

## *Positive orientation and health behaviors in older patients with atherosclerosis*

### BACKGROUND

Human health is determined by a number of physical, social and psychological factors, including the often considered health behaviors. They are an indispensable part of the health recovery process and are also the basis of prevention in the development of such disorders as atherosclerosis. Health behaviors are reinforced by an individual's resources such as positive orientation, which is composed of optimism, high self-esteem and satisfaction with life. The main objective of the study was to determine whether there is a relationship between positive orientation and health behavior, in a group of people with atherosclerosis.

### PARTICIPANTS AND PROCEDURE

Sixty-one patients, both male and female, in late adulthood were surveyed ( $M = 69.41$ ,  $SD = 5.44$ ). A researcher-designed questionnaire, the Health Behavior Inventory (IZZ) and the Positive Orientation Scale (P-Scale) were

used in the measurement. The study was conducted in accordance with the ethical principles of the 2013 Declaration of Helsinki.

### RESULTS

The results showed that patients with a more positive attitude toward life are more likely to use health-promoting behaviors.

### CONCLUSIONS

There is a positive relationship between positive orientation and health behaviors. Positive orientation can be enhanced through appropriate psychoeducation and psychological support to prevent ill health and improve treatment of patients with atherosclerosis.

### KEY WORDS

positive orientation; health behaviors; atherosclerosis

ORGANIZATION – Department of Psychology, Kazimierz Wielki University, Bydgoszcz, Poland

AUTHORS' CONTRIBUTIONS – A: Study design · B: Data collection · C: Statistical analysis · D: Data interpretation · E: Manuscript preparation · F: Literature search · G: Funds collection

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## BACKGROUND

An important cause of cardiovascular diseases, considered to be diseases of civilization, is human lifestyle (Bodio et al., 2014). Poor diet, low physical activity and a high amount of stress contribute to an increase in the number of illnesses and deaths associated with these diseases. According to the Central Statistical Office (GUS), in the first half of 2020, cardiovascular diseases were responsible for about 41% of all deaths in Poland. Of this group, as many as 20% were between the ages of 85 and 89.

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Atherosclerosis is a specific type of a civilization disease of the circulatory system. It develops in aortas and medium-sized arteries whose walls have been damaged by inflammation, most often caused by excessive blood pressure. Atherosclerotic inflammation results in the deposition and collection of macrophages, lipoproteins, foam cells and extracellular clusters of cholesterol (Kalinin et al., 2021).

Clusters of these particles encased in connective tissue fibers lead to isolation of the site with inflammation and narrowing of the vessel lumen restricting blood flow. This process leads to coronary artery disease. When such clusters of particles break off from the artery wall, they often block it and lead to stroke or heart attack (Beręsewicz & Skierczyńska, 2006). Treatment of atherosclerosis usually requires intravascular surgical procedures. With prevention, which is early treatment of hypertension, the occurrence of atherosclerosis and other diseases of the circulatory system can be avoided.

Atherosclerosis is most common in middle and late adulthood. Contributing to the development of the disease are physical inactivity, smoking, drinking alcohol and poor nutrition resulting in increased blood cholesterol levels (Surma et al., 2020). In this and other cardiovascular and lymphatic diseases, the patient's mental functioning is also important. For as it turns out, such diseases are also associated with the occurrence of mental disorders such as depression, hence the growing need to take care of this issue as well, in order to negate the progression of the disease (Giournta et al., 2020).

The effectiveness of treatment is diminished by patients' noncompliance, in not taking prescribed medications. Many patients take medications irregularly, skip single doses, or shorten their intake due to a subjective sense of physical improvement. These patients often do not know the consequences of their inappropriate behavior (Pudło et al., 2012).

The costs associated with atherosclerosis among the elderly can be reduced by adopting health behaviors (cf. Ślusarska & Nowicki, 2010).

Health behaviors, according to David Gochman (1998; after Heszen & Sęk, 2007), are a set of behaviors, personality traits and cognitive elements associated with maintaining, improving or regaining

health. These include beliefs, expectations and motivations as well as an individual's emotionality, habits and overall health-related activities.

Atherosclerosis can lead to very significant damage to a person's health. In some situations, the goal ceases to be merely to improve health, and becomes a necessity to save lives. This is served, for example, by amputation of the affected limb, which carries a huge psychological cost. The patient's personal resources can help in dealing with the trauma. Many of them can help him to adequately understand the life situation in which he finds himself, to motivate him to take care of his health and to cope with a situation of severe psychological strain. Such resources include positive orientation.

Positive orientation, in the premise of Gian Vittorio Caprara's (2009) theory, is a permanent personality trait of humans. Caprara defines positive orientation as the opposite of depression. It is a biologically conditioned ability related to the system of giving emotional meaning to life experiences. Its presence is related to a person's ability not to give up when there are life failures, adversities or even visions of imminent death. It is a basic, innate human disposition that enables a person to live (Caprara et al., 2010; after Sobol-Kwapińska, 2014).

Positive orientation is considered a predictor of goal-oriented motivation (Paliga et al., 2019), and is also associated with commitment to action, which is particularly important during the process of hospitalization and treatment (i.e., adherence to medical recommendations). Among other things, it is related to one of the components of positive orientation, optimism, which is associated with improving physical health (Schou-Bredal et al., 2021). It also affects perceptions of interpersonal relationships and social support.

Positive orientation provides a sense of being worthy of respect, emphasizes the value of life, and reinforces hope for a promising future (Sobol-Kwapińska, 2014). Thus, positive orientation may be considered a key resource for patients with atherosclerosis, who must revise their lifestyle habits and often adapt to losses (i.e., limb amputation). It is associated with greater patient involvement in the treatment and recovery process (Sobol-Kwapińska, 2014). However, the literature lacks empirical evidence supporting the association between atherosclerosis and positive orientation.

In contrast, studies on health behaviors of patients with atherosclerosis show that they are undertaken to a limited extent (Pakulska & Gorzkowicz, 2015). Thus, the problem addressed in the research described in this article, which aimed to verify whether there is a relationship between positive orientation and health behavior in a group of people with atherosclerosis, is timely and useful. Two research questions were formulated:

1. Is there a relationship between positive orientation and health behavior in the studied group of angiological patients?
2. Do demographic variables modify the relationship between positive orientation and health behaviors in the studied group of angiological patients?

## PARTICIPANTS AND PROCEDURES

### PARTICIPANTS

The study group consisted of 61 patients in the age range of 60 to 82 years. Both men ( $n = 36$ ) and women ( $n = 25$ ) were surveyed. Their inclusion criterion was a diagnosis of atherosclerosis. The duration of their disease ranged from 1 to 30 years ( $M = 6.36$ ,  $SD = 6.04$ ). Detailed demographic characteristics of the sample are provided in Table 1.

### MEASURES

The study used a researcher-designed questionnaire to collect participants' demographic information including: gender, education, place of residence, number of children, work activity and presence of a comorbid disease. In addition, two questionnaires were used:

*The Health Behavior Inventory* (IZZ; Juczyński, 2009) is a tool used to measure health behavior. It consists of 24 items, which are rated using a five-point scale from 1 (*almost never*) to 5 (*almost always*). The results of the inventory provide an overall health behavior index and scores for four categories of health behavior. The first is eating habits relating to the type and amount of food consumed, which in the process of checking psychometric properties received a reliability score of  $\alpha = .65$  (in the self-reported study,  $\alpha = .78$ ). The second is preventive behavior relating to the degree to which a person follows medical recommendations and obtains information about both health and disease, which has a reliability score of  $\alpha = .61$  (in our own study  $\alpha = .41$ ). The third is positive mental attitude, which includes avoidance of overly strong emotions, stress or tension as well as situations that have a depressing effect. The reliability of this subscale is  $\alpha = .60$  (in our study,  $\alpha = .41$ ). The fourth category is made up of health practices that relate to daily physical and recreational activities along with sleep habits. The reliability of the last scale in studies of psychometric properties was  $\alpha = .64$  (in our own research  $\alpha = .52$ ). The research confirmed the high internal consistency of the tool ( $\alpha = .85$ ) and its theoretical relevance (Juczyński, 2009). In our study, the tool's reliability was  $\alpha = .77$ .

*The Positive Orientation Scale* (Positivity Scale [P-Scale]; Caprara et al., 2012), in the Polish adap-

tation by Łaguna et al. (2011), is used to measure positive orientation as assumed by Caprara's theory. The scale consists of 8 statements to which the respondent must respond via a five-point scale from

**Table 1**

*Distribution of selected demographic characteristics in the sample (N = 61)*

Variable	Quantity n (%)	Critical role of positive orientation
Marital status		
Single	1 (2)	
Married	41 (67)	
Widowed	18 (29)	
Divorced	1 (2)	
Place of residence		
Village	10 (16)	
Small city (up to 20,000 inhabitants)	14 (23)	
Medium city (20,000 to 100,000 inhabitants)	9 (15)	
Large city (more than 100,000 inhabitants)	28 (46)	
Education		
Elementary	9 (15)	
Vocational	21 (34)	
Secondary	24 (39)	
Higher	7 (12)	
Work/Professional activity		
Active	7 (12)	
Retirement	47 (77)	
Pension	6 (9)	
Unemployed	1 (2)	
Number of children		
0	2 (3)	
1	11 (18)	
2	28 (46)	
3	13 (22)	
4	5 (8)	
5	2 (3)	
Comorbid disease		
Present	39 (64)	
Not present	22 (36)	

1 (*strongly disagree*) to 5 (*strongly agree*). The Polish adaptation of the scale is characterized by both a satisfactory reliability index ( $\alpha = .78$ ) and accuracy, indicating its applicability in scientific research (Łaguna et al., 2011). In our study, a reliability of  $\alpha = .77$  was obtained.

## ETHICAL CONSIDERATIONS

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The study was conducted in accordance with the ethical principles of the 2013 Declaration of Helsinki and was approved by the Commission for Research Ethics at the Faculty of Psychology of Kazimierz Wielki University in Bydgoszcz (opinion no. 2/10.06.2021). The study was conducted at the Jan Biziel University Hospital No. 2 in Bydgoszcz in direct contact with the individuals, using self-report questionnaires. Before the start of the study patients were asked to give written consent to participate in the study, after having been informed of its voluntariness and anonymity with the possibility of ceasing to participate at any time.

## STATISTICAL ANALYSIS

Statistical analyses were performed using Statistica 13 for Windows. The Shapiro-Wilk  $W$  test was used to check the normality of the distributions of the variables studied. To verify hypotheses of relationships between variables, Pearson's simple linear cor-

relation test was used. To verify the hypotheses of relationship modification, multiple regression analyses were used.

## RESULTS

At the beginning of the statistical analyses, the distribution of results and descriptive statistics were checked for the positive orientation and health-seeking behavior of the participants. The results are shown in Table 2.

Some of the distributions obtained deviated in shape from the normal distribution. However, since their results for skewness and kurtosis deviate from those for the normal distribution to a weak degree, parametric tests were used to calculate the results (Wiktorowicz et al., 2020).

Based on the sten norms of the Positive Orientation Scale, the average score obtained in the study ranks at 6 sten. This means that, on average, those surveyed show an average level of positive orientation.

The average results obtained for health behaviors in relation to norms show that in the study group, the average level of overall health behavior severity is between the 6th and 7th sten. This means that the respondents showed slightly more frequent than average severity of health behaviors. The severity of health behavior categories was compared, according to the assumptions of the Health Behavior Inventory, to the average results obtained in the validation

**Table 2**

*Descriptive statistics for the P-Scale and IZZ*

Variable	<i>M</i>	<i>Me</i>	Min	Max	<i>SD</i>	Skew	Kurt	<i>W</i>	<i>p</i>
Positive orientation	29.82	31	17	40	4.12	-0.52	1.10	0.96	.074
Overall health behavior	90.11	92	65	106	10.42	-0.46	-0.58	0.96	.037
Positive mental attitude	23.18	24	17	29	2.79	-0.07	-0.59	0.97	.210
Preventive behavior	23.43	24	13	29	3.58	-0.76	0.30	0.95	.010
Proper eating habits	21.13	22	12	30	4.56	-0.11	-0.83	0.97	.120
Health practices	22.39	23	14	30	3.64	-0.54	-0.04	0.96	.048

Note. P-Scale – Positive Orientation Scale; IZZ – Health Behavior Inventory; skew – skewness; kurt – kurtosis;  $W$  – Shapiro-Wilk test.

**Table 3**

*Correlations between positive orientation and health behaviors*

Variable		Overall health behavior	Positive mental attitude	Preventive behavior	Proper eating habits	Health practices
Positive orientation	<i>r</i>	.45	.52	.17	.26	.40
	<i>p</i>	< .001	< .001	.195	.044	.002

study of the tool. Indicators of category severity are the sum of responses to the questions comprising it divided by 6. The results thus obtained for the average score on the survey are 3.86 for positive mental attitude, 3.91 for preventive behavior, 3.52 for proper eating habits and 3.73 for health practices. All of these scores are higher than the average scores obtained in the tool's validation study.

Pearson's *r* correlation analysis was then conducted between positive orientation and all dimensions of health behavior (see Table 3).

The results of the analysis indicate that there is a moderate positive correlation between positive orientation and the overall health behavior

scale, positive mental attitude and health practices, and a low positive correlation between positive orientation and proper eating habits. Only the correlation of preventive behavior and positive orientation is statistically insignificant. When patients are characterized by a more positive orientation they are more likely to use health behaviors except preventive behaviors.

In the course of further analysis, we tested whether mediating variables such as gender, age, education and the presence of comorbidities could modify the relationship between positive orientation and health behavior. For this purpose, multiple regression analysis was used (see Table 4).

*Critical role of positive orientation*

**Table 4**

*Positive orientation and demographic variables as predictors of health behavior*

Overall health behavior								
Predictor	b*	SE from b*	b	SE from b	t	p	Partial correlation	R <sup>2</sup>
Positive orientation	0.47	0.12	1.19	0.30	3.94	< .001	0.47	.24
Gender	0.05	0.13	1.07	2.69	0.40	.692	0.05	
Age	0.06	0.12	0.11	0.24	0.45	.652	0.06	
Education	0.06	0.12	1.14	2.47	0.46	.645	0.06	
Presence of comorbidities	-0.18	0.12	-3.95	2.63	-1.50	.139	-0.20	
<i>F</i> (5, 55) = 3.46, <i>p</i> = .009								
Positive mental attitude								
Predictor	b*	SE from b*	b	SE from b	t	p	Partial correlation	R <sup>2</sup>
Positive orientation	0.56	0.11	0.38	0.08	5.01	< .001	0.56	.34
Gender	-0.02	0.12	-0.14	0.67	-0.21	.835	-0.03	
Age	0.19	0.12	0.10	0.06	1.64	.107	0.22	
Education	-0.05	0.11	-0.29	0.61	-0.47	.640	-0.06	
Presence of comorbidities	-0.21	0.11	-1.19	0.65	-1.82	.074	-0.24	
<i>F</i> (5, 55) = 5.79, <i>p</i> < .001								
Preventive behavior								
Predictor	b*	SE from b*	b	SE from b	t	p	Partial correlation	R <sup>2</sup>
Positive orientation	0.17	0.13	0.15	0.11	1.27	.052	0.17	.08
Gender	-0.08	0.14	-0.56	1.02	-0.55	.210	-0.07	
Age	0.10	0.14	0.07	0.09	0.75	.585	0.10	
Education	0.21	0.13	1.48	0.93	1.59	.455	0.21	
Presence of comorbidities	-0.01	0.13	-0.06	0.99	-0.06	.117	-0.01	
<i>F</i> (5, 55) = 0.94, <i>p</i> = .465								

*Table 4 continues*

**Table 4**

*Table 4 continued*

Predictor	Proper eating habits								
	b*	SE from b*	b	SE from b	t	p	Partial correlation	R <sup>2</sup>	
Positive orientation	0.28	0.13	0.30	0.14	2.15	.036	0.28	.13	
Gender	0.20	0.14	1.85	1.26	1.47	.148	0.19		
Age	-0.10	0.13	-0.08	0.11	-0.72	.473	-0.10		
Education	0.01	0.13	0.13	1.15	0.11	.914	0.01		
Presence of comorbidities	-0.19	0.13	-1.79	1.23	-1.46	.150	-0.19		
<i>F</i> (5, 55) = 1.65, <i>p</i> = .162									
Predictor	Health practices								
	b*	SE from b*	b	SE from b	t	p	Partial correlation	R <sup>2</sup>	
Positive orientation	0.42	0.13	0.40	0.11	3.33	.002	0.41	.17	
Gender	-0.01	0.13	-0.10	0.98	-0.08	.937	-0.01		
Age	0.04	0.13	0.00	0.09	0.27	.785	0.04		
Education	-0.02	0.12	-0.20	0.90	-0.19	.847	-0.03		
Presence of comorbidities	-0.12	0.13	-0.90	0.96	-0.94	.350	-0.13		
<i>F</i> (5, 55) = 2.27, <i>p</i> = .060									

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Most of the regression models proved to be statistically insignificant, except for the models for demographic variables modifying the relationship between positive orientation and the overall health behavior scale and positive mental attitude. Although some of the models were statistically significant, they only confirmed a statistically significant correlation between some health behaviors and positive orientation. Regression analyses showed that the demographic variables analyzed did not modify the relationship between positive orientation and health behaviors.

## DISCUSSION

Research conducted at the intersection of positive psychology and health psychology provides clues to the importance of positive orientation in the treatment process. On the one hand, optimism, satisfaction with life and a person's self-esteem have significant meanings for explaining a person's mental states (including disorders such as depression) as well as his social functioning (Petrović, 2010). On the other hand, positive orientation is believed to have significant value in predicting a person's optimal physical functioning, including what his or her health will be like (Caprara, 2009).

This ability also gives people the strength to fight adversity without exception across cultures both in European and Asian contexts (Caprara et al., 2012). This provides an opportunity to conduct not only cross-cultural research, but also cross-cultural health promotion programs. In the practice of medicine itself, on the other hand, enhancing positive orientation can also counteract the negative health effects of psychological conditions such as loneliness lowering the sense of meaning in life, which can be crucial in the treatment process (Borawski, 2022).

The gathered results proved that patients with angiological diseases were characterized by a similar average level of positive orientation as in the sample of the general population (see Łaguna et al., 2011) or the group of people with chronic diseases (Kupcewicz et al., 2019).

Positive orientation falls within the definition of health behavior established by Gochman (1997). Then, the average values obtained by patients on the Positive Orientation Scale correspond to the average levels of patients' health behaviors obtained in other studies (Pakulska & Gorzkowicz, 2015). Meanwhile, positive orientation translates into engagement in life pursuits, including maintaining health (Łaguna et al., 2011), and is additionally strongly related to self-efficacy (Oleś et al., 2013); thus it can be assumed that people with atherosclerosis, with higher levels

of positive orientation, are more likely to engage in health behaviors.

Patients with lower limb atherosclerosis were proven to be characterized by global life satisfaction (Kurowska, 2013), which is one of the components of positive orientation. Another is optimism (Roy et al., 2010). Research proved that people who are more optimistic have lower levels of inflammation leading to the formation and exacerbation of atherosclerosis. Moreover, a study by Giltay et al. (2004) found that optimism has a protective role against the fatal consequences of cardiovascular disease regardless of what these diseases resulted from. The relationship between positive orientation and health behavior, in addition to our own research, was also confirmed by Kupcewicz et al. (2019) study of patients with chronic diseases. Moreover, Caprara et al. (2010; after Sobol-Kwapińska, 2014) proved that positive orientation explains a person's health status better than optimism, self-esteem and life satisfaction separately.

Furthermore, the influence of mediating variables on the relationship between positive orientation and health behavior was examined. Gender, education and the presence of comorbidities proved to be irrelevant. This is consistent with Caprara's assumption that positive orientation is a universal and innate human disposition. Thus, it can be considered independent of gender and socioeconomic status, as confirmed by Caprara's research (2012; after Łaguna et al., 2011). Nevertheless, gender is assumed to determine health behavior (Gruszczynska et al., 2015). This assumption, however, was not confirmed by the present research or a study on cardiac patients (Szenk-Czyczerska et al., 2021).

There are more ambiguous results. According to Andruszkiewicz and Basińska (2006) there is a significant relationship between education and health behavior. However, both the theoretical assumptions of Caprara (2012; after Łaguna et al., 2011) and the study conducted by Kupcewicz et al. (2019) proved no relationship between education and positive orientation – hence the possible lack of a significant effect on health behavior in the present work.

Comorbidities were also found to be irrelevant in the analyzed model. It may be due to the sample selection that included patients with atherosclerosis. In turn, the most common comorbidities were hypertension and diabetes. All these diseases are inter-related because diabetes and hypertension are risk factors for atherosclerosis. In addition, the treatment of these diseases and, most importantly, the applied behaviors that promote recovery when they occur, focus on the same spheres of functioning (Wasilewski & Poloński, 2010). Due to this relationship, in the context of health behavior, all diseases may have been treated equally by the respondents, which may have meant that the presence of comorbidities did not significantly affect the results.

## LIMITATIONS

The most important limitations of the present study include the limited number of participants. It is possible that this factor weighed on the lack of statistically significant results. Further questions concern the reliability of the IZZ scale implemented. As in the validation studies, this study obtained a satisfactory reliability coefficient for the general health behavior scale. However, the reliability of the subdimensions of health behaviors is questionable in both studies. For this reason, the results obtained with the Health Behavior Inventory should be analyzed with distance and caution. The unsatisfactory reliability of the subscales of the Health Behavior Inventory may explain the lack of a significant relationship between preventive behaviors and positive orientation.

*Critical role of positive orientation*

## CONCLUSIONS

The most important findings of the above study include the following:

1. The presence of a positive relationship between positive orientation and health behaviors. Despite methodological shortcomings, the present results are part of the discussion on the growing importance of positive orientation for patient functioning.
2. Need for further empirical verification of the relationships between health behavior and positive orientation on a larger sample and with a different health behavior survey tool.
3. Implementation of the results to more effectively help patients with atherosclerosis. Thus, their recovery process should focus not only on treating the physical condition, but also on enhancing self-esteem, optimism and satisfaction with life. With proper care of the mental sphere, patient-medical staff cooperation can be improved, but also the patient's recovery can be accelerated and behaviors that can lead to relapse can be effectively reduced.

## DISCLOSURE

The authors declare no conflict of interest.

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