



Analysis of Adult Epilepsy Registry Data in the Ferghana Valley

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Abstract: The analysis of data from the register of epilepsy in adults in the Ferghana Valley was carried out. The prevalence and incidence of epilepsy, social and etiological aspects were studied. It has been established that the prevalence of epilepsy among the population of Namangan, Fergana and Andijan regions is 1.8, 2.6 and 2.7 per 1000 population, and the incidence is 12.3, 12.5 and 14.8 per 100,000 per year, respectively. Types of epileptic seizures, etiological factors are analyzed. When assessing the social status of patients with epilepsy, the level of education, employment, and the presence of a disability group were assessed.

Keywords: epilepsy, prevalence, incidence, epilepsy registry, types of seizures, etiological factors, social aspects.

Introduction. The Fergana Valley is the most densely populated area in Central Asia. The administrative centre is the city of Fergana. The largest cities are Fergana, Andijan and Namangan. The area of about 22 thousand km², the total population of the three countries, between which the valley is divided, is about 15 million people, or about 30% of the total population of the three countries.

Population epidemiological studies suggest that epilepsy is diagnosed in 40-70 people per 100,000 in developed countries and 100-190 people per 100,000 in developing countries annually [10, 12], in the Republic of Uzbekistan - 87.2 per 100,000. [8]. In the world, according to various researchers' data, the incidence of this disease varies from 11 to 134 per 100,000 people and its prevalence is from 1.5 to 31 per 1000 population [2]. Extrapolating the well-known figures on the prevalence of epilepsy in population (0.8-1.0%) to the population of Uzbekistan, B.G. Gafurov et al. (2011) note about 35-40 thousand epilepsy cases a year. Almost 80% of people with epilepsy live in low- and middle-income countries. Three quarters of them do not receive adequate treatment; they often suffer discrimination, as do their families [11, 13]. The average age of onset of epilepsy in adult patients is 23 years, which means that the disease affects a young and socially active segment of society [4]. These data underline the high medical, social and economic importance of epilepsy in adults.

Evidence-based planning and organisation of an effective treatment system for patients with epilepsy are not possible without accurate epidemiological data. Epidemiological studies require a clear distinction between the terms "incidence" and "prevalence". "Prevalence" is the ratio of the number of persons with the condition under study to all those surveyed over a period of time. The frequency of new cases of a disease in a population where the disease was not present at baseline is called incidence [1].

Purpose of the study: To examine adult epilepsy registry data in the Fergana Valley.

Materials and Methods. A retrospective analysis of primary morbidity in the Fergana Valley population for 2019-2020 was carried out, and the incidence and prevalence rates of epilepsy in this region were determined.

According to the data of register the prevalence of nervous system diseases among adults in Andijan per 1000 population was 23.2 (2.7 - epilepsy), in Fergana - 32.7 (2.6), in Namangan - 20.5 (1.8). The primary incidence and dispensary registration of patients with epilepsy among adults in Andijan per 100,000 population was -14.8; in Fergana, 12.5; and in Namangan, 12.3 (Fig. 1). The incidence was defined as the total number of new cases per year in the study population, calculated as per 100,000 population.

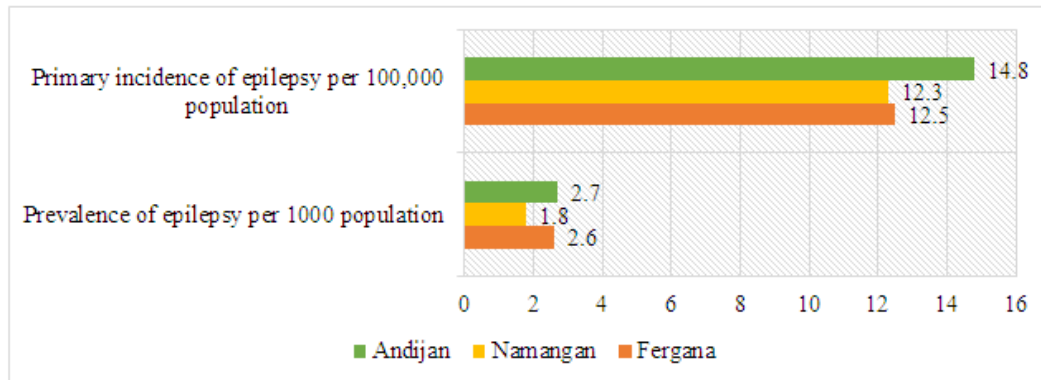


Figure 1. Prevalence and incidence of epilepsy in the Fergana Valley

The age of all patients surveyed at the time of the examination ranged from 18 to 85 years. The average age of patients in Namangan was 41.4 ± 14.7 years, in Fergana, 42.2 ± 14 years and in Andijan, 42.5 ± 14.3 years. The distribution of patients by age in the studied oblasts is shown in Table 1.

Table 1 Distribution of patients by age in the oblasts

| Age | Namangan (n=1254) | | Fergana (n=275) | | Andijan (n=1531) | |
|-----------------|-------------------|------|-----------------|------|------------------|------|
| | Abs. | % | Abs. | % | Abs. | % |
| 18-29 years old | 329 | 26,2 | 66 | 24 | 329 | 21,5 |
| 30-39 years old | 295 | 23,5 | 63 | 22,9 | 371 | 24,2 |
| 40-49 years old | 238 | 19 | 51 | 18,5 | 313 | 20,4 |
| 50-59 years old | 238 | 19 | 64 | 23,3 | 301 | 19,7 |
| 60-69 years old | 113 | 9 | 26 | 9,5 | 174 | 11,4 |
| 70-79 years old | 36 | 2,9 | 4 | 1,4 | 40 | 2,6 |
| 81 > years old | 10 | 0,8 | 1 | 0,4 | 3 | 0,2 |
| Total: | 1254 | 100 | 275 | 100 | 1531 | 100 |

There was a non-significant predominance of male patients among the patients examined.

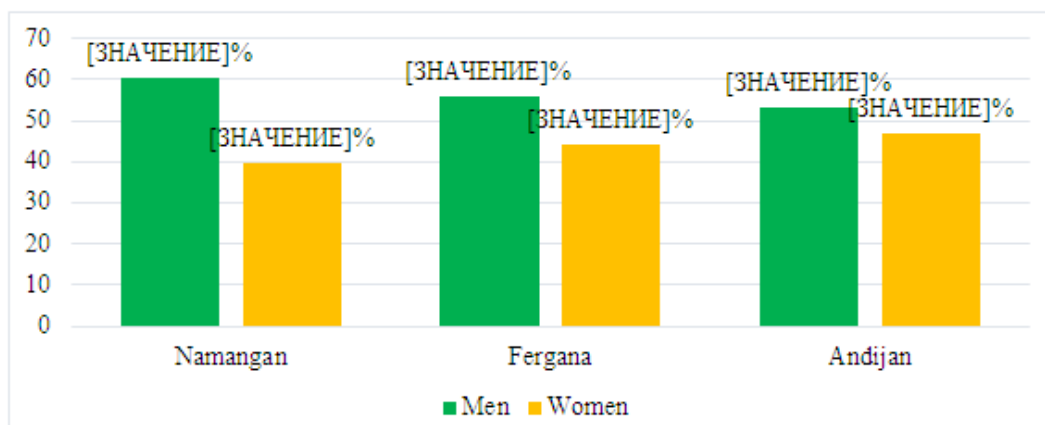


Figure 2. Distribution by gender in the oblasts

In Namangan province, the proportion of men examined was 759 (60.5%) and 495 (39.5%) for women. In the Ferghana region 154 (56%) male patients were examined, while 121 (44%) female

patients were examined. In the Andijan region, 814 (53.2%) male and 717 (46.8%) female patients were examined (Figure 2).

Statistical processing of the data was carried out on a personal computer using the programs developed in Microsoft Excel package, version 9.0, using a library of statistical functions. Conventional methods of variation statistics were used. The reliability of statistical differences was assessed using the Student's test. Differences were considered statistically significant at a significance level of at least 95%. Results and discussion. According to A.S. Kotov and A.M. Rudenko [6], 82.4% of those examined had the debut of the disease in the first three decades of life. According to some experts, epilepsy debuts before the age of 16 in 75% of cases [7]. An age analysis of the first seizures among patients surveyed in the Fergana Valley showed the highest percentage of onset in the first and second decades of life, with almost half (67.25%) having their first seizures in the first twenty years of life (Table 2).

Table 2 Age of debut of patients with epilepsy in the oblasts

| Age | Namangan (n=1254) | | Fergana (n=275) | | Andijan (n=1531) | |
|-----------------|-------------------|------|-----------------|------|------------------|------|
| | Abs. | % | Abs. | % | Abs. | % |
| 0-9 years old | 528 | 42,1 | 184 | 66,9 | 769 | 50,2 |
| 10-19 years old | 210 | 16,7 | 31 | 11,3 | 336 | 21,9 |
| 20-29 years old | 188 | 15 | 35 | 12,7 | 138 | 9 |
| 30-39 years old | 143 | 11,4 | 15 | 5,4 | 122 | 8 |
| 40-49 years old | 90 | 7,1 | 8 | 3 | 90 | 5,9 |
| 50-59 years old | 55 | 4,4 | 2 | 0,7 | 55 | 3,4 |
| 60-69 years old | 25 | 2 | - | | 20 | 1,3 |
| 70> years old | 14 | 1,1 | - | | 1 | 0,07 |

The findings confirm that epilepsy is a long-term chronic disease. In the populations studied, the disease started more frequently at a young age and occurred predominantly in persons of more working age.

The final ICD 10 diagnoses of patients with epilepsy are shown in Figure 3

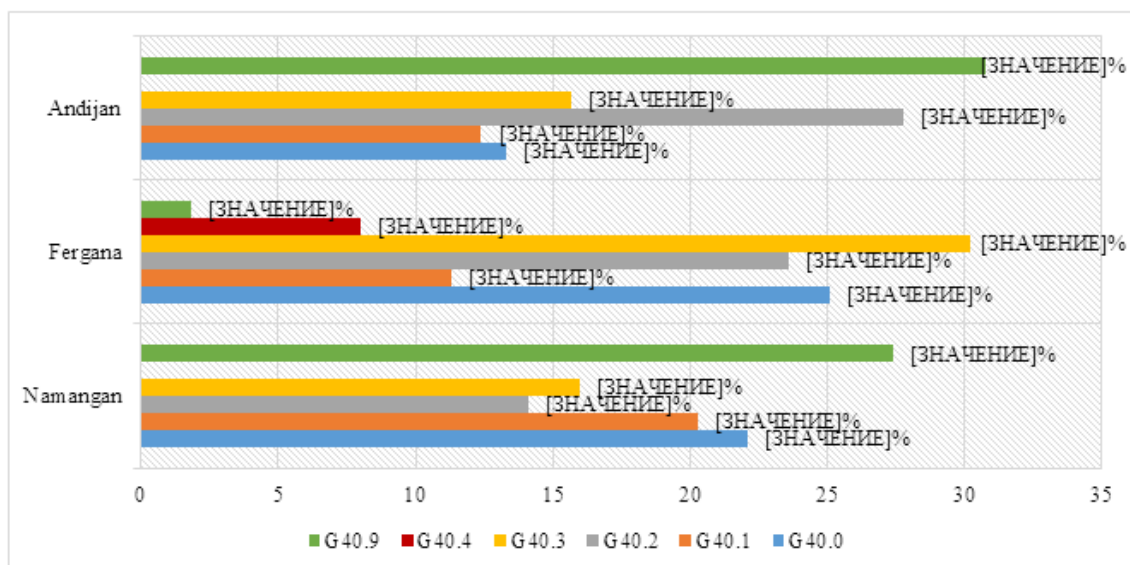


Figure 3. ICD-10 disease codes

In the ICD 10 coding structure, G40.9 (Epilepsy unspecified), G40.3 (Generalised idiopathic epilepsy and epileptic syndromes), G40.2 (Localised (focal) (partial) symptomatic epilepsy and epileptic syndromes with complex partial seizures), G40.0 (Localised (focal) (partial) idiopathic epilepsy and epileptic syndromes with seizures with focal onset) (Figure 1). In ICD 10, G is diseases of the nervous system, G40-G47 are episodic and paroxysmal disorders.

The incidence of epilepsy according to the form of the disease is shown in Figure 4

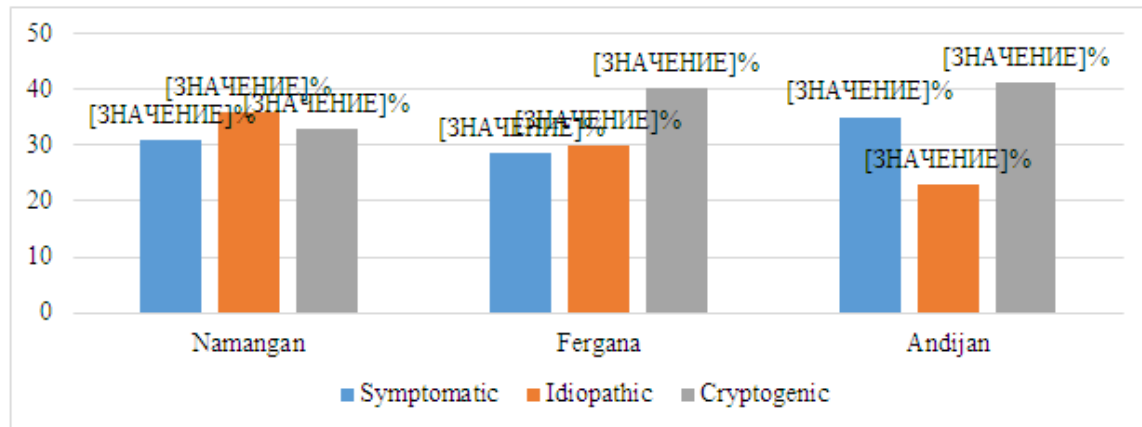


Figure 4. Frequency of occurrence according to the form of the disease

In the Namangan region population studied, 35.9% of patients had idiopathic generalized epilepsy, 30.8% had symptomatic epilepsy and 33% had cryptogenic epilepsy. In Fergana oblast, 29.8% of patients had idiopathic generalized epilepsy, 28.7% had symptomatic epilepsy and 40.4% had cryptogenic epilepsy. In Andijan province, idiopathic generalised epilepsy was diagnosed in 23.1% of patients, symptomatic epilepsy in 35.1%, and cryptogenic epilepsy in 41.3%. Russian and foreign sources indicate that the proportion of patients with idiopathic generalised epilepsy can range from 6 to 40% of patients. It should also be noted that cryptogenic epilepsy is the most frequent variant of the disease in adults. Large population-based studies in adults with epilepsy have shown that up to 80% of cases are associated with locally determined forms, among which cryptogenic forms predominate [3, 9]. The likely etiological factors for epilepsy are shown in. Table 3

Table 3 Etiological factors in epilepsy

| Etiological factor | Namangan (n=1254) | | Fergana (n=275) | | Andijan (n=1531) | |
|----------------------------------|-------------------|------|-----------------|------|------------------|------|
| | Абс. | % | Абс. | % | Абс. | % |
| Unknown factor | 886 | 70,6 | 179 | 65,1 | 992 | 64,8 |
| Brain tumours | 10 | 0,8 | 2 | 0,7 | 22 | 1,4 |
| Peri- and neonatal pathologies | 8 | 0,6 | 36 | 13,1 | 11 | 0,72 |
| Neuroinfection | 7 | 0,5 | 2 | 0,7 | 9 | 0,59 |
| Chronic alcoholism | 18 | 1,4 | - | | 6 | 0,4 |
| Cerebrovascular disease | 164 | 13,1 | 22 | 8 | 260 | 17 |
| Craniocerebral injuries | 139 | 11,1 | 20 | 7,3 | 197 | 12,9 |
| Degenerative diseases of the CNS | 1 | 0,08 | - | | 2 | 0,1 |

Among 886 (70.6%) patients in Namangan province, 179 (65.1%) patients in Ferghana province and 992 (64.8%) patients in Andijan province, it was not possible to identify a possible cause of the disease. The presumed etiological factors of epilepsy were: Craniocerebral trauma (CTS) - 11.1% of cases (Namangan), 7.3% (Fergana), 12.9% of cases (Andijan); cerebrovascular diseases - 13.1% (Namangan), 8% (Fergana), 17% of cases (Andijan); peri- and neonatal pathologies - 13.1% (Ferghana); chronic alcoholism - 1.4% (Namangan); brain tumours (operated) - 0.8% (Namangan), 0.7% (Fergana), 1.4% cases (Andijan).

Table 4 Distribution of patients by type of dominant seizure

| Types of seizures. Dominant | Namangan (n=1254) | | Fergana (n=275) | | Andijan (n=1531) | |
|-----------------------------|-------------------|------|-----------------|------|------------------|------|
| | Абс. | % | Абс. | % | Абс. | % |
| Simple partial | 98 | 7,8 | 46 | 16,7 | 435 | 28,4 |
| Complex partial | 2 | 0,2 | - | | 6 | 0,4 |
| Secondary generalised | 404 | 32,2 | 22 | 8 | 347 | 22,7 |

| | | | | | | |
|---|-----|------|-----|------|-----|------|
| Multiple types of partial seizures | 1 | 0,08 | - | - | - | - |
| Absences | 4 | 0,3 | 1 | 0,4 | - | - |
| Myoclonic | 10 | 0,8 | 1 | 0,4 | 10 | 0,7 |
| Primary generalized tonic-clonic seizures | 728 | 58 | 202 | 73,5 | 720 | 47 |
| Primary-generated clonic | - | - | 1 | 0,4 | 1 | 0,07 |
| Other types | 3 | 0,2 | - | - | 3 | 0,2 |

Primary-generated tonic-clonic seizures prevailed in all three regions of Fergana Valley - 58% (Namangan), 73.5% (Fergana), 47% (Andijan); secondary-generated - 32.2% (Namangan), 8% (Fergana), 22.7% (Andijan); simple partial - 7.8% (Namangan), 16.7% (Fergana), 28.4% (Andijan). Of the primary generalized seizures, tonic-clonic seizures were the most common (Table 5). Most of the patients studied had seizures with focal onset (focal and secondary generalised seizures), followed by tonic-clonic seizures; other seizure types were detected in a small percentage of cases, with no significant differences between them (Table 4).

Table 5 Characteristics of other seizure types among epileptic patients

| Types of other seizures | Namangan (n=1254) | | Fergana (n=275) | | Andijan (n=1531) | |
|---|----------------------|------|--------------------|------|---------------------|------|
| | Aбс. | % | Aбс. | % | Aбс. | % |
| Simple partial | 96 | 7,6 | 47 | 17,1 | 441 | 28,8 |
| Complex partial | 7 | 0,6 | - | - | 6 | 0,4 |
| Secondary generalised | 400 | 31,9 | 21 | 7,6 | 348 | 22,7 |
| Multiple types of partial seizures | 2 | 0,2 | - | - | 1 | 0,07 |
| Absences | 5 | 0,4 | 1 | 0,4 | - | - |
| Myoclonic | 9 | 0,7 | 1 | 0,4 | 11 | 0,72 |
| Primary generalized tonic-clonic seizures | 730 | 58,2 | 203 | 73,8 | 711 | 46,4 |
| Primary-generated clonic | 1 | 0,08 | 1 | 0,4 | 2 | 0,1 |
| Other types | - | - | - | - | 3 | 0,2 |

The following types of seizures were observed in the studied patients of Fergana Valley (Table 5): primary generalized tonic-clonic seizures were found in 58.2% of cases in Namangan, 73.8% of cases in Fergana and 46.4% of cases in Andijan. Secondary generalized seizures were observed in 31.9% of patients in Namangan region, in 7.6% of patients in Ferghana region and in 22.7% of patients in Andijan region. Focal seizures were found in 7.6% of patients in Namangan province, in 17.1% of patients in Ferghana province and in 28.8% of patients in Andijan province.

When assessing the social status of patients with epilepsy, the level of education, employment, and presence of disability group were evaluated.

The majority of patients were unemployed 81.9%, and 66.4% of patients received pension, including disability pension. 6.4% of patients were considered socially active, 4.8% belonged to the working professions, and 2% were students and pupils. The proportions of socially active patients (workers and students) and those receiving pensions for various reasons varied considerably between regions. The highest proportions of socially active patients were in Namangan - 8.1%, Andijan - 5.6%, and the lowest in Fergana - 3.3%.

Given that disability is one of the main indicators of the health status of the population, the level of disability among people with epilepsy in the Ferghana Valley. On average, in the population studied, more than half of the patients, 66.5%, had a disability due to epilepsy. In Namangan province - 61.8%, in Fergana province - 90.5%, in Andijan province - 65.8% of patients. Epilepsy is a disabling disease, particularly if the treatment of patients is not carried out properly. A total of 72.3 per cent of patients were disabled. The majority of patients had group II disability - 36.8%, group III disability, which gives the right to work, was in 10% of patients, and group I disability - 25.6%. The high rate of disability among patients in the Ferghana Valley, especially those in the second group, indicates

significant social and labour maladjustment in patients with epilepsy due to their inability to find employment. According to authors B.M. Doronin and H.D. Mongush [5], the majority (almost 90%) of adult patients with epilepsy have a disability and only 1/3 of patients continue to work.

Table 6 Education level of epilepsy patients in the Ferghana Valley

| Education | Namangan (n=1254) | | Fergana (n=275) | | Andijan (n=1531) | |
|-----------------------|-------------------|------|-----------------|------|------------------|------|
| | Абс. | % | Абс. | % | Абс. | % |
| Secondary | 1021 | 81,4 | 226 | 82,2 | 1015 | 66,3 |
| Secondary specialised | 155 | 12,4 | 43 | 15,6 | 375 | 24,5 |
| Higher | 31 | 2,5 | - | | 31 | 2 |
| Primary | 4 | 0,3 | - | | 7 | 0,5 |
| Did not study | 30 | 2,4 | 1 | 0,4 | 84 | 5,5 |

Social aspects. The majority of the patients, 81.4% (Namangan), 82.2% (Fergana), 66.3% (Andijan) had secondary education, 12.4% (Namangan), 15.6% (Fergana), 24.5% (Andijan) had specialized secondary education, 2.5% (Namangan), 2% (Andijan) had higher education, 0.4% had primary education, 3.7% (Table 6) were not educated.

A study of the marital status of epilepsy patients showed that most patients (91.4 per cent) were married at the time of the study, while single and unmarried patients accounted for 8.5 per cent of the patients.

Summarizing the results obtained, it may be noted that a social maladjustment factor such as the low educational level of the patients draws attention. Thus, the data on the patients' employment indicate their unsatisfactory social adaptation.

Conclusions.

1. The primary incidence of epilepsy among adults in Andijan per 100,000 population was -14.8; in Ferghana - 12.5, in Namangan - 12.3. The prevalence of epilepsy in the adult population of the Ferghana Valley (according to the register) was 2.7 per 1000 population in Andijan province, 1.8 in Namangan province and 2.6 in Ferghana province. Analysis of epilepsy prevalence by age showed a gradual increase in epilepsy at a young age, with a peak in the 20-40-year-old group and a gradual decline from the sixth decade.
2. The prevalence of patients with idiopathic epilepsy (35,9%) in Namangan region, cryptogenic epilepsy (40,4%) in Ferghana and Andijan regions, the prevalence of primary generalised tonic-clonic seizures was 58% (Namangan), 73,5% (Ferghana), 47% (Andijan). The most frequent etiological factors were craniocerebral trauma (brain injury) - 11.1% (Namangan), 12.9% (Andijan); cerebrovascular diseases - 13.1% (Namangan), 17% (Andijan); peri- and neonatal pathologies - 13.1% (Ferghana).
3. The evaluation of the social status revealed the prevalence of individuals with secondary education - 81, 4% (Namangan), 82,2% (Ferghana), 66,3% (Andijan). The percentage of socially active patients was 6.4%, and the level of disability was 72.3%, with a predominance of the disabled of the second group.
4. The obtained clinical and epidemiological data of the register allow to optimize on scientific basis the rendering of therapeutic and diagnostic aid and preventive measures of this category of patients in Fergana valley, to define character and volume of required neurological and neurophysiological aid to patients of young, able-bodied age.

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