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CERTIFICATE PROGRAM "READINESS, RESPONSE AND MANAGEMENT OF EMERGENCY SITUATIONS" AS A COMPONENT IN THE FORMATION OF COMPETENCIES FOR PUBLIC HEALTH SPECIALISTS

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Abstract. *In the field of public health, the acquiring of relevant knowledge, skills and competencies for managing emergencies as well as the problem of effective response to them, and how to mitigate their consequences within the healthcare system are the crucial issues. The research employs bibliosemantic, informational, analytical, medical, statistical, sociological methods, method of content analysis, as well as surveys of practitioners from the Center for Disease Control and Prevention and the Public Health Center of Ukraine. The minimum sample size comprises 326 individuals, which was calculated using the statistical package G*Power; a total of 369 respondents participated in the survey. The statistical processing of the materials was carried out using the licensed program Microsoft Excel 2016. In addition, the inclusion criteria for respondents concerned the individuals who participated in rapid response groups (both primary and reserve). The exclusion criteria encompassed specialists who were on leave for various reasons, such as maternity or health-related issues, in addition to individuals who opted not to engage in the survey. When developing the requisite competencies, it is imperative to allocate appropriate consideration to the practical aspect, as evidenced by the information gathered through the survey. Thus, 47% of respondents believe that this aspect needs improvement. Furthermore, within the array of challenges linked to the attainment of requisite competencies, specialists from rapid response groups have delineated the subsequent factors: psychological and emotional stress, a perceived threat to personal safety (19%), inadequate levels of professional training (18.4%), health-related concerns (11.7%), and deficiencies in material and technical support (26.8%). Consequently, upon analysis of the acquired data, the imperative to initiate the subsequent modifications to the accredited program "Readiness, Response and Emergency Management" has been ascertained, namely: to enhance practical training methodologies, to underscore holistic competencies, to implement psychological training protocols, and to instruct on the operation with modern technical equipment.*

Key words: public health, emergencies, competencies, professional standards, biosafety.

Introduction. The training of theoretical and practice skills among public health specialists is of significant importance today, as it directly impacts the health and well-being of the population. This encompasses the monitoring of specialists and readiness for hazardous factors and emergencies within the public health sector, alongside the maintenance of essential competencies throughout their careers. In this regard, particular emphasis is placed on educational programs and initiatives designed to foster ongoing improvement and professional development.

International and local healthcare organizations have implemented various documents that necessitate national legislation in this sector. Consequently, the World Health Organization (WHO) underscores the importance of sustained investment in skill development and the

enhancement of continuous professional development for healthcare specialists. It emphasizes the significance of competency-based education within the healthcare system, which has emerged as a cornerstone for the creation of educational programs in national healthcare frameworks (Bucharest Declaration, 2023).

Educational programs address a wide range of issues within the healthcare education system, and the integration of digital tools can greatly improve their accessibility. This approach is especially pertinent in the current context of full-scale war in the European region, climate change, the refugee crisis, overpopulation, and other global challenges. (Rizvi, 2022; WHO 2023). Therefore, enhancing the training of public health specialists is of particular importance for the WHO European Region, as outlined in the Thirteenth European Programme *United Action for Better Health in Europe* (2020-2025), and policy document such as *Achieving Progress in Public Health in the WHO European Region for Sustainable Development*, etc. (WHO, 2018; WHO, 2021; WHO 2022).

Regarding Ukraine, the *Priority Directions for the Development of the Healthcare Sector for 2023-2025* highlight professional education, addressing the healthcare system's need for skilled personnel, and the continuous professional development of healthcare staff as the key priorities (MOZU, 2022). Such areas require modern forms and methods of ongoing professional development, such as the implementation of certification programs that provide consumers with the opportunity to acquire new knowledge for professional growth.

Alongside the previously outlined development priorities for the years 2023-2025, the "Healthcare System Development Strategy until 2030" was established in February 2022 by a collaborative intersectoral working group. This strategy emphasizes the following priorities (MDTU, 2024):

- Governance within the health sector;
- Comprehensive coverage of health services;
- Public health initiatives, including readiness and emergency response;
- Involvement of individuals and communities;
- Human resources management within the health system.

Ukrainian legislation, supported by the state, ensures the right to education is realized through formal, non-formal, and informal educational pathways. Informal education adheres to organized educational frameworks and can result in the attainment of professional and/or partial educational qualifications (VRU, 2024). Individuals engaged in informal vocational training gain essential professional knowledge, skills, and competencies. The framework and characteristics of informal education remain undefined, allowing for a variety of environments, durations, and formats. Certificate programs exemplify this category, providing advanced educational opportunities at the Bachelor's or Master's degree levels, and delivering intensive learning experiences along with practical expertise in specific fields. Certificate programs are widely utilized for the ongoing professional development of specialists, including those in public health. The significance of online courses and certification programs is consistently growing, as they are developed through strategic partnerships between esteemed universities and leading global entities in open online education. (Coursera, Prometheus, etc.). The World Health Organization (WHO) offers an online training platform for individuals. Given the current global circumstances, particularly in Europe and Ukraine, which face ongoing threats to their existence and the abrupt emergence of crises, including biological ones that adversely affect public health on global, regional, and national scales, the establishment of a certification program titled "Readiness, Response and Emergency Management" is a crucial component of the ongoing education for public health specialists, enabling them to effectively respond to emergencies.

Research objectives. To create the scope of knowledge, skills, and competencies in managing public health emergencies, to respond effectively to health-related emergencies, and mitigate the consequences of public health emergencies, taking into account the experience

of rapid response group specialists.

Materials and methods. The research employs bibliosemantic, informational, analytical, medical, statistical, sociological methods as well as method of content analysis and surveying. The study focused on assessing the readiness, response, and emergency management practices of public health specialists, as defined by the Association of Schools of Public Health in the European Region (ASPHER) and the standard for obtaining a Master's degree in the specialty 229 Public Health; an analysis of the current certification programs in global health; and conducting sociological surveys among public health experts to elicit priority topics and preferred methods of education. The scientific foundation for the research was derived from regulatory documents, electronic resources as well as the results of a sociological study. The statistical and mathematical analysis of the data were carried out using statistical analysis methods with licensed software Microsoft Excel 2016. The data received was analyzed by determining the percentages of the responses to the questions and visually represented by pie charts.

A survey was carried out by specialists of rapid response groups based at the Centers for Disease Control and Prevention and the Public Health Center of Ukraine in the central and western regions of Ukraine. The Department of Emergency and Tactical Medicine at Bogomolets National Medical University created the questionnaire for the survey. A Google form link was distributed by email for a remote survey, enabling respondents to participate at their preferred time, in accordance with Ukraine's "Law on Personal Data Protection" (2010), the survey involved an analysis of anonymized essential data collected from specialists within the State Sanitary and Epidemiological Service. The inclusion criteria concerned the respondents of the general staff (both primary and reserve). The study excluded specialists on leave (whether sick, maternity, or regular), as well as those who chose not to participate in the survey. The sample was calculated using the statistical package G*Power (Apponic, 2024-2025), considering the importance of identifying the smallest sample size that satisfies the criteria indicators and produces reliable outcomes. It should be noted that the program is available for free. A minimum sample size of 326 individuals is required (based on the anticipated sensitivity and specificity of 40%, calculated with a margin of error of 5%, at a significance level of $p=0.05$, with a power of 95%, and a sample size ratio of the negative/positive group of 1). A total of 369 individuals participated in the survey out of 381 (12 respondents did not participate in the survey). Thus, the number of responses collected is sufficient to obtain statistically significant results.

The survey comprised a set of questions designed to evaluate the work experience of the rapid response groups, in addition to examining their work conditions and the prevalence of overtime work. The evaluation conducted by the personnel of the State Emergency Service regarding their readiness and the specific characteristics of their operations during emergency responses received particular emphasis, especially concerning compliance with biosafety protocols.

Research results. In a survey conducted among specialists of rapid response groups, it was observed that a significant majority, when posed with the question, "Do you believe your training level is adequate for addressing emergencies in the public health sector?", responded predominantly in the affirmative. However, they observed that the most significant challenges are associated with psychological and emotional stress, a perceived threat to personal safety (19%), inadequate levels of professional training (18.4%), health-related concerns (11.7%), and deficiencies in material and technical support (26.8%).

The evaluation of the standards for higher education in obtaining a Master's degree in the field of 229 Public Health reveals that the developers of the certificate program "Readiness, Response and Management of Emergency Situations" have emphasized the necessity for Master's students in public health to acquire essential competencies. These competencies are crucial for effectively managing public health emergencies, responding adeptly to crises within

the healthcare sector, and playing a significant role in alleviating the impacts of such emergencies, particularly concerning biological threats and aspects of biosafety (PHF, 2021).

A certificate program has been established as a result of the aforementioned developments, comprising 2 ECTS credits (equivalent to 60 academic hours). Of these, 30 academic hours are designated for in-class instruction, while the remaining 30 hours are intended for independent study by students. The program comprises two content modules, with each module featuring one lecture and four practical classes.

The content module 1 "General Issues of Emergency Management in the Healthcare Sector" includes the lecture "Emergency Management Systems in Public Health in Ukraine." Additionally, it encompasses several practical classes: "Emergency Management in Public Health in Ukraine," "Emergency Response Planning in the Healthcare Sector," "Tasks and Algorithms of the Incident Management System at Regional and National Levels," and "Logistical and Communication Management in Emergency Response."

The content module 2 "Applied Management of Emergencies in the Field of Health Care," encompasses a lecture named "The Role of Rapid Response Groups in Public Health," along with a series of practical sessions. These sessions include "Laboratory Assessment of the Operational Situation in Emergency Response in Health Care," "Personal Protective Equipment in Emergency Response," "Response Algorithms for Radiological and Nuclear Threats, Medical Countermeasures," and "Response Algorithms for Chemical and Biological Threats, Medical Countermeasures." At the end of the course, the assessment of the students is carried out by the program instructors through a comprehensive evaluation measuring the level of proficiency in the competencies acquired.

It is essential to emphasize that when developing the necessary competencies, sufficient attention must be given to the practical aspect. Data from a survey conducted in the rapid response groups indicates that almost half of the participants (47%) feel that the practical training for specialists tasked with responding to public health emergencies requires enhancement. This finding is consistent with the observation that nearly half (48.5%) of the respondents possess experience in managing emergencies related to public health, predominantly of a socio-political or natural origin, underscoring the critical importance of the practical component.

Through the completion of the tasks specified in the discussed certificate program, graduates develop essential competencies that facilitate the execution of critical operational functions in public health, particularly in the realm of emergency response and management. These competencies include:

- the capacity to make informed decisions regarding emergency planning within the health sector;
- the ability to evaluate risks and justify suitable actions in response to health sector emergencies;
- the management of logistics and the deployment of response teams and resources;
- a comprehensive understanding of chemical, biological, radiological, and nuclear (CBRN) agents, including their characteristics and associated risks during disease outbreaks;
- the capability to articulate medical countermeasures related to personal protective equipment in the event of CBRN weapon releases;
- knowledge of safety principles and methods for first responders, hospital personnel, and patients during emergencies involving CBRN weapons;
- the ability to implement incident management systems in real-world scenarios;
- the skill to effectively and promptly communicate public health information to communities.

Nevertheless, despite possessing the necessary competencies, emergency response specialists encounter various challenges that hinder their ability to respond effectively to emergencies, thereby adversely affecting the resolution of the strategic concern regarding the

quality of training for professionals.

Discussion. Despite the general assurance in their training, the specialists of the rapid response groups necessitate additional resources and support to function effectively during emergencies. Factors such as psychological and emotional stress, a perceived sense of threat, and insufficient material and technical support can hinder their capacity to respond swiftly and efficiently to crisis situations. This underscores the necessity of investing in professional training that aligns with the core competencies required for public health specialists, as outlined by European standards. Furthermore, the enhancement of psychological training, infrastructure, and the professional development of postgraduates is also critical. This concern is addressed in both international publications (Piasecki, 2023; Shiell, 2022) and Ukrainian studies (Khymych, 2022; Kuvshynova, 2021). These sources also highlight the importance of ongoing professional development and the need for a preliminary selection process before specialists assume their professional roles (Yaremko, 2023).

Conclusion. In order to enhance the knowledge, skills, and competencies of professionals involved in emergency management within the public health sector, it is crucial to emphasize the following areas during their training in the certificate program "Readiness, Response, and Emergency Management":

1. To give a special focus on practical training, as a significant number of surveyed specialists (47%) indicated the need for an improved practical component in education to enhance emergency response capabilities.

2. To adopt a holistic approach in the training of young specialists at the Master's level, ensuring that program graduates gain comprehensive knowledge in emergency management, encompassing risk assessment, medical countermeasures, and safety protocols related to CBRN agents.

3. To prioritize psychological readiness and resource allocation, as highlighted by 28.1% and 26.8% of respondents, respectively. Master's students should have access to psychological support and training in delivering initial psychological assistance.

4. To develop skills for the effective use of material and technical resources, as operating under conditions of limited resources can hinder efficiency. Thus, investment should be directed not only towards infrastructure development but also towards ongoing professional education.

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СЕРТИФІКАТНА ПРОГРАМА «ГОТОВНІСТЬ, РЕАГУВАННЯ ТА УПРАВЛІННЯ НАДЗВИЧАЙНИМИ СИТУАЦІЯМИ» ЯК СКЛАДОВА В ФОРМУВАННІ КОМПЕТЕНТНОСТЕЙ ФАХІВЦІВ ГРОМАДСЬКОГО ЗДОРОВ'Я

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Резюме. Питання щодо набуття знань, навичок і компетенцій для управління надзвичайними ситуаціями у сфері громадського здоров'я, ефективного реагування на них та ліквідації їх наслідків у системі охорони здоров'я є важливим викликом сьогодення. У роботі застосовано бібліосемантичний, інформаційно-аналітичний, медико-статистичний, соціологічний методи, метод контент-аналізу та анкетування практикуючих фахівців центру контролю та профілактики хвороб та Центру громадського здоров'я України. Об'єм мінімальної вибірки становить 326 чоловік і був розрахований за допомогою статистичного пакету G*Power; всього анкетування пройшло 369 респондентів. Статистична обробка матеріалів

проводилася з використанням ліцензійної програми Microsoft Excel 2016. До критеріїв включення респондентів належали особи, які входили до складу груп швидкого реагування (як основного, так і резервного). Критеріями виключення були: фахівці, які перебували у відпустці, декреті або на лікарняному, а також ті, хто відмовився від участі в анкетуванні. При здобуванні відповідних компетентностей необхідно приділяти необхідну увагу практичному компоненту про що свідчать дані, отримані під час опитування. Так, 47% респондентів вважають, що дана компонента потребує покращення. Також, серед труднощів, пов'язаних з набуванням відповідних компетенцій, було виділено фахівцями груп швидкого реагування були виділені наступні чинники: психо-емоційне навантаження, відчуття загрози для життя (19%), недостатній рівень професійної підготовки (18,4%), проблеми зі власним здоров'ям (11,7%), проблеми із матеріально-технічним забезпеченням (26,8%). Отже, на основі отриманих даних, доведена необхідність внести наступні зміни в сертифіковану програму «Готовність, реагування та управління надзвичайними ситуаціями», а саме: покращити практичну підготовку, зробити акцент на комплексних компетентностях, впровадити психологічну підготовку та навчити працювати з сучасним матеріально-технічним забезпеченням.

Ключові слова: громадське здоров'я, надзвичайні ситуації, компетентності, професійні стандарти, біобезпека.

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