management, although they controlled the levels of glycaemia, lipids, blood pressure, and body weight [17, 19]. They also consulted about diabetes, cardiology, nephrology, and ophthalmology, but rarely examined the feet [4, 5, 14, 19]. The maturity of the respondents and their readiness to participate in the screening study should be appreciated even more. Especially since all areas of expectations increased with age and duration of diabetes and were significantly higher in the group with diagnosed DFD and other disorders or

complications. There were relatively many cases of DFD in such a small group, especially since not everyone was diagnosed with diabetes, and some only had impaired fasting glycaemia. There is a suspicion that the participation of diabetics in the study may have been caused by the COVID-19 pandemic and the lack of, or limited access to, stationary medical care.

During the restrictions, the main way to access medical consultations was telemedicine. Especially in the first year of the pandemic, there was a significant, almost 50% decrease in the number of medical consultations in primary health care. It mainly concerned consultations for cancer, mental disorders, vascular diseases, and diabetes [22, 23]. However, reports of diabetes complications have varied widely. In some centres, a significant increase in the number of hospitalizations due to PAD, DFD complications, and amputations was observed, especially after periods of restrictions [24, 25]. In others, no significant difference was found in the number of DFD and amputation complications, and even a decrease was observed [26, 27]. In our opinion, the impact of the pandemic on the study results was negligible.

Restrictions and emphasis on telemedicine influenced primarily the scope of recruitment (which was conducted through primary care facilities) but not the increase in the frequency of diagnosed complications. It is possible that screening was mainly attended by people who were concerned about their health for some reason or were suffering from ailments, because people who were already feeling the effects of the disease had greater expectations. However, it should be emphasized that more than half of them had been suffering from diabetes for 2–10 years, so it is unlikely that the main reason for participating in our study was the severity of the disorder during the pandemic. Advanced foot abnormalities and numerous other complications of diabetes indicate previous and long-term neglect in the screening diagnostics of this group. Leg pain while walking was reported by over 1/3 of the respondents. And although the average value of the ICQ questionnaire in the entire group, or even only in the PAD group, was low compared to critical limb ischaemia [11, 28], what is worrying is the fact that symptomatic patients did not have any previous tests. These results also indicate non-compliance with the guidelines [2, 8–10], which recommend systematic foot examination at least once a year in patients with diabetes. Lack of compliance with the guidelines was also indicated by other authors as one of the reasons for unsatisfactory control of the risk of complications in diabetes [16, 29]. Valori *et al.* [13] treat the PRF questionnaire as a method of assessing neglected aspects of care, including factors that influence patients’ intentions and determine their intentions. These may include requests for diagnostic or therapeutic interventions resulting from experienced ailments, but also from high health awareness. Our

analysis included both completely healthy people and those suffering some effects of the disease. Participation in the study and some areas of expectations were correlated with subjects' perception of health. Explanations and information were more often expected by subjects who defined health as the absence of physical and mental discomfort and acceptance of oneself and one's limitations. However, support was significantly more often expected by subjects who defined health in terms of the absence of physical dysfunctions, the fitness of individual body parts, and the absence of serious diseases. These were respondents who already experienced dysfunctions and ailments because they had been suffering from diabetes for a longer time. Therefore, the perception of health status depended largely on the duration and severity of diabetes and changed over the course of the disease.

Older participants in the study by Janiszewska *et al.* [30] followed similar health criteria. However, young people, i.e. high school students, more often perceived health in terms of a sense of happiness and the ability to enjoy life, as well as concern for sleep and rest, proper nutrition, and not smoking [31]. Data obtained using the LKZ questionnaire can be an excellent diagnostic guide to direct cooperation with the patient and to learn about his or her beliefs about health and values. For example, the much less frequent definition of health as "optimal body weight" in obese people and those in poorer health indirectly points to the cause of obesity: lack of attention to nutrition and lifestyle factors. This information can be used to set health education priorities and goals in line with patients' expectations.

Conclusions

People at risk of diabetes and DFD expect to be covered by early screening for foot disorders, in accordance with the guidelines. First, they expect adequate tests to be carried out, and a discussion of the results and the expected course of the disease, including possible complications. Subjects' expectations and perceptions of health depended on the duration and advancement of the disease, but not on COVID-19 restrictions. Therefore, organizational actions should be taken to enable diabetic patients to control not only metabolic and cardiac disorders, but also to prevent and screen foot disorders.

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