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Original article

FACTORS AFFECTING THE QUALITY OF LIFE IN PATIENTS WITH CORONARY HEART DISEASE AND THE ROLE OF NURSES FOR PREVENTION

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ABSTRACT

Purpose: The aim of the study is to investigate the influence of some personal factors such as anxiety and Type D personality on the health-related quality of life in patients with chronic ischemic heart disease.

Methods: Subject of the study are146 patients with chronic ischemic heart disease and a control group of 146 individuals.The survey was conducted through a direct individual questionnaire containing three tools: an adapted questionnaire for the assessment of personal anxiety; a questionnaire for the study of Type D personality (DS-14); a standardized questionnaire for the assessment of the health-related quality of life (EQ-5D-3L).

Results: Patients with anxiety and characteristics for type D personality were 45 (30.8%) and subjects from the control group - 13 (8.9%). There was a statistically significant difference between the relative shares of the two groups (t=4.86, p=0.000). Patients with type D personality tested have higher levels of anxiety. The relationships between the areas of HRQL, anxiety and Type D personality were measured by correlation analysis. The established odds ratio shows that patients with a Type D have a 2.94-fold greater risk of disease progression (OR 2.94 (95% CI) 1.84-4.71, P <0.0001); for patients with personal anxiety this risk is higher (OR 3.53 (95% CI) 2.15-5.79, P <0.0001).

Conclusion: The significance of the type of personality and the psycho-emotional resources for coping with the disease have been identified as an important component of thealth care. Nurses can play a leading role in shaping health culture and providing better prophylactic care.

Keywords: type D personality, health-related quality of life, prevention, nurses, health care,

INTRODUCTION

Cardiovascular disease is the most common cause of death worldwide and causes enormous socio-economic costs to society. In the last few years, progress can be observed in prevention in several areas: reducing the number of high-risk patients by introducing effective strategies to reduce the modifiable risk factors. However, the incidence of ischemic heart disease (IHD) and stroke is increasing. At the same time, cardiovascular interventions and the need for rehabilitation are increasing. These processes can be influenced by more effective prophylaxis based on early identification of risk factors, lasting change to a healthy lifestyle, smoking restriction, optimal physical activity, stress copying, etc. Prevention should be targeted at both high-risk patients and the general population [1, 2].

The autonomous role of nurses in the prevention of coronary heart disease is not clearly regulated in Bulgaria. Independent activities related to the promotion, prevention, health education and monitoring of patients with ischemic heart disease are poorly covered in the nursing profession.

The purpose of the study is to investigate the influence of some personal factors such as anxiety and Type D personality on the health-related quality of life in patients with chronic ischemic heart disease.

To accomplish the goal, the following tasks were set:

1. Study Type D personality and anxiety - risk factors for coronary heart disease.
2. Explore some aspects of health-related quality of life (HRQL).
3. Study the dependencies between HRQL, anxiety and Type D personality.
4. Analyze the role of the nurse in the prevention of ischemic heart disease (IHD).

MATERIALS AND METHODS

A "control-case" study was conducted using structured self-assessment questionnaires. Two groups were identified by random selection: 146 patients with chronic ischemic heart disease (CIHD) and a control group of 146 subjects. The two groups are equal by gender. The study covers adults who have given informed consent to participate in compliance with the ethical principles outlined in the Helsinki Declaration. The following research methods were used:

- A standardized questionnaire for the study of health-related quality of life (HRQL) - EQ-5D-3L (an adapted Bulgarian version). The test has identified prob-

lems in the following areas: mobility; self-care; usual routine; pain/discomfort; anxiety.

➢ A questionnaire for identifying characteristics for Type D personality - (DS-14) (adapted Bulgarian version). The questionnaire consists of two parts: negative affectivity and social inhibition. The evaluation of each statement is done through the Likert Scale with 5 levels: wrong, rather wrong, neutral, rather true, true.

➢ An adapted Bulgarian questionnaire for the assessment of personal anxiety - Trait Anxiety Inventory. The evaluation of the answers is performed under a 4-point Likert scale: never, rarely, often, always. Norms for the Bulgarian population: men (mean = 43.7, SD = 9.1); women (mean = 48.8; SD = 9.6).

Statistical methods:

• Descriptive statistical methods:

- Variation analysis - to sum up, quantifiable data.

- Alternative analysis - to sum up quantifiable data.

• Parametric analysis - for normally distributed quantitative parameters:

- Independent Samples T-test to test hypotheses for a statistically significant difference between two independent samples.

- Single factor and multifactor regression analysis to study the overall impact of several factors on a given result magnitude.

• Nonparametric analysis: $\chi 2$ - Pearson's criterion; Mann-Whitney U-test for differences in unrelated samples.

• Correlation analysis - to reveal causal links and interaction between variables; Pearson linear correlation coefficient (r).

• For the significance level of the zero hypothesis, P=0.05 was assumed, with a confidence interval of 95%.

Data processing and analysis waere performed with SPSS v.19 statistical software.

MS Excel for Windows was used for the graphical presentation of the results.

RESULTS

The average age of respondents is 61.15 ± 2.35. Most of them are married 86 (58.9%), with secondary education 82 (56.2%) and living in the city. The mean age of the control group individuals is 54.50 ± 2.12. Majority of which 98 (67.1%) are married, (73.3%) had higher education.

All patients have been diagnosed with chronic ischemic heart disease (CIHD). The cases with chronic IHD and arterial hypertension prevailed. Patients with stable angina pectoris have 66 (55.02%); cardiac arrhythmia - 35 (24%); a painless form of the IHD - 46 (31.50%). 89 patients have arterial hypertension and duration of the disease for over 5 years.

The studies of the scientists prove that the state of psyche and personality traits are key to heart health as well as traditional risk factors. Studies have shown an association between a Type D person and the incidence of cardiac events as well as a deterioration in the quality of life. Findings focus on patient-centered health outcomes such as health status and HRQL [3, 4].

The results of the Type D personality study and anxiety in the two groups show some differences that give rise to comparison and interpretation. A comparison between the mean values of the type D personality results of patients and the control group was performed by an Independent sample T-test. A statistically significant difference in the mean values between "cases" and a control group for the Type D Scale (DS-14) was found for both parts: social inhibition and negative affectivity (Table 1).

Table 1. Average values under Type D Personality Scale of the respondents by groups

	patients		**controls**		
Type D Scale	**mean**	**SD**	**mean**	**SD**	**t-test, p-value**
Type D personality	22,73	10,12	17,90	6,88	t=4.75; p<0.001
Negative affectivity	12,77	6,88	10,54	4,57	t=3.29; p<0.001
Social inhibition	10,12	16193	7,60	4,07	t=3.90; p<0.001

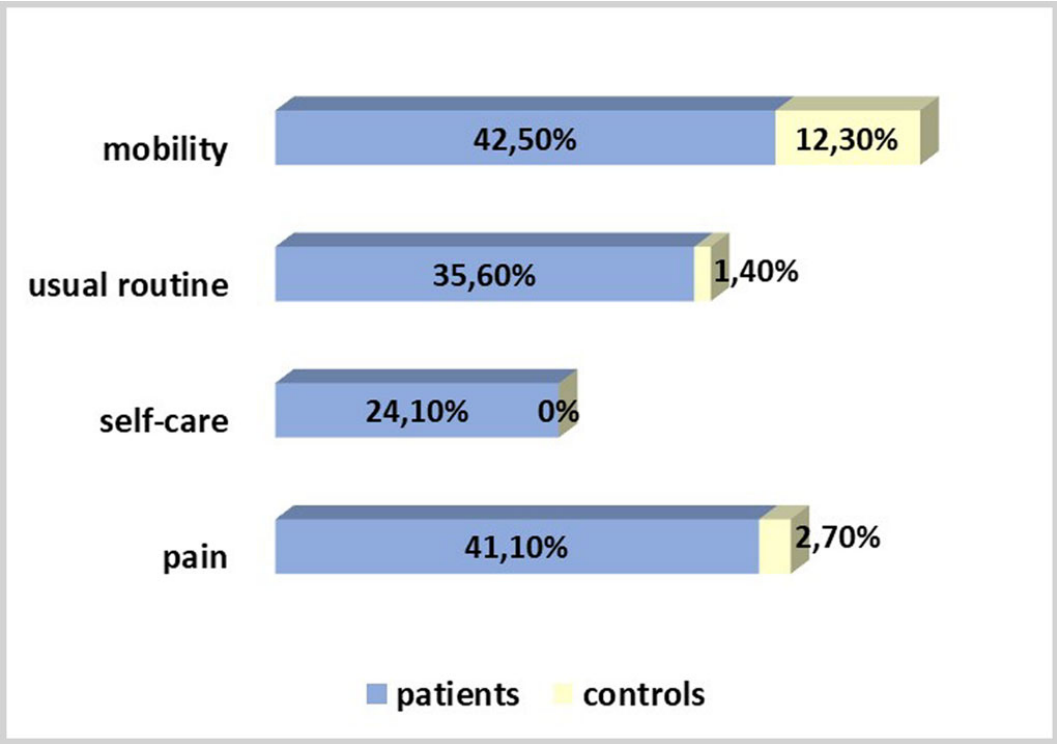
Patients with *anxiety and characteristics for type D personality* were 45 (30.8%) and subjects from the control group - 13 (8.9%). There was a statistically significant difference between the relative shares of the two groups (t=4.86, p=0.000).

Patients with type D personality tested have higher levels of anxiety. For the same group, higher values were found for the two dimensions of personality type D: social inhibition and negative affectivity, as compared to those in the control group.

The results of the *personal anxiety* test show differences in the two study groups. Patients with anxiety were 72 (49.3%), individuals in the control group were 32 (21.9%), (χ^2=23.89, p<0.001). The mean values of the responses were as follows: patients - 45.79 (SD=9.09), controls - 42.01 (SD = 6.53). There was a statistically significant difference in anxiety level between the patients and the control group (t=4.07, p<0.001).

The number and the relative share of study groups (patients and controls) that exhibit anxiousness and have problems in the areas related to the quality of life have been identified: mobility; self-care; usual routine; pain/discomfort (Figure 1).

Fig. 1. Distribution of patients and controls with anxiety and HRQL problems



Patients with *anxiety* and problems in the *mobility* dimension were 60 (41.1%). Individuals in the control group on the same indicators were 4 (2.7%).A nonparametric test of the working hypothesis with a level of significance P=0.05. Man-Whitney U-Test was performed and showed a significant difference between the relative proportions of patients and controls that exhibit anxiety and difficulty in physical activity (Z=7.09, p=0.000).

Patients with *self-care* difficulties and *anxiety* are 35 (24.0%). There are no individuals with such problems in the control group. A relationship between anxiety and self-care options was found in patients (Z=6.29; p=0.000).

Patients who have difficulties in performing *"usual routine"* and *anxiety* disorder are 52 (35.6%). Individuals from the control group with the same problems were 2 (3.7%). There was a statistically significant difference in the relative proportions of patients and controls with anxiety and problems in the sphere of "daily activities" (Z=7.52, p=0.000).

Patients with *anxiety* and *"pain/discomfort"* were 62 (42.5%), controls were 18 (12.3%). Man-Whitney U-Test shows a significant difference between the relative proportions of patients and controls that exhibit anxiety and pain/discomfort (Z=5.76; p=0.000).

The responses of both Type D personality and the EQ-5D quality of life questionnaire were analyzed. There is a relationship between personality type D and some aspects of quality of life: mobility, common usual routine and pain/discomfort (Table 2).

Table 2. Dependence between Type D Person Dimensions and HRQL

EQ-5D – dimensions	negative affectivity	social inhibition
Mobility	χ^2=13.0; p=0.000	χ^2=20.44; p=0.000
Self-care	χ^2=7.32; p=0.007	χ^2=3.76; p=0.052
Usual routine	χ^2=21.71; p=0.001	χ^2=16.66; p=0.000
Pain/discomfort	χ^2=11.18; p=0.001	χ^2=8.51; p=0.003

There was no association between HRQL and the two personality dimensions of type D for respondents in the control group (P>0.05).

Dependence between Type D personality, anxiety and HRQL

The relationship between anxiety, type D personality and patient health assessment has been analyzed. The established odds ratio shows that patients with a Type D have a 2.94-fold greater risk of disease progression (OR 2.94 (95% CI) 1.84-4.71, P<0.0001); for patients with personal anxiety this risk is higher (OR 3.53 (95% CI) 2.15-5.79, P <0.0001). Patients exhibiting type D and anxiety have a high risk of deterioration (OR 5.06 (95% CI) 2.56-10.02, P<0.0001). The results obtained do not take into account the impact of other

risk factors associated with the disease.

A single- and multifactorial linear regression analysis was carried out to determine the influence of some personal factors on the quality of life and health (Table 3).

Table 3. Single-factor regression model for the influence of anxiety and type D Personality on HRQL

	Beta	B±SE	t	P	OR	95%CI	P
Anxiety	-0.523	0.123±0.166	-7.357	0.000	3.530	2.151; 5.793	0.000
Type D personality	-0.184	0.375±0.167	-2.246	0.026	2.948	1.848; 4.701	0.000
Negative affectivity	-0.463	0.438±0.229	-6.267	0.000	1.872	1.187; 2.951	0.006
Social inhibition	-0.259	0.988±0.307	-3.220	0.002	3.641	2.236; 5.292	0.000

Factors proven to be statistically significant in the single-factor analysis were analysed by multi-factor stepwise regression analysis. According to the obtained model, the reduced quality of life and health score of 41% of patients was due to the influence of personality type D and personal anxiety (R=0.647, P<0.0001). The overall impact of psychosocial factors explains 51% of variations in self-assessment of health and quality of life (R^2=0.511, P<0.0001).

The relationships between the areas of HRQL, anxiety and Type D personality were measured by correlation analysis. The correlation coefficient of Spearman was calculated (Table 4).

Table 4. Correlation coefficients of anxiety and Type D personality on dimensions of HRQL

	Anxiety	Type D Personality	Health	Mobility	Self-care	Usual routine	Pain/ discomfort
Anxiety	1.000	0.395	-0.492	0.481	0.390	0.555	0.423
Type D		1.000	-0.221	0.233	0.267	0.251	0.332
Health			1.000	-0.520	-0.497	-0.600	-0.386
Mobility				1.000	0.568	0.600	0.480
Self-care					1.000	0.627	0.443
Usual routine						1.000	0.455
Pain							1.000

The results are statistically significant at p<0.01

Increasing problems with mobility, self-care and day-to-day activities reduce patient's self-assessment of health. Higher anxiety values are reflected in the increasing problems in the observed HRQL dimensions. With an increase in the type D personality values, the health assessment decreases.

DISCUSSION

Knowing the factors related to individual differences in health behaviour is essential to identify high-risk patients and improve secondary prevention. Patients with different personality characteristics differ in the way they express disease symptoms. There is a need for qualified healthcare professionals to take care of them [5, 6]. Knowledge of personal risk factors would direct medical professionals to work for more effective health care practices and improved lives.

Frederix I, Dendale P, Schmid JP (2017) recommend a comprehensive approach to prevention of IBS: risk assessment; physical activity, dietary nutrition, training program development, control of risk factors; psychosocial support; adherence to therapy; health education of the patient [7].

Patient education has an important role to play in their active involvement in the healing process. Experience from applying training programs shows that they have a positive impact on lifestyle, and lifestyle changes have an impact on health outcomes. This new knowledge is effective both for people with insufficient health culture and for educated people [8, 9]. According to medical specialists, the acquisition of control over health behaviour aims to improve the quality of life of patients [4].

One-third of the patients surveyed in this study reported that they needed training from nurses to control their symptoms, information on the disease and possible risks and complications. Gender, place of residence and education do not affect attitudes towards healthy behaviour (P>0.05).

In Bulgaria, the routine performance of prophylactic activities by nurses is difficult to apply. The reasons are complex: the health fund monopoly, the organization of work and pay for health care professionals, the shortage of nurses and other specialists, the low level of autonomy in the work of nurses, the lack of multidisciplinary teams, etc.

The nurses are qualified to carry out autonomous

activities to provide health information and guidelines for improving lifestyle. They can monitor patients, screen for risk factors and other activities [10]. Educational interventions seriously affect patients' health behaviour and personal responsibility [11].

According to Jennings and Astin (2017), effective prevention of CVD can be achieved through consolidated efforts by physicians, nurses, pharmacists, psychologists, nutritionists and other healthcare professionals. The most appropriate prevention models are those with a common risk management approach (i.e. covering all risk factors that affect the cardiovascular system), using counselling to actively alter patient behaviour, setting goals and regular feedback with medical professionals [12].

Limitations

A possible limitation of the study is that the comparison groups do not exactly match in age and educational status.

CONCLUSION

Based on the results obtained, we can conclude that anxiety, negative affectivity and social isolation –type D dimensions are interrelated and are personal factors leading to a change in HRQL of patients with chronic ischemic heart disease.

There is a need for patient education to control disease manifestations. The nursing resource is not fully used to train patients in dietary, hygienic and motor regimen. The introduction of a standard on health care will ensure the effectiveness of autonomous nursing activities in the field of prevention and health education.

Nurses can play a leading role in shaping health culture and providing better prophylactic care. In order to make preventive measures as effective as possible, they must become part of the culture of society. Further research is needed to identify the factors that motivate people to behave responsibly toward personal health.

REFERENCES:

1. Panev A, Panayotov K. Methodological issues of the ischemic heart disease prevention. *Social Medicine*. 2012; 20(2/3):26-29. [in Bulgarian]

2. Piepoli MF, Hoes AW, Agewall S, Albus C, Brotons C, Catapano AL, et al. 2016 European Guidelines on cardiovascular disease prevention in clinical practice: The Sixth Joint Task Force of the European Society of Cardiology and Other Societies on Cardiovascular Disease Prevention in Clinical Practice (constituted by representatives of 10 societies and by invited experts) Developed with the special contribution of the European Association for Cardiovascular Prevention & Rehabilitation (EACPR). *Eur Heart J.* 2016 Aug 1;37(29):2315-81. [PubMed] [Crossref]

3. Denollet J, Schiffer AA, Spek V. A general propensity to psychological distress affects cardiovascular outcomes: evidence from research on the type D (distressed) personality profile. *Circ Cardiovasc Qual Outcomes.* 2010 Sep;3(5):546-57. [PubMed] [Crossref]

4. Grande G, Romppel M, Barth J. Association between type D personality and prognosis in patients with cardiovascular diseases: a systematic review and meta-analysis. *Ann Behav Med.* 2012 Jun;43(3):299-310. [PubMed] [Crossref]

5. Dunbar SB, Butts B, Reilly CM, Gary RA, Higgins MK, Ferranti EP, et al. A pilot test of an integrated self-care intervention for persons with heart failure and concomitant diabetes. *Nurs Outlook.* 2014 Mar-Apr;62(2):97-111. [PubMed] [Crossref]

6. Wallström S, Ekman I. Person-centred care in clinical assessment. *Eur J Cardiovasc Nurs.* 2018 Oct;17(7): 576-9. [PubMed] [Crossref]

7. Frederix I, Dendale P, Schmid JP. Who needs secondary prevention? *Eur J Prev Cardiol.* 2017 Jun;24(3_suppl): 8-13. [PubMed] [Crossref]

8. Alston LV, Peterson KL, Jacobs JP, Allender S, Nichols M. A systematic review of published interventions for primary and secondary prevention of ischaemic heart disease (IHD) in rural populations of Australia. *BMC Public Health.* 2016 Aug 27;16:895. [PubMed] [Crossref]

9. Hung DY, Glasgow RE, Dickinson LM, Froshaug DB, Fernald DH, Balasubramanian BA, et al. The chronic care model and relationships to patient health status and health-related quality of life. *Am J Prev Med.* 2008 Nov;35(5 Suppl):S398-406. [PubMed] [Crossref]

10. Michalkova H, Sedova L, Tothova V, Olosarova V. The role of nurses in the prevention of cardiovascular diseases. *Journal of Nursing, Social Studies, Public Health and Rehabilitation.* 2016; (3-4):134-140.

11. Peterson JC, Link AR, Jobe JB, Winston GJ, Marina Klimasiewfski E, Allegrante JP. Developing self-management education in coronary artery disease. *Heart Lung.* 2014 Mar-Apr; 43(2):133-9. [PubMed] [Crossref]

12. Jennings C, Astin F. A multidisciplinary approach to prevention. *Eur J Prev Cardiol.* 2017 Jun; 24(3S):77-87. [PubMed] [Crossref]

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