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Original article

Awareness and attitudes of pregnant women towards STI prevention and treatment in new sociomedical conditions of COVID-19 pandemic

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Abstract: *Background* — Restriction on in-person events during the pandemic constitutes a dangerous factor causing the reduced awareness of youth of the risks and measures to prevent sexually transmitted infections (STIs). Consequently, pregnancies ending in childbirth in 2022 occurred against the backdrop of the COVID-19 situation, characterized by a decrease in preventive activity. Information deficit in 2020-2021 and the emphasis on issues of maintaining health in connection with the psychological factors of the pandemic accounted for peculiarities of awareness of young women regarding the prevention of STIs. The *objective* of our study was to analyze the knowledge and attitude of women towards prevention, diagnosis and treatment of STIs during pregnancy and to highlight the differences that arose depending on their education profile/profession.
Materials and Methods — In 2022, against the background of the cancelation of most anti-epidemic restrictions, we conducted a sociological survey of 518 pregnant women. The respondents were divided into two comparable subgroups (178 respondents with education in medicine/biology and 340 females with other education profiles). This sample size corresponded to a significance level of 95%. Data processing was based on the calculation of relevant indicators (the proportion of parents – women and their husbands – screened for STIs prior to the conception, readiness for systematic screening examinations, and intentions to seek medical help for STIs). The significance of the difference in values between the subgroups of respondents with education in medicine/biology and education in humanities or technology was assessed using the Student's t-test.
Results — We revealed that 66.8% of respondents were focused on productive contact with the health care system, 74.2% of women with education in medicine/biology were examined for STIs, which statistically significantly ($p<0.05$) exceeded the proportion of women with other education profiles (62.9%). At the same time, the level of trust in the public venereological services vs. private clinics was significantly higher among all categories of pregnant women ($p<0.01$).
Conclusion — Our study exhibited a high level of awareness among pregnant women about the STIs and the beneficial importance of preparation for conception by STI prevention. Women with education in medicine/biology had a more conscious attitude towards screening examinations for STIs, but at the same time demonstrated a higher desire for self-medication. We established that during the pandemic, young people in general have shown a stronger intention to receive medical care in private clinics, but in case of pregnancy exhibited higher confidence in public medical facilities.

Keywords: pregnancy, sexually transmitted infections, screening, education profile.

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Introduction

Protecting reproductive function of a woman is the most important task of doctors in all countries worldwide. One of the main components of this task is the prevention of sexually transmitted infections (STIs) through educational activities and diagnostic screening [1, 2].

The period from 2014 through 2019 in Russia and Europe is characterized by a decrease in STI incidence rates. For example, the following reductions in incidence rate values were established in Russia: for gonococcal infection, from 23.5 to 7.7 cases per 100 thousand population; for anogenital herpes infection, from 14.0 to 11.1 cases per 100 thousand population; and for all forms of syphilis from 25 to 15 cases per 100 thousand population. At the same time, diseases caused by some other viruses and protozoa

(cytomegalovirus infection, chlamydia, trichomoniasis) are characterized by insufficiently complete diagnosis, and the general trend in developed countries is an increase in the prevalence of their asymptomatic forms [3-7].

The main negative impact of STIs on public health is their role as a risk factor for pregnancy complications and congenital disorders. The dangerous consequences of STIs include an increased risk of infertility, miscarriage, gestosis and eclampsia, as well as the formation of multiple organ pathologies, including damage to the central nervous system of the fetus [8].

Uncontrolled STIs, such as chlamydia, gonorrhea, syphilis, herpes and HIV, can cross the placenta or be transmitted during childbirth, which can lead to infection of the fetus. This can cause a number of problems, including congenital infections, intrauterine growth restriction, premature birth, and an increased risk of serious complications for the mother. The presence of cytomegalovirus and chlamydial infections in parents leads to an increased risk of congenital lesions of the central nervous system; children from such families have lower rates of physical development in the first years of their life [9]. The results of studies conducted in the USA implied a direct connection of chlamydial infection with an increased risk of stillbirth and spontaneous abortion [10, 11].

Controlling STIs in pregnant women is important for public health. This includes timely diagnosis and treatment of infections, screening for STIs during pregnancy, and provision of appropriate education and preventive measures [12, 13].

From 2020 to the present, the situation can be characterized as new sociomedical conditions associated with the COVID-19 pandemic, measures to combat it, and their social consequences. At this time, the coverage of the population with screening diagnostics decreased. In the population's perception of public health problems, some people strengthened their attention to protecting and promoting health, while among other part of the population, the spread of dissident movements increased [14].

Many Russian and foreign authors point to a lack of awareness about the problem of STIs in pregnant women [15, 16, 17]. The period of pregnancy under the supervision of a woman by a doctor creates conditions for personalized preventive work, taking into account her profession and education level [18], reproductive health issues in her anamnesis [17], her family, as well as psychological and behavioral factors. When studying the awareness of pregnant women about the problem of STIs, it is important to consider the features of the new sociomedical situation. Results of an analysis of the work of prenatal care clinics in St. Petersburg in 2020–2021. showed a more responsible attitude of women towards maintaining pregnancy (reduction in the frequency of abortions). At the same time, the coverage of pregnant women with prenatal medical care has declined, and the proportion of women admitted under the supervision of prenatal care clinics during pregnancy up to 12 weeks decreased from 84% in 2019 to 70% in 2020 [19].

When planning the study, we proceeded from the fact that pregnancy presumes a woman's increased attention to her reproductive health and the presence of conditions for identifying STIs during medical supervision. Previous studies reported that education profile significantly influences public awareness of sociomedical issues [17, 18].

Table 1. Sociodemographic characteristics of respondents

Sociodemographic characteristics	*Proportion, %*
Age, years old	
18 – 19	3.1%
20 – 24	17%
25 – 29	26.6%
30 – 34	25.1%
35 and more	28.2%
Education level	
High school	1.9%
Community college	25.9%
University	72.2%
Education profile	
Medicine and biology	34.4%
Humanities, technology, other	65.6%

The *objective* of our study is to analyze the body of knowledge and attitudes of women towards the prevention, diagnosis and treatment of STIs during pregnancy in post-pandemic conditions (after COVID-19) and to highlight the differences that formed depending on their education profile (presence or absence of professional knowledge in the field of medical or biological sciences).

Material and Methods

In 2022, when most anti-epidemic restrictions were cancelled, we carried out a survey on a sample of 518 pregnant women (patients of level II and III obstetrics and gynecology facilities in the Kursk, Belgorod, Moscow, and Voronezh oblasts. The processing of the obtained data was carried out within the framework of the project funded by the Russian Science Foundation grant #23-28-10301, *Sociodemographic Features of Epidemiology and Prevention of Sexually Transmitted Infections and Substance Use Disorders in Youth in New Sociomedical Conditions*, https://rscf.ru/project/23-28-10301. Such sample size corresponded to the significance level of the results of 95% and was representative in terms of age, education profile, and the ratio of primiparous to multiparous (*Table* 1).

From the total sample, two comparable subgroups of women were identified differing in terms of their educational profile: 178 females with education in medicine/biology and 340 with education in the field of humanities or technology without professional medical and biological knowledge, the presence of which is the basis for the contrast between the compared subgroups. The number of subgroups is sufficient for use in exploratory studies [20]. The survey questions used in the study were previously used in sociomedical studies of other youth groups with the support of the administration of the Kursk Oblast.

Our questionnaire included the following questions:

- Whether the woman was tested for STIs in preparation for conception;
- Whether her spouse/partner was examined for STIs in preparation for conception;
- About interest in regular screening examinations for STIs;
- About the supervision in the prenatal care clinic during pregnancy;
- About intentions when STI symptoms occur (with answer options regarding the preferred facilities to seek help at or attitude to self-medication);
- About readiness to seek medical help for the treatment of STIs together with a partner/spouse (with answer options regarding the limiting factors of such decision).

The survey was conducted with the assistance of the management of medical facilities. The voluntary independent consent of patients to participate in the study (in the absence without the presence of staff) was obtained via filling out questionnaires on the Google Forms platform. Data processing was based on the calculation and comparison of relevant indicators (the proportion of respondents for each answer option from the total number of respondents (or a specific subgroup) and an assessment of the significance of differences using parametric statistical methods (Student's t-test). In the course of data processing, we employed the built-in capabilities of the Google Forms platform and online calculators at www.medstatistic.ru.

Results

Two-thirds (66.8%) of surveyed women planned pregnancy and underwent a preliminary medical examination for STIs. Such screening was more characteristic (p=0.025) for women with a natural science education (74.2%) vs. those with education in humanities or technology (62.9%).

Regular examinations for the purpose of prevention and detection of STIs, including outside pregnancy or when planning it, was higher in the group with education in medicine/biology: 75.3% vs. 56.3% (p=0.007) (*Figure* 1).

The shares of families in which men underwent routine examination for STIs were comparable between subgroups of women based on education and profession: 52.8% of spouses of women with education in medicine or biology vs. 50.0% of spouses in case of women with education in humanities or technology (p>0.05). It was the woman's attitude and conviction that became the decisive motive for examining the male spouse much more often in women with professional knowledge about health: 53.2% vs. 40.0% in families where women received education in humanities or technology (p=0.014). It is worth noting that among women with a natural science education, 1.1% gave positive test results for STIs vs. twice as much (2.4%) in women with education in humanities or technology; however, taking into account the sample sizes, this difference was not statistically (p>0.05).

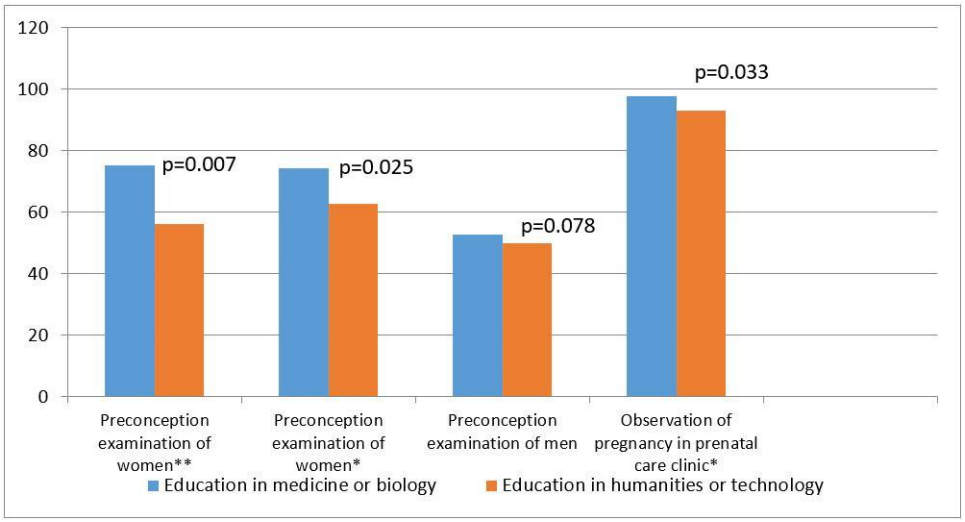

Figure 1. Interest in preventive screening examinations, %. *, p≤0.05; **, p≤0.01.

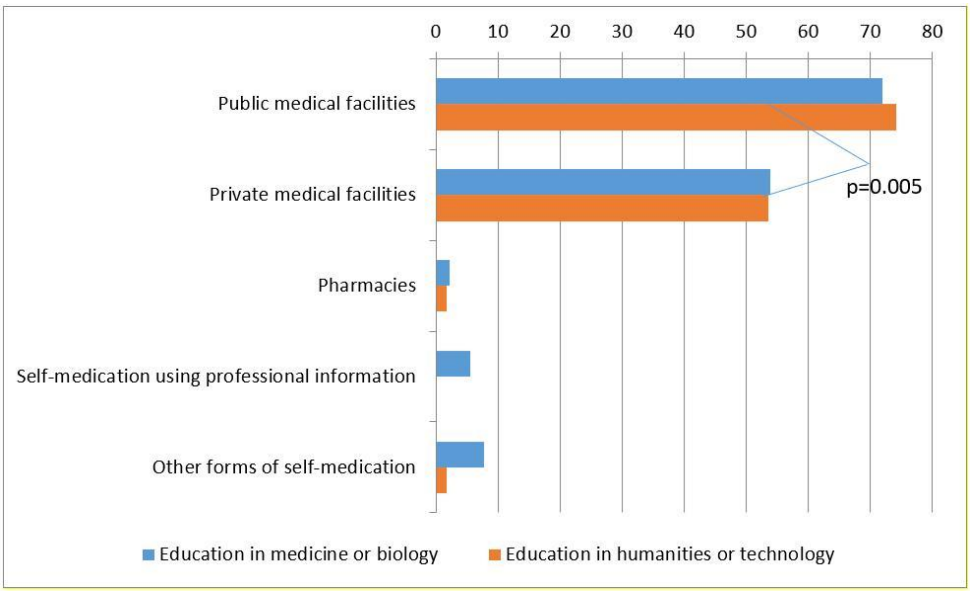

Figure 2. Preferred facilities for women to seek help for sexually transmitted infections.

The coverage of pregnant women with prenatal care was higher in the humanities/technology subgroup: 97.7% vs. 93.2% of respondents with education in medicine/biology (p=0.033). Also, these women completed preenatal care programs more often (95.9% vs.91%, p≤0.023).

If symptoms of a sexually transmitted infection appeared, the overwhelming number of women were ready to seek help in medical facilities: in the humanities/technology subgroup their share was 99.5%, while in the biology/medicine subgroup it was significantly lower (94.4%, p=0.035). If there was professional knowledge, the answers included options such as self-medication using scientific publications and guidelines, which can be considered a somewhat professional approach. At the same time, female doctors and biologists expressed a desire to turn to traditional medicine, but such cases were rare (*Figure 2*).

We compared the incidence of demand for services at different healthcare facilities. Among pregnant women, the level of trust in the public venereological service was significantly higher than in private clinics (p=0.005). The scope of education did not matter in this issue: 71.9% of women with education in medicine/biology vs. 74.1% of women with other education profiles intended to apply to public dermatovenereology facilities; 53.9% vs. 53.5%, respectively, tended to attend private clinics (p>0.05).

The proportion of women who were ready to seek medical help for STI treatment together with their partner was significantly lower among women with biomedical education: 93.3% vs. 98.2% (p=0.027). The main problem in this issue was psychological: the fear of losing trust, which was considered relevant by 3.4% of women with biology/medicine background and a significantly smaller proportion of other females (0.6%, p = 0.035).

Discussion

Conscious preparation of a woman for conception, along with medical supervision of her pregnancy, constitutes the basis for the timely detection of STIs. Our results indicated that the majority of respondents were focused on correct and productive contact with the healthcare system. They were willing to undergo screening. They understood the need for medical preparation for pregnancy. They perceived the dangers of STIs and the need to seek help from specialists if a problem arose. At the same time, respondents somehow underestimated the importance of examining a male spouse/partner.

Published studies of representative populations of younger people have generally provided similar data to ours: 60–70% understood the need for regular screening examinations. Furthermore, outside the pregnancy, no more than 15% were independently examined (these were the results for all subgroups based on gender, age, or education profile [21]. Moreover, more than two-thirds of pregnant women were examined at their own request several months before conception. This suggested that they were consciously preparing for motherhood. Medical preparation for conception was significantly more often present in women with education in medicine/biology. Among those, there was also an increased interest in screening examinations outside of pregnancy. Consequently, an important motivating factor in the prevention of STIs in women was their responsibility for the health of the unborn child, supported by medical knowledge. This finding should be used in education and consultations.

Wife's education was not a significant factor in encouraging men to medically prepare for fatherhood. This was evidenced by the insignificant difference between the proportions of men routinely examined for STIs in families of women with biomedical education vs. families of women with other education profiles. This finding was confirmed by the leading role of men's personal knowledge about STIs, rather than motivation on the part of women, revealed in our survey [22].

Women with education in humanities or technology were more disciplined in terms of registering with prenatal care clinics and fulfilling all required medical procedures during pregnancy. It was logical to explain this pattern by the fact that, having a relevant education profile, some women independently coped with self-control of their condition during a normal pregnancy. This was also due to the high prevalence of attitude towards self-medication for STIs in the group with biomedical education.

Research on a representative sample characterizing young individuals of the European Russia indicated an increase in interest in the services of private medical facilities for the treatment of STIs during the pandemic. The share of those who preferred using private medical services increased from 48-52% in the pre-pandemic years to 70-75% in 2020-2021. In 2020-2021, respondents 18-30 years of age exhibited similar levels of trust in public and private medical facilities [23]. At the same time, this study revealed a higher level of trust in pubic medical services among pregnant women. This may be due to women's positive experiences with public health care during pregnancy. It is important to note that the choice of preferred clinic barely depends at all on education and profession.

The majority of respondents of all professions were aware of the importance of the STI problem for both partners. Quantitative data on this issue in pregnant women were close to data from other groups of young people, both in 2016-2017 and during the pandemic. The specific feature of 2020-2021 was that closer communication during the period of strict anti-epidemic measures led to an increase in psychological problems in terms of maintaining intimate relationships against the background of the COVID-19 [23-25]. This trend was confirmed in foreign countries [26].

Conclusion

In general, our study showed a fairly high level of awareness among pregnant women about the STIs. We established that preparation for conception and pregnancy were the factors resulting in increased attention to maintaining reproductive health. Similarly, understanding responsibility for the successful course of pregnancy and the birth of a healthy child was an important factor in the prevention of STIs.

A beneficial feature of the subgroup of women with education in biology/medicine was a more conscious attitude towards STI screening. A disadvantageous feature of this subgroup was the high prevalence of beliefs in the sufficiency of one's own knowledge and the effectiveness of self-medication. This may cause late seeking of medical help and neglect of the disease.

In the context of the COVID-19 pandemic, a desire for confidentiality and personalized preventive approach has emerged, which led to an increase in interest in the services of private clinics among young people outside of pregnancy; but the presence of pregnancy increased their confidence in public health care, which was not associated with their education profile.

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Conflict of interest

The authors declare no conflicts of interest.

Author contributions

All authors participated in developing the concept and design of the study, and manuscript preparation. The final version of the manuscript was approved by all authors.

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