The Bioscan AN INTERNATIONAL QUARTERLY JOURNAL OF LIFE SCIENCES 20(3): S.I (3), 657-661, 2025 www.thebioscan.com

PREVALENCE OF ECHINOCOCCOSIS IN THE CONTEXT OF PROFESSIONAL ACTIVITIES

Butaboyev Jasurbek Makhmudjonovich - Associate Professor, Department of General Surgery and Transplantology, Andijan State Medical Institute, Andijan, Uzbekistan.

Shaykhova Guli Islamovna – Professor, Department of Hygiene of Nutrition and Children, Adolescents, Tashkent Medical Academy, Tashkent, Uzbekistan.

Kasimov Adkham Lutfullaevich – Professor, Department of General Surgery and Transplantology, Andijan State Medical Institute, Andijan, Uzbekistan.

Otakuziev Akhmadillo Zakirjanovich - Associate Professor, Department of Surgical Diseases of the Andijan State Medical Institute, Andijan, Uzbekistan.

DOI: 10.63001/tbs.2025.v20.i03.S.I(3).pp657-661

KEYWORDS
hydatid disease, professional activity, food hygiene, prevalence of echinococcosis.
Received on:

24-06-2025

Accepted on:

26-07-2025

Published on:

30-08-2025

ABSTRACT

As part of the study, the authors assessed the incidence of hydatid disease among the population of the Andijan region, taking into account social and professional factors. The data obtained made it possible to identify a correlation between professional activity, the level of food hygiene and the spread of echinococcosis.

It was found that insufficient awareness of the population about the causes of hydatid disease requires comprehensive sanitary and educational measures to prevent and control this disease.

INTRODUCTION

Echinococcosis is a parasitic disease from the group of cestodes caused by the invasion of the human body by echinococcus larvae at the oncosphere stage. The highest prevalence of echinococcosis is observed in Australia, New Zealand, North Africa, South America, Southern Europe and Central Asia [1,13,14,15].

In endemic regions, the incidence of echinococcosis can reach 5-10%. The spread of echinococcosis closely correlates with the development of animal husbandry [2,4,7,10]. Due to the fact that echinococcosis can affect various internal organs, and the only radical method of treatment is surgery, this disease is of interest to specialists in the field of thoracic and abdominal surgery [5,6,8,11].

Objective of the study.

To study the prevalence and influence of hygienic factors in the development of echinococcal disease in the context of professional activity.

Materials and methods.

An analysis of the incidence and effectiveness of hygienic, epigenetic and therapeutic and preventive measures was carried out in 438 patients with EB and in 88 patients with EB among the population at risk in the Andijan region, characterized by different climatic conditions and agricultural focus (the cities of Asaka, Shakhrikhan, Pakhtaabad, Kurgontepa, Jalolkuduk) according to the main parameters: the level and structure of incidence; long-term dynamics of incidence; the intensity of epidemic manifestations in various age and socio-professional groups of the population in the period from 2021 to 2023. This group of patients was divided into three subgroups: subgroup A - 231 (52.7%) people with EB, who underwent measures to improve the quality of medical examinations according to the developed algorithm (Algorithm of complex therapeutic, preventive and hygienic measures for echinococcal disease, see Chapter 5) and the prevention of echinococcal disease among the population with a study of actual nutrition and epigenetic diet during the period; subgroup B - 88 (20.1%) patients with echinococcosis among the risk group population, in which an analysis of morbidity was conducted and the effectiveness of sanitary and hygienic measures was studied with a study of the epigenetic diet and hygienic behavior, as well as immunological correction and antiparasitic therapy for small cysts (up to 5 cm); subgroup B - 119 (27.2%) operated patients with EB, who were treated with the developed hygienic and preventive measures with individualization of the epigenetic diet for echinococcal disease according to the questionnaire developed by us, as well as the tactical and technical principles of antiparasitic therapy in combination with improved treatment methods based on the

Department of Surgical Clinics of the Andrei State Medical Institute.

Due to the fact that the incidence of the population of the districts exceeded the incidence of the urban population, the study of the factors maintaining the epidemic process of echinococcosis was carried out in relation to the districts.

The most affected territory was the Asaka district (zone 1 with a high incidence rate). The intensive indicator varied from 8.37 to 12.09 per 100 thousand people with an average long-term (over 10 years) indicator for the region - 2.5. In terms of the invasiveness of echinococci, the second place was taken by the Shakhrikhan district, where the average long-term incidence rate fluctuated from 4.65 to 8.36 per 100 thousand people; this district was assigned to the 2nd zone with an average incidence rate, in third place were the Kurgontepa and Jalolkuduk districts, in the latter, the Pakhtaabad district.

At the same time, when analyzing the incidence by gender, in the group of operated patients, a slight prevalence of females was noted (50.3% and 49.7%) in a ratio of 3:2.

In all subgroups of patients, there was a prevalence of rural residents compared to the urban population. Urban residents in subgroup A were 42.4%, rural - 57.6%, Thus, in subgroup B, patients among rural residents amounted to 59.1%, urban - 40.9%. In subgroup B, rural residents accounted for 59.6%, while urban residents accounted for 40.3%, respectively (Fig. 1).

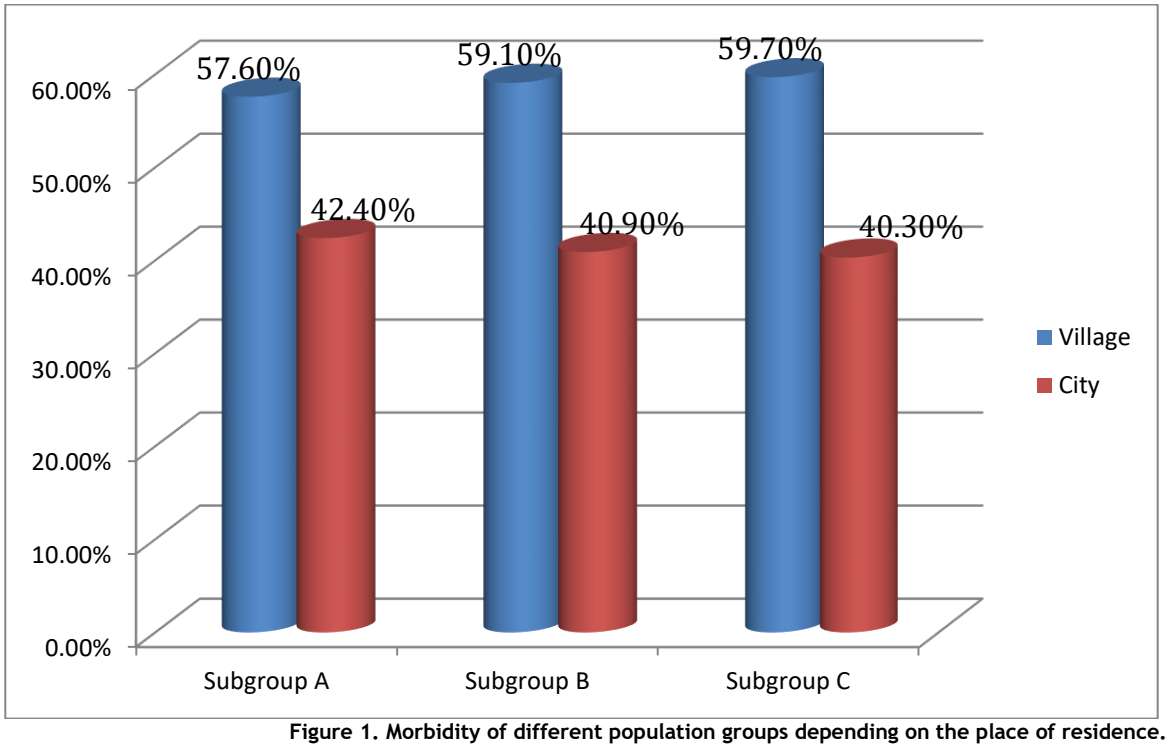

Figure 1. Morbidity of different population groups depending on the place of residence.

The difference in the specific gravity - 256 (58.5%) and 182 (41.5%) indicates an increase in morbidity among the urban population, which is associated with increased migration of the population from rural areas to the city, worsening of the general epidemiological situation.

Professional activity in this contingent of patients played an extremely significant role in determining risk factors: the longer the stay at the place of work and meals on site, irregular meals without observing the rules of food hygiene, the more often unfavorable conditions were created for the body's adaptation to an increase in infection (Fig. 2).

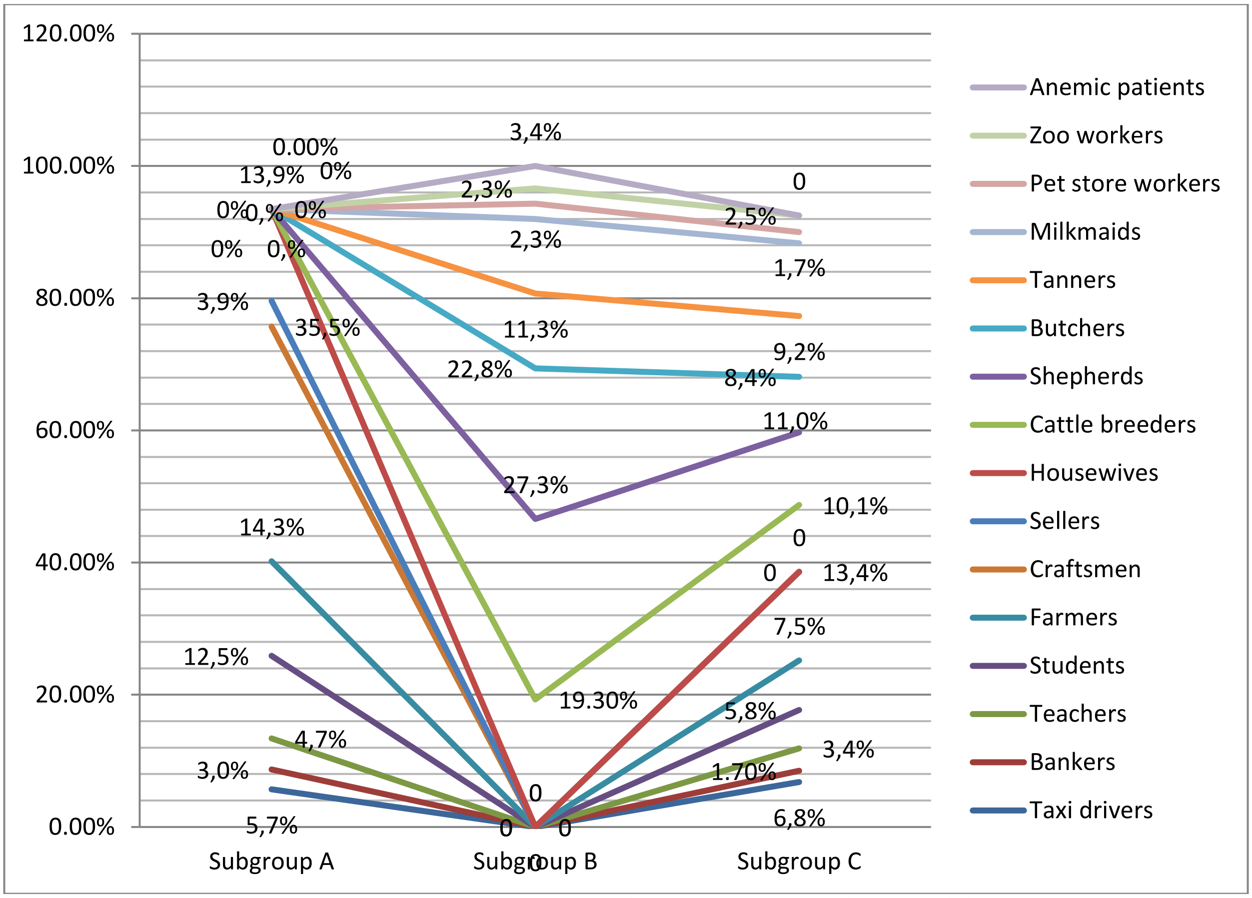

Figure 2. Professional activity in case of echinococcal disease.

In subgroup A of 231 population with EB, the disease was most often diagnosed in students - 29 (12.5%), farmers - 33 (14.3%), housewives - 32 (13.9%), but the largest number were artisans - 82 (35.5%). At the same time, taxi drivers made up - 13 (5.7%), teachers - 11 (4.7%), sellers - 9 (3.9%), bankers - 7 (3.0%), and other professions - 15 (6.5%).

In subgroup B (risk group n= 88), the disease was most often diagnosed in those people who most often came into contact with animal hair or processed animal skin and meat: cattle breeders - 17 (19.3%), shepherds - 24 (27.3%), butchers - 20 (22.8%), tanners - 10 (11.3%), milkmaids - 10 (11.3%). Among others, there were also zoo workers - 2 (2.3%) and pet store workers - 2 (2.3%). We consider anemic patients to be an important factor - 3 (3.4%), regardless of their profession, who are also susceptible to EB infection due to reduced immunity. In subgroup B (operated n= 127), among the patients admitted to hospital, there were categories of almost all professions. The largest number of patients were those who also frequently came into contact with animal hair or the processing of animal skin and meat, these are cattle breeders - 12 (10.1%), shepherds - 13 (11.0%), butchers - 10 (8.4%), tanners - 11 (9.2%), milkmaids - 13 (11.0%).

An important fact is also the presence of EB in students - 7 (5.8%), artisans - 16 (13.4%), takisits - 8 (6.8%).

In addition, the diet was assessed: the frequency of meals, the intervals between them, the distribution of the energy value of the diet by meals. Since nutrition is an important factor determining the health and well-being of people. Improper nutrition contributes to the progression of many diseases and is also considered one of the important links in the multifactorial etiology of diseases. People who often have a reduced level of food consumption, which is due to various reasons, have an increased risk of developing various diseases, including echinococcosis. In patients, the detection and timely correction of malnutrition plays a particularly important role in the prevention and development of various pathologies, as well as echinococcal disease.

When analyzing the results of the nutrition study, the following were assessed:

- compliance of the energy value of the diet;
- compliance of the content of macronutrients in the diet (proteins, fats, carbohydrates) with the needs of the body;
- the content of animal proteins relative to total proteins;
- the content of vegetable fats relative to total fats;
- the contribution of proteins, fats and carbohydrates to the energy value of the diet;
- the ratio between proteins, fats and carbohydrates;
- balance of amino acid composition;
- compliance of the content of micronutrients (vitamins, macro- and microelements) with the needs of the body;
- the ratio between individual macroelements (Ca, P, Mg).

In this regard, we used the developed Questionnaire Card, slightly modifying it. The survey was conducted in family medical clinics with familiarization of the population with prepared scientific materials and facts about EB, and also the awareness of the population about echinococcal disease was determined and clarified. The survey was also conducted by an online survey of the population at the link.

Research results. When conducting a survey of the population, it was revealed that among residents of the districts, owners of farm animals and dogs were more common than among city residents. Thus, contact of people with dogs in the conditions of livestock breeding more often occurred in rural areas. First of all, this factor can explain the difference in morbidity among the rural and urban population. When analyzing the population's preventive examinations, it was found that the overwhelming majority of patients, 178 (40.6%), did not undergo preventive ultrasound, only 10 (2.2% of 438) underwent it once every 6 months, despite the widespread introduction of ultrasound into the mandatory protocol in primary health care institutions. The situation with fluorographic examination is also the same, 195 (44.6% of 438) did not undergo this examination at all, 2.2% (10 of 438) once a year, and 11.9% (52 of 438) once every 3 years. X-ray examination improves the situation only with an increase in preventive X-ray

examinations - once every 6 months for 11.0% of the total number (438), and 110 (25.1% of 438) did not undergo X-ray examination. Special more in-depth examinations, such as MSCT/MRI, also do not improve the situation, due to the smaller number of examinations – 3 (0.7% of 438) patients.

In this regard, most of them came with clearly expressed clinical symptoms, when the EC reaches enormous sizes and existing disorders of the affected organ.

The overwhelming majority of patients 432 (98.7%) did not undergo immunological studies, or had no idea about the analysis for echinococcus. General blood analysis was taken once every 6 months by 78 (17.8%) patients, once every one year by 63 (14.4%), only 103 (23.6%) took a general blood test once every 3 years, despite the widespread introduction of this type of laboratory research into the mandatory protocol in primary health care institutions. Blood for determination of protein fractions once every 6 months - 3 (0.7%), once a year - 9 (2.1%), once every 3 years - 45 (10.3%), rarely - 194 (44.2%), did not donate or had no idea - 187 (42.7%) patients. When analyzing the awareness of the population about echinococcal disease, it was revealed that the overwhelming majority of patients 368 (84.1%) and 378 (86.3%), that the population is poorly informed about parasitic diseases, especially about EB. More than half of 423 (96.6%) patients have no idea about the immunological analysis (Ig G) for echinococcus and 401 (91.5%) antiparasitic agents. Very rarely (94.3%) patients at the initial detection and after EE received antiparasitic therapy for 3 cycles of 28 days. All this indicates that the population is poorly informed about the causes of occurrence and poorly informed about possible measures of prevention and conservative treatment of EB. We also analyzed the eating behavior of the population (Table 1; 2; 3; 4).

Table 1

Results of the study on determining eating behavior and food hygiene (n=438)

How often do you drink water from sources? (choice +,√)

Quantity	Well		Drilling		Imported		Open water bodies	
	abs	%	abs	%	abs	%	abs	%
Every day	10	2,2	201	45,9	45	10,3	2	0,5
Every other day	0	0	11	2,5	0	0	0	0
1-2 times a week	0	0	3	0,7	15	3,4	0	0
very rarely	0	0	2	0,5	78	17,8	12	2,8
I don't use	428	97,7	221	50,4	300	68,5	424	96,8

As can be seen from the study of the living conditions of patients suffering from EB, it was revealed that 2.2% of patients use water from wells, 63.4% of the population systematically used water from boreholes, 31.5% - imported water, 97.7% - water from the tap and 3.3% - from an open reservoir.

Table 2

Results of the study to determine eating behavior and food hygiene (n = 438)

How often do you eat vegetables and fruits? (choice +, √)

Quantity	Vegetables		Fruits		Juices		Strawberries		Strawberry	
	абс	%	абс	%	абс	%	абс	%	абс	%
Every day	432	98,6	172	39,3	77	17,6	13	2,9	10	2,2
Every other day	2	0,5	102	23,3	35	8,0	0	0	3	0,7
1-2 times a week	2	0,5	138	31,5	83	18,9	25	5,8	5	1,1
very rarely	0	0	13	2,9	35	8,0	89	2,4	103	23,6
I don't use	0	0	9	2,1	208	47,5	311	71,0	317	72,4

When studying the hygiene of nutrition and healthy lifestyle of the population suffering from EB, it was found that more than half of them (98.6%) consume vegetables, fruits (94.1%), and 52.5% consume various juices. Garden berries such as strawberries (11.4%) and strawberries (27.6%) of patients suffering from EB. What matters here is the intake of vegetables, fruits and berries in compliance with hygiene rules, and most of them often do not follow basic hygiene rules and have a habit of trying food with unwashed hands, biting into vegetables or fruits and berries.

Table 3

Results of the study to determine eating behavior and nutrition hygiene (n=438)

How often do you drink boiled or unboiled water and raw milk? (choice +, √)

Quantity	Boiled water		Unboiled water		Raw milk	
	abs	%	abs	%	abs	%
Every day	95	21,7	133	30,4	77	17,6
Every other day	37	8,5	85	19,4	0	0
1-2 times a week	129	29,5	77	17,6	35	8,0
very rarely	172	39,2	75	17,2	98	1,8
I don't use	5	1,1	68	15,5	228	52,1

It was noted that 39.2% of the population, depending on their profession, rarely drink boiled water, drinking water directly from the tap or from irrigation ditches 67.4% (30.4%; 19.4%; 17.6%).

Table 4

Results of the study of conditions for the occurrence of echinococcal disease (yes/no choice)

Circumstances and conditions of causes Do you often go out for agricultural and other work?	Number of examined (n=438)			
	yes		no	
	abs	%		
Do you follow the rules for caring for domestic animals and prevent faecal pollution of the environment?	250	57,1	188	42,9
Do you often care for animals on your farm (for example, cows)?	98	22,4	340	78,1

Circumstances and conditions of causes 298 68.1 140 31.9

The analysis of the responses showed that in the study area, echinococcosis infection was predominantly caused by farm animals bred in private households with dogs as the source of the infection.

CONCLUSION

Thus, the survey results clearly indicate an alarming trend: patients with echinococcosis (EB) demonstrate an extremely low level of awareness of the importance of food hygiene. When studying the circumstances and conditions of infection, it was found that the majority of the patients surveyed (68.1%) keep pets without observing basic personal hygiene rules, and are also systematically engaged in agricultural work (57.1%).

This alarming situation is due to the lack of awareness of the population about echinococcosis, its causes and clinical manifestations. As a result, even those segments of the population that do not come into contact with farm animals due to the nature of their work are poorly informed about preventive measures. They also have poor food hygiene skills, which creates additional risks to their health. Particularly vulnerable groups are hunters, shepherds, reindeer herders, cowherds, fur farm workers, livestock farm workers, zoo workers, fur harvesters, fur workshop workers, veterinarians, dog catchers, dog owners, nature reserve workers, and mushroom and berry pickers. All these people have direct contact with wild foxes, domestic dogs and cats that may be infected with echinococcus, as well as wild rodents. This increases the risk of infection for them and their families.

REFERENCES

- Akhina, D. A. Endemicity of territories for echinococcosis in countries of the world and in Russia / D. A. Akhina, A. M. Okunev // Actual issues of science and economy: new challenges and solutions: Collection of materials of the LIV student scientific and practical conference dedicated to the memory of the 75th anniversary of Victory in the Great Patriotic War, Tyumen, March 19–20, 2020. - Tyumen: State Agrarian University of the Northern Trans-Urals, 2020. - P. 229-237. - EDN ZBQKWO.
- Bessonov, A.S. Echinococcosis in the Russian Federation / A.S. Bessonov // Medical parasitology and parasitic diseases. - 2001. - No. 3. - P. 56-61.
- Dzhaborov, A.I. Prevalence of echinococcosis in the Republic of Tajikistan / A.I. Dzhaborov // Healthcare of Tajikistan. - 2013. - No. 3. - P. 29-33.
- Dousov V.V., Brook S.L., Militsa I.M. Some clinical and epidemiological features of echinococcosis based on the materials of the infectious disease service of the Smolensk region // Smolensk Medical Almanac. - No. 1. - 2020. - P. 98-99.
- Karimov Sh.I., Nishanov Kh.T., Yeshanov A.T., Durmanov B.D. Epidemiological aspects of echinococcosis // Medical journal of Uzbekistan. - 1997. - No. 3. - P. 59-62.
- Kuttubaev O.T., Kulzhabaeva K.S., Abdyzhaparov T.A. and others. Brief historical review of scientific research on echinococcosis of the Kyrgyz Republic (review) // Bulletin of KSMA named after. I.K. Akhunbaeva. - 2010. - No. 10. - P. 27-31.
- Nishonov F.N. Botirov A.K., Otakuziev A.Z., Nishanov M.F. // Etipathogenic aspects of recurrent liver echinococcosis and its diagnosis. Bulletin of surgery named after. I.I. Grekova 2011 T.170. No. 2. P.91-94.
- Nazirov F.G., Akbarov M.M., Saidazimov E.M., Sirozhitdinov K.K. Morphological features of the interaction of the embryonic elements of echinococcus with the fibrous capsule. // Proceedings: jubilee scientific and practical conference "Innovative technologies and multidisciplinary approaches: in the diagnosis and treatment of socially significant diseases", St. Petersburg, October 17-20, 2018 pp. 80-81.
- Rakhmanov KE Modern views on the pathology of liver echinococcosis // Problems of biology and medicine. - Samarkand. - 2018. - No. 3 (102). - P. 178 - 181. (14.00.00, No. 19)
- Safoev BB, Bakhmatov Sh.Sh., Ikromov TE Modern views on the etiopathogenesis, epidemiology, diagnosis and treatment of echinococcal disease // Scientific and practical journal Novy Den v Meditsine. 2019. - No. 4 (28). P. 294-299.
- Raimkulov K.M. Prevalence of echinococcosis in Central Asia // Economy and Society" No. 4 (107) -1 2023. DOI 10.5281 / zenodo.7916445.
- Shamsiev A.M., Shamsiev Zh.A., Kurbanyiazov Z.B., Rakhmanov K.E., Davlatov S.S. Echinococcosis of the liver: incidence, pathogenesis, classification, diagnosis and treatment (literature review). // Clinical and experimental pathology. - Ukraine. - 2018. - No. 3 (65) - Vol. 17. - P. 126-133.
- Paternoster G., Abdykerimov K.K., Torgerson P.R. et al. Epidemic cystic and alveolar echinococcosis in Kyrgyzstan: an analysis of national surveillance data // The Lancet Global Health. – 2020. – Vol. 8, No. 4. – P. e603-e611. – DOI 10.1016/S2214-109X (20)30038-3.
- Raimkylov, K.M. Epidemiological analysis of the distribution of cystic and alveolar echinococcosis in Osh Oblast in the Kyrgyz Republic, 2000–2013 / K.M. Raimkylov, O.T. Kuttubaev, V.S. Toigombaeva // J. Helminthol. – 2015. – Vol. 89, №6. – P. 651–654.
- Vladimirovna, Sarkisova Victoria, et al. "Hyperplastic Processes of the Endometrium: Issues of Ethiopathogenesis, Clinic, Diagnosis, Treatment." Scholastic: Journal of Natural and Medical Education 2.3 (2023): 72-77.