JUSTIFICATION OF THE MODEL OF OPTIMIZED SYSTEM OF PROVIDING PALLIATIVE AND HOSPICE CARE TO THE POPULATION OF UKRAINE

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ABSTRACT

Background. National systems of Palliative and Hospice Care (PHC) are an important part of holistic systems of public health care. According to ratings (modified Wright M., Lynch T. and Clark D. country rating system, 2008/2011; Quality of Death Index, 2015), the PHC system of Ukraine is such that it does not have signs of systemic organization at the state level, provides low coverage of treatment and care of palliative patients (approximately 30% of the need) and the low quality of treatment (especially analgesia) of predominantly the majority (nearly 80%) of the covered patients.

Aim. To substantiate the model of the optimized PHC system of Ukraine on the basis of the generalized experience of countries with developed PHC systems and the results of own scientific research; evaluate the developed model.

Materials and Methods. System analysis and comparative methods were used in the study. To evaluate the developed model, a sociological method was used: a survey of specialists in the organization of health care and PHC was carried out. The results of the survey are evaluated on a quartile scale (Q_1–Q_4).

Results and Conclusions. A model of the optimized system of providing PHC to the population of Ukraine was developed, which outlines the subjects and objects of management, the goal, strategy, tactics, functions of the improved management system, directions, methods, measures, resources, and the system of scientific regulation. Scientific, legal, economic and administrative solutions are proposed to improve the existing order of PHC organization. According to the parameters of reasonableness and consistency, the model was recognized by experts as high-quality (the assessment is within Q_4[75–100]%). By parameters predictability, correlativeness and resistance to changes, as well as according to the general assessment, the model is recognized by experts as high-quality (the assessment is within Q_3[50–75]%). The evaluation of the developed model allows us to propose it for use in the organization of health care in the conditions of long-term reform of the health care system and the uncertainty of wartime.

Keywords: *health care system reform, qualimetry, expert assessment.*

Introduction

The health care system of Ukraine is in a state of long-term reform, which is characterized by researchers as inconsistent and inefficient, with irrational use of funds and a permanent shortage of medical personnel [1; 2]. Among the reasons for the shortcomings of the reform, the main ones are low spending on health care (up to 4% of the Gross Domestic Product, GDP, on average over the last decade from the state budget, with a low absolute GDP value), frequent changes in the strategy of the reform, and the lack of an honest assessment of the results. For comparison, EU spending on health care is higher thanks to a much higher average GDP [3].

National systems of providing Palliative and Hospice Care (PHC) are an important part of holistic systems of public health care. In Ukraine, the PHC system has undergone significant changes in

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recent years, which was associated with a change in the system of financing palliative medical services for patients, adults, and children. The National Health Service of Ukraine offered hospital managers to order package financing for the treatment of palliative patients under the Medical Guarantee Program [4; 5]. Such financing corresponds to the principle "money follows the patient", which is an important part of the strategy of reforming the health care system in Ukraine in its latest stages (from 2014, and then from 2018) [6; 7] and meets the needs of palliative patients in building a patient-oriented medical care system [8].

Under this funding model, PHC were to be provided in hospitals (hospices, palliative care units and wards) and by outpatient teams until and including 2023. However, in 2024, the focus of funding was shifted to family doctors. That is, the financial powers actually began to change the procedure for providing palliative care in "hospices at home". The reasons and consequences of such changes will be analyzed later in this publication. But it can be immediately noted that such a change is a vivid illustration of the inconsistency of the PHC system reform.

In the comparative aspect of the success of countries in the development of national PHC systems, the modified rating of Wright M., Lynch T. and Clark D. (2008/2011) [5] and the Quality of Death Index (2015), which we investigated in the context of the possibility of legalizing euthanasia of palliative patients in Ukraine, are important [9; 10]. According to the first index, the PHC system of Ukraine is such that it does not have signs of system organization at the state level. The PHC system in its current state of existence ensures low coverage of treatment and care of palliative patients (approximately 30% of the need, including the number of beds – by 40.5%, with the practical absence of hospices at home) and the low quality of treatment (in particular, pain relief) of the vast majority (nearly 80%) of the covered patients [11–13].

Thus, a change in the strategy of organizing PHC in "hospices at home", the country low ratings in international indexes required a scientific assessment and revision of the existing model of the PHC delivery system.

The **aim** of the study was to substantiate the model of the optimized PHC system of Ukraine based on the generalized experience of countries with developed PHC systems and the results of own scientific research; and expert assessment of the developed model.

Materials and Methods

System analysis, comparative and sociological methods were used in the study. To evaluate the developed model of the optimized system of providing PHC in Ukraine, a questionnaire was developed in which 10 specialists from the organization of health care and PHC of Ukraine and Poland were asked to evaluate the proposed strategy, tactics, functions, directions, methods, measures (scientific, legal, economic and administrative decisions), resources of the improved PHC management system according to the criteria: 1) reasonableness; 2) sequences; 3) predictability, 4) correlation; and 5) resistance to change. All criteria were assigned the same qualitative weight (20.0%), which was also proposed to be evaluated as a research design criterion. At the beginning of the evaluation, the experts involved in the expert evaluation were asked to propose a different qualitative weight of the 5 evaluation criteria. But there were no comments on the proposed qualitative weight.

Each measure of improvement of the PHC provision model was proposed to be evaluated on a 10-point scale, the quartile distribution of which is presented in *Table 1*. A 10-point scale is the most intuitively acceptable for a quick assessment, which confirms the design of the Visual-Analog Pain Scale [14; 15]. The evaluation results are calculated in absolute values (number of points, average values with deviation, M±m) and in relative values (%) with rounding of results to tenths.

The research results were calculated according to the legend of the programmable cells of the program Excel 2019 (Microsoft, USA). The methods of intelligence statistics were used. The general design of the study was approved by the bioethics commission of Kharkiv National Medical University (Ukraine). Specialists were invited for the expert assessment, whose personal data are kept confidential (names of respondents are known only to researchers; for generalization and disclosure of information about the expert assessment, these names are replaced by numbers from 1 to 10).

Results and Discussion

To reform the PHC system in Ukraine, managerial influence on the subjects of the legislative and executive power of the state, state bodies managing medical aid to the population of Ukraine, professional public associations working

Table 1. Quartile distribution of assessments of measures to improve the model of providing palliative and hospice care

Quarter	Q_1[0–25]%	Q_2[25–50]%	Q_3[50–75]%	Q_4[75–100]%
Verbal evaluation of the proposed improvement	Unsatisfactory	Good	Qualitative	High quality
Number of points	1	2–4	5–7	8–10

in the field of palliative care to the population, as well as educational and scientific institutions that have the potential of training palliative medicine doctors and improving the qualifications of medical workers of other specialties who treat and care for palliative patients, adults and children. The influence on management subjects is envisaged to be indirect, through the announcement of the results of scientific research, the provision of the results of public opinion studies to the listed organizations, the attitude to the problems of palliative medicine of specialists who constantly or periodically provide assistance to palliative patients.

The objects of management are the management bodies of medical assistance to the population at the regional, city and district levels, medical education institutions in which specialists in the field of palliative medicine study and improve their qualifications, specialized palliative institutions (hospices), medical institutions of other or general profiles of treatment, as part of which include palliative departments and wards, homes for elderly people whose lives are coming to an end due to diseases and natural aging, family medicine clinics, medical institutions that created mobile teams and treatment of palliative patients at home, as well as the teams themselves, expert groups created to discuss PHC issues with the participation of scientists, public figures, medical and social workers, representatives of state authorities and local self-government.

Participation in scientific expertise and research in the field of PHC and its improvement in Ukraine is provided for in the model developed by us to determine the needs of the population for PHC, adults and children, taking into account the main palliative diagnosis, concomitant diseases, monitoring of satisfaction with PHC, in particular from the provided pathogenetic and symptomatic treatment, analgesia (including with the use of recently legalized cannabis preparations), palliative surgical interventions, secondary and tertiary prevention of complications and life-threatening conditions that can lead to premature death, and vice versa, from providing access to euthanasia, from psychological support of patients and their relatives (guardians, caregivers), from social support, spiritual support of religious palliative patients and their relatives. The National Health Service of Ukraine also conducted a scientific assessment on the effectiveness of PHC funding under the Medical Guarantees program. Using the sociological method, with the development of appropriate questionnaires and the invitation of respondents, the readiness of the population of Ukraine, patients, their relatives (caregivers), PHC specialists for public discussion of the need for legalization of euthanasia in Ukraine, the availability and quality of PHC was investigated.

In the scientific assessment, the comparative method was widely used with the study of the best foreign practices of building national PHC systems, legalizing cannabis and euthanasia for palliative patients [16–18]. In the issues of increasing the availability of adequate analgesia for palliative patients of Ukraine, emphasis was placed on the pathogenetic aspects of pain in the presence of various main palliative diagnoses [19–21]. In matters of assessing the current need for PHC and forecasting the need for the following years, scientific studies were conducted to improve forecasting methods, with a choice in favor of the creeping trend method with a constant smoothing segment [22; 23].

The main emphasis of this study was the determination of the purpose, strategy, tactics, functions, directions, methods, measures and resources of the optimized system of providing palliative and hospice care to the population of Ukraine, which is shown in the *Figure.*

The goal of developing an improved PHC model in Ukraine was to create a set of interrelated and consistent measures that had to be implemented in the conditions of uncertainty of wartime, as well as a long and inconsistent reform of the health care system. The strategic direction of the process of improving the existing PHC model was strict adherence to patient-oriented reform aimed at increasing the coverage of palliative patients and their close PHC, increasing the quality

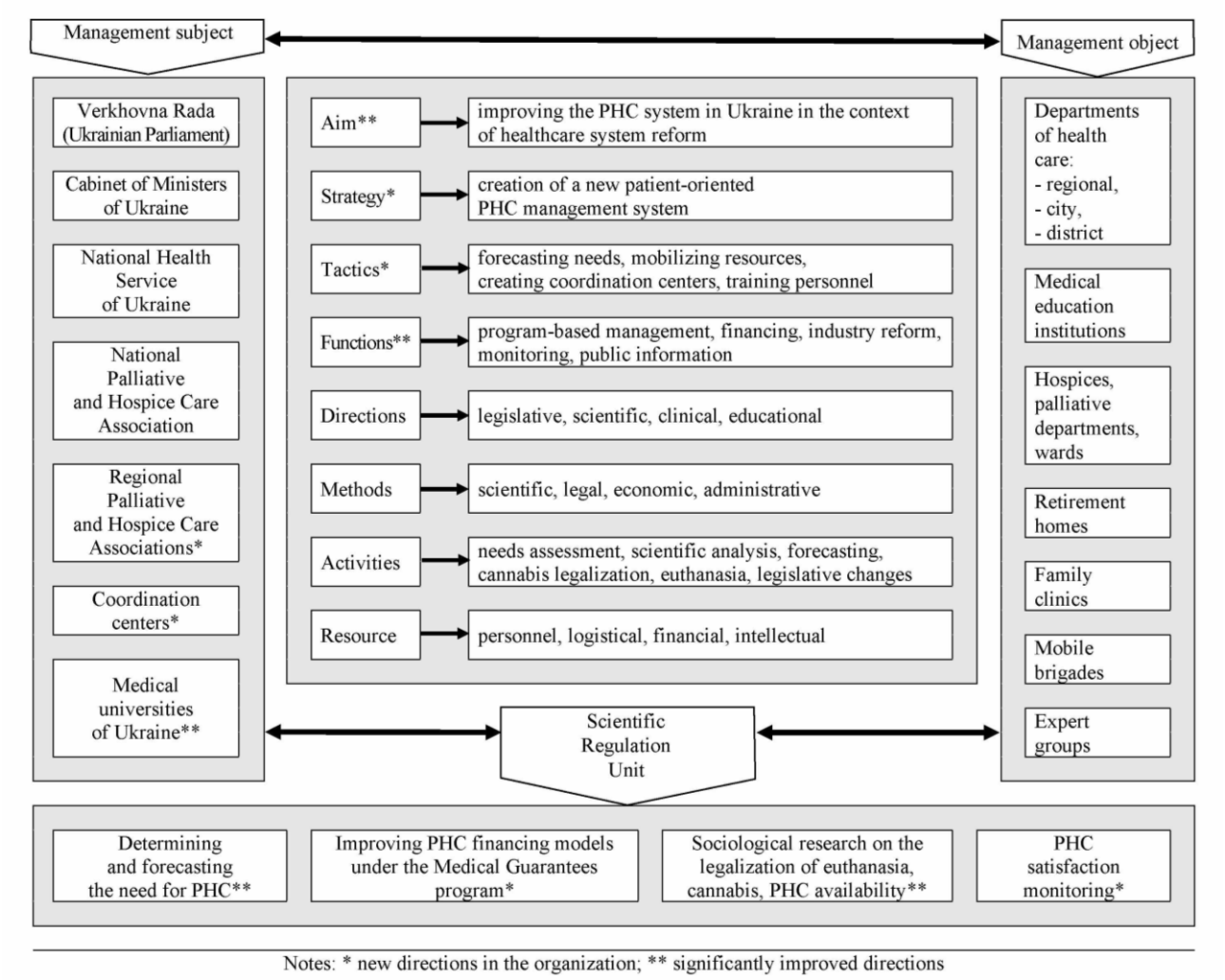

Fig. Functional and organizational model of the optimized system of providing palliative and hospice care to the population of Ukraine.

of PHC according to the criteria of satisfaction and the price/quality ratio of services.

We took into account the circumstances of the war in Ukraine, constant shelling and the danger of regions in close proximity to the borders of the aggressor country. Ensuring the safety of palliative patients in hospices and palliative departments/wards during the war is possible only by evacuating hospices in the eastern and central parts of Ukraine to the western regions [24]. Immobile or immobile palliative patients with serious illnesses are not able to quickly go to shelter during each successive shelling. It should also be taken into account that the warning about the threat does not always come, or comes already after the explosions.

PHC in Ukraine was complicated during the COVID-19 pandemic. This highly contagious disease increased mortality among all categories of patients. Patients with severe incurable diseases were at particular risk. The disease increased the costs of carrying out anti-epidemic measures in medical institutions, which was especially noticeable in hospices and palliative care units, in which a significant number of patients are immobile or have limited mobility and require the constant presence of a caregiver.

To improve the PHC system, we also propose [25; 26] to determine at the state level the list of palliative diseases (with diagnoses of the International Classification of Diseases-10 and the corresponding stages and severity of diseases, taking into account the main palliative diagnoses and comorbid pathology, by categories of adults and children). According to the list of these diagnoses, the need for PHC should be calculated, with appropriate funding of costs and provision of resources. In order to fully calculate the need for

PHC, it is necessary to resume the collection of medical and statistical information on such diseases as dementia in adults and severe and profound mental retardation in children. (Collection of these statistical data was discontinued in 2018). An important part of continuous and sufficient government funding of the PHC system should be scientifically based forecasting of PHC demand.

It is necessary to recognize and eliminate the shortage of personnel in hospices and palliative departments. For this, it is necessary to restore the record of bed days of palliative patients at the state level. This practice was stopped in connection with the rejection of Mykola Semashko's planned Soviet system of health care organization.

Providing hospices, palliative departments and wards, mobile teams treating palliative patients in home hospices with the necessary funding, qualified staff and other resources should lead to PHC coverage at the level of 90–95% of palliative patients. The goal of increasing patient and caregiver satisfaction with PHC should be 80% or more. To achieve such indicators, it is necessary to improve the legal framework of palliative medicine (with emphasis on the standards of treatment of chronic pain in all palliative diseases; increasing the availability of drugs for pain relief, especially narcotics). It is necessary to comply with the norm provided for by law on the introduction of the specialty "doctor of palliative medicine" to the official list of specialties of Ukraine, and to start the training of specialists of this profile at medical education institutions.

The experience of countries with developed PHC systems shows the expediency of creating regional PHC coordination centers, separated from medical institutions. Coordination centers should direct palliative patients to medical institutions that have received package financing of costs for palliative care from the National Health Service of Ukraine with the Medical Guarantees program. It is also necessary to abandon the obligation to treat palliative patients in "hospices at home" by family doctors. Because the reform of the primary link of medical care for the population in Ukraine provided for the principle: family doctors do not go to call patients at home. So, Art. 7 of Chapter II of the current "Procedure for providing primary medical care" provides [27] that Primary Medical Care (PMC) "is provided during a personal reception of the patient at the place of providing PMC. A doctor providing PMC can make a decision to provide individual PMD services at the patient's place of residence (stay) or using technical means of electronic communications in accordance with the mode of operation of the PMC provider". That is, the family doctor has the right to independently decide on the need to visit the patient at home, if he has the opportunity (for example, official transport or reimbursement of the cost of using other transport). But entrusting the family doctor with the duty of providing care for severely immobile palliative patients in "hospices at home" actually deprives the family doctor of the right to make such a choice. At the same time, if the family doctor has a service contract, he must visit a palliative patient at least once a week, in accordance with the standard of care for such patients [28].

The problem of insufficient influence of civil society on the decisions of legislators and executive authorities in matters of PHC planning and organization should be solved at the expense of state support for the development of the PHC national association (for example, [29]) with the mandatory creation of branches in all regions of Ukraine. Through the regional branches and the main organization, the Ministry of Health of Ukraine, the National Health Service of Ukraine, the centers of medical statistics of the Centers of Public Health, the Cabinet of Ministers of Ukraine and the committee of the Verkhovna Rada of Ukraine on Health Care should receive the generalized proposals of the members of the association, which should become all doctors of palliative medicine and, upon request, doctors of other specialties who regularly or periodically treat palliative patients. The functions of the association should be the analysis and formation of public opinion on the complex problems of PHC [30], protection of the rights of association members, influence on the decisions of the legislative and executive authorities in matters of development of the PHC system. In our research, we came to the conclusion that Ukrainian society needs the beginning of a broad public discussion about the possibility of legalizing euthanasia of palliative patients. The palliative care association and its communication with the mass media should be the main driving force in the issues of public dialogue about the possibility of such legalization.

The priorities of the National Health Service of Ukraine in matters of financing PHC programs should be package financing of mobile and stationary palliative care for adults and children, effective pain relief under medical guarantee programs, instead of financing palliative care at home, which is carried out by family doctors.

The standards and protocols of medical care for patients with chronic pain, a large part of which are palliative, need significant improvement. According to the generally recognized list of palliative diseases in the future, it is necessary to detail the list of drugs for pain relief (narcotic and non-narcotic analgesics, adjuvants) for various palliative diagnoses. The need for these drugs should be studied and reimbursed through the "Affordable Medicines" program at 100% with state funds. At the level of practical implementation of already existing norms of Ukrainian legislation, regulation of the turnover of legalized medical cannabis and its preparations should be accelerated.

Monitoring of the development of the national PHC system should be ongoing in the scientific plane: its personnel, material and technical, financial, intellectual resources, effectiveness of measures, scientific, legal, economic and administrative methods of managing the system. Centers of scientific analysis should be medical universities of Ukraine. We propose to return to the Soviet tradition of defining basic and supporting departments of medical universities of Ukraine. We propose to identify the Department of Public Health and Health Care Management of Kharkiv National Medical University (KhNMU) as the basic department in PHC issues, where the treatment and organization of medical care for palliative patients should be improved [31]. The possibility of practical implementation of such a solution is proved by our scientific research and the presence of a hospice of the university clinic of the KhNMU [32]. We propose to define the Department of Palliative and Hospice Medicine of Shupyk National Healthcare University of Ukraine [33], which can develop and continuously revise a typical curriculum in palliative medicine.

The principles, methods and measures proposed by us, in our opinion, can improve the provision of PHC to the population of Ukraine. To test this hypothesis, we conducted an expert evaluation of the developed model using a questionnaire developed by us. The results of the survey of 10 specialists in the field of palliative medicine and health care organization, evaluated on a quartile scale (Q_1–Q_4), are presented in *Table 2*.

Table 2. Results of expert assessment of principles, methods and measures for improving the PHC provision model in Ukraine

A proposed principle, method or measure	Quartile	Evaluation criterion: Justification	Consistency	Predictability	Correlation	Resistance to change	Overall assessment
		Evaluation result for individual criteria – (quartile): the number of responses within the quartile; for the overall assessment – (quartile): points (M±m) (Q_1 – 1 point; Q_2 – 2-4 points; Q_3 – 5-7 points; Q_4 – 8-10 points)					
Patient-oriented principle (all actions are aimed at increasing the satisfaction and quality of life of patients)	Q_1	–	–	2	–	–	1.0 ±0.0
	Q_2	–	1	2	2	–	2.7±0.7
	Q_3	1	3	–	–	4	6.2±0.4
	Q_4	9	6	–	5	6	9.4±0.5
Increasing the list of palliative diagnoses and enshrining them in the law for official recognition by the state	Q_1	–	–	–	–	–	–
	Q_2	–	1	–	–	–	3.0±0.0
	Q_3	–	1	2	3	1	6.3 ±0.6
	Q_4	10	8	8	7	9	8.9±0.5
Resumption of data collection of medical statistics on dementia in adults and mental retardation in children	Q_1	–	–	–	–	1	1.0±0.0
	Q_2	–	–	2	2	2	2.5±0.2
	Q_3	–	–	3	2	1	5.3±0.6
	Q_4	10	10	5	4	6	9.3±0.5
Continuous recalculation of the need for PHC among adults and children and forecasting of the need for the following periods	Q_1	–	1	–	–	1	1.0±0.0
	Q_2	–	2	1	–	–	3.1±0.4
	Q_3	2	–	5	3	1	6.1±0.3
	Q_4	8	7	4	4	8	9.0±0.5
Implementation of the order of the Ministry of Health of Ukraine to include a doctor of palliative medicine in the national list of specialists.	Q_1	–	–	3	–	–	1.0±0.0
	Q_2	–	–	2	2	–	3.5±0.2
	Q_3	–	1	–	2	–	6.0±0.3
	Q_4	10	9	5	6	10	8.9±0.6
Creation of a typical educational program in palliative medicine by the support department	Q_1	–	–	–	–	–	–
	Q_2	–	–	–	–	–	–
	Q_3	–	2	1		1	5.3±0.4
	Q_4	10	8	9	10	9	9.2±0.5

A proposed principle, method or measure	Quartile	Evaluation criterion: Justification	Consistency	Predictability	Correlation	Resistance to change	Overall assessment
		Evaluation result for individual criteria – (quartile): the number of responses within the quartile; for the overall assessment – (quartile): points (M±m) (Q_1 – 1 point; Q_2 – 2-4 points; Q_3 – 5-7 points; Q_4 – 8-10 points)					
Improvement of treatment protocols for chronic pain and palliative patients by the forces of the basic department	Q_1	–	–	–	–	–	–
	Q_2	1	–	–	1	–	3.5±0.2
	Q_3	1	1	1	2	2	6.2±0.4
	Q_4	8	9	9	7	8	9.0±0.7
Acceleration of the practical implementation of the legal norm of legalization of medical cannabis for palliative patients	Q_1	–	–	–	–	–	–
	Q_2	–	1	1	–	1	2.7±0.3
	Q_3	–	2	4	3	4	6.1±0.4
	Q_4	10	7	5	6	5	9.3±0.6
Development of the national and creation of a network of regional associations of palliative medicine	Q_1	–	–	–	–	–	–
	Q_2	–	–	–	2	2	4.0±0.0
	Q_3	3	1	–	1	2	5.9±0.6
	Q_4	7	9	10	7	6	9.4±0.5
Activation of a broad public and professional dialogue regarding the legalization of euthanasia	Q_1	2	1	–	–	1	1.0±0.0
	Q_2	1	1	1	2	2	3.3±0.2
	Q_3	1	2	3	1	2	6.1±0.3
	Q_4	6	6	6	7	5	8.6±0.4
Creation of regional and local PHC coordination centers, separate from hospitals	Q_1	–	–	–	–	–	–
	Q_2	1	2	2	–	–	2.4±0.3
	Q_3	1	–	1	3	4	9
	Q_4	8	8	7	7	6	8.1 ± 0.6
Returning the function of treating palliative patients in "hospices at home" to mobile teams from family doctors	Q_1	1	–	–	–	–	1.0 ±0.0
	Q_2	2	–	–	–	1	3.0 ±0.1
	Q_3	1	1	3	2	1	6.2±0.3
	Q_4	6	9	7	7	8	8.1±0.7
Evacuation of hospices from the east and center of Ukraine to the safer territories of the western regions of Ukraine during the war	Q_1	–	–	–	–	–	–
	Q_2	–	–	–	2	6	3.0±0.5
	Q_3	2	6	5	3	3	5.8±0.4
	Q_4	8	4	5	5	1	9.1±0.6
Reimbursement of 100% of drugs for pain relief for palliative patients under the "Affordable Medicines" program	Q_1	–	–	–	–	–	–
	Q_2	–	–	–	–	–	–
	Q_3	2	3	2	1	3	6.6±0.3
	Q_4	8	7	8	9	7	9.3±0.4
Continuous monitoring of satisfaction with PHC at the state level	Q_1	–	–	–	–	–	–
	Q_2	–	–	–	–	–	–
	Q_3	1	2	4	2	3	5.9±0.4
	Q_4	9	8	6	8	7	8.8±0.3
In total	Q_1	3	2	5	–	3	1.0±0.0
	Q_2	7	8	11	11	14	3.3±0.6
	Q_3	19	25	34	27	32	6.2±0.4
	Q_4	111	115	94	92	101	8.5±0.3

Notes: some questions were not answered by the experts. In this case, the number of points (M±m) was calculated as the average of the given answers.

The obtained results were evaluated taking into account the variance. Correction for dispersion allowed discarding the results with a range of [±(0.52÷0.34)] points. As a result of this assessment, the model was recognized by experts as high-quality based on the parameters of reasonableness and consistency (the assessment is within Q_4[75–100]%). According to the parameters of predictability, correlativeness and resistance to changes, as well as according to the general assessment, the model was recognized by experts as high-quality (the assessment is within Q_3[50–75]%).

Limitations of the study

Summarizing the average score for all proposals made only mathematical sense. The insufficient reliability of the results of the questionnaire according to certain criteria for medical research in the range of p=(0.14÷0.63) indicated the need

to increase the group of experts. The conducted generalization made it possible to determine the size of the minimum sample of experts of 23 people. We also noted the need for additional expert consultations regarding our proposed model: misunderstanding of certain aspects of scientific development made evaluation difficult and even led to the absence of evaluations according to certain criteria in part of the received questionnaires. Publication of research results with a detailed description of the developed model should partially solve the problem of insufficient understanding.

Prospects for future research consist in an additional survey of 15 experts, doctors, specialists in the field of palliative medicine and health care organizations with a generalization of the results of two stages of the survey (13 to achieve the minimum sample size with a reliable result of calculating points $p<0.05$ and 2 more to level the possible effect of dispersion).

Conclusions

The system of Palliative and Hospice Care (PCH) in Ukraine is characterized by the absence of signs of systemic organization at the state level, low coverage of the contingent of palliative patients and the quality of medical care and care according to the criteria of satisfaction of patients and their relatives (caregivers), as well as the price/quality ratio of services. Thus, the PHC system needs improvement in legislative, scientific, clinical and educational directions. We proposed a functional and organizational model of an optimized system of providing PHC to the population of Ukraine, based on the principle of patient orientation. The model provides for the expansion of the list of palliative diagnoses with the recognition of the new list at the state level, forecasting of the need for PHC, mobilization of resources and their rational use, creation of coordination centers for the treatment of palliative patients independent of medical institutions, training of staff for palliative medicine, expansion of the activities of the association of palliative medicine on all regions of Ukraine, activation of social and professional dialogue about the possibility of legalizing euthanasia of palliative patients, increasing reimbursement of medical means used in palliative medicine, especially for pain relief.

The model takes into account present-day challenges. We recognize that the war and the COVID-19 pandemic have added complexity to the process of organizing PHC in Ukraine, especially related to the safety of palliative patients in hospices and palliative departments in the front-line regions of Ukraine. But most of the problems in the development of the PHC system in Ukraine are not related to the war, and require ordinary organizational decisions and political will to improve regulatory and legal acts. Ukraine has sufficient scientific, administrative and political potential to accelerate the reform of this area of health care.

According to the parameters of reasonableness and consistency, the model is recognized by experts as high-quality (the assessment is within Q_4[75–100]%). By parameters predictability, correlativeness and resistance to changes, as well as according to the general assessment, the model is recognized by experts as high-quality (the assessment is within Q_3[50–75]%). The evaluation of the developed model allows us to propose it for use in the organization of health care in the conditions of long-term reform of the health care system and the uncertainty of wartime.

DECLARATIONS:

Disclosure Statement

The authors have no potential conflicts of interest to disclosure, including specific financial interests, relationships, and/or affiliations relevant to the subject matter or materials included.

Statement of Ethics

The authors have no ethical conflicts to disclosure.

Data Transparency

The data can be requested from the authors.

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Consent for publication

All authors give their consent to publication.

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