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## **FREQUENCY OF PRIMARY DETECTION OF BRUCELLOSIS INFECTION AMONG BLOOD DONORS IN THE REPUBLIC OF UZBEKISTAN FROM 2021 TO 2023**

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### **Abstract**

This article presents an analysis of the frequency of primary detection of brucellosis infection among blood donors in the Republic of Uzbekistan during the period from 2021 to 2023. The study is retrospective in nature and is based on data obtained from medical examinations and laboratory screening of blood donors in blood transfusion services. Serological diagnostic methods were used to detect brucellosis. The obtained data were analyzed over time to assess the frequency of infection among donors and the factors influencing its prevalence. The results highlight the importance of effective screening measures to ensure blood safety and to improve epidemiological surveillance within the blood service system.

**Keywords:** Blood donors, brucellosis, primary detection, screening, infectious safety, Republic of Uzbekistan.

### **Introduction**

Brucellosis is a zoonotic infectious disease and represents an important medical and social problem for human health. It is mainly transmitted to humans from agricultural animals and is dangerous due to its chronic course, reduction in working capacity, and the risk of long-term complications. Countries of Central Asia, including the Republic of Uzbekistan, are considered endemic regions for brucellosis [3,5,7].



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Ensuring the infectious safety of donor blood is one of the most urgent tasks in the blood transfusion service system. Timely detection of infectious diseases among donors, particularly brucellosis, is crucial for protecting the health of recipients [1,4,8,9,10]. Therefore, it is necessary to improve the processes of medical examination and laboratory screening of donors.

In recent years, modern diagnostic methods have been introduced in the screening of blood donors in the Republic of Uzbekistan. Nevertheless, fluctuations in the frequency of primary detection of brucellosis infection over the years have been observed. This situation highlights the need to assess the epidemiological situation and to revise preventive measures accordingly [5,6,7].

**Objective of the study:**

The aim of this study is to analyze the frequency of primary detection of brucellosis infection among blood donors in the Republic of Uzbekistan during the period from 2021 to 2023, and to draw conclusions aimed at improving infectious safety in the blood service system based on the obtained results.

**Methodology:**

The study involves a statistical analysis of the detection rate of brucellosis infection among blood donors in the Republic of Uzbekistan over a three-year period (2021–2023). The assessment is based on statistical data obtained from regional blood centers, the city of Tashkent, and republican medical institutions, with the purpose of evaluating the prevalence of brucellosis infection.

**Analysis and results:**

The data presented in Table 1 indicate that during the period from 2021 to 2023, the annual number of primary detections of brucellosis infection among blood donors across the regions of the Republic ranged from 536 to 600 cases. The highest number of cases was recorded in 2022, when out of 216,438 donors, 600 individuals tested positive for brucellosis (0.28%).

At the same time, the lowest rate of infection among donors was observed in 2023, when 598 positive cases (0.24%) were identified out of 250,319 donors.

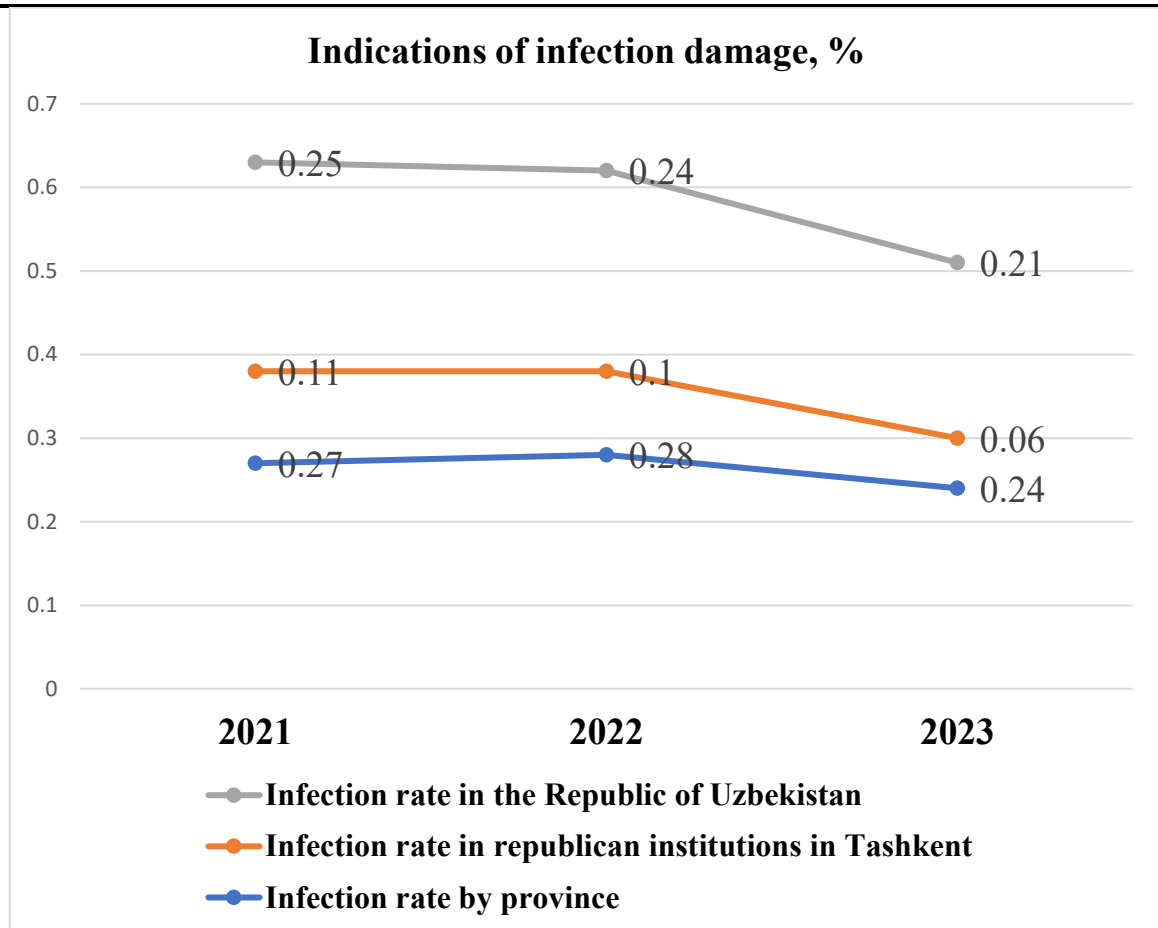


The intermediate level of positive results was recorded in 2021, when 536 cases (0.27%) were detected among 195,084 donors.

**Table 1 Based on a retrospective analysis for 2021–2023, the detection rate (%) of brucellosis infection among blood donors across regions, republican institutions, and the Republic of Uzbekistan as a whole.**

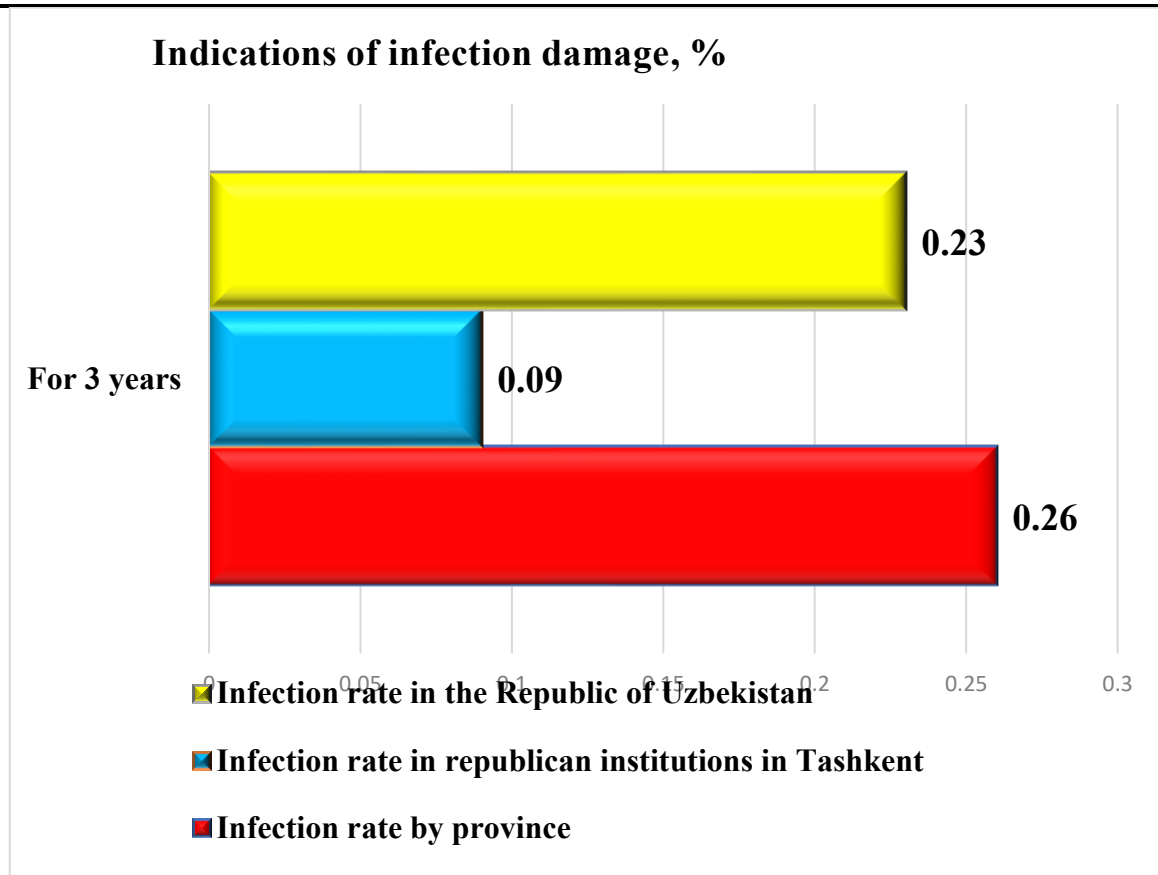
Years	Results	By regions	by republican institutions	By republic
2021	Number of analyses	195084	42784	237868
	Number of positive results	536	49	585
	<b>Detection index, %</b>	<b>0,27</b>	<b>0,11</b>	<b>0,25</b>
2022	Number of analyses	216 483	49 642	266 125
	Number of positive results	600	51	651
	<b>Detection index, %</b>	<b>0,28</b>	<b>0,10</b>	<b>0,24</b>
2023	Number of analyses	250 319	45 861	296 180
	Number of positive results	598	33	631
	<b>Detection index, %</b>	<b>0,24</b>	<b>0,06</b>	<b>0,21</b>
2021-2023 yy.	Number of analyses	661886	138287	800173
	Number of positive results	1734	133	1867
	<b>Detection index, %</b>	<b>0,26</b>	<b>0,09</b>	<b>0,23</b>

In the Republican medical institutions operating in the city of Tashkent, the number of positive cases from 2021 to 2023 ranged annually from 33 to 49. However, the highest infection rate was observed in 2021, when 49 out of 42,784 donors (0.11%) tested positive for brucellosis. In 2022, a slight decrease was noted, with 51 positive cases (0.10%) identified among 46,642 donors. In 2023, the lowest number of positive cases was recorded, with 33 individuals (0.06%) testing positive among 45,861 donors (see Table 1).



**Figure 1. Frequency of Primary Detection of Infection Among Blood Donors in the Republic of Uzbekistan from 2021 to 2023.**

Across the entire Republic, the prevalence of brucellosis among blood donors showed a trend similar to that observed in the republican medical institutions operating in Tashkent. The highest peak was recorded in 2021, reaching 0.25%, when 585 positive cases were identified among a total of 237,868 donors. This indicator decreased to 0.24% in 2022 (651 positive cases out of 266,125 donors) and further declined to 0.21% in 2023 (631 positive cases out of 296,180 donors) (see Figure 1).



**Figure 2. Median Frequency of Primary Detection of Infection Among Blood Donors in the Republic of Uzbekistan over the Three-Year Period from 2021 to 2023.**

Thus, over the three-year period from 2021 to 2023, the average detection rate of brucellosis infection among blood donors was 0.26% (ranging from 0.24% to 0.28%) in regional centers, 0.09% (from 0.06% to 0.11%) in republican medical institutions, and 0.23% (from 0.21% to 0.25%) across the Republic of Uzbekistan as a whole. The annual rate of brucellosis infection among donors depended on the number of positive cases identified relative to the total number of screened blood donors (see Figure 2).

**Conclusion:**

According to the results of the retrospective analysis, during the period from 2021 to 2023, cases of primary detection of brucellosis infection among blood donors in the Republic of Uzbekistan were identified. Analysis of the data over the years



showed that the frequency of brucellosis infection among donors varied depending on the epidemiological situation.

The study results confirm the importance of screening for brucellosis infection to ensure the infectious safety of donor blood. Regular medical examinations of donors and timely, comprehensive laboratory testing help reduce the risk of infection transmission.

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