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APPLICATION OF THE INTERNATIONAL CLASSIFICATION OF FUNCTIONING IN DISABLED PEOPLE DUE TO CORONARY ARTERY DISEASE

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The article describes the possibilities of using the International Classification of Functioning, Disability and Health in the medical and social expertise of patients with coronary artery disease. From the new points of view were presented the limitations of functioning in terms of functions, structures, activity, and participation. A short set of domains was selected that characterize the functioning profile in patients with coronary artery disease. We developed a method for quantifying the severity of structural and functional disorders, limiting activity and opportunities for participation, and the degree of positive and negative impact of contextual factors that provides a single language for health and related indicators. The introduction of the International Classification of Functioning into the practice of medical and social expertise will allow a full transition to the biopsychosocial model of disability, will promote the objectification of both the process of medical and social expertise and rehabilitation of disabled people.

Key words: international classification of functioning, medical and social expertise, disability, coronary artery disease.

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ЗАСТОСУВАННЯ МІЖНАРОДНОЇ КЛАСИФІКАЦІЇ ФУНКЦІОНУВАННЯ В ОСІБ З ІНВАЛІДНІСТЮ ВНАСЛІДОК ІШЕМІЧНОЇ ХВОРОБИ СЕРЦЯ

В статті описані можливості застосування Міжнародної класифікації функціонування, обмеження життєдіяльності та здоров'я при проведенні медико-соціальної експертизи у пацієнтів на ішемічну хворобу серця. Був відібраний короткий комплект доменів, які характеризують профіль функціонування у пацієнтів з ішемічною хворобою серця. Розроблено метод кількісної оцінки ступеня виразності порушень структури та функцій, обмеження активності та можливості участі, а також ступеня позитивного и негативного впливу факторів контексту забезпечує єдину міжнародну мову для характеристики здоров'я та показників, з ним пов'язаних. Впровадження Міжнародної класифікації функціонування до практики медико-соціальної експертизи дозволить повністю перейти до біопсихосоціальної моделі інвалідності, сприятиме об'єктивізації як процесу медико-соціальної експертизи, так і реабілітації осіб з інвалідністю.

Ключові слова: міжнародна класифікація функціонування, медико-соціальна експертиза, обмеження життєдіяльності, ішемічна хвороба серця.

The study is a fragment of the research project "Justification of the implementation of an optimized model for assessing the loss of functionality of defenders and victims (children and adults) of aggression in Ukraine based on the principles of the International Classification of Functioning, Life Limitations and Health: from a system of medical and social expertise to a system of expert -rehabilitation assistance", state registration No. 0123U100995.

Disability is a complex biopsychosocial category covering various levels of human development in biological and social terms, in its various relationships with the environment. At the same time, disability is a complex social phenomenon that depends on socio-economic and hygienic factors, the state of the industrial and external environment, the development of health care, demographic processes, the level of development of medical and other sciences [0].

The Convention on the Rights of Persons with Disabilities, adopted by the UN General Assembly on 13.12.2006 and signed by Ukraine on 16.12.2009, establishes the international obligations of participating states in the field of rehabilitation of disabled people, which provide for the implementation of measures to provide persons with disabilities with opportunities to achieve and preservation of maximum independence, realization of physical and mental capabilities through the organization, strengthening and expansion of complex rehabilitation services and programs. It considers the concept of "disability" as an evolutionary, because of the interaction that occurs between a violation of human health and environmental barriers, and which prevents their full and effective participation in the life of society on an equal basis with others.

Coronary artery disease (CAD) remains one of the leading causes of disability in Ukraine. The standard classification of patients with CAD by ability to physical rehabilitation in the inpatient phase

includes considering the depth, expansion of myocardial damage, and the presence of complications. Such distribution cannot fully reflect the patient's rehabilitation potential and permit the necessary rehabilitation measures to be implemented. That is why previously there were made the attempts to classify different forms of CAD based on functional ability of the patient [0**Ошибка! Источник ссылки не найден.**].

In accordance with the instructions of Prime Minister Shmyhal D.A., dated 01.09.2020 No. 36626/0/1–20 regarding the reform of the medical and social examination service, considering the recommendations of the World Health Organization, it is proposed to implement measures aimed at solving problems in the field of medical and social examination, in particular, it is proposed to use foreign experience and provisions of the International Classification of Functioning, Disability and Health (ICF) [0].

The International Classification of Functioning, Disability and Health (ICF), adopted by the World Health Organization (WHO) in 2001, is designed to provide unification and definition of a framework for assessing health and health-related indicators [0].

The ICF moved away from classifying the effects of disease to become a classification of health and health-related factors. It includes the following components: body functions, body structures, activity (performance of tasks or actions) and participation (involvement in the life situation) of the individual, environmental factors, and personal factors.

The application of the ICF classification will allow with a high degree of reliability and objectivity to assess the functional health of an individual from the biological, psychological, and social points of view and determine his needs in various types of social protection, including rehabilitation.

It is expected to determine legislatively and normatively the framework for describing the indicated indicators in a "universal" language – in the form of a system of letter codes, which will ensure the identification of the predominant types of life restrictions in disabled people, the accessibility of the physical and informational environment in order to eliminate individual barriers services, departments and other organizations regardless of organizational and legal forms and forms of ownership [0, 0]. Therefore, ICF introduction into the system of medical and social expertise and rehabilitation is necessary [0].

The purpose of the study was to determine the possibilities of the International Classification of Functioning regarding the description of the objective status of a person with a disability in the medical and social examination of patients with coronary artery disease.

Materials and methods. 255 male and female patients with coronary artery disease (CAD) were included in the study. The average age of the patients was 48.8±2.7 years, 72.1 % were men. 63.7 % of the examined had group III disability, 5 % had group II disability, the rest had no group. 15.7 % of patients had higher education, medium-special – 55.7 %, school – 28.6 %. Data on the health status of patients were determined based on clinical expert analysis of medical and medical expert documentation during clinical expert research. The clinical form of the main disease, the clinical forms of concomitant diseases, the stage of the pathological process, the characteristics of the course of the disease, the degree of functional disorders were determined.

Assessment of the patient's vital activity status according to the ICF was carried out using a set of ICF domains developed by the authors. At the first stage of the study, a short set of ICF domains was selected that characterize the profile of functioning in patients with CAD [0]. A set of domains proposed by experts using the Delphi expert error method in 2004 [0], developed by the Munich Department of Physical Medicine and Rehabilitation, was also used.

All three components classified in the ICF (body functions and structures, activity and participation, and environmental factors) were measured using a single scale. Depending on the component, the presence of a problem determines a violation, limitation of activity or limitation of an opportunity, an obstacle. The corresponding main words were selected for the corresponding domain of classification (the sign "XXX" stands for the code of the second level domain):

XXX.0 – no impairment (0–4 %).

XXX.1 – mild impairment (5–24 %).

XXX.2 – moderate impairment (25–49 %).

XXX.3 – severe impairment (50–95 %).

XXX.4 – complete impairment (96–100 %).

The research was approved by the Commission on Biomedical Ethics of the State Institute "Ukrainian State Research Institute of Medical and Social Problems of Disability Ministry of Health of Ukraine" and was conducted in accordance with the written consent of the participants and in accordance with the principles of bioethics set forth in the Helsinki Declaration "Ethical Principles of Medical Research Involving Humans" and the "General Declaration on Bioethics and Human Rights" (UNESCO)".

The statistical method (description and variation statistics) and the method of expert evaluations were used to process the research results [0]. The level of reliability was taken at $p<0.05$. Licensed software MS Excel for Windows© was used. The proposed set of ICF categories and individual profile protocols were developed by the team of authors of the article.

Results of the study and their discussion. The distribution of nosological forms is presented in Table 1.

Table 1

Distribution of patients by nosological forms

Nosological forms	ICD10 code	%
IX Diseases of the circulatory system		
Angina II functional class	I20.8	89.9
Post-infarction cardiosclerosis	I25	68.8
Chronic heart failure II-III NYHA	I50	83.5
Violation of heart rhythm and conduction	I44–I49	51.2
Arterial hypertension	I10	53.1
IV Diseases of the endocrine system, nutritional disorders, and metabolic disorders		
Obesity	E66.0	32.1
Hypercholesterolemia	E78.0	79.9
XIII Diseases of the musculoskeletal system and connective tissue		
Vertebral osteochondrosis	M42.1	45.8

The following ICF domains were chosen for the study:

Domains of the body function category:

b410 heart functions, b415 blood vessels functions, b420 blood pressure functions, b530 weight maintenance functions, b540 general metabolic functions, b5408 general metabolic functions, others specified.

Domains of the body structure category:

s410 structure of cardiovascular system, s4101 structure of arteries.

Activity and participation category domains:

d450 walking, d 520 caring for body parts, d570 looking after one's health, d630 preparing meals, d640 doing housework, d825 vocational training, d830 higher education, d850 remunerative employment.

Domains of the environmental factors category:

e110 products or substances for personal consumption, e115 products and technologies for personal use in daily living, e120 products and technologies for personal indoor and outdoor mobility and transportation, e310 immediate family, e580 health services, systems, and policies, e585 education and training services, systems, and policies, e590 labor and employment services, systems, and policies.

At the second stage of this study, a method was developed for quantitative assessment of the degree of severity of structural and functional violations, limitations of activity and participation, as well as the degree of positive and negative influence of context factors. Below is a list of criteria chosen for assessing the deviation or loss of body functions and structures of the patients.

In the "heart functions" category (b410), the following components were evaluated: heart rate (b4100), heart rhythm (b4101) – according to the results of auscultation, electrocardiography (ECG), daily ECG monitoring; contraction force of ventricular muscles (b4102) – according to the results of echocardiography; blood supply to the heart (b4103) – based on the results of a patient survey, an exercise test (climbing the stairs at a pace that is affordable for the patient) daily ECG monitoring and a standardized exercise test.

The function "blood pressure" (b420) was evaluated according to the degree of arterial hypertension and the presence of hypertensive crises.

The category "weight maintenance function" (b530) was evaluated by body mass index.

The category "general metabolic functions, other specified" (b5408) includes a metabolic disorder such as hypercholesterolemia assessed according to international recommendations.

However, the fact of the existence of certain violations and the degree of severity does not yet provide a basis for making an expert decision. It is also necessary to know how severe the limitations of activity and participation in a specific person in combination with the factors of the environment are. To do this, we evaluated changes in the domains of activity and participation and considered contextual factors.

In the walking category (d450), the distance, nature and pace of pace were assessed; the ability to use transport independently; the possibility and effectiveness of using technical and other auxiliary means

to compensate for difficulties in walking and developing an adequate level of motor activity, the need for the help of other people when moving.

In the categories of body care, looking after one's health (d570), preparing meals (d630), and doing housework (d640), the ability to perform one or more needs without outside help was assessed: personal hygiene, dressing, eating, carrying out physiological shipments, the need for which occurs after short intervals and is unregulated; the need for the help of third parties in fulfilling a number of regulated needs, the need for additional help and care; time intervals during which the need for external assistance arises; the possibility of correcting impaired abilities, including with the help of drugs and/or technical or other aids.

In the category "remunerative employment" (d850), the compliance of the state of health with the requirements necessary for a specific profession (position) was assessed; the level of education that ensures the availability of work; the opportunity to carry out labor activities in full, full-time, full-time working week with the fulfillment of production (service) standards; the possibility of employment in another profession (position), equal in qualification to the previous one; the possibility of reproduction of special professional knowledge and skills; the need to equip the workplace with auxiliary devices and other technical means.

The presence of limitations in the domains of activity and participation was measured using the single scale presented above.

Table 2

Distribution of functional impairments by degree of severity by category

Code	Blocks/categories	Violation of body functions (%)				
		no violation	mild	moderate	severe	complete
Heart functions b410						
b4100	Heart rate	14.6	29.7	53.6	2.1	–
b4101	Heart rhythm	11.6	47.7	39.5	1.2	–
b4102	Contraction force of ventricular muscles	–	69.3	30.7	–	–
b4103	Blood supply to the heart	32.3	67.7	–	–	–
Blood pressure function b420						
b4200	Increased blood pressure	3.9	17.9	78.2	–	–
Functions, related to the digestive system b510–b539						
b530	Weight maintenance function (obesity)	11.6	51.2	37.2	–	–
Functions, related to metabolism and the endocrine system b540–b559						
b 5408	General metabolic functions, other specified (hypercholesterolemia)	–	56.2	39.9	3.9	–
Walking and moving d450–d469						
d4500	Walking short distances	–	48.9	42.6	8.5	–
d4501	Walking long distances	–	42.4	36.2	21.4	–
d4552	Running	–	0.7	61.1	38.2	–
d4600	Moving around within the home	–	20.7	67.2	12.1	–
d4601	Moving around within buildings other than home	–	20.3	69.8	9.9	–
d4602	Moving around outside the home and other buildings	–	20.8	71.5	7.7	–
Using transportation d470–479						
d4702	Using public motorized transportation	–	17.6	59.3	23.1	–
d4751	Driving motorized vehicles	–	54.8	31.5	13.7	–
Acquisition of necessities d610–d629						
d6200	Shopping	–	22.7	51.1	25.1	1.1
d6201	Gathering daily necessities	–	16.8	46.8	35.5	0.9
Household tasks d630–d649						
d6400	Washing and drying clothes and garments	–	3.2	66.2	29.5	1.1
d6401	Cleaning cooking area and utensils	–	–	16.1	56.1	27.8
d6402	Cleaning living area	–	0.8	14.1	65.3	19.8
d6405	Disposing of garbage	–	1.2	28.6	55.4	14.8
Remunerative employment d850						
d850	Remunerative employment	–	3.7	38.5	50.2	7.6

Determinants with negative and positive scales were developed to quantify the impact of environmental factors, which determine the degree of expressiveness of environmental factors in the form of a barrier or a facilitator. As shown below, a dot indicates barriers, a "+" sign indicates facilitators.

XXX.0 – NO barriers (0–4 %).
XXX.1 – MILD barriers (5–24 %).
XXX.2 – MODERATE barriers (25–49 %).
XXX.3 – SEVERE barriers (50–95 %).
XXX.4 – COMPLETE barriers (96–100 %).
XXX+0 – NO facilitator (0–4 %).
XXX+1 – MILD facilitator (5–24 %).
XXX+2 – MODERATE facilitator (25–49 %).
XXX+3 – SUBSTANTIAL facilitator (50–95 %).
XXX+4 – COMPLETE facilitator (96–100 %).

In practice, there are also unspecified barriers and situations when contextual factors cannot be determined. Then the following coding is used:

XXX.8 – Unspecified barrier.
XXX.9 – Not applicable.

In the e110 category (products or substances for personal consumption), the impact of medicinal substances and food products on a person was evaluated on a positive scale, and the level of compensation served as the evaluation criterion.

Table 2 presents an analysis of the distribution of functional impairments by degree of severity.

Irrelevant activities for a specific patient were not considered.

The protocol is formed in the form of a text conclusion indicating category codes or in the form of a set of codes:

Body functions: b4101.2, b4102.2; b4200.3; b5408.2.

Activity and participation: d4501.1; d4502.2; d4551.2; d4602.2; d850.1.

Approbation of the ICF when making an expert decision in persons with disabilities due to coronary artery disease, using the generalized data of individual profiles of "restrictions of vital activity" by components of impaired body functions and limitation of activity, showed the possibility of identifying a list of "restrictions of vital activities" in this category of patients. Compiled protocols of the individual profile by the categories of "activity and participation" reflect the patient's subjective assessment of the degree of limitation in certain types of activities, therefore, should be used as auxiliary criteria.

According to the analysis of available references, the results obtained by us in this study coincide with the results of other researchers in assessing the functioning of the cardiovascular system [0, 0]. Results vary by assessment of activity and participation, considering contextual factors [3, 7]. In our opinion, the identified discrepancies are related to the difference in the surrounding environment, which directly depends on the national characteristics and structure of society and personal factors that are influenced by the peculiarities of culture and mentality.

Conclusions

1. Thus, the application of the International Classification of Functioning, Disability and Health provides a single international language for characterizing health and indicators related to it. This is particularly important and extremely relevant for Ukraine right now when active processes of the country's integration into the European Community and the reorganization of the medical and social examination service are underway.

2. The international classification of functioning, limitations of life activities and health is a valuable tool for assessing disability in all aspects – deterioration at the level of an organ and organism, limitation of activity (individual side of functioning) and opportunities for participation (social side of functioning). The ICF provides a conceptual model and is a tool for assessing the social environment, its application provides not only an assessment of the need for rehabilitation measures of a person with a disability, but also for assessing the effectiveness of rehabilitation measures that have already been conducted.

3. Further development of methods of applying the ICF for other nosological forms of the class of cardiovascular diseases is necessary. The introduction of the ICF to the practice of medical and social examination will allow a complete transition to the biopsychosocial model of disability, will contribute to the objectification of both the process of medical and social examination, and the rehabilitation of disabled persons with further evaluation of the effectiveness of rehabilitation measures. The ICF provides an opportunity to use a single system of health characteristics and indicators related to it, which will ensure full compliance of the national system of medical and social examination and rehabilitation of persons with disabilities with the European level and the possibility of adequate comparison of Ukrainian and European statistical indicators of disability.

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TOPICAL ASPECTS OF COMBINED COMBAT THERMOMECHANICAL INJURIES

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Severe mechanical injuries and large and deep burns lead to burn and wound shock, which is more severe than in isolated mechanical wounds and burns. The key syndrome in the pathogenesis of shock named hemocirculation disorders syndrome is formed as a result of blood and plasma loss, including losses caused by burn wounds. In medical evacuation of the wounded persons with severe and extremely severe combined injuries, there is a tendency to accelerate the transportation of the wounded persons to the next stage as fast as possible, and sometimes the severity of injuries is not taken into account, which leads to deterioration in the condition of the wounded persons. There was a comparative integrated clinical examination of 183 injured persons, who were divided into 3 groups. Group 1 consisted of 71 wounded persons with combat extremity injuries, Group 2 consisted of 61 persons with minor injuries, and Group 3 consisted of 57 persons with severe and extremely severe injuries.

Key words: combined combat thermomechanical injury, wound shock, shock.

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АКТУАЛЬНІ АСПЕКТИ КОМБІНОВАНОЇ БОЙОВОЇ ТЕРМОМЕХАНІЧНОЇ ТРАВМИ

При важких механічних ушкодженнях і великих та глибоких опіках розвивається опіковий і травматичний шок, який протікають важче, ніж при таких ізольованих механічних ушкодженнях та опіках. Формування ключового у патогенезі шоку синдрому гемоциркуляторних порушень відбувається внаслідок крововтрати та плазмовтрати, в тому числі з опікових ран. На шляхах медичної евакуації поранених з тяжкими та вкрай тяжкими комбінованими травмами спостерігається тенденція до прискорення транспортування поранених на наступний етап, як можна раніше, іноді не враховуючи тяжкість, що призводить до погіршення стану поранених. Проведено порівняльне комплексне клінічне обстеження 183 постраждалого, які були поділенні на 3 групи. Група 1 становила 71 поранених з бойовими травмами кінцівок, група 2 становила 61 постраждалих з не тяжкою, група 3 становила 57 постраждалих з тяжкою та вкрай тяжкою.

Ключові слова: комбінована бойова термомеханічна травма, травматичний шок, шок.

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Modern man-made disasters and emergencies are characterized not only by multiple and combined injuries, but also by a high severity of injuries [1, 2]. Thermomechanical injuries are observed in the majority of cases of combined trauma, which in the general structure of peacetime trauma experience accounts for up to 1 % of the injured persons, and in the military one – up to 5–10 % of the injured persons [3]. When nuclear weapons were used in Japan (Nagasaki, Hiroshima, 1945), the share of combined injuries