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Sociocultural factors in cardiology: previous knowledge *de novo*

Taratukhin E. O.

Despite the progression in cardiovascular biomedicine, the issue of a person's social life and his social relations remains relevant. The impact on adherence to lifestyle changes and therapy, on risk factors such as stress or physical inactivity, is imperative and cannot be realized through biomedical methods alone. In the modification of sociocultural and psychosocial risk factors, the work of a doctor with a patient is the interaction of two subjects, who have experience in their lives. The article provides a brief analysis of the modern understanding of sociocultural aspects of cardiovascular processes and proposes the concept of identity as a unit of meaning in such a coordinate system. The modern understanding of the biosocial structure of a person makes it possible to move from the declarative principles of "treating the patient — not just the disease" to a scientific interdisciplinary and practical concept. The inclusion of a humanitarian knowledge about the structure of culture and society in modern biomedicine will provide a novel, constructive understanding of doctor-patient relationship.

Key words: psychosomatics, patient-centered care, burnout, risk factors, communication, adherence, social identity.

Relationships and Activities: none.

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History moves in a spiral. The history of medicine is no exception. The spiral movement suggests a new level based on accumulated knowledge. The old truths that it is necessary to "treat the patient — not just the disease" in their original form cause only a sentimental sigh from any practitioner involved in modern economic and social relations. But old truths are getting a second wind. The development of humanitarian knowledge, supported by the progress in neuroscience and psychology, gives a qualitatively different understanding of the social person, and in the opposite direction — an understanding of the specifics of somatic processes under the influence of sociocultural factors.

The relationship between the biological and the social is deeply rooted in human nature. Not considering social interaction as a factor of health and illness is to abdicate the human nature. The social is a manifestation of life. Earlier I proposed a risk factors hierarchy for cardiovascular disease [1], according to which purely biological factors are at the lower level, and sociocultural ones at the upper level. A movement from the bottom up is a movement along the biopsychosocial definition of health (according to the World Health Organization), that is, a movement along the biosocial nature of human. All factors are framed by genetics and epigenetics, more precisely, the influence that the genome has on the structure and functioning of a person as a biosocial subject. The genome predetermines a certain structure of human biology; however, gene expression is dynamic and associated with the influence of social factors [2]. Thus, one of the many vicious circles of the cardiovascular continuum may consist in the fact that the initial psychophysiological prerequisites reinforce stereotypes of behavior in society, and the situation that develops due to the behavior, on the contrary, creates conditions for certain regulatory shifts.

But society and culture are created by people. They are the summation of the people actions. Culture is the result of human activity in history, and its first task is to free a person from natural necessity. Culture satisfies the demand for heat, food, safety, treatment of diseases, etc. That common thing that involves people in intersubjective interaction, and gives rise to culture. And culture, becoming the context of the development and life of a social person, determines his behavior, attitudes, stereotypes, motivation, experiences, and feelings. And so are the risk factors for disease.

Working with culture as an independent world is no less important for clinical medicine than the ability to manage the biological components of the disease pathogenesis. But human science is opposite in its structure to natural science. In natural science, generalization allows one to discover the truth. In human science, any generalization is fraught with the loss of individuality. The general can be identified, but the applicability of such a generalization to a specific individual is limited by the degree of universalization. The more detailed a conclusion about the nature of social interaction is made, the less it coincides with people in general and with an individual person in particular. Psychology allows us to reconcile individuality and generalization. Psychology, for example, generalizes into patterns some specificity of a person's response in life situations. This is a somatopsychic process in response to semiotic stimulation — words, items, statements.

What we call a psychosocial risk factor is a somatic response to semiotic influences. When medicine chooses a target for an intervention, the effectiveness of such an intervention must be proven in large samples. Large samples equalize the differences between people and allow to identify a pattern. This is absolutely possible for biochemical processes, less possible for psychological processes and even less possible for socio-psychological and sociological processes. The area of culture, in principle, is not calculated.

The social sciences can identify common cultural assumptions (such as income levels) and in the same way identify the relationship. For example, a multivariate analysis of income can find that poorer people are more likely to get sick and die earlier from cardiovascular disease. They have more stress, worse food quality, higher tendency to addiction and destructive behavior [3]. But does this mean that by setting the unconditional basic income at a high level, we will rid these people of behavioral risk factors? Wouldn't it turn out that low income is not a cause, but a result of social maladjustment due to low levels of education and/or intelligence and/or awareness, which in themselves can determine behavioral patterns? By allowing money, will we obtain the good health parameters? Will these people begin to eat better, experience less stress, get rid of bad habits and physical inactivity? Probably, in part, yes, but as a result of the intervention in social interactions, new factors will appear, previously unknown.

It is obvious that universalization in such matters falls apart about the individual characteristics of human experience, which precedes one or another factor of behavior, and also determines the specificity of the environmental action. And stress as a biopsychosocial event is the best example. The severity of stress depends on the context of the stressful event and the experience.

Psychology works with an individual experience. What, in a similar context, is the place of medicine? This is working with sociocultural components from

the perspective of a physician which represents medicine. The right to tell the truth is given to a physician by the cultural institute of medicine and healthcare. Apart from the legal side of the issue, one must understand the healthcare practice is not only associated with biomedicine. How the patient acts in view of psychosomatic processes depends on the surrounding context, the received information and experiences. Cardiology practice, especially in terms of essential hypertension, coronary artery disease, acquired cardiac arrhythmias, is replete with such examples.

Cardiology as a discourse, that is, an integral field of practice and theory about human conditions associated with the cardiovascular system, is included in biomedical science, psychology, ethics, law, economics and even politics. Rational thinking requires the identifying object for research and a more detailed understanding, but the world is arranged continually. Medicine, as an integral science about a person, including both physicochemical aspects and a picture of illness, fate, suffering, is forced to combine an analytical way on a par with a synthetic one. When working with a patient, one has to take into account both purely biomedical aspects, and purely social ones, and their interconnection.

What to do with this knowledge in practice? If the biomedical side of the issue is more or less clear and much attention is paid to it, then the sociocultural component is still outside the field of view of medicine, except for some psychological items.

I propose identity as a unit of meaning. The concept of identity, that is, a person's idea of his social characteristics taken as criteria for self-concept, organize behavior and experiences. The self-concept assumes self-awareness, including interception, communication, response to the statements of other people and one's own statements. Today, the immune models of the concept of 'self' or cardiophenomenology are considered to be integral concepts of the somatopsychic structure of a person [4, 5]. It is identity that is the source (carrier) of stress, unhealthy lifestyle, negative socially emotions and other well-known factors. A person's identity and self-identification lead to the experience of emotions and feelings and to the decision-making, motivation, presence/absence of medical adherence, etc. Identity is biosocial. The dynamics of biological health changes the social self, and changes in social relations alter somatic status. An incorrect pattern of oneself in social relations leads to feelings of guilt or resentment, aggression, stress, and as a result to fixing patterns of response and life exhaustion.

Working with a person's identity is the highest and most difficult level of work, at least because a helper himself must be free from the problems which helps to solve. Helping a helper is another important aspect of working with sociocultural risk factors for cardiovascular disease. A doctor as the personification of medicine and health care is also an identity. His own image of himself, of the situation, of the patient is manifested through communication with the patient. The influence of a doctor on patient's psychosomatic status, disease, medical adherence is important. Therefore, work with sociocultural and psychosocial factors should begin with the interpersonal interaction between a doctor and a patient, as well as with the cultural context.

The questions raised go far beyond the modern conventional understanding of health care. But moving forward also implies looking back. A doctor as a representative of medicine, having today the most powerful tools for working with human biology, does not stop working with a living human, that is, experiencing feelings, emotions, living his life in a social context.

Relationships and Activities: none.

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Testing the educational program "Primary and secondary prevention of cardiovascular diseases" on the basis of social networking service Instagram

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Aim. To study the possibility of conducting an educational program "Primary and Secondary Prevention of Cardiovascular Diseases (CVD)", aimed at increasing health literacy among followers of cardiology blogs on Instagram.

Material and methods. The methodology for conducting an educational program on Instagram included following items: the choice of agents of influence and the forms of engagement with audience; development of evaluation metric; carrying out the program; evaluation of the results obtained; defining a scaling strategy. The educational program was conducted daily from March 19 to March 30, 2020 on Instagram in following medical accounts: @doc_4_you, @zdorovye_serdtsa, @doctor_isaeva_cardio, @dr_cardioann, @doctor_savonina, @cardiolog.novikova, @doctor_lobzhanidze, @dnevnik.doctora, @doc.for.health, @aksenova_doctor. The format is publications of up to 4 thousand characters dedicated to informing people about primary (proper nutrition, quitting smoking, physical activity, obesity, vegetarianism) and secondary prevention (drug treatment) of CVD. The assessment of the results was carried out using descriptive statistics.

Results. The total number of followers of cardiology blogs is 367,727. The audience of professional doctors' accounts is mostly female (from 89 to 95%), the 25 to 34 age group accounts for 40 to 47% of followers. The total number of followers who read 10 publications of the educational program was 104 794; the total audience involvement (comments, reposts, likes, saves) was 9,692 people. The greatest involvement of people was revealed in the following topics — consumption of vegetables, salt and sugar, physical activity, obesity (1146, 1100, 2195, 1052, 1534 people, respectively).

Conclusion. The social networking service Instagram can be used to conduct educational programs aimed at improving the health literacy of Russian people. It is necessary to further improve the methodology for conducting research in social networks, in order to select the most effective technologies in this topic.

Key words: cardiovascular disease, prevention, social media, Instagram.

Relationships and Activities: none.

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Social networks have become not only a part of everyday life [1, 2], but also have a huge impact on such areas as politics, international relations, marketing [3, 4]. Undoubtedly, social media also affects the health care system. In a number of countries with a high standard of living, almost 50% of residents use social networks to search for information about health, including about cardiovascular diseases (CVD) [5, 6]. When searching a "Social media and medicine" in the Pubmed, more than 8,000 publications were received from 2007 to 2020. During this time, the attitude of the medical community towards the role of medical publications on social networks has changed significantly. So, in the period 2007-2010, the first works were published with negative arguments about social networks and a huge number of risks for doctors [7]. Over time, this trend changed in the opposite direction and more and more specialists began to study the possibilities of social networks in improving both public health and the individuals [5, 8, 9]. In 2015, first data was published on the need to implement social networks for physicians and patients [10, 11]. In 2016-2019, leading American organizations in cardiology recognize social networks as a promising platform for education and interaction of healthcare professionals with each other and patients [12], which can contribute to improving cardiovascular health [13]. At present, the social media provides the results of significant studies even before their official publication for a wide range of followers, including non-physicians [14].

With growing activity of medical specialists in social networks, Instagram is becoming one of the most popular platforms for professional medical accounts [15-18]. Nowadays, professional medical blogs are so developed that a number of medical communities took things a step further and created guidelines for social blogging in the specialization area [19].

CVDs occupy a leading place in the mortality pattern in most countries of the world, including in the Russian Federation [20]. Many European countries have achieved a significant reduction in mortality due to CVD, and at the moment, a number of experts agree that it is necessary to look for new ways to improve the cardiovascular health of people and demographic situation. However, there are currently no significant medical and surgical reserves for the treatment of CVD, and, according to the authors, the search for new ways to reduce mortality due to CVD should be directed towards increasing the health literacy of the population. At the same time, the place of social networks in the structure of educational health programs, including preventive ones, has not been finally determined at the moment. These facts served as a rationale for carrying out this study.

The aim was to study the possibility of conducting an educational program "Primary and Secondary Prevention of Cardiovascular Diseases (CVD)", aimed at increasing health literacy among followers of cardiology blogs on Instagram.

Material and methods

In the presented study, the methodology of educational program included:

— selection of agents of influence;
— selection of interaction format;
— selection of the most relevant topics and timing;
— determination of the frequency and characteristics of interaction with audience;
— selection of research evaluation metrics;
— carrying out the program;
— evaluation of the results obtained;
— determination of the scaling up strategy.

The research was carried out on the basis of the social network Instagram. The platforms of the educational program were the most popular professional accounts of cardiologists — @doc_4_you, @zdorovye_serdtsa, @doctor_isaeva_cardio, @dr_cardioann, @doctor_savonina, @cardiolog.novikova, @doctor_lobzhanidze, @dnevnik.doctora, @doc.for.health, @aksenova_doctor (Table 1).

The educational program was held daily from March 19 to March 30, 2020 on Instagram in professional medical accounts. The format of the program is a publication (article) of up to 4 thousand characters dedicated to informing people about primary (proper nutrition, smoking cessation, physical activity, obesity, vegetarianism) and secondary prevention (drug therapy) of CVD (Table 2).

The educational program took place in 3 stages. At the first stage, the project was started with announcement in all cardiology blogs in order to maximize the audience attention. The second stage included 10 publications that increase the health literacy of followers of cardiology blogs (Table 2). At the third stage, a final article was published, summarizing all the information on primary and secondary prevention of CVD.

Statistical processing. This study did not test any predefined statistical hypotheses. The main aim was to collect data on the potential of social networks in the spread of health information on primary and secondary prevention of CVD.

There were following statistical indicators assessed in this article:

1. Outreach — a metric reflecting the number of users who have read the publication.

Table 1
Instagram accounts of cardiologists participating in the educational program and the number of subscribers as of 25.03.2020

Blog	Number of subscribers
@doc_4_you	177,000
@zdorovye_serdtsa	30,100
@doctor_isaeva_cardio	25,900
@dr_cardioann	7,813
@doctor_savonina	41,300
@cardiolog.novikova	5,125
@doctor_lobzhanidze	28,300
@dnevnik.doctora	29,200
@doc.for.health	13,900
@aksenova_doctor	9,089

Table 2
Topics of program publications

Blog	Topic
@doc_4_you	Proper nutrition. Refusal of sweets
@doctor_lobzhanidze	Proper nutrition. Salt
@zdorovye_serdtsa	Proper nutrition. Fish
@doctor_isaeva_cardio	Proper nutrition. Vegetables
@dr_cardioann	Healthy sleep hygiene
@doctor_savonina	Smoking prevention
@cardiolog.novikova	Physical activity
@dnevnik.doctora	Obesity prevention
@doc.for.health	Vegetarianism and CVD risks
@aksenova_doctorSecondary prevention of CVD	Secondary prevention of CVD

2. Engagement — a metric reflecting overall involvement. This metric summarizes likes, comments, shares, and saves into one single value.

3. Comments — a metric reflecting the number of unique comments from users.

The above statistical metrics are estimated by the social network's own software, which is available for analysis (Figure 1). The indicators were recorded 48 hours after the publication of the information material.

Results

The total number of potential readers of the educational program was 367,727, excluding the audience intersection.

Figure 1. Statistics of automatic indicators in the Instagram.

The audience of health accounts is mostly female (from 89 to 95%); the age group of 25-34 years accounts for 40 to 46% of followers (Table 3). Up to 20% of subscribers of cardiology blogs live in Moscow, up to 5% — in St. Petersburg; other constituent entities of the Russian Federation accounts for approximately 2%, depending on the place of residence of the authors.

At the first stage of the educational program, the total outreach was 55,592; the unique audience engagement was 4,325 followers. The total number of people who read the information materials on primary and secondary prevention of CVD at the second stage was 104,794; the unique engagement was 9,692 people. The total outreach of the third stage was 52,241; the maximum engagement was 4,985 people (Table 4).

The total number of people who got acquainted with the educational program was 212,627, with a maximum engagement of 19,002 followers.

The most popular topics among followers of cardiology blogs were the consumption of vegetables, salt and sugar, physical activity, obesity (Table 5).

Table 3

Demographic characteristics of cardiology blogs' followers as of 25.03.2020

Blog	Age range, % (years)						
	13-17	18-24	25-34	35-44	45-54	55-64	65+
@doc_4_you	3	24	46	18	6	2	1
@zdorovye_serdtsa	4	32	42	13	5	3	1
@doctor_isaeva_cardio	5	25	42	18	6	3	1
@dr_cardioann	1	15	40	23	13	6	2
@doctor_savonina	4	22	44	19	7	3	1
@cardiolog.novikova	4	24	46	18	5	2	1
@doctor_lobzhanidze	2	20	41	22	9	4	2
@dnevnik.doctora	1	14	38	28	12	5	2
@doc.for.health	1	12	46	26	10	4	1
@aksenova_doctor	1	18	45	24	8	2	2

Table 4

The total number of contacts with the audience at I, II, III stages of the educational program as of 25.03.2020

Blog	Stage I			Stage II			Stage III		
	Outreach	Com.	Eng.	Outreach	Com.	Eng.	Outreach	Com.	Eng.
@doc_4_you	17917	66	505	28168	173	2195	13259	53	677
@zdorovye_serdtsa	2062	0	128	3386	15	613	2000	5	500
@doctor_isaeva_cardio	2598	11	270	6561	56	1146	2855	7	317
@dr_cardioann	2888	19	347	4075	75	899	3058	28	458
@doctor_savonina	3140	18	427	27960	48	527	1701	15	250
@cardiolog.novikova	2450	18	286	4097	66	1052	3900	40	823
@doctor_lobzhanidze	6675	15	705	8269	63	1100	13164	25	1301
@dnevnik.doctora	13994	121	1597	13781	98	1534	12268	50	300
@doc.for.health	2734	14	310	6856	31	452	1005	15	250
@aksenova_doctor	1134	5	200	1641	12	174	1601	2	109
Total	55592	287	4325	104794	637	9692	52241	240	4985

Note: Outreach — a metric reflecting the number of users who have read the publication; engagement — a metric reflecting overall involvement; comments — a metric reflecting the number of unique comments from users.

Thus, the division of the educational program into stages made it possible to increase the overall outreach and audience engagement. However, attention is drawn to the decrease in activity towards the third stage, which requires additional analysis. The total number of participants in this educational program was 212,627; the total engagement was 19,002 people, excluding the audience intersection. The most popular topics were proper nutrition, physical activity, obesity.

Discussion

The social network Instagram can potentially be used to educate the population and to create the educational programs in order to increase health literacy in cardiology.

In 2017, Thaler R was awarded the Nobel Prize for research in the field of behavioural economics and, as a result, identifying the possibilities and directions of the state's influence on the individual behaviour of people. Changing health behaviour of people plays

Table 5

Distribution of the audience engagement of the educational program

Blog	Topic	Maximum audience engagement
@doc_4_you	Proper nutrition. Refusal of sweets	2195
@dnevnik.doctora	Obesity prevention	1534
@doctor_isaeva_cardio	Proper nutrition. Vegetables	1146
@doctor_lobzhanidze	Proper nutrition. Salt	1100
@cardiolog.novikova	Physical activity	1052
@dr_cardioann	Healthy sleep hygiene	899
@zdorovye_serdtsa	Proper nutrition. Fish	613
@doctor_savonina	Smoking prevention	527
@doc.for.health	Vegetarianism and CVD risks	452
@aksenova_doctor	Secondary prevention of CVD	174

Abbreviation: CVD — cardiovascular disease.

a key role in shaping a nationwide health strategy. At the core of health management, the World Health Organization proposes to use the concept of health promotion, which is based on a combination of social, economic, political programs aimed at changing the adaptation of a person and his environment in order to improve his health. To regulate the concept of health promotion, you can use tools of internal and external motivation, for example, educational programs that stimulate people to make healthy choices [21]. According to the authors, social networks can take a certain place in the spread of health information among the population around the world without significant financial and time expenditures. However, such educational health programs must be created taking into account the choice of a social network (Instagram, VKontakte, Facebook, etc.). Key points worth paying attention are opportunities, methods and formats for spreading information, characteristics of the target audience, territorial epidemiological situation.

The total outreach of the educational program "Primary and secondary prevention of CVD" within 10 days was 212,627 people. For comparison, the total population of Iceland as of January 1, 2018 was 348,450 people, and Montenegro — 622,359 [22]. Thus, it should be noted that the use of the Internet and social networks can make it possible to almost completely disseminate the necessary information not only in a single family, but also on the territory of certain subjects, as well as throughout the state.

Quite often, a limitation in the use of social networks for educational programs is the prejudiced attitude of the professional community towards the prevailing target audience. Most of the audience of social networks is female, and the dominant age is from 18 to 34 years [23]. This trend was also identified in the presented study. However, the educational program "Primary and secondary prevention of CVD" was designed taking into account the possible impact of women on the well-being and health in the family, which has been proven in studies [24-26]. Thus, it is women who can influence such significant behavioural patterns as annual medical examination, adherence to treatment, prevention of risk factors [24, 25].

When creating educational health programs in social networks, it is also necessary to take into account the epidemiological situation in the territory.

Thus, according to the ESSE-RF study, the prevalence of smoking in Russia on average was 27,7%. It was also revealed that 38,8% of the population have low physical activity, while the highest prevalence of low physical activity was found in young and middle age, from 25 to 44 years. The prevalence of obesity was 33,4%. According to the ESSE-RF study, in Russia there is an insufficient consumption of vegetables/fruits (41,9%) and fish/seafood (36,9%), while 49,9% of the population suffers from excessive salt consumption [26]. To date, there are also low medical adherence among cardiac patients in Russia [20].

In this regard, the presented program was created taking into account the epidemiological characteristics in Russia. Moreover, the data obtained revealed the most popular topics (consumption of vegetables, salt, sugar, physical activity, and obesity), which may indirectly reflect the current epidemiological situation in the country.

The following new sections of the health promotion using social networks, which require further analysis, were revealed: impact of social media on medical adherence, lifestyle modification, confidence in the healthcare system, most effective format of interaction with the audience of health blogs (publications or videos), and studying the effectiveness of various formats and demographic indicators.

Conclusion

At present, social networks may occupy some position in the healthcare system, but their exact role is not defined. The results demonstrated the potential of the Instagram in improving health literacy through educational programs, including in the field of primary and secondary prevention of CVD. According to the authors, it is the dissemination of educational health programs for patients that will be the leading role of social networks in the future. Currently, social networks have their own sex and age characteristics of the audience, which must be taken into account when creating the prevention programs. It is especially important to develop health educational programs taking into account the territorial prevalence of CVD risk factors.

The development of educational programs for patients under the auspices of professional communities and their dissemination using social networks is possible in the near future. However, this requires a more detailed study and the creation of special regulatory bodies that will control popularization of reliable information.

Relationships and Activities: none.

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Experience in teaching deontology to students by managing patients with cardiovascular diseases

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Aim. To present the methodological techniques for teaching deontology to students in modern clinical practice on the example of managing patients with cardiovascular diseases.

Material and methods. We outlined the lectures and practical classes introduced into teaching fourth-year students within the educational program of the course «Practical issues of medical deontology». Methods of practical classes included solving 50 case problem in all course sections with their subsequent analysis and interactive discussion, watching and discussing videos, students' individual work with developing own case problems with further analysis in classes. Students also assessed the course by anonymous questionnaire survey.

Results. Every case problem has three questions for students. The discussion of videos is also carried out with posing a question and discussing the opinions expressed by students. A total of 151 students were surveyed. All students noted that there is a need for this course. One hundred eighteen (78%) students answered that they were satisfied with this course; 33 (22%) students noted that it is necessary to discuss legal aspects of the case problems. Students rated the content and quality of the lectures given at 4,68 points, practical classes — at 4,63 points.

Conclusion. Thus, the introduction of deontological education of students will help to improve understanding the meaning of deontology and develop the abilities of congruent behavior in various clinical and life situations, using the example of cardiovascular patients.

Key words: deontological skills, case problems, videos.

Relationships and Activities: none.

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In modern clinical practice, the physicians' ability to successfully communicate with patients, their relatives, work colleagues, and the media is becoming more and more relevant. This is due to the increased competence of the population, the significantly increased flow of medical information due to the Internet, the active work of insurance companies with patients, the significant interest of journalists in medical issues, etc. [1]. According to polls and sociological research, the number of people impatient with the quality of healthcare varies both in Russia and abroad from 40 to 60% [2]. The number of complaints to medical and legal authorities is growing exponentially [3]. For known reasons, the overwhelming majority of these appeals are associated with cardiovascular and oncological diseases. The study by Shaposhnik II, et al. (2016) revealed that 75-80% of complaints and court cases related to cardiovascular diseases are caused not by diagnostic and treatment errors, but by violation of deontological ethics [4]. This is largely due to insufficient attention to deontology in various clinical situations when teaching students. Of course, according to the program, these questions are studied by 3rd year students in a bioethics course. However, this is of a perfunctory theoretical nature. In addition, classes are, as a rule, not taught by clinicians, but by the social and philosophical specialists. As a result, students do not develop the deontological skills when communicating with patients.

In agreement with the university administration, we introduced the course "Practical issues of medical deontology" for fourth-year medical students. The course consists of 100 academic hours: lectures — 16 hours, clinical practical classes — 48 hours, out-of-class work — 36 hours. The aim of the course is to develop basic deontological skills in modern clinical practice using the example of patients with cardiovascular diseases. As a result of mastering the subject, students should be able to apply basic deontological techniques when collecting a medical history and examining a cardiac patient, communicating with patients and their relatives, with work colleagues, with middle and junior medical staff, with the media and society as a whole. Classes are taught by teachers of the Department of Propaedeutics of Internal Diseases. Some lectures are given by the staff of the Department of Clinical Psychology.

There were following topics of the lectures: 1. General concept of medical ethics and medical deontology. Features of the psychology of a sick person; 2. Deontology of collecting a medical history and physical examination; 3. Communication of the examination results and diagnosis to a patient; 4. Communication of information about treatment to a patient; 5. Doctor-relative relationships; 6. The relationship of a doctor with work colleagues, middle and junior medical staff. The importance of a doctor's appearance; 7. Medical secrecy. Iatrogenic diseases; 8. The relationship of a doctor with society and the state.

The topics of the practical interactive classes are closely related to the lecture subjects. In addition, in practical classes, students analyze deontological problems of emergency care and high technologies. In practical classes, students solve 50 case problems compiled by teachers for all sections of the course. These materials describe a specific situation, containing, in addition to clinical data, certain deontological aspects. The content of case tasks aims to show students how adherence to deontological ethics contributes to the treatment success or, conversely, their violation affects negatively the health of patients. The clinical data on the results of physical examination, diagnostic tests, and the treatment carried out are useful for students. They allow considering a specific clinical problem with deontological aspects as a whole. For each task, 3 questions are posed, to which students give answers. These questions are the subject of discussion and the identification of different students' opinions on the presented situation. As an example, we give one of the case problems and related questions on the topic "Medical secrecy. Iatrogenic diseases ".

Patient C., 53 years old, head of the plant workshop, was delivered to the intensive care unit of the cardiology department by an ambulance, with a diagnosis of coronary artery disease, anteroseptal ST elevation Q-wave myocardial infarction, complicated by Lown grade IV ventricular premature beats, Killip class II acute heart failure. Before admission, pain was relieved by 1,0 ml of 1,0% morphine solution intravenously. One hour after the onset, successful systemic thrombolysis was carried out with tenecteplase at a dose of 30 mg intravenously; aspirin at a dose of 250 mg and clopidogrel at a dose of 300 mg were given internally. Further, the disease proceeded without complications, after 3 days the patient was transferred to the cardiology department for patients with acute coronary syndrome.

On the same day, the physician received a phone call from the patient's colleagues. They asked about his diagnosis, well-being and the prospect of further work capacity. The doctor answered them that the patient has an extensive myocardial infarction and within 3-4 months he will be on sick leave. It is possible that surgical treatment will be required. Then the disability is usually set for 1 year. After 3 days, colleagues visited the patient and told him that they knew about his diagnosis and the forthcoming operation. In addition, they informed

him that a disability group would be determined, which would not allow him to work after the end of the sick leave for one year. In this regard, another shop manager has already been appointed to his place. When colleagues left, the patient was upset and could not sleep for a long time. In the morning, the patient developed an intense pain syndrome behind the sternum, a recurrent myocardial infarction was diagnosed, complicated by cardiogenic shock. The following questions are posed to this problem: 1. Should the doctor have been allowed to inform the patient's colleagues by phone? 2. Was the doctor supposed to provide them with information about the patient's diagnosis, treatment and further work ability? 3. What should the doctor have done in this situation?

Then students take turns expressing their opinions on each of the questions posed. Often, on the same issue, different judgments are put forward, usually complementing the previous ones, but often opposite. Thus, a discussion arises, which is guided by the teacher. At the end of the analysis, the teacher can read out, if necessary, the proposed answers to this problem: 1. Information by phone should not be communicated to anyone under any circumstances. Even if they are close relatives of the patient, it is better to invite them to talk with the doctor. In addition, the doctor is not sure of the identity of the person with whom he is having a telephone conversation; 2. The doctor should not inform anyone about the diagnosis of the patient and further management tactics, except for close relatives (in the case of the patient's consent). It should be emphasized that even to the patient himself, the whole truth about his illness should be revealed gradually and with an optimistic perspective. The patient has the right, but not the obligation to know everything about his illness; 3. The doctor should tactfully reply to the patient's colleagues that his state is currently satisfactory; the examination and the necessary treatment are being carried out. It was unacceptable to make assumptions about the further management and the timing of disability.

Thus, this case clearly demonstrates to the students how the deontological mistake made by the physician had a negative effect on the disease course.

It is also promising to use in practical classes some methodological techniques. In particular, when simulating various clinical situations, one of the students play the role of a doctor, the other as a patient. In accordance with the psychological types of patients identified by A. E. Lichko and N. Ya. Ivanov, a teacher invites a student, playing the role of a patient, to imitate this or that type of behavior. The student, performing the role of a doctor, is invited to ask questions of a patient accordingly, to react to his answers and behavior in general. At the same time, a teacher corrects the performance of the roles by students. Then other students of the group express their opinions on how successful the behavior of a student-doctor and his questions were, as well as how much the behavior of a student-patient and his answers corresponded to the given psychological type of a patient.

No less interesting and instructive is watching videos prepared in advance on various topics. Watching a video clip takes 3-5 minutes. The roles in this material are played by students — members of the university drama circle. In this case, all the details are analyzed. For example, one of the plots is devoted to the doctor's first contact with a patient and the deontological aspects of questioning. The teacher offers the following series of questions for analysis: 1. How friendly did the doctor greeted the patient? 2. Did he ask him to sit down, and how? 3. How attentively did the doctor listen to the patient? 4. Did the doctor ask leading questions, and how appropriate were they? 5. Did the doctor have eye contact with the patient, or did he fill out an outpatient card or medical history all the time, or was he typing on a computer? 6. What was the physician's appearance (clothing, hairstyle, hands, jewelry, etc.).

It should be noted with satisfaction that the discussion of all deontological problems arouses interest among students, accompanied by many questions to a teacher and to each other. A teacher, as a rule, sums up the discussion on the situation. He often stresses that there is no single answer to a number of questions. Much depends on the individual characteristics of the patient, his relatives, and other circumstances (education level, social status, personality type, etc.).

Out-of-class work of students consists in simulating various deontological situations on a given topic in the form of case tasks or short video clips. For this, they usually involve their fellow students, dorm roommates, and in some cases, close relatives. Then these materials are presented in practical classes, followed by analysis and critical assessment of the group students. Sometimes students raise questions that were not even intended for training, but at the same time are of significant interest. As an example, we give one of the situational tasks compiled by a student.

During the fighting in the Donbas, a wounded high-ranking nationalist prisoner was hospitalized in a militia-controlled city hospital. The patient had a bullet wound in his thigh with a comminuted fracture and bleeding. The patient is conscious; blood pressure is unstable. The bleeding was stopped; a temporary splint was applied. The only surgeon remained at the hospital. The rest of the doctors either died or

managed to leave the combat zone. It was reliably known about the prisoner that he was distinguished by cruelty towards civilians and captured militias. The patient required emergency surgery to save his life. However, the surgeon refused to perform the operation. His entire family had died shortly before that during the shelling of the city. In addition, he wanted to preserve materials for the operations of wounded militias and civilians. The patient died a few hours later due to a fat embolism.

The student posed the following questions to the problem: 1. Do you think the surgeon was right? 2. What should a doctor do in such situations? 3. What considerations, in addition to deontological, can justify the need to provide assistance in such situations?

There were following answers of the student: 1. It is difficult to assess the actions of a person who has lost his entire family and who is forced to provide medical assistance to the person through whose fault this happened. This situation often arises in the course of hostilities. It has been described many times in the literature. In this case, doctors, as a rule, provided assistance to a wounded enemy. There are known cases when even the doctors of the Hitler's army did this, and for Russian military doctors this was generally the rule. From the point of view of medical ethics and deontology, the refusal of a doctor to provide assistance is completely unacceptable; 2. In such a situation, medical duty should be higher than political convictions. In addition, prisoners of war are subject to protection under international conventions. The doctor is obliged to provide care, especially emergency, to any sick and wounded person; 3. If the prisoner survives, he will be held accountable for his crimes under the law. Moreover, it is important to preserve it for the court, since it will be important for the victory in the war, including the moral one. Providing medical assistance to the enemy confirms the strength of the belligerent to which the doctor belongs. A medical worker has no right to take revenge on a prisoner for his atrocities.

Particular attention is paid to developing the skills of expressing sympathy for a patient and his relatives in various clinical situations, which often occur in cardiovascular diseases. Students are also taught the rules of behavior with the media. Given that cardiovascular diseases in most cases have a chronic course, the deontological aspects of the relationship between doctors of intensive care, inpatient, outpatient and rehabilitation departments are considered in sufficient detail, and rules of behavior with middle and junior medical staff are developed.

At the end of this course, an anonymous survey of students is conducted. In one of the latest, 151 students took part. All 100% of the respondents noted that there is an urgent need for this course. A total of 118 (78%) students answered that they were satisfied with this form of the course; 33 (22%) students noted that it is necessary to indicate the legal basis of the situations under consideration. Students rated the content and quality of the lectures given at 4,68 points, practical classes — at 4,63 points.

Thus, there is every reason to believe that the introduction of various forms of deontological education of students will help improve their understanding of this important section and develop the skills which will help in various clinical and life situations on the example of cardiovascular patients.

Relationships and Activities: none.

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Psychosocial factors, anxiety and depressive disorders in patients with coronary artery disease: problems of comorbidity and prognosis

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Aim. To assess the significance of psychosocial factors, anxiety and depressive disorders in predicting the comorbidities in patients with coronary artery disease (CAD).

Material and methods. The study included 132 patients aged 37 to 66 years with CAD and anxiety-depressive disorders. Depression was found in 42% of patients, anxiety — in 25%; combination of anxiety, depression — in 33%. The assessment of the significance of cardiovascular and psychosocial factors in predicting comorbidities in patients with CAD was carried out using the logistic regression.

Results. The total prognosis percentage was 95,4% in the general group of patients (Somers'D — 0,910). In the group of men, it was 95,5% (Somers'D –0,912); in the group of women — 93,1% (Somers'D — 0,877). The predictors with a high significance level (p=0,0001) were following cardiovascular risk factors: patient age, hypertension, diabetes, dyslipidemia, left ventricular hypertrophy, arrhythmias, smoking, positive family history of cardiovascular diseases and others. Following psychosocial factors were also significant: stress and characteristics of stressors, active psychopathological syndrome with leading anxiety and/or depressive symptoms, the patient age at the onset of mental disorder diagnosis, duration of the mental disorder, and psychological characteristics of patients. The age of the mental disorder onset was found to be related to the previous stressful events (p=0,0001). A relationship was found between the age of patients with the onset of mental disorder and the severity of CAD (p=0,0001), as well as with the age of CAD onset and the sex of patients (p=0,0007). The contribution of stressful events before anxiety and depressive disorders to the development of predictors effecting the course and diagnosis of CAD was shown.

Conclusion. Logistic regression showed a relevant relationship of cardiovascular risk factors, psychosocial factors, anxiety and depressive disorders, included in the list of significant predictors of comorbidities and the progression of CAD. The results obtained serve as a guideline for an interdisciplinary approach to the treatment and prevention of comorbidities.

Key words: cardiovascular risk factors, coronary disease, psychosocial factors, stress, anxiety, depression, comorbidity.

Relationships and Activities: none.

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The modern model of total cardiovascular risk (CVR), based on the multifactoriality in the development of one or several socially significant diseases, with the introduction of new prevention strategies, is aimed at reducing the prevalence and correction of the leading controllable risk factors, primarily at reducing cardiovascular morbidity and mortality [1].

Scientific research over the past decades has demonstrated the pathogenicity of often unrecognized psychosocial factors. The concept of psychosocial factors includes a wide range of mental and behavioral disorders, social factors and psychological personality traits that increase the risk of cardiovascular diseases (CVD) and complications that worsen the prognosis and survival of patients with coronary artery disease (CAD), at the same time complicating clinical course, diagnosis, treatment, prevention of CVD and comorbid conditions [2, 3].

The 2016 European Guidelines and 2017 Russian National Guidelines on cardiovascular disease prevention are based on the principles of preventive interventions aimed at identifying, controlling and correcting both known CVD factors and psychosocial factors. Confirmed by the results of large clinical and epidemiological studies and meta-analyzes, the Guidelines present the following psychosocial factors: low or no social support, low socioeconomic status, stress at work and in the family, depression, anxiety, hostility, type D personality, post-traumatic stress disorder and other mental disorders [4, 5]. Psychosocial factors caused by the pathophysiological and psychophysiological mechanisms have a negative impact on behavioral factors (Figure 1) that reduce medical adherence [3, 6-8].

It should be emphasized that modern Guidelines on cardiovascular and psychosocial factors help physicians in acquiring experience and skills in identifying, assessing and interpreting symptoms of mental and psychological maladjustment, as well as mastering competencies in the diagnosis, treatment and correction of comorbidities in patients with CVD [9, 10].

The aim of the study was to assess the significance of psychosocial factors, anxiety and depressive disorders in predicting the comorbidities in patients with CAD.

Material and methods

The presented work belongs to interdisciplinary research on the problem of cardiovascular and mental comorbidities, in particular, the impact of psychosocial factors and mental disorders on the course of CVD and other diseases. The sample consisted of patients with CAD (n=132), including 92 men and 40 women aged 37 to 66 years, who were treated in a psychiatric department due to severe anxiety and depressive disorders. All patients with CAD, class II-III effort angina, progressive angina, including those with acute coronary events, were previously examined in a cardiology hospital to verify the diagnosis. Some patients (9,8%) had a previous myocardial infarction. In 83% of cases, CAD was associated with hypertension (HTN), in 22% — with type 2 diabetes (T2D), in 9,8% — with impaired glucose tolerance (IGT). In addition, 58% of patients had hypercholesterolemia/dyslipidemia (DLP), 36,4% — cardiac arrhythmias, 30,3% — left ventricular hypertrophy (LVH), 60% — overweight, in more than half of men — smoking.

The mental state was assessed by the clinical-psychopathological method. A psychological examination of stress response was carried out using the Minnesota Multiphasic Personality Inventory (MMPI). Symptoms of depression were observed in 42% of patients, anxiety — in 25%; combination of anxiety, depression with asthenia — in 33% of cases. Mental disorder in 53,6% of the surveyed met the criteria for neurotic stress-related disorders, including adjustment disorders (prolonged depressive reaction, mixed anxiety-depressive reaction, other reactions to severe stress); anxiety disorders (generalized anxiety disorder, panic disorder). In 13,6% of patients, the revealed affective disorders were classified as a depressive episode, dysthymia, recurrent depressive disorder; in 32,8% — organic (anxious, depressive, asthenic) disorder.

This study was performed in accordance with the Helsinki declaration and Good Clinical Practice standards. The medical ethics committee of approved this study. All patients signed informed consent.

Statistical analysis. Data analysis was carried out using the Statistica 8.0 software package (StatSoft Inc., USA). To study the relationship of traits, multivariate analysis was used, including analysis of variance and contingency tables. Statistical hypotheses were tested using nonparametric methods (Mann-Whitney and Kruskal-Wallis tests). Quantitative indicators are represented as mean and standard deviation (M±SD). Logistic regression and Wald test were used for creating predictive models and assessing the significance of cardiovascular and psychosocial factors. Out of 80 independent features, significant predictors were determined, which were included by stepwise inclusion in logistic models. Differences were considered significant at $p<0,05$.

Results and discussion

Stepwise logistic regression demonstrated the compatibility of CVR and psychosocial factors reflecting the somatic, mental and psychological state of patients with CAD. The predictors selected

by the algorithm in the amount from 9 to 22 were included in all logistic equations. As examples, this paper presents the results of some final models.

The most significant component of comorbid conditions of CAD was the presence in the patients' history of a psychological trauma, which was the main reason of psychopathological symptoms. Psychosocial stress factors, depending on the nature and duration of exposure to stress, were defined as important life events (serious illness or death of a significant other), medical problems in the patient, work and family stress.

To assess the characteristics of comorbid conditions, the age ratios of the duration of coronary and mental disorder were taken into account. The interrelationships were determined: the age of patients at the time of examination, CAD onset, identification of the leading psychopathological syndrome and the mental disorder. A relationship was found between the age of patients with the onset of the stress-related disorder, the severity of CAD (p=0,0001), the age of CAD onset, and the sex of patients (p=0,0007).

Thus, the age of patients at the onset of mental disorder in the general group was 47,4±8,4 years (in women — 51,4±6,9 years, in men — 45,6±8,4 years (p=0,0001)). The age of CAD onset in the general group was 50,1±7,0 years (in women — 54,2±5,6 years, in men — 48,3±6,8 years (p=0,0232)). So, manifestation of mental disorder symptoms precedes the CAD, regardless of its clinical manifestations and the sex of patients.

The development of comorbidities in men with CAD was observed up to 50 years of age, in women — over 50 years of age.

The diagnosis of CAD was made with already existing symptoms of psychological maladjustment caused by stress.

All qualitative and quantitative traits of the relationship between coronary and mental pathology were included in the logistic regression as predictors and had high values of the regression coefficients, indicating their prognostic significance.

The analysis performed may indicate the initiating role of psychosocial stress and the resulting mental disorders in the formation of the prerequisites for development or progression of CAD and comorbid conditions.

Early diagnosis of CAD in patients with severe clinical manifestations of anxiety and/or depression was difficult and was overlapped by neurotic, stress-related, affective and other disorders.

Table 1 reflects the results of one of stepwise analysis of predictors, where the concordant was 95,4%; Somers'D=0,910. For patients with CAD (regardless of sex) from the first step, the most significant predictor was the dyslipidemia, which was

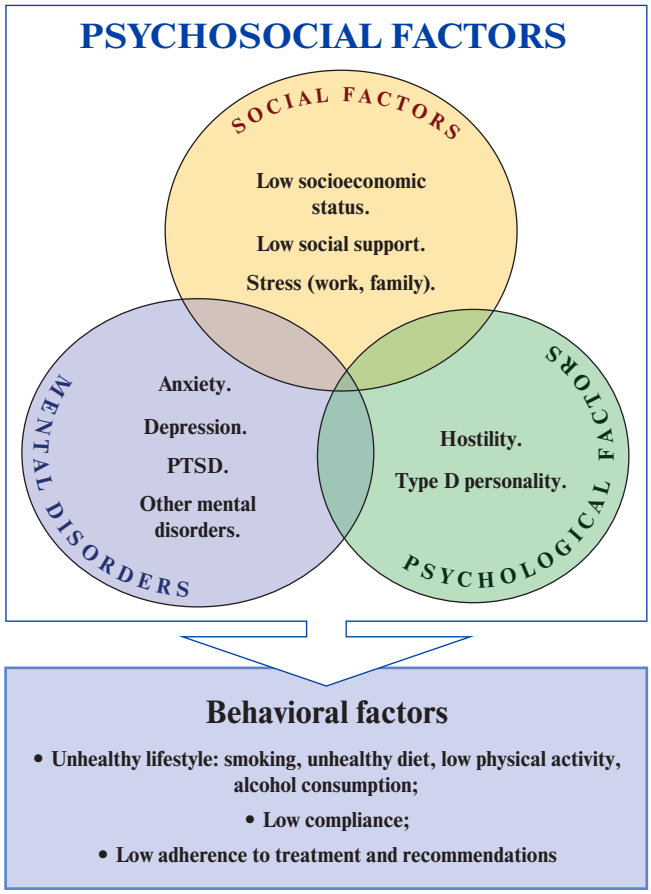

Figure 1. Psychosocial factors and their influence on behavioral factors of CVR.
Abbreviation: PTSD — post-traumatic stress disorder.

>50% of the prediction (p=0,0001). Then, the equation included other characteristic signs reflecting the progression of CVR: patient's age (p=0,0001), blood pressure level (p=0,0001), HTN (p=0,0240), cardiac arrhythmias (p=0,0001), T2D/IGT (p=0,0066), LVH (p=0,0490), family history of CVD (p=0,0371), along with a wide range of psychosocial factors. The mental condition and psychological characteristics of patients were characterized by the participation of such predictors as the mental disorder (p=0,0172), the leading psychopathological syndrome (p=0,0077), the patient's age at the onset of mental disorder (p=0,0322), severe anxiety (p=0,0379), fear of death (p=0,0108), introversion (p=0,0045), rigidity (p=0,0249), low activity (p=0,0475), impaired social adaptation (p=0,0238), previous stress (p=0,0184).

The analysis of the revealed cardiovascular and psychosocial factors in the groups of patients divided by sex revealed significant differences in the clinical manifestations of CAD in patients with anxiety and depressive disorders.

Table 1

Predictors of comorbid conditions in patients with CAD (stepwise logistic regression)

Step	Trait	(χ^2) Wald test	Accurate prediction (%)	p
1	Hyperlipidaemia, DLP	322,2	50,4	0,0001
2	Age	109,8	89,9	0,0001
3	Arrhythmias	45,2117	91,6	0,0001
4	Blood pressure level (mm Hg)	35,9287	93,3	0,0001
5	Introversion	8,0569	93,8	0,0045
6	Leading psychopathological syndrome (anxiety, depression)	7,1001	94,2	0,0077
7	T2D/IGT	7,3708	94,4	0,0066
8	Social maladaptation	5,1058	94,5	0,0238
9	Hypertension	5,0957	94,6	0,0240
10	Diagnosis of a mental disorder	5,6750	94,6	0,0172
11	Rigidity	5,0306	94,6	0,0249
12	Fear of death	6,5044	94,7	0,0108
13	Family history of CVD	4,3448	94,8	0,0371
14	LVH	3,8768	95,0	0,0490
15	Anxiety, various fears	4,3107	95,1	0,0379
16	Psychosocial stress (life events)	5,5620	95,1	0,0184
17	Family psychosocial stress	3,5495	95,2	0,0533
18	Age of onset of mental disorder	4,5870	95,2	0,0322
19	Hepato-biliary diseases (including hepatic steatosis)	3,3619	95,3	0,0667
20	Low activity	3,9265	95,4	0,0475
21	Non-cardiac manifestations	3,0661	95,4	0,0799
22	Emotiveness	2,9802	95,4	0,0843

Note: Concordant=95,4%; Somers'D=0,910.

Abbreviations: LVH — left ventricular hypertrophy, DLP — dyslipidemia, IGT — impaired glucose tolerance, CVD — cardiovascular diseases.

Table 2 presents the results of predicting comorbid conditions with CAD in men (n=92), where the concordant was 95,5%. The following predictors was significant: duration of mental disorder (p=0,0228), diagnosis of mental disorder (p=0,0318). Stress-related anxiety-depressive disorders preceded the CAD in men by an average of 2,7 years (p=0,0001). The age of the mental disorder onset was found to be related to the previous psychological trauma (p=0,0001).

For men, the stressors (p=0,0243) were significant life events (death or serious illness of a significant other), stress at work (dismissal, job loss), medical problems in the patient himself.

Clinically, there is a dependence of an acute coronary event (progressive/unstable angina, myocardial infarction), which developed with severe depressive episode in 11 patients who experienced extreme stress (death of a of a significant other), on average 4 months before the onset of acute cardiac symptoms.

In cases of comorbidity of CAD and anxiety disorders, angina attacks were associated with panic disorder with a severe leading thanatophobia (p=0,0111), accompanied by a tachycardia or tachyarrhythmia. Paroxysmal arrhythmias (paroxysmal supraventricular tachycardia, atrial fibrillation, frequent premature beats), as well as panic disorder, occurring in the form of sudden attacks of severe anxiety, fear of death, autonomic and somatic vegetative symptoms, hemodynamic disorders and

Table 2

Predictors of the severity of CAD and comorbid conditions in men (stepwise logistic regression)

Step	Traits	(χ^2) Wald test	Accurate prediction (%)	p
1	Age	117,9	86,7	0,0001
2	Hypercholesterolemia, DLP	45,5266	91,2	0,0001
3	Arrhythmias	21,4362	92,5	0,0001
4	Hypertension	15,2462	93,7	0,0001
5	LVH	7,4900	94,1	0,0062
6	Fear of death, panic disorder	6,4530	94,2	0,0111
7	T2D/IGT	6,2532	94,3	0,0124
8	Positive family history of cancer	6,1633	94,5	0,0130
9	Duration of mental disorder	5,1824	94,5	0,0228
10	Psychosocial stress (life events)	5,0734	94,7	0,0243
11	Social maladaptation	3,9340	94,9	0,0473
12	Diagnosis of a mental disorder	4,6102	95,2	0,0318
13	Hypochondriasis	4,0743	95,3	0,0435
14	Internal tension	3,7710	95,3	0,0521
15	Hepato-biliary diseases (including hepatic steatosis))	3,4940	95,5	0,0616

Note: Concordant=95,4%; Somers'D=0,910.
Abbreviations: LVH — left ventricular hypertrophy, DLP — dyslipidemia, IGT — impaired glucose tolerance.

cardiac arrhythmias, are psycho-traumatic events which leads to maladaptive response, depression, and hypochondriasis (p=0,0435).

In addition, the clinical manifestations of anxiety and depression were supplemented by low activity, sleep disorders, headache, aggressive outbursts, anger, irritability, internal tension, hypochondriasis, fear of death from heart disease.

The progression of CAD is accompanied by the severity and nature of psychosocial stress, symptoms of anxiety and depression, the predominance of depressive disorders, psychological characteristics leading to social maladaptation (p=0,0473), anosognosia and low medical adherence of men.

Positive family history of cancer (p=0,0130) was included in some of the final equations only in men with CAD.

Analysis of the CAD predictors in women also revealed some features. The analysis showed a high prediction percentage in a number of logistics models: Concordant=93,1%; Somers'D=0,877 and Concordant=95,0%; Somers'D=0,916. There were following predictors of CVR: DLP (p=0,0001), which provided 31,1-50% of the prognosis; LVH (p=0,0162), HTN (p=0,0002), T2D/IGT (p=0,0085), arrhythmias (p=0,0001), body mass index (p=0,0203).

For women, the most significant stressors were family stress and life events (p=0,0448).

In women, CAD was associated with postmenopausal period of age (p=0,0001), dyshormonal disorders (p=0,0027), thyroid diseases (p=0,0379), family history of endocrine disorders (p=0,0157). Women were characterized by non-cardiac manifestations (p=0,0447), autonomic dysfunctions (globus sensation, shortness of breath (p=0,0047), vegetative paroxysms (p=0,0466)), severe anxiety, and fears (p=0,0379)

Conclusion

The progression of CAD and predicting comorbid conditions in these patients are associated with combined effect of CVR and psychosocial factors.

Among psychosocial factors, mental and psychological components turned out to be significant predictors: history of stress and the nature of stress factors (death or serious illness of a significant other and other life events; family, industrial, and medical stress), the patient's age at the time of mental disorder

diagnosis, the duration of mental disorders, leading psychopathological syndrome (the severity of anxiety and/or depressive symptoms), some personal characteristics of patients, leading to a social maladaptation.

The development of a comorbid pathology that aggravates the CAD course is specified by the sex and age of patients, while in men at a younger age (<50 years) than in women (>50). Psychopathological symptoms precede the primary diagnosis of CAD, which is due to the impact of psychological trauma with a subsequent prolonged depressive reaction (adjustment disorders, anxiety, mixed anxiety and depressive disorder, depressive episode or dysthymia), complicating the clinical performance and diagnosis of CAD.

The analysis showed that psychosocial stress and the resulting anxiety-depressive disorders can be considered as significant predictors of the development or progression of CAD and comorbid conditions.

The revealed significant predictor "positive family history of cancer" in men requires additional study and follow-up of patients.

The results obtained serve as a guideline for an interdisciplinary approach to the treatment and prevention of combined cardiovascular and mental diseases.

Relationships and Activities: none.

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Implantable cardioverter defibrillator: decision-making on turning off in patients with end-stage heart failure

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The use of implantable cardioverter defibrillators has become a common standard method of primary and secondary prevention of sudden cardiac death, prolonging the life of patients with cardiomyopathy. At the same time, with the disease and comorbidity progression, at the final stages of life, a difficult decision arises to turn off the device due to a shift in priorities from extending life to maintaining its quality. Heart failure patients eventually die due to the progression of the underlying disease, despite currently available advanced technologies. Whether certain life-sustaining treatment methods are still appropriate in the final stages of life is an important topic of discussion in this article. Palliation for patients with implantable cardioverter-defibrillators is a challenging issue for both patients and medical professionals. This article describes the different ways to turn off defibrillation devices based on patient status.

Key words: implantable cardioverter defibrillator, shock, terminal illness patient, death, heart failure.

Relationships and Activities: none.

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Currently, an implantable cardioverter defibrillator (ICD) is an effective therapy and prophylaxis in patients at high risk of sudden cardiac death (SCD) due to ventricular tachyarrhythmias (VTA). In 2013, over 85,000 ICDs were implanted in 46 European countries. Every year the number of implantations increases, which is associated with both an aging population and the shift from secondary prevention of SCD (implantation in patients with previous life-threatening arrhythmias or SCD) to primary prevention (implantation in patients only with an increased risk of arrhythmia or SCD) [1]. While ICD is effective in saving and therefore prolonging life, it creates problems for a patient such as fear, painful shocks, and helplessness due to the unpredictability of arrhythmias and subsequent shocks [2]. Defibrillator shocks can cause serious physical and psychological distress, and ICD benefits may do not outweigh these concerns, requiring consideration of turning off. Most often, this question arises in patients with end-stage heart failure (HF), cancer and other irreversible diseases. At the same time, not every European country has national legislation, directives, recommendations or consensus related to this issue.

The majority of patients with SCD more often (64%) are class II HF patients with moderate symptoms and need protection. The most symptomatic patients with class IV HF are much more likely to die from heart failure (56%), rather than suddenly from VTA (33%) [3]. That is why the current recommendations apply to patients whose life expectancy is >1 year with good functional status. The use of an ICD is not recommended for patients with class IV HF, refractory to therapy, without indications for cardiac resynchronization therapy (CRT), left ventricular assist device, or heart transplantation. Thus, severe HF is a contraindication to primary ICD implantation [4].

What about patients with progressive HF with previously implanted defibrillation devices? The study by Cleland J, et al. (2019) with a two-year follow-up of patients with ICD demonstrated an increase in mortality from congestive HF and sudden arrhythmia with an increase in class and in the end-stage phase. In the same phase, a significant decrease in the number of patients saved from sudden arrhythmic deaths was noted [5].

Patients with ICD can develop incurable disease due to progression of underlying heart disease or other chronic conditions. Terminally ill patients are more likely to develop conditions such as hypoxia, sepsis, decompensated HF, and electrolyte abnormalities, which predispose to tachyarrhythmias and, consequently, an increase in shock therapy frequency. Shocks are physically painful and contribute to psychological tension without prolonging life with good quality. Therefore, consideration of ICD deactivation is advisable when the patient's condition worsens and death is close [6].

Subanalysis of telemetry data from cardiac implanted electronic devices of deceased patients included in the MADIT-II trial found that 15 out of 55 (27%) patients received appropriate shock therapy at the last life phase and 1 patient (2%) received unwanted shocks; in 39 out of 55 patients (71%), ventricular tachycardia (VT) and shock therapy were not recorded [7]. According to a survey of 50 hospice workers in Oregon (USA), 64% of patients with ICD received unwanted shock therapy during the last phase of their life or even after death [8].

In the Almazov National Medical Research Center, patients with ICD and CRT devices for the SCD prevention are being observed. Since 2003, 2,248 implantations (primary, 1851) of such devices have been performed in patients from all regions of Russia. We analyzed the telemetry data of devices removed during autopsy of 18 patients who died in the clinic. At the time of hospitalization, the mean age of patients was 72,4±5,3 years, mainly men (15/18) with class III and IV HF. The left ventricular ejection fraction was 24,5±6,2%. Most of the deceased patients (13/18) had ischemic cardiomyopathy and the rest had dilated cardiomyopathy. Six patients had a history of VT; ICD implantation was performed for secondary prevention of SCD. The causes of death were mainly the progression of heart failure (n=12), severe pulmonary embolism (n=2), acute myocardial infarction (n=3), cancer (n=1). In only two patients, death was accompanied by recurrent VT with multiple ICD interventions in the form of antitachycardia pacing (ATP) and shocks (electrical storm) with progressive multiple organ failure (Figure 1). Five patients had prolonged paroxysmal or permanent atrial fibrillation. One of them had severe tachycardia with unwanted electrotherapy.

In addition, we analyzed the telemetry data of the ICD with remote monitoring of 20 deceased patients who were near the transmitter at the time of death. The system allows a detailed analysis of electrograms in episodes of VTA or atrial arrhythmias with a rapid ventricular contraction rate (Figure 2). During a telephone conversation with the relatives of the deceased, the circumstances, the cause of death and the presence of shocks immediately before death were clarified.

The overwhelming majority of patients (17/20) died without electrotherapy. Three patients had multiple shocks that aggravated the death. In most of the deceased patients, persistent cardiac arrhythmias were not recorded at the time of death. The cause of death, according to relatives, was progressive HF

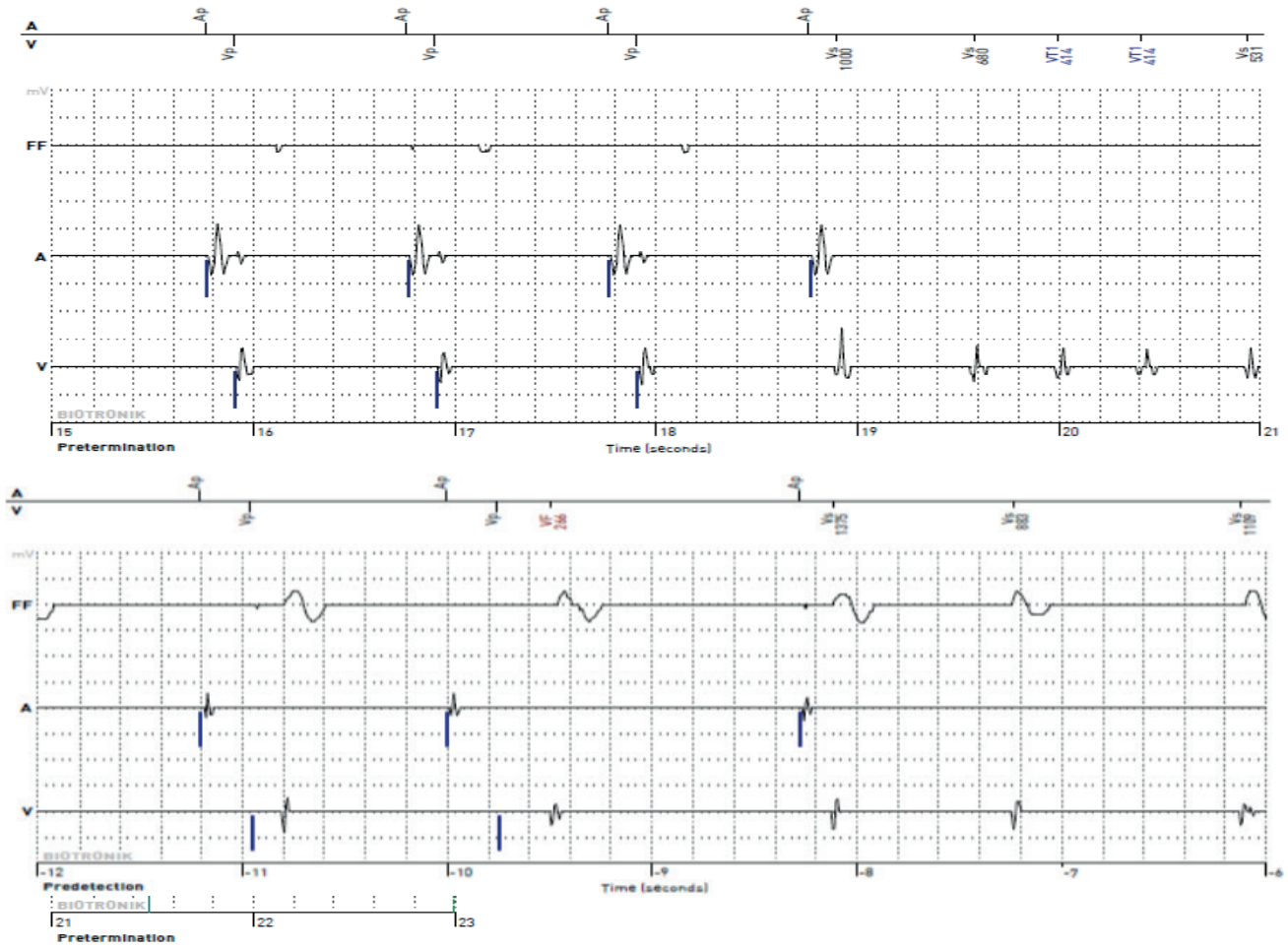

Figure 1. Recurrent VT with multiple ICD interventions in the form of antitachycardia pacing (ATP) and shocks (electrical storm).

(n=6), thromboembolism (n=3), stroke (n=4), cancer (n=3), acute myocardial infarction (n=3), and infection (n=1).

The presented analysis confirms the fact that, with the progression of the underlying disease, defibrillation is not always life-saving and sometimes it can even aggravate the critical condition. However, the small amount of available data does not allow for firm conclusion. More information could be obtained with the return of removed devices with a detailed analysis of the records. This will help developing criteria for risk stratification of critical events.

HF affects 2,4% of the adult population and >11% of patients over 80 years of age. The current treatments slow down but do not stop the disease progression. As a result, the prevalence of symptomatic HF increased, including prolongation of refractory end-stage heart failure. This definition describes a group of patients for whom symptoms, despite the recommended treatment, significantly limit daily life, and for whom long-term remission is unlikely [9]. The increasing prevalence and high burden of symptoms in patients with end-stage HF indicate a systematic and thoughtful approach to decision-making.

ICDs is fundamentally different from many life-saving therapies in patients with HF with reduced ejection fraction. Medication and CRT improve cardiac function, thereby reducing mortality and hospitalization rate and improving quality of life [10]. In contrast, ICDs improve survival by interrupting potentially fatal arrhythmias, but do not affect cardiac function or symptoms. In addition, cardioverter-defibrillators can create additional burdens for patients, especially due to unmotivated or unnecessary shocks and the prevention of quick death. Since the ICD use is a trade-off between a reduced risk of SCD and an increased risk of hospitalization, a possible decrease in the quality of life and long-term death from progressive contractility decrease, it is especially important to carefully discuss the absolute risks for a patient with and without an ICD.

There is a medical aspect, which may seem trivial, but is that all patients with/without an ICD, will die sooner or later. The annual mortality rate for patients

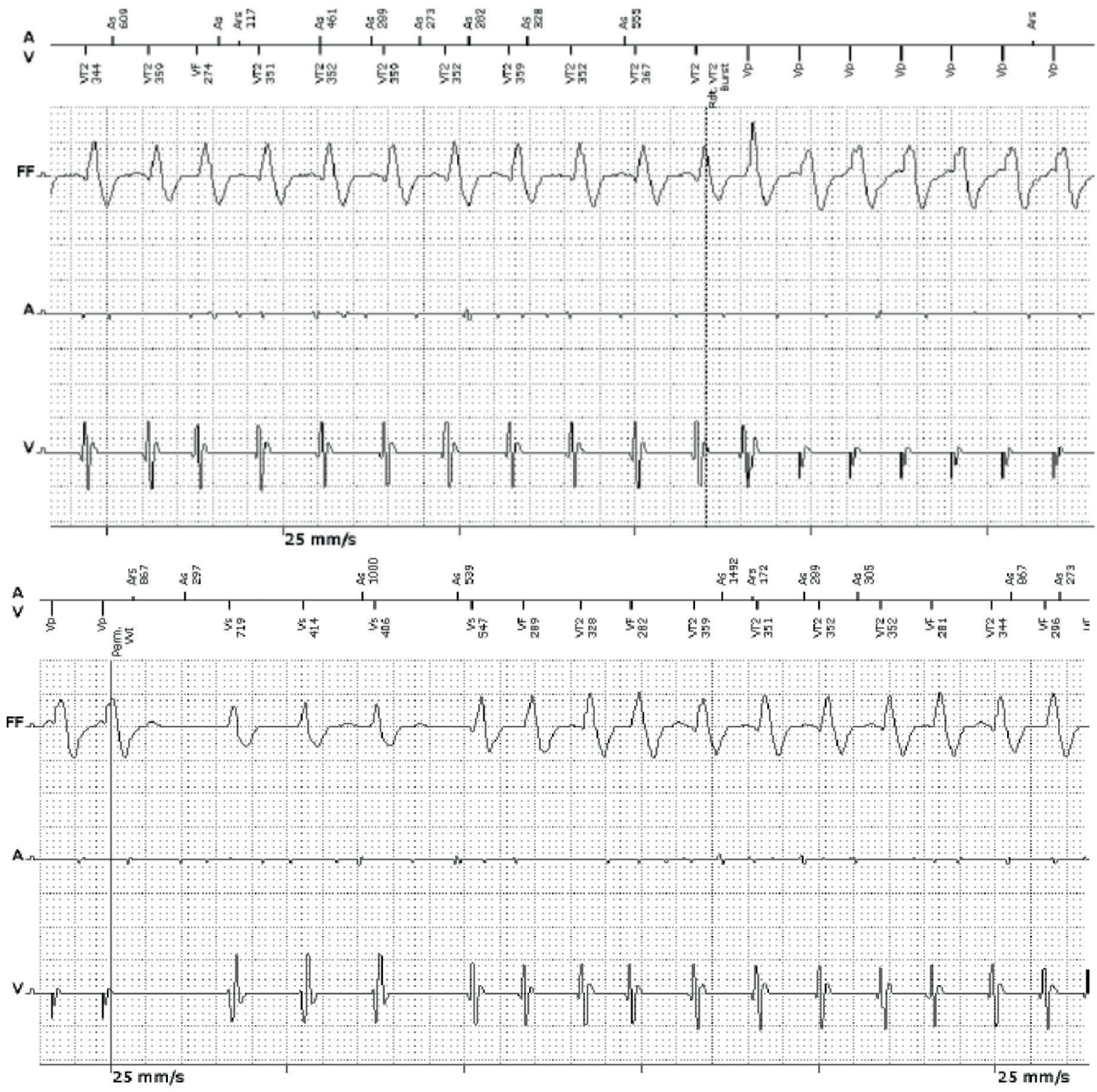

Figure 2. Episodes of VTA or atrial arrhythmias with a rapid ventricular contraction rate.

with ICD varies depending on the underlying disease (11,3% to 16,8%), and most of these patients die from the progressive HF [11].

Passive discontinuation of treatment: turning off the ICD

The option to deactivate the ICD should be discussed prior to implantation and again if significant changes in clinical status appear [6]. Currently, this is done very rarely. In a nationwide survey of 734 physicians, including 292 cardiologists, published by Goldstein N, et al (2010), only 60% of participants discussed ICD deactivation with patients and/or their families. The nationwide American survey of 900 hospice staff found that <10% of hospices have a clear policy on defibrillator deactivation, and >58% of hospices have had at least one patient who has suffered shock in the past year [12]. For a device near its end-of-battery life, the generator should not be changed without careful review of whether or not active defibrillation is consistent with overall goals of care and anticipated duration of good-quality survival [13].

Various ways to turn off ICD may be discussed. Thus, shock function and ATP can be completely

deactivated by reprogramming. Non-replacement of an ICD near its end-of-battery life should be considered (surgical removal is not recommended as it is painful and has potential unwanted complications).

Types of ICD deactivation

• Complete deactivation of all functions (detection and electrotherapy of tachycardia);

• Programming the device for monitoring only;

In patients with end-stage incurable HF, turning off all antitachycardia therapy should be considered, since any rapid VTA can result in sudden death without long-term suffering;

• Deactivate shock therapy only with maintaining ATP.

In stable patients and those with slow VT (100-160 bpm), tachycardia can lead not to death, but to an aggravation of the condition. In these cases, deactivation of shock therapy with maintaining ATP may be preferable, but it should be borne in mind that the rate of VT acceleration with ATP is 2 to 4%.

Deactivation of implantable electronic devices for pacing

Pacemakers prevent symptomatic bradycardia and asystole, which gives a patient a better quality of life and prevents worsening HF, and therefore is a means of achieving palliative care goals. In patients with CRT devices, severe HF usually accompanies an incurable illness. In this situation, CRT is mainly used as a symptomatic treatment and, therefore, should not be deactivate as there is a risk of a significant reduction in quality of life.

Ethical issues

Empirical ethical research shows that the judgments of patients and physicians do not always correspond to professional ethics. Patients tend to overestimate the potential of the ICD in preventing death, so they often view turning off the ICD as an act of suicide. Most patients are hesitant to accept ICD deactivation, even if death from another cause is not far off [14]. For a terminally ill patient who can make decisions, it is imperative that a physician discusses ICD deactivation in a timely manner. This will enable a patient to understand that failure to deactivate defibrillator can lead to excruciating death. Since deactivation may not have been discussed at the time of implantation, it is important that the issue is raised sensitively and at the appropriate time [15].

The parameters for device activation should be included in the informed consent prior to implantation, which should include the following points:

1. Before ICD/CRT-D implantation, the potential for impairing a patient's health to such an extent that deactivation should be discussed.

2. If a patient gives a do-not-resuscitate order or receives palliative care, a turning off should be discussed at the same time. Deactivation of shock therapy should at least be suggested.

3. The physician observing patients with implanted devices should be informed of significant health changes and worsening comorbidity at each patient visit.

What issues need to be discussed regarding ICD deactivation?

• ICD deactivation will not result in death;

• Demand pacing will be provided, but not therapy for VTA;

• Turning off ICD will not be painful and the ICD inability to function will not cause pain;

• Deactivation process will be similar to the examination in the clinic, where a patient is monitored after implantation.

Discuss ICD deactivation with a patient and/or immediate family member if:

— Resuscitation opportunities have been exhausted or a do-not-resuscitate order has been made;

— A patient's condition is deteriorating and turning off may be advisable;

— Moving to a hospice or home for the rest of life is planned.

At this stage, it may be appropriate to consider the palliative care, which involves a multidisciplinary team approach; caring for a patient, his family or closest friends; relief of pain and other symptoms; attention to emotional, psychological, and physical needs; improving the quality of life as high as possible.

Current пguidelines for the treatment of patients with HF and risk of SCD have focused on the indications for device implantation, but attention should also be paid to the technical, scientific and ethical aspects of turning off devices. It seems appropriate to develop a medical, bioethical, and legal consensus for deactivating ICD, keeping in mind that this applies to two different categories of patients: the cognitively intact and those deprived of legal capacity. Shared decision-making for advanced HF has become more difficult as the duration of illness and treatment options have increased. Carefully informed decisions should be chosen from medical options and should be consistent with the values, aims, and preferences of an informed patient.

Relationships and Activities: none.

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Role of spirituality and religiosity in clinical practice: problem conceptualization

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The concepts of spirituality and religiosity are studied in the context of cardiac disease and prevention. In psychology, psychosomatics, psychocardiology, spirituality is studied as a feature of human experience, attributed to certain transcendental ideas. Religiosity is a part of a person's self-identification, influencing his experience of interaction with medicine, and more broadly, in general, his worldview and conceptualizations. Spirituality and religiosity are culturally specific, in particular, in Russia, where society has historically formed stereotypes of attitudes on God and other inaccessible ideas. Thus, the Russian society is characterized by lay religiosity, which includes Eastern Orthodox metaphysics along with paganism. In practical cardiology, the concepts of spirituality and religiosity can be realized explicitly (manifestation of faith by a patient and a doctor) and implicitly, without manifestation. Spirituality and religiosity can influence patient adherence, decision making, and more complex psychosomatic processes. Spirituality and religiosity can be a salutogenic factor, which promotes health, improves the psychological and physical state. But they can also mediate morbid effects if a doctor incorrectly addresses them during communication with a patient. Spirituality and religiosity are a part of complex downward system of somatic manifestation of cultural and social factors, the study and consideration of which is obvious in practice.

Key words: psychosomatics, upward communication, downward communication, experience, risk factors, patient-centered care, communication, spirituality, religiosity.

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Cardiovascular disease is a strong example of psychosomatic interrelationships of human physiology, relations of social life and somatics. Lifestyle and stress are risk factors for noninfectious pathology that depend directly on the motivation, emotions, mood, as well as personality traits, accentuations, and stable features of the social self.

Human is biosocial. This means that biological and physiological structure through mental functions manifests itself in the form of social behavior, and life in society leaves a stamp on the physiology and then the pathomorphology of the body. Psychosocial risk factors are culturally dependent. Stress is the result of comprehending and experiencing socially significant events, and the way of life is closely related to the requirements that society makes to the individual, and to the opportunities that it provides.

Working with cardiovascular disease requires taking into account the sociocultural aspects involved in the disease development, as well as those positively effecting, promoting rehabilitation and secondary prevention. The concepts of disease picture and illness narrative, existential issues associated with the disease include cultural constructs — ideas developed historically. Among these constructs, religiosity and spirituality (RS) are important concepts for explaining the inexplicable and dealing with the inevitable. Illness and death are certainly the first to raise the questions that people seek answers to.

Definitions

The concepts of religiosity and spirituality are quite new (or well overlooked old) in the complex of attitudes towards their own health.

The concepts of RS are one of the most difficult to define in psychology. The general main feature of RS is the fact of recognizing the existence of the transcendent as fundamentally inaccessible to the experience of perception of our external senses. A person with such an experience feels like a part of something larger, which, despite its influence on the psyche and somatics of the experiencer, remains in his perception as something inaccessible to experience. Many researchers designate this as a determining factor, however, it seems to us more adequate to recognize the immanent as an important part of religious and mystical experience. Rituality is the most important aspect of this social phenomenon. The importance of immanent experience is also confirmed by studies on influence of prayers, meditations and religious participation as factors preventing the cardiovascular pathology.

Spirituality is not tied to social institutions and rituals, which distinguishes it from religiosity. Comprehension of one's attitude to the transcendental is often associated with spirituality. Thus, the psychologist Sinnott JD (professor at Towson University, Maryland, USA) believes that spirituality is more related to a person's attitude to the sacred or transcendent, while religiosity more refers to practices and beliefs related to a particular dogma system [1]. However, the separation of concerns can be quite controversial. Spirituality is also associated with the inner mystical experience, which has a somatic effect similar to religiosity. For religious thinkers and texts, spirituality is, on the contrary, an integral part of the religious experience of life. This, in turn, means that for religious people, whose self-identification is significant in interviewing for empirical research, spirituality is realized in the same non-opposing way. Accordingly, a significant number of empirical studies do not reveal not only opposition, but also a demarcation of these phenomena.

Quantitative studies in Russia [2] and abroad [3-5] show the positive influence of religiosity and supernatural belief on the prevention of cardiovascular diseases. The nature of this association is not completely clear, but the effect turns out to be positive and diverse. Various studies have shown that religiosity has a multifaceted effect on a person's life, reducing the likelihood of excessive alcohol consumption, smoking, promiscuity. It also improves the condition of blood vessels and diet. The positive influence of certain religious practices on blood pressure is shown. All this allows us to consider RS as significant factors in the dynamics of cardiovascular disease development in an individual patient. It is obvious that despite the absence of any evidence of the supernatural nature of RS effect on the cardiovascular health, the nature of this influence lies in the complex biopsychosocial relationship of the somatics and complex external factors. The difficulties of describing this issue are largely determined by two closely related problems: 1) formulation of abstract and culturally overloaded definitions; 2) the subject studied is equally an intersection of factors, most of which go beyond biomedical science, involving economic factors, cultural norms and social institutions. Figures proving this connection in numerous publications are reliable and representative, but by themselves they are hardly applicable to medical therapeutic practice [6].

RS are one of the significant factors in a doctor-patient relationship, but the direction of this influence, as well as specific communicative advice, turn out to be difficult to interpret and have been little studied. In addition to psychological and psychosomatic (cultural-somatic [7]) relationships, one should remember about the patient's decision-making and signing an informed consent. In fact, in the specifics of working with psychosocial risk factors for noncommunicable diseases, the transdisciplinary

competence of physician and his understanding of cultural relations turn out to be more important. In addition, despite the similar results of studies on the RS correlations, it remains unclear whether there is any significant specificity of Russian religiosity.

Historical and cultural specificity

The issue of significant specificity in the religiosity of Russians, represented primarily in Orthodoxy, is ambiguous. It is worth saying that we see more evidence of the importance of individual factors than belonging to a particular religion. In the case of social factors, this means being included in a certain community. The group factor is quite clear and consists in helping a person to perceive his identity, and also realizes the social nature of our biological species. Naturally, loneliness is a known risk factor for noncommunicable diseases.

In the case of non-specific individual factors, the presence of mystical experience and prayer can be distinguished. As neurophysiologic studies show, the former is usually described as a strong inner feeling of being part of something larger and is mainly associated with the work of inferior parietal lobule [8]. The study by Italian cardiologists that examined the effect of pronouncing Ave Maria in Latin or the Tibetan Buddhist mantra (in the original language) on the sensitivity of arterial baroreceptor reflex. Reduced baroreceptor reflex is known to be associated with future coronary artery disease and heart failure. Results have shown an increase in baroreceptor reflex in both forms of meditation [9]. The salutogenic nature of some factors, while not yet sufficiently conceptualized in biomedicine, is a kind of antagonist of the pathogenic (morbidogenic) factor, positively influencing the dynamics of cardiovascular disease development [2].

The positive effect of RS is associated with the patient's satisfaction with his personal life and his external environment. To date, parameters of stress extend to illness or death of loved ones, family conflicts, marital status, difficulties at work, lack of rest [10], that is, the relationship of an individual with his environment. It does not affect the person's inner attitude to himself or his personal ideas about the world.

With the development of Freudian thought, the concept of norm and their deviations entered the social culture, which is associated with the psychosis. Now anyone who has seen, heard or felt something supernatural will say, perhaps these are manifestations of the disease — delusion and hallucinations. Identifying parameters of RS is associated with another negative view: all unexplained phenomena and sensations fall under the well-established definitions adopted in psychiatry and describing a tendency to psychosis. Delusions, hallucinations, perceptual disorders, disorganized speech or non-normal behavior [11] can be regarded as clinical signs of psychosis. Therefore, even a positive, short, but inexplicable experience that a person can go through turns out to be carefully hidden.

The factor of RS can positively influence a patient [2]. At the same time, the perception of illness as punishment and injustice is a negative inner experience. "I have never drank alcohol or smoked in my life — why am I punished?" — the patient can ask a question to the doctor who announced the severe diagnosis. At this moment, mistrust may arise in the medicine, which "made a mistake" in the diagnosis or prescribed treatment. The cognitive dissonance experienced by the patient does not lead to acceptance of the disease, but to reflections on guilt: either he is to blame or someone else.

Lifestyle modification should include not only dietary changes, weight loss, increased physical activity, but also balancing the internal psychological state and perception of the external world. Religiosity allows to receive "support" from some external figure who personifies a powerful force, and spirituality increases the amount of positive emotions experienced by an individual.

"Crisis of sacrality"

In Russia, the relationship between society and church is affected by several crises. One of them is the "crisis of sacrality", when the church is perceived as a social organization (or corporation) separated from the religious personality, designed to provide "religious services" and "services" in the field of charity [12].

"Popular religiosity" in Russia is considered an ethnographic sign of everyday consciousness, which is supported by the mass media and has nothing to do with religion. Such religiosity is a mixture of pagan and Christian concepts and is often deeply rooted in human consciousness [12]. Therefore, any question related to the concept of religiosity, first of all, will be perceived by the patient precisely from the standpoint of the correctness of ritual performance, and not deeply immerse him in the contemplation of his selfhood.

However, religiosity is not only what a person believes and considers himself a part of any religious institution, but also how mysticism (attitude to the supernatural), spirituality (inner experiences and sensations) and the transformation of his selfhood (Where I came from? Where will I go?) are combined. When a person thinks, responses to external factors or begins to conduct an internal dialogue, then all these questions constitute the integrity of his thought process.

The theory that personal relationship with God is just a product of the human psyche was put forward by Sigmund Freud a hundred years ago. Before this theory firmly began to enter human culture, everyone knew: there is I and there is "something" that affects me from the outside. A thousand years ago, a person firmly believed that his main purpose was to correctly live this real life and receive as a reward a "different" life, full of love and pleasure.

Spiritual experiences are considered to be the internal responses of the human psyche to external influences (for example, the sense of beautiful, satisfaction from favorite occupation) or to conditions that are felt inside the body, but produce an additional sensory response (for example, love, tenderness, delight).

The concept of mystical religious experience (MRE) appeared long ago and was actively developed among American sects and religious societies [13]. It was associated with using hypnosis or narcotics. More recent research of the Presbyterian church among parishioners [14] suggests that additional external stimuli should be discarded and that MRE is viewed in the context of faith or participation in religious practice. However, there is a terminological mixture in the meaning of MRE. In Orthodoxy, this concern is a specially organized practice aimed at achieving exclusive states (communion with God, deification) [15]. For modern research, it is important to interpret the concept of MRE as some exceptional state, an intense experience that is perceived (interpreted) by an individual as a collision with transcendental reality [16]. It is proposed to use not a questionnaire related to bodily sensations in parallel with conscious changes in the psyche, but the neutral formulation of A. Hardy known as 'The Hardy Question' [17]: "Have you ever been aware of or influenced by a presence or power, whether you call it God or not, which is different from your everyday self?". A classification of possible variants of interpersonal relations in the context of the MRE has been developed [18]: 1. A person intuitively notes the existence or presence of God as a partner in interpersonal interaction. 2. Man realizes and accepts the mutual character of the relationship between him and God. God is perceived as an "entity" and a partner aware of the presence of human. 3. Awareness of mutual presence is replaced by an emotional relationship, akin to love or friendship. 4. Human feels himself to be a "confidant" of God, an equal participant in their relationship.

The survey of women from 23 to 62 years old studied spirituality and spiritual quest [19]. It has been shown that modern Russian women are implicit in the attitude to spirituality and participate in "spiritual" (non-religious) practices. Since the author did not provide clear criteria for spirituality for their respondents, they were unable to distinguish between spiritual experience and MRE, limiting themselves to listing common elements: "A complex gamut of conflicting experiences, a sense of belonging to a supernatural reality, ideas about the transcendental foundations of everyday life, the interpretation of any objects and events of one's own life as sacred phenomena". The author points out that the subjects gained experience by immersing themselves in spiritual practices that combine elements of different cults and beliefs. But for a real assessment of RS factor, which could be applied in everyday medical practice in Russia (except for counseling psychology), these classifications are unacceptable.

Practical aspects

As for the direct interaction with the clinician (cardiologist, therapist), in addition to the favorable picture of the disease course, it is known that mainly spiritual/religious patients are more prone to adherence, trust in the doctor and greater involvement in research [5]. At the same time, a value dissonance (a doctor of another religion or an atheist) articulated by a doctor may, on the contrary, turn out to be a significant obstacle. This case rather describes interaction with radical Orthodox Christians, who are in a statistical minority, but a similar scenario is possible in the case of a combination of other factors (age, sex and area of residence). And although more spiritual/religious patients trust doctors, the activity of interaction with the patient can be reduced on his part along with a decrease in the salutogenic factor, which is replaced by the feeling of "deserved punishment". For example, in Russian studies, the deservedness of punishment turned out to be a common explanation for the myocardial infarction that occurred [2]. Curiously, patients who identified themselves as not very religious blamed fate for the punishment. Rural African Americans also tended to treat illness as divine punishment [20]. Elderly Englishmen from Durham actually illustrated similar responses, but in addition to punishment, there was also an interpretation of what happened as an ordeal. All this suggests that the happened myocardial infarction in the interpretation of events by the patient is often described as punishment, regardless of the region of residence.

It can be assumed that the feeling of deserving punishment may not only be a barrier for doctor, but in general, rather negatively affect the general attitude. Internal acceptance of the happened myocardial infarction as an ordeal looks more beneficial and can be recommended to the patient by the therapist in order to improve his inner self-consciousness.

It should also be noted that in order to gain better medical adherence and emotional response in a situation of feeling deserved punishment, a priest may be more proper than a doctor. In Russian medical practice, priests are frequent visitors to hospitals, but they are far from always in demand even among spiritual/religious patients. Perhaps a more universal tool for resolving such problems, independent of spiritual and religious preferences or their absence, is psychotherapy, however, unfortunately, the patient's attitude to communication with a psychotherapist causes a noticeable negative response [21].

An important point in communication is the fact that although RS factor can favorably affect the disease course, the doctor should not increase it. Inappropriate advice (for example, "go to church") can negatively affect the patient's general attitude towards the doctor. Phrases such as "people will pray for you" or an invitation to pray for a patient will not only not calm him down, but may also negatively affect treatment. In 2005, the randomized study was conducted where patients were divided into three groups: those received intercessory prayer and was not informed about it; those received intercessory prayer and was informed about it, and control group [22]. The highest incidence of atrial fibrillation was revealed in the second group. This may be due to the frame inconsistency: in a hospital where people are to be treated, a patient after a very dangerous disease (myocardial infarction) is told that he is being prayed for, which makes prayer feel like a last resort.

All this leads to the fact that it is not a doctor who should initiate conversations about God, but he can bring to them and in no way impose either his position or his recommendations on actions related to RS. Not initiative, but support, will be the best strategy for interaction. In the case of atheistic views of a doctor, he should perceive the RS factor as a necessary part of evolution and society, which naturally has certain positive functions, including for health.

Based on evidence of the positive effects of RS, can an atheist be encouraged to think about increasing his own RS? There are reasons to give a negative answer. Focusing on this factor is not favorable for an atheist: instead of believing with further healing, a patient is more likely to get stuck in the frame of faith as a missed opportunity, which, like any other strong negative experience, negatively affects the treatment. Thus, discussing religious issues with a patient-atheist can be fraught, and the initiative to increase the RS factor is not only difficult, but also dangerous.

An individual spiritual quest necessarily leads to a group with similar interests or to a group that can satisfy this need with their ideas. In the case of a patient, these may be neighbors in the hospital ward. Very often this factor escapes the attention of a doctor, since he is observing a patient, and not a group of people gathered in one place and united by a common problem. In a hospital, a person breaks out of the familiar environment and social circle, becoming more vulnerable to the effects of the new environment and more in need of a positive attitude. A doctor can contribute to the creation of a salutogenic environment" by establishing the correct settings — the patient is not alone, is under close care, the treatment regimen is selected correctly, family members support and await recovery.

However, the attending physician cannot perform the functions of a personal psychologist, but can refer them to the "health schools". If the patient talks about individual discomfort (dissatisfaction with life, work, etc.), then group trainings aimed at personal growth are suitable.

Therefore, it seems important for a doctor to assess the medical adherence of patient and to change not only the lifestyle, but also the attitude towards the disease. Spirituality can be maintained by listening to favorite music, watching movies, reading books, or visiting places that the patient would like to see, but did not dare. The need for mysticism and receiving "reinforcement" in the form of dreams and revelations is solved through intellectual and creative work on oneself and exercise. General religiosity, the basic need of which is the absence of loneliness and a feeling of love, is achieved by rethinking the patient's life attitudes, but this process does not occur simultaneously.

In day-to-day life, there are several vectors in our country that people try to separate from each other and even hide from their loved ones. This attitude is determined by the socially accepted criteria of "shame" and "punishment" — natural constraints within any society. Therefore, the degree of plain-speaking depends not only on the personality of a doctor, but also on the guarantee of confidentiality.

The RS factor depends significantly on sex and differs in various generations. People who are immersed in everyday life problems tend to forget about RS, they psychologically isolate themselves, trying not to think. Therefore, memories of spiritual quest beginning in adolescence can be a kind of trigger. Or some tragic event (for example, the death of a loved one), after which a person dramatically changes his life. A rarer option is love, since this feeling is not so clearly understood in modern society in a spiritual sense.

Negation, or repression, is based on the natural unwillingness of a person to experience painful questions: how should I live? "Here and now" or is there life after death? These are two opposite

paradigms. However, the next question is why live: if reality does not suit you, and I don't believe in the afterlife? All personality crises can be explained by depression and childhood traumas, and the meaning of life is found in creativity or work. Disease is a factor that changes everyday life, that is, when the attitude "bad reality — there is no other life," a negative scenario is inside a person. Therefore, initially the doctor should be concerned only with two aspects: does the patient have a desire to change his life? And second, no less important, does the patient realize that well-being in his life depends only on himself? Not from a doctor, government, family, or bad weather forecast.

Conclusion

Conceptualization of RS concerns for scientific and practical cardiology is necessary due to the powerful culturally-specific influence of the factors described by these concepts on the patient. This influence is realized in at least two ways: through psychosomatic experiences that create both salutogenic and morbidogenic effects, and through behavioral components — lifestyle, stress, medical adherence, trust in medicine, decision-making, and communication.

In clinical practice, there are many questions that do not imply an exact answer, but are included in the clinical performance, the world picture of both a patient and a doctor. The individual response to them depends on the worldview and experience of a person. Not only psychology, but philosophy and cultural studies will make it possible to operationalize the concepts of RS and their individual elements for a more effective inclusion in clinical practice.

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Patient-centered palliative care in pediatric cardiology: a cardiophenomenological approach

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Despite the success of pediatric cardiology and cardiac surgery in the treatment of severe heart diseases in children, a significant increase in the average life expectancy and quality of life of patients, cardiovascular diseases remain common reasons leading to the need for palliative care. A number of psychological and ethical aspects in pediatric palliative care in cardiology are not sufficiently developed. Cardiac diseases requiring palliative care affect the physiological, psychological and social aspects of patients' lives, and require special attention. It is proposed to use the second-person methods in clinical communication based on the biopsychosocial approach of cardiophenomenology in order to provide a patient-centered environment in palliative care for children with severe heart diseases. Cardiophenomenology can provide non-paternalistic relationships in palliative care for pediatric patients with cardiovascular disease to improve health-related quality of life (HRQoL).

Key words: congenital heart defects, quality of life, patient-centered care, doctor-patient relationship, palliative care for children, cardiophenomenology.

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Cardiovascular diseases are one of the leading causes of the need for pediatric palliative care. In developed countries, the incidence of severe heart disease in children is increasing [1]. At the same time, a number of psychological and ethical aspects in pediatric palliative care in cardiology cannot be called sufficiently developed, in contrast to neurological and oncological palliative care. Often the patients themselves and their parents are not ready for the end-of-life, and physicians do not take into account all aspects of mourning in such a specific context [1].

The pathophysiological and clinical features of cardiovascular diseases influence the patient's subjective experience. Modern clinical and fundamental medicine does not have sufficient tools for studying categories of experience and similar ones, i.e., phenomenological categories. In this article, we will show how you can enrich the communicative repertoire of interaction between a physician and a palliative patient in cardiology with elements and techniques of modern evidence-based humanitarian knowledge. The cardiophenomenological approach used in this article can successfully highlight the problem areas of pediatric palliative care in cardiology and help develop effective communication strategies in clinical practice.

Clinical features of severe heart disease in children

Severe cardiovascular disease often leads to the need for palliative care for children and is one of the leading causes of all-cause child mortality. Key diseases leading to severe cardiac dysfunction are cardiomyopathies and congenital heart defects. The most common severe conditions are single ventricular defects, congenital heart defects as part of genetic syndromes, pulmonary hypertension and pulmonary vein stenosis [1].

Pediatric cardiac diseases requiring palliative care have a number of clinical features due to their pathophysiology and directly impact on the subjective experience and the communication of the patient, parents and physicians. Thus, cardiovascular diseases are prone to slow steady progression with periodic decompensations with acute heart failure, after which the cardiac function is not fully restored [1]. This remitting course makes the disease unpredictable and often makes it impossible for both parents and children to prepare for death.

Also, palliative cardiac patients are more likely to die in intensive care units, rather than in a hospice or at home. Most patients undergo cardiopulmonary resuscitation. As a rule, most patients have a long history of operations and catheterizations during their life, and at the end-of-life are sedated for intubation.

The mental status of patients varies and largely depends on whether the heart lesion is isolated or is part of a genetic disorder. In the second case, the incidence of cognitive failure is high. In both cases, the condition may worsen due to secondary organ dysfunction due to inadequate hemodynamics.

The pathophysiology and features of the clinical course specifies subjective sensations and symptoms. Fatigue, sleep disturbances, poor appetite, chest pain, shortness of breath, nausea and vomiting, and constipation are common among children with cardiac diseases over 2 years of age [1, 2]. Of mental problems, the most common among children with severe heart disease are agitation, anxiety, and decreased consciousness [2].

Patient-centered care and cardiophenomenology

The special pathophysiology and clinical course of cardiovascular diseases requires a specific approach to building relationships between doctors and patients [3]. Cardiac diseases requiring palliative care affect the physiological, psychological and social aspects of patients' lives, and, accordingly, require special attention to their lifeworld. Patient-centered medicine (PCM) is a relatively new approach in the relationship between a physician and a patient, which focus on the interests of the patient himself.

The theoretical basis for the patient-centered approach was the "biopsychosocial model", proposed by Engel GL in 1977, which involves biological, psychological and social components of a person as a single being, as opposed to the biomedical model, which can be described as disease-centered. In opposition to the disease-centered model, there are two models: person-centered (Rogers C [4]) and patient-centered.

The patient-centered approach is not yet clearly defined; in general, it can be defined as an approach to treating a patient as a unique person, taking into account his point of view and life circumstances, needs and preferences. The patient-centered approach is implemented in shifting the paradigm of the doctor-patient relationship, in participation of a patient in decision-making, in informing a patient [4].

The work by Mead N and Bower P distinguished 5 main features of patient-centredness: biopsychosocial perspective; 'patient-as-person'; sharing power and responsibility; therapeutic alliance; and 'doctor-as-person' [5]. This scheme has been successfully used in empirical studies of patient-centeredness among healthcare workers [6].

Since the PCM is based on deep interaction with a patient, taking into account his personality and the

lifeworld in making medical decisions ('sharing power and responsibility', 'therapeutic alliance'), it seems necessary in order to better understand a patient and productively interact with him to use empathy-based communication methods and tools. In particular, it is proposed to use the cardio-phenomenological approach.

Cardiophenomenology is an interdisciplinary patient experience methodology developed by Depraz N, et al. and combining the first- (cardiovascular) and third-person (emotional-affective) analysis [7]. The unity of mental and somatovegetative processes and their dynamic interdependence, taken into account in empirical cardiophenomenological studies, makes it possible to achieve synchronization of physiological measurements (for example, electrocardiography) and psychological fixation of the subjective states of patients.

Researchers, relying on psychophysiological data and cardiophenomenology, suggest that at the level of homeostatic self-maintenance of the organism, processes such as interoceptive and emotional-affective states, heart beats and respiratory rate should be considered as markers of the individual's unified vital activity. At the same time, the individual mental life of a patient is interpreted by them as initially involved in dynamic interactions with other people, which predetermines the psychosomatic dynamics of individual development. Thus, it is proposed to consider socio-cultural factors as important parameters of cardiovascular system, and in pediatrics, emotional-affective aspects of relations within the parent-child dyad.

It should be noted that cardiophenomenology is based on the concept that visceral sensations and reactions, primarily interception, are central to the subjective experience of emotions. It is associated with the vagus nerve, which also provides parasympathetic innervation of the heart and

lung smooth muscles [8]. Consequently, the 'third' and 'first' person (physiology and psychology, respectively) are inseparable in the case of emotion-induced visceral sensations, which, in turn, support and modify a patient's affective reactions.

From the cardiophenomenological perspective, the heart (more broadly, the cardiovascular system) functions as a recorder of emotional fluctuations in the mental life of an individual. The dynamics of heart rate from normal acceleration/deceleration to bradycardia or tachycardia, the cardiac arrhythmias and heart attacks, according to the researchers, is in a feedback relationship with the subjective emotional states of patients: the work of cardiovascular system also serves as a marker of emotional-affective states, and the factor of their intensification or deprivation in a patient's subjective life [9]. This means that the subjective symptoms of cardiac diseases (shortness of breath, irritability, sleep disorders, fatigue) directly depend on complex psychological and sociocultural processes that affect different levels of a patient's systemic organization. Of particular interest may be the relationship of subjective (emotional-affective or cognitive [10]) symptoms caused both by systolic dysfunction and injury of pulmonary blood vessels, which is observed in pulmonary embolism [11].

Empathy and second-person methodology in palliative care for children with severe heart disease

What does this mean in the case of pediatric palliative care? It is known that one of the objectives of palliative medicine is to improve the quality of life of patients and their caregivers. This formulation of the problem distinguishes the palliative approach, aimed at filling the socio-psychological, existential lack in case of the expected end-of-life, from the conventional curative care.

Pediatric cardiology and cardiac surgery focus on curative care. In recent decades, many previously incurable diseases began to be successfully treated surgically and medically. The average life expectancy of pediatric cardiology patients, as well as its quality, has significantly increased. Therefore, the strategies of interaction between pediatric palliative care specialists, pediatric cardiologists and intensivists are still poorly developed [1].

However, this does not remove the question of creating a supportive, patient-centered environment in pediatric cardiac palliative care. Today, palliative care is a holistic, integrative approach based on the adherence of doctors and health professionals to communication, empathy, and the perception of a patient as an individual in the environment of family, society and culture.

Cardiophenomenology can provide a conceptual framework and set of communication techniques for building non-paternalistic relationships in palliative care for pediatric cardiac patients to improve health-related quality of life (HRQoL). According to the data, HRQoL in children with severe cardiac pathology is similar to that in children with other chronic diseases, but compared to healthy children, pediatric cardiology patients are a high-risk group, and interventions are required to maintain both the physical and psychosocial components of the quality of life. In this regard, it can be useful to take into account and hierarchize risk factors of several organization levels: somatic, psychological and social [12]. It is proposed to correct and define cardio-phenomenology as a methodology for working with subjective symptoms and feelings in children, which are directly caused by cardiac disease.

Palliative care, based on the unity of somatovegetative and emotional-affective processes, has its own ethical offshoot, which has already found its successful application in group psychotherapy [13]. It is based on the idea of empathy — a resonance with the psychosomatic states of another person in comparison with one's own experiences. This ability can be expressed as addressing another 'in the second person'. Second person appeal, according to studies, is an elementary unit of correlation between 'I' and 'others', which provides the dynamics of interpersonal relationships within small social groups (family, community, psychotherapeutic group). In medicine, empathy works as a mechanism for a doctor's understanding of a patient's feelings and, in particular, is used by Taratukhin EO, et al. [14]. As a consequence, empathic communication is focused on dialogue, positive acceptance of a patient in a helping relationship, which in case of palliative care is not limited to a functional relationship of curative and/or palliative care.

Palliative communication from the cardiophenomenology perspective should take into account the tendency of cardiac diseases to slow progression with periodic decompensations, after which the heart function is not fully restored. In this case, it is the constitutional feature of the cardiovascular system and its functions that directly substantiates the experiences of a patient and his parents: the anticipatory grief can be prolonged due to the impossibility of predicting the disease course, which increases the severity of psychological trauma in caregivers. This means that communication with palliative patients should be based on empathy not only for a patient, but also for the experiences of his family.

Talking about a child patient in the third person is ethically unacceptable. The "second person" provides an effective tool for communication with both a patient and his parents, who often act as intermediaries from doctor to patient.

The doctor does not have direct access to a patient's experience, his subjective feelings. Sometimes this gives a reason to treat his body as an object with defective functions or organs. A curative understanding of health care committed to the idea of survival can be realized in an objectified and dehumanized attitude towards the patient. The prospect of expected death may also contribute to this. Nevertheless, in palliative communication, one should pay tribute to the personal, subjective states of patients. In the case of pediatric cardiology, one should address him directly, saying that this is "your" disease, "your" experience, which, despite its privacy, can be shared.

A patient's suffering and complaints are not just signals of internal dysfunctions of the body, they are also markers that activate empathy and compassion. On the physician's part, non-paternalistic and non-hierarchical communication begins with second person appeal. 'You' may die, but we will do everything to improve your quality of life. Curative medicine, due to its focus on patient survival, may neglect the patient's subjective quality of life in order to prolong his life. On the contrary, palliative care is based on the needs of a patient himself and his relatives, who together make a decision. Second person appeal may prompt a patient to make an existentially significant decision to prolong or stop treatment in case of end-stage disease.

It is known that anticipatory grief in palliative has nosological specificity, since different degrees of incurability sets different expectations. In addition, the assessment of incurability and the decision to provide palliative care depends on who expresses it — a "traditional", curative or palliative physician.

The disease course is often unpredictable and the prognosis is difficult. Long periods of compensation are replaced by acute decompensations, after which treatment and prognosis are revised [1]. Because of this, parents are less and later aware of the proximity of the child's death, and cardiologists overestimate their readiness for it. This means that one should also take into account the temporal specifics of end-stage cardiovascular diseases and build communication from the perspective of a patient's sudden death, informing the parents about the likelihood of such an outcome.

The dynamics of cardiovascular system in the cardiophenomenological perspective presupposes its openness to the future, including one's own death, as well as the death of another. To achieve joint readiness for the dying of a child requires work with stereotyped ideas about death, carried out by psychologists both with a patient himself and with his relatives [15].

Study limitations. Within the pediatric palliative care in cardiology, the limitations of the cardiophenomenological approach are manifested. Like any other humanitarian methodology, cardiophenomenology cannot be universally applicable to all categories of patients, as a result of which the measurement of the 'second person' is implemented in different ways. In particular, it is worth noting that autonomic patients are very difficult to treat with empathy — just like cognitively intact patients with intact personal autonomy and basic cognitive functions. Similarly, empathy and interpersonal correlation in the 'second person' perspective is not universal, but depends on local socio-cultural contexts. In some cultures, the child's autonomy is neglected in favor of the dyad, while in others, on the contrary, the patient is endowed with personal

Table 1

Comparison of curative and palliative approaches in pediatric cardiology

Curative care	Palliative care
survival	quality of life
“add days to life”	“add life to days”
paternalism	dialog
physiology	phenomenology, psychosomatics
biology	culture
third person	second person
“brain”	“heart”

autonomy from the earliest life periods. All these input parameters must be taken into account in the practical palliative care in cardiology within the cardiophenomenological approach.

Conclusion

In this article, we have shown how the ‘second person’ methodology based on the cardiophenomenology can be implemented within the patient-centered care in the context of palliative care for children with severe heart disease. In palliative communication, one should refer directly to a patient himself as a subject experiencing the disease. Second person appeal means the recognition of his personal autonomy and possession of existential, emotional-affective characteristics.

Taking into account a patient’s subjective sensations and experiences caused by endogenous (psychosomatic) and exogenous (socio-cultural) factors of his lifeworld can help to improve the quality of life of a patient and caregivers.

Patient-centered palliative care is aimed at making up for the socio-psychological, existential lack in the situation of the expected end-of-life, which distinguishes it from the more traditional curative approach (Table 1). Cardiophenomenology, which emphasizes the biopsychosocial unity of an individual, presupposes an empathic attitude towards the patient, built on the basis of ‘second person’ communication.

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