ORIGINAL ARTICLE   **OPEN ACCESS**

Epidemiological Features and Prevention of The Incidence of Coronavirus Infection In The Fergana Valley.

NuritdinovaD. Yu[1], MustafoevX. M. [2], Matnazarova G.S.[3], SaidkasimovaN.S. [3],Abdukaharova M.F. [3]
Department of Sanitary and Epidemiological Welfare and Public Health of the Fergana region[1].
Republican Specialized Scientific and Practical Medical Center of Epidemiology, Microbiology, Infectious and Parasitic Diseases[2].
Tashkent Medical Academy, Department of Epidemiology[3]. Uzbekistan

ABSTRACT
The study of the epidemic of a new coronavirus infection in the Fergana Valley of the Republic of Uzbekistan during 2021-2022, risk factors for the development of the epidemiological process and the epidemiological characteristics of the disease in the context of age and occupational composition showed that the incidence in 2021 has increased significantly since April, in the Fergana region in June, July, August, in Namangan region in July, August, September and Andijan region in September, October, November. In 2022 in the Ferghana region, Namangan and Andijan regions in January, February, July, an increase in the disease was observed. The main reason for this increase is population migration, mutation of the virus strain, most of the patients with an unknown source of infection are adults and non-workers, many of them did not have clinical manifestations of the disease, since some segments of the population were vaccinated with a coronavirus vaccine and revaccinated, and some of them was asymptomatic, therefore, was not examined, which became a source of infection, which is the cause of the disease.
Key words: *epidemiological analysis, coronavirus infection, Ferghana Valley, booster dose, coronavirus vaccine, virus strain mutation.*

INTRODUCTION

The World Health Organization (WHO) has declared the outbreak of the COVID-19 coronavirus a pandemic. Since the beginning of 2020, the fight against coronavirus infection has been considered one of the main tasks of all branches of the healthcare system. Timely identification and implementation of preventive and anti-epidemic measures is important in the fight against this infection. The establishment of epidemiological surveillance of COVID-19 coronavirus infection among the population is of great importance in determining measures to combat this infection. Epidemiological monitoring of COVID-19, as well as the study and assessment of the situation in the world is the main topic of relevant research.

The high rate of spread of a new coronavirus infection in the world has caused an emergency of an epidemiological nature on an international scale. Since the end of January 2020, cases of COVID-19 have been registered in many countries of the world, mainly related to trips to China (4). At the end of February 2020, the epidemiological situation of COVID-19 in South Korea, Iran and Italy sharply complicated, which subsequently led to a significant increase in the number of cases in other countries. countries of the world associated with trips to these countries. On February 11, 2020, the World Health Organization (WHO) established the official name of the infection caused by the new coronavirus - COVID-19 ("Coronavirus disease 2019"). On February 11, 2020, the International Committee on the Taxonomy of Viruses established the official name of the causative agent of infection – SARS-CoV-2 (4,8,9).

And so, COVID-19 (coronavirus Disease 2019) is a potentially dangerous disease caused by SARS-CoV-2, which can occur as a mild acute respiratory viral infection or as a severe disease. The natural reservoir of the SARS-CoV-2 virus is bats. Phylogenetic studies of the isolated strains have shown that the genomic sequences of viruses found in bats are 99% identical to those isolated from patients with COVID-19. Currently, the main source of infection is a sick person, including those in the incubation period of the disease. The acute period of coronavirus infection in patients lasts on average 18-19 days. It has been observed that the acute phase of the disease can last from 11 to 28 days, but the SARS-CoV-2 virus will survive only for 11 days, and the recovery period can take up to several months. The duration of the disease consists of the duration of the acute period of infection, including the period from the appearance of the

first symptoms to the disappearance of acute man ifestations of COVID-19, as well as the duration of the recovery period, which can take up to several months (5,6,7,10).

Transmission of the virus occurs by airborne droplets (coughing, sneezing, talking). The contact pathway occurs through transmission factors: (contaminated hand) and objects contaminated with the pathogen. There is a proven risk of transmission of infection from the hands to the mucous membranes of the eyes, nose and mouth, as well as diseases. A fecal-oral mechanism is possible (the pathogen was detected in fecal samples of patients infected with SARS-CoV-2).

Elimination of the virus usually lasts up to 12 days in mild and moderate cases and more than 14 days in severe cases. In some patients, PCR may be positive, but the disease may proceed without symptoms. There is no significant circulation of the virus among the population (0.14% of 320,000 tested individuals). The vast majority of infections occur as a result of contact with clinically manifested cases (1-5% of 38,000 close contacts develop COVID-19). Most of the transmission occurs in family clusters (75-85% of clusters).

In Uzbekistan, this infection has been registered since March 2020. The first case of coronavirus infection was detected in a citizen of Uzbekistan who arrived from France. A patient with a coronavirus infection managed to infect family members and relatives. In connection with the current epidemiological situation in the Republic, quarantine was declared. Quarantine has been announced in the Fergana Valley since March 22, 2020, where all necessary preventive and anti-epidemic measures have been initiated (2,3).

In September 2022, WHO declared a state of emergency due to the coronavirus, which will be lifted, but the sharp aggravation of the epidemiological situation in China and the global increase in the number of deaths worldwide at the beginning of 2023 cast doubt on these forecasts. In this regard, the World Health Organization (WHO) on January 30, 2023 cited the significance of the results of epidemiological monitoring of COVID-19 coronavirus infection. Officially, this decision means that Covid will retain the status of a public health emergency of international importance. The head of the WHO also expressed concern about the increase in the number of deaths from Covid-19 worldwide since December 2022. According to WHO, there are not enough vaccinated people in the world, antiviral drugs are limited, and the health systems of many countries cannot cope with the influx of patients, and new strains are also emerging. To date, GISAID (Global Initiative on Sharing avian Influenza Data) has identified new COVID-19 strains (Alpha (V.1.1.7), Beta (V.1.351), Gamma (V.1.1.248), Delta (V.1.617.2)), and Omicron variants have been identified (V.1.1.529). This strain was first identified on October 22, 2022 in the USA, to date it has been found in almost 30 countries across Europe (Austria, Belgium, Germany, Denmark, the Netherlands, France, Spain, Italy, Iceland, Ireland, Portugal, the Czech Republic and Sweden, the USA, Great Britain, Canada, and India, Australia, Colombia, China) and is growing rapidly. A new subvariant of coronavirus XVV.1.5 "kraken" has not been identified in the republic.

In the pre-election year of the COVID-19 pandemic, there has been a significant decrease in the number of hospitalizations and a decrease in patients among all age groups. Immunity at the population level has increased significantly all over the world. This was due to the stable use of vaccines, immunity, infection and their combination (hybrid form of immunity). However, there is still a particularly high probability of severe cases of illness or death, and they account for a significant number of deaths caused by COVID-19.

As of April 6 , 2023 69.9% of the world's population has received at least one dose of the COVID-19 vaccine. There are 13.38 billion doses of vaccines in use worldwide and currently 865,000 doses of vaccines are administered per day. 29% of people in low-income countries have received at least one dose of the vaccine.Today, children are being vaccinated in our republic, but the coverage level is low, which is especially noticeable in the age group of 5-11 years. The average vaccination rate in the republic is only 6%. This is due to the need to warn parents, teachers and medical staff about the effectiveness and safety of vaccination against COVID-19.

Despite the implementation of strict anti-epidemic measures and the announcement of quarantine, there was a gradual spread of COVID-19 to other regions of the country (1,2,3). Therefore, the study of the epidemiological features of COVID-19 infection in the Fergana Valley and the improvement of epidemiological control over it is one of the urgent tasks of our time.

The aim was to conduct an epidemiological analysis of the incidence of coronavirus infection in the Fergana Valley during 2021-2022.

MATERIAL AND METHODS
The materials of the study were statistical data of the Republican Committee for Sanitary and Epidemiological Welfare and Public Health (SEW and PH) on the incidence of COVID-19 for 2021-2022. Epidemiological and statistical research methods were used in the work.

RESULTS
We conducted an epidemiological analysis of the incidence of coronavirus infection in Namangan, Andijan and Ferghana regions of the Republic of Uzbekistan based on the results of 2021-2022.

DISCUSSION
Epidemiological analysis of the incidence of coronavirus infection in the Republic of Uzbekistan for 2021-2022 showed that in terms of the number of cases of COVID-19, the Ferghana region was in 8th place, Andijan in 10th place and Namangan region in 11th place.
In 2021, 19,404 people infected with the SARSCov-2 virus were registered in the Ferghana Valley (Ferghana, Andijan and Namangan regions), which accounted for 21.1% of the total number of COVID-19 patients in the Republic of Uzbekistan. In 2022, 6,184 people infected with the SARS Cov-2 virus were registered in the Fergana Valley, which also accounted for 28.4% of the total number of COVID-19 patients in the Republic of Uzbekistan.
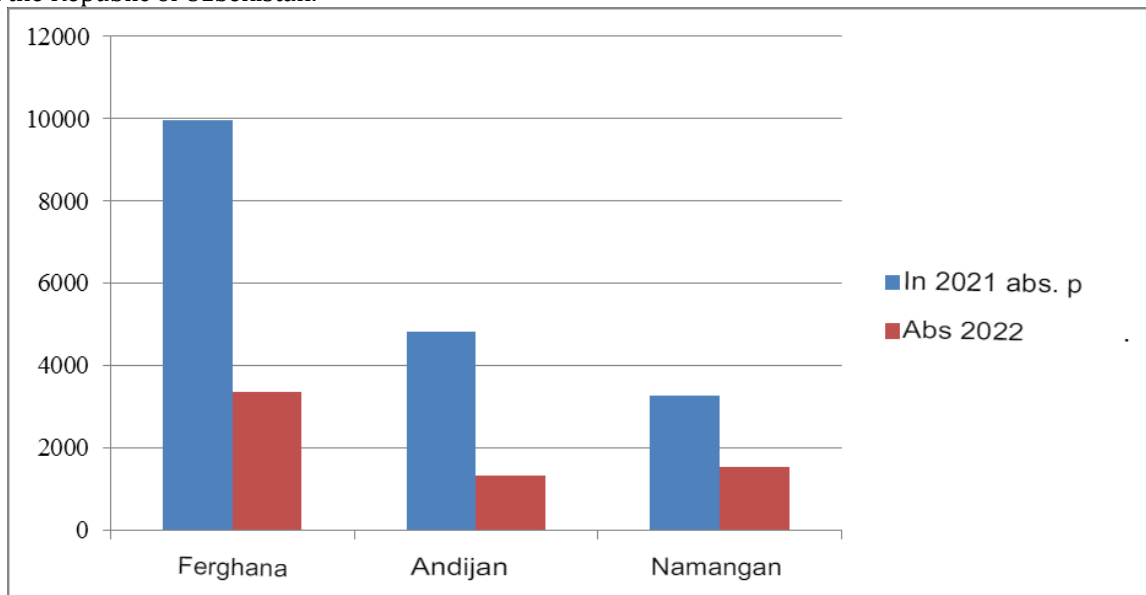
Fig.1.Incidence of coronavirus infection in the Fergana Valley 2021-2022 (abs. indicator).
We have revealed that in 2021 the incidence in the Ferghana region was 9959, and in 2022 - 3350 patients. In Namangan region in 2021 - 3272; in 2022 - 1525 patients and in Andijan region in 2021 - 4833; in 2022 - 1309 patients (Fig.1.).
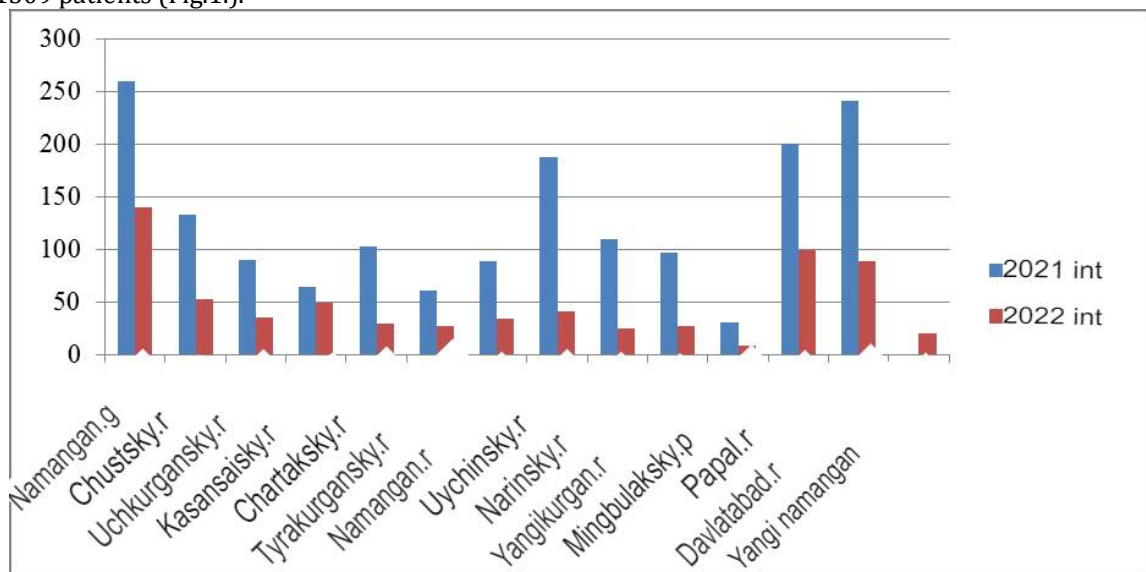

Fig.2.Incidence of coronavirus infection in Namangan region for 2021-2022 (int. indicator)
The territorial distribution of COVID-19 cases in 2021 and 2022 in Namangan region was uneven. A large number of persons infected with the SARS-Cov-2 virus were registered in 2021 and 2022 in the city of

Namangan (int. indicator 2021-259.8, 2022-140.0), Papal (2021-200.1; 2022 98.78), Davlatobod (2021 - 240.6; 2022 88.93), Uychinsky (2021 year-186.8; 2022- 41.0) districts (fig.2).
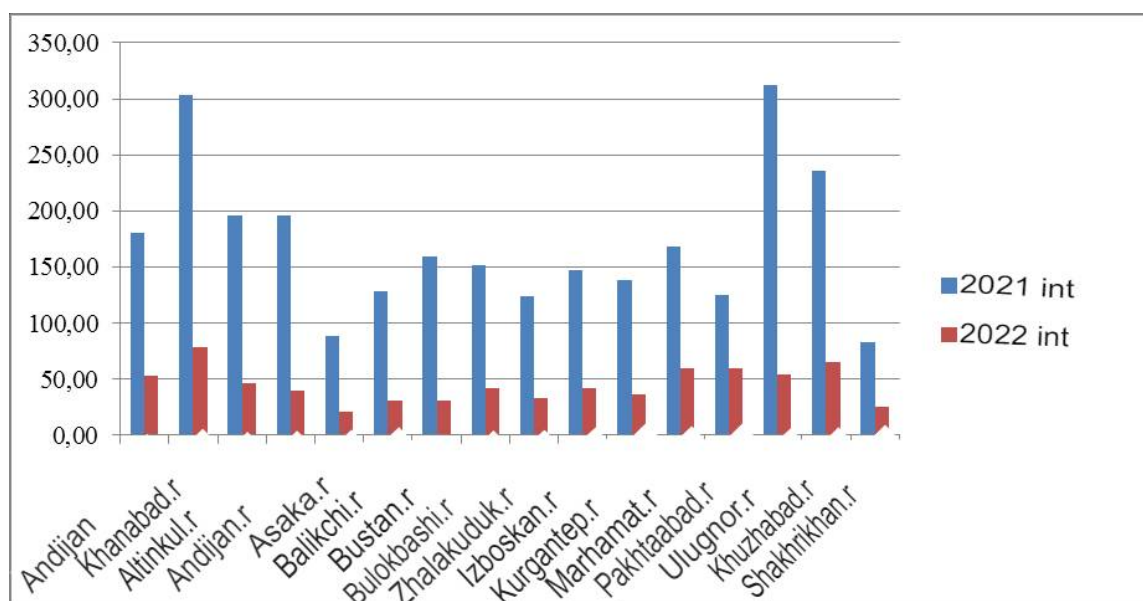

Fig.3. Incidence of coronavirus infection in the Andijan region for 2021-2022 (int. indicator)
A comparative analysis of intensive morbidity rates in the Andijan region of the Fergana Valley showed that the largest number of patients was detected in Honobod (2021-303.2; 2022-79.9 patients), Ulugnor (2022-312.6; 2022- 54.2) and Khuzhabad district (2021-236.1; 2022-65.2, respectively). (Fig.3.).
Throughout the Republic, the Ferghana region took 8th place and 9959 patients with coronavirus infection in 2021, and 3350 patients in 2022 showed that it was naturally leading.
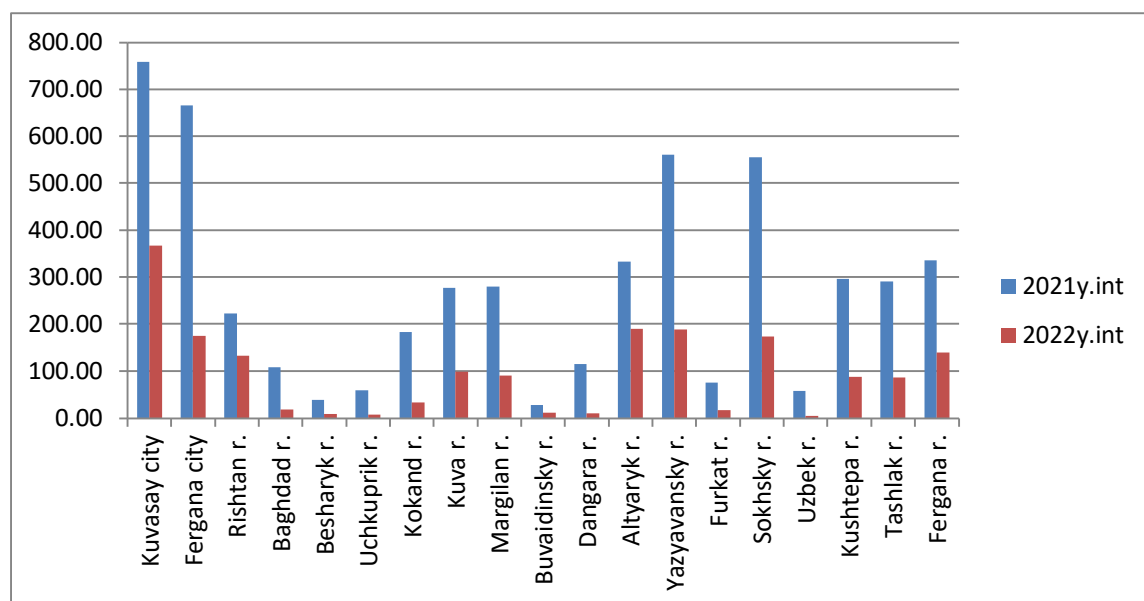

Fig. 4. Incidence of coronavirus infection in the Ferghana region for 2021-2022 (int. indicator)
At the same time, the largest number of people infected with COVID-19 was registered in the city of Kuvasai (in 2021-758.8; in 2022-366.9), Ferghana (in 2021-665.2; in 2022- 175.3) and Yazyavan district (in 2021-560.9; in 2022-188, respectively). The smallest number of patients was detected in Besharyksky (year-38.6; 2022-8.7) district (Fig.4).
We conducted a comparative analysis of the frequency of detection of coronavirus infection among female and male individuals. So, as in 2021, there were 1.5 times more sick men in the Ferghana region than women. In 2022, there is also a prevalence of men infected with coronavirus infection. (fig. 5).
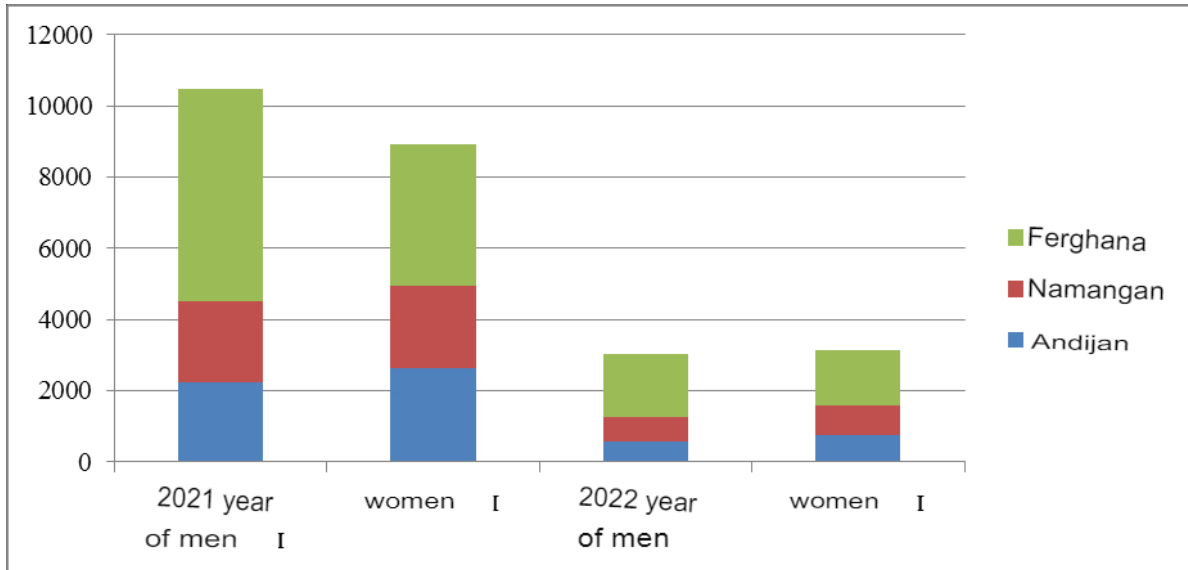
Fig.5. The frequency of detection of coronavirus infection among female and male persons in the Fergana Valley (2021-2022, abs. indicator).
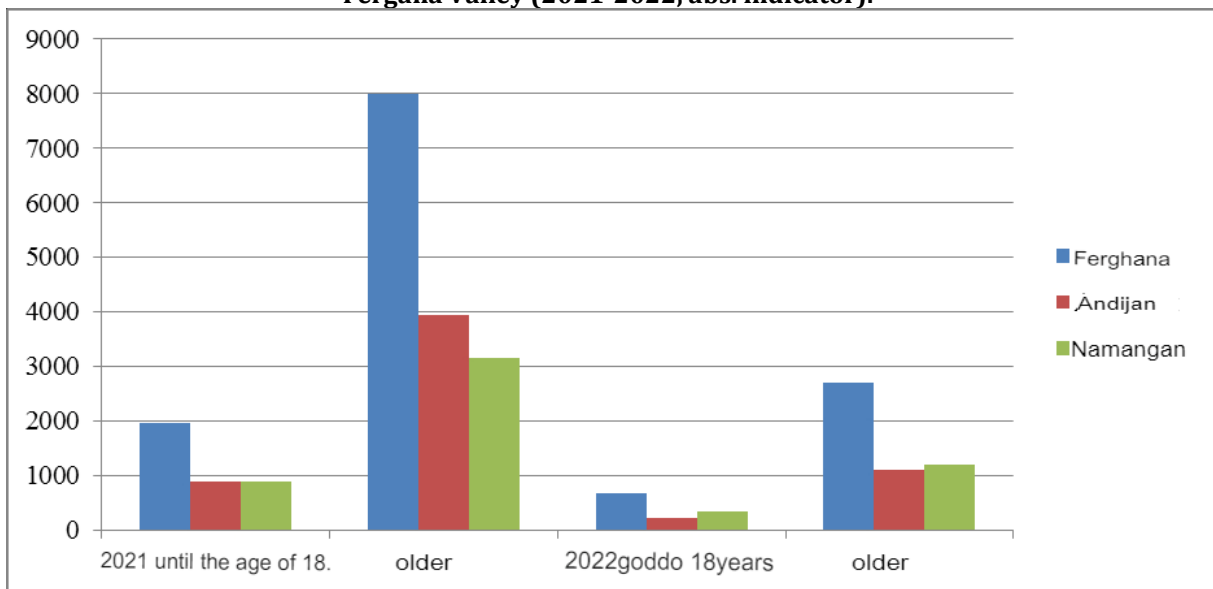

Fig.6. Coronavirus infection among 18 years and older in the Fergana Valley (2021-2022, abs. indicator).

Epidemiological analysis of the distribution of coronavirus infection in the Ferghana Valley in 2021-2022 showed that, throughout the Republic, the disease was mainly registered in people over 18 years of age, among adults (Fig.6.)

When studying the social structure of COVID-19 infected among the population of the Ferghana Valley: housewives made up 7.3%; medical workers -3.7%; military -2.4%; students of schools and lyceums -12.9%; teachers and educators of MBM -5.8%; unemployed -67.9%, including local citizens who came to the region from foreign countries -1.8%.
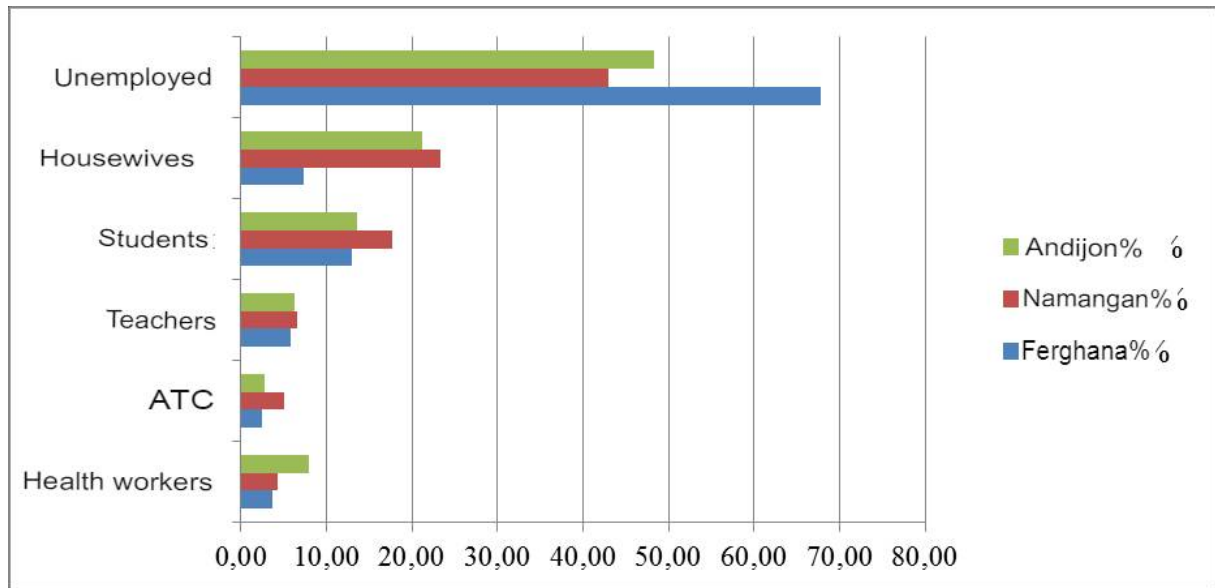
Figure 8. Social structure of patients with COVID-19 registered in the Fergana Valley for 2021-2022. (as a percentage).

A comparative analysis of the dynamics of the epidemiological situation of COVID-19 in the Fergana Valley in 2021 shows that the whole process can be divided into 3 periods (Fig.8). I – the period of "introduction" of infection or the beginning of the development of the epidemic process (March – June); II – the period of morbidity growth (June – August); III – the period of subsidence of morbidity (November – December) (Fig.8.).
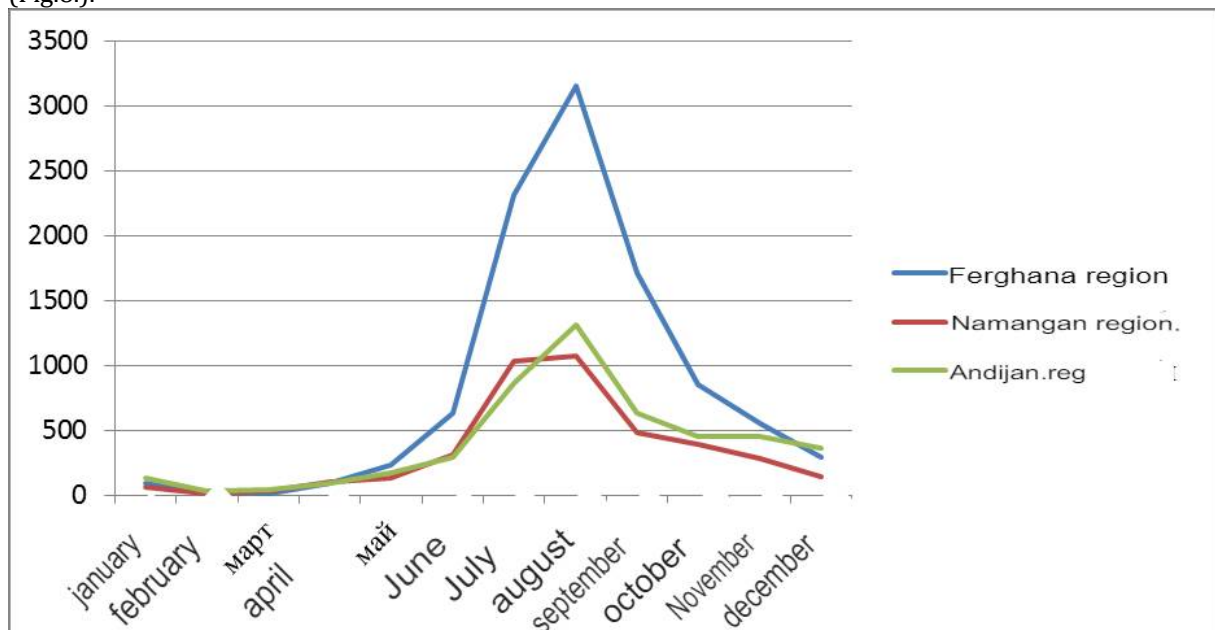

Figure 8. Dynamics of COVID-19 detection frequency in the Ferghana Valley by months of 2021 (abs.)

Each of the periods was characterized by its own characteristics: in period 1, there was an increase in morbidity in the month of April in all regions of the Ferghana Valley, apparently due to the migration of the population at that time and the disease of persons at risk of occupational infection. In the 2nd period, a comparative analysis shows an increase in the incidence in July in the Ferghana region to 2,313 people, in the Namangan region to 1,030 patients and in the Andijan region to 861 people infected with COVID-19, apparently associated with high contagiousness of the disease and high incidence of the disease in the families of patients. The next stage of subsidence has been observed since November with a decrease in the number of infected. (Fig. 8)
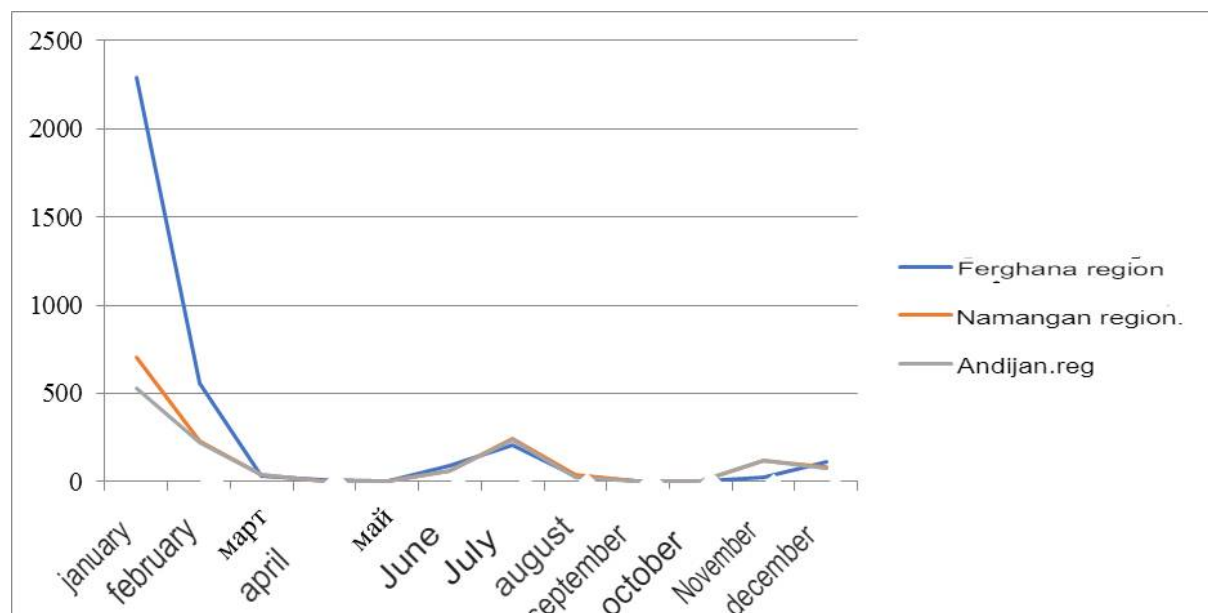
Figure 8. Dynamics of COVID-19 detection frequency in the Ferghana Valley by months of 2022 (abs.)

And in 2022, since January and June, there has been an increase in morbidity. The rise in morbidity at the end of 2022, apparently, was mainly due to the social activity of citizens against the background of the gradual lifting of restrictions, cases of family infection, etc.

Epid. anamnesis collected from the sources of infection showed that the disease was most often caused by contact with the patient in the family or in his close environment (Ferghana region in 82.2% of cases, Andijan region in 83.18%, Namangan – in 89.5% of cases).

There are 257 patients in the Ferghana region, in 16 cases in the Andijan region, in the Namangan region 45 patients returned from abroad or were in contact with visitors from abroad. According to the data obtained, it was quite often impossible to determine the source of infection, perhaps this was due to a large number of people without clinical manifestations of the disease who were not examined and were considered healthy, and some of them had previously been vaccinated.

As of October 23, 2021, 23 vaccines against coronavirus infection are used in the world (in 194 countries), of which 7 are approved by WHO for emergency use

Uzbekistan has approved a number of vaccines against COVID-19, including:
1. ZF-UZ-VAC 2001 (Uzbek-Chinese vaccine).
2. Moderna
3. Oxford/AstraZeneca
4. Pfizer/BioNTech,
5. Sinovac
6. Sputnik Light
7. Sputnik V

CONCLUSION

1.Epidemiological analysis of the incidence of coronavirus infection in the Republic of Uzbekistan for 2021-2022 showed that in terms of the number of cases of COVID-19, the Ferghana region was in 8th place, Andijan in 10th place and Namangan region in 11th place.

2. In 2021, 19,404 persons were registered in the Fergana Valley (21.1% of the total number of COVID-19 patients), and in 2022 6,184 persons were registered (28.4% of the total number of COVID-19 patients in the Republic of Uzbekistan).

3.Epidemiological analysis of the distribution of coronavirus infection in the Fergana Valley in 2021-2022 showed that, throughout the Republic, the disease was mainly registered in people over 18 years of age.

4.2021 in the Ferghana region, there were 1.5 times more sick men than women. In 2022, there is also a prevalence of men infected with coronavirus infection.

5. When studying the social structure of COVID-19 infected people among the population of the Fergana Valley, it showed that 67.9% of the unemployed out of all patients were unemployed.

REFERENCES

1. KurbanovB.Zh., Anvarova L.U. (2021). Analysis of the epidemiological situation of a new coronavirus infection (COVID-19) in the Republic of Uzbekistan // News of dermatovenerology and reproductive health. - Tashkent, №1-2. (93-94). – P.28-31.
2. Kurbanov B. Zh. (2021). Shzbekistonda coronavirus infection (COVID-19) tarkalishining epidemiologist taҳlili // Infection, immunity and pharmacology. -Toshkent, 2021.-No.6. - B. 54-61.
3. Kurbanov B.J. (2021). New coronavirus infection COVID-19: epidemic situation in Uzbekistan // Infection, immunity and pharmacology. Brief messages. - Toshkent, No. 4. - pp.138-139.
4. Lei Pan, Mi Mu, Pengcheng Yang, Yu Song (2020). Clinical characteristics of COVID-19 patients with digestive symptoms in Hubei Province, China: a descriptive cross-sectional multicenter study //American Journal of Gastroenterology.- 115 (5).-DOI: 10.14309/ ajg. 0000000000000620
5. Matnazarova G.S. and co-authors, (2023). Cold chain management during the introduction of vaccines against COVID-19//Educational and methodical manual, Tashkent, 2023.
6. Recommendations on strategies in connection with severe acute respiratory syndrome-2 coronavirus (SARS-CoV-2) and other respiratory viruses in the WHO European Region in the autumn-winter period 2022/23 (WHO/EURO:2022-5851-45616-65595).
7. Yao Yu., Chong V., Wu H., Yao M., Zhou J., Zhou H. (2020). Clinical characteristics of patients with COVID-19 in three consecutive generations of distribution in Zhejiang, China..-DOI:https://doi.org/10.1016/j.cmi.2020.06.018
8. Aliye Bastuga, Hurrem Bodura, Serpil Erdoganb, Derya Gokcinarc, Sumeyye Kazancioglud, Behiye Deniz Kosovalie, Bahadır Orkun Ozbayd, Gamze Gokb, IsilOzkocak Turanc, Gulsen Yilmazf, Canan Cam Gonene, Fatma Meric Yilmazf (2020). Clinical and laboratory features of COVID-19: Predictors of severe prognosis //InternationalImmunopharmacology.-2020.
9. https://www.worldometers.info/coronavirus/
10. https://gisaid.org/hcov19-variants/
11. 10.https://tokpb.ru/main/informatsionnyy-byulleten-vsemirnoy-organizatsii-dravookhraneniya-po-grippu/