

RESEARCH ARTICLE

Factors determining acceptance of disease and its impact on satisfaction with life of patients with peripheral artery disease

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Abstract

Aims and objectives: Analysis of factors determining acceptance of disease and satisfaction with life in patients with peripheral artery disease.

Background: Peripheral artery disease is more common in older patients and is associated with increased morbidity and mortality due to cardiovascular diseases and the risk of amputation. The acceptance of disease is one of the most important factors for adjusting to life with a chronic disease.

Design: A cross-sectional survey study. Patients' questionnaires.

Method: The participants were patients with peripheral artery disease ($N = 72$). The study included the use of the standardized research tools the Acceptance of Illness Scale (AIS) and the Satisfaction with Life Scale (SWLS).

Results: The highest acceptance of disease was observed for patients with higher education, while the lowest was found for patients with the greatest limitation of physical mobility.

Conclusions: The education level and physical fitness of patients had significant impact on disease acceptance.

KEYWORDS

disease acceptance, nurses, nursing, PAD, peripheral artery disease, quality of life, satisfaction

1 | INTRODUCTION

Atherosclerosis is the most common cause of peripheral artery disease (PAD) (Zdrojowy et al., 2010), which requires long-term treatment. Clinical manifestations of PAD include intermittent claudication, rest pain and tissue necrosis (Curry et al., 2018; Pascarella & AboulHosn, 2018; Varu et al., 2010; Zdrojowy et al., 2010). The occurrence and severity of symptoms depend on the localization of the occlusion, the length of the occluded segment, the number of occluded/stenosed segments and the presence and development

of collateral circulation (Zdrojowy et al., 2010). Intermittent claudication is the most characteristic symptom, yet chronic ischaemic rest pain, ulceration and gangrene may develop as the disease progresses (Varu et al., 2010; Zdrojowy et al., 2010). The presence of such symptoms should be considered as a direct limb threat due to the development of irreversible ischaemic lesions (Pascarella & AboulHosn, 2018). Peripheral artery disease is associated with strenuous somatic symptoms and undoubtedly impairs the quality of life of the affected person, having a negative impact on physical and psychosocial functioning (Piotrkowska et al., 2011). Patients

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with PAD are described in the recommendations of the American College of Cardiology and American Heart Association (ACC/AHA) as a high cardiovascular risk population (Hirsch et al., 2006). The principles of the diagnosis and treatment of atherosclerotic limb ischaemia are presented in the guidelines developed in 2017 by the European Society of Cardiology (ESC) in collaboration with the European Society for Vascular Surgery (ESVS) (ESC, 2018). This document presents recommendations concerning the selection of examinations and therapy methods in selected clinical manifestations of limb atherosclerosis.

The therapy of PAD is an interdisciplinary process which includes medical actions, education and psychological support (Hirsch et al., 2006). The progress of PAD leads to complex consequences which affect various functional areas and cause increased physical and mental discomfort. This results from the pain, suffering and progressing limitation or loss of functional capabilities experienced by such patients (Piotrkowska et al., 2011; Piotrkowska et al., 2017).

Acceptance of disease means accepting and being reconciled with the presence of the illness, which allows adaptation to the new situation, that is life with the disease. Questionnaires focused on measuring the acceptance of disease allow researchers to measure how much the disease affects a patient's vision of their reality, being not only a limiting factor (Juczyński, 2012). Such an interpretation of acceptance leads to the situation where life with the disease remains valuable and worth supporting (Dijkstra et al., 2008). In this paper, we adopted a definition for the acceptance of disease identical to the one which was used as a base for creating the tool used in other studies, namely the Acceptance of Illness Scale (AIS). According to this assumption, the acceptance of illness should be considered as a lack of problems with adaptation to the limitations imposed by the disease, a sense of independence and self-sufficiency despite the illness, maintained and not-reduced self-esteem, as well as no feeling that the disease may have a negative impact on the people and situations surrounding the patient. Moreover, the manifestations of disease acceptance include a low intensity of the negative reactions and emotions which are associated with the disease and less mental discomfort (Boryczko-Pater et al., 2011; Dijkstra et al., 2008).

Acceptance of disease means gaining a positive attitude towards a given situation and encourages patients to mobilize their own vital strength to prevent the deterioration of their quality of life due to chronic disease. It is recognized that the level of such acceptance depends not only on such factors as the nature of the disease, its severity and the discomfort it imposes, but also patient-associated factors, which are socio-demographic determinants (Czerw et al., 2016; Czerw et al., 2016; Czerw et al., 2016; Gałuszko, 2013).

Another factor determining the adequate attitude of a patient during their illness is satisfaction with life. This term refers to the general satisfaction presented by a given person influenced by personal standards promoting activity and better coping with difficult situations (Gałuszko, 2013). The information presented to the patient about the diagnosis of a chronic disease is a source of psychological stress, arousing fear and anxiety, which in turn results in the reduced quality of life. On the other hand, the chronicity of the

disease gives patients an opportunity to adapt to new life conditions, to positively re-evaluate their lives and to accept their disease, which may be aided by the stimulation of positive emotions. If patients succeed in coping with these issues, their quality of life will improve and in particular cases may even become better than how they declared it to be before becoming ill. Taking into account the fact that the emotional state, level of sensed distress, physical discomfort and acceptance of disease are responsible to a certain degree for the quality of life of such patients, an attempt was made to determine the relationship between the selected variables (Gałuszko, 2013).

2 | MATERIALS AND METHODS

2.1 | Aim of the study

The aim of this study was to evaluate the acceptance of disease and its impact on satisfaction with life in patients with peripheral artery disease.

2.2 | Design

It was a cross-sectional survey study.

2.3 | Study population

A total of 72 patients with peripheral artery disease treated in the Clinic of Cardiac and Vascular Surgery, University Clinical Centre, Poland, were included in the study. The study was performed between March and May 2018. The inclusion criteria included the signed informed consent form, a diagnosis of chronic limb ischaemia and age > 18 years. A diagnostic survey method was adopted, and socio-demographic (education, marital status and residence), clinical (grade of limb ischaemia, nicotine abuse, comorbidities, physical fitness) and psychometric data were collected.

2.4 | Data collection

Questionnaires were completed by the patients during the first day (in the afternoon, under the same or very similar room conditions) after they had been admitted to the clinic. A member of the study staff explained to each patient the aim of the study and the methods used to protect the participants' confidentiality. Each patient provided written informed consent to participate in the study.

2.5 | Questionnaire development

We decided to use a diagnostic survey as the research method. The Acceptance of Illness Scale (AIS), developed by Felton, Revensson

and Hinrichsen from the Center for Community Research and Action, Department of Psychology, New York University (adapted to Polish conditions by Juczyński) and the Satisfaction with Life Scale (SWLS), developed by Diener, Emmons, Larsen and Griffin from the Department of Psychology, University of Illinois (adapted to Polish conditions by Juczyński) were used.

2.5.1 | The Acceptance of Illness Scale (AIS)

This scale is intended to measure the disease acceptance. It may be used in relation to every single illness. The greater the disease acceptance, the better the adaptation and less psychological discomfort. The accuracy of AIS was verified by comparing its outcomes with therapy results in oncologic patients—significant correlation was observed (.42; $p < .01$). AIS results were also correlated with outcomes acquired with other tools used to obtain indirect information on disease acceptance in different patient groups (multiple sclerosis, diabetes mellitus and suffering from myocardial infarct). The AIS scale contains eight statements describing negative consequences of ill health with regard to the following issues: limitations imposed by the illness, lack of self-sufficiency, the feeling of being dependent on others and reduced self-esteem. For each statement, the patient was required to determine his/her current condition using a 5-grade scale, where 1—strongly agree and 5—strongly disagree. Strong agreement (score of 1) means poor adaptation to the disease, while lack of agreement (score of 5) is equivalent to acceptance of the disease. The sum of all points (ranging from 8 to 40) reflects the general assessment of disease acceptance. Low scores (i.e. below 20 points) are considered to indicate a lack of or poor acceptance of disease, as well as poor adaptation. Scores between 20 and 30 points indicate a moderate level of acceptance, while scores over 30 points are considered to show high or complete acceptance presented by the patient. The reliability of the Polish version is satisfactory, and Cronbach's alpha is 0.85 (Juczyński, 2012).

2.5.2 | The Satisfaction with Life Scale (SWLS)

SWLS is intended for individual and group examination of healthy and diseased adults. The Satisfaction with Life Scale (SWLS) consists of 5 statements and patients rate each item concerning their current life using a 7-point scale (from 1 “strongly disagree” to 7 “strongly agree”). The total score, ranging from 5–35, is the sum of all individual scores. The higher the score, the greater the satisfaction with life. To determine the sense of satisfaction with life, the indices were calculated into sten scores. A sten score of 1–4 is considered as low, 5–6 as moderate and 7–10 as high (Juczyński, 2012).

2.6 | Ethical considerations

The study was approved by the Independent Bioethical Committee for Scientific Research.

2.7 | Statistical analysis

All statistical calculations were carried out using the IBM SPSS 23 statistical package and an Excel 2013 spreadsheet. Qualitative variables were presented as numbers and percentages, while quantitative variables were characterized using arithmetic mean and standard deviations. The Kolmogorov–Smirnov test was used to check whether each quantitative variable follows a normal distribution. The significance of any differences between more than two groups was verified using the Kruskal–Wallis non-parametric significance test (if statistically significant differences between groups were found, the Bonferroni post hoc test was additionally used); and the significance of differences between two groups, by using the Mann–Whitney. The distribution of measurement variable (dependent) was significantly different from normal distribution. Spearman correlation test was used to verify the existence and power of the relationship between the variables. In all calculations, $p < .05$ was assumed as the level of significance.

3 | RESULTS

3.1 | Socio-demographic characteristics of patients with peripheral artery disease

The study group consisted of 24 women (33.3%) and 48 men (66.7%). The dominance of men may result from the epidemiological characteristics of the disease and its more common incidence in men. The age of the patients ranged from 35–85 years, while the mean age was 64.38 years (SD 10.12).

Patients with vocational education and urban citizens made up the most numerous group, that is $N = 35$, 48.6% and $N = 58$, 80.6%, respectively. The most common comorbidities included nicotine abuse ($N = 54$, 75.0%), arterial hypertension ($N = 48$, 56.5%) and diabetes mellitus ($N = 22$, 25.9%).

The severity of the disease was classified according to the Rutherford classification. Most patients presented category 4 lesions. The results are illustrated in Table 1.

3.2 | The acceptance of illness scale (AIS)

The results of this study show that the general index of acceptance of disease in the studied patient group was satisfactory (rather good): mean (mean = 25.17; SD 0.85). The lowest acceptance of disease was observed for self-sufficiency (mean = 1.68; SD 0.64). Table 2 shows the acceptance of the disease according to the AIS questionnaire.

A comprehensive analysis of particular areas of acceptance of disease, such as acceptance of the limitations imposed by the disease, lack of self-sufficiency, and the feeling of being dependent on others, assessed using a scale of 1–5, indicates that the highest mean score showing a lack of negative emotions was observed for such statements as: “I think people who are with me are often

embarrassed by my illness" (self-esteem - mean 3.80), followed by "Illness makes me a burden to my family and friends" (feeling of being dependent on others - mean 3.75). The lowest score was obtained for "I will never be self-sufficient to the extent that I would like to be" (sense of lack of self-sufficiency - mean 1.68).

The statistical analysis did not reveal any significant relationship between gender, residence, age and the level of disease acceptance ($p > .005$). Table 3 and Table 4 show the comparison of disease acceptance with socio-demographic characteristics.

The Kruskal-Wallis non-parametric significance test showed, however, a significant relationship between education and the level of disease acceptance, and thus, significantly higher disease acceptance was observed in patients with higher education ($H_{(3)}=13.60$; $p < .05$). The results are illustrated in Table 5. The presence of two comorbidities and the grade of limb ischaemia does not significantly differentiate the level of disease acceptance ($p > .05$). On the other hand, the lowest acceptance of disease was observed for patients with the greatest limitation of mobility ($H_{(3)}=8.68$; $p < .05$).

TABLE 1 Severity of the disease according to the Rutherford classification

Severity of the disease	Clinical symptoms	N	%
R2	Moderate claudication	1	1.4
R3	Severe claudication	11	15.3
R4	Ischaemic rest pain	32	44.4
R5	Minor tissue loss	22	30.6
R6	Ulceration or gangrene	6	8.3
Total		72	100

AIS	Min	Max	M	SD
1. I have trouble adjusting to the limits imposed by the disease	1	4	3.53	0.87
2. Due to my state of health, I am unable to do what I like the most	1	4	2.59	0.91
3. Illness makes me feel unnecessary sometimes	1	5	3.72	1.12
4. Health problems make me more dependent on others than I want to be	1	5	3.65	1.16
5. Illness makes me a burden to my family and friends	1	5	3.75	1.08
6. My state of health makes me not feel like a full-fledged human	1	5	2.43	0.88
7. I will never be self-sufficient to the extent that I would like to be	1	4	1.68	0.64
8. I think people who are with me are often embarrassed by my illness	1	5	3.80	1.08

TABLE 3 Sex, residence and level of disease acceptance

Level of disease acceptance vs. sex	N	M	SD	Z	p
Female	24	25.12	6.36	0.51	.610
Male	48	25.19	6.08		
Cities	58	25.63	4.47	0.15	.875
Rural area	14	23.21	8.51		

TABLE 4 Disease acceptance and age

Level of disease acceptance vs. age	N	rHO	p
Age	72	-0.13	.261

3.3 | Satisfaction with Life Scale (SWLS)

The mean score obtained in the SWLS scale was 21.86 points, which indicates that the studied group shows a medium level of satisfaction with life. The results are illustrated in Table 6. The Spearman correlation test revealed that the acceptance of disease improves with rising satisfaction with life ($rHO = 0.60$; $p < .001$). Table 7 shows results comparison of satisfaction with life and disease acceptance.

4 | DISCUSSION

An evaluation of the acceptance of disease and satisfaction with life allows us to better understand the adjustment to illness, as well as to reduce negative emotions accompanying the diseased. No one has previously carried out a study concerning the acceptance of disease in patients with chronic limb ischaemia in Poland. Due to the low

TABLE 2 Acceptance of the disease according to the AIS questionnaire

TABLE 5 Educational stage and level of disease acceptance

Level of disease acceptance vs. education	N	M	SD	H	df	p
Primary	6	19.16	7.65	13.60	3	.003
Vocational	35	25.23	5.56			
Secondary	15	24.13	4.99			
Higher	16	28.25	2.20			

TABLE 6 Satisfaction with life assessed using the SWLS questionnaire

SWLS	Min	Max	M	SD
1. In most ways my life is close to my ideal	2	5	3.79	0.67
2. The conditions of my life are excellent	2	5	4.12	0.87
3. I am satisfied with my life	3	6	4.47	0.83
4. So far I have gotten the important things I want in life	1	6	4.81	0.54
5. If I could live my life over, I would change almost nothing	2	6	4.65	0.63

TABLE 7 Satisfaction with life and disease acceptance

Satisfaction with life	N	rHO	p
Level of disease acceptance	72	0.60	.000

number of studies using psychometric tests and concerning patients with PAD, the results obtained for our group was compared with those observed in patients with other chronic malignant and non-malignant diseases (Czerw, Bilińska, & Deptała, 2016; ; Dymecka & Bidzan, 2018).

The study revealed that the level of disease acceptance was moderate (25.17), yet particular areas assessed using the AIS scale differed significantly. On the other hand, higher mean results than those observed in our population were found in patients with malignancies: colon cancer ($M = 27.74$) (Czerw et al., 2016), bladder cancer (mean = 28.8) (Krajewski et al., 2018) and breast cancer ($M = 28.45$) (Czerw et al., 2016). An even higher level of disease acceptance was obtained for patients with prostate cancer ($M = 30.39$) (Czerw et al., 2017). A similar mean value of disease acceptance was observed for patients with non-malignant diseases, such as epilepsy (Staniszewska et al., 2017), systemic connective tissue diseases (Puto et al., 2018), musculoskeletal disorders (Denys et al., 2015), arterial hypertension (Jankowska-Polańska et al., 2014), diabetes mellitus (Kurpas et al., 2012), atrial fibrillation (Martynow et al., 2017), multiple sclerosis (Dymecka & Bidzan, 2018), migraine (Rolka, 2009), Graves' disease and Hashimoto's thyroiditis (Basińska et al., 2008).

Our studies revealed that education was the sole socio-demographic variable statistically significant for the acceptance of disease.

Patients with higher education showed higher illness acceptance. Jankowska-Polańska et al. (2014) studied a population of patients with arterial hypertension and found that gender, age and residence have no impact on the acceptance of disease. Identical results were obtained for patients with diabetes mellitus (Kurpas et al., 2012). A similar study performed in patients with PAD did not confirm any significant relationship between the gender, age and residence of the studied patients and the acceptance of disease. However, the authors were able to demonstrate a statistically significant correlation between illness acceptance and education. On the other hand, Jankowska-Polańska et al. (2014) did not observe such a relationship in their population. Rolka (2009) and Basińska et al. (2008), who analysed patients with migraine and Graves' disease and Hashimoto's thyroiditis, respectively, did not find any association between the acceptance of disease and gender and education. The obtained results show that there is no direct relationship between age or gender and illness acceptance. However, it can be suspected that both these factors indirectly modify this variable.

It has been demonstrated in a population of patients with arterial hypertension that there is a statistically significant relationship between the acceptance of disease and comorbidities, that is ischaemic heart disease, vascular diseases and atherosclerosis (Jankowska-Polańska et al., 2014). Such a correlation was not found in our study. In patients with malignancies, residence (Czerw et al., 2016; Czerw et al., 2016) and education (Chao et al., 2010; Czerw et al., 2017) were the only socio-demographic factors showing a significant impact on disease acceptance. An analysis of the literature reveals that the higher the level of disease acceptance, the higher the satisfaction with life. The general quality of life is significantly correlated with disease acceptance (Czerw et al., 2017; Denys et al., 2015; Jankowska-Polańska et al., 2014). Our results confirm this hypothesis. Many authors report that higher acceptance of disease has a positive impact on the patient-experienced quality of life and improves motivation for taking actions which will improve their well-being (Pompey et al., 2019; Van Bost et al., 2019).

A significant relationship was, however, reported for illness acceptance and the physical mobility of the studied patients. Our results, obtained in a population of patients with PAD, allow us to conclude that patients with less severe limitations of physical mobility presented higher acceptance of disease. Limitations in daily functioning reduce disease acceptance, while maintained physical mobility favours disease acceptance. Malicka and Jankowska-Polańska (Chao et al., 2010; Jankowska-Polańska et al., 2019; Malicka et al., 2011) who analysed the impact physical activity has on the attitude towards a disease presented a similar outcome.

To sum up, a relationship between variables associated with the course of chronic limb ischaemia and disease acceptance and satisfaction with life was not observed for all of the variables. Acceptance is the most important factor for the adjustment to life with a chronic disease. It is the source of an adequate attitude of a patient towards the disease and the therapeutic process and has an impact on their satisfaction with life (Gałuszko, 2013; Pasek et al., 2017).

4.1 | Limitations

The fact that all patients were recruited from one department in one of the largest university hospitals in Poland may pose a possible limitation for this research project. Future studies should include larger number of participants and carry out an extensive analysis of disease acceptance in patients with PAD to demonstrate that the level of own disease acceptance is not significantly related to many clinical and socio-demographic factors. In the available literature, there is little interest for the studies examining level of disease acceptance in patients with PAD using AIS scale. Therefore, the authors compared the obtained results with the ones acquired in patients with other chronic diseases.

5 | CONCLUSIONS

Patients with peripheral artery disease demonstrated moderate acceptance of their disease and satisfaction with life. The education and physical fitness of patients had significant impact on disease acceptance. We observed increased satisfaction with life in patients expressing higher acceptance of their illness.

6 | IMPLICATIONS FOR NURSING POLICY AND PRACTICE

It is necessary that nursing managers introduce the assessment of disease acceptance and quality of life into routine practice to make nurses aware of the level of these determinants in their patients. Working as a part of a multidisciplinary team nurses may help patients to develop their abilities to accept their disease.

We emphasize that the therapeutic process in such a population should include an evaluation of disease acceptance, as it may allow the identification of patients with poor acceptance of disease and thus the planning of therapeutic, prophylactic and educational actions for them.

7 | ETHICAL CONSIDERATIONS

The study was approved by the Independent Bioethical Committee for Scientific Research of the Medical University of Gdańsk (No. NKBBN/67/2018).

CONFLICT OF INTEREST

No conflict of interest has been declared by the author(s).

AUTHOR CONTRIBUTIONS

RP, WMD, PJ: Study design and manuscript writing. RP, MK: Data collection. RP, PJ: Data analysis. WMD, PJ: Study supervision. RP, STS: Critical revisions for important intellectual content.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author, (RP), upon reasonable request.

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