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HYGIENIC ANALYSIS OF THE SPECIFIC FEATURES OF THE PREVALENCE OF NON-COMMUNICABLE DISEASES AMONG RURAL AND URBAN POPULATIONS

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Abstract. *This study analyzes the specific features of the prevalence of non-communicable diseases among rural and urban populations through a hygienic and socio-medical approach. The research highlights that differences in demographic, socio-economic, cultural, and healthcare accessibility factors between rural and urban residents significantly influence the spread of non-communicable diseases. In particular, lower levels of medical awareness and healthcare culture among rural populations contribute to a higher risk of morbidity and reduced use of professional medical services. The study was conducted using retrospective analytical methods based on a case-control design. The findings demonstrated regional and age-related differences in morbidity rates within the Fergana Valley, with rural populations showing a considerably higher prevalence of non-communicable diseases compared to urban populations. The results emphasize the importance of strengthening preventive measures, improving medical literacy, and enhancing access to healthcare services among rural communities.*

Keywords: *non-communicable diseases, rural population, urban population, public health, hygienic analysis, morbidity, medical literacy, preventive healthcare, socio-demographic factors, healthcare accessibility.*

Introduction.

Among countries worldwide, chronic diseases, namely non-communicable diseases (NCDs), have become one of the most pressing public health problems due to their rapid increase in recent years. According to numerous international and local studies, these diseases account for approximately 60% of global mortality and include diabetes mellitus, respiratory diseases, hypertension, complications of overweight and obesity, as well as certain types of cancer [7, 8, 10, 18, 20, 24].

The mortality rate associated with these diseases is even higher in low- and middle-income countries and is expected to continue increasing in the coming years. The major contributing factors to the growing burden of chronic diseases in these countries include decreased physical activity, sedentary lifestyle, increased consumption of unhealthy foods and tobacco products, and failure to maintain healthy daily routines. Most of these factors are considered consequences of urbanization [5, 6, 12, 14, 31, 32].

It has been reported in several studies that rural and urban populations differ in demographic, socio-economic, and cultural characteristics, as well as in their accessibility to public and private healthcare institutions, emphasizing the necessity of conducting further research in this field [8, 19, 26, 27, 41].

In the modern era, various factors affecting the growth and development of the younger generation, including changes in school-related environmental conditions, deterioration of air quality, increased consumption of fast food during school hours, insufficient intake of fruits and vegetables, excessive consumption of confectionery products, decreased intake of biologically active substances, and deficiencies of macro- and micronutrients contribute to an increase in diseases associated with anemia, iodine deficiency disorders, and various alimentary and somatic diseases [4, 7, 8, 23, 24, 33, 41].

These socio-demographic and cultural differences, particularly the lower level of medical literacy among rural populations compared to urban residents, often lead people to seek assistance from traditional healers rather than evidence-based professional medical services [14, 21, 24, 31, 32].

In particular, scientific reports indicate that in many African countries, limited access to modern medicines and healthcare services, especially among low-income families, has resulted in widespread reliance on traditional healers for disease treatment [4, 40].

According to the data of the World Health Organization (WHO) [5, 6, 30], the ratio of traditional healers to the population in Africa is approximately 1:500, which is nearly 80 times higher than the ratio of qualified physicians, estimated at 1:40,000. This suggests that most qualified physicians practice predominantly in urban areas, while millions of rural residents continue to rely on traditional healers as their primary source of healthcare [33, 36].

Today, the health of rural populations, including growing children, school students, and individuals affected by various non-communicable somatic diseases, is increasingly recognized as an important social determinant of public health [2, 10, 38].

At present, disruption of daily routines among schoolchildren, changes in labor and living conditions, alterations in dietary composition and nutritional value, environmental influences, and dietary factors associated with disease prevention contribute to the emergence of metabolic syndrome, anemia, iodine deficiency disorders, unhealthy lifestyles, and chronic fatigue among schoolchildren [4, 8, 10, 15, 18, 22, 28, 33, 39].

Evidence indicates that rural populations face unique challenges contributing to disparities in physical health, mental health, disability, and mortality [1, 9, 10, 17, 19, 37].

Furthermore, disparities in health outcomes between rural and urban populations have evolved throughout the 21st century, likely due to changes in demographic structure and socio-economic conditions in rural areas, including population aging and shifts in socio-economic distribution [11, 12, 13, 21, 31, 32].

As a result, there is an increasing need for comparative studies investigating rural–urban differences in healthcare trends among elderly populations in the 21st century. Previous studies have demonstrated that chronic pain syndrome has become significantly more prevalent among rural populations compared to urban populations over time [12, 34].

In 2010, approximately 21 million individuals in the United States were diagnosed with diabetes mellitus, which was nearly three times higher than the number reported in 1980. Approximately 90–95% of all newly diagnosed diabetes cases in the United States are type 2 diabetes mellitus. Annual outpatient visits related to diabetes exceed 27 million cases, and more than 68,000 deaths occur annually due to diabetes-related complications. Diabetes is considered the seventh leading cause of death in the United States and significantly contributes to severe complications such as renal failure and limb amputations. Complications of diabetes mellitus include cardiovascular diseases, diabetic neuropathy, and retinopathy [12, 13, 29, 35]

A study conducted in Canada demonstrated that although mortality rates among diabetic patients have significantly decreased in recent years, the reduction was substantially greater among high-income groups compared to low-income groups. Scientific studies conducted in the United States and other industrialized countries have confirmed the association between these risk factors and the increasing prevalence of diabetes mellitus and coronary heart disease. However, comparative data regarding rural–urban differences in the prevalence of diabetes and coronary heart disease remain limited, especially concerning unidentified risk factors. Previous studies have nevertheless reported a higher prevalence of diabetes among rural populations [3, 16].

Despite the implementation of numerous preventive measures aimed at reducing morbidity rates in our country, the persistence of anemia among schoolchildren and the need for effective preventive interventions remain highly relevant public health challenges.

Therefore, the main objective of this study was to conduct a hygienic analysis of the specific characteristics of the prevalence of non-communicable diseases among rural and urban populations.

Materials and Methods.

The study was conducted retrospectively using a case-control approach within the framework of an analytical epidemiological study design.

The data were collected from official statistical reports of three regions of the Fergana Valley: Fergana Region, Andijan Region, and Namangan Region.

The study covered the period from 2013 to 2023, during which morbidity indicators were analyzed dynamically according to years, territories, and age groups.

General and primary morbidity data were classified according to the International Classification of Diseases (ICD-10, 1993).

Analysis of the Obtained Results.

To establish a comprehensive assessment, morbidity data covering a 10-year period (2013–2023) were analyzed based on annual reports provided by the Ministry of Health of the Republic and regional healthcare authorities. The dynamics of disease prevalence in the Fergana, Andijan, and Namangan regions of the Fergana Valley were evaluated.

According to the analysis, in 2013 the highest morbidity rate was observed in the Namangan region (1450.5), whereas lower rates were recorded in the Andijan region (1211.2) and the Fergana region (1111.1).

By 2016, the morbidity indicators in the Namangan and Andijan regions decreased to 1380.4 and 1168.4, respectively. One possible explanation for this decline may be insufficient organization of medical examinations and reduced monitoring efficiency, as well as improved birth control and healthcare supervision during those years.

It should be emphasized that after 2016 these indicators gradually increased until 2023, after which a sharp decline was observed. In the Fergana region, however, the morbidity rate remained relatively stable throughout the observation period (see Figure 1).

These findings suggest that morbidity rates in the Fergana region remained consistently lower and relatively unchanged during the last decade compared to the other two regions, thereby highlighting the relevance and significance of the present study.

Statistical analysis of the obtained results indicates that the low quality of examinations conducted at primary healthcare institutions contributed to underestimation and insufficient control of iron deficiency anemia, overweight conditions, various forms of endemic goiter, and other health disorders. This demonstrates the necessity of conducting further scientific studies aimed at eliminating these shortcomings and improving the effectiveness of preventive healthcare measures. In the subsequent stage of the study, overall morbidity and primary morbidity rates in these regions were analyzed, and the obtained results are presented in Table 1.

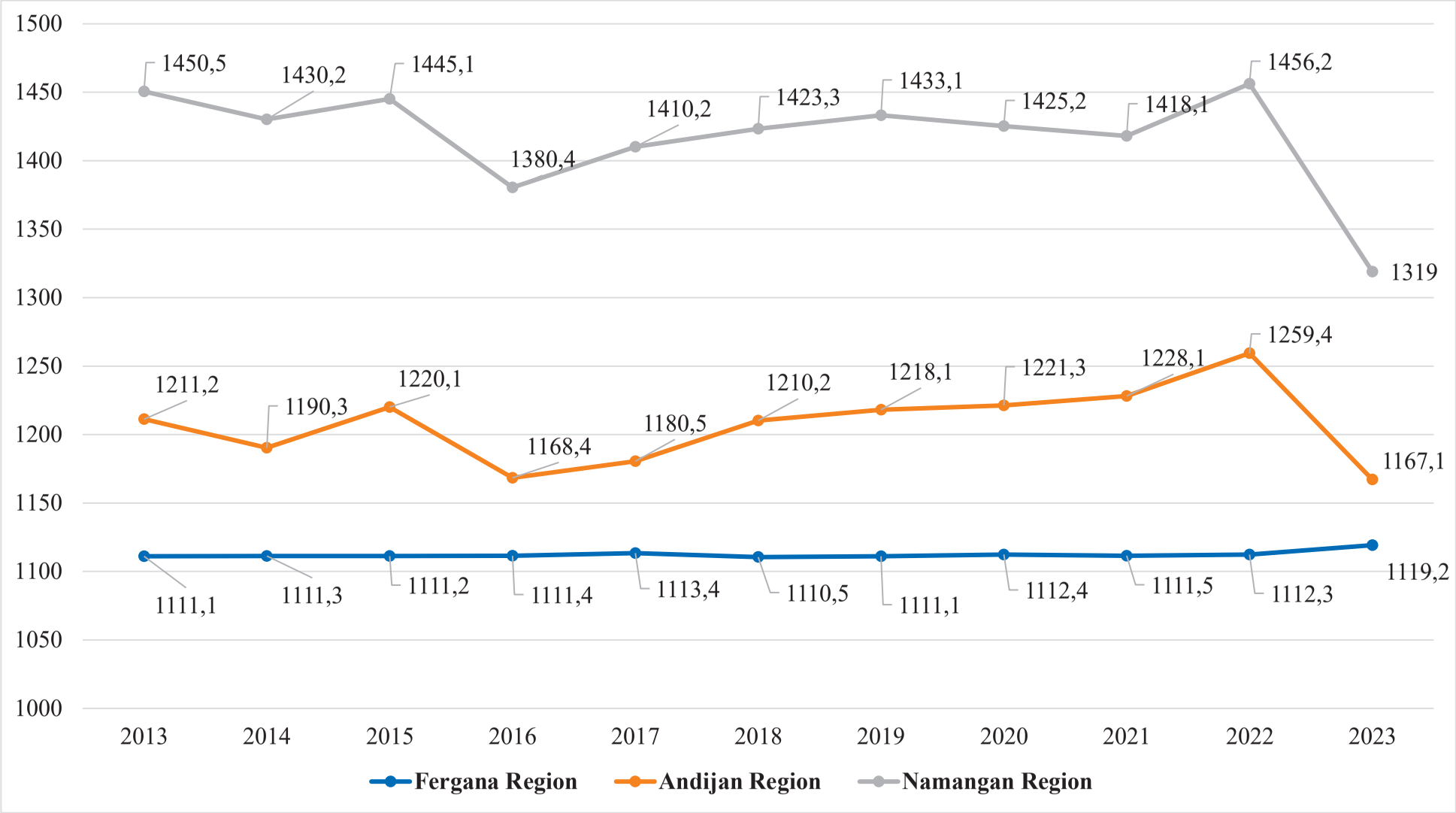


Figure 1. Characteristics of Disease Incidence Distribution by Years (per 1,000 population (‰))

Table 1. The proportion of primary morbidity relative to total morbidity across regions ()

Disease classification	Fergana region Total	Fergana Primary	Fergana % primary	Andijan region Total	Andijan Primary	Andijan % primary	Namangan region Total	Namangan Primary	Namangan % primary
Total morbidity	1113.2	586.5	52.7	1258.9	808.2	64.2	1112.3	727.4	65.4
Class I	19.7	10.2	51.8	47.5	19.3	40.6	49.5	23.2	46.9
Class II	7.5	1.3	17.3	4.8	1.2	25.0	5.8	2.1	36.2
Class III	232.1	84.8	36.5	298.5	134.3	45.0	278.5	123.4	44.3
Class IV	96.7	36.6	37.8	74.5	27.0	36.2	78.5	23.2	29.6
Class V	22.7	1.8	7.9	16.0	1.5	9.4	14.0	1.0	7.1
Class VI	48.4	30.4	62.8	35.5	23.8	67.0	40.5	22.1	54.6
Class VII	40.2	27.9	69.4	42.7	35.4	82.9	44.7	23.4	52.3
Class VIII	24.4	15.8	64.8	31.2	26.0	83.3	30.2	26.5	87.7
Class IX	126.6	30.2	23.9	85.1	38.9	45.7	82.1	32.7	39.8
Class X	236.9	173.9	73.4	264.7	222.4	84.0	254.4	212.2	83.4
Class XI	74.7	47.8	64.0	109.5	86.0	78.5	111.5	78.4	70.3
Class XII	26.7	21.0	78.7	30.7	26.7	87.0	27.7	22.1	79.8
Class XIII	20.6	11.0	53.4	19.3	12.5	64.8	20.3	8.7	42.9
Class XIV	71.6	45.4	63.4	77.4	54.7	70.7	72.4	46.7	64.5
Class XV	22.6	14.2	62.8	52.3	33.8	64.6	46.3	22.8	49.2
Class XVII	4.3	0.4	9.3	1.9	0.3	15.8	2.4	0.0	0.0
Class XVIII	0.8	0.8	100.0	3.5	3.5	100.0	2.8	2.8	100.0
Class XIX	27.9	27.9	100.0	57.8	57.8	100.0	38.8	38.8	100.0
Obesity	4.2	1.5	35.7	1.9	0.6	31.6	2.9	1.0	34.5
Hypertension-related	82.6	14.3	17.3	22.8	8.7	38.2	25.8	4.8	18.6
Ischemic heart disease	9.9	1.5	15.2	11.8	5.3	44.9	10.8	5.1	47.2
Cerebrovascular	3.0	0.7	23.3	2.2	0.8	36.4	2.7	0.9	33.3

Analysis of the results presented in Table 1 demonstrated that the following disease categories in the Namangan Region showed higher prevalence rates compared to the other two regions: endocrine system diseases (78.5‰), diseases of the blood and hematopoietic system (278.5‰), circulatory system diseases (82.1‰), chronic respiratory diseases (254.4‰), digestive system diseases (111.5‰), and genitourinary diseases (72.4‰).

The characteristics of morbidity distribution among rural and urban populations across different population groups are presented in Table 2.

In the next stage of the study, a hygienic analysis of morbidity characteristics among rural and urban populations was conducted. According to the results presented in Table 2, in the Fergana Region morbidity among children aged 0–14 years was more frequently recorded among the urban population compared to the rural population (1113.7‰). However, among individuals aged 18 years and older, the trend was reversed, with morbidity rates being higher among the rural population (1117.2‰).

In the Andijan Region, analysis by age groups demonstrated that morbidity rates among children aged 0–14 years were higher in the rural population (1230.6‰), whereas in the population aged 18 years and older, higher morbidity rates were observed among urban residents (1202.2‰). In the Namangan Region, these indicators were found to be similar to those observed in the Fergana region (see Table 2). These findings indicate the necessity of implementing comprehensive preventive measures, improving medical literacy among the population, and enhancing the effectiveness of healthcare services

Table 2.

Characteristics of Morbidity Distribution in Rural and Urban Populations (‰)

Regions	Fergana				Andijan				Namangan			
	0-14 age	15-17 age	18 years and older	Total	0-14 age	15-17 age	18 years and older	Total	0-14 age	15-17 age	18 years and older	Total
City	1113,7	1111,1	1111,8	1112,1	1199,7	1061,5	1328,2	1265,1	1506,8	655,3	646,5	1537,1
Vallage	1108,5	1111,6	1117,2	1114,3	1230,6	1202,2	1271,8	1254,3	1351,6	1310,7	1411,2	1393,9
Total	1111,1	1111,3	1114,1	1113,2	1217,1	1135,2	1295,1	1258,9	1441,8	1412,4	1467,5	1456,2

Conclusions

Based on the results of the present study, it was determined that morbidity rates differed across regions and among various age groups. In particular, the likelihood of developing non-communicable diseases among the rural population was found to be significantly higher compared to the urban population.

The obtained findings indicate that studying and evaluating risk factors contributing to the prevalence of non-communicable diseases across different regions remains one of the most актуal and important public health issues. Furthermore, the development and implementation of preventive measures targeting these risk factors should be considered one of the urgent priorities of the healthcare system.

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