

ABSTRACT

of dissertation work of Akpanova Togzhan Zhomartovna
on the topic «Improvement of the principles of «One Health» in the
Republic of Kazakhstan» for the academic degree of Doctor of
Philosophy (PhD) on the specialty 8D10103- «Public Health»

Relevance of the study. Contemporary global challenges in the field of biological and sanitary-epidemiological safety underscore the importance of the One Health” concept, based on a coordinated interdisciplinary and intersectoral approach to risk prevention and management at the intersection of human, animal, and environmental health. The principles of One Health can be defined as «a generalized and flexible term that reflects the desire to address the challenges and interrelationships that exist between human, animal and environmental health» [Trimmel N.E., Walzer C. 2020, Boqvist S., Söderqvist K., Vågsholm I. 2018].

Today, public health services need to define operational functions that include epidemiological health surveillance, monitoring and responding to health threats, health promotion, and disease prevention as fundamental functions for implementing the One Health concept in practice. It should be noted that protecting public health is not solely the responsibility of the health sector, but also requires efforts from other sectors and the public. Thus, all sectors have a great responsibility to prevent and reduce the burden of environmental factors and to build a productive dialogue between them.

In accordance with WHO recommendations, the concept of «One Health», oriented towards achieving the 16 UN Sustainable Development Goals, should be optimized taking into account the 10 core operational functions of public health services (PHS). This approach allows for a structured approach to defining the roles and boundaries of professional activities of specialists from POPH and other sectors in the implementation of the «One Health» concept [Sustainable Development Solutions Network. A global Initiative for the United Nations].

The introduction of the One Health concept in Kazakhstan is driven by the rise of zoonotic infections, climate change, and globalization, which contribute to the spread of new pathogens. Insufficient coordination between the medical, veterinary, and environmental sectors has highlighted the need for a cross-sectoral approach to effectively respond to health threats. The epidemiological situation caused by COVID-19 has demonstrated the key role of the One Health concept in public health policy. The pandemic has revealed shortcomings in interdisciplinary collaboration and a shortage of qualified specialists in this field, which contributed to problems in the early stages of responding to the threat [Filip R., Gheorghita Puscaselu R., Anchidin-Norocel L. et al. 2022].

Thus, the relevance of the study is due to the lack of systematic interagency cooperation, and the insufficient institutionalization of the One Health approach significantly limits the possibilities for its full implementation. The underdevelopment of the regulatory framework, fragmented inter-sectoral coordination, and insufficient awareness among specialists in the field of One Health hinder the implementation of the concept at the national level.

Purpose of the study

The aim of the research is to develop a model for transforming the principles of «One Health» in the Republic of Kazakhstan based on a comprehensive study of the «One Health» concept.

Objectives of the study

1. Study international practices in applying and improving the principles of «One Health»;
2. Conduct an analysis of the regulatory framework regarding the Republic of Kazakhstan's readiness to implement the principles of «One Health»;
3. Conduct an analysis of personnel in the sanitary-epidemiological and veterinary services in the Republic of Kazakhstan;
4. Conduct a sociological survey of human and animal health specialists on their awareness of the «One Health» concept;
5. Develop a model for implementing the «One Health» concept in the Republic of Kazakhstan.

Scientific novelty:

For the first time:

- international analysis of experience in the application of the principles of «One Health»;
- a comprehensive assessment of the readiness of the Republic of Kazakhstan to implement the concept of «One Health», analysis of the legal and regulatory framework governing the issues of One Health, functional analysis of the activities of government agencies implementing the tasks under the concept of One Health;
- analyzed the awareness of specialists in the protection of human and animal health regarding the principles of «One Health»;
- proposals for professional development of specialists on the principles of «One Health» were developed; a cycle of professional development for the population on the theme «Safety in everyday life: the principles of «One Health» was developed;
- a model for implementing the «One Health» concept in the Republic of Kazakhstan has been developed.

Practical significance

1. A comprehensive analysis of international practices in applying and improving the principles of «One Health» has identified barriers and determined mechanisms for its implementation in the Republic of Kazakhstan.
2. An analysis of the regulatory framework determined that the regulatory framework is ready for the implementation of the principles of «One Health» in the Republic of Kazakhstan.
3. Three professional development programs on the topic of «One Health» have been developed to train a pool of qualified specialists in the field of One Health..
4. Proposals and recommendations for the qualification requirements for healthcare professionals have been developed (Appendix B).
5. A model for implementing the One Health concept in the Republic of Kazakhstan has been developed (Appendix A).

6. An informational website on the topic of «One Health» has been developed at <https://aboutonehealth.kz>, which is an information resource reflecting issues of One Health and designed to raise public awareness.

Materials and Methods of the Study

The study was conducted using the following methodology:

The research design is analytical/cross-sectional study.

Object of the study:

- Normative legal documents that regulate the relationship between human, animal and environmental health;
- Official data related to staffing levels of sanitary-epidemiological and veterinary service specialists;
- Specialists in the protection of human and animal health.

The structure of the conducted study is represented by four main stages:

The first stage is the study of international experience on the stated topic, using Pubmed, Medline, Google Scholar, eLibrary and Academy Google databases.

The second stage - content analysis of the main legal acts regulating human-animal-environmental health.

The third stage - analysis of sanitary-epidemiological and veterinary service in the Republic of Kazakhstan.

The fourth stage - analysis of awareness among specialists in the field of human and animal health; a sociological survey was conducted.

The fifth stage - development of a model for transforming the principles of «One Health» into the system of the Republic of Kazakhstan.

Thus, the design of the research work was a combination of several types of research: descriptive study, cross-sectional study, analytical study.

The main provisions introduced in the defense

1. An analysis of international experience in the field of «One Health» principles confirmed the importance of «One Health» principles for effectively combating zoonoses, antibiotic resistance, and other transboundary threats, which necessitates their implementation in the Republic of Kazakhstan.

2. Content analysis of existing regulatory and legal acts governing human, animal, and environmental health issues has revealed that the Republic of Kazakhstan is partially ready to implement the «One Health» principles.

3. Raising awareness of «One Health» among specialists will help reduce barriers to the implementation of this concept.

4. Reforms in sanitation and epidemiology have led to an imbalance in staffing, highlighting the need for an integrated approach based on the principles of «One Health».

5. It has been established that the veterinary service plays a key role in intersectoral cooperation and is an integral component of the implementation of the principles of the «One Health» concept, as confirmed by the identified trends in its staffing.

6. To implement the «One Health» concept, it is necessary to use the model for implementing the «One Health» concept in the Republic of Kazakhstan.

Conclusions

Based on the results of our study, we have drawn the following conclusions:

1. International experience has demonstrated the effectiveness of implementing the «One Health» concept in ensuring cross-sectoral cooperation, early detection and prevention of zoonotic infections, and combating antibiotic resistance. The results obtained indicate that the implementation of this concept in the Republic of Kazakhstan is not only justified but also a timely step aimed at strengthening the resilience of the national health system to modern biological threats and ensuring the sanitary and epidemiological well-being of the population.

2. An analysis of the regulatory framework showed that the functions between ministries and the responsibilities of authorized bodies are not always clearly defined. The creation of an institutional framework and a coordination council is considered one of the priority areas contributing to the effective implementation of the «One Health» concept. The results of the study indicate that 38.1% of respondents have theoretical knowledge of the principles of «One Health» and 36.6% of respondents use the principles of «One Health» in their professional activities. The low level of awareness of «One Health» among specialists is a serious obstacle to the implementation of this concept. Only 282 (36.6%) respondents use the principles of «One Health» in their professional activities, and 294 (38.1%) respondents have theoretical knowledge of the principles of «One Health». Among those surveyed, 195 (25.3%) are unaware of these principles. It is necessary to include the developed One Health programs in the educational process for training specialists in the field of healthcare and veterinary medicine.

3 The low level of awareness of One Health among specialists is a serious obstacle to the implementation of the concept. Only 282 (36.6%) respondents use the principles of One Health in their professional activities, while 294 (38.1%) respondents know the principles of One Health in theory. Among the respondents, 195 (25.3%) are not aware of these principles.

3. The reforms carried out in the Republic of Kazakhstan, including the adoption of the Entrepreneurial Code and its subordinate legislation, have had a significant impact on the human resources capacity of the epidemiological service and the activities of epidemiological surveillance centers, as evidenced by a steady decline in the number of specialists between 1998 and 2022. At the same time, the staffing of the veterinary service as a whole remains at a satisfactory level, but there are marked territorial imbalances between urban and rural areas, indicating the need for management decisions.

The adoption of the Entrepreneurial Code and subordinate legislation had a significant impact on both the number and per capita indicators of rural epidemiologists. Between 1998 and 2022, the total number of epidemiologists ranged from 3,164 (in 1998) to 4,287 (in 2016), while the number of urban epidemiologists varied from 2,541 (in 2000) to 3,574 (in 2016).

4. The provision of veterinary services in Kazakhstan is at a satisfactory level. However, the imbalance between regions indicates the need to improve management strategies aimed at redistributing human resources, introducing incentive programs for specialists in underserved regions, and modernizing the infrastructure of veterinary institutions.

5. An important condition for the effective implementation of the One Health principles is a conceptual approach that includes monitoring human, animal, and ecosystem health; training specialists; creating cross-sectoral mechanisms; raising public awareness about the prevention of zoonotic infections; and participating in cross-country initiatives to exchange experiences.

Practical recommendations

1. One of the priority areas proposed is the formation of a sustainable structure for intersectoral cooperation and the creation of a national consortium aimed at the practical integration of the principles of «One Health» into the system of public administration and healthcare in the Republic of Kazakhstan. It is advisable to legally enshrine the term «One Health» in the Code of the Republic of Kazakhstan «On public health and the healthcare system» and in other regulatory legal acts. To increase the effectiveness of the implementation of the principles of «One Health», it is recommended to develop and implement intersectoral training programs for specialists in the fields of medicine, veterinary medicine, epidemiology, and ecology. As a supplement, it is proposed to update the qualification requirements to include new competencies that reflect the principles of «One Health» and are focused on the development of intersectoral cooperation.

2. It is necessary to integrate the advanced training courses we have developed on the topic of «One Health» for specialists in the field of sanitary and epidemiological profile and veterinarians. We recommend using the modules we have developed for the general public to conduct informational and educational work with the population.

3. To raise public awareness of the principles of «One Health», an information portal has been created at www.aboutonehealth.kz, which serves as a basis for educational programs, including an online course entitled «Safety in Everyday Life: Principles of «One Health»». It is recommended that such educational initiatives be scaled up in order to foster a culture of prevention and strengthen cross-sectoral cooperation in society.

4. An analysis of staffing levels in the sanitary-epidemiological and veterinary services has revealed a shortage of specialists in rural areas. In this regard, it is recommended to strengthen government measures to attract and retain personnel in rural areas, including the provision of social benefits, targeted grants and training opportunities, housing, and the creation of conditions for professional growth and career development.

5. It is recommended to amend and supplement the order «On the approval of statistical forms for nationwide statistical observations on agriculture, forestry, hunting, and fisheries statistics and instructions for filling them out», providing for the inclusion of a separate form reflecting information on veterinary personnel. It is also advisable to take measures to improve the reliability of official statistical information in this area as part of the preparation and conduct of the agricultural census planned for 2025.

Approbation of the thesis

The main provisions of the thesis were reported on:

The main results, provisions, conclusions and findings of the dissertation were reported and presented at the XVI International Scientific and Practical Conference named after Atchabarov B. A. «Ecology. Atchabarov B.A. «Ecology. Radiation. Health» (August 28-29, 2023).

Publications on the subject of the dissertation

On the materials of the dissertation research 6 scientific works have been published, including 3 publications in the journals recommended by the Committee for Control in the Sphere of Education and Science of the Republic of Kazakhstan, 3 theses in the collections of international conferences and 1 scientific publication in the journals indexed by Scopus and Web of Science databases (Clarivate Analytics). 5 certificates of state registration of rights to the object of copyright, 2 acts of implementation were received.

Personal contribution of the author

The author of the study took an active part in the development of the conceptual framework of the work, formulation of its goal and objectives, as well as in the development of the research program. She collected primary data, analyzed them and performed all stages of statistical analysis. In addition, the author independently described the results obtained, formulated the key points of the thesis, prepared the conclusion, conclusions and practical recommendations.

Implementation of the research results

- An informational website has been created to reflect issues related to One Health, aimed at raising awareness among specialists and the general public (author's certificate № 54862 dated February 19, 2025);
- A professional development course entitled «Introduction to One Health» has been developed (copyright № 54133 dated February 3, 2025);
- A professional development course «Fundamentals of One Health for Veterinary Professionals» was developed (copyright № 56316 dated April 2, 2025);
- Developed a professional development course «Safety in Everyday Life: Principles of One Health» (copyright № 56036 dated March 26, 2025);
- Conducted a comprehensive assessment of the Republic of Kazakhstan's readiness to implement the One Health concept;
- An analysis of the regulatory framework governing One Health issues and a functional analysis of the activities of state bodies implementing tasks within the framework of the One Health concept have been carried out;
- A model for the implementation of the One Health concept in the Republic of Kazakhstan has been developed (copyright № 55526 dated March 6, 2025);
- Received a certificate of implementation of an informational website reflecting the concept of «One Health» from Primary Health Care;
- Received a certificate of implementation of the educational program «Introduction to the concept of «One Health» from NJSC «Semey Medical University».

Scope and Structure of the Dissertation

The dissertation is presented in 115 pages of printed text and consists of an introduction, a review of the literature, materials and methods, seven sections, a conclusion including findings and recommendations for practical implementation,

and a bibliography of 217 sources, including 47 sources in the state and Russian languages and 170 in foreign languages.