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The role of the nurse in prevention of complications of diabetes

Rola pielęgniarki w profilaktyce powikłań cukrzycy

Summary

Diabetes is one of the most serious diseases of modern civilization. This disease is the cause of many complications. The most important of these include: diabetic retinopathy, diabetic nephropathy, diabetic neuropathy (which are the clinical forms of the so-called microangiopathy), hypoglycemia and hyperglycemia. The role and responsibilities of nurses in the prevention of these complications, their diagnosis and treatment is very important. Law regulations give the nurse a significant range of independent powers. Own research conducted providing data on the structure of the examined group of patients diagnosed with diabetes, the incidence of complications, methods of treatment and knowledge possessed by patients on diabetes showed a significant role of nurses.

Key words: complications, nurse, prevention

Streszczenie

Cukrzyca jest jedną z najpoważniejszych współczesnych chorób cywilizacyjnych. Choroba ta jest przyczyną występowania wielu powikłań. Do najpoważniejszych z nich należą: retinopatia cukrzycowa, nefropatia cukrzycowa, neuropatia cukrzycowa (stanowiące postacie kliniczne tzw. mikroangiopatii), hipoglikemia i hiperglikemia. Rola i zadania pielęgniarki w zakresie profilaktyki przedmiotowych powikłań, ich diagnostyki i leczenia jest bardzo istotna. Przepisy prawne przyznają pielęgniarce istotny zakres samodzielnych uprawnień. Przeprowadzone badania własne dostarczyły danych w zakresie struktury badanej grupy chorych z rozpoznaną cukrzycą, a także częstości występowania powikłań, stosowanych metod ich leczenia, oraz posiadanej przez chorych wiedzy na temat cukrzycy wykazały istotną rolę pielęgniarki.

Słowa kluczowe: powikłania, pielęgniarka, profilaktyka

Introduction

The rapid urbanization and associated changes in the mode of social life, which have been especially clear for the last decades, have made it increasingly challenging for medical services to prevent, diagnose and treat the so-called civilisation diseases and complications associated with them. One of the most serious of these diseases is diabetes.

Epidemiological data are the evidence of large scale and seriousness of the problem of diabetes and complications associated with it. Complications of diabetes are dangerous and difficult to treat, and the chances of curing are uncertain. In extreme cases, complications of diabetes can lead to disability, and even death.

The nurse, in the prevention of complications of diabetes, performs an educational and educative role, undertakes actions which serve the prevention of acute and chronic complications of the disease. She is responsible for the patient's development of sense of security and control over their lives, prepares him for self-care and self-control, makes him realize how important it is to treat co-morbid conditions that can impair the quality of life and lead to serious complications of diabetes.

Material and methods

The survey was conducted among a group of 50 patients with diabetes, patients of the Local Clinic in □□Luk. The survey was conducted in October 2012 with the help of the questionnaire-survey consisting of 26 closed and semi-opened questions developed independently for research purposes. All patients agreed to participate in the survey.

Discussion of results

Based on the survey it was showed that almost half of respondents (46%) belonged to the age group of 46-60 years. Women (32%) were more frequent than men (14%). It was observed that 30% of respondents belonged to the age group of above 60 years. Men (16%) were here a bit more numerous than women (14%). Based on the results obtained it was found that 10% of respondents belonged to the age group of 36-45 years. There was a similar proportion of men to (6%) and women (4%) here. It was shown that the smallest group of respondents were those aged 26-35 years (6%). Only 8% of respondents belonged to the age group below 25 years, women (6%) were more frequent than men (2%) (Table 1).

Tab. 1. Age of responders - overall number of responders by gender

	Gender					
Age	Female		Male		Overall	
	L	%	L	%	L	%
Under 25	3	6	1	2	4	8
26- 35 years of age	2	4	1	2	3	6
36- 45 years of age	2	4	3	6	5	10
46- 60 years of age	16	32	7	14	23	46
Above 60	7	14	8	16	15	30
Total:	30	60	20	40	50	100

The results of the survey showed that the largest group of respondents consisted of people with secondary education (44%). Among them there were 30% of women and 14% of men. It was observed that 18% of respondents had vocational training (16% of men and 2% of men). 16% of respondents were people with vocational education (2% of women and 14% of men). People with higher education accounted for 12% of the respondents (8% of women and 4% of men), and people with primary education accounted for 10% of patients (4% of women and 6% of men) (Table 2).

Tab. 2. The level of education of respondents - all respondents by gender

	Gender					
Education	Female		Male		Overall	
	L	%	L	%	L	%
Primary	2	4	3	6	5	10
Vocational training	8	16	1	2	9	18
Vocational	1	2	7	14	8	16
Secondary	15	30	7	14	22	44
Higher	4	8	2	4	6	12
Total:	30	60	20	40	50	100

The data contained in Table 3 show that 56% of the respondents were economically active people. The group consisted of 40% women and 16% men. The second group in terms of numbers, of respondents were the retired (30%). This category included 14% women and 16% men. The group of pensioners accounted for 8% of respondents (2% of women and 6% of men). The category of the unemployed accounted for 6% of all respondents, 4% of women and 2% of men.

Tab. 3. Sources of income of respondents - all respondents by gender

	Gender					
Source of income	Female		Male		Overall	
	L	%	L	%	L	%
Professional activity	20	40	8	16	28	56
Unemployed	2	4	1	2	3	6
Disability pension	1	2	3	6	4	8
Age pension	7	14	8	16	15	30
Total:	30	60	20	40	50	100

The data presented in Table 4 shows that 70% of people lived in the city. There were 46% of women and 24% of men among them. People living in rural areas accounted for 30% of the respondents (14% women and 16% men).

Tab. 4. Place of residence of respondents - all respondents by gender

	Gender					
Place of residence	Female		Male		Overall	
	L	%	L	%	L	%
Rural areas	7	14	8	16	15	30
City	23	46	12	24	35	70
Total:	30	60	20	40	50	100

On the basis of the data in Table 5 it was showed that in 56% of all respondents, diabetes was diagnosed during a routine medical examination. Women were slightly more frequent (32%) than men (24%). Incidental diagnosis of diabetes affected 22% of the respondents, i.e. 12% of women and 10% men. 22% of responders - 16% of women and 6% of men pointed out to other circumstances of diagnosis of diabetes.

Tab. 5. Circumstances of diagnosis of diabetes - overall number of responders by gender

Circumstances of diagnosis of diabetes	Gender					
	Female		Male		Overall	
	L	%	L	%	L	%
During a routine medical examination	16	32	12	24	28	56
By accident during the stay in hospital	6	12	5	10	11	22
Other	8	16	3	6	11	22
Total:	30	60	20	40	50	100

Based on the survey conducted it was showed that 78% of respondents were people with type-2 diabetes. This group consisted of 50% women and 28% men. It was observed that 16% of those participating in the study were unable to identify the type of diabetes diagnosed. This group consisted of 6% women and 10% men. It was found that type-1 diabetes was diagnosed in those who were examined the smallest number of times. This form of the disease was diagnosed in only 6% of patients and it was women (4%) who twice as often as men (4%) had this disease (Table 6).

Tab. 6. Recognized type of diabetes in responders - all respondents by gender

Type of diabetes	Gender					
	Female		Male		Overall	
	L	%	L	%	L	%
Type 1 diabetes	2	4	1	2	3	6
Type 2 diabetes	25	50	14	28	39	78
DN	3	6	5	10	8	16
Total:	30	60	20	40	50	100

Based on the survey it was showed that in more than half of the respondents (78%), diabetes was treated with medications. This treatment was more often indicated by women (48%) than men (30%). It was shown that 12% of all respondents (8% of women and 4% of men) indicated treatment based on medicines and injections of insulin. It was observed that injections of insulin were an independent basis of treatment in only 10% of respondents, i.e. 4% of women and 6% of men (Table 7).

Tab. 7. Methods of treatment of diabetes - all respondents by gender

	Gender					
Methods of treatment of diabetes	Female		Male		Overall	
	L	%	L	%	L	%
Medicines	24	48	15	30	39	78
Injections of insulin	2	4	3	6	5	10
Medicines + injections of insulin	4	8	2	4	6	12
Total:	30	60	20	40	50	100

Based on the results contained in Table 8 it was showed that 10% of all respondents were not able to perform injections of insulin without assistance. There was a larger proportion of men (6%) than women (4%) here. Only 8% of respondents performed injection of insulin without assistance and women were for times more often to do it. Only 4% of respondents performed injections of insulin with the help of people close to them (2% of men and 2% of men). Based on the survey, it was observed that only two people (4%) of all respondents were unable to perform insulin injections alone (Table 8).

Tab. 8. Method of performing insulin injections - all respondents by gender

	Gender					
Method of performing insulin injections	Female		Male		Overall	
	L	%	L	%	L	%
Injections performed without assistance	3	6	1	2	4	8
Injections performed with the help of relatives	1	2	1	2	2	4
Lack of ability to independently perform injections	2	4	3	6	5	10
Total:	6	12	5	10	11	22

Based on the survey it was showed that slightly more than half of respondents (54%) pointed to gaps in their knowledge about the complications of diabetes. This problem affected 32% of women and 22% of men. Having sufficient knowledge about the complications of diabetes, however, was declared by 46% of respondents, i.e. 28% of women and 18% men (Table 9).

Tab. 9. Knowledge of the complications of diabetes - all respondents by gender

	Gender					
Knowledge of complications of diabetes	Female		Male		Overall	
	L	%	L	%	L	%
Yes	14	28	9	18	23	46
No	16	32	11	22	27	54
Total:	30	60	20	40	50	100

Based on the data in Table 10, it was showed that 56% of respondents did not observe any diabetes-related complications in themselves. This group consisted of 38% women and 18% men. The incidence of complications of diabetes at home was indicated by 44% of respondents, i.e. 22% of women and 22% of men.

Tab. 10. Incidence of complications associated with diabetes - all respondents by gender

	Gender					
Incidence of complications associated with diabetes	Female		Male		Overall	
	L	%	L	%	L	%
No	19	38	9	18	28	56
Yes	11	22	11	22	22	44
Total:	30	60	20	40	50	100

Studies carried out and the results obtained allow to show that the most common symptom of disease in subjects over the past three months was sweating. 54% of the respondents (32% women and 22% men) complained about it. Almost half of respondents (44%) notices symptoms on the part of the circulatory system, that is, palpitations. This symptom was reported more often by women (26%) than men (16%). It was observed that 30% of responders experienced blurred vision which was more frequently reported by women (16%) than men (14%). Trembling was present in 22% of patients and it affected women (14%) nearly twice as often as men (8%). It was found that the least common symptom which respondents noticed was tingling sensation around the mouth and tongue about which only 2% of women complained (Table 11).

Tab. 11. The symptoms occurring among respondents in the last three months - all respondents by gender

	Gender					
The symptoms occurring among respondents in the last three months	Female		Male		Overall	
	L	%	L	%	L	%
Sweating	16	32	11	22	27	54
Trembling	7	14	4	8	11	22
Tingling sensation around mouth and tongue	1	2	0	0	1	2
Palpitations	13	26	8	16	22	44
Blurred vision	8	16	7	14	15	30

Based on the survey it was showed that the most common symptoms that occur on the feet of respondents were: pain, itching and numbness. These symptoms are related to 32% of those surveyed, more often women (20%) than men (12%). Cuts, bruises and other minor damage occurred in 26% of patients (12% women and 14% men), and ulcers and chronic wounds related to a total of 14% of respondents. To this group, 8% of women and 6% of men belonged. Changed colour of the skin of the feet occurred in 6% of patients and only in women (Table 12).

Tab. 12. The incidence of disease symptoms on feet - all respondents by gender

	Gender					
Incidence of complications associated with diabetes	Female		Male		Overall	
	L	%	L	%	L	%
Pain, itching and numbness	10	20	6	12	16	32
Ulcers and chronic wounds	4	8	3	6	7	14
Changed colour of skin of feet	3	6	0	0	3	6
Cuts, bruises and other minor damage	6	12	7	14	13	26

Based on the survey it was showed that the most frequent complications were recurrent skin infections and skin fungal infections. The occurrence of these complications was declared by 22% of respondents. Another, in terms of frequency, skin complication was furunculosis and related problems affected 14% of responders, more men (8%) than women (6%). Only 4% of respondents named skin discoloration and scarring as skin complications. None of the respondents mentioned vitiligo as a complication associated with diabetes (Table 13).

Tab. 13. The presence of skin complications - all respondents by gender

	Gender					
The presence of skin complications	Female		Male		Overall	
	L	%	L	%	L	%
Recurrent skin infections	8	16	3	6	11	22
Furunculosis	3	6	4	8	7	14
Fungal skin infections	6	12	5	10	11	22
Vitiligo	0	0	0	0	0	0
Skin discolouration and scarring	2	4	0	0	2	4

Based on the survey conducted it was found that hypertension was the most common disease associated with diabetes diagnosed among respondents. Its presence was indicated by 14% of respondents (8% of women and 6% of men). Stroke affected 8% of respondents and the same number of women and men pointed out to this condition (4%). It was shown that the incidence of coronary heart disease was the same as myocardial infarction, and the existence of these diseases was reported by 6% of responders. It was observed that coronary heart disease often related to women (4%), and myocardial infarction was diagnosed in men more often (4%) (Table 14).

Tab. 14. The presence of diseases associated with diabetes - all respondents by gender

	Gender					
The presence of diseases related to diabetes among responders	Female		Male		Overall	
	L	%	L	%	L	%
Coronary heart disease	2	4	1	2	3	6
Stroke	2	4	2	4	4	8
Myocardial infarction	1	2	2	4	3	6
Endocrine diseases	0	0	1	2	1	2
Hypertension	4	8	3	6	7	14

The data in Table 15 indicate that 22% of responders felt depressed in relation to diabetes. Men (12%) were slightly more likely to feel this state than women (10%). Among 12% of responders (8% of women and 4% of men) anxiety disorders were observed as a result of diabetes. The presence of depression and optimism was indicated by the 6% of patients, 4% of men and 2% of men (Table 15).

Tab. 15. Emotional reactions associated with diabetes - all respondents by gender

Emotional reactions associated with diabetes	Gender					
	Female		Male		Overall	
	L	%	L	%	L	%
Depression	2	4	1	2	3	6
Anxiety disorders	4	8	2	4	6	12
Feeling depressed	5	10	6	12	11	22
Optimism	2	4	1	2	3	6

Based on the survey it was showed that the respondents measured blood glucose every day. This response was given by 46% of all respondents (26% women and 20% men). It was shown that 30% of responders measured glycemia twice each day, and women were twice as likely as men (20% and 10%) to do so. Periodic measurements of glycemia, depending on how they were feeling, were performed by 14% of respondents (8% of women and 6% of men). Only 10% of respondents measured glycemia several times a day, more often women (6%) than men (4%) (Table 16).

Tab. 16. Frequency of measurement of glycemia - all respondents by gender

	Gender					
Frequency of measurement of glycemia	Female		Male		Overall	
	L	%	L	%	L	%
Several times a day	3	6	2	4	5	10
Every day, twice a day	10	20	5	10	15	30
Every day, once a day	13	26	10	20	23	46
Periodically, depending on how the responders were feeling	4	8	3	6	7	14
Total:	30	60	20	40	50	100

Based on the survey it was showed that 56% of respondents performed blood and urine tests in the laboratory only once a year. This group consisted of women (38%) more often than men (18%). It was observed that 20% of all respondents disregarded blood and urine tests. There was a larger proportion of men (12%) than women (8%) here. Blood tests and urine tests once every six months concerned 14% of all respondents. It were more often men (8%) than women (6%). Only 10% of respondents performed blood and urine tests once a month. Women (8%) were four times more often than men (2%) to do so (Table 17).

Tab. 17. The frequency of blood and urine tests in the laboratory-all respondents by gender

	Gender					
The frequency of blood and urine tests in the laboratory	Female		Male		Overall	
	L	%	L	%	L	%
Once a month	4	8	1	2	5	10
Twice a year	3	6	4	8	7	14
Once a year	19	38	9	18	28	56
None	4	8	6	12	10	20
Total:	30	60	20	40	50	100

The data in Table 18 indicate that the control of blood pressure was conducted by 46% of all respondents. Women (32%) were more than twice as likely to control blood pressure (32%) as men (14%). It was observed that 22% of respondents (12% women and 10% men) claimed that they measure blood pressure occasionally and a total of 20% of the respondents, more women (12%) than men (8%), claimed that they measured it when they were feeling bad. It was shown that 12% of respondents did not perform blood pressure measurements, men (8%) were twice as likely as women (2%) to do so (Table 18).

Tab. 18. Control of blood pressure by responders -all respondents by gender

	Gender					
Blood pressure control among respondents	Female		Male		Overall	
	L	%	L	%	L	%
Yes	16	32	7	14	23	46
No	2	4	4	8	6	12
Occasionally	6	12	5	10	11	22
When feeling bad	6	12	4	8	10	20
Total:	30	60	20	40	50	100

Based on data contained in the table below it was showed that the most common method of self-control by the responders was independent measurement of glucose with the use of a glucometer. The use of this method was indicated by 76% of respondents (42% women and 34% men). A frequent method of self-control was running a diary of self-control. It was observed that a total of 46% of respondents ran a diary of self-control. In this group, the proportion of women (34%) was greater than the proportion of men (22%). Diabetes self-monitoring in the form of regular and healthy eating was detected in 16% of patients. This group accounted for 12% of women and 4% of men. Daily physical exercise was indicated by only 6% of respondents and men (4%) were more frequent than women (2%). Based on the results of the study, it was showed that the lack of self-control was declared only by men, and they accounted for 6% of all responders (Table 19).

Tab. 19. Self-control methods used by respondents - all respondents by gender

	Gender					
Self-control methods used by responders	Female		Male		Overall	
	L	%	L	%	L	%
Running a diary of self-control	17	34	11	22	28	46
Independent measurement of glucose using a glucometer	21	42	17	34	38	76
Regular and healthy eating	6	12	2	4	8	16
Daily physical exercise	1	2	2	4	3	6
Lack of self-control	0	0	3	6	3	6

The data presented in Table 20 allow us to conclude that 60% of respondents cared about their feet by wearing comfortable shoes, women (40%) were more frequent than men to do so (20%). It was shown that 38% of responders examined (observed) their feet as part of the prevention of diabetic complications. It were women (28%) nearly three times more frequently than men (10%). The lack of any form of taking care of feet was indicated by 28% of all respondents (12% women and 16% men). It was observed that 24% of responders, but women were two times more often than men (8%), dried feet and interdigital spaces after washing. Only 6% of respondents, but more women (4%) than men (2%), cared about their feet by reducing their feet nails with a file, rather than a sharp tool.

Tab. 20. Methods of taking care of feet - all respondents by gender

	Gender					
Methods of taking care of feet	Female		Male		Overall	
	L	%	L	%	L	%
Wearing comfortable shoes	20	40	10	20	30	60
Drying feet and interdigital spaces after washing feet	8	16	4	8	12	24
Viewing feet on a daily basis	14	28	5	10	19	38
Reducing nails with a file, not a sharp tool.	2	4	1	2	3	6
None	6	12	8	16	14	28

Based on the results of the study it was showed that 62% of respondents were not convinced of the need for control of eye-sight by an ophthalmologist as a result of diabetes. Such an opinion was expressed by 34% of women and 28% of men. The opposite view was expressed by 38% of the respondents, i.e. 26% of women and 12% of men (Table 21).

Tab. 21. Respondents' opinions on the need to control eye-sight by an ophthalmologist - all respondents by gender

	Gender					
Respondents' opinions on the need to control eye-sight by an ophthalmologist	Female		Male		Overall	
	L	%	L	%	L	%
Yes	13	26	6	12	19	38
No	17	34	14	28	31	62
Total:	30	60	20	40	50	100

Based on the survey it was showed that the most frequent changes in lifestyle in conjunction with diagnosed diabetes were: reduction of smoking cigarettes and giving up drinking alcohol. A total of 20% of the respondents indicated such changes. The data collected showed that the above mentioned changes were indicated more often by women than men. It was observed that recognized diabetes was also a reason for the resignation from the previous job. This situation concerned 6% of responders and men were two times more frequent than women, respectively 4% and 2%. Based on the obtained results, it was observed that 4% of the respondents gave up driving in connection with diabetes, but in this group only men were present (Table 22).

Tab. 22. Lifestyle changes due to diabetes-all respondents by gender

	Gender					
Lifestyle changes due to diabetes	Female		Male		Overall	
	L	%	L	%	L	%
Reduction of smoking	3	6	2	4	5	10
Giving up drinking alcohol	4	8	1	2	5	10
Resignation from the previous job	1	2	2	4	3	6
Giving up driving	0	0	2	4	2	4

The results contained in the following table showed that 60% of responders gained knowledge about diabetes through a variety of educational materials. It was observed that women used brochures, books, and other educational materials slightly more often than men (32% and 28%). It was observed that 36% of respondents received information about the disease from a nurse, and women (22%) used her advice two times more often than men (14%). The results showed that the Internet was also a popular source of information on diabetes. This source was indicated by 30% of all respondents, almost as often by men as by women. The knowledge provided by doctors concerned 28% of respondents, more often women (16%) than men (12%). Other sources of knowledge about diabetes were indicated by a total of 16% of the respondents (Table 23).

Tab. 23. Sources of information on diabetes-all respondents by gender

	Gender					
Sources of information about diabetes	Female		Male		Overall	
	L	%	L	%	L	%
Doctor	8	16	6	12	14	28
Nurse	11	22	7	14	18	36
Educational materials (brochures, books)	16	32	14	28	30	60
The Internet	7	14	8	16	15	30
Other	5	10	3	6	8	16

It was shown that a personal conversation was the most effective form of education according to respondents. This response was given by 68% of respondents, and women (38%) gave it almost as often as men (30%). The effectiveness of self-help groups was indicated by 22% of respondents, i.e. 16% of women and 6% of men. According to the respondents, the least effective form of education were presentations for them and their loved ones. The effectiveness of this form of learning was indicated only by one in ten responders, but more often it were women (6%) than men (4%) (Table 24).

Tab. 24. Effectiveness of particular forms of education - all respondents by gender

	Gender					
Effectiveness of particular forms of education	Female		Male		Overall	
	L	%	L	%	L	%
Personal conversation	19	38	15	30	34	68
Presentation for the patient and his relatives	3	6	2	4	5	10
Meetings with patients suffering from diabetes (self-help groups)	8	16	3	6	11	22
Total:	30	60	20	40	50	100

The vast majority of respondents felt that educational training is needed. Such an opinion was expressed by 46% of women and 14% of men surveyed. The lack of such a need was indicated by as many as 40% of respondents. In this group, the greater number of men (26%) rather than women (14%) (Table 25) was observed.

Tab. 25. The need to participate in the educational training - all respondents by gender

	Gender					
The need to participate in educational training	Female		Male		Overall	
	L	%	L	%	L	%
Yes	23	46	7	14	30	60
No	7	14	13	26	20	40
Total:	30	60	20	40	50	100

Based on data contained in the table below it was found that 40% of respondents demonstrated only partial knowledge of the principles of nutrition in diabetes. The percentage of women and men (20%) was identical. Full knowledge of the principles of nutrition in diabetes was indicated only by 32% of respondents. Three times more often it were women (24%) than men (8%). It was observed that 28% of respondents admitted to the absence of any knowledge of the principles of nutrition in diabetes, there was a similar proportion of women and men (16% and 12%) (Table 26).

Tab. 26. Knowledge of the principles of nutrition in diabetes-all respondents by gender

	Gender					
Knowledge of principles of proper nutrition with diabetes	Female		Male		Overall	
	L	%	L	%	L	%
Full knowledge	12	24	4	8	16	32
No knowledge	8	16	6	12	14	28
Partial knowledge	10	20	10	20	20	40
Total:	30	60	20	40	50	100

The results of the studies included in Table 27 show that 50% of all respondents had sufficient knowledge about medicines they use, it concerned 34% of women and 16% of men. It was shown that 50% of all respondents indicated the existence of gaps in knowledge in this field. The percentage of men and women was almost the same (respectively 26% and 24%).

Tab. 27. Assessment of knowledge about medicines taken - all respondents by gender

	Gender					
Having sufficient knowledge about medicines taken	Female		Male		Overall	
	L	%	L	%	L	%
Yes	17	34	8	16	25	50
No	13	26	12	24	25	50
Total:	30	60	20	40	50	100

Discussion

According to the researchers, in order for the life with diabetes to be easier and every day not to consist of problems only, the patient must have sufficient knowledge about the disease and how to deal with it. It is a necessary condition to avoid the complications of the disease, and if they occur, properly conducted education should ensure relatively normal functioning in the family, at work, in society and allow for “living life to the fullest” (Krzemińska, 2006). The studies have shown that as many as 28% of respondents did not have sufficient knowledge about the disease. It was also observed that 60% of patients with diabetes expected education on this topic, because only half of the respondents had sufficient knowledge of the principles of treatment of diabetes.

In light of the literature what is highlighted is the great importance the educational role of nurses regarding patients with diabetes (Drozd et al. 2010; Gumprecht, 2012). § 1. 1 pt 1 is the basis for the education conducted by a nurse. Regulations of the Minister of Health of 7 November 2007 on the nature and extent of the benefits of preventive, diagnostic, therapeutic and rehabilitation services provided by a nurse or midwife without a doctor's order. Preventive education for people with diabetes concerns the complications of diabetes, and among high-risk individuals (i.e. people with obesity, hypertension, dyslipidemia, etc.) is intended to prevent specific complications of diabetes (Krzemińska, 2006; Szymczyk, 2008).

Education of patients with diabetes, according to some authors, is to give theoretical and practical knowledge through personal interviews and meetings with other patients diagnosed with diabetes. According to researchers, a patient with diabetes needs to know about their disease, its treatment methods and practical skills (injections of insulin, operation of glucose meter and lancing device). Therefore, the task of the nurse is to motivate the patient to actively participate in the process of treatment and gaining of knowledge. A nurse, when working with a patient, should prevent the patient from being discouraged in the event of occurrence of difficulties. The nurse should educate not only the patient, but also their proximal and distal environment. Actions taken by the nurse convince the patient that in spite of diabetes he or she continues to be a full-fledged member of society, and through better education, accepts his or her illness (Krzemińska, 2006; Szewczyk, 2011). Based on the results of own research, it was observed that as many as 68% of the patients pay particular attention to the form of a personal conversation as part of educational activities carried out by the nursing staff. It was also found that 22% of all respondents mentioned the group training as a method of education. Based on the research material obtained, a highly disturbing trend among respondents was observed as only 36% of all respondents were informed about the disease by a nurse. For the vast majority of respondents (60%) the source of knowledge about diabetes were information materials (brochures and books), and 30% of responders were looking for knowledge about the disease on the Internet.

Among the main objectives of existing prevention programs described in the literature the following are mentioned: appropriate presentation of the disease, its complications and treatment, clarification of dietary treatment and provision of information about the disease (in the form of brochures, self-control diary, information on the acute and chronic complications, emergency diabetic card) (Szewczyk, 2004).

The purpose of nurses in the prevention of diabetes complications is to prepare the patient for self-control and self-care, so that it will improve outcomes, health and extend the life of the patient. The nurse should provide the patient with goals of self-management of diabetes: normoglycemia, proper assessment of the effect of different meals on blood glucose, increase of self-discipline in their lives, provision of the necessary assistance to the physician in making decisions about prescribed medicines, independent decisions about changes in insulin dose. According to the researchers, the right way to present the purpose of self-control allows the nurse to mobilize and encourage the patient to make independent assessments of the influence of lifestyles, diet, exercise, travel, stress and additional diseases on the level of glucose in the blood. According to the researchers, only thanks to the right attitude of the nurse it is possible that the patient will be able to conduct their own observations on the effects of insulin, risks of hypoglycemia, insulin injection technique, the effect of treatment with diet and oral medications (Szewczyk, 2011; Szymczyk, 2008).

Based on the available literature, it can be concluded that, by proper patient education in self-control, the nurse should point to the importance of the self-control for: maintaining proper blood glucose levels within the range of normoglycemia, removing the damage caused by the disease and the complications concerning eye-sight, kidney, heart, legs and improvement of overall efficiency and quality of life (Kornafel, 2008). On the basis of the analysis of research materials, it was shown that diabetes caused a change in the daily lives of patients. It was found that (10%) responders reduced cigarette smoking and alcohol consumption after diagnosis of the disease, and a small group of those studied, in connection with the disease, resigned from the job (6%) or driving (4%).

In working with patients with diabetes, the nurse should pay attention to the need to turn the patient's attention to the necessity of observation of symptoms suggestive of risks of complications. Huge importance is attached to convincing patient into performing regular check-ups (fundus examination, measurement of blood pressure, ECG, determination of blood lipids, renal function test, test of pulse in the feet and vibration in the lower limbs, neurological examination (Szewczyk, 2011).

According to some authors, the best results in terms of patient education are achieved if the nurse provides ongoing collaboration with: dietician, psychologist, family doctor, and education should be conducted not only individually, but also in the training group of patients with diagnosed diabetes (Krzemińska, 2006; Szymczyk, 2008).

It is true that only individual education allows for direct contact of the patient with the nurse who adjusts the scope of the knowledge to the needs of the patient and the condition of her success is to provide information in a simple and understandable language (Krzemińska, 2006).

According to Szewczyk, the diagnosis of diabetes is most often the result of routine check-ups, and a significant role in carrying out these studies is played by a nurse. For this reason, the study concerning patients with diabetes includes: urine, blood, blood pressure, examination of eye-sight and feet (Szewczyk, 2011).

In accordance with § 1 section 2 of the Ordinance of the Minister of Health of 7 November 2007 on the nature and extent of the benefits of preventive, diagnostic, therapeutical rehabilitation services provided by a nurse or midwife without a doctor's order, the nurse is

entitled to independently exercise diagnostic tests for the determination of glucose and ketone bodies in the blood and urine. In addition, the nurse can, on her own, without a medical order, refer the patient for diagnostic tests or collect materials for diagnostic tests, but the condition for using these powers is to obtain the title of specialist in the field of nursing.

According to Kapała, examination of eye-sight performed as part of preventive actions for people with diabetes is supposed to detect retinopathy and it includes ophtalmoscopie or photographs of the retina (Kapała, 2011). Own research shown that as many as 62% of respondents did not understand the need for more frequent ophthalmologic monitoring due to diabetes, as only 38% of responders carried these tests regularly.

Tasks of nurses concerning measuring blood pressure are evident according to researchers. In accordance with the principle of order and established procedures, the nurse takes measurements and stores the results in the relevant documents (Kapała, 2011). Our results have allowed to observe that 46% of responders controlled levels of blood pressure regularly, but as many as 20% did so occasionally, and 20% only when they were feeling bad.

Examination of feet of a diabetic patient by a nurse in the literature focused on the early diagnosis of diabetic foot syndrome. The nurse participates in the assessment of presence of the pulse in the feet (in the dorsal artery of foot) and if the pulse tested is reduced or absent, the nurse should instruct the patient about the risks and the need to take concrete action because this symptom can be the first symptom of neuropathy (Szewczyk, 2011). Based on the results of their research, it was observed that 28% of respondents did not pay attention to their feet during daily care. Other responders undertook various preventive measures to prevent diabetic foot syndrome. It was shown that as part of preventive activities they pointed out to wearing of comfortable shoes (60%) and daily viewing of feet (38%). Respondents indicated a variety of troubling symptoms that were observed on their feet. It was shown that it was most often pain, numbness and itching of feet (32%), minor injuries (26%) and ulcers and non-healing wounds (14%). It was found that due to diabetes the responders observed in themselves skin lesions in the form of recurrent infections (22%), fungal infections (22%) and furunculosis (14%).

According to Szewczyk, the purpose of curative actions undertaken in the field of medical complications of diabetes, not only by doctors but also by a nurse, is, in the first place, to alleviate their symptoms and inhibit the growth rate of complications (Szewczyk, 2004). It was observed that in the study group as much as 44% of people experienced complications of diabetes, but as many as 54% of respondents did not have enough knowledge on this subject. It also showed that the subjects experienced a variety of symptoms of complications of the disease. It was observed that the most common symptoms felt by the responders were: sweating (54%), palpitations (44%) and blurred vision (30%). Other symptoms that responders reported were trembling and tingling sensation.

The role and responsibilities of nurses in the treatment of diabetic complications also depends on their type. Based on recent reports in the literature, it is concluded that the most important way to treat nephropathy is to cure hyperglycemia with dietary treatment, medication, and physical exercises appropriately selected (Szewczyk, 2011; Szewczyk, 2008). In our study it was showed that 46% of all respondents measured blood glucose every day - once during the day, and 30% performed measurements daily - twice a day. It was observed that as many as 14% of the respondents evaluated glucose only when they were experiencing distressing symptoms.

The role and responsibilities of nurses in the prevention of complications become clearly apparent in the dietary treatment. According to § 1. 1 pt 3 of the Ordinance of the Minister of Health of 7 November 2007 on the nature and extent of the benefits of preventive, diagnostic, therapeutic and rehabilitation services provided by a nurse or midwife without a doctor's orders, the nurse can independently provide medical services including determining diet for patients based on existing guidance in this area. Our results revealed that 28% of respondents did not have sufficient knowledge of the principles of nutrition diet due to diabetes, and 40% of patients had only partial knowledge on the subject. The results obtained in this area clearly indicate the need to intensify educational activities of nurses on the principles of dietary nutrition.

According to most researchers, the principal aim of treatment of diabetic neuropathy is to alleviate the symptoms and control the progress of the damage to the nervous system. The basis of treatment is the prevention of pathological processes by maintaining a proper level of blood glucose, and this treatment is multi-faceted and is based on pharmacological and non-pharmacological methods (Koziarska-Rościszowska, 2008; Wróbel, 2008). In terms of pharmacological therapy, the tasks of the nurse are limited to the execution of medical orders and monitoring of the overall medical condition of the patient. Non-pharmacological methods of treatment of diabetic neuropathy include physical therapy and psychotherapy. On the basis of § 1. 1 point 3. of the Regulation of the Minister of Health on November 7, 2007 on the nature and extent of the benefits of preventive, diagnostic, therapeutic and rehabilitation services provided by a nurse or midwife without a doctor's order, the nurse is authorized to independently provide medical benefits in the form of basic psychotherapy and using elements of qualified psychotherapy provided that she underwent the educational specialist course (Szewczyk, 2004). Research results revealed that respondents need psychotherapeutic activities because as much as 22% of the respondents felt depressed in relation to diabetes, 12% had anxiety disorders and 6% depression. The collected research material confirms the need to include the elements of psychotherapeutic procedure into the treatment of diabetes.

According to experts, the treatment of diabetic foot syndrome should be performed by a diabetes specialist or surgeon (Hurej, Vithian, 2011; Kornafel, Mrozikiewicz-Rakowska, 2010). This treatment is of a multi-faceted nature, it includes pharmacological and non-pharmacological methods. Pharmacological methods include, among others, insulin therapy, medicines reducing coagulation of blood and analgesia (Kornafel, Mrozikiewicz-Rakowska, 2010). Regulation of the Minister of Health of 7 November 2007 on the nature and extent of the benefits of preventive, diagnostic, therapeutic and rehabilitation services provided by a nurse or midwife without a doctor's order authorizes the nurse to independent, casual modification of therapeutic dose of short-acting insulin (§ 1. 1 point 2.) and when injecting insulin the nurse must follow specific rules (abdomen or thigh should be the area of injection, when injecting she should avoid piercing muscles, to a prevent lipohypertrophy or atrophy from occurring, the area of injection should be changed because it prevents uncontrolled slow down of the absorption of insulin (Młynarczyk, 2010; Szewczyk, 2011). It was observed that as many as 10% of the respondents were not able to independently perform insulin injections, and 4% of respondents carried out the injection with the help of relatives.

Conclusions

Based on the survey, the following conclusions were formed:

1. Diabetes is often diagnosed during a routine medical examination in women aged 46-60 years with secondary education, economically active and living in the city.
2. The most common type of diabetes was observed among responders with type 2 diabetes, treated pharmacologically.
3. Symptoms of diabetes observed among respondents were the most frequently: sweating and skin lesions.
4. Diabetes was the reason for the change in the psyche of the test group.
5. Most of the respondents applied a variety of methods of self-control of diabetes.
6. The best source of information about diabetes in the opinion of the respondents were educational materials and personal conversation with the nurse.

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