ASSESSMENT OF THE LEVEL OF ACCEPTANCE OF THE ILLNESS AND OF SATISFACTION WITH LIFE IN PATIENTS WITH TYPE 2 DIABETES AGED 45-60

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Abstract

Background. Type 2 diabetes is a disease which constitutes a serious problem among the middle-aged society. Its progressive nature contributes to the occurrence of numerous limitations in the patients' everyday life. Moreover, the presence of a chronic disease such as type 2 diabetes significantly affects the quality of life.

Material and Methods. The studies were performed using the diagnostic poll method. The research tools were: an own survey questionnaire, standardized questionnaires – the Acceptance of Illness Scale (AIS) and the Satisfaction With Life Scale (SWLS). The studies were held from February till December 2017 among 100 inpatients of the cardiology department and the internal medicine department of the Kolejowy Hospital in Wilkowice – Bystra (Independent Public Healthcare Institution).

Results. The mean of the acceptance of the illness among patients with type 2 diabetes aged 45-60 was 30.39 which indicates a high level of acceptance. In the SWLS nearly a half of those studied indicated a high sense of satisfaction with life.

Conclusions. The patients demonstrated a high level of acceptance of the illness and of satisfaction with life. The level of acceptance determines the sense of satisfaction among patients and affects their quality of life.

Keywords: type 2 diabetes, acceptance of the illness, satisfaction with life, chronic disease.

1. Introduction

One of the diseases which significantly hinder human life is type 2 diabetes. Its progressive nature affects the level of the patients' acceptance of the illness and satisfaction with life. Type 2 diabetes is considered one of social diseases due to its high prevalence [1,2].

Type 2 diabetes is a chronic disease, it lasts from the moment it is diagnosed until the end of life. It affects the mental, physical as well as the social area of human life. Moreover, it is a strong stressor for the patient and thus forces him or her to perform certain changes aimed at adapting to the new situation. This new situation is also related to choosing whether the patient wants to accept the disease and consider him- or herself sick or whether he or she rejects the disease and denies its existence. The majority of the society cannot accept a chronic disease because such a disease is associated with negative emotional experiences. It is also related to the necessity to regularly take medications, frequently attend a diabetologist and change the existing nutrition habits. Facing such a challenge requires the acceptance of the disease which in turn affects satisfaction with life [3,4,5,6].

The aim of the paper was the assessment of the level of acceptance of the illness and of satisfaction with life among patients aged 45-60 with a diagnosis of type 2 diabetes.

Material and Methods

The study enrolled a group of 100 inpatients of the of the cardiology department and the internal medicine department of the Kolejowy Hospital in Wilkowice – Bystra hospitalized in in the period from February to December 2017. Before commencing the study the respondents were informed about its purpose and about the voluntary and anonymous character of participating in it. The inclusion criteria for the study were: providing expressed

consent for participation, a diagnose of type 2 diabetes, hospitalization at the department of cardiology or of internal medicine and age of 45-60.

The diagnostic poll method was applied in order to achieve the assumed research target. The research tools applied in the study were: an own survey questionnaire, the Acceptance of Illness Scale (AIS) and the Satisfaction With Life Scale (SWLS) [7].

4.3. Statistical methodology

The statistical analysis was performed using the following software: PQStat 1.6.6, PSPP 1.0.1, MS Office 2013 (RS for Excel).

The significance level considered in all the analyses was p=0.05. A lower level of significance allowed for rejecting the zero hypothesis and considering the alternative hypothesis indicating the occurring dependences.

The normal distribution of variables was verified using the Shapiro-Wilk test. If the variables presented a character other than normal the following non-parametric tests were applied: the Kruskal–Wallis test, the Mann-Whitney test. In case of the normal character of the variables – parametric tests were applied: ANOVA, the T-Student test.

5. The results of the performed studies

5.1. The sociodemographic characteristics of the studied group

The detailed sociodemographic characteristics of the studied group has been presented in Table I.

Table I. The sociodemographic characteristics of the studied group

Variable	Reply	Women (n = 42)		Men (n = 58)	
		n	%	n	%
Age	up to 50 (inclusively)	4	9.5	5	8.6
	51 to 55	15	35.7	14	24.1
	56 and more	23	54.8	39	67.2
Education	Primary	8	19.0	2	3.4
	Vocational	14	33.3	32	55.2
	Secondary	16	38.1	19	32.8
	Higher	4	9.5	5	8.6
Marital status	Single	0	0.0	9	15.5
	Married	22	52.4	41	70.7
	Widow/er	16	38.1	2	3.4
	Divorced	4	9.5	6	10.3
Place of inhabitance	Rural area	19	45.2	29	50.0
	Urban area	23	54,8	29	50,0

Legend: n-number of persons
Source: own calculations

5.2. The characteristics of the health status of the studied group

Detailed data have been presented in Table II.

Table II. The characteristics of the health status of the studied group

Variable	Reply	Women (n = 42)		Men (n = 58)	
		n	%	n	%
Is there a possibility that your family takes care of you?	Yes	39	92,9	50	86,2
	No	3	7,1	8	13,8
Do you smoke cigarettes?	Yes	10	23,8	30	51,7
	No	32	76,2	28	48,3
How much time has elapsed from the moment of diagnosing diabetes?	Less than a year	5	11,9	9	15,5
	From 1 to 5 years	27	64,3	36	62,1
	From 6 to 10 years	8	19,0	9	15,5
	Over 10 years	2	4,8	4	6,9
Type of treatment	Insulin	11	26,2	15	25,9
	Dietary treatment (diabetes diet)	22	52,4	28	48,3
	Pharmacotherapy (medications lowering the blood glucose level)	30	71,4	42	72,4
	None of the above mentioned	2	4,8	3	5,2
Do you adhere to the treatment recommendations?	Yes	38	90,5	48	82,8
	No	4	9,5	10	17,2
Are you under constant supervision of a diabetologist?	Yes	27	64,3	30	51,7
	No	15	35,7	28	48,3

Legend: n – number of persons
Source: own calculations

The analysis of the Acceptance of Illness Scale indicates that the area related to the acceptance of the illness which obtained the highest score from the surveyed patients was the feeling that they are not a burden for their family and friends (mean 4.25). The second in turn answer provided by the studied patients was that the disease does not make them feel unwanted (mean 4.02). The areas which obtained the lowest score were: a lack of self-sufficiency to the extent which the patients would like (mean 3.43) and the one indicating a

lack of the feeling of embarrassment and adjusting to the limitations imposed by the disease (mean 3.58).

The analysis of the replies provided to the questions included in the AIS questionnaire also demonstrated that the mean acceptance of the illness among the studied respondents was 30.39 which proves a high level of acceptance of the illness among the surveyed patients. The detailed distribution of the results has been presented in Table III which also includes data presenting the mean for satisfaction with life. The results of the analysis of the sten scores obtained by the studied patients indicate that the mean for satisfaction with life was 6.25 which proves the respondents' moderate satisfaction with life.

Table III. General results of the Acceptance of Illness Scale (AIS) and the Satisfaction With Life Scale (SWLS).

	Level of illness acceptance	Satisfaction with life	Satisfaction with life (sten)
M	30,39	22,50	6,25
SD	8,139	5,508	2,017
Min	9	2	2
Max	40	10	10
Q1	25,00	17,50	4,25
Me	33,00	23	6,00
Q3	36,75	27	8,00

Legend: M – mean; SD – standard deviation; Min –minimum value; Max – maximum value; Q1 – lower quartile; Me – median; Q3 – upper quartile.

The influence of sociodemographic factors on the level of acceptance of the illness

The collected data allow for concluding that the degree of acceptance of the illness was diversified depending on the age of the respondents (U =843.0; p< 0.05). Moreover the level of acceptance of the illness was also influenced by the possessed education (U = 897.5; p< 0.05). What is also interesting is the fact that the marital status, as one of the sociodemographic factors, has got an influence on the acceptance of type 2 diabetes (U = 712.5; p < 0.01). The performed studies demonstrated that the level of the acceptance of type 2 diabetes is not diversified in terms of variables such as gender or the place of inhabitance (p>0,05) (Table IV).

Table IV. The influence of sociodemographic factors on the level of acceptance of the illness

Variable	Group	AIS							
		M	*SD*	*Me*	*Min*	*Max*	*Q1*	*Q3*	*U*
Gender	Woman	29.19	7.718	29	13	40	23	26	996.5
	Man	31.26	8.389	34	9	40	35	38	
Age	Up to 55	33.08	6.322	35	19	40	29	38	843.0*
	56 and more	28.74	8.718	30	9	40	23	35	
Education	Primary or vocational	28.84	8.388	31	9	40	23	35	897.5*
	Secondary or higher	32.46	7.443	35	14	40	26	39	
Marital status	Persons who were not in marriage	27.24	8.095	29	12	40	21	35	712.5**
	Persons who were married	32.24	7.638	34	9	40	27	38	
Place of inhabitance	Rural area	29.81	7.595	32.5	12	40	24	36	1104.5
	Urban area	30.92	8.65	33	9	40	26	39	

Legend:. M – mean; SD – standard deviation; Me – median; Min – minimum value; Max – maximum value; Q1 – first quartile; Q3 – third quartile; AIS – result of the Acceptance of Illness Scale; U – Mann–Whitney U Test statistics.
*$p < 0.05$; ** $p < 0.01$.
Source: own calculations

The influence of sociodemographic factors on the patients' satisfaction with life

The obtained results indicate that satisfaction with life is influenced by the patients' age ($U = 901.0$; $p < 0.05$). Moreover it is possible to notice that a higher level of satisfaction was also noted among persons who were married (Me = 7). Satisfaction with life was not diversified depending on the respondents' gender, education or the place of inhabitance.

Detailed results have been presented in Table V.

Table V. The influence of sociodemographic factors on the patients' satisfaction with life.

Variable	Group	SWLS (sten)							
		M	*SD*	*Me*	*Min*	*Max*	*Q1*	*Q3*	*U*
Gender	Woman	5.83	2.059	6	2	10	4	5	990.5
	Man	6.55	1.948	6.5	3	10	7	8	
Age	Up to 55	6.74	2.075	7	2	10	6	4	901.0*
	56 and more	5.95	1.937	6	2	10	8	7	
Education	Primary or vocational	5.98	2.136	6	2	10	4	5.25	1025.5
	Secondary or higher	6.59	1.821	7	3	10	7	8	
Marital status	Persons who were not in marriage	5.30	1.746	5	2	9	4	7	639.0***
	Persons who were married	6.81	1.966	7	3	10	6	8	
Place of inhabitance	Rural area	6.04	1.957	6	2	10	4.25	7.75	1115.0
	Urban area	6.44	2.071	7	2	10	4.25	8	

Legend: M – mean; SD – standard deviation; Me – median; Min – minimum value; Max – maximum value; Q1 – first quartile; Q3 – third quartile; U – Mann–Whitney U Test statistics.
*p< 0.05; ** p< 0.01; *** p< 0.001.
Source: own calculations

The influence of the duration of type 2 diabetes on the level of acceptance of the illness

The respondents were asked to provide an answer to a question related to the duration of the disease. The data included in Table VI indicate a relationship between the duration of type 2 diabetes and the level of acceptance of the illness among the surveyed patients.

Table VI. The influence of the duration of type 2 diabetes on the level of acceptance of the illness.

Variable	Group	AIS							
		M	**SD**	**Me**	**Min**	**Max**	**Q1**	**Q3**	**$\chi^2(df)$**
Duration of the illness	Less than 1 year	34.64	5.458	35[a]	22	40	32	39.25	
	From 1 to 5 years	31.13	7.920	34[a]	9	40	26	37	10.975(2)**
	Over 5 years	25.78	8.273	26[b]	13	40	19	33	

Legend: M – mean; SD – standard deviation; Q1 – first quartile; Q3 – third quartile; Me – median; Min – minimum value; Max – maximum value; Q1 – first quartile; Q3 – third quartile χ^2 *– the Kruskal–Wallis Test statistics; df – degrees of freedom.*
*** $p < 0.01$.*
[a, b] *– there are statistically significant differences between groups marked with different letters in the Bonferroni* post hoc *test.*
Source: own calculation

The influence of the duration of type 2 diabetes on the patients' level of satisfaction with life

The obtained results included in Table VII allow for concluding that satisfaction with life did not depend on the duration of the disease ($p > 0.05$).

Table VII. The influence of the duration of type 2 diabetes on the patients' level of satisfaction with life

Variable	Group	SWLS (sten)							
		M	**SD**	**Me**	**Min**	**Max**	**Q1**	**Q3**	**$\chi^2(df)$**
Duration of The illness	Less than 1 year	6.43	1.950	6.50	3	10	4.75	8	
	From 1 to 5 years	6.54	1.958	7	2	10	5	8	5.861(2)
	Over 5 years	5.35	2.036	6	2	10	4	8	

Legend: M – mean; SD – standard deviation; Me – median; Min – minimum value; Max – maximum value; Q1 – first quartile; Q3 – third quartile; U – the Mann–Whitney U Test statistics.
Source: own calculations

The influence of the type of the applied treatment on the patients' level of acceptance of the illness

As is indicated by the studies, the level of acceptance depended i.a. on the use of insulin. Moreover, the acceptance was also diversified depending on applying pharmacotherapy. Patients taking medications lowering the blood glucose level demonstrated a higher level of acceptance (Me=34) than the patients who did not take medications (Me=28).

The studies also indicated a lack of the influence of dietary treatment on the level of acceptance of the illness among the surveyed patients (Table VIII).

Table VIII. The influence of the type of applied treatment on the patients' level of acceptance of the illness

Variable	Group	AIS							
		M	*SD*	*Me*	*Min*	*Max*	*Q1*	*Q3*	*U*
Insulin	Not applied	31.93	7.338	34	9	40	26.75	38	583.00*
	Applied	26.00	8.832	25.5	12	40	18.50	34.25	
Dietary treatment (diabetes diet)	Not applied	30.20	8.764	31.5	9	40	23	38.25	1228.00
	Applied	30.58	7.546	33	12	40	26	36	
Pharmacotherapy (medications lowering the blood glucose level)	Not applied	26.79	9.535	28	9	40	17.5	34.75	698.50*
	Applied	31.79	7.119	34	12	40	26	37.75	

Legend: M – mean; SD – standard deviation; Me – median; Min – minimum value; Max – maximum value; Q1 – first quartile; Q3 – third quartile; U – the Mann–Whitney U Test statistics.
*$p< 0.05$; ** $p< 0.01$; *** $p< 0.001$.
Source: own calculations

The influence of the type of the applied treatment on the patients' level of satisfaction with life

The analysis of the performed studies allows for concluding that satisfaction with life is also diversified depending on the type of the applied treatment. The data included in Table IX, similarly as in case of the acceptance of the illness, indicate that patients applying insulin demonstrate a lower level of satisfaction with life.

Satisfaction with life was not diversified depending on the remaining methods of treatment.

Table IX. The influence of the type of the applied treatment on the patients' level of satisfaction with life

Variable	Group	SWLS (sten)							
		M	*SD*	*Me*	*Min*	*Max*	*Q1*	*Q3*	*U*
Insulin	Not applied	6.51	1.988	7	2	10	5	8	680.50*
	Applied	5.50	1.944	6	2	10	4	7	
Dietary treatment (diabetes diet)	Not applied	6.20	2.040	6	2	10	4	8	1188.50
	Applied	6.30	2.013	6.5	2	10	4.75	8	
Pharmacotherapy (medications lowering the blood glucose level)	Not applied	5.75	1.878	6	2	10	4	7	793.00
	Applied	6.44	2.048	7	2	10	5	8	

Legend: M – mean; SD – standard deviation; Me – median; Min – minimum value; Max – maximum value; Q1 – first quartile; Q3 – third quartile; U – the Mann–Whitney U Test statistics..
*$p< 0.05$; ** $p< 0.01$; *** $p< 0.001$.
Source: own calculations

The assessment of the dependence between the patients' level of acceptance of the illness and satisfaction with life.

The performed studies allowed for assessing the occurrence of dependences between the acceptance of type 2 diabetes and the patients' satisfaction with life. The obtained results have been included in Table X which presents a statistically significant correlation occurring between the level of acceptance of the illness and satisfaction with life among persons with type 2 diabetes ($R = 0.628$; $p< 0.001$). The correlation was strong and it was positive which indicates that the higher the patients' level of acceptance of the illness the higher also their satisfaction with life.

The correlation coefficient was calculated basing on raw results, which has been presented in Figure 1.

Table X. The assessment of the dependence between the patients' level of acceptance of the illness and their satisfaction with life.

Variables	R
Degree of Acceptance of the Illness (AIS) **Satisfaction with Life (SWLS)**	0.628***

Legend: *R –Spearman correlation coefficient*
*** *p< 0.001.*
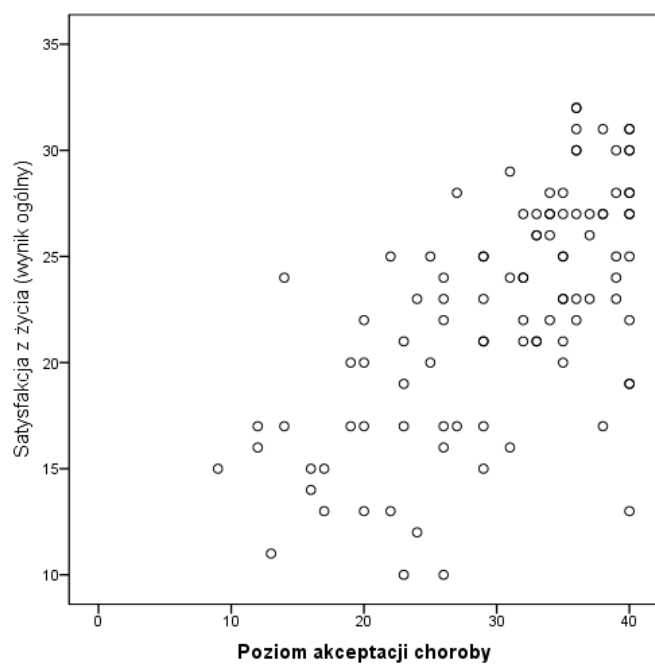*Source: own calculations*

Figure 1. The correlation coefficient between the patents' level of acceptance of the illness and satisfaction with life

6. Discussion

The influence of sociodemographic factors on the level of acceptance of the illness and of satisfaction with life

The results obtained in the performed studies prove that sociodemographic factors significantly influence the level of acceptance of the illness and of satisfaction with life. The analysis of the data indicates that persons aged 45-55 demonstrate a higher level of acceptance of type 2 diabetes and a higher level of satisfaction with life than patients aged 56-60. The marital status is also of statistically significant importance. The surveyed patients who were married also demonstrated a higher level of acceptance of the illness and satisfaction with life which was related to the feeling of support and help from the side of the spouse, in reference to the remaining persons. The obtained results proved that the level of the acceptance of the illness (in contrary to the level of satisfaction with life) was influenced by the patients' education. The analysis demonstrates that the acceptance of the illness increased along with the increase of the level of education. Our own studies proved that gender and the place of inhabitance are not factors which diversify the patients in terms of the assessment of the level of acceptance of the illness an satisfaction with life.

The studies carried out by Kurowska et al. [8] among 81 patients of the Multispecialty Municipal Hospital in Bydgoszcz are convergent with the results presented in the present study. They assessed the influence of health behaviors among patients with type 2 diabetes on the quality pf life. The studies applied an abbreviated version of the questionnaire assessing the level of the quality of life - WHOQOL-BREF (World Health Organization Quality of LifeTest-Bref) and the Health Behavior Inventory (IZZ) by Z. Juczyński. The obtained results proved that the level of the quality of life of patients changes along with age. Younger persons demonstrated better quality of life in reference to the elder ones. It may be therefore concluded that this may result from the deterioration of their functioning in everyday life occurring along with increasing age which is also visible in the studies performed by us.

The influence of the duration of type 2 diabetes on the level of acceptance of the illness and of satisfaction with life.

In their studies Glińska et al. [9] presented i.a. the influence of the duration of type 2 diabetes on satisfaction with life among the surveyed persons. The research tools applied in the studies were: an own survey questionnaire and the ADDQoL questionnaire. The results

obtained by them differ from those included in the present study. They demonstrated that 32% of patients with type 2 diabetes believe that the duration of the disease influences the feeling of satisfaction with life, 9% of the respondents disagreed with that and 8% did not have an opinion on that. Above this it was possible to notice that the persons participating in the study who had been sick for over 10 years (23.81% of those surveyed) determined the quality of their life as bad, in contrary to persons in case of which the duration of the disease was shorter (5.56% of the respondents) which is confirmed by our own studies.

The influence of the type of the applied treatment on the level of acceptance of the illness and of satisfaction with life.

The results of our own study referring to the influence of the type of the applied treatment on the level of acceptance of the illness and of satisfaction with life demonstrated that the level of the acceptance of the illness was affected by applying insulin (the median was 25.5) which resulted in lower acceptance of the illness than among persons who did not apply it (median 34). Moreover it is possible to notice that the studied patients taking medications lowering the blood glucose level demonstrated a higher level of acceptance of the illness and a lower level of mental discomfort (median 34) than the persons who did not use pharmacotherapy (median 28). The results of the present study also proved that the level of satisfaction with life is affected only by applying insulin which lowers the feeling of that satisfaction among the respondents. Dietary treatment did not influence neither the level of acceptance of the illness nor the satisfaction with life.

Studies analyzing the influence of the applied treatment on the quality of life were conducted by Kocka et al. [10] in the period from January to April 2016 among 103 patients with type 2 diabetes. The applied method was the diagnostic poll and the research tools were as follows: an own survey questionnaire and the WHOQOL-BREF (World Health Organization Quality of LifeTest-Bref) standardized questionnaire. The obtained results are convergent with those obtained in the present paper and they demonstrate that patients who do not apply insulin declare a higher level of satisfaction with their health and better quality of life which has been also confirmed by our own studies. Moreover, an element which is divergent with the results of our study is that the results of the studies by Kocka et al. allow for noticing that the patients applying the diabetes diet and performing physical activity assessed their quality of life as better than the patients subjected to pharmacological treatment which may have resulted from the fact that the patients

demonstrated greater satisfaction if they could maintain the appropriate blood glucose level only by adhering to the dietary recommendations. The studies performed by us did not demonstrate a statistically significant influence of the respected dietary recommendations on the level of acceptance of the illness and satisfaction with life.

The assessment of the dependence between the patients' level of acceptance of the illness and the satisfaction with life.

The results obtained for the Acceptance of Illness Scale and of the Satisfaction With Life Scale which have been included in the present paper demonstrated statistically significant correlation between the level of acceptance of type 2 diabetes and the patients' satisfaction with life.

Studies presented by Kurpas et al. [6] allowed for noticing that the result of the mean total value of the points obtained in the Acceptance of Illness Scale was 29 points. This proves a high level of acceptance of the illness. The surveyed patients also provided answers to questions related to the quality of life and subjective assessment of health. More than a half of those surveyed (57%) is satisfied with their quality of life and only 7% shows a lack of satisfaction. The respondents assessed their health as follows: 28% as satisfactory, 22% as unsatisfactory and 43% did not have an opinion on this issue. 3% of those surveyed answered that they were very satisfied with their health and 4% - that they were very unsatisfied. Therefore the analysis of the studies allows for concluding that the higher the level of acceptance of type 2 diabetes the betted the respondents' assessment of the quality of their life and of their health status which has also been proved by our own studies.

7. Conclusions

1. The level of acceptance of the illness among patients with a diagnosis of type 2 diabetes is affected by sociodemographic factors such as: age, education and marital status. The perceived satisfaction with life is affected only by age and the marital status.

2. According to the studied patients the level of acceptance of the illness is also affected by the duration of type 2 diabetes. It was found that the longer the duration of this disease the lower the level of its acceptance. No statistical dependence was found between the duration of the disease and satisfaction with life among the surveyed patients.

3. The study revealed a relationship of the influence of the type of the applied treatment on the patients' level of acceptance of the illness and of satisfaction with life. Patients applying insulin demonstrated a lower level of acceptance of the illness and of satisfaction with life. An element which was also statistically significant was taking medications reducing the blood glucose level which generated a higher level of acceptance of the illness among the patients.

4. Statistical dependence was found between the patients' level of acceptance of the illness and their satisfaction with life. The obtained correlation was positive which indicates that the higher the level of acceptance of the illness among patients with type 2 diabetes the greater was also their satisfaction with life.

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