ABSTRACT

of the dissertation work of Urazayeva Aisha Bauyrzhanovna on the topic «Comprehensive study of morbidity, risk factors of human infection and problems of intersectoral cooperation in the fight against brucellosis» submitted for the degree of Doctor of Philosophy (PhD) in the specialty 6D110200 – «Public Health»

1. Relevance of the research topic.

Chronic brucellosis is a zoonosis, which is an infectious, autoimmune disease. Today brucellosis is considered an urgent problem in countries where livestock farming is developed. Acute brucellosis turns into a chronic form in 80% of cases, and disability of patients occurs in 35% of cases. Mostly people of working age are ill, which causes significant socio-economic damage, indicating the relevance of this problem [1].

Brucellosis, also called Mediterranean fever, is caused by *Brucella species*, and infects humans, cattle, pigs, and dogs [2]. There are 4 species of *Brucella that are important in infecting humans: B melitensis, pathogenic for small cattle (SC), B. abortus - for cattle (cattle), B. suis* - for pigs, B. *canis - for* dogs. However, 90% of sick people worldwide have B. melitensis. *In rare cases, the remaining 3 species are identified* [3].

According to the Food and Agriculture Organization of the United Nations (FAO), brucellosis is currently recognized as a real threat to the biological security of the population in the regions of the Mediterranean, South and Central America, Africa, Asia, the South Caucasus, the Arabian Peninsula, India, and the Middle East [4].

According to the World Health Organization (WHO), more than 500 thousand cases of newly diagnosed brucellosis are registered annually in the world, but in fact the figures are several times higher due to shortcomings in the diagnosis of brucellosis, insufficient correct registration of newly diagnosed cases of the disease and failure to submit data to WHO [5]. In the countries of Central Asia and Eastern Europe, in the CIS countries, the highest rates of newly detected brucellosis were determined in Kyrgyzstan and Kazakhstan. According to the trend of the spread of brucellosis and the level of morbidity of humans and farm animals, Kazakhstan belongs to endemic countries [4, 6]. When comparing the incidence of particularly dangerous and zoonotic infections in Kazakhstan by nosology, it was noted that the infection rate of people with newly diagnosed brucellosis was the highest - from 7.7% to 10.2% in different years [7, 8].

Centuries later, brucellosis is spreading again even in developed countries, and poses a serious problem for the economy, food security and public health. According to WHO and FAO, by 1999, the highest incidence in the Middle East was in the Saudi Kingdom [9]. In Europe, there is also an increase in the incidence of brucellosis, despite the high level of veterinary control. For example, in Germany from 1962 to 2005, only 6,269 cases of the disease were registered, the mortality rate during this period was 0.9%, and in recent years there has been a

steady increase in the incidence of brucellosis [10]. Thus, modern global trends in the economy and trade have created prerequisites for the actualization of the problem of brucellosis on a global scale.

2. The purpose of the dissertation research: A comprehensive analysis of the incidence of brucellosis in Kazakhstan and the Aktobe region, supplemented by the study of public awareness of the risk factors of infection and the identification of the level of agreement of specialists from all interested departments with the recommendations of the world's leading organizations on brucellosis.

3. The object of the dissertation research the state of the problem of brucellosis in the Republic of Kazakhstan in all its aspects: historical, systemic, social, practical, medical, competence, economic. It is known that Kazakhstan belongs to the territories endemic to brucellosis. The significance of the problem, its objectless, is further aggravated by the fact that the epidemiology of human brucellosis, the most common zoonotic infection in the world, is radically changing due to various sanitary, socio-economic and political reasons, as well as due to the increasing intensity of migration processes.

4. The subjects of research are specific aspects of the brucellosis problem that are subject to comprehensive study. Based on the relevance of the topic and the insufficiency of the development of a number of its problems in the domestic literature, the purpose of the study was determined: a comprehensive analysis of the situation on the incidence of brucellosis, risk factors for infection of people and the level of agreement of specialists of all involved departments on key problems of brucellosis with the guidelines of world expert organizations to optimize interdepartmental interaction.

To determine the features of the manifestation of modern brucellosis on the territory of the Republic of Kazakhstan, data from the epidemiological investigation of newly diagnosed cases of brucellosis by absolute numbers of patients, materials on territorial prevalence, available data on the sources of the disease, including identifying the degree of awareness of the population about the risk factors of transmission of infection, data on the effectiveness of laboratory diagnostic methods were used, analytical information on the level of epidemiological surveillance of brucellosis in the Republic of Kazakhstan based on official statistical data of monitoring services. A separate subject of the study was the study of the consistency of opinions of competent services as the most likely resource for improving the situation with the incidence of brucellosis among the population and preventing economic losses of the state.

5. Research objectives:

1. To study the modern features of the epizootological and epidemiological situation of brucellosis in the Republic of Kazakhstan as a whole.
2. To identify the sources, dominant mechanisms and transmission factors contributing to the maintenance of epizootic and epidemiological problems with brucellosis in the Aktobe region, to identify the correlation between the incidence of the population with the incidence of brucellosis in cattle for the period 2008-2017.

3. To determine the level of awareness of the population of Aktobe region about the risk factors of infection with brucellosis.
4. To identify the level of agreement of specialists from all interested departments with the recommendations of the world's leading organizations on brucellosis, conduct a survey of specialists from all services (veterinary, public health and medical) in selected 6 regions of the Republic of Kazakhstan and an in-depth interview of experts of expert level (qualitative research).

6. Scientific novelty of the dissertation research.

Within the framework of this study:

1. For the first time, both the regularity of the spread of infection and the features of the current epidemic situation of brucellosis in the Aktobe region have been established, which are manifested, on the one hand, in a decrease in the incidence of brucellosis among the population, and, on the other, in a change in the pathobiocenosis and the structure of the epidemic process.
2. For the first time, the features of the prevalence of brucellosis in various regions of the Aktobe region were analyzed and it was demonstrated that an infected person is an indicator of a brucellosis problem, as a result of the presence of "hidden" foci of brucellosis of farm animals in the settlements of the Aktobe region.
3. For the first time, the awareness of the population about the risks of infection, about sanitary and hygienic standards and measures for the prevention of brucellosis was assessed on the basis of a specially developed questionnaire. The social profiles of a patient with acute brucellosis, as well as a person who is unaware of the brucellosis clinic and potentially vulnerable to infection are presented.
4. For the first time, the analysis of the spread of opinions of specialists of three departmental services on key issues of brucellosis was carried out, and the degree of discrepancy between their professional assessments and the WHO/FAO/CDC guidelines on brucellosis was revealed.

7. The main provisions submitted for protection.

1. The features of the modern epizootic - epidemic situation of brucellosis in the Republic of Kazakhstan are established, manifested both in the tendency to decrease the incidence of brucellosis in the population, and in changes in the structure and risk factors of infection in the conditions of circulation of the pathogen of the most virulent Br. *melitensis* goat type.
2. The presented work shows that the peculiarity of the modern epidemiological process is an infected person, which serves as an indicator of the detection of new cases of acute brucellosis of people in the considered safe settlements. In the Aktobe region, as well as in the republic as a whole, insufficient concordance of data on the incidence of livestock and people was revealed, suggesting the facts of the presence of hidden foci of brucellosis among livestock. The revealed situation of insufficient level of veterinary supervision of farm animals requires in-depth study of risk factors and sources of infection with brucellosis both in the Aktobe region and in the Republic of Kazakhstan as a whole.

3. By interviewing the population, the degree of awareness of potential risk factors for infection with brucellosis was revealed. Cattle ownership, place of residence (urban residents are less informed about the problem), occupation (employment in animal husbandry), and behavioral patterns when buying meat and dairy products (compliance with food safety) are crucial. For those who own livestock, the method used for the disposal of biologically hazardous material (afterbirth, etc.) and the use of PPE when cleaning livestock premises are crucial.
4. A survey of specialists of three services (veterinary, public health and medical) of 6 regions of the Republic of Kazakhstan (Akmola, Almaty, North Kazakhstan, Turkestan, Zhambyl, Aktobe) and an in-depth interview of experts of the expert level of Aktobe revealed insufficient concordance with the recommendations of WHO/FAO/CDC on tactics to combat brucellosis (weighted 0,22/0,24/0,49), and as a consequence, an insufficient degree of interdepartmental interaction of services.
The analysis of the results of a comprehensive study allows us to create a certain foundation for the future development of national recommendations for the implementation of the "Unified Health" approach widely practiced in modern science in relation to the fight against brucellosis in the Republic of Kazakhstan.

8. Practical significance of the dissertation research.

The correlation analysis of the incidence of brucellosis in humans and animals in the Aktobe region carried out within the framework of the work revealed certain discrepancies in the assessments of the epizootic and epidemiological situation by specialists of responsible services, thereby giving grounds for revising the key indicator of ill-health in morbidity.

A large-scale survey of the population of the Aktobe region on awareness of the ways of infection revealed the key risk factors for infection with brucellosis.

A survey of specialists from all involved departments (veterinary control, public health, clinical services) in 6 regions of the Republic of Kazakhstan, as well as an in-depth interview with experts of an expert profile, revealed the degree of dispersion of professional opinions on key issues of brucellosis.

Together, the results of this study have created a foundation for the development of nationwide methodological recommendations in the spirit of the "Unified Health" approach adopted in today's science.

The results of the dissertation work are used in the educational process when lecturing on the discipline "Epidemiology and infectious diseases".

9. Personal contribution of the author.

The author personally completed all the planned tasks, including the organization of epidemiological studies and the collection of primary data. Personally, the author has developed research designs, prepared and tested analytical tables, as well as Questionnaires for target groups of the population and for specialists of all involved departments. Personally conducted an interview with experts of the expert level. Statistical analysis of the results and their subsequent evaluation, development of Conclusions and conclusions are systematized and generalized. Based on the materials of the dissertation, the author personally prepared publications, reports for speeches and training materials.

10. Approbation of the results of the dissertation.

The dissertation materials were presented and discussed at the meetings of the Academic Council of the Marat Ospanov State Medical University on October 26, 2017 (Aktobe), the Specialized Scientific Problem Commission "Hygiene, Epidemiology, Public Health" on June 29, 2018, as well as at the meeting of the approbation Commission of the Marat Ospanov State Medical University (Aktobe, May 2021).

The main results of the dissertation were reported and discussed at scientific and practical and international conferences:

1. Proceedings of the Conference “Contemporary lssues in Preventive Medicine” 21-23 may, 2018. Yerevan, Republic of Armenia.
2. The III international scientific and educational conference “The internationalization of continuing medical education. Prospection”. Aktobe, Kazakhstan, April 25-26, 2019.
3. International Scientific and Practical Conference of Young scientists "Science and Health", Semey, November 20, 2020
4. II Kazakhstan Congress of Infectious Diseases "Infectious Diseases in the context of globalization: challenges and solutions", Nur-Sultan, from 7 to 8 October 2021 (abstracts submitted).

11. Publications on the topic of the dissertation.

Based on the materials of the dissertation, a total of 11 scientific papers have been published, including: 1 indexed in the Scopus database - the journal Russian Open Medical Journal (IV quartile, IF - 0.16), №4, 2020; 3 - in scientific publications recommended by the Committee for Quality Assurance in the Sphere of Education and Science of the Ministry of Education and Science of the Republic of Kazakhstan; 4 theses are published in the proceedings of international scientific conferences; 2 - in a domestic scientific publication and 1 - in a foreign scientific publication.

12. Structure and scope of the dissertation.

The dissertation was completed in the volume of 159 pages of a computer set and consists of the following chapters: Introduction; The current state of the problem of brucellosis (literature review); Materials and methods used in the study; Results and discussion; Conclusion; References; Appendices. The work have illustrated with 45 tables, 20 figures. The index of literature contains 111 sources, including 38 in Russian and 75 in English.

Based on the materials of the dissertation work, 1 certificate of state registration of copyright was obtained, 3 acts of implementation (Appendices) were registered.