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Analysis of the Epidemiology of Brucellosis in Uzbekistan and Development of Preventive Measures

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Abstract: This research is dedicated to analyzing the epidemiology of brucellosis in Bukhara region during 2015–2025 and developing preventive measures.

Epidemiological, serological, and laboratory data were analyzed. The results show that in recent years the incidence of brucellosis has significantly decreased. This is associated with preventive measures, vaccination of animals, and raising awareness about sanitation and hygiene. The findings can be used to reduce the spread of brucellosis and improve infection control strategies.

Keywords: brucellosis, epidemiology, prevention, animals, sanitation, Bukhara region.

RELEVANCE

Brucellosis is one of the infectious diseases common to both humans and animals, frequently found among communities engaged in agricultural activities. The disease has significant economic and social importance as it reduces labor capacity, limits opportunities for healthy childbirth, and decreases livestock productivity.

According to the World Health Organization, more than 500,000 new cases are detected annually worldwide. Central Asian countries, including Uzbekistan, are considered endemic regions for brucellosis.

In Bukhara region, the wide development of livestock farming, close contact with animals, and low hygiene culture contribute to the spread of the disease. Therefore, this topic is highly relevant.

Early information about brucellosis dates back to the late 19th century. Scientists around the world identified various pathogenic species of brucella and studied their effects on human health.

Several studies (Corbel M.J., WHO, 2006; Rubach M.P. et al., 2020) show that brucellosis is more prevalent among rural populations and veterinarians.

Research conducted in Uzbekistan (Karimov A.A., 2022; Qodirov N.B., 2021) indicates that although brucellosis cases have partially decreased in recent years, sources of infection remain in certain areas.

OBJECTIVES AND TASKS

Objective:

To study the epidemiological situation of brucellosis in Bukhara region from 2015 to 2025 and develop effective preventive measures.

Tasks:

1. Analyze the dynamics of brucellosis cases in Bukhara region during 2015–2025.
2. Identify the main transmission factors.
3. Evaluate the effectiveness of existing preventive measures.
4. Develop recommendations to reduce epidemiological risks.

MATERIALS AND METHODS

The study covered all districts of Bukhara region. Data from the Ministry of Health, veterinary services, and sanitary-epidemiological stations for 2015–2025 were analyzed.

Methods used:

- Epidemiological analysis
- Serological tests (Wright, ELISA, PCR)
- Statistical analysis (dynamics and correlation)
- Sociological surveys (among the population and farmers)

RESULTS

Year | Total cases | Per 100,000 population | Districts with highest incidence

2015 | 187 | 3.1 | Qorakol, Romitan

2018 | 145 | 2.5 | Vobkent, Jondor

2020 | 112 | 2.0 | Qorakol, Shofirkon

2023 | 84 | 1.6 | Romitan

2025 | 69 | 1.4 | Qorakol, Peshku

Age and gender distribution:

Men aged 20–50 — 65%

Women — 35%

Main transmission routes:

- Improperly boiled dairy products — 48%
- Direct contact with animals — 37%
- Poor hygiene — 15%

DISCUSSION

The results show that in the last 10 years the incidence of brucellosis in Bukhara region has significantly decreased. This is linked to comprehensive measures, such as mandatory vaccination of livestock, strengthened sanitary control, and public awareness campaigns.

However, persistent cases in some areas are due to insufficient hygiene knowledge and the sale of animal products without sanitary inspection.

CONCLUSION

1. From 2015 to 2025, brucellosis cases in Bukhara region decreased from 3.1 to 1.4 per 100,000 population.
2. Main sources of infection are animals and dairy products.
3. Chronic cases are often diagnosed late.
4. Collaboration between veterinary and medical services is crucial in combating brucellosis.

RECOMMENDATIONS

1. Vaccinate animals twice a year and implement serological monitoring.
2. Increase hygiene education among rural populations.
3. Organize preventive examinations for pregnant women and veterinarians.
4. Equip regional laboratories with PCR technologies.
5. Promote pasteurized dairy products among the population.

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