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Features of the attitude to vaccination against COVID-19 in Russia

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ABSTRACT

Background. 1.5 years after the registration of the first vaccine against COVID-19 in Russia, national herd immunity reached only 49.7%. It is obvious that the success of vaccination measures depends on the readiness of the population for immunization and their attitude to the vaccine.

The aim of the study was to research the attitude to vaccination against a new coronavirus infection among various socio-demographic population groups in Russia.

Materials and methods. The study was conducted online by distributing via social networks a direct link to an electronic form with questions about the attitude to the COVID-19 pandemic and vaccination. A total of 2,786 people (of whom 66.9% were women) aged 16 to 77 years took part in the online survey.

Results. It was shown that distrust of vaccination was more often expressed by women and younger people. A targeted approach to these population groups can improve the results of awareness-raising and preventive measures in the context of an ongoing pandemic.

Keywords: pandemic, COVID-19, coronavirus infection, attitude to vaccination, awareness-raising and preventive measures

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Особенности отношения к вакцинации против COVID-19 в России

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РЕЗЮМЕ

Введение. Спустя 1,5 года с момента регистрации первой вакцины против COVID-19 в России, коллективный иммунитет населения страны достиг лишь 49,7%. Очевидно, что успешность мероприятий по вакцинации зависит от готовности населения к иммунизации и его отношения к вакцине.

Целью исследования стало изучение отношения к вакцинации против новой коронавирусной инфекции среди различных социально-демографических групп населения России.

Материалы и методы. Исследование проводилось в онлайн-формате посредством распространения в социальных сетях прямой ссылки на электронную форму с вопросами об отношении респондентов к пандемии COVID-19 и вакцинации. В заполнении формы онлайн-опроса приняли участие 2 786 человек (66,9% женщин) в возрасте 16–77 лет.

Результаты. Показано, что недоверие к вакцинации чаще проявляли женщины и лица более молодого возраста. Применение таргетированного подхода к данным группам населения может улучшить результаты информационно-профилактических мероприятий в условиях продолжающейся пандемии.

Ключевые слова: пандемия, COVID-19, коронавирусная инфекция, отношение к вакцинации, информационно-профилактические мероприятия

Конфликт интересов. Авторы декларируют отсутствие явных и потенциальных конфликтов интересов, связанных с публикацией настоящей статьи.

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INTRODUCTION

According to the World Health Organization (WHO), at the end of March 2022, a total of 468,859,830 COVID-19 cases and 5,792,618 related deaths were registered worldwide [1], and these figures continue to grow. As of March 2022, about 17,803,503 COVID-19 cases and 368,025 related deaths were registered in Russia [2]. The number of new coronavirus cases varies significantly between countries. One of the main reasons for this are administrative orders and recommendations of health services to slow the spread of coronavirus disease [3].

Mass vaccination is the most important measure to combat COVID-19, since the use of the vaccine allows to create stable population immunity [4, 5]. However, success of vaccination measures depends on the readiness of the population for immunization and their attitude to the vaccine. Currently, there is some distrust of vaccination and medical technologies in general

among various social groups [6, 7]. The origins of this distrust date back to the 1980s–1990s when a whole movement of anti-vaccinationism emerged, whose members conduct quite aggressive anti-vaccination propaganda. Russia is no exception in this regard. A lot of reports and media coverage have repeatedly mentioned low rates of vaccination among citizens, despite the availability of free vaccines, as well as restrictions regarding the spread of COVID-19 [8, 9]. The first vaccine in Russia was registered on August 11, 2020; 1.5 years later, Russian herd immunity reached only 49.7% (data as of March 25, 2022) [10].

Thus, when after a long period of time society faced an unprecedented new pandemic, characterized by a relatively high risk of death or disability, there was a unique opportunity to analyze what the attitude of the population to medical technologies and, in particular, to vaccination is to protect against a new coronavirus infection. To date, an extensive body of empirical data has been accumulated on psychological, socio-demographic, and behavioral predictors of vaccination decisions [11–13]. For example, common factors associated with refusal and doubts about influenza vaccination include: the idea that the risk is low, uncertainty about the effect or safety of the vaccine, a general negative attitude towards vaccines, denial of the social significance of vaccination and the disease itself, low socioeconomic status, and a lack of knowledge about vaccination [11–13]. It is possible that similar factors are the reason for the low rate of COVID-19 vaccination in Russia. Nevertheless, there are very few studies on factors influencing the attitude to COVID-19 vaccination in the available literature, and their reliability is questionable due to the small sample size.

The aim of the study was to research the attitude to COVID-19 vaccination among various socio–demographic groups of the Russian population.

MATERIALS AND METHODS

To study the attitude of the population to COVID-19 vaccination, in January–March 2021 we conducted a survey in the form of online testing on the platform ivik.org. The respondents were asked to fill out an electronic questionnaire in which they independently answered questions to clarify their attitude to measures aimed at preventing the spread of the novel coronavirus infection.

All respondents signed an informed consent to participate in the study and publish the data in an anonymous and generalized form. The sample was collected by advertisements in social media in accordance with standard network methods for recruiting respondents [14, 15]. A total of 2,786 people aged 16–77 years took part in the study (the average age was 29.57 ± 10.86 years), including 1,864 women (66.9%) and 922 men (33.1%). A total of 42 (1.5%) people had incomplete secondary education, 415 (14.9%) people had secondary general education, 187 (6.7%) people – secondary special education, 1,197 (43%) people – incomplete higher education, and 945 (33.9%) respondents – higher vocational education. The study involved residents of the following federal districts of Russia: Central (40.1%), Northwestern (10.4%), Ural (5.1%), Volga (27.4%), Southern (10.5%), and Siberian (6.5%). Out of 2,786 people, 734 (26.3%) reported having COVID–19, of whom 93% experienced the disease in a mild form.

The results were processed using the Statistica 12 software package. Descriptive analysis methods were used. The data are presented in the form of absolute and relative values of n (%). To identify the significance of the differences in parameters between the groups, the Pearson's $\chi 2$ test was used. The Spearman's rank correlation coefficient (r_s) was used to assess correlations between the studied parameters.

RESULTS

The analysis of the questions reflecting the respondents' attitude to COVID-19 vaccination showed mixed results (Fig. 1). To the question "I will agree to COVID-19 vaccination", 1,604 (57.6%) respondents answered "disagree", 551 (19.8%) people answered "agree", the remaining 631 (22.6%) respondents neither agreed nor disagreed with the statement. At the same time, 1,389 (49.9%) respondents did not agree that vaccination should be mandatory, while only 729 (26.2%) people supported mandatory vaccination. Moreover, 1,076 (38.6%) people did not believe that "the vaccine can help control the spread of COVID-19", however, 829 (29.8%) people agreed with this statement.

Then the survey participants were divided into two groups based on gender. The data obtained as a result of the survey, depending on gender, are presented in Table 1.

According to the survey, women were more likely to be against vaccination than men (61 vs. 50.7%; $\chi 2 = 40.72$; $p < 0.001$); women more often expressed doubts about the effectiveness of vaccination (41.7 vs. 32.4%; $\chi 2 = 37.38$; $p < 0.001$) and also more often disagreed with the statement that vaccination should be mandatory (52.8 vs. 43.9%; $\chi 2 = 30.29$; $p < 0.001$).

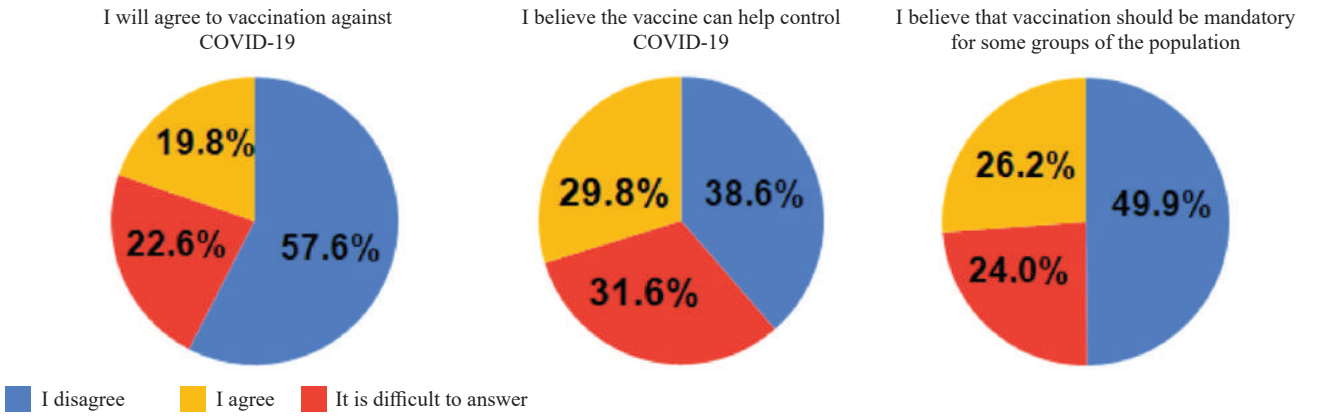

Figure. The attitude of the respondents to COVID-19 vaccination

Table 1

Results of the survey on the attitude to COVID-19 vaccination based on gender, *n* (%)

Do you agree with the following statements?	Response options	Men, *n* = 922	Women, *n* = 1,864	Total, *n* = 2,786
I will agree to COVID-19 vaccination	I disagree	467 (50.7%)	1,137 (61%)	1,604 (57.6%)
	Neither agree nor disagree	213 (23.1%)	418 (22.4%)	631 (22.6%)
	I agree	242 (26.2%)	309 (16.6%)	551 (19.8%)
I believe the vaccine can help control the spread of COVID-19	I disagree	299 (32.4%)	777 (41.7%)	1,076 (38.6%)
	Neither agree nor disagree	282 (30.6%)	599 (32.1%)	881 (31.6%)
	I agree	341 (37%)	488 (26.2%)	829 (29.8%)
I believe that vaccination should be mandatory for some population groups	I disagree	405 (43.9%)	984 (52.8%)	1,389 (49.9%)
	Neither agree nor disagree	218 (23.6%)	450 (24.1%)	668 (23.9%)
	I agree	299 (32.4%)	430 (23.1%)	729 (26.2%)

Then the respondents were divided into 6 groups based on age: group I – young people under the age of 20 (927 individuals), represented by schoolchildren and first- and second-year students; group II – respondents aged 20–29 years (1,219 people), represented by undergraduates, Master's and post-graduate students; group III – people aged 30–39 years (279 people), group IV – people aged 40–49 years (223 people), and group V – people aged 50–59 years (86 people) – people of working age; group VI – respondents aged 60 years and older (52 people), who are all retired. The data obtained as a result of the survey are presented in Table 2 arranged by the age of the respondents.

Table 2

Results of the survey on the attitude to COVID-19 vaccination based on age, *n* (%)

Do you agree with the following statements?	Response options	Age groups					
		I < 20 years	II 20–29 years	III 30–39 years	IV 40–49 years	V 50–59 years	VI 60 and older
I will agree to COVID-19 vaccination	I disagree	551 (59.4%)	755 (61.9%)	138 (49.5%)	113 (50.7%)	26 (30.2%)	21 (40.4%)
	Neither agree nor disagree	221 (23.8%)	255 (20.9%)	75 (26.9%)	48 (21.5%)	22 (25.6%)	10 (19.2%)
	I agree	155 (16.7%)	209 (17.1%)	66 (23.7%)	62 (27.8%)	38 (44.2%)	21 (40.4%)
I believe the vaccine can help control the spread of COVID-19	I disagree	387 (41.7%)	498 (40.9%)	83 (29.7%)	75 (33.6%)	18 (20.9%)	15 (28.8%)
	Neither agree nor disagree	327 (35.3%)	376 (30.8%)	90 (32.3%)	59 (26.5%)	20 (23.3%)	9 (17.3%)
	I agree	213 (23%)	345 (28.3%)	106 (38%)	89 (39.9%)	48 (55.8%)	28 (53.8%)
I believe that vaccination should be mandatory for some population groups	I disagree	455 (49.1%)	629 (51.6%)	149 (53.4%)	107 (48%)	26 (30.2%)	23 (44.2%)
	Neither agree nor disagree	242 (26.1%)	288 (23.6%)	57 (20.4%)	46 (20.6%)	26 (30.2%)	9 (17.3%)
	I agree	230 (24.8%)	302 (24.8%)	73 (26.2%)	70 (31.4%)	34 (39.5%)	20 (38.5%)

According to the data from Table 2, it was found that older people (50 years and older, groups V and VI) more often than others agreed to get vaccinated ($\chi 2 > 34.78$; $p < 0.001$), and in general there was a direct correlation between the age of the respondents and the percentage of those who agreed to get vaccinated ($r_s = 0.244$; $p = 0.018$). A similar trend was observed with regard to the effectiveness of vaccination ($r_s = 0.322$; $p < 0.001$); older individuals (30 years and older, groups III and VI) more often agreed that the vaccine could help control the spread of COVID-19 (more than half of the respondents in each group agreed with this statement; $p < 0.05$). Nevertheless, in almost all the groups, with the exception of group V, the majority were against mandatory vaccination for some population groups, although the percentage of dissenters decreased with age.

Additionally, we analyzed the survey results depending on the level of education of the respondents. We identified five groups: I – individuals with incomplete secondary education (42 people), II – individuals with secondary general education (415 people), III – people with secondary vocational education (187 people), IV – respondents with incomplete higher education (1,197 people), and V – people with higher vocational education (945 people). The data obtained as a result of the survey are presented in Table 3 arranged by the level of education of the respondents.

Table 3

Results of the survey on the attitude to COVID-19 vaccination based on the level of education, *n* (%)

Do you agree with the following statements?	Response options	Groups by the level of education				
		I	II	III	IV	V
I will agree to COVID-19 vaccination	I disagree	29 (69%)	238 (57.3%)	121 (64.7%)	731 (61.1%)	485 (51.3%)
	Neither agree nor disagree	9 (21.5%)	97 (23.4%)	44 (23.5%)	265 (22.1%)	216 (22.9%)
	I agree	4 (9.5%)	80 (19.3%)	22 (11.8%)	201 (16.8%)	244 (25.8%)
I believe the vaccine can help control the spread of COVID-19	I disagree	23 (54.8%)	169 (40.7%)	87 (46.5%)	495 (41.4%)	302 (32%)
	Neither agree nor disagree	9 (21.4%)	133 (32.1%)	60 (32.1%)	414 (34.6%)	265 (28%)
	I agree	10 (23.8%)	113 (27.2%)	40 (21.4%)	288 (24.1%)	378 (40%)
I believe that vaccination should be mandatory for some population groups	I disagree	26 (62%)	192 (46.3%)	94 (50.3%)	601 (50.2%)	476 (50.4%)
	Neither agree nor disagree	8 (19%)	115 (27.7%)	50 (26.7%)	294 (24.6%)	201 (21.3%)
	I agree	8 (19%)	108 (26%)	43 (23%)	302 (25.2%)	268 (28.4%)

According to the data presented, the level of education affected the attitude to the effectiveness of vaccination – the majority of respondents with higher vocational education (group V) agreed that the vaccine could help control the spread of the disease (40 vs. 32%). Besides, this group had the highest percentage of those who agreed to vaccination (25.8%) and introduction of mandatory vaccination for some population groups (28.4%).

DISCUSSION

The COVID-19 pandemic has brought unprecedented challenges for society [14, 16]. Existing health problems among vulnerable population groups may worsen multiple times under the influence of new waves of coronavirus infection [16–18]. Despite this, most of the respondents surveyed had a negative attitude to COVID-19 vaccination (57.6%) or could neither agree or disagree with it (22.6%), which may be due to claims about the quality and effectiveness of the vaccine (38.6%), as well as distrust of vaccination in general. Only a small number of the respondents (19.8%) expressed readiness to use the vaccine, while the spread of opinion correlated with gender and age.

Doubts about vaccination and uncertainty about its necessity and effectiveness are more typical for women than for men. Thus, according to the data obtained, women in comparison with men mostly disagreed to get vaccinated (61 vs. 50.7%), as well as doubted about the effectiveness of the vaccine itself (41.7 vs. 32.4%). For example, the majority of men agreed with the statement that the vaccine could help control the spread of COVID-19 (37 vs. 32.4%), while the majority of women tended to assume the opposite (26.2 vs. 41.7%). This largely corresponds to the data of other studies [19–21].

It was also found that a significant proportion of young people under the age of 49 (55% on average) who were not ready for immunization was opposed to a relatively large proportion of those who agreed to get vaccinated among older people (42.3% on average). This finding is a relatively positive trend, since older people are at risk of developing a serious illness and acute respiratory distress syndrome from the novel coronavirus infection [22]. A similar trend was observed with regard to the effectiveness of vaccination in different age groups. It is also worth noting that the majority of the respondents with higher vo-

cational education agreed that the vaccine could help control the spread of COVID-19. In addition, in this group of the respondents, the highest percentage of people who agreed to get vaccinated was noted.

CONCLUSION

According to the Levada Center [23], even sufficient information and the second wave of the pandemic at the beginning of March 2021 did not make the population confident about getting vaccinated. Our study showed that distrust of vaccination was more often expressed by women and younger people. A targeted approach to these population groups can improve the results of awareness-raising and preventive measures in the context of the ongoing pandemic.

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Authors contribution

Goiko V.L., Myagkov M.G. – conception and design. Myagkov M.G. – methodology, research management. Naidenko D.G., Goiko V.L. – implementation of the research. Galkin S.A. – analysis of the data, drafting of the article. Kornetov A.N. – revision of the manuscript.

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