

## Colon Polyps: Distribution of Patients by Age, Gender and Place of Residence (Belarus, Grodno Region, 2022)

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**Summary.** Colon polyps are an obligate precancerous disease. Fundamental understanding of the etiology and pathogenesis of rectal polyps is a prerequisite for successful prevention, diagnosis and treatment of both benign and malignant tumors of the colon, and therefore is an urgent problem of modern coloproctology. We researched the distribution of patients with the diagnosis of colon polyp (D12) residing in the Grodno region by age, gender and place of residence in 2022. It was found that in the mature and elderly age groups the proportion of male patients was significantly greater (about 60%,  $p < 0.05$ ), while in the senile age group female patients (68.2%,  $p < 0.05$ ) predominated. The proportion of urban residents significantly predominated in most age groups (about 63%,  $p < 0.05$ ); the maximum number of patients (42.6%,  $p < 0.05$ ) belonged to the age group of 50-65 years; there were more male patients among urban residents ( $p < 0.05$ ).

**Keywords:** colon polyp, polyposis, rectum, sigmoid colon, colon, anal canal, Grodno region, Belarus, rural residents, urban residents, males, females.

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Date of Submission: 22-10-2022

Date of Acceptance: 04-11-2022

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### I. INTRODUCTION

Colon polyps are an obligate precancerous disease. Fundamental understanding of the etiology and pathogenesis of rectal polyps is based on the elegant and classic report of Vogelstein and Fearon [1]. In this model, acquired genetic mutations leading to increased oncogene function or loss of tumor suppressor gene function confer a selective advantage in the growth of cell clones. [2]. The expansion of these cell clones initiates the transformation of the normal colonic epithelium into benign neoplasms or polyps. Therefore, prevention, diagnosis and timely treatment of these benign neoplasms is an urgent problem of modern coloproctology [3, 4, 5].

### II. EXPERIMENTAL PROCEDURE

Goal. To explore the distribution of patients with a diagnosis of colon polyp (D12) residing in the Grodno region by age, gender and place of residence in 2022.

The study included 340 electronic medical records of patients hospitalized in the department of purulent surgery of the Grodno University Clinic with a diagnosis of colon polyp (D12) for colonoscopy in 2022.

Statistical data processing was carried out using the program «Statistica 13». LOG-linear analysis was used to assess the significance of the influence of factors. For the frequencies obtained (in fractions of a unit), Yates correction was applied. For each frequency, the value of  $\varphi$  – Fisher's auxiliary variable – was calculated in radian measure. For each obtained value of  $\varphi$  - Fisher's variable, a 95% confidence interval was calculated using a two-tailed t-test. The boundaries of the obtained confidence interval for  $\varphi$  - Fisher's variable, were recalculated into the boundaries of the confidence interval of the original variable – frequency. Further, in the text, the confidence interval is abbreviated CI, its boundaries are indicated in square brackets. The significance of frequency differences was assessed using Fisher's auxiliary variable  $\varphi$  in radians and two-tailed t-test statistics ( $\varphi$ -test). The result was considered as statistically significant with the level of error of the first kind  $p < 0.05$ .

### III. RESULTS AND DISCUSSIONS

In total, 340 case histories of patients of the Grodno University Clinic with a diagnosis of colon polyp (D12), who received treatment in 2022 were studied. The minimum and maximum ages of the examined patients were 31 and 78 years, respectively, with an average age of 61 years. The number of males was 172 people, females – 168. Of these, there were 215 urban and 125 rural residents. The number of patients distributed by age, gender and place of residence is presented in table 1.

**Table 1** – distribution of patients with colon polyps in the general group by age, gender, and place of residence

Age	Group of patients (n)	Gender		Place of residence	
		m	f	u	r
Young (20-35 years)	5	3	2	4	1
Mature (35-50 years)	80	54	26	64	16
Elderly (50-65 years)	145	80	65	105	40
Senile (65 and older)	110	35	75	42	68
General group	340	172	168	215	125

Note: m – male, f – female, u – urban, r – rural

According to the research results, the smallest number of patients was at the age group of 20-35 years: 1.5%, CI [0.5%; 3.0%],  $p < 0.05$ . Differences in gender and place of residence in this age group were not statistically significant.

The age group of 35-50 years included a significant number of patients: 23.5%, CI [19.2%; 28.2%]. Of these, there were reliably more males ( $p < 0.05$ ) (67.5%, CI [56.9%; 77.3%]) than females (32.5%, CI [22.7; 43.1%]). In this age group, the number of urban residents was 80%, CI [70.6%; 88.0%], and the number of rural residents was reliably ( $p < 0.05$ ) less – 20%, CI [12.0%; 29.4%].

The maximum number of patients – 42.6%, CI [37.4%; 47.9%],  $p < 0.05$ , belonged to the age group of 50-65 years. Of them, the proportion of males was 55.2%, CI [47.0%; 63.2%], and it did not reliably differ from that of females: 44.8%, CI [36.8%; 53.0%]. In this age group, the percentage of urban residents was 72.4%, CI [64.9%; 79.4%], which turned out to be reliably higher ( $p < 0.05$ ) than that of rural residents: 27.6%, CI [20.6%; 35.1%].

The group of 65 years and older included 32.4%, CI [27.5%; 37.4%] of patients. Among them, there were reliably ( $p < 0.05$ ) more females (68.2%, CI [59.2%; 76.5%]) than males (31.8%, CI [23.5%; 40.8%]). In this age group, the rural population (61.8%, CI [52.6%; 70.6%]) reliably prevailed over the urban one (36.8%, CI [29.4%; 47.4%]).

In the general group of patients, the proportions of males (50.6%, CI [45.3%; 55.9%]) and females (49.4%, CI [44.1%; 54.7%]) did not differ considerably. In this group, urban residents reliably ( $p < 0.05$ ) prevailed over the rural ones: 63.2%, CI [58.0%; 68.3%] and 36.8%, CI [31.7%; 42.0%] respectively.

The relationship of the factors "age and gender" was reliably ( $p < 0.05$ ) established. Thus, the diagnosis of colon polyp (D12) was more common among males in the mature and elderly age groups (35-65 years), while in the senile (over 65 years) age group there were more females. This may be due to the fact that male patients, because of their lifestyle peculiarities are more subjected to harmful environmental factors, and, consequently, their proportion decreases considerably by old age.

The relationship of the factors "age and place of residence" was reliably ( $p < 0.05$ ) established. Thus, the diagnosis of colon polyp (D12) was more common among urban residents in the mature and elderly age groups (35-65 years), while in the senile (over 65 years) age group there were more rural residents. This is probably due to the fact, that urban residents are more affected by harmful environmental factors, and, consequently, their proportion decreases considerably by old age.

The relationship of the factors "gender and place of residence" was reliably ( $p < 0.05$ ) established. Thus, the proportion of males with the diagnosis of colon polyp (D12) was greater among urban residents. This may be related to the peculiarities of the lifestyle of male patients in urban environment leading to excessive exposure to harmful environmental factors.

### IV. CONCLUSION

In the mature and elderly age groups, the proportion of male patients reliably prevails (about 60%,  $p < 0.05$ ), while the proportion of female patients reliably predominates (68.2%,  $p < 0.05$ ) in the senile age group. Among the patients diagnosed with colon polyp (D12) both in the general and in most of the age groups, the proportion of urban residents significantly prevails (about 63%,  $p < 0.05$ ). The maximum number of patients (42.6%,  $p < 0.05$ ) with a diagnosis of colon polyp (D12) belongs to the age group of 50-65 years. Among patients diagnosed with colon polyp (D12) there are more males among urban residents ( $p < 0.05$ ).

#### Conflict of interest

There is no conflict to disclose.

### **ACKNOWLEDGEMENT**

The authors are grateful to the National Council for Scientific and Technological Development – CNPq.

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SalminRoman Mikhailovich. "Colon Polyps: Distribution of Patients by Age, Gender and Place of Residence (Belarus, Grodno Region, 2022)." *International Journal of Engineering and Science*, vol. 12, no. 11, 2022, pp. 08-10.