

Egamkulov Husniddin Erkaboevich
Gulistan State University Department of Ecology and Geography
Acting Associate Professor, Doctor of Philosophy (PhD)
in Geographical Sciences

GEOGRAPHICAL FEATURES OF VIRAL HEPATITIS IN THE POPULATION OF UZBEKISTAN

Annotation: This article thoroughly examines the characteristics and types of viral hepatitis, as well as their geographical distribution across the administrative-territorial units of Uzbekistan.

Keywords: Viral hepatitis, Viruses A, B, C, D, E, G, Infectious and parasitic diseases, blood, routes of transmission.

Аннотация: В данной статье подробно рассматриваются характеристики и виды вирусных гепатитов, а также их географическое распределение по административно-территориальным единицам Узбекистана.

Ключевые слова: вирусный гепатит, вирусы A, B, C, D, E, G, инфекционные и паразитарные заболевания, кровь, пути передачи.

Annotatsiya: Ushbu maqolada virusli gepatitlarning xususiyatlari va turlari, shuningdek, ularning O‘zbekiston ma’muriy-hududiy birliklari bo‘yicha geografik tarqalishi atroflicha tahlil qilingan.

Kalit so‘zlar: virusli gepatit, A, B, C, D, E, G viruslari, yuqumli va parazitlar kasalliklar, qon, yuqtirish yo‘llari.

From birth until the end of life, a person encounters various factors from the external environment. One such factor is the world of countless species of microbes, invisible to the naked eye, known as the microworld. Throughout their lives, people struggle with various diseases and try to prevent them. Diseases, in turn, are categorized into infectious and non-infectious types. In Uzbekistan, infectious and parasitic diseases accounted for 1.3% of the registered death rate in 2023 [1].

Viral hepatitis, one of the infectious and parasitic diseases, is an acute infectious disease characterized by damage to liver cells, signs of general intoxication, yellowing of the skin and mucous membranes, dark orange or "beer-colored" urine, pale-colored stools, enlargement of the liver, and sometimes the spleen. Viral hepatitis refers to six types of hepatitis that are similar to each other

and are caused by viruses A, B, C, D, E, G. Based on their transmission route, they are classified into types that spread orally (A, E) and parenterally (B, C, D, G). In viral hepatitis A and E, the viruses are excreted through the patient's feces. Therefore, contamination from waste, water, food products, and objects used by patients is considered extremely dangerous. Parenteral viral hepatitis can be transmitted through insufficient disinfection of medical instruments such as syringes, needles, and other devices, as well as during blood transfusions, administration of blood products, and various medical procedures (including dental treatments).

Table 1

**Incidence rates of viral hepatitis among the population of Uzbekistan
(per 100,000 people)**

Administrative units	2010	2012	2014	2016	2018	2020	2022	2023
Republic of Uzbekistan	108	99,1	123,3	119,7	94	33,6	82,6	160,9
Republic of Karakalpakstan	61,1	80,2	81,6	92,7	80,2	15,6	13,3	52,8
Andijan region	138,5	130,7	134,5	110,9	101,6	31	17,6	67,3
Bukhara region	81,3	59	90,9	38,5	40,1	18	7,5	56,4
Jizzakh region	103,6	76,7	99,7	107,8	76,3	31,6	33,2	59,7
Kashkadarya region	75,1	59,7	52,5	108,4	121,7	24,2	249,3	220,1
Navoi region	92,6	104,5	195,8	107,4	114,6	25	22,5	93,5
Namangan region	195,1	152,6	148	146,8	147,5	36,7	37,5	198,4
Samarkand region	89,5	92,7	123,1	109,3	129,3	49,7	203	363
Surkhandarya region	56,6	131,6	67,7	180,5	66,8	57,8	217,4	367,7
Syrdarya region	166,9	108,4	170,2	199,4	117,8	38,7	43,1	152
Tashkent region	154,6	114,6	186,4	130,2	123,1	35,5	35,6	127,1
Fergana region	128,6	109,9	150,3	125,5	93,4	36,1	28,2	130,2
Khorezm region	69,1	67,2	59,2	54,4	46,4	10	4,3	22,9
Tashkent city	81,9	84,4	173,5	134,6	95,5	32,2	43,6	67

Source: The table is based on data from <https://siat.stat.uz/> [2].

Patients with viral hepatitis diseases are encountered in almost all administrative units of Uzbekistan's population. In 2010, 108 people per 100,000 were infected with viral hepatitis, while by 2023, this figure has reached 160.9 people per 100,000. Between 2010 and 2023, the rate has increased by 1.48 times.

However, this indicator, which began declining in 2016, reached its lowest point in 2020, amounting to 33.6 people (Table 1).

Among the administrative units of Uzbekistan, Surkhandarya (367.7) and Samarkand (363) regions recorded the highest rates per 100,000 people in 2023. Among the regions with slightly fewer cases of viral hepatitis among the population, Khorezm region (22.9), the Republic of Karakalpakstan (52.8), Bukhara region (56), Jizzakh region (59.7), Tashkent city (67), and Andijan region (67.3) are represented (Fig. 1).

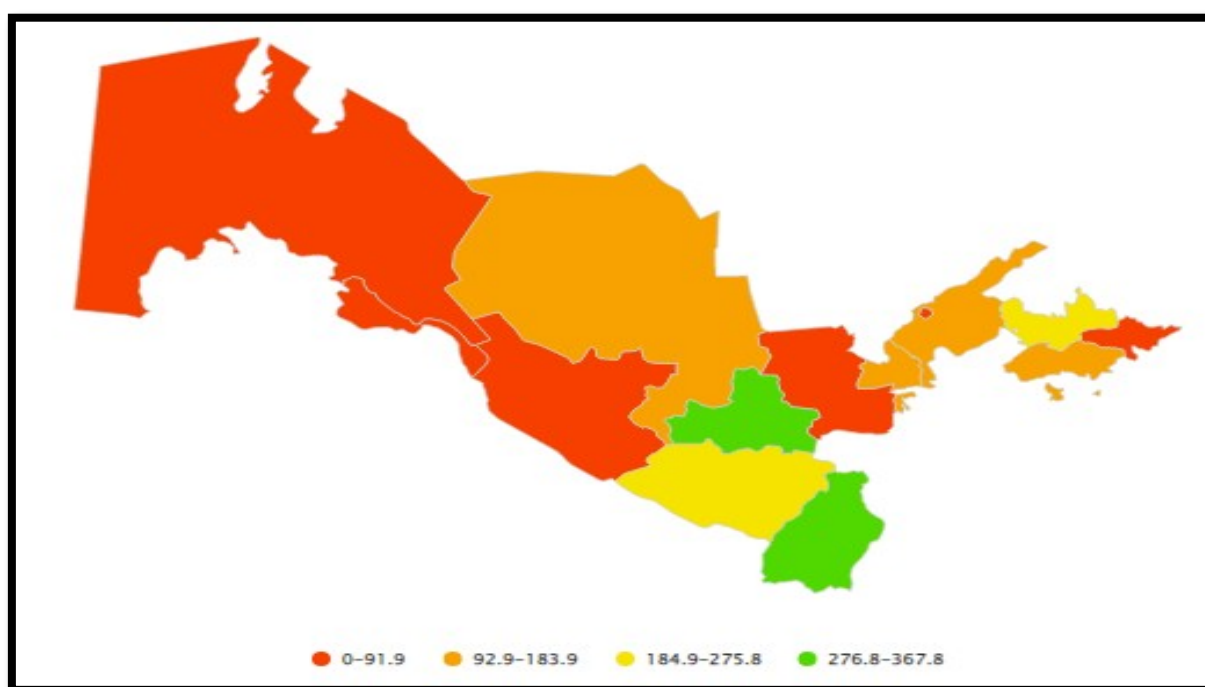


Figure 1. Map of viral hepatitis incidence rates among the population of administrative units of the Republic of Uzbekistan.

Viral hepatitis is characterized by a periodic course, with distinct phases including latent, initial, peak, regression, and recovery periods.

The incubation period of the disease varies depending on its type: for viral hepatitis A and E, it can last from 7 to 60 days, while for parenteral forms, it can range from 2 weeks to 6 months, and in some cases, up to 1 year. Viral hepatitis occurs in mild, moderate, and severe forms, as well as uncomplicated and complicated forms. It can be acute, chronic, or periodically recurring. Additionally, mixed forms of the disease are sometimes observed. The disease progresses more severely in pregnant women and children. Viral hepatitis manifests in various

forms: flu-like, dyspeptic, asthenovegetative, with arthralgic symptoms, mixed syndromes, and latent (without clinical signs). Regardless of the syndrome present in the initial stage of viral hepatitis, three characteristic signs of this disease are observed: 1) urine that is beer-colored; 2) pale-colored stool; 3) liver enlargement in the majority of cases (almost 90%).

The "course" of the disease also progresses in a distinctive manner. The acute phase of viral hepatitis begins with the yellowing of the whites of the eyes. In type A, as the patient becomes jaundiced, their condition significantly improves and they start to recover.

In viral hepatitis transmitted by the parenteral route, the period of jaundice is longer than in oral hepatitis, the patient does not recover quickly, weakness, nausea, and in some cases itching (cholestatic form). Depending on the type of viral hepatitis, its clinical symptoms may manifest differently: in the non-icteric form, due to the absence of pigment metabolism disorders, the patient does not develop jaundice, the color of urine and feces remains unchanged, and the bilirubin level in the blood stays within normal range. In the form of mild symptoms, the patient's eyes are slightly yellow for a short period of time, and the bilirubin level quickly returns to normal.

Table 2

**The incidence of viral hepatitis among the population of the Syrdarya region
(per 100,000 people)**

№	Administrative units	2010	2012	2014	2016	2018	2020	2022	2023
1	Syrdarya region	166,9	108,4	170,2	199,4	117,8	38,7	43,1	152
2	Gulistan city	250,3	136,5	346,5	245,2	158,3	41,2	9,6	109,7
3	Shirin city	157,6	71	97,1	108,5	89,9	21,6	5,25	58,4
4	Yangiyer city	242,2	87,4	101,6	126,4	79,3	55	19,8	255,4
5	Akaltyn district	95,2	63,1	56,1	335,1	93,7	45,8	37	168,9
6	Boyovut district	123,2	85,6	66,7	139,3	100,6	30,3	17,7	123
7	Saykhunabad district	148,2	108,9	130,3	188,3	142,3	83,1	23,7	117,7

8	Gulistan district	92,9	87,6	178,1	160, 7	105,5	36	15,7	105
9	Sardoba district	197,1	138, 6	246,6	329, 7	205,1	9,5	166,9	350
10	Mirzaabad district	142,9	115, 8	175	190, 4	110,1	62,4	9	171
11	Syrdarya district	205,5	141, 1	170,9	202, 6	112,8	28,6	118,6	174,3
12	Khavast district	176,4	101, 2	221,6	171, 3	77,5	23,1	8	106,4

Source: The table was compiled based on data from <https://siat.stat.uz/> [2]

In the subclinical form, clinical signs are practically absent, which can only be known from lip tests. The virus-bearing form of viral hepatitis is more complex, it occurs latently and gradually becomes chronic.

Among the administrative units of the republic, Syrdarya Region stands out with its small area, flat terrain, and relatively low population. However, in some of its districts, the number of people infected with viral hepatitis is significantly higher than the average rates in the republic [3, 4, 5] (Table 2).

In Syrdarya region, the incidence of viral hepatitis decreased from 166.9 cases per 100,000 people in 2010 to 152 cases in 2023.

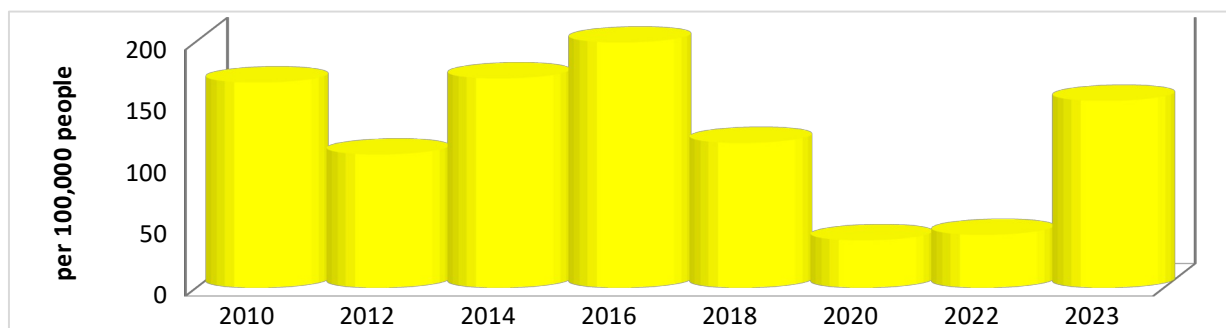


Figure 2. The incidence of viral hepatitis among the population of the Syrdarya region

Between 2010 and 2023, it decreased by 14.9 people. However, we can observe an increase in the number of certain diseases in the city of Yangiyer and in Akaltyn, Gulistan, Sardoba, and Mirzaabad districts. The number of cases has somewhat decreased in the cities of Gulistan and Shirin.

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