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PREVALENCE OF SOCIAL RISK FACTORS AND ITS TRENDS IN THE POPULATION OF WOMEN OF REPRODUCTIVE AGE AT THE TERRITORIAL LEVEL

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Introduction. Tumours affecting the reproductive organs are diagnosed in women of fertile age in 20–40% of cases. Therefore, the current situation not only affects the quality and life expectancy of patients, but also leads to a decrease in the reproductive potential of the country. **Relevance of Research.** The authors’ research aims to obtain new theoretical data regarding the risks of malignant neoplasms in the female genital system correlated with various ratios of risk factors at the territorial level. **Materials and Methods.** During the initial research stage, the authors employed the analytical method to gather data on risk factors for oncological malignancies identified through content analysis of both domestic and foreign literature sources. During the second research stage, data were collected regarding the incidence of cancer risk factors classified as social and hygienic factors. The data were collected retrospectively for the period of 1995–2020 (n = 36935). The data processing programme comprised the calculation of the prevalence rate of the risk of malignant neoplasms of the reproductive system in women of reproductive age. Research methodical specifics involved constructing parallel chronograms of each cancer risk factor and new onsets of malignant cancer diseases broken down by years of the research period. These data were used as evidence of effectiveness of cancer risk management procedures within the territory. **Conclusion.** The data obtained bolster the correlation between malignant reproductive diseases in women and social and hygienic risk factors. This substantiates the suggestion to incorporate such risk factors as maternal smoking, late first pregnancy and maternal age over 40 years, early sexual activity and large number of sexual partners in the set of indicators for assessing the risk burden in the territory.

Key words: public health, social risk factors, social determinant, systemic approach, reproductive age, malignant diseases of reproductive system organs in women, risks of malignant neoplasms of female genital system.

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Introduction. Patients with cancer in Russia make up 2.4% of the population. In 2018, their total number was over 3.5 million, including more than 600,000 patients diagnosed with new-onset malignant neoplasms (MNDs). In 2021, a total of 580,415 cases of malignant neoplasms were newly diagnosed in the Russian Federation, with over half of them occurring in female patients. In comparison to year 2020, there was a rise of 4.4% in this metric. Furthermore, the prevalence of malignant neoplasms in the Russian population surpassed the 2011 level by 32.6%. [18]. In 2020, the crude morbidity marker per 100 thousand people in Russia amounted to 379.7, with an increase of 20.5% over the 10-year period. This can largely be attributed to the unfavourable demographic trends in the population, which have led to its ageing. Breast cancer is the most prevalent MND among females worldwide, accounting for more than 20% in the cancer morbidity distribution [19]. Despite comparable global and Russian incidence rates of breast cancer (with over 1.5 million cases diagnosed worldwide annually and over 68,000 in Russia), the mortality rate from this disease is higher in the latter country than elsewhere [21, 32]. The relationship between the stage of a neoplastic process and the effectiveness of treatment and survival rates is widely acknowledged. Currently, the Russian Federation reports detection rates of 2.0–2.5 cases of breast cancer at the in situ stage per every 100 newly diagnosed malignant neoplasms [19]. Uterine body cancer (UBC) is the most prevalent malignant tumour of the female reproductive system in developed countries and the second most prevalent malignant tumour after cervical cancer (CC) worldwide [13, 19]. UBC ranks third in the distribution of the disease among the female population in Russia. More than 20,000 new cases are reported each year. Between 2006 and 2017, the increase in adjusted incidence rate per 100,000 female population was 23.54% [15]. In Ivanovo Oblast, the incidence of UBC surpasses the national average consistently. During the last decade, there has been a noticeable upward trend in the disease incidence from 25.94 per 100,000 women in 2010 to 45.7 per 100,000 women in 2020, making this matter especially pressing for the region. The incidence of CC within the country stood at 19.75 per 100,000 women in 2020, denoting an increase of 12.4% over the last 5 years. The high neglect rate for cervical cancer in Russia, which was 34.1% in 2021 and 33.6% in 2020, highlights the importance of giving priority to timely diagnosis of neoplastic processes. Meanwhile, the detection rates for preinvasion and early stage cases, where organ preservation treatment is possible, are still unsatisfactory. The

incidence of in situ cervical cancer was 33.6 cases per 100 new cases of cervical malignancy diagnosed in 2021, indicating an increase from 30.8 cases in 2020 [4]. In 20–40% of cases, reproductive organ tumours (ROTs) are diagnosed in women of fertile age. Therefore, the current situation not only affects the quality and life expectancy of patients, but also leads to a decrease in the reproductive potential of the country.

Relevance of Research. The relevance of our research lies in the acquisition of new theoretical data regarding the risks of malignant neoplasms in the female genital system at a territorial level. Our objective is to confirm trends and practical work scope in the healthcare system that concentrate on the female population in the region, taking into account the obtained risk characteristics and dynamic trends.

Research Materials and Methods. The research methodology utilised a systemic approach to examine the risk factors for female reproductive organ malignancies. This approach draws on data from both domestic and foreign researchers highlighting the significant incidence of comorbid gynaecological pathologies in patients with breast diseases, breast cancer, endometrial cancer, ovarian cancer, preinvasive diseases and CC [5,6]. Several authors consider the condition of mammary glands a marker of reproductive health [3, 5, 6, 14]

The identified interrelationships allowed us to merge risk factors for the emergence of specific forms of malignant neoplasms into a unified set of risk factors for the development of malignant neoplasms in the reproductive system. We also examined patterns in its condition and trends at a territorial level.

During the initial research stage, the authors employed the analytical method to gather data on risk factors for oncological malignancies identified through content analysis of both domestic and foreign literature sources. During the second stage, we acquired data on the frequency of cancer risk factors within the social and hygienic factors group. These factors are related to both family and non-family characteristics, and were identified among the risk factors for perinatal and maternal mortality. The data were obtained from the system that monitors the health and medical surveillance of women who are pregnant or have recently completed pregnancy (on the example of one constituent entity of the Russian Federation). The data were collected retrospectively for the period of 1995–2020 (n = 36935). The data processing programme comprised the calculation of the prevalence rate of the risk of malignant neoplasms of the reproductive system in women of reproductive age (number of risk cases per 1,000 women) as well as the prevalence rates of individual risk factors (number of cases of risk factor registration for malignant neoplasms affecting the reproductive system in cases per 1,000 women). The research analysed the number of women of reproductive age over the course of several years (five-year periods in 2000, 2005, 2010, 2015, and 2020) and made a medium-term forecast using extrapolated data from the multi-year trend. Data on the occurrence and composition of malignant tumours affecting reproductive organs were sourced from Russian and regional statistics. Research methodical specifics involved constructing parallel chronograms of each cancer risk factor and new onsets of malignant cancer diseases broken down by years of the research period. These data were used as evidence of effectiveness of cancer risk management procedures within the territory.

Results and Discussion. Based on the statistical data collected, the incidence rates of malignant neoplasms affecting the reproductive organs of women residing in Ivanovo Oblast have been consistently higher than the national average for the past decade and display an increasing trend, as depicted in diagrams 2 and 3. Consequently, further investigation into this problem remains a priority.

In line with the research programme, we analysed the risk factors for malignant neoplasms of the reproductive system in women identified by domestic and foreign researchers. For this purpose, a literature

Table 1

Look-up table of risk factors for malignant neoplasms of the reproductive system in women (based on systemic analysis of special literature)

Factor name	Source number in the reference list
Harmful habits (smoking, alcohol)	23, 30, 35, 37
Occupational hazards	2, 36
Environmental factors	24, 34, 36
Late first labour	2, 5, 6, 10, 20, 26
Cervical diseases and destructive interventions	1, 11, 38
Gynaecological diseases	1, 5, 9, 12
in vitro fertilisation	16, 33
Endometriosis	7, 40
Uterine and ovarian tumours	22, 39
Parovarium surgeries	17, 29
Infertility	17
HPV infection	9, 11
Abortions	27
Obesity	25
Diabetes mellitus	8
Thyroid diseases	10
Liver diseases	10
Psychological factors, stress	28

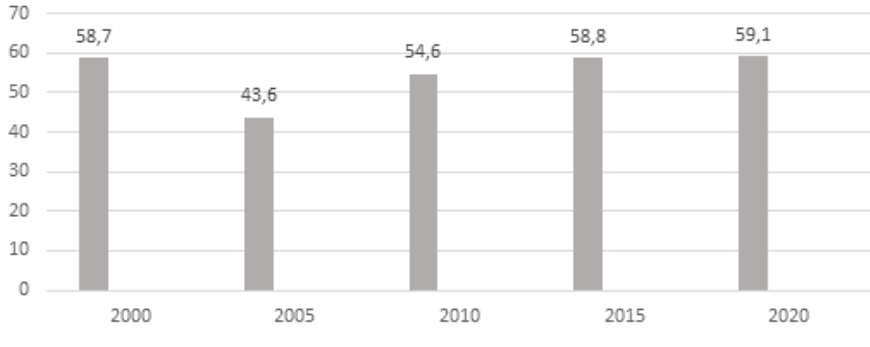

Fig. 1. Frequency of women of childbearing age at risk of malignant neoplasms of reproductive organs at the territorial level

review was conducted to investigate the risk of developing malignant reproductive system pathologies in women of reproductive age. The search depth covered 10 years, the number of works analysed on the problem amounted to 264, including 32 monographs, 198 articles and 34 dissertations.

The search outcomes were collated in a table (Table 1) that classifies risk factors contributing to female reproductive system cancer via alphabetical order and by origin (societal environment, lifestyle, living conditions, somatic, gynaecological, psychological, reproductive, and genetic health).

The evaluation of literature on malignant neoplasms affecting the reproductive system in women of reproductive age reveals numerous studies confirming the existence of risk factors for the development of these malignant neoplasms. The scholarly importance of this information establishes the basis for conduct-

Table 2

Frequency of social risk factors for malignant reproductive neoplasms in women of reproductive age at the territorial level

Name	2000		2005		2010		2015		2020	
	Abs.	Cases per 1.000	Abs.	Cases per 1.000	Abs.	Cases per 1.000	Abs.	Cases per 1.000	Abs.	Cases per 1.000
Habits that are harmful to the mother: smoking	586	25.83	526	21.19	902	25.74	1011	28.75	617	20.7
Occupational hazards adversely affecting the mother	172	7.58	84	3.38	32	0.91	22	0.63	20	0.67
Environmental factors at the woman's place of residence	74	3.26	61	2.46	41	1.17	32	0.91	1	0.03
Maternal age over 40 years	57	2.51	36	1.45	81	2.31	147	4.18	186	6.24
Habits that are harmful to the mother: alcohol abuse, drug addiction	39	1.72	44	1.77	78	2.23	95	2.70	13	0.44
Maternal age of 35–40 years, primipregnancy	16	0.71	124	5.00	572	16.32	830	23.60	976	32.75
Marital status (single, divorced, common-law marriage)	4167	183.71	3585	144.45	3498	99.81	2720	77.35	1776	59.6
Financial situation	1805	79.58	952	38.36	860	24.54	320	9.10	136	4.53
Unintended pregnancy	806	35.53	409	16.48	167	4.77	255	7.25	188	6.31
Conflict within the family (unwanted child)	320	14.11	124	5.00	46	1.31	28	0.80	10	0.34
Early sexual activity (before 19)	172	7.58	124	5.00	81	2.31	95	2.70	75	2.52
More than 3 sexual partners	39	0.17%	36	1.45	32	0.91	83	2.36	63	2.11

Table 3

Social risk factor structure for malignant reproductive system neoplasms in women of reproductive age over time for the period from 2000 to 2020

Name	2000		2005		2010		2015		2020	
	Abs.	D%	Abs.	D%	Abs.	D%	Abs.	D%	Abs.	D%
Harmful habits (maternal smoking)	586	7.10	526	8.62	902	14.12	1011	18.23	617	15.15
Occupational hazards adversely affecting the mother	172	2.08	84	1.38	32	0.50	22	0.40	20	0.49
Environmental factors at the women's place of residence	74	0.90	61	1.00	41	0.64	32	0.58	13	0.32
Maternal age over 40 years	57	0.69	36	0.59	81	1.27	147	2.65	186	4.57
Habits that are harmful to the mother (alcohol abuse, drug addiction)	39	0.47	44	0.72	78	1.22	95	1.71	13	0.32
Maternal age of 35–40 years, primipregnancy	16	0.19	124	2.03	572	8.95	830	14.97	976	23.96
Marital status (single, divorced, common-law marriage)	4167	50.49	3585	58.72	3498	54.74	2720	49.05	1776	43.60
Financial situation	1805	21.87	952	15.59	860	13.46	320	5.77	136	3.34
Unintended pregnancy	806	9.77	409	6.70	167	2.61	255	4.60	188	4.62
Conflict within the family (unwanted child)	320	3.88	124	2.03	46	0.72	28	0.50	10	0.25
Early sexual activity (before 19)	172	2.08	124	2.03	81	1.27	63	1.14	75	1.84
More than 3 sexual partners	39	0.47	36	0.59	32	0.50	22	0.40	63	1.55
Total	8253	100,0	6105	100,0	6390	100,0	5545	100,0	4073	100,0

ing further research on the risk factors associated with malignant neoplasms in reproductive organs. Concurrently, we consider researching the incidence of each identified risk factor in the female population of a specific area, tracking this metric over time and correlating it to dynamic primary morbidity rates of malignant neoplasms to be a vital aspect of the study of the problem in women of reproductive age.

To examine the occurrence of neoplastic conditions in the reproductive organs of women of reproductive age (Table 2), we gathered pertinent data and conducted an analysis at the territorial level employing the risk factor look-up table created during the initial stage of the research. We followed the methodology detailed in the Materials and Methods section.

Figure 1 illustrates the incidence of malignant neoplasms of the reproductive system in women of reproductive age.

The table displays the frequency of risk factors associated with malignant neoplasms of the reproductive system in women of reproductive age at the territorial level, as identified by researchers (Table 3).

Table 5 displays the structure of specific risk factors associated with malignant neoplasms of the reproductive system in women of reproductive age who have performed reproductive function in 2000, 2005, 2010, 2015, and 2020. The fidelity assessment of these indicators has been conducted by determining the t-test.

The proportion of the insufficient financial security risk factor among the survey participants decreased over the examined period. There has been a notable reduction in the proportion of environmental factors as a component of cancer risk factors from 2000 to 2020. The share of unstable marital status as a component of cancer risk factors had a pronounced unidirectional downward trend over the entire study period. Unfortunately, these favourable changes in the structure of socio-hygienic factors were not translated into the dynamics of cancer incidence in women's reproductive organs.

The proportion of late first pregnancies has risen steadily from 0.07% in 2000 to 3.35% in 2020, correlating with rising rates of endometrial, breast and cervical cancer by 2015. The reduction in the occurrence of gynaecological cancer in 2020, according to our viewpoint, cannot be attributed to genuine progress, but rather to a decline in the identification of tumour diseases due to the difficulties in arranging screening and preventive examinations in the context of the coronavirus infection pandemic. Between 2005 and 2020, there was a significant rise in the ratio of pregnant women over the age of 40 who were surveyed.

Table 4

The structure of specific risk factors for malignant neoplasms of the reproductive system among populations of women of reproductive age who performed reproductive function between 2000 and 2020

Analysed factor	Fidelity assessment (D)	Year				
		2000	2005	2010	2015	2020
Occupational hazards	D%	2.08	1.38	0.5	0.4	0.49
	previous year t		3.27	5.05	0.85	-0.68
	base year t		3.27	8.78	9.45	10.99
Financial situation	D%	21.87	15.59	13.46	5.77	3.34
	previous year t		9.66	3.39	14.52	5.78
	base year t		9.66	13.48	29.15	47.14
Environmental factors at the place of residence	D%	0.9	1	0.64	0.58	0.32
	previous year t		-0.62	2.21	0.45	1.91
	base year t		-0.62	1.77	2.2	5.33
Marital status	D%	50.49	58.72	54.74	49.05	43.6
	previous year t		-9.84	4.49	6.21	5.31
	base year t		-9.84	-5.12	1.66	8.15
First pregnancy in the age of 35-40	D%	0.19	2.03	8.95	14.97	23.96
	previous year t		-9.83	-17.29	-10.07	-10.93
	base year t		-9.83	-24.30	-30.68	-35.50
Maternal age over 40 years	D%	0.69	0.59	1.27	2.65	4.57
	previous year t		0.75	-3.97	-5.38	-4.89
	base year t		0.75	-3.45	-8.37	-11.69
Habits that are harmful to the mother (alcohol abuse, drug addiction)	D%	0.47	0.72	1.22	1.71	0.32
	previous year t		-1.88	-2.86	-2.22	7.13
	base year t		-1.88	-4.77	-6.53	1.54
More than 3 sexual partners	D%	0.47	0.59	0.5	0.4	1.55
	previous year t		-0.95	0.67	0.85	-5.45
	base year t		-0.95	-0.24	0.67	-5.41
Unintended pregnancy	D%	9.77	6.7	2.61	4.6	4.62
	previous year t		6.71	10.83	-5.76	-0.04
	base year t		6.71	18.68	11.98	13.44
Conflict within the family (unwanted child)	D%	3.88	2.03	0.72	0.5	0.25
	previous year t		6.62	6.27	1.51	2.11
	base year t		6.62	13.3	14.48	24.24

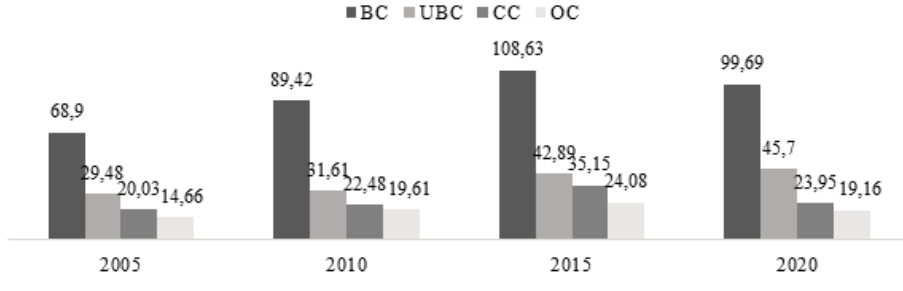

Fig. 2. Dynamics of MND incidence per 100,000 female population

The proportion of harmful habits in a pattern of risk factors over the period 2000–2015 was not reliably different. However, there was a substantial reduction in the incidence of this factor in 2020. The proportion of women who reported having more than three sexual partners in surveys conducted between 2000 and 2015 declined gradually. However, in 2020, this indicator experienced a significant increase.

The proportion of unintended pregnancies among those surveyed was highest in 2000. It then decreased significantly, reaching its lowest level in 2010, after which it increased again in 2015–2020, although the analysed indicator remained significantly lower than the baseline. The

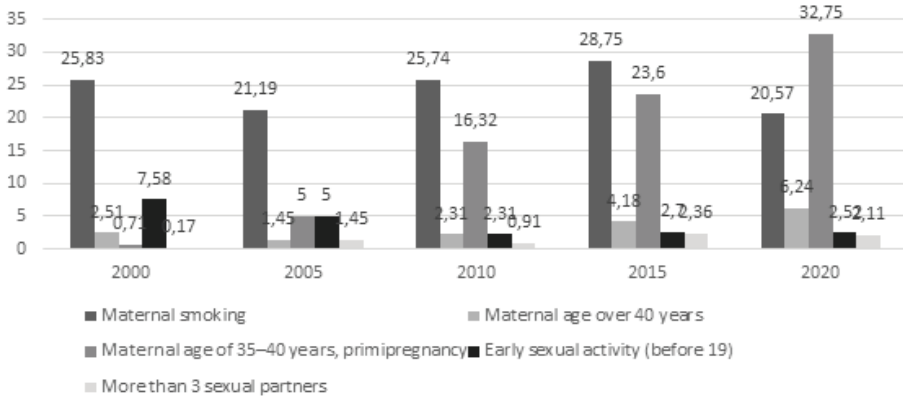

Fig. 3. Prevalence data on social and hygienic risk factors for malignant reproductive system cancer and incidence rates in women of reproductive age between 2000 and 2020 within the same constituent entity of the Russian Federation (Ivanovo Oblast)

incidence of conflicts arising within families due to the birth of an unwanted child demonstrated a distinct and consistent decline throughout the analysed period.

It was relevant to analyse the data concerning the risk of malignant neoplasms in the reproductive system of women of reproductive age, with regard to evaluating the evidence supporting the significance of risk factors. To meet this aim, we undertook a comparative analysis of the extended-term trend in social factors and indicators of recently diagnosed malignant cancers in a specific area, utilising graphical analysis.

We examined statistical data on the occurrence of primary malignant neoplasms in women of reproductive age and compared them with data on the prevalence of risk factors for malignant cancer of the reproductive system in the same region over a twenty-year period. Figure 2 presents the trend in the occurrence of malignant neoplasms (MND) affecting reproductive system organs in the region.

Figure 3 presents the prevalence data on social and hygienic risk factors for malignant reproductive system cancer and incidence rates in women of reproductive age between 2000 and 2020 within the same constituent entity of the Russian Federation (Ivanovo Oblast).

The data obtained indicate that within the group of social and hygienic risk factors, there is a mutually reinforcing relationship between the incidence rate of malignant oncopathology of the reproductive system in women and several risk factors, including maternal smoking, late first pregnancy, maternal age over 40 years, early sexual activity, and large number of sexual partners.

This allows to incorporate these factors into a set of 12 social and hygienic indicators to evaluate the risk burden of malignant neoplasms in women residing in the area.

Conclusion. The data obtained bolster the correlation between malignant reproductive diseases in women and social and hygienic risk factors. This substantiates the suggestion to incorporate such risk factors as maternal smoking, late first pregnancy and maternal age over 40 years, early sexual activity and large number of sexual partners in the set of indicators for assessing the risk burden in the territory.

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ASSESSMENT OF CARBOHYDRATE-LIPID BALANCE IN PEOPLE UNDERGONE COVID-19 AMONG THE RESIDENTS OF YAKUTSK

An assessment was made of the biological constant, consisting of the sum of glucose and total cholesterol levels in 161 residents of Yakutsk aged 20 to 72 years who had recovered from COVID-19.

The increase in this biological constant in the post-Covid period is most acutely expressed in individuals with morbid obesity. At the same time, there was a statistically significant tendency to increase the constant, as the disease worsened. Its significant increase to 12.25 mmol/l was noted in the post-ovoid period, in the group of patients with severe lung damage. The imbalance of harmony occurs due to an increase in glucose concentration, i.e. it is associated with a violation of carbohydrate metabolism. The results of our study indicate that patients who have suffered from SARS-CoV-2 coronavirus infection are at high risk of developing cardiovascular diseases in the postcovid period.

Keywords: coronavirus infection, glucose, total cholesterol, biological constant, body mass index, fatness.