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QUALITY OF LIFE OF SENIORS STAYING IN THE VASCULAR SURGERY DEPARTMENT

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A. Study design/planning
B. Data collection/entry
C. Data analysis/statistics
D. Data interpretation
E. Preparation of manuscript
F. Literature analysis/search
G. Funds collection

Summary

Background. Cardiovascular diseases are among the most important health problems and are considered a leading cause of death. A patient's quality of life (QoL) depends on their physical and mental health, as well as on various areas of their functioning. The purpose of this study was to determine the QoL of senior patients with vascular diseases.
Material and methods. The study covered 227 patients staying in the vascular surgery department. The analysis used a proprietary questionnaire containing questions about socio-demographic data, and standardized questionnaires: SF-36 and Beck's Depression Inventory.
Results. Most patients with vascular diseases were men (120 men, i.e. 52.86%) and those over the age of 60 (66.08%). A correlation was observed between age and perceived QoL – patients over 60 experience a lower QoL in terms of physical functioning and general health. It was found that women were significantly more likely than men to experience a reduced QoL due to pain complaints, and that those with higher levels of education, taking fewer medications, had lower scores on the Beck's scale.
Conclusions. Pain has a decisive impact on the respondents' QoL. The higher the level of depression among the respondents, the lower their QoL. Women are more likely to experience reduced QoL due to pain complaints. People with higher levels of education take fewer medications, less frequently complain of low mood and rate their QoL higher.

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Introduction

A growing group of researchers explore patients' quality of life (QoL). The topic is gaining more and more importance in medical science, mainly due to the desire to implement holistic treatment that takes into account all aspects

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of patients' health. As a result, an increasing number of studies on this issue can be seen in the literature. Increasingly, it is not only the biological assessment of the patient's condition itself that is being studied but also, and more importantly, the patient's well-being, emotions, acceptance of the disease or ability to function in daily life [1,2].

There are many definitions of the QoL, which can be categorized into two groups: professional definitions formulated by experts, which include global, complex, specific and mixed scales, and colloquial terms. The global scales are concerned with assessing QoL as a whole, i.e. overall life satisfaction, well-being in various spheres of life and a sense of happiness. Complex definitions take into account partial areas of human life in addition to the global assessment, and the assessment of such partial areas affects the global QoL. In turn, specific definitions focus on specific areas of life. This group includes the definition of health-related QoL, which is determined by the subjective assessment of health and consequences of an illness and its symptoms. The last group, i.e. mixed scales, takes into account the global assessment of QoL and, in addition, also external factors such as living environment, economic conditions, social participation and the person's individual expectations. Colloquial definitions, on the other hand, are presented by researchers, for whom QoL is a subjective concept so it is impossible to capture it in the form of norms or standards [3].

One of the earliest definitions of QoL was developed by Rourke and Dalkey in 1972. According to them, QoL consists of two elements: satisfaction with life and the feeling of happiness. Authors of definitions developed later approached the problem even more broadly. In 1987, Torrence noted that QoL should define the totality of a person, in all his/her existential dimensions [4]. In the same year, Walden-Gałuszko developed a Polish definition of QoL, referring to the personal assessment of one's position in life, which should be made over time and taking into account the respondent's recognized hierarchy of values. It can also be defined as the difference between real conditions and the situation expected by the individual [5].

As an example of how important QoL has become in recent times, the World Health Organization (WHO) has decided to create its definition, which points out that good QoL is not only about the absence of diseases but also about good mental, physical and social well-being, which is of great importance for the health of the individual. This definition indicates that QoL should be viewed holistically, taking into account clinical, psychological and social conditions in juxtaposition with the external environment. Therefore, QoL cannot be equated with concepts such as "health status", lifestyle, life satisfaction, mental status or well-being [6].

Attempts to clarify the definition of QoL in medicine led to the creation of a new concept in 1993, namely Health Related Quality of Life (HRQoL). Over time, the WHO modified its original definition, recognizing that QoL is "an individual's perception of his or her position in life within the cultural context and value system in which he or she lives and in relation to the tasks, expectations and standards set by environmental conditions" [7,8]. A year later, Schipper, Patrick, Guayaff and Spillker created a standardized questionnaire for assessing QoL [5], which took into account a patient's functioning in the physical (mobility), emotional and social spheres, as well as the patient's symptoms and the effects of treatment. Proponents of this definition included Leppert, Floryska and de Walden-Gałuszko, who noted that, in addition to the factors mentioned above, one should take into account the patient's attitude toward themselves and their illness, and how they cope with problems in order to globally assess the patient's QoL [6].

As a result, there are three elements to consider when studying health-related QoL:

1. The patient's point of view – which can be completely different from professional medical knowledge as the patient perceives their illness from the perspective of their own psycho-social life situation and assessment of their physical condition. The communication between the doctor and the patient, and their mutual interactions occurring in the treatment process are particularly important here;

2. Subjective assessments made by the patient, which are a source of additional information necessary for therapeutic decisions that subsequent QoL depends on;
3. The doctor's failure to recognize the patient's need for expert medical care outside the hospital environment. This is mostly about factors that the medical staff may perceive as unimportant but they are of particular importance to the patient and his family while other factors that seem important to the staff are not considered important by patients.

According to Stecler [9], there are many facets to understanding QoL but the important thing is that the concept refers to those dimensions that are crucial to the patient in question. These include physical problems (symptoms, pain), the ability to function (activity), satisfaction, emotionality, spirituality, social functioning, satisfaction with treatment, future orientation, sexuality, intimacy and interests [6,9].

Based on the definition developed by the WHO in 1997, Orley and Saxena distinguished several elements that affect QoL. These include mental state, relationships with other people, living environment, physical health and level of independence [6]. Siegrist and Junge also believe that QoL involves several interrelated elements, including physical indicators (disability, pain), psychological conditions (mood, degree of anxiety, depressive states) and social conditions (isolation, ability to perform social roles) [10].

Researchers agree that the overall evaluation of QoL should not be based on one factor only as it is the result of various subjective and objective elements. Therefore, depending on the different criteria adopted in QoL evaluation in research and clinical practice, two aspects are taken into account: the subjective and the objective one [7].

Any disease disrupts a person's functioning by affecting his or her QoL in many areas. It can change the person's social roles, force them to give up their career or limit social contacts. It often entails pain, suffering, shatters one's sense of security, causes isolation or reduces well-being due to a sense of unfinished business in life, eventually leading to low mood and even depression [9].

According to data reported by the Central Statistical Office (CSO), cardiovascular diseases have for many years been one of the most important health problems in Polish society and are the leading cause of death [11,12]. Despite increasingly better diagnostics and modern treatments, about 200,000 people die from them every year in Poland. In our country, the problem is primarily a high incidence of disease the causes of which are called risk factors. People with several such factors, which include old age, low physical activity, overweight and obesity, poor diet, smoking, impaired glucose tolerance, psychological factors (excessive stress, depression) or cases of heart disease in the family are particularly vulnerable to the development of cardiovascular disease. Many authors of scientific studies on the QoL of patients with cardiac diseases published in leading cardiology journals (*Annals of Thoracic Surgery, Arteriosclerosis, Thrombosis and Vascular Biology, British Heart Journal, Cardiology, Circulation, Kardiologia Polska, Folia Cardiologica Excerpta*) demonstrate that certain procedures introduced in the treatment of cardiac patients that alleviate their troublesome symptoms, increase their QoL (e.g. ablation, implantation of a ventricular pacemaker, Cox Maze III procedure, surgery of the ascending aorta and aortic valve), which seems to be the rationale for addressing QoL issues and ongoing analyses [13].

The most important causes of cardiovascular disease are uncontrolled hypertension, lipid disorders, smoking, low physical activity, poor diet and carbohydrate disorders [14-16]. Cardiovascular diseases are much more common in patients with diabetes, with impaired lipid and glucose metabolism [15]. Pathological changes lead to tissue ischemia, which is caused by narrowing or complete closure of the arterial lumen [14,16]. This causes various types of symptoms that patients complain of, such as severe pain and coldness in the extremities, lack of peripheral pulse, change in skin color, superficial and deep sensibility disturbances,

collapse of superficial veins, ischemic muscular contractures, edema, intermittent claudication, acute tissue ischemia or necrosis occur later [17,18]. All of them can contribute to the lowering of patients' QoL.

Aim of the work

The purpose of the paper is to evaluate the QoL of patients hospitalized in vascular surgery departments. As reported in the literature, QoL is as important as the results of physical, laboratory and clinical tests. Therefore, it seems reasonable to study health-related QoL in this group of patients in order to assess the effectiveness of the treatment and therapeutic process.

Material and methods

The study included 227 patients with a diagnosed vascular disease, staying in the Vascular Surgery Department at the Jan Mikulicz-Radecki University Clinical Hospital in Wroclaw, Poland. In the analysis, A proprietary questionnaire was used containing questions on socio-demographic data (including age, gender, education, place of residence, number of medications taken, treatment of low mood) and standardized, international, reliable and accurate questionnaires:

1. The Quality of Life Survey (Short Form Health Survey, SF-36) – the questionnaire is designed for subjective assessment of health. It consists of 11 questions containing 36 statements to determine 8 elements: physical functioning, limitations due to physical health, experiencing pain, general sense of health, vitality, social functioning, emotional functioning and mental health. The QoL indicator is the sum of the scores of all 8 QoL scales and provides an overall assessment of health. According to the Polish version of the questionnaire, the highest score denotes the lowest degree in the evaluation of QoL, while the lowest score denotes the highest level of QoL. The physical dimension of QoL is assessed on the basis of grades: I, II, IV and VIII, with the maximum number of points being 103. The mental dimension of QoL is assessed on the basis of grades: III, V, VI and VII, with the maximum number of points being 68. For the QoL index, the maximum number of points is 171 [19].
2. Beck's Depression Inventory (BDI) is a self-report psychological tool used to assess the severity of depressive symptoms in adults and adolescents over the age of 13. It was developed by psychiatrist and psychoanalyst Dr. Aaron T. Beck. It consists of 21 questions on various symptoms of depression, i.e.: sadness, loss of interests, sense of guilt, difficulty concentrating and sleep problems. A respondent fills out a questionnaire, assesses the degree to which the symptoms are characteristic of him or her using a 4-point grading system, where 0 points means no symptom, 1 point means moderate severity, 2 points means significant severity, and 3 points means very significant severity of the symptom. The points are added up to give an overall score that indicates the severity of depression, where receiving 0-9 points means no or minimal depression, 10-18 points refer to mild depression, 19-29 points refer to moderate depression, and 30-63 points refer to severe depression.

The Beck's questionnaire is often used in scientific research as well as in clinical practice as a tool to help diagnose and monitor the severity of depressive symptoms. However, it is only a screening tool and is not used to make a diagnosis. Therefore, consultation with a specialist is required [20].

Inclusion criteria for the study consisted of a diagnosed vascular disease, health adequate to complete the questionnaire, and being in a vascular surgery department.

The significance of differences between the two mean values was tested using the Student's t test for independent samples. Correlations between variables were checked using Spearman's rank correlation coefficient. This coefficient takes values from +1 (strong positive correlation), through 0 (no correlation) to

-1 (strong negative correlation). A significance level of $p<0.05$ was adopted. Analyses were performed using SPSS software.

Results

The majority of the respondents were male (119; 52.42%). The largest group of respondents was over the age of 60 (150; 66.08%), followed in order by the 51-60 age group (43; 18.94%), 41-50 (21; 9.25%) and the 30-40 age group (13; 5.73%). They were mainly people with secondary education (84; 37.00%), followed by vocational education (70; 30.84%), higher education (59; 25.99%) and primary education (14; 6.17%), from cities with more than 100,000 residents (110; 48.46%).

The respondents usually lived with a spouse (145; 63.88%), less often alone (52; 22.91%), with children (26; 11.45%) or another person (4; 1.76%).

Most respondents took 3 to 5 medications (84; 37.00%), slightly fewer took up to 2 medications (73; 32.16%) or more than 5 (70; 30.84%) and, in addition, 18 people (7.93%) were treated for low mood.

The average score for the QoL index was 41.4 points with a standard deviation of 20.30 points. At least half of the respondents scored at least 42.1 points. The distribution of the variable ranged from 7.7 to 82.6 points. The respondents' QoL was worse in the physical dimension (M=45.6 points, SD=24.31 points). At least half of the respondents scored at least 46.6 points for this dimension. The distribution of the variable ranged from 3.9 to 92.2 points.

The mean for the mental dimension was 35.1 points, with SD=18.70 points. At least half of the respondents scored at least 35.3 points. The lowest QoL score was reported for the general health scale (49.3) and for the pain scale (48.1), and the highest ones for the social function scale (31.2) and emotional limitations scale (31.3) (Table 1).

Table 1. SF-36 questionnaire results, transformed data (0-100 scale)

Questions from the SF-36 questionnaire	M	SD	Me	Mo	Min.	Max.
Physical functioning	42.3	30.45	38.00	0.00	0.00	100.00
Physical limitations	46.9	46.67	25.00	0.00	0.00	100.00
Pain	48.1	21.02	55.60	44.4	0.00	88.90
General health	49.30	19.03	50.00	60.00	5.00	90.00
Vitality	39.90	18.90	40.00	35.00	0.00	75.00
Social functions	31.20	25.40	37.50	0.00	0.00	87.50
Emotional limitations	31.30	43.25	0.00	0.00	0.00	100.00
Mental health	34.80	17.87	36.00	40.00	0.00	96.00
Physical dimension of QoL	45.60	24.31	46.60	22.30	3.90	92.20
Mental dimension of QoL	35.10	18.70	35.30	36.80	5.90	82.40
QoL index SF-36	41.40	20.30	42.10	15.80	7.60	82.50

Notes: M – mean, SD – standard deviation, Me – median, Mo – dominant, Min. – minimum value, Max. – maximum value.

The analysis using Spearman's rank correlation coefficient showed a statistically significant relationship between age and the grades for physical functioning ($p<0.001$), physical limitations ($p=0.007$), general health ($p=0.033$), emotional limitations ($p=0.013$), mental health ($p=0.016$), physical dimension of QoL ($p<0.001$), and the SF-36 QoL index ($p=0.004$). Older respondents were more likely to experience reduced QoL in terms of physical functioning, have greater physical and emotional limitations, general health problems, and lower QoL in terms of physical and general health but their mental health was better than in the case of younger respondents.

It was also found that respondents with higher levels of education were less likely to have problems with physical functioning (p=0.013), with physical limitations (p=0.004), had lower scores for SF-36 (p=0.014) and for the physical dimension of QoL (p=0.004). In addition, respondents living in rural areas and small towns were more likely to experience lower QoL in terms of their mental health (p=0.038).

Respondents taking more medications were more likely to experience reduced quality of physical functioning (p<0.001), more likely to have physical (p=0.003) and emotional limitations (p=0.002), more problems with general health (p=0.003) and with vitality (p=0.042). They also scored high (low QoL) on the overall SF-36 questionnaire score (p<0.001) and for the physical (p<0.001) and mental (p=0.021) dimensions (Table 2).

Table 2. Analysis of the association between age, education, place of residence, number of medications taken and the results of the SF-36 questionnaire

Questions from the SF-36 questionnaire		Age	Education	Place of residence	Number of medications taken
Physical functioning	**Correlation coefficient**	0.44	-0.25	-0.14	0.48
	Two-sided significance	<0.001	0.013	0.165	<0.001
Physical limitations	**Correlation coefficient**	0.27	-0.29	0.08	0.30
	Two-sided significance	0.007	0.004	0.450	0.003
Pain	**Correlation coefficient**	0.08	-0.14	0.00	0.07
	Two-sided significance	0.433	0.180	0.994	0.525
General health	**Correlation coefficient**	0.22	-0.04	-0.06	0.30
	Two-sided significance	0.033	0.677	0.588	0.003
Vitality	**Correlation coefficient**	-0.03	-0.05	0.07	0.21
	Two-sided significance	0.755	0.614	0.517	0.042
Social functions	**Correlation coefficient**	-0.10	-0.07	0.14	0.05
	Two-sided significance	0.351	0.490	0.157	0.655
Emotional limitations	**Correlation coefficient**	0.25	-0.12	0.05	0.31
	Two-sided significance	0.013	0.250	0.614	0.002
Mental health	**Correlation coefficient**	-0.24	0.00	0.21	0.14
	Two-sided significance	0.016	0.995	0.038	0.172
Physical dimension of QoL	**Correlation coefficient**	0.43	-0.29	-0.08	0.47
	Two-sided significance	<0.001	0.004	0.436	<0.001
Mental dimension of the QoL	**Correlation coefficient**	0.01	-0.11	0.14	0.23
	Two-sided significance	0.907	0.265	0.168	0.021
SF-36 QoL index	**Correlation coefficient**	0.29	-0.25	0.01	0.42
	Two-sided significance	0.004	0.014	0.894	<0.001

Notes: Spearman correlation coefficient values.

An analysis using the Student's t test for independent samples showed that women (SD=54.1) were significantly more likely than men (SD=42.7) to experience reduced QoL due to pain (p=0.007) (Table 3).

Table 3. Results of the SF-36 questionnaire by gender of respondents

Questions from the SF-36 questionnaire	Gender of the respondent				Student's t test	
	Female		Male			
	M	SD	M	SD	t	*p*
Physical functioning	41.20	29.37	43.40	31.64	-0.35	0.724
Physical limitations	46.20	46.54	47.50	47.24	-0.14	0.887
Pain	54.10	12.53	42.70	25.37	2.76	0.007
General health	49.60	18.04	49.00	20.05	0.14	0.889
Vitality	41.30	15.33	38.60	21.70	0.69	0.489
Social functions	32.10	23.81	30.40	26.96	0.32	0.748
Emotional limitations	28.30	43.30	34.00	43.46	-0.65	0.518
Mental health	33.30	17.14	36.20	18.57	-0.78	0.435
Physical dimension of QoL	45.40	22.53	45.70	26.03	-0.07	0.944
Mental dimension of QoL	34.40	16.86	35.70	20.36	-0.35	0.729
SF-36 QoL index	41.00	17.81	41.70	22.48	-0.18	0.859

There was also a significant difference in terms of experienced pain ($p<0.05$) between those living alone and those living with someone; single people reported higher QoL in this regard (Table 4).

Table 4. Results of the SF-36 questionnaire for single and coupled people

Questions from the SF-36 questionnaire	The respondent lives:				Student's t test	
	Alone		With someone else			
	M	SD	M	SD	t	*p*
Physical functioning	47.00	27.37	41.00	31.33	0.82	0.416
Physical limitations	46.60	50.18	47.00	45.94	-0.04	0.971
Pain	40.40	22.89	50.40	20.04	-1.99	<0.050
General health	44.80	24.62	50.60	17.02	-1.27	0.208
Vitality	34.50	20.47	41.50	18.27	-1.52	0.132
Social functions	26.10	27.52	32.70	24.74	-1.06	0.291
Emotional limitations	15.20	35.23	36.00	44.44	-2.02	0.046
Mental health	35.80	14.05	34.50	18.92	0.30	0.764
Physical dimension of QoL	46.60	23.57	45.20	24.67	0.24	0.813
Mental dimension of QoL	29.70	16.84	36.70	19.03	-1.54	0.128
SF-36 QoL index	39.90	19.55	41.80	20.63	-0.39	0.701

Those respondents who were treated for low mood scored higher (lower QoL) for the SF-36 questionnaire ($p=0.043$) and for its mental dimension ($p=0.004$). They also had a lower QoL in terms of general health ($p=0.040$), social functions ($p=0.003$), emotional limitations ($p=0.006$), and mental health ($p=0.043$) (Table 5).

Table 5. Comparison of SF-36 questionnaire results with treatment for the respondents' low mood

Questions from the SF-36 questionnaire	Treatment of low mood				Student's t test	
	Yes		No			
	M	SD	M	SD	T	*p*
Physical functioning	49.00	28.04	41.70	30.73	0.64	0.521
Physical limitations	71.90	38.82	44.70	46.84	1.59	0.115
Pain	51.40	11.79	47.80	21.67	0.46	0.647
General health	62.50	13.36	48.10	19.06	2.09	0.040
Vitality	46.90	17.10	39.30	19.02	1.09	0.278
Social functions	56.30	25.00	28.90	24.32	3.04	0.003
Emotional limitations	70.80	37.53	27.70	42.11	2.80	0.006
Mental health	47.00	11.26	33.70	17.99	2.05	0.043
Physical dimension of QoL	56.60	21.27	44.60	24.43	1.34	0.183
Mental dimension of QoL	53.30	17.24	33.50	18.02	2.99	0.004
SF-36 QoL index	55.30	18.44	40.20	20.09	2.05	0.043

The mean score obtained for the BDI was 10.6 points with SD=8.85 points. At least half of the respondents scored at least 9 points and the distribution of the variable ranged from 0 to 42 points, so nearly 57% of the respondents had no depression, 36% of the respondents experienced a depressive episode of mild severity, the rest experienced a depressive episode of moderate severity.

Correlation analysis using Spearman's rank correlation coefficient showed a statistically significant association between the BDI and the respondents' education (p=0.021) and the number of medications they were taking (p<0.001). Those with higher levels of education and taking fewer medications had lower scores on the BDI (Table 6).

Table 6. Relationship between age, education, place of residence, number of medications taken and the BDI

Sociodemographic variables		Beck Depression Inventory
Age	**Correlation coefficient**	0.20
	Two-sided significance	0.052
Education	**Correlation coefficient**	-0.23
	Two-sided significance	0.021
Place of residence	**Correlation coefficient**	0.08
	Two-sided significance	0.449
Number of medications taken	**Correlation coefficient**	0.50
	Two-sided significance	<0.001

The study found no statistically significant differences between men and women in the BDI scores (p=0.584), and no similar relationship was demonstrated for analyses between living alone or with others and the BDI (p=0.752). However, statistical analysis using Spearman's rank correlation coefficient demonstrated statistically significant associations between the BDI and the SF-36 questionnaire scores for all its dimensions and subscales. The higher the level of depression among the respondents, the lower their QoL was (Table 7).

Table 7. Relationship between the SF-36 scale and the BDI

Questions from the SF-36 questionnaire		Beck Depression Inventory
Physical functioning	**Correlation coefficient**	0.69
	Two-sided significance	<0.001
Physical limitations	**Correlation coefficient**	0.54
	Two-sided significance	<0.001
Pain	**Correlation coefficient**	0.47
	Two-sided significance	<0.001
General health	**Correlation coefficient**	0.48
	Two-sided significance	<0.001
Vitality	**Correlation coefficient**	0.71
	Two-sided significance	<0.001
Social functions	**Correlation coefficient**	0.48
	Two-sided significance	<0.001
Emotional limitations	**Correlation coefficient**	0.52
	Two-sided significance	<0.001
Mental health	**Correlation coefficient**	0.54
	Two-sided significance	<0.001
Physical dimension of QoL	**Correlation coefficient**	0.70
	Two-sided significance	<0.001
Mental dimension of QoL	**Correlation coefficient**	0.73
	Two-sided significance	<0.001
SF-36 QoL index	**Correlation coefficient**	0.77
	Two-sided significance	<0.001

Discussion

Our own research has shown that men are more likely to suffer from vascular diseases than women. Similar results were obtained in the research conducted by Papłaczyk and Gawor [21], Czuchryta and Kowalski [22], and Spannbauer and Madejczyk [23]. In turn, Raciborski et al. [24] demonstrated that vascular diseases are more common in women than in men. This result was obtained after examining 301 patients, 260 of whom were women. Although it is men who show a greater predisposition to vascular disease incidence, the reasons for this are not fully established and require further research [25].

The research conducted for this paper showed that the majority of patients in the vascular surgery department are over 60 years old. These data coincide with those collected by Krosny and Dąbek [26] and by Spannbauer and Madejczyk [23], who demonstrated that the largest percentage of those qualified for vascular procedures were patients in the 45-78 age range. Based on the results, it can be concluded that vascular diseases affect the elderly more often. The most common reason for their occurrence is atherosclerosis, which is often called the "silent killer" due to its nearly asymptomatic progress in its early stages [27].

The results also showed that nearly half of the respondents with vascular disease lived in large cities. These data are in line with the study by Raciborski et al. [24]. It seems that the higher incidence of the disease among people living in larger cities results from location-specific factors such as higher levels of stress, a stressful lifestyle or exposure to other external factors that predispose to the development of

atherosclerosis and, consequently, increased incidence of vascular disease. In addition, large agglomerations are also characterized by high emissions of air pollutants, which, according to Modrzejewski, are one of the factors affecting the development of cardiovascular disease [28].

The majority of respondents reported taking 3 to 5 medications on a regular basis. This result is in line with those obtained by other researchers. For example, Ksiądzyna and Szeląg demonstrated in their analysis that most cardiac patients take between 3 and 8 medications a day. The patient's age should also be taken into account as it predisposes them to an increased incidence of multiple morbidities and thus multiple medications, which may reduce their QoL [29].

Another variable examined for the purposes of this study involved analyzing whether respondents experienced low mood or even symptoms of depression. Humańska et al. proved that the onset of depressive states is observed more often in those who live alone. Reasons for this may include loneliness as well as family conflicts or estrangement [30]. However, our own research did not confirm such a trend, and statistical analysis showed no significant differences in the incidence of depression between single people and those living with their families. Perhaps the situation results from the fact that most of the respondents lived in large cities and therefore had frequent opportunities for contact with other people. However, it seems that further analysis is needed to explain the results obtained.

The study shows that the lowest QoL was found for the scales of general health and pain. This confirms the fact that pain significantly affects a person's well-being, especially if it is chronic, which is the case for many seniors. In particular, pain restricts mobility and the efficiency of activities, makes the patient care-dependent, which undoubtedly affects the patient's mental well-being. Research by Domżał demonstrated that depression is the most common psychological reaction resulting from chronic pain [31]. This was confirmed by the results obtained from our own research, which proved that the lower the QoL of the respondents was, the higher the score was for depression.

Muszalik's research demonstrated that patients over 65 are significantly more likely than younger people to have mobility difficulties, as well as decreased vitality needed to undertake daily activities and more pain [30]. Similar results were obtained by Low et al., thus demonstrating that the QoL decreases with age [32].

Proprietary research found that reduced QoL was mainly experienced by elderly respondents. This was especially true with regard to limitations in physical and emotional functioning, as well as general health. Interestingly, elderly respondents had a higher QoL in terms of mental health than younger people. A similar result was obtained in the analysis by Rustoen et al. [33], confirming that higher QoL is experienced in the older age group. Papłaczyk et al. and Repka obtained different results in this regard, demonstrating that there was no correlation between age and QoL of the respondents [21,34].

The study also found that the quality of mental health depends on where respondents live: people from rural areas and small towns experience lower QoL in this regard. Unfortunately, no information on this relationship was found in the literature. However, it is possible to hypothesize that the reason for reduced QoL in terms of mental health is an unsatisfactory material situation, including low satisfaction with housing conditions or anxiety over insufficient finances. Elderly patients with multiple morbidities may ask themselves whether they will be able to cope with the expenses related to the diagnostics, treatment and rehabilitation, as well as home adaptations to their changing needs [35].

The results show that women were more likely than men to experience low QoL due to pain, which is consistent with the literature. Similar results were obtained by Paplaczyk et al. who proved that women rated the intensity of their pain higher than men. The author claims that the perception of QoL and health

depends largely on the severity of pain, so the greater the pain, the worse the perception of quality [21]. Żółnieczuk-Kieliszek came to similar conclusions in her study, demonstrating the difference in QoL depending on the gender of the respondents. In her study, women scored lower on the mental and physical pain scales compared to men [36].

Analyzing the results obtained from the BDI, it was found that most of the respondents did not have symptoms of depression. Depressive episodes were only observed in a few of them. It is suspected that the reason for this situation is that medical developments and innovative surgical techniques are increasing the chances of successful procedures and therefore prolonging the patient's life. A cardiac patient has a good chance of being cured currently unlike, for example, patients with advanced cancer. This information can make a big difference in terms of patients' well-being and positively affect their QoL [37]. Therefore, it can be concluded that low mood and potential depression depend on the diagnosed condition among other things. In addition, many exogenous and endogenous factors influence its possible appearance, including, for example, the patients' character, whether they rely only themselves or can count on the help of other people, that is, how extensive their social networks are [38]. Nowadays, depression is a rather frequently discussed topic. According to the research, e.g. by Humańska or Ostrzyżek, depression is an increasingly common problem for the elderly. According to the authors, depressive syndromes are the most common mental syndromes, and are a significant problem in the elderly, primarily due to the significant deterioration of their QoL, which is not the best anyway [30,39]. Interestingly, the degree of acceptance of the disease, and therefore the mood of the patients, depends on their education. Kurlak and Dacka demonstrate in their analysis of patients diagnosed with abdominal aortic aneurysm that respondents with higher education are more accepting of the disease than those with vocational, secondary or primary education [11]. A similar relationship was proved by Szyguła-Jurkiewicz [40], which coincides with the results of our own study based on the SF-36 questionnaire. The relationship in question appears to be related to patients' greater awareness of their own condition. They also show more determination in seeking information about the nature of the disease, its treatment and possible complications.

The present study also demonstrated the relationship between education, the BDI and the number of medications taken. Respondents with higher education took fewer medications and scored lower on the Beck scale. Not having to take medications can mean not having a disease, and therefore entail a lower risk of depression. However, it should be remembered that the body's natural aging process has already begun in people over 65 years of age, which can lead to multiple morbidities and the use of multiple medications, so the risk of depression may increase [41].

Humańska et al. [30] demonstrated a statistically significant relationship between emotional well-being and perceived QoL among the elderly in their study. The higher the score was on the GDS scale, the significantly lower the respondents' sense of QoL. This confirms the principle that depressive states entail limited contact with people and reduced social activity [30]. Proprietary research confirms this correlation, which was demonstrated using the BDI and the SF-36 questionnaire. The higher the respondents' level of depression was, the lower their QoL.

Today's medicine strives for holistic care provided to the patient and the restoration of the best possible health of the patients so that they have a chance to achieve maximum independence, fitness and autonomy. Helpful in achieving this goal is the determination of the patient's QoL, i.e., their subjective assessment of their emotional well-being, health, social and physical states, providing an opportunity for appropriate selection and course of therapy. It is important to approach each patient on an individual basis, taking into account their participation in the measures taken [42].

As evidenced by numerous studies, assessing the QoL of people with cardiovascular diseases is as important as the results of physical, laboratory and clinical examinations. Therefore, it seems reasonable to study health-related QoL in this group of patients, which can help improve the efficiency of the treatment and therapeutic process [13].

Conclusions

1. The largest number of patients with vascular disease are elderly men.
2. People from larger cities are more likely to suffer from vascular diseases.
3. Polypharmacy is observed in patients in cardiac wards.
4. Pain has a decisive impact on reducing the QoL of respondents.
5. The higher the level of depression among respondents, the lower their QoL.
6. Women are more likely to experience reduced QoL due to pain.
7. People with higher education take fewer medications, complain less often of depressed mood and rate their QoL higher.

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References:

1. Kaniewska-Mackiewicz E. [Quality of life in the discourse of social sciences]. Edukacja, Rodzina, Społeczeństwo. 2021; 39(6): 201-222 (in Polish).
2. Zięba M, Cisoń-Apanasewicz U. [The quality of life in medical sciences]. Pielęgniarstwo w Opiece Długoterminowej. 2017; 3(6): 57-62 (in Polish).
3. Wołowicka L. [The quality of life in medical sciences]. Poznań: Wydawnictwo Uczelniane Akademii Medycznej im. Karola Marcinkowskiego w Poznaniu; 2002. p. 117-127, 231-238 (in Polish).
4. Leplege AL, Hunt S. The problem of quality of life in medicine. JAMA. 1997; 47-50. https://doi.org/10.1001/jama.278.1.47
5. Papuć E. [Quality of life – definitions and different types of approach]. Curr Probl Psychiatry 2011; 12(2): 141-145 (in Polish).
6. Leppert W, Forycka M, de Walden-Gałuszko K, Majkowicz M, Buss T. [Quality of life assessment in cancer patients – recommendations for the staff of oncology and palliative care units]. Psychoonkologia. 2014, 1: 17-29 (in Polish).
7. HOQOL Group. Development of the WHOQOL rationale and current status. Internal Journal Mental Health. 1994; 23: 24-56. https://doi.org/10.1080/00207411.1994.11449286
8. WHOQOL Group. The World Health Organisation quality of life assessment (WHOQOL): Position paper from the world health organisation. Soc. Sci. Med. 1995; 41: 1403-1409. https://doi.org/10.1016/0277-9536(95)00112-K

9. Stecler B. [Quality of life and mental integration]. In: Wołowicka L., editor. [Quality of life in medical science]. Poznań: Wydawnictwo Uczelniane Akademii Medycznej w Poznaniu; 2001. p. 117-127 (in Polish).
10. Kowalik S. [Measuring quality of life – theoretical controversies]. In: Bańka A, Derbis R., editors. [Psychological and pedagogical dimensions of quality of life]. Poznań–Częstochowa: Uniwersytet Adama Mickiewicza WSP; 1994. p. 75-78 (in Polish).
11. Cha YM, Friedman PA, Asirvatham SJ, Shen WK, Munger TM, Rea RF, et al. Catheter ablation for atrial fibrillation in patients with obesity. Circulation. 2008; 117: 2583-2590. https://doi.org/10.1161/CIRCULATIONAHA.107.716712
12. Mohanty S, Mohanty P, Di Biase L, Bai R, Santangeli P, Casella M, et al. Results from a single-blind, randomized study comparing the impact of different ablation approaches on long-term procedure outcome in coexistent atrial fibrillation and flutter (APPROVAL). Circulation. 2013; 127: 1853-1860. https://doi.org/10.1161/CIRCULATIONAHA.113.001855
13. Cieślik B. [Influence of the heart diseases on quality of life – literature review]. Acta Bio-Optica et Informatica Medica Inżynieria Biomedyczna. 2014; 20(2): 101-117.
14. Visseren F, Mach F, Smulders Y, Carballo D, Koskinas CC, Back M, et al. Guidelines on cardiovascular disease prevention in clinical practice. Eur Heart J. 2021; 42(34): 3227-3337. https://doi.org/10.1093/eurheartj/ehab484
15. Catapano AL, Ray KK, Tokgözoglu L. Prevention guidelines and EAS/ESC guidelines for the treatment of dyslipidaemias: a look to the future. Atherosclerosis. 2022; 340: 51-52. https://doi.org/10.1016/j.atherosclerosis.2021.11.021
16. Filardi PP, Basile C, Paolillo S. European guidelines on cardiovascular disease prevention: what's new?. G Ital Cardiol (Rome). 2022; 23(6): 414-418.
17. Vinther JL, Jacobsen RK, Jørgensen T. Current European guidelines for management of cardiovascular disease: is medical treatment in nearly half a population realistic?. Eur J Prev Cardiol. 2018; 25(2): 157-163. https://doi.org/10.1177/2047487317738826
18. Mahabadi AA, Möhlenkamp S, Lehmann N, Kälsch H, Dykun I, Pundt N, et al. CAC score improves coronary and CV risk assessment above statin indication by ESC and AHA/ACC Primary Prevention Guidelines. JACC Cardiovasc Imaging. 2017; 10(2): 143-153.
19. Tylka J, Piotrowicz R. [Quality of life SF-36 questionnaire – the Polish version]. Kardiol Pol. 2009; 67: 1166-1169 (in Polish).
20. Beck AT, Ward CH, Mendelson M, Mock J, Erbaugh J. An inventory for measuring depression. Archives of General Psychiatry. 1961; 4: 53-63. https://doi.org/10.1001/archpsyc.1961.01710120031004
21. Paplaczyk M, Gawor A, Ciura G. [Evaluation of the quality of life of patients with chronic pain who suffer from ischemic disease of the lower limbs]. Pielęgniarstwo Chirurgiczne i Angiologiczne. 2015; 3: 135-140 (in Polish).
22. Czuchryta E, Kowalski W. [Quality of life of patients after amputation of lower extremities]. Aspekty Zdrowia i Choroby. 2017; 2(1):29-37 (in Polish).
23. Spannbauer A, Madejczyk M, Chwała M, Berwecki A. [Lifestyle of patients with peripheral arterial occlusive disease undergoing surgical revascularization procedures]. Pielęgniarstwo Chirurgiczne i Angiologiczne. 2015; 1: 28-35 (in Polish).
24. Krosny T, Dąbek P, Staszkewicz W, Lewszuk A. [Assesment of perfusion abnormalities in patients with p.o.d. using NIRS (near infrared spectroscopy)]. Postępy Nauk Medycznych. 2012; 8: 628-635 (in Polish).

25. Larionov P, Izdebski P. [Selected personality traits versus dysfunctional emotion regulation as a risk factor for hypertension]. Annales Universitatis Mariae Curie-Skłodowska. Sectio J, Paedagogia-Psychologia. 2020; 33(2): 239-252 (in Polish). https://doi.org/10.17951/j.2020.33.2.239-252
26. Manfredini F, Malagoni AM, Felisatti M, Mandini S, Mascoli F, Manfredini R, et al. A dynamic objective evaluation of peripheral arterial disease by near-infrared spectroscopy. Eur J Vasc Endovasc Surg. 2009; 38: 441-448. https://doi.org/10.1016/j.ejvs.2009.06.011
27. Ageenkova EK. [Arbitrary prolongation of psychoemotional stress as a risk factor for cardiovascular diseases]. Lichnost' v menjajushhemsja mire: zdorov'e, adaptacija, razvitie. 2016; 4(15): 98-103 (in Russian). https://doi.org/10.23888/humJ2016498-103
28. Modrzejewski W, Musiał W. [Old and new cardiovascular risk factors – how to stop the atherosclerosis epidemic?]. Forum Zaburzeń Metabolicznych. 2010; 1(3): 168-176 (in Polish).
29. Ksiądzyna D, Szeląg, A. [Special aspects of geriatric pharmacotherapy]. Psychogeriatria Polska. 2013; 10(3): 115-126 (in Polish).
30. Humańska M, Kędziora-Kornatowska K. [The occurance of depression in older people using social care – preliminary results]. Psychogeriatria Polska. 2009; 6(1): 15-22 (in Polish).
31. Domżała T. [Chronic pain clinical and therapeutic problems]. Pol. Przegl. Neurol. 2008; 4(1): 1-8 (in Polish).
32. Muszalik M, Kędziora-Kornatowska K. [Quality of life of chronically ill elderly patients]. Gerontologia Polska. 2006; 14(4): 185-189 (in Polish).
33. Rustoen T, Wahl AK, Hanestad BR, Lerdal A, Paul S, Miaskowski C. Age and the experience of chronic pain: differences in health and quality of life among younger, middle-aged, and older adults. Clin J Pain. 2005; 21: 513-523. https://doi.org/10.1097/01.ajp.0000146217.31780.ef
34. Repka I, Wordliczek J. [The relationship of demographic factors on level of pain, quality of life and individual domains of the patients with chronic pain]. Problemy Pielęgniarstwa. 2013; 21: 348-359 (in Polish).
35. Zych A. [Professional activity of the elderly on the labour market in the shadow of the coronavirus pandemic]. Praca Socjalna. 2020; 6(35): 21-33 (in Polish). https://doi.org/10.5604/01.3001.0014.5735
36. Żołnierczuk-Kieliszek D, Kulik T. [Selected medical and psychological factors and quality of life in cardiovascular patients]. Medycyna Ogólna i Nauki o Zdrowiu. 2014; 20(2): 131-135 (in Polish). https://doi.org/10.5604/20834543.1112225
37. Witkowska K. [Assessment of the quality of life of patients after stroke]. Innowacje w Pielęgniarstwie i Naukach o Zdrowiu. 2021; 6(3): 7-20 (in Polish). https://doi.org/10.21784/IwP.2021.013
38. White A. Palliative care. Physical and spiritual wellbeing at the end of life. Medicine Today. 2016; 7(5): 22-28.
39. Ostrzyżek A, Marcinkowski J. [Quality of life dimensions in late-life]. Probl. Hig. Epidemiol. 2009; 90(4): 465-469 (in Polish).
40. Szyguła-Jurkiewicz B, Kowalska M, Mościński M. [Quality of life as a component of health assessment and treatment effectiveness of patients with cardiovascular diseases]. Folia Cardiologica Excerpta. 2011; 6(1): 62-71 (in Polish).
41. Fidecki W, Wysokiński M, Wrońska I, Misiarz J, Kulina D, Kuszplak K. [Risk assessment of depression among the elderly from a rural environment]. Geriatria. 2019; 13: 147-151 (in Polish).
42. Jazayeri E, Kazemipour S, Hosseini SR, Radfar M. Quality of life in the elderly: a community study. Caspian J Intern Med. 2023; 14(3): 534-542.