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The impact of knowledge on the functioning of patients with coronary artery disease

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ABSTRACT

Introduction: The functioning of patients with chronic disease is inseparably connected with the understanding of the essence of the disease, acceptance of the disease, and taking measures leading to achieving the best possible treatment results.

Aim of the study: The aim of the study was to evaluate the influence of patients' knowledge on their functioning in coronary artery disease, which was assessed with the aid of the tool 'The Functioning in Chronic Illness Scale' (FCIS).

Materials and methods: A single-centre prospective, observational study was conducted on 202 patients hospitalized due to coronary artery disease. In the study, patients' knowledge was assessed (subjective method: self-assessment report; objective method: an APK questionnaire which assesses familiarity with symptoms, knowledge about the disease and disease prevention), as well as the functioning in a chronic illness (FCIS scale which checks the impact of a disease on the patient, the influence of the patient on the disease and the impact of a disease on attitudes).

Results: The distribution of FCIS results varied depending on self-assessment regarding the level of knowledge (p = 0.04). High result was achieved by 27% respondents who declared a sufficient level of knowledge, and 38% of those respondents who declared insufficient knowledge. The analysis of the impact of knowledge on various areas of functioning in coronary artery disease has shown that patients with a higher level of knowledge about the disease and its prevention achieved better results in the subscale which evaluates patients' opinion on the possibility of influencing the course of disease (p = 0.039). This observation was confirmed by a weak positive correlation (R = 0.193; p = 0.006).

Discussion and conclusions: Reliable information about a disease, available therapeutic plans and prevention procedures help patients understand their health condition and let them take decisions with full awareness. The correlation noticed in the study between patients' knowledge resources regarding the disease and its prevention and their convictions about the possibilities of having influence on the course of the disease is a strong argument supporting the claim that conducting coordinated educational interventions for patients with coronary artery disease is a legitimate task.

Key words: coronary artery disease, functioning in disease, patients' knowledge, chronic disease

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Introduction

The specificity of therapeutic procedure in ischemic heart disease requires multidirectional measures. Focusing solely on patient's physical condition can obscure their psychological, social and emotional problems, which stem from their health condition [1–4].

Assigning a concrete meaning to one's own disease is an important step in the process of patient's adaptation to the disease. It determines the attitude

towards the therapeutic procedures and triggers various strategies of coping with the consequences of a new life situation [5–7].

The proper functioning of patients with chronic disease is undoubtedly connected with the understanding of the essence of the disease, its acceptance, and with taking measures that would lead to achieving best possible treatment effects and to enhancing the quality of life [8, 9].

The most beneficial behavior for patients seems to be staying active and seeking information in order to have control over and influence on one's illness. A problem arises when a subjective view of the illness, inadequate to the scientific knowledge and the patient's current health condition, gives rise to attitudes that are unfavourable for treatment, such as: denial, disavowal, anxiety and avoidance [10, 11]. The aim of the study was to provide an evaluation of the influence of patients' knowledge on the functioning in coronary artery disease, which was assessed with the use of a complex tool 'The Functioning in Chronic Illness Scale' (FCIS).

Material and methods

The study presented in this paper is a part of the project "The impact of readiness to hospital discharge on adherence, life quality, functioning in illness and select clinical parameters in patients with chronic diseases", which received consent of the Bioethical Committee at Collegium Medicum, Nicolaus Copernicus University in Torun (approval reference no. KB 769/2016).

A single-centre, prospective, observational research was planned in accordance with the principles of ethics contained in the Declaration of Helsinki.

The subjects for the study were sampled from the Cardiological Ward at Teaching Hospital no 1 in Bydgoszcz. Each subject had to meet the following requirements:
— diagnosed cardiac artery disease prior to hospital admission;
— signed informed consent to participate in the study after being familiarized with information about the research;
— age ≥ 18.

Once the patients had familiarized themselves with the information about the study and had signed the official consent, they were next asked to fill in the questionnaire (which comprised sociodemographic and clinical factors, as well as self-assessment report regarding knowledge about cardiac and artery diseases and their prevention), and the scale of functioning in a chronic disease (FCIS). They were also asked to complete a test assessing patients' knowledge (APK) of symptoms and prevention of coronary artery disease.

The FCIS Scale is a new, validated tool used to assess patient's functioning in chronic diseases. It evaluates patient's functioning in three aspects: the impact of a disease on the patient, the influence of the patient on the disease, and the impact of the disease on patient's attitude. The questionnaire consists of 24 single-choice questions which are graded on a scale from 1 to 5 points. The patient may achieve one of the three levels — low, average or high — both in the summary result and in the subscales. Achieving high results is suggestive of having a conviction that the illness has a limited impact on the patient, an opinion that the patient has influence on the course of illness, as well as having motivation to develop an active attitude towards the illness [12, 13].

The questionnaire assessing patient's knowledge (APK) consists of 20 single-choice questions, each with four possible answers. The questions are divided into three groups: questions testing patient's knowledge about symptoms of coronary artery disease and cardiac infarction (5 questions), questions about the disease (5 questions), and questions about disease prevention (5 questions). For each question, patients can obtain 1 point. Patients who were related to the investigators as well as those whose health condition did not allow signing the official consent to participate in the investigation were excluded from the study. Of the 224 patients who met the requirements to participate in the study, 22 did not fill in at least one of the questionnaires. Ultimately, the study involved 202 respondents (129 males and 73 females). The average age of the subjects was 64.4 ± 11.59. The youngest patient was 31 years old and the oldest was 91 years of age. The sample is characterised in detail in Table 1.

The statistical analysis was carried out using the Statistica 13.0 package (TIBCO Software Inc, California, USA). Continuous variables were presented as means with standard deviations. The Shapiro-Wilk test demonstrated an abnormal distribution of the investigated continuous variables. Therefore, non-parametric tests were used for the statistical analysis. Comparisons between two groups were performed with the Mann-Whitney unpaired rank sum test. For comparisons between three or more groups, the Kruskal–Wallis one-way analysis of variance was used. To assess the relationship between two quantitative variables Spearman's rank correlation was used. Categorical variables were expressed in numbers and percentages, and they were compared using the $\chi 2$ test. Results were considered significant at $p < 0.05$.

Results

Self-assessment of the level of knowledge did not demonstrate significant differences in terms

Table 1. The characteristic of the study group

Parameter	Variabe	Amount (n)	Precentage of a total (%)
Sex	Men	129	63.86
	Women	73	36.14
Age	< 65 years	89	44.06
	65 years	113	55.94
Place of residence	Village	52	25.74
	City	150	74.26
Education	Primary education/ /basic vocational education	109	53.96
	Secondary education	70	34.65
	Higher education	23	11.39
Economic status	Bad	28	13.86
	Acceptable	163	80.69
	Good	11	5.45
Employment status	Invalid/pensioner	134	66.33
	Unemployed	11	5.45
	Employed	57	28.22
Marital status	Widow/widower	29	14.36
	In a relationship	146	72.28
	Single	27	13.37
Duration of treatment IHD	< 1 year	72	35.64
	1–5 years	47	23.27
	> 5 years	83	41.09
FCIS: General result	Low level	50	24.75
	Medium level	90	44.55
	High level	62	30.69
FCIS: The impact of illness on the patient	Low level	36	17.82
	Medium level	140	69,31
	High level	26	12.87
FCIS: The patient's influence on the illness	Low level	36	17.82
	Medium level	92	45.54
	High level	74	36.63
FCIS: The impact of illness on patient's attitude	Low level	47	23.27
	Medium level	86	42.57
	High level	69	34.16

of FCIS results (a sufficient level of knowledge: 87.16 ± 12.20 points vs insufficient level of knowledge 86.55 ± 10 points; p = 0.65). The distribution of FCIS results varied depending on self-assessment of the level of knowledge (p = 0,04). A high FCIS result was obtained by only 27% of respondents who declared a sufficient level of knowledge and 38% of respondents who declared insufficient level of knowledge. The level of knowledge assessed by the objective method (APK) showed that the average result for the population under study was 14.24 ± 3.46 points (71.19 ± 17.29% of correct answers). Detailed results which compare patients' knowledge in line with the FCIS level are shown in Table 2.

The analysis of the impact of knowledge on specific areas of patients' functioning in coronary artery disease assessed with the use of the FCIS scale allows us to conclude that the patients' knowledge about the illness and its prevention determines the viewpoint on the possibility of influencing the course of the illness. Respondents with higher APK results also achieved more points on the FCIS scale, in particular in the subscale of the influence of patients on the illness (p = 0.039). The observation is also confirmed by a weak positive correlation (R = 0.193, p = 0.006). As far as the other areas of the functioning in illness are concerned, we did not obtain similar results.

Discussion

The prevention of coronary artery disease and cardiac infarction relies on a change in health behavior, the control of risk factors and pharmacological treatment [14]. In line with the assumptions of WHO, the aim of educational interventions is not only to increase patients' scope of medical information, but, more importantly, to motivate patients to change behavior into one supporting healthy lifestyle, and to create conditions for proper functioning in illness. These measures should be accounted for at each stage of treatment [15].

Reliable information about the disease, available therapeutic plans and prevention procedures help patients understand their health condition and let them take decisions with full awareness [9, 16, 17]. The most interesting result of our study is proving that patients' knowledge about the disease and its prevention determines their conviction of having an influence on the course of the illness. This simple observation is fundamental for an effective implementation of changes in patients' lifestyle and in realization of the therapeutic plan. Our results corroborate the claim put forward by Wiles et al. [18], who, on the basis of an in-depth interview with 25 cardiac infarction patients, have proved that basic knowledge about the pathophysiology of a disease helps enhance motivation to change health behavior.

Detailed assessment of patients' knowledge in three areas (symptoms of the disease, knowledge about the disease, and knowledge about disease prevention) confirmed observations reported in earlier publications [19–22] about incomplete medical information of patients with coronary artery disease.

Table 2. Objective assessment of knowledge (APK) depending on the level of functioning in chronic illness

The functioning in chronic illness scale (FCIS)		Evaluation of patients' knowledge (KE)			
		Knowledge about signs and symptoms of disease	Knowledge about the disease	Knowledge about prevention	Total score
		Mean ± SD	Mean ± SD	Mean ± SD	Mean ± SD
The impact of illness on the patient	Low level	3.61 ± 1.18 [72.22 ± 23.56%]	3.33 ± 1.33 [66.67 ± 26.62%]	7.08 ± 2.03 [70.83 ± 20.34%]	14.06 ± 3.29 [70.28 ± 16.47%]
	Medium level	3.35 ± 1.36 [67.00 ± 27.64%]	3.77 ± 1.30 [75.43 ± 25.99%]	7.35 ± 2.00 [73.50 ± 19.96%]	14.47 ± 3.54 [72.36 ± 17.69%]
	High level	3.04 ± 1.88 [60.77 ± 23.65%]	3.19 ± 1.47 [63.85 ± 29.40%]	7.00 ± 1.92 [70.00 ± 19.18%]	13.23 ± 3.15 [66.15 ± 15.77%]
	P-value	0.167	0.038	0.468	0.166
The patient's influence on the illness	Low level	3.31 ± 1.67 [66.11 ± 33.40%]	3.28 ±1 .32 [66.56 ± 26.45%]	6.69 ± 1.79 [66.94 ± 17.86%]	13.31 ± 3.27 [66.53 ± 16.34%]
	Medium level	3.34 ± 1.26 [66.74 ± 25.21%]	3.53 ± 1.37 [70.65 ± 27.41%]	7.15 ± 2.20 [71.52 ± 22.04%]	14.02 ± 3.80 [70.11 ± 19.00%]
	High level	3.41 ± 1.19 [68.11 ± 23.65%]	3.89 ± 1.28 [77.84 ± 25.55%]	7.66 ± 1.72 [76.62 ± 17.22%]	14.96 ± 2.97 [74.80 ± 14.84%]
	P-value	0.896	0.034	0.028	0.039
The impact of illness on patient's attitude	Low level	3.02 ± 1.38 [60.43 ± 27.50%]	3.53 ± 1.38 [70.64 ± 27.62%]	7.36 ± 1.85 [73.62 ± 18.47%]	13.94 ± 3.26 [69.68 ± 16.30%]
	Medium level	3.50 ± 1.35 [70.00 ± 27.05%]	3.50 ± 1.34 [70.00 ± 26.70%]	7.12 ± 1.96 [71.16 ± 19.16%]	14.12 ± 3.47 [70.58 ± 17.34%]
	High level	3.41 ± 1.19 [68.12 ± 23.84%]	3.83 ± 1.32 [76.52 ± 26.34%]	7.36 ± 2.13 [73.62 ± 21.28%]	14.59 ± 3.59 [72.97 ± 17.19%]
	P-value	0.122	0.215	0.507	0.373
General results	Low level	3.30 ± 1.37 [66.00 ± 27.48%]	3.48 ± 1.23 [69.60 ± 24.66%]	7.10 ± 1.78 [71.00 ± 17.76%]	13.90 ± 2.93 [69.50 ± 14.65%]
	Medium level	3.44 ± 1.41 [68.89 ± 28.14%]	3.52 ± 1.45 [70.44 ± 28.95%]	7.10 ± 2.20 [71.44 ± 21.96%]	14.11 ± 3.92 [70.56 ± 19.62%]
	High level	3.27 ± 1.12 [65.48 ± 22.37%]	13.87 ± 1.25 [77.42 ± 24.95%]	7.55 ± 1.83 [75.48 ± 18.26%]	14.69 ± 3.12 [73.47 ± 15.59%]
	P-value	0.520	0.171	0.342	0.325

It has been noticed that a greater percentage of patients with high FCIS result defines their knowledge as insufficient. The result suggests that patients who are aware of their insufficient knowledge function well in illness. Nonetheless, in our opinion the patient's self-assessment should be treated as additional information that only completes objective methods, which was already indicated in our earlier research [23, 24].

In the review of literature devoted to educational interventions implemented to cardiological patients, Ghisi et al. [25] emphasize the importance of education as an element supporting therapeutic measures. Patients engaged in educational measures demonstrate not only a higher level of knowledge but they also follow proper health behavior recommendations regarding nutrition, physical activity and quitting smoking more often than respondents from control groups [25].

Among patients with coronary artery disease, convictions about the disease predict health behavior and engagement in the therapeutic plan [26–28]. Cardiological patients who assess their illness as dependent on lifestyle adopt more active attitudes than subjects who see the sources of the illness in unmodifiable factors [26]. Whitemarsh et al. [27] demonstrate that insufficient knowledge about an illness, the conviction of lack of one's influence on the course of the illness, and coping with stress by avoiding problems do not foster cardiological rehabilitation. Other researchers in turn [28] stress that a positive attitude and a belief in the possibility of enhancing one's state of health are factors supporting

patient's decision to initiate cariological rehabilitation after an acute coronary syndrome.

Limitation of the study

The perception of an illness by patients is not stable and may change under the influence of various factors, such as psychological, social and health issues. These aspects were not taken into account in the present study.

Summary

The study has demonstrated that the correlation between the knowledge about the disease and its prevention, and patients' conviction regarding the possibilities of influencing the course of the illness is a strong argument supporting the claim that implementing coordinated educational measures for patients with coronary artery disease may bring positive results.

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