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The Quality of Life of Patients with Chronic Kidney Disease Undergoing Hemodialysis Therapy

Marta Hreńczuk*, Weronika Kozieł, Piotr Małkowski

Department of Surgical and Transplantation Nursing and Extracorporeal Therapies, Faculty of Health Sciences, Medical University of Warsaw, Poland

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***For Correspondence:**

Marta Hreńczuk, Department of Surgical and Transplantation Nursing and Extracorporeal Therapies, Ul. Oczki 6, 02-007 Warsaw, Poland.

E-mail: marta.hrenczuk@wum.edu.pl

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ABSTRACT

Introduction: Chronic kidney disease is characterized by impairment of the endocrine, excretory and homeostatic functions of the kidneys. The disease develops slowly, is irreversible and in most cases progressive. In the case of kidney failure, the patient must undergo a renal replacement therapy. In Poland, hemodialysis is the most common renal replacement therapy, it extends life expectancy and gives the patient an opportunity to wait for kidney transplant, however, it is not free of disadvantages. Chronic kidney disease and its treatment methods have significant impact on the quality of life of the patients.

Purpose: Evaluation of the quality of life of patients undergoing hemodialysis therapy.

Materials and Methods: The study was conducted on a group of 150 patients in the Independent Public Central Clinical Hospital at Banacha Street in Warsaw. The WHOQOL-Bref. questionnaire was used for the evaluation of the quality of life. The analysis was performed using StatSoft Statistica 13.1 PL statistics software.

Results: The mean value of satisfaction from the general quality of life is 3.0/5.0, and of self-assessment of one's own health is 2.4/5.0. The mean values of the quality of life for the particular domains were: physical-12.00/20.00, psychological-12.5/20.00, social relations-13.5/20.00 and environment-13.2/20.00. Sex, place of residence and financial situation did not have significant impact on the evaluation of the quality of life. Whereas age ($p<0.03$), education ($p<0.02$) and marital status ($p<0.03$) had influence on certain aspects of the quality of life.

Conclusion: Hemodialysis has significant negative impact most importantly on the physical and psychological spheres of the patients. Certain socio-demographic variables are relevant in the evaluation of component parts of the quality of life.

INTRODUCTION

Internal Society of Nephrology estimated that 1 out of every 10 people all over the world have chronic kidney disease (CKD)[1]. According to NATPOL 2011 study, the prevalence ratio in Poland is 5.8%[2]. Due to ageing society, the problem will be increasing, thus, the necessity of renal replacement therapy will be higher. Age, diabetes and hypertension are

among the independent risk factors. According to approximate data, renal damage in various stages may occur in as many as 4-5 million people in Poland[2]. While annual CKD morbidity is around 150 per one million[1,3].

Chronic kidney disease and its treatment methods have significant impact on the quality of life of the patients[4-6]. Quality of life (QoL) is defined as "overall assessment of an individual's state of being in terms of psychological, physical and social functioning"[4], and the notion of health related quality of life (HRQOL) additionally reflects "the functional effect of the disease and its treatment experienced by the patient"[4,5]. At the end-stage of CKD, the only possibility for an extension of a patient's life is renal replacement therapy: peritoneal dialysis, hemodialysis, and kidney transplant. At present, kidney transplant is the best treatment method for end-stage renal disease and considerably improves the quality of patients' life. However, the most common method used in Poland is hemodialysis (HD), which prolongs the life of a patient, but is not free of limitations. At the end of year 2017, there were 18452 hemodialysis patients[7]. The drawbacks of hemodialysis therapy are associated mainly with lesser physical activity, pain related to the therapy, and the treatment process itself, i.e., spending from 4 to 5 hours three times a week at a dialysis facility. Hemodialysis is regarded as a burdensome form of renal replacement therapy due to the necessity of being performed only at a dialysis facility or hospital. In comparison with dialysis therapy, kidney transplant has greater benefits, i.e., removing the limitations of hemodialysis, nutrition or fluid intake. Additionally, the life expectancy of patients after kidney transplant is twice longer than that of hemodialysis patients[8-10].

The number of patients undergoing chronic and long-term hemodialysis, for several or several dozen of years, is increasing every year. It is worth mentioning that HD is a renal replacement therapy which only helps to redress basic homeostatic imbalance, but does not completely eliminate the consequences of kidney failure. Each person treated with hemodialysis, with no contraindications, may be registered as a potential kidney recipient, as kidney transplant is considered a better therapeutic method, not only as regards prolonging life, but also improving its quality[8-10]. However, as per the data of the Organization and Coordination Centre for Transplantation "Poltransplant", the average waiting time for the first kidney transplant in 2017 counted from the time of a patient's qualification and entry on the National Waiting List to the transplant date was about 11 months, while counted from the beginning of dialysis therapy was longer by about 1.5 year[11]. In 2017, there were 994 kidney transplants, while according to the Coordination Team for the Register of the Polish Society of Nephrology, there were 2577 patients registered on the National Waiting List[7].

PURPOSE

The purpose of the study was the analysis of the quality of the life of patients undergoing chronic hemodialysis therapy.

MATERIALS AND METHODS

The study was conducted from November 2017 to February 2018 on 150 patients undergoing chronic hemodialysis treatment from the Department of General, Vascular and Transplant Surgery and the Department of Nephrology, Dialysis Therapy and Internal Medicine of the Independent Public Central Teaching Hospital at Banacha Street in Warsaw. The heads of both departments had given their consent to the study. The study was carried out on the basis of the diagnostic survey method with the use of two tools: the validated Polish version of the WHOQOL-Bref questionnaire prepared by Dr. Helena Baran-Furga, Dr. Bogusław Habrat and Dr. Karina Steinbarth-Chmielewska containing 26 questions on the evaluation of the quality of life and an own survey consisting of questions regarding the socio-demographic status and therapy of the subjects.

The WHOQOL-Bref questionnaire is a tool for general evaluation of the quality of life of both ill and healthy people, encompassing four areas/domains: physical health, psychological health, social relations and environment. The results from all the four domains are expressed by points within the range of 4-20, where 4 is the worst and 20 the best experienced quality of life. This questionnaire also contains two questions analysed separately, concerning individual general perception of one's own quality of life and individual general perception of one's own health. Answers to the above questions are expressed in a 5-point scale (the higher the number, the better experience). The study was anonymous and participation in it was voluntary. Every patient undergoing chronic hemodialysis who was able to fill out the questionnaires unaided could participate in the study after giving oral consent to participation. The study was conducted after obtaining a positive opinion of the Bioethical Committee of the Warsaw Medical University.

The findings were presented in terms of qualitative data by means of size and proportion and quantitative data by means of mean, standard deviation, median, and minimum and maximum value. In order to determine whether there were statistically significant correlations between the variables, an analysis by means of the non-parametric Pearson's chi-squared test was carried out for the qualitative data. The distribution of the quantitative data was tested by means of the Shapiro-Wilk test. After determining the distribution (non-normal), the Mann-Whitney U test was used for comparing two groups, and the Kruskal-Wallis test for three and more groups. The Spearman correlation for determining the correlation of the quantitative data was also applied. It was accepted that $p<0.05$ indicated the occurrence of a

statistically significant relation. The analysis was performed using StatSoft Statistica 13.1 PL statistics software and by means of Microsoft Office suite.

Socio-demographic Status of the Subjects

The subjects of the study were 150 adult patients undergoing chronic hemodialysis treatment. There were 64% women and 36% men among the subjects. The average age of the subjects was 48, the youngest one was 18 years old, the oldest one was 78 years old. The subjects were classified according to age groups (Figure 1).

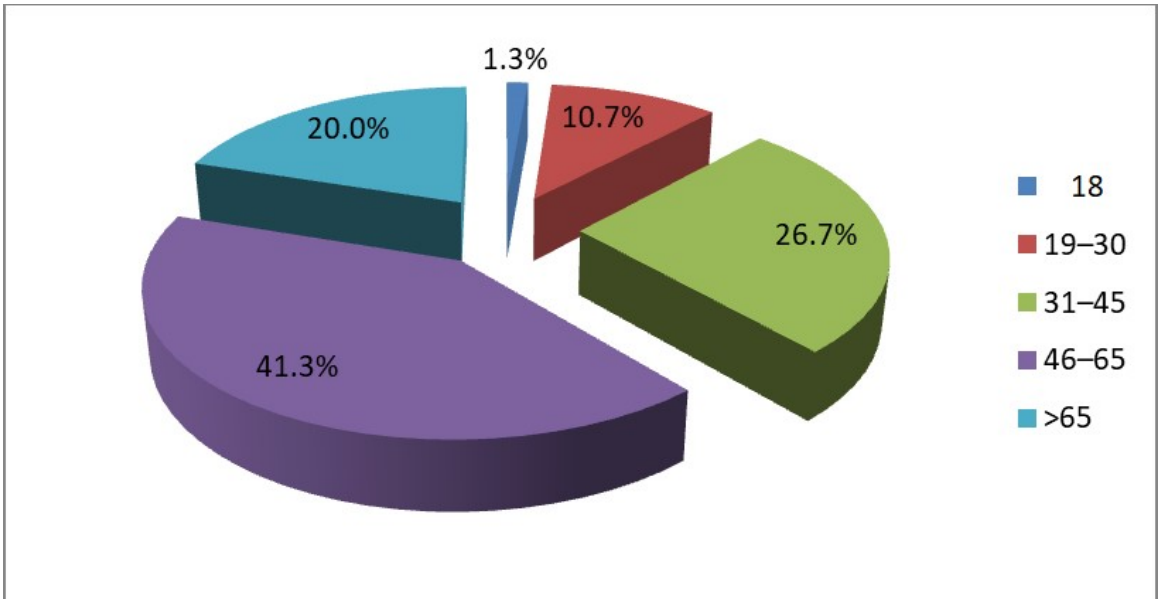

Figure 1. Classification of the subjects according to age (in years).

People living in towns and cities were dominant within the studied group (70%), whereas country residents constituted 30%. The proportion of 42.7% of the respondents graduated from secondary school, 28.7% had basic vocational education, 19.3% had a university degree, and 9.3% graduated from primary school. More than half of the patients were married-52%, the remaining subjects were single. The proportion of 78% of the respondents lived with their families, 19.3% lived alone, and 2.7% lived in a nursing home or in a nursing and therapeutic facility.

The proportion of 38% of the patients were occupationally active, both retirees and other pensioners constituted 26.7%, and unemployed people and students comprised 3.3% and 5.3% respectively. For the purposes of this analysis, the subjects were regrouped into working and non-working persons, that constituted 38% and 62% respectively. The proportion of 62% of the respondents defined their financial situation as good, while 38% described it as bad.

Characteristics of the Subject's Therapies

The most common causes of the kidney failure and the need of renal replacement therapy declared by the patients were glomerulonephritis (30.7%), diabetic kidney disease (30%), and hypertension (23.3%). The proportion of 61.4% of the respondents had an arteriovenous fistula, 11.3% had an arteriovenous graft, 14% had a permanent central venous catheter, and 13.3% had a temporary central venous catheter. Nearly half (49.3%) of the patients had been treated with hemodialysis for the period of from 1 to 5 years, for 22.7% the duration of the treatment had been less than 1 year, 6.7% of the respondents had been undergoing the treatment for more than 15 years, and 6% had been treated for the period of from 10 to 15 years. The dialysis for 38.6% of the subjects was performed on the first (7.00-13.00) shift. The others underwent the treatment on the second (13.00-19.00) and third (19.00-24.00) shift, what constituted 30.7% for both shifts equally. The proportion of 89.3% had the treatment three times a week, 10% of the patients had dialysis performed twice a week, and 0.7% were treated four times a week. The proportion of 56.7% responded that each dialysis lasted for the period of from 4 to 5 hours, 42% declared that the procedure lasted for less than 4 hours, and 1.3% stated that the duration of the dialysis was more than 5 hours.

RESULTS

The mean value of satisfaction from the general quality of life (GQL) was 3.0/5.0. The mean value of self-assessment of one's own health (SAH) was lower-2.4/5.0. The mean values of the quality of life for the particular domains were:

physical sphere (DOM1)-12.00/20.00, psychological sphere (DOM2)-12.50/20.00, social relations (DOM3)-13.50/20.00 and environment (DOM4)-13.20/20.00 **(Figure 2)**.

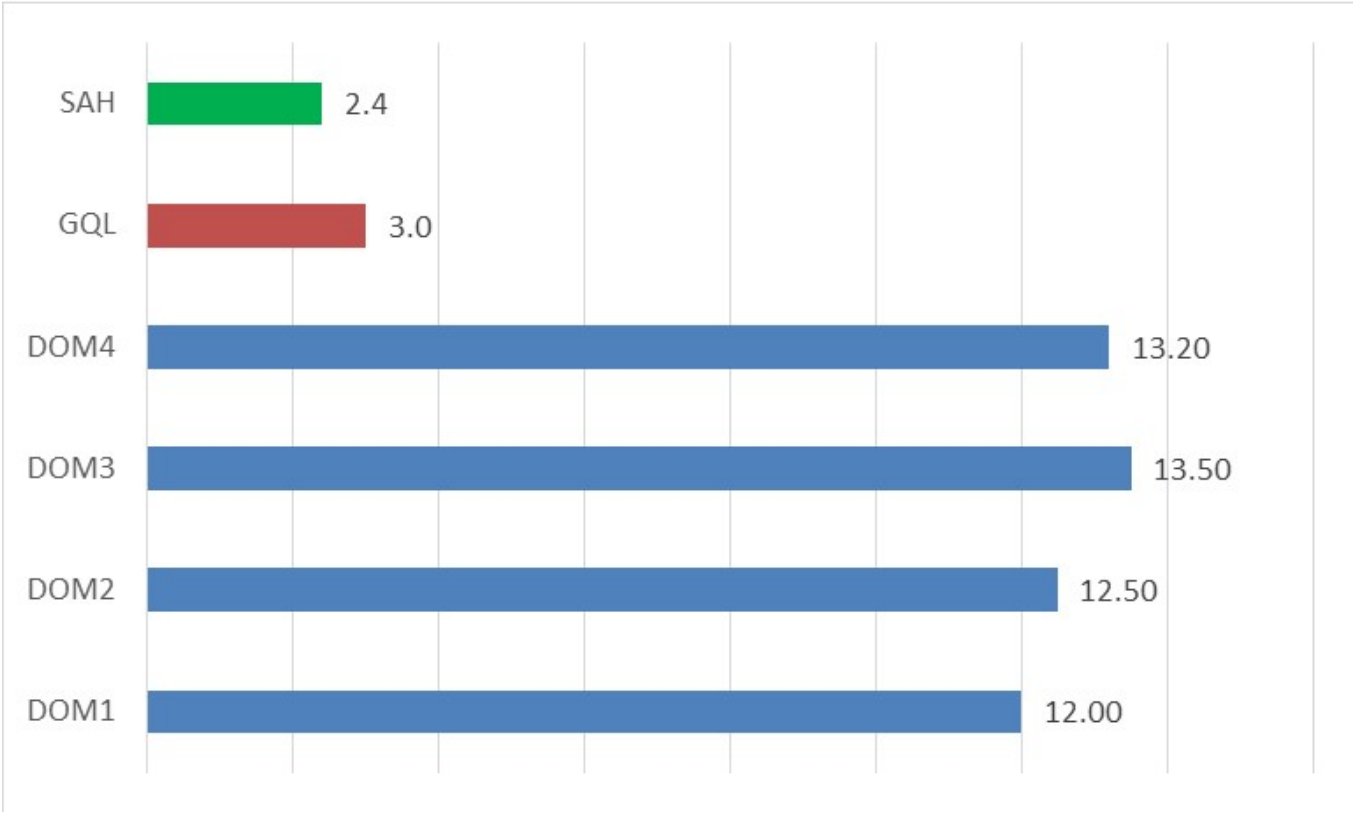

Figure 2. Mean values of the WHOQOL-Bref domains. Note: GQL-general quality of life, SAH-self-assessment of one's own health, DOM1-physical sphere, DOM2-psychological sphere, DOM3-social relations, DOM4-environment.

There was no statistically significant difference in general quality of life and self-assessment of one's own health depending on the sex of the subjects - $p>0.05$ **(Table 1)**. The highest value of general quality of life (3.1 ± 0.7) was among the male subjects, while the highest value of self-assessment of one's own health (2.9 ± 0.8) was among the female subjects. There was no statistically significant relation between the values of the domains and the sex of the subjects ($p<0.05$). The highest value of the physical functioning domain was among the male subjects. Mean values representing the best psychological functioning were at a similar level among the female subjects (12.7 ± 2.0) and the male subjects (12.4 ± 1.6). Social relations were at an equal level among the male subjects and the female subjects. The environment domain was better assessed by the male subjects (13.3 ± 1.9).

Table 1. Correlation between the quality of life and the sex of the subjects. Note: GQL-general quality of life, SAH-self-assessment of one's own health, DOM1-physical sphere, DOM2-psychological sphere, DOM3-social relations, DOM4-environment, F-female, M-male.

Sex and the quality of life		Mean	Standard deviation	Median	Minimum	Maximum	p
GQL	F	2.9	0.8	3	1	5	0.227
	M	3.1	0.7	3	1	4	
SAH	F	2.5	0.9	2	1	5	0.608
	M	2.4	0.7	2	1	4	
DOM1	F	11.9	1.7	12	8.6	15.4	0.956
	M	12	1.5	12	9.1	16.6	
DOM2	F	12.7	2	12.7	8.7	18	0.582

	M	12.4	1.6	12.7	8.7	16	
DOM3	F	13.5	3.3	14.7	4	20	0.831
	M	13.5	3	14	8	20	
DOM4	F	13.1	2.7	13	8	20	0.623
	M	13.3	1.9	13.5	8.5	17.5	

There was no significant statistical difference ($p>0.05$) in general quality of life and self-assessment of one's own health depending on the age of the subjects **(Table 2)**. The highest value of general quality of life was among the persons aged 46-65 (3.1 ± 0.8), while the highest value of self-assessment of one's own health was among the persons aged 31-45 (2.5 ± 0.8). From among the analysed domains, there was significant statistical difference ($p<0.03$) between the subjects of different ages only in the psychological functioning domain. There was no statistically significant relation between the values of the remaining domains and the age of the subjects ($p<0.05$). The highest mean values representing the best psychological functioning were among the subjects aged 31-45 (12.8 ± 1.5) and 46-65 (12.7 ± 1.6), while the lowest values were among the eldest subjects (>65 years old-11.7 ± 1.7). The highest value of the physical functioning domain was among the subjects aged 31-45 and 46-65. Social relations were at the highest level among the subjects aged 31-45. The fourth domain reflecting living environment was also best assessed by the subjects aged 31-45.

Table 2. Correlation between the quality of life and the age of the subjects. Note: GQL- general quality of life, SAH-self–assessment of one's own health, DOM1-physical sphere, DOM2-psychological sphere, DOM3-social relations, DOM4-environment.

Age [years] and the quality of life		Mean	Standard deviation	Median	Minimum	Maximum	p
GQL	≤ 30	2.9	0.7	3	2	4	0.803
	31-45	2.9	0.8	3	1	4	
	46-65	3.1	0.8	3	1	5	
	>65	3	0.9	3	1	4	
SAH	≤ 30	2.3	0.7	2	1	4	0.916
	31-45	2.5	0.8	2	1	4	
	46-65	2.4	0.9	2	1	5	
	>65	2.4	0.7	2	1	4	
DOM1	≤ 30	11.4	1.5	10.9	9.1	14.3	0.084
	31-45	12.2	1.6	12	8.6	14.3	
	46-65	12.1	1.7	12	8.6	16.6	
	> 65	11.6	1.3	11.4	9.1	13.7	
DOM2	≤ 30	12.4	2.6	11.7	8.7	18	0.032
	31-45	12.8	1.5	12.7	9.3	15.3	
	46-65	12.7	1.6	12.7	10	16	
	>65	11.7	1.7	12	8.7	14.7	
DOM3	≤ 30	13.6	2.7	14	8	18.7	0.68
	31-45	13.9	3.4	14.7	4	20	
	46-65	13.5	3.2	14.7	8	20	

	>65	12.8	3	14	6.7	16	
DOM4	≤ 30	12.9	2.8	12.3	9	20	0.136
	31-45	13.6	2	14	8	17.5	
	46-65	13.3	2.1	13	8.5	17.5	
	>65	12.6	2.3	12.3	8.5	17	

There was no significant statistical difference ($p>0.05$) in general quality of life and self-assessment of one's own health depending on the place of residence of the subjects **(Table 3)**. General quality of life was assessed by both town and city residents (3.0 ± 0.8) and country residents (3.0 ± 0.8) at an equal level. Whereas the value of self-assessment of one's own health was higher among the country residents (2.5 ± 0.8).

There was no statistically significant relation between the values of the analysed domains and the place of residence of the subjects. Psychological functioning was at a similar level. The higher value of the physical functioning domain was among the country residents. Social relations were at a higher level among the country residents. The living environment domain was best assessed by the country residents.

Table 3. Correlation between the quality of life and the place of residence of the subjects. Note: GQL-general quality of life, SAH-self-assessment of one's own health, DOM1-physical sphere, DOM2-psychological sphere, DOM3-social relations, DOM4-environment, T/C-town/city, C-country.

Place of residence and the quality of life		Mean	Standard deviation	Median	Minimum	Maximum	p
GQL	T/C	3	0.8	3	1	4	0.957
	C	3	0.8	3	1	5	
SAH	T/C	2.4	0.8	2	1	4	0.404
	C	2.5	0.8	2	1	5	
DOM1	T/C	11.9	1.6	12	8.6	16.6	0.516
	C	12.1	1.6	12	9.1	14.9	
DOM2	T/C	12.5	1.6	12.7	8.7	16	0.83
	C	12.6	2	12.7	8.7	18	
DOM3	T/C	13.1	3.1	13.3	4	20	0.077
	C	14.3	3.1	14.7	9.3	20	
DOM4	T/C	13	2.1	13	8	17.5	0.239
	C	13.6	2.4	13.5	8.5	20	

There was no significant statistical difference ($p>0.05$) in general quality of life and self-assessment of one's own health depending on the marital status of the subjects **(Table 4)**. The highest values of general quality of life and self-assessment of one's own health were among the widowed subjects, 3.2 ± 0.8 and 2.6 ± 0.8 respectively.

From among the analysed domains, there was significant statistical difference between the subjects of different marital statuses in the social relations ($p<0.03$) and environment ($p<0.04$) domains. There was no statistically significant relation between the values of the remaining domains and the marital status of the subjects ($p<0.05$). The highest mean values representing the best social relations were among the widowed subjects (14.8 ± 2.4), while the lowest values were among the divorced subjects (11.5 ± 3.5). The living environment domain was best assessed by the widowed subjects. The highest value of the physical functioning domain was among the married and widowed subjects. Psychological functioning was at a similar level among the single (maid/bachelor) and widowed subjects.

Table 4. Correlation between the quality of life and marital status. Note: GQL-general quality of life, SAH-self–assessment of one's own health, DOM1-physical sphere, DOM2-psychological sphere, DOM3-social relations, DOM4-environment.

Marital status and the quality of life		Mean	Standard deviation	Median	Minimum	Maximum	p
GQL	S	3	0.7	3	2	4	0.187
	M	3	0.7	3	1	4	
	D	2.7	1.1	2.5	1	5	
	W	3.2	0.9	3	1	4	
SAH	S	2.5	0.8	2	1	4	0.602
	M	2.4	0.7	2	1	4	
	D	2.4	0.9	2	1	5	
	W	2.6	0.8	2	2	4	
DOM1	S	11.5	1.5	11.4	9.1	14.3	0.225
	M	12.1	1.6	12	8.6	16.6	
	D	11.7	1.8	11.4	8.6	14.9	
	W	12.2	1.5	12.3	9.1	14.9	
DOM2	S	12.9	2.3	12.7	8.7	18	0.121
	M	12.5	1.5	12.7	8.7	15.3	
	D	11.8	1.5	12	8.7	14.7	
	W	12.8	1.7	12.7	10	16	
DOM3	S	13.9	3	14.7	8	20	0.021
	M	13.4	3.1	14.7	8	20	
	D	11.5	3.5	11.3	4	17.3	
	W	14.8	2.4	14.7	9.3	18.7	
DOM4	S	13.1	2.7	12.8	8	20	0.038
	M	13.3	2.1	13.5	8.5	17.5	
	D	12.2	1.9	11.5	10	16.5	
	W	13.8	2.2	14.3	8.5	17.5	

There was no statistically significant difference in general quality of life and self-assessment of one's own health depending on the occupational activity of the subjects-$p>0.05$ **(Table 5)**. The values of the general quality of life were the same among the working and non-working subjects (3.0 ± 0.8). The highest value of self-assessment of one's own health was among the working subjects (2.5 ± 0.8).

From among the analysed domains, there was significant statistical difference ($p<0.03$) only in the physical functioning domain. There was no statistically significant relation between the values of the remaining domains and the occupational activity of the subjects ($p<0.05$). The highest mean values representing the best physical functioning were among the working subjects (12.4 ± 1.8). The values of the psychological functioning domain were similar among the subjects. Social relations were at a similar level among the working and non-working subjects. The fourth domain reflecting living environment was best assessed by the working subjects.

Table 5. Correlation between the quality of life and the occupational activity of the subjects. Note: GQL-general quality of life, SAH-self-assessment of one's own health, DOM1-physical sphere, DOM2-psychological sphere, DOM3-social relations, DOM4-environment, W-working, NW-non-working.

Occupational activity and the quality of life		Mean	Standard deviation	Median	Minimum	Maximum	p
GQL	W	3	0.8	3	1	4	0.783
	NW	3	0.8	3	1	5	
SAH	W	2.5	0.8	2	1	4	0.524
	NW	2.4	0.7	2	1	5	
DOM1	W	12.4	1.8	12	8.6	16.6	0.024
	NW	11.7	1.4	11.4	9.1	14.9	
DOM2	W	12.6	1.7	12.7	8.7	16	0.624
	NW	12.5	1.8	12.7	8.7	18	
DOM3	W	13.7	3.2	14.7	4	20	0.442
	NW	13.3	3.1	14.7	6.7	20	
DOM4	W	13.4	2.2	13.5	8	17.5	0.306
	NW	13.1	2.3	13	8.5	20	

There was no significant statistical difference ($p>0.05$) in general quality of life and self-assessment of one's own health depending on the financial situation of the subjects (Table 6). The same values of the quality of life were among both the subjects with good and bad financial situation (3.0 ± 0.8), while the value of self-assessment of one's own health was higher among the subjects with bad financial situation (2.5 ± 0.8). There was no statistically significant relation between the values of the analysed domains and the financial situation of the subjects ($p<0.05$). The values of the psychological functioning and social relations domains were at the same level among both the subjects with good and bad financial situation. The value of the physical functioning domain was higher among the subjects with good financial situation. The domain reflecting living environment was assessed by the subjects at a similar level.

Table 6. Correlation between the quality of life and the financial situation of the subjects. GQL-general quality of life, SAH-self-assessment of one's own health, DOM1-physical sphere, DOM2-psychological sphere, DOM3-social relations, DOM4-environment.

Financial situation and the quality of life		Mean	Standard deviation	Median	Minimum	Maximum	p
GQL	Good	3	0.8	3	1	4	0.88
	Bad	3	0.8	3	1	5	
SAH	Good	2.4	0.7	2	1	4	0.563
	Bad	2.5	0.8	2	1	5	
DOM1	Good	12.1	1.5	12	9.1	15.4	0.315
	Bad	11.8	1.8	11.4	8.6	16.6	
DOM2	Good	12.5	1.8	12.7	8.7	18	0.792
	Bad	12.5	1.8	12	8.7	16	
DOM3	Good	13.5	2.9	14.7	8	20	0.877
	Bad	13.5	3.5	14.7	4	20	
DOM4	Good	13.2	2.4	13.5	8	20	0.493

	Bad	13.1	2	13	8.5	17.5	

There was no statistically significant difference ($p>0.05$) in general quality of life and self-assessment of one's own health depending on the educational background of the subjects **(Table 7)**. The highest values of general quality of life and self-assessment of one's own health were among the subjects with elementary education, 3.2 ± 0.9 and 2.7 ± 0.7 respectively.

From among the analysed domains, there was significant statistical difference between the subjects with different educational background in the psychological functioning ($p<0.02$) and social relations ($p<0.05$) domains. There was no statistically significant relation between the values of the remaining domains and the educational background of the subjects ($p<0.05$). The highest mean values representing the best psychological functioning were among the subjects with elementary education (13.5 ± 1.7), while the lowest values were among the subjects with basic vocational education (11.9 ± 1.9). Social relations were at the highest level also among the subjects with elementary education (15.5 ± 3.2), while they were at the lowest level among the subjects with basic vocational education (13.1 ± 3.0). The highest value of the physical functioning domain was among the subjects with elementary education. The fourth domain reflecting living environment was also best assessed by the subjects with elementary education.

Table 7. Correlation between the quality of life and the educational background of the subject. GQL-general quality of life, SAH-self-assessment of one's own health, DOM1-physical sphere, DOM2-psychological sphere, DOM3-social relations, DOM4-environment, E-elementary, BV-basic vocational, S-secondary, U-university degree.

Education and the quality of life		Mean	Standard deviation	Median	Minimum	Maximum	p
GQL	E	3.2	0.9	3	1	4	0.441
	BV	3	0.8	3	1	5	
	S	2.9	0.7	3	1	4	
	U	3	0.8	3	2	4	
SAH	E	2.7	0.7	3	2	4	0.479
	BV	2.4	0.9	2	1	5	
	S	2.4	0.7	2	1	4	
	U	2.4	0.9	2	1	4	
DOM1	E	12.6	1.3	12.3	10.9	14.9	0.17
	BV	11.7	1.6	11.4	8.6	15.4	
	S	12.1	1.6	12	9.1	16.6	
	U	11.7	1.6	11.4	8.6	14.3	
DOM2	E	13.5	1.7	13.3	10	16	0.018
	BV	11.9	1.9	11.3	8.7	16	
	S	12.7	1.5	12.7	8.7	18	
	U	12.6	1.9	12.7	9.3	16	
DOM3	E	15.5	3.2	16	9.3	20	0.04
	BV	13.1	3	13.3	8	20	
	S	13.3	2.8	13.3	8	20	
	U	13.4	3.8	14.7	4	18.7	
DOM4	E	13.9	2.8	14.5	8.5	17.5	0.167

	BV	12.9	2.2	12.5	8.5	17.5	
	S	13.5	1.9	13.3	9	20	
	U	12.7	2.5	13	8	17.5	

DISCUSSION

Chronic kidney disease is a progressive condition resulting in permanent renal damage regardless of sex, age, place of residence, marital status, occupational activity or financial situation. At the end-stage of the disease, it is necessary to perform one of the renal replacement therapies: hemodialysis, peritoneal dialysis, or kidney transplant[8,9,12]. Hemodialysis is the most commonly used renal replacement therapy, both in Poland and in the world. Unfortunately, it is deemed as burdensome by a lot of patients, since they experience a lot of difficulties which worsen their comfort of life while undergoing the treatment. The therapy also entails the necessity to regularly repeat the procedure several times a week, what disrupts all spheres of life of the patients making them in a sense "slaves" to the treatment. The patients must adjust their family, social, and occupational life to the therapy, frequently resigning from many aspects of life.

In their study, Dutkowska et al.[13] compared the quality of life of patients on peritoneal dialysis and hemodialysis. It was found that the patients undergoing hemodialysis more intensively experienced the symptoms of chronic kidney disease and the therapy as well as the difficulties related to the procedure. The persons undergoing hemodialysis reported unpleasant symptoms increasingly more frequently than those who were on peritoneal dialysis. The differences between the symptoms experienced by the patients undergoing peritoneal dialysis and hemodialysis may result from escalation of the consequences related to hemodialysis. A potential reason for the above are the limitations of hemodialysis itself, its frequency, and the necessity to go to a hemodialysis facility. All these problems adversely affect the quality of life, which was worst assessed by the hemodialysis patients.

The main purpose of contemporary medicine is both prolongation of patients' life and improvement of their functioning in everyday life. The quality of life of patients with chronic kidney disease is much worse in the physical, psychological and social spheres when compared to healthy people[14]. In addition to the chronic disease, hemodialysis patients experience other problems, such as difficulties and limitations associated with hemodialysis therapy, as described by Dutkowska et al.[13].

The physical (mean value 12.00/20.00) and psychological (mean value 12.50/20.00) spheres were worst assessed by the respondents in the own study. The values of the social relations domain were slightly better (mean 13.5/20.00), which, according to a study by Neuman et al.[15], is an important factor conditioning medical results of patients suffering from chronic diseases. The above results correlate with the findings of Zielińska-Więczkowska et al.[16]. In a study carried out by Sathivik et al. in India[17], hemodialysis patients displayed significantly lower quality of life in the physical and psychological spheres, similarly as in the own study.

Age had major impact on the values of the physical domain among the subjects, the respondents over 65 years old gave the lowest scores. In a Chinese study[18], there was also statistically significant influence of age on the quality of life, QoL gradually decreased as age increased. It can be assumed that additional restrictions arising out of advanced age have significant impact on perceiving the quality of life.

According to the study conducted by Zhou et al. in China[19], patients undergoing hemodialysis with higher education gave better score than patients with lower education in the psychological domain. It is contrary to the own study, where persons with elementary education better assessed their quality of life than subjects with higher education.

Occupationally active persons have much greater motivation to combat chronic disease. Job satisfaction as well as financial independence and self-reliance all have impact on better quality of life, as indicated by a study performed on Polish patients[13]. In the own study, it was shown that occupational activity has influence on the quality of life in the physical domain. Non-working persons gave considerably worse score. Polish researchers produced similar findings in their studies: Starczewska et al.[19], Zielińska-Więczkowska et al.[16], and Rutkowski et al.[20], where the parameters of the quality of life among the non-working group were very low. In the Indian study[17] and a study conducted among patients treated in Ghana[21], there were statistically significant higher values among persons on hemodialysis who were working as compared to persons who were not working. It can be concluded that a job motivates the patients and helps to overcome difficulties in the physical sphere. The symptoms of CKD as well as the therapy and its side effects compel dialysis patients to reduce their level of occupational activity. Hemodialysis is a renal replacement therapy method which imposes restrictions on every aspect of patients' life. Job satisfaction as well as financial independence and self-reliance have positive impact on perceiving the quality of life. Working persons are more often motivated to deal with the therapy and fight the chronic disease[22]. In the own study, working persons constituted 38%, while the proportion of non-working persons was 62%, out of which 1/3 were retired.

The respondents in the own study estimated their own health (mean 2.4/5.0) slightly worse than general quality of life (mean 3.0/5.0). However, these results are not satisfactory. They correlate with the findings of Rutkowski et al.[20].

A study carried out in Poland[23] on the quality of life of patients undergoing chronic hemodialysis therapy indicate that concomitant diseases, sex and age have significant impact on the evaluation of the quality of life. In the own study, sex, place of residence and financial situation were not of material importance. Age had significant influence on the psychological sphere ($p<0.03$), educational background was also important in the evaluation of the functioning of the psychological ($p<0.02$) and social ($p<0.05$) spheres, while marital status had impact on perceiving social relations ($p<0.03$) and environment ($p<0.04$).

On the basis of the analysis performed, it is suggested that more emphasis be put on psychological support for the patients and creation of groups of support by interdisciplinary teams for persons undergoing hemodialysis (psychological and physical therapy), thanks to which the patients could get to know their condition better and learn how to cope with it, and perhaps they could make an attempt to look for an activity which would bring them joy and positively affect their quality of life.

In spite of a lot of research conducted before, the general observations from the own study are similar to those from the previous studies, and it seems that there is still no effective method of support for patients undergoing hemodialysis therapy. It is important to emphasise the need for improvement of the quality of life of these patients, besides focusing only on effect of the therapy, which is prolongation of the life of patients with chronic kidney disease [22]. The purpose of the study on the quality of life is to determine in which areas of life there are deficiencies affecting the quality of life and what actions should be taken to improve this quality, as it must be remembered that hemodialysis is the most frequently used method of renal replacement therapy. The WHOQOL-Bref questionnaire allowed for specification of deficiencies in all spheres of life of hemodialysis patients, and the biggest deficiencies were found in physical and psychological functioning.

CONCLUSION

1.General quality of life of hemodialysis patients was assessed as sufficient, while the physical and psychological spheres were estimated at a worse level, and the social and environmental domains at a slightly better level.

2.Such variables as sex, place of residence, and financial situation have no impact on the evaluation of the quality of life. Whereas such variables as age, occupational activity, educational background, and marital status had influence on the perception of the quality of life, particularly in the social functioning and psychological domains.

3.Occupational activity has distinctly positive influence on the assessment of the quality of life, particularly in the physical sphere.

4.The quality of life of hemodialysis patients is a major aspect, which should be treated with the same importance by therapeutic teams as the effectiveness of the therapy. By knowing the deficiencies in particular spheres of life, those teams should take support, educational and organisational actions which will contribute to the improvement of the quality of life of this group of patients.

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