

Perceptions of the COVID-19 Pandemic and Psychological Distress amongst Russian Citizens during Spring 2020

Представления о пандемии COVID-19 и психологический дистресс у граждан России весной 2020 года

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Original research

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ABSTRACT

BACKGROUND: The COVID-19 pandemic has affected the emotional state of a wide range of people around the world. Studying the social and psychological factors of psychological distress is required in the context of the pandemic in different countries. This study aims to explore the relationship between the emotional state of Russian citizens during the COVID-19 pandemic and their perceptions of it, and its dependence on various socio-demographic characteristics.

METHODS: A socio-demographic questionnaire, the Russian version of the Perceived Stress Scale, the State Scale from Spilberger State-Trait Anxiety Inventory, and the modified version of the Brief Illness Perception Questionnaire were used for the purposes of this study. The data was analyzed via descriptive statistics, ANOVA, Exploratory Factor Analysis, Correlation Analysis, Scale Consistency Analysis, and Structural Equation Modeling (Path Analysis Method).

RESULTS: The study sample consisted of 1192 Russian-speaking respondents. The findings suggest that psychological distress affects all components of the ideas about the pandemic. The "Psychological distress" variable positively influences the "Threat to life" and "Fear of an unknown disease" components of the ideas about the pandemic, whereas the "Control" component (ideas about the ability to control events) is ambivalent. On the one hand, the severity of psychological distress reduces the idea of being able to control events; on the other, the psychological distress experienced increases the feeling of threat and uncertainty, and stimulates the control of these feelings to be realized. In addition, significant differences were revealed in the nature of perceptions of the pandemic and psychological distress, as dependent on gender, age, type of employment, daily routine during self-isolation, income, as well as a fear of possible stigmatization with regard to COVID-19. It has been shown that underestimating the disease leads to improvement of psychological well-being. However, respondents who underestimated the danger of coronavirus paid less attention to the measures taken against the virus. If the respondent had relatives infected with COVID-19, they were found to perceive the COVID-19 pandemic as more threatening and less understandable.

CONCLUSIONS: Through assessing a level of threat and fear of an unknown disease, we defined that psychological distress has a direct and mediated influence on the feeling of control over the pandemic. However, the results on the role of psychological distress and perceptions of the COVID-19 pandemic, taken together, appear rather contradictory. Further research exploring additional predictors of psychological well-being and distress during the COVID-19 pandemic is required to provide solid conclusions.

АННОТАЦИЯ

ВВЕДЕНИЕ: Пандемия COVID-19 оказала влияние на эмоциональное состояние широкого круга людей во всем мире, что делает необходимым изучение социальных и психологических факторов психологического неблагополучия населения разных стран. Настоящее исследование направлено на изучение связи между эмоциональным состоянием граждан России во время пандемии COVID-19 и их представлениями об этой пандемии, в их зависимости от различных социально-демографических характеристик.

МЕТОДЫ: Для целей исследования использовались: социально-демографический опросник, русскоязычная версия Шкалы воспринимаемого стресса, Шкала состояний из опросника тревожности Ч. Спилбергера, модифицированная версия Краткого опросника восприятия болезни. Данные были проанализированы с помощью методов описательной статистики, дисперсионного анализа, эксплораторного факторного анализа, корреляционного анализа, анализа согласованности шкал, а также с помощью моделирования структурными уравнениями (процедура путевого анализа).

РЕЗУЛЬТАТЫ: Выборку исследования составили 1192 русскоязычных респондента. Полученные данные свидетельствуют о том, что психологический дистресс оказывает значимое влияние на все составляющие представлений о пандемии. Так, переменная «Психологический дистресс» положительно влияет на такие компоненты представлений о пандемии, как «Угроза жизни» и «Страх неизвестной болезни», тогда как компонент «Контроль» (представления о способности контролировать события) испытывает на себе амбивалентное влияние. С одной стороны, тяжесть психологического дистресса снижает представление о способности контролировать события. С другой стороны, выраженный психологический дистресс усиливает чувство угрозы и неуверенности и, далее, стимулирует к реализации контроль над этим чувством. Кроме того, выявлены существенные различия в характере представлений о пандемии и в выраженности психологического неблагополучия в зависимости от пола, возраста, вида занятости, режима дня в период самоизоляции, уровня доходов, а также страха перед возможной стигматизацией в случае заболевания COVID-19. Показано, что психологическое благополучие выше у респондентов, недооценивающих степень опасности COVID-19. Однако респонденты, недооценившие опасность коронавируса, меньше внимания уделяли мерам защиты от вируса. Респонденты, имеющие родственников, болеющих или болевших COVID-19, воспринимали эту пандемию как более угрожающую и менее понятную.

ВЫВОДЫ: Оценивая уровень угрозы и страха перед неизвестным заболеванием, мы определили, что психологический дистресс оказывает прямое и опосредованное влияние на представления о способности контролировать события в условиях пандемии COVID-19. Однако результаты о вкладе психологического дистресса в представления о пандемии COVID-19, в совокупности, представляются довольно противоречивыми. Для получения убедительных выводов необходимы дальнейшие исследования, изучающие дополнительные предикторы психологического благополучия и дистресса во время пандемии COVID-19.

Keywords: *perception of the COVID-19 pandemic; cultural-historical concept; stress; psychological distress; pandemic threat; pandemic control; suspense; structural equation modeling; Russian citizens*

Ключевые слова: *представления о пандемии COVID-19; культурно-историческая концепция; стресс; психологический дистресс; угроза, исходящая от пандемии; контроль пандемии; неопределенность; моделирование структурными уравнениями; граждане России*

INTRODUCTION

It is now clear that the COVID-19 pandemic and its social restrictions have changed the lives of millions of people around the world in just a few months [1]. The pandemic, and its associated restrictions, not only carry the risk of death from the coronavirus but also put enormous psychological pressure on people. Living through a lockdown can pose a serious challenge to adapting and maintaining mental health [2, 3]. According to the first nationwide survey on well-being during the COVID-19 pandemic, almost 35% of 52,730 respondents in China claimed to have experienced psychological distress. Women were more prone to experiencing stress than men. People under the age of 18 experienced the least stress, while people aged 18–35 and the elderly experienced it the most. Similar results were shown in studies originating from Italy [4, 5], Spain [6, 7], Canada [8], the USA [9], Portugal, and Brazil [10]. A higher level of distress was observed following the release of official data on the increase in the number of cases and the high mortality rates from COVID-19, as well as the introduction of quarantine measures and lockdown regimes [6, 11]. It was emphasized that stress levels may considerably increase as the quarantine continues [6].

Getting such results inevitably brings the problem of perception of the COVID-19 pandemic to the focus of scientific research. Exploring perceptions of the COVID-19 pandemic in a sample of Chinese citizens revealed that specific, relevant, and accurate medical information on preventive measures contributed to lower levels of anxiety, stress, and depression [12]. At the same time, social media reports representing COVID-19 as a “killer virus” increased the sense of danger and reduced tolerance for uncertainty [13]. This is consistent with the fact that young people and those with a higher education may have higher levels of stress because they have greater access to a variety of information sources, including social networks [11]. Another Chinese study found that the awareness of the risk of getting sick and knowledge of managing the risk of infection became a powerful protective factor against emotional distress and a motive for preventive behavior [14]. A survey of the Italian population revealed a different picture. It was suggested that the higher awareness of COVID-19 leads people to become more insecure and adopt stricter preventive measures [15]. Thus, the existing literature cannot be considered consistent, which raises the question of possible cultural differences in perceptions of the COVID-19 pandemic. Furthermore,

although there are Chinese [14] and Italian [15] studies on this matter, we did not find any work on a Russian sample.

Perceptions of the COVID-19 pandemic can be hypothesized and constructed in the light of the following theoretical models: the concept of the Subjective Pattern of Disease (SPD) [16–18], and Leventhal’s model of disease perception [19].

From a clinical psychology point of view, the COVID-19 pandemic is in many ways unique. The conditions of the pandemic, with all its associated limitations and risks, provide researchers the opportunity to observe the development of a clinical and psychological phenomenon such as SPD [16–18, 20]. In this case, the SPD is formed based on the absence of any “experiential fabric” of the disease due to the activities of the mass media and the “circulation of rumors” emerging in society. However, the peculiarity of the current situation with regard to SPD formation lies in the fact that neither the general population nor the medical community had any clear “models of disease representations” by the time the pandemic was declared [21]. Thus, COVID-19 is a disease that not everyone gets but everyone prepares for and assesses the risks of. It can be assumed that, at the moment, we are witnessing the formation of a “Collective Pattern of Disease”, reflecting a system of collective ideas about the new type of virus. The presence of this “Collective Pattern of Disease” will undoubtedly be a contributory factor to the formation of individual SPDs in the context of the COVID-19 pandemic.

However, the SPD as a systemic entity seems to be an extremely difficult phenomenon to assess. In non-Russian studies, the basic category for describing self-regulation in relation to health and disease is considered to be “disease perception”, which is understood to be a combination of cognitive and emotional perceptions of disease [22, 19, 23]. The “disease perception” construct is certainly not as rich from a theoretical and methodological point of view, but is relatively simple compared to the SPD design, which makes it easier to assess, including the use of questionnaires as a primary research method. In light of this, H. Leventhal’s model of disease perception has become the most widespread in the modern scientific discourse. This model combines five key components: (1) identification of the disease; (2) the cause of the disease; (3) the duration (time perspective) of the disease; (4) the consequences of the disease; and (5) the controllability/curability of the disease. In later studies, three additional components were introduced into the “perception of

disease” construct: (1) the clarity of the disease; (2) concern for the disease; and (3) emotional responses to the disease. The use of this model and the resulting Disease Perception Questionnaire by E. Broadbent [22, 24] seems to be adequate for assessing COVID-19 perceptions in terms of both heuristics and content.

Against this background, the aim of this research is to explore the relationship between the emotional state of Russian citizens during the COVID-19 pandemic and their perceptions of it and its dependence on various socio-demographic characteristics.

METHODS

The aim of the study was addressed via online survey on the HT-Line.ru platform. An online format was chosen due to the need to maintain self-isolation (<http://www1.ht-line.ru/>). The surveys included the following parts:

1. A socio-demographic questionnaire containing 20 questions [21].
2. Perceived Stress Scale [25, 26].
3. Modified version of the Brief Illness Perception Questionnaire [21–23].
4. Modified version of State Scale from State-Trait Anxiety Inventory [27, 28].

We modified all the methods specifically for this study and tested their reliability via the Cronbach’s Alpha coefficient. This procedure is described in detail in the article published in July 2020 [21].

Sampling

The convenience sampling was adopted for the purposes of this study.

Recruitment

The online survey was conducted between April 27 and May 27, 2020. Participants were recruited through ads on social networks. Participants were eligible if: 1) their skill in reading in Russian was at an advanced level; 2) they were more than 18 years; 3) the presence of consent to the personal data processing, and 3) they showed an absence of symptoms and diagnosis of COVID-19 and community-acquired pneumonia at the time of the study. All of the above characteristics were indicated by the respondents themselves.

Procedure

The study took 10–20 minutes. Immediately after passing the online testing, respondents received their results

with individual interpretations and recommendations for improving their health. All participants gave their informed consent to participate in the study and to publish the data in an anonymous and summarized form. Questionnaires of respondents who did not pass all stages of testing were excluded from the study.

Research governance

The research is supported and ethically approved by the Russian Science Foundation, Project No. 21-18-00624.

Data analysis

The data were analyzed by descriptive statistics, ANOVA, Exploratory Factor Analysis, Correlation Analysis, Reliability Scale Analysis, and Structural Equation Modeling (Path Analysis Method) [29, 30]. The results were processed using the statistical software packages EQS 6.2 and SPSS 22.0.

RESULTS

The study involved 1,192 people. A description of the sample is presented in Table 1.

Table 1. The sample characteristics

Total	1,192
Sex	
Women	981(82%)
Men	211(18%)
Area of living	
Central District	58%
North-Western District	11%
Urals District	8%
Volga District	6%
Southern District	5%
Siberian District	4%
Far Eastern District	1%
Caucasus District	1%
Lived abroad	4%
No answer	3%
Education	
Below secondary level	1%
General secondary education	4%
Specialized secondary education	4%
Incomplete higher education	9%
BA, MA, or equivalent degree	75%
Ph.D. or equivalent degree	6%
Age: From 18 to 81 y.o. 36.5±11.0, (Q1=28, Q2=36, Q3=44).	

Factor extraction of the collective COVID-19 pattern categories

Since the questionnaires used in the study were modified to study the perception of the COVID-19 pandemic and the emotional state of people during it, we analyzed the factor structure of the questionnaires.

The factor structure of the modified version of the Brief Illness Perception Questionnaire [21–23, 31] was checked in the present study using Principal Component Analysis and the Rotation Method (Oblimin with Kaiser Normalization). Adopting these methods allowed us to highlight three factors that explained 59% of the total variance [21]: (1) Perceptions of the pandemic-related threats (further — Threat); (2) Perceptions of the control over the pandemic (further — Control); and (3) Perceptions of pandemic-related suspense (further — Suspense).

It was defined that Threat and Control factors are unipolar and positively correlated ($r=0.210, p < 10^{-10}$). The third factor, Suspense, turned out to be bipolar: at the positive pole there was the “Fear of an unknown disease”, and at the negative one, “Understanding the pandemic as a known phenomenon” (“Absence of fear”). The Pearson correlation between the first and third factors turned out to be positive ($r=0.115, p < 10^{-4}$). This can be interpreted as follows: the greater the perceived threat, the greater the fear of the unknown (or vice versa: the greater the fear of the unknown, the greater the perceived threat). No significant correlation was found between the second and third factors ($r=0.029, p=0.3$), i.e., no correlation was found between the possibility of controlling the pandemic and understanding what it is. Analysis of the nature of the relationships between the factors in the resulting three-part factor structure suggests that the life threat

assessment may have the status of an intermediate variable, mediating the relationship between suspense and pandemic control [21].

The factor structure of the modified version of the Perceived Stress Scale and State Anxiety Scale was explored in our previous study [21, 31] and indicated that “Psychological Distress” as a factor explains 73% of the general dispersion. Therefore, four factors, including Psychological Distress, Threat, Control, and Suspense were used as variables for further analysis. These factors represent centrally distributed normal values with a mean sample value of 0 and a standard deviation of 1 (Z-scores).

Construction of the Path Model defining relationships between psychological distress and perceptions of the COVID-19 pandemic

The Path analysis method was performed using the EQS 6.2 program to check the relationships between the selected variables [29, 30]. The created Path Model is represented below in Figure 1. All paths are significant and indirect effect is positive, significant and equal 0.186 ($\chi^2(1)=1.756, p=0.185, CFI=0.999, RMSEA=0.025$).

The model constructed reveals the direct and indirect effects of Psychological Distress on the perceptions of the Control over the pandemic, as mediated by Suspense and Threat. Psychological distress decreases the feeling of Control over a pandemic. At the same time, Psychological Distress can indirectly increase the feeling of Control through strengthening the feelings of Threat and Suspense. Thus, if a person perceives the pandemic as threatening, they will pay more attention to controlling it, but if a person’s mental state worsens, it may lead to a feeling of lack of control over the pandemic.

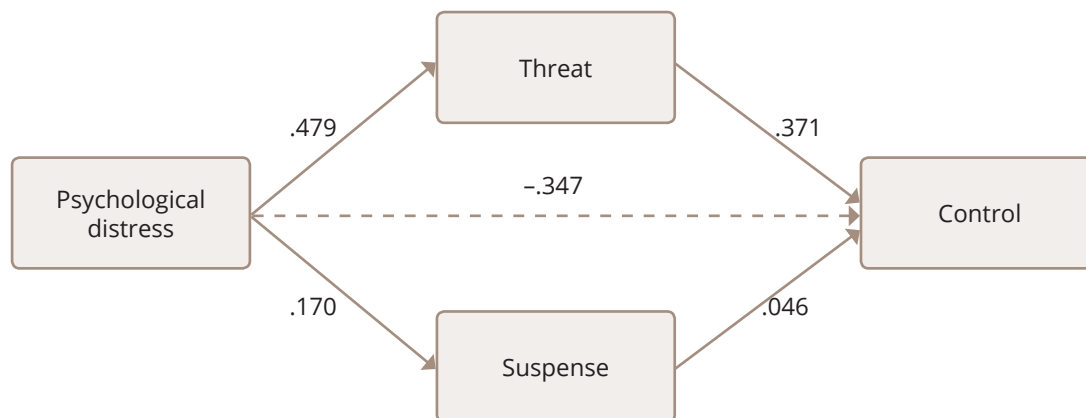


Figure 1. A Path Model of the perceptions of COVID-19 pandemic determined by Psychological Distress.

Table 2. Descriptive statistics for all the scales in the male and female samples (N=1192)

Scale name	Minimum	Maximum	Women (N=981)		Men (N=211)	
			Average	Standard deviation	Average	Standard deviation
Psychological distress	-2.07	3.32	0.09***	0.99	-0.41	0.93
Threat	-2.9	2.4	0.06***	0.98	-0.27	1.04
Control	-2.5	3.6	-0.04	0.98	0.20**	1.08
Suspense	-2.2	3.2	0.03	1.00	-0.13*	0.99

Note: Asterisks indicate the largest of the two compared values (mean or standard deviation), p-value <0.05 is marked *, <0.01 is marked **, <0.001 is marked ***.

The next step in our research was to identify socio-demographic predictors of the emotional state of the Russian-speaking population and its perceptions of the COVID-19 pandemic. Table 2 shows the means and standard deviations for all scales in the male and female samples. The variance in both subsamples do not significantly differ from each other or from the total sampled variance equal to one. However, the means in each subsample are significantly different from 0 and from each other. According to the Student's criterion (with the following check by the non-parametric Mann-Whitney criterion) significant differences in the values of the variables were established: Psychological Distress ($t=6.609$; $p < 0.0001$), Threat ($t=4.423$; $p < 0.0001$), Control ($t=-3.213$; $p < 0.0001$), and Suspense ($t=2.073$; $p < 0.038$). In the female sample, Psychological Distress, and perceptions of the Threat and Suspense are significantly more pronounced. Men tend to be calmer and think that the situation is under control and that they understand everything about this disease.

To determine how age affects psychological distress and perceptions of the pandemic, respondents were divided into four age groups. Figure 2 shows the number of each group and representations of the values on the scales under analysis in each group. Since the survey was conducted online, the vast majority of our respondents (over 99%) are people of active age, that is, under 64. Therefore, the age periodization in our survey is limited by this age. The results show that Psychological Distress ($F=8.647$; $p < 0.0001$) and Threat representations ($F=3.782$; $p < 0.010$), as well as the perceptions of Control ($F=11.984$; $p < 0.0001$), are mostly characteristic of younger respondents. It is worth noting that despite lower levels of Psychological Distress and Threat assessment in the older age group, the

Suspense is higher in this group, though not to a significant degree.

No significant differences by region of residence have been identified.

With regard to living arrangements, the results revealed a significant difference in Control scale ($F=4.598$, $p < 0.0001$). It was shown increasing in Control scale in the group of respondents "living with parents" and "living with friends" compared with groups of respondents living alone ($p < 0.002$), with a spouse ($p < 0.013$), with a spouse and children ($p < 0.0001$), and alone with children ($p < 0.001$) (Figure 3). The high indicators on the "Control" scale in these groups of respondents can be explained by the fact that this type of respondents are mostly from the group of young people (see the previous paragraph).

Since the respondents filled in the online questionnaires over the course of a month, this allowed the dynamics of the emotional state of the population over time to be estimated. Since the total number of respondents per day differed significantly on a day-to-day basis, we divided the study period into seven stages (Figure 4). The one-way ANOVA has revealed significant changes in the Psychological Distress variable at different stages of time ($F=2.815$; $p=0.010$). It is important to note that the highest level of Psychological Distress was observed after May 12, 2020 (Figure 4). This phenomenon might be explained by the highest level of COVID-19 infections being detected on that day (11,656 people) and the official end of the "non-working days" in Russia.

Respondents with a very low income had the highest level of psychological distress, and increasing income till the average causes decreasing distress. But after the average point, the psychological distress does not depend on income more (Figure 5).

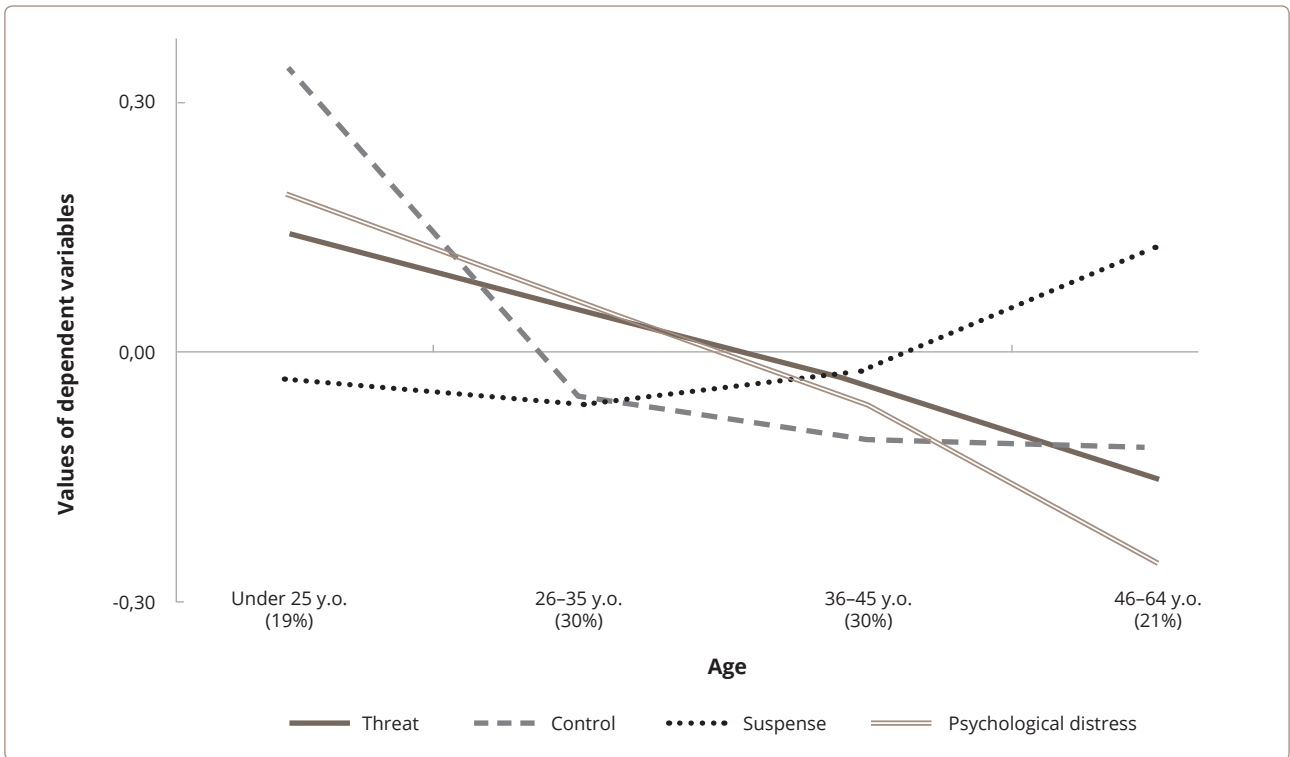


Figure 2. Levels of Psychological Distress and the perceptions of the COVID-19 pandemic in different respondents' age groups.

Note: Here and in the following figures, the values of dependent variables are plotted along the Y-axis. These variables are calculated as factor scores. Therefore, they are standardized and normally distributed variables (Z-score).

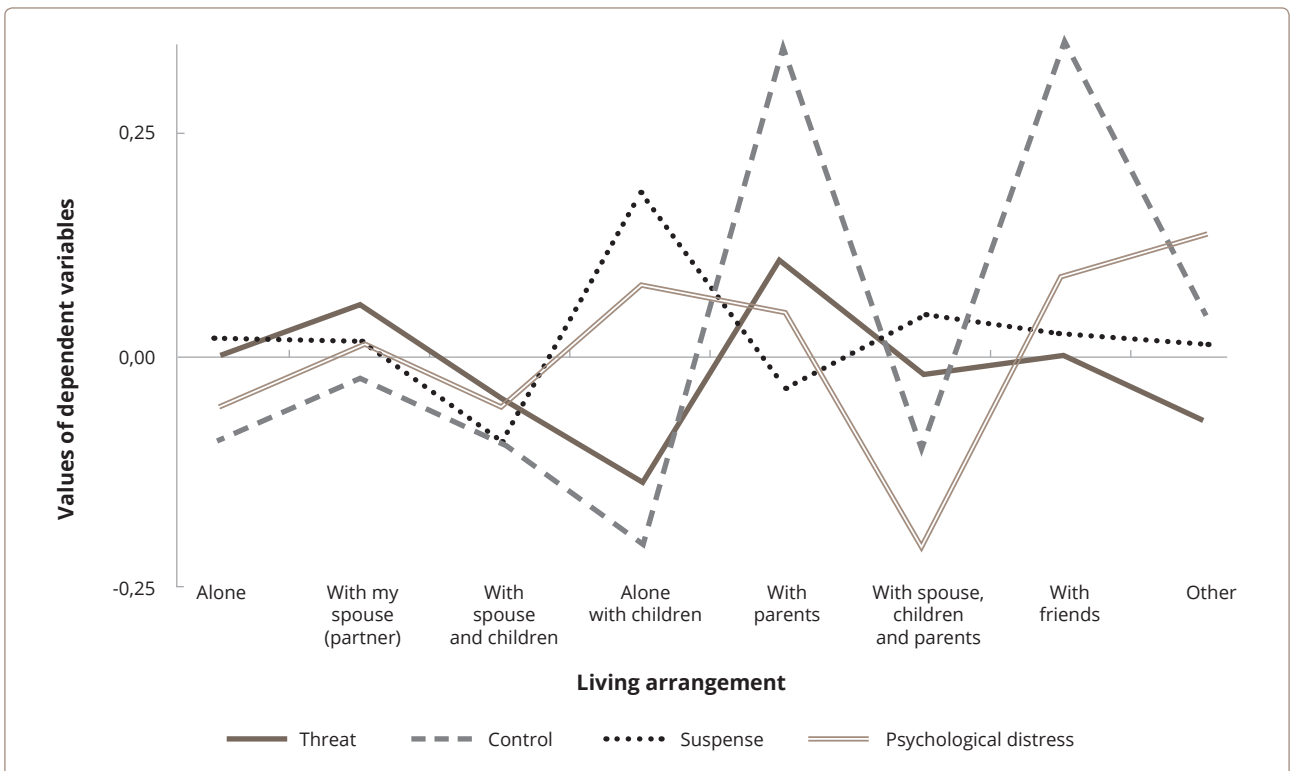


Figure 3. Levels of Psychological Distress and perceptions of the COVID-19 pandemic in different respondents' groups according to living arrangement.

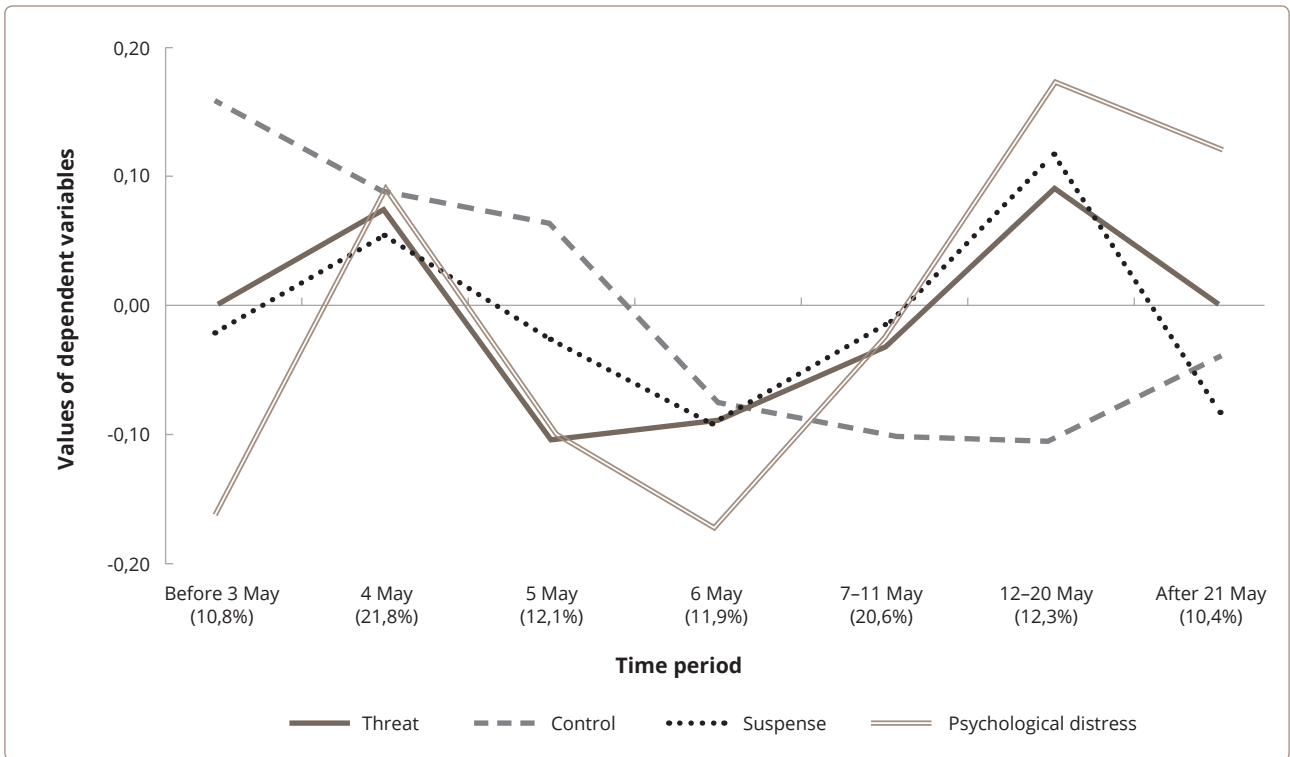


Figure 4. Dynamics of Psychological Distress and perceptions of the COVID-19 pandemic during the period from April 27 to May 27, 2020.

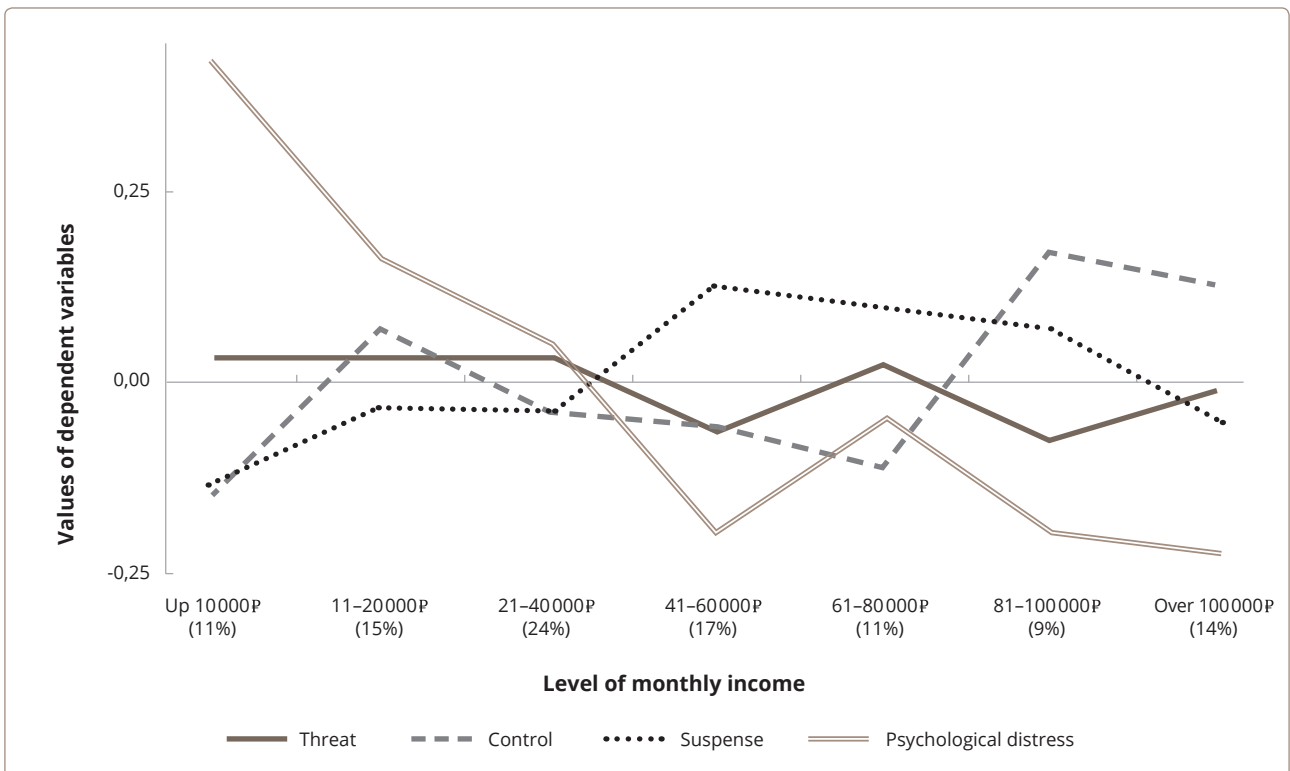


Figure 5. Changes in Psychological Distress and perceptions of the COVID-19 pandemic with the increase in income.

Significant differences across the scales were found depending on the type of employment at the time of the pandemic. For example, such variables as Threat ($F=3.102, p=0.009$), Control ($F=4.598, p <0.0001$) and Psychological Distress ($F=4.896, p <0.0001$) were less pronounced, whereas Suspense ($F=2.540, p <0.027$) was greater in the groups of respondents who “take care of the household/stay on maternity leave” ($p <0.034$) and “working” ($p <0.05$) compared to “non-working students” (Figure 6).

A reliable increase of values in the Psychological Distress variable ($t=-1.913, p <0.05$) was revealed for respondents answering the question about “job-related risks of contamination by virus” positively.

In response to the question “Do you stick to your daily regime in self-isolation?”, there was a significant increase in the Threat ($F=10.264, p <0.0001$), Suspense ($F=3.807, p <0.004$), and Psychological Distress ($F=26.772, p <0.0001$) variables if one is unable to stick to one’s daily routine. This was identified among the groups of respondents answering the question with either “yes” or “rather yes” compared to the groups of respondents answering “probably not” ($p <0.001$) or “not” ($p <0.006$) (Figure 7).

That is, those respondents who want to but cannot stick to their daily regime are the most stressed.

One of the questions asked whether the respondent had relatives who were ill or had already had COVID-19. 14% of the respondents stated that they had infected relatives. Comparative analysis of the severity of the scales analyzed for the groups of respondents with and without sick relatives by the Student’s criterion (confirmed by the non-parametric Mann-Whitney criterion) showed significant differences in the Threat ($t=-2.213; p <0.027$), Control ($t=-2.453; p <0.014$), and Suspense ($t=-2.050; p <0.041$) scales. In all cases, having a sick relative lead to higher scale values; that is, people with an ill relative are more likely to think about the pandemic, perceive the threat more acutely with greater suspense, and make more attempts to control the COVID-19 pandemic.

Gender differences in perceptions of the pandemic were found among respondents with or without sick relatives (Figure 8). Having an ill relative significantly increases the Psychological Distress for both women and men; however, the level of such remains lower in men, even in the case of a diseased relative.

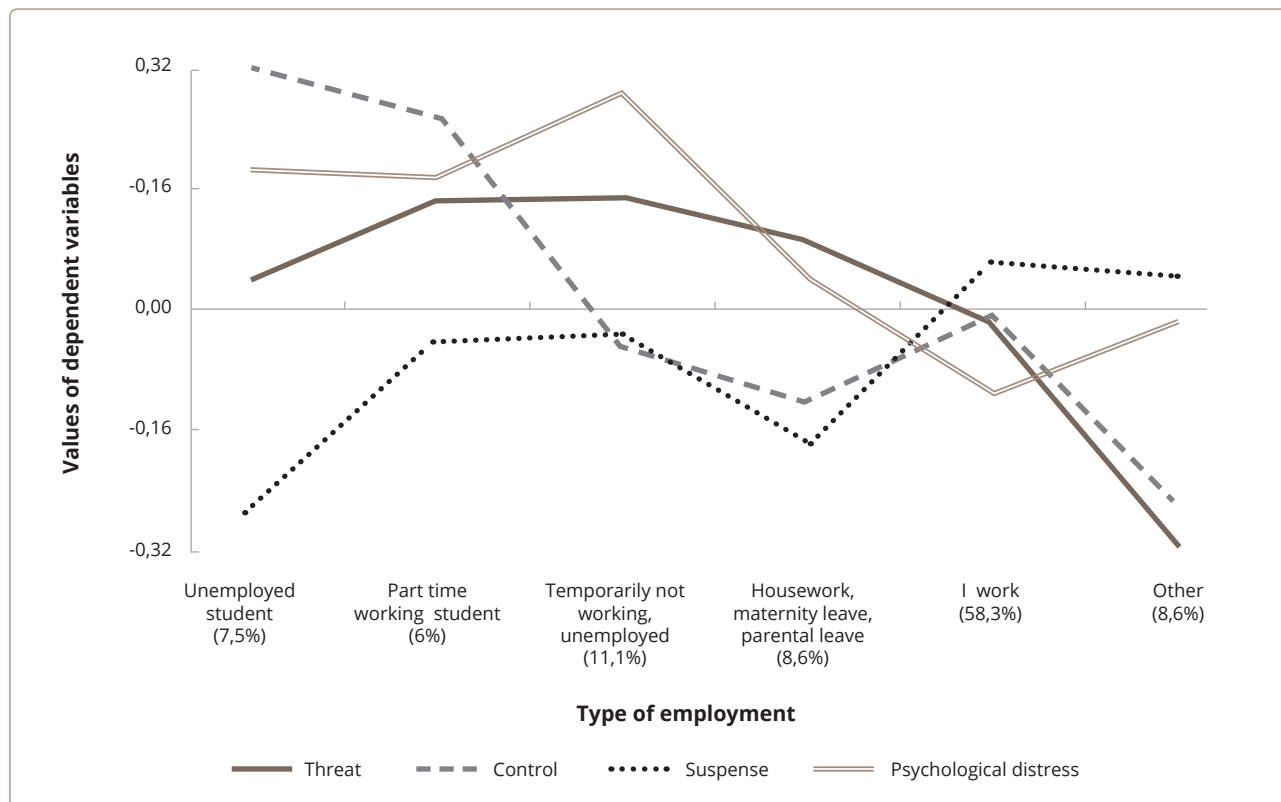


Figure 6. Levels of Psychological Distress and perceptions of the COVID-19 pandemic in different respondents' groups according to the type of employment.

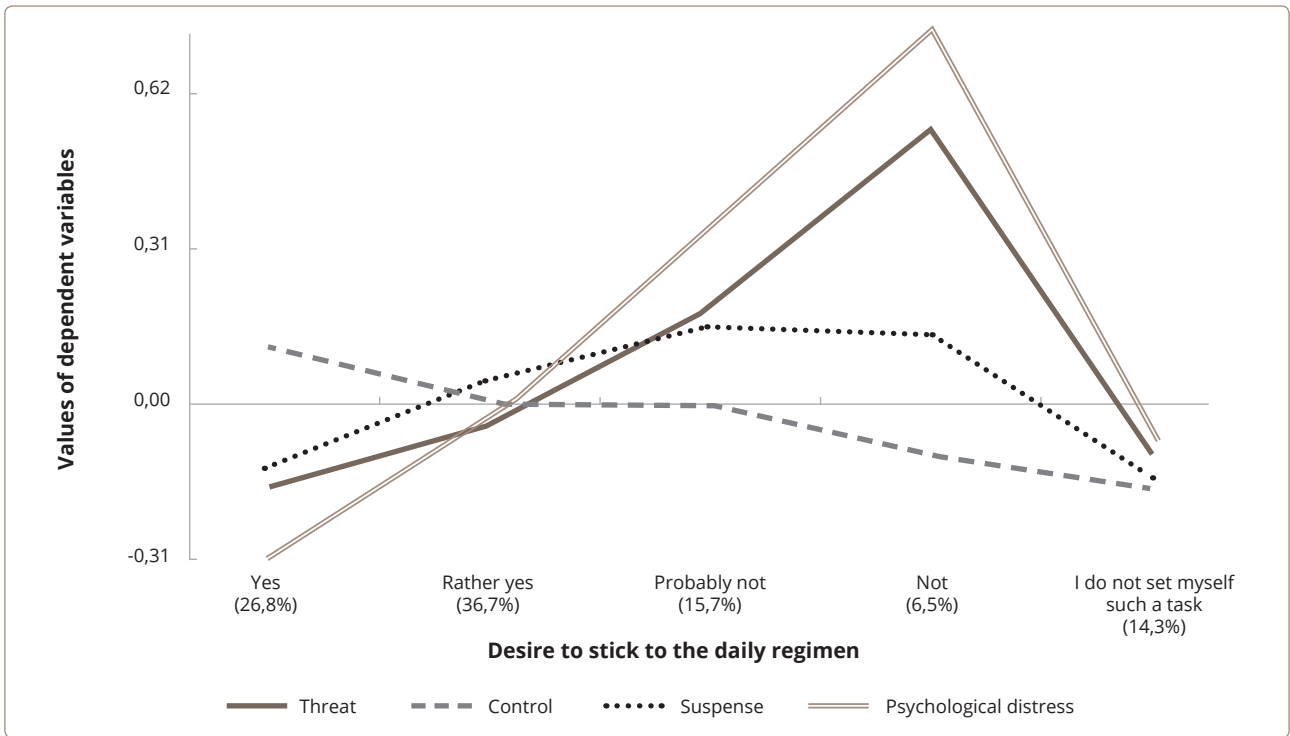


Figure 7. Levels of Psychological Distress and perceptions of the COVID-19 pandemic in different respondents' groups according to the question on the desire to stick to the daily regimen during the self-isolation.

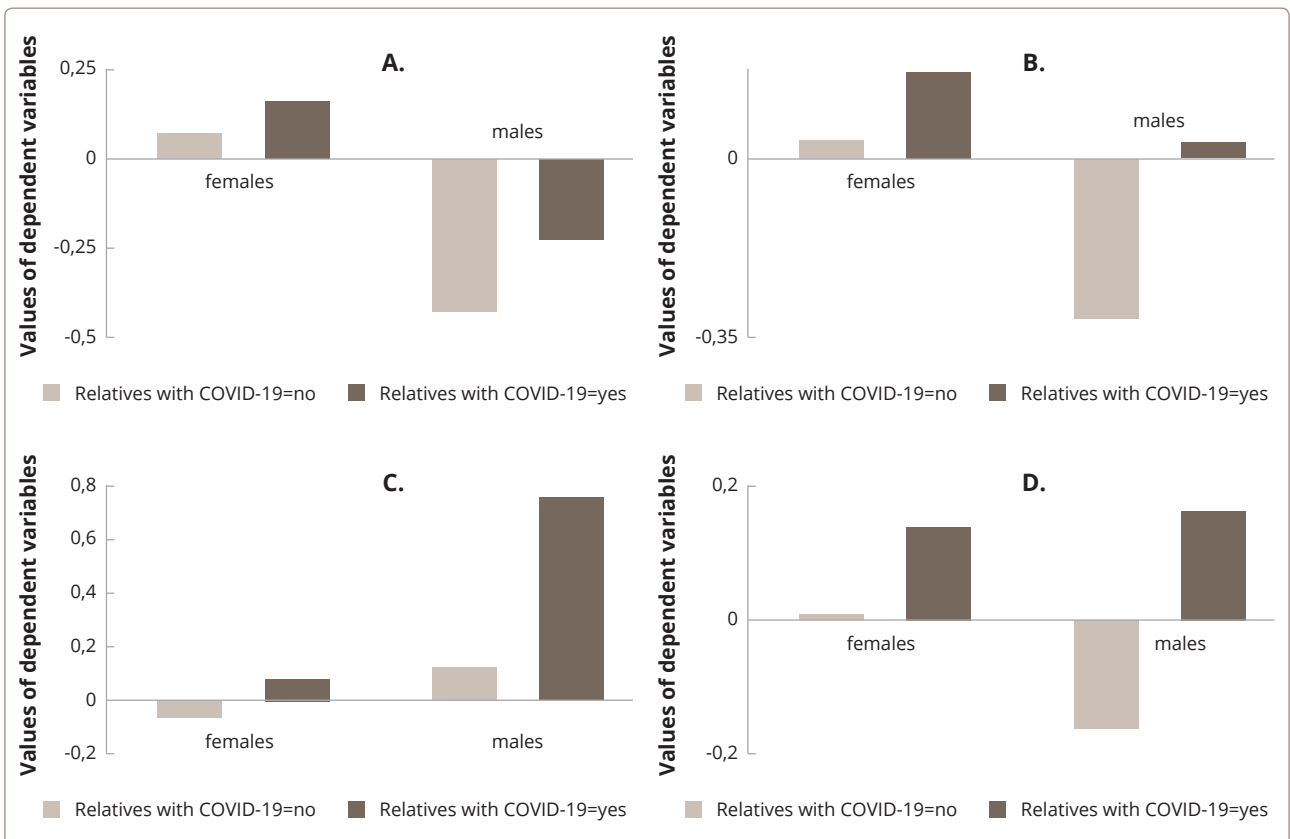


Figure 8. Levels of Psychological Distress (A) and perceptions of the COVID-19 pandemic (B-D) in different respondents' groups according to their gender and having relatives infected with COVID-19.

For men, having a diseased relative is associated with a significant revision of the Threat from the COVID-19 pandemic. This indicator reaches the same level of Threat among women without a sick relative. Furthermore, men with an infected relative have greater suspense than men who do not have an infected relative and have no Suspense. It is interesting that in men who do not have an infected relative, the feeling of Control over the pandemic is basically higher than in women.

One-way ANOVA revealed significant differences in groups declaring different attitudes toward coronavirus across all scales of perception of the COVID-19 pandemic (Figure 9). Respondents who believed that the coronavirus risk was exaggerated felt less threatened ($F=40.310, p < 0.0001$); such respondents believed that they “know everything about coronavirus” ($F=45.048, p < 0.0001$). Respondents who perceived the risk from coronavirus to be very high felt more threatened; they considered it less clear, requiring more action to Control it ($F=53.428, p < 0.0001$).

A statistically reliable difference was found between the Threat ($F=11.135, p < 0.0001$) and Psychological Distress ($F=30.200, p < 0.0001$) variables in response to the

question about “increasing quarrels in the family during self-isolation”. Thus, the values of both variables increased significantly when comparing the “yes, quarrels have become more frequent” group with the “no, everything is as it was before” ($p < 0.0001$) and the “no, we have become even more united” ($p < 0.001$) groups (Figure 10). Thus, people who have quarreled more during the pandemic perceive it as more Threatening and experience more Psychological Distress.

With regard to the question “whether a person who falls ill with COVID-19 will face condemnation and avoidance from others”, a statistically significant increase in the Threat ($F=15.959, p < 0.0001$) and Psychological Distress ($F=16.177, p < 0.0001$) variables was revealed. The level of Psychological Distress and Threat according to the degree of increase in the Threat (pairwise comparison of the groups with responses “no, we will not face it”, “probably not” with the groups who said, “rather yes” ($p < 0.0001$) and “yes, will face it” ($p < 0.0001$)) (Figure 11). Hence, people who face condemnation and feel the effect of COVID-19-related stigma will experience the greatest Psychological Distress and Threat from the pandemic.

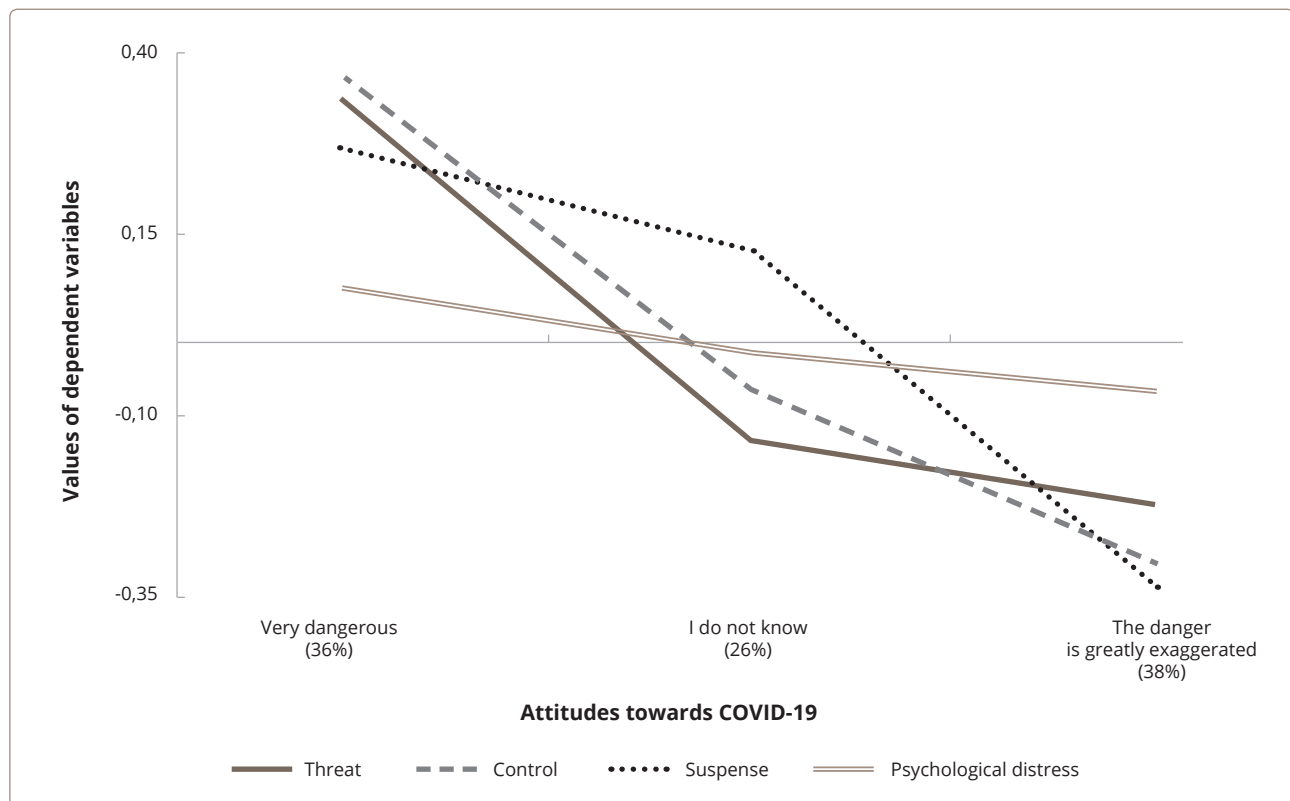


Figure 9. Levels of Psychological Distress and perceptions of the COVID-19 pandemic in groups with different declared attitudes towards coronavirus (consider it exaggerated danger).

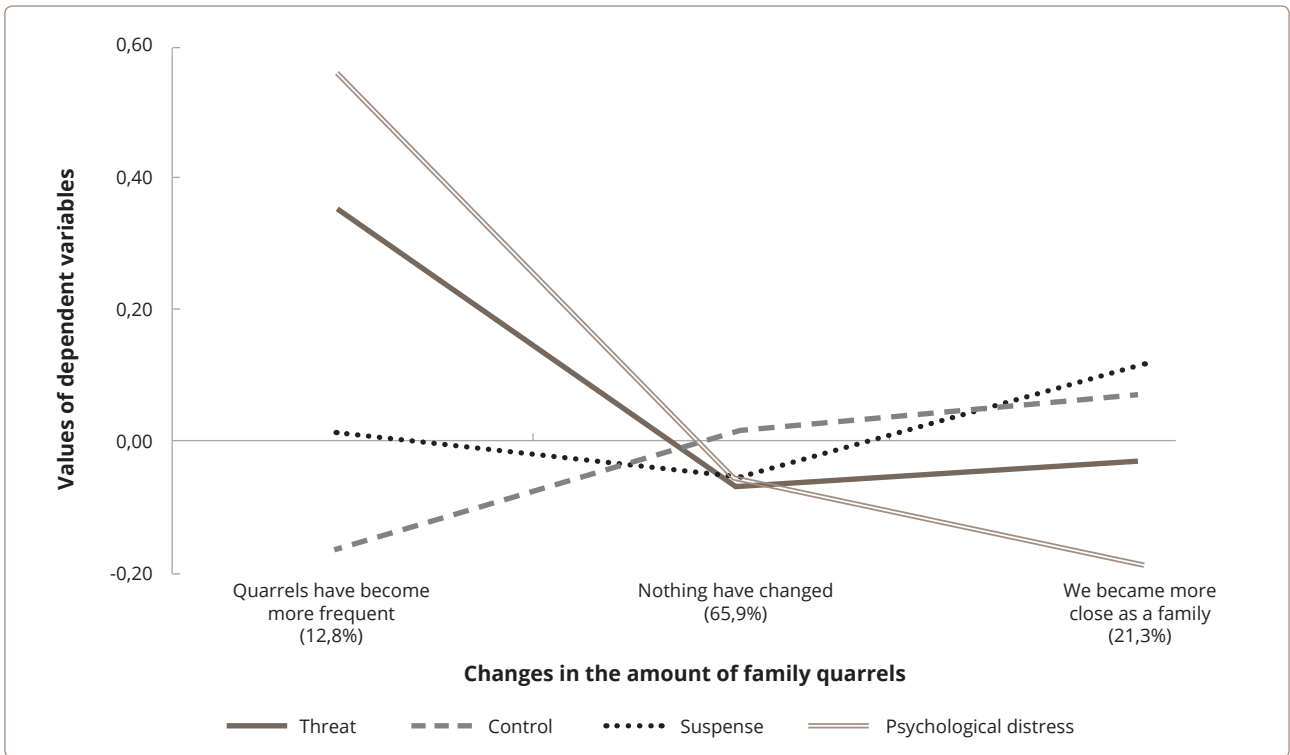


Figure 10. Levels of Psychological Distress and perceptions of the COVID-19 pandemic in groups with different numbers of family quarrels before and during the pandemic.

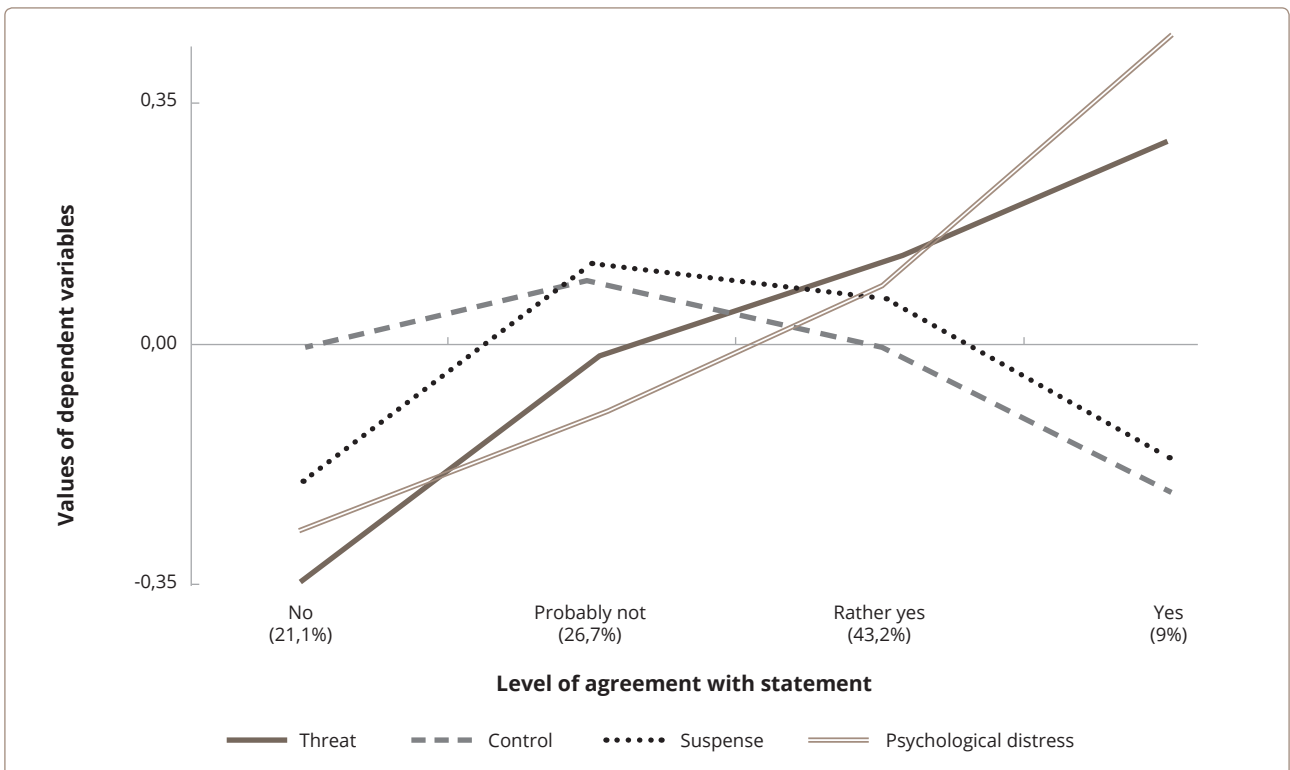


Figure 11. Levels of Psychological Distress and perceptions of the COVID-19 pandemic in groups with different answers to the question "Will a person suffering from coronavirus disease face condemnation?".

With regard to the question about “the desire to receive psychological support in the conditions of COVID-19”, statistically reliable differences in the Threat ($F=36.527, p < 0.0001$), Suspense ($F=14.111, p < 0.0001$) and Psychological Distress ($F=79.019, p < 0.0001$) variables were found. All three variables show a significant decrease in value as negative answers increased based on the pairwise comparison of extreme groups ($p < 0.04$) (Figure 12). Thus, people who are more aware of the pandemic Threat are experiencing greater Psychological Distress and require psychological help.

DISCUSSION

Summary of main findings

The findings suggest that psychological distress affects all components of the ideas about the pandemic. The “Psychological Distress” variable positively influences the “Threat to life” and “Fear of an unknown disease” components of the ideas about the pandemic, whereas the “Control” component (ideas about the ability to control events) is ambivalent. On the one hand, the severity

of psychological distress reduces the idea of being able to control events; on the other, the psychological distress experienced increases the feeling of threat and uncertainty and stimulates the control of these feelings to be realized. In addition, significant differences were revealed in the nature of the perceptions of the pandemic and psychological distress, depending on gender, age, type of employment, daily routine during self-isolation, income, as well as a fear of possible stigmatization for contracting COVID-19. It is shown that underestimating the disease leads to improvement of psychological well-being. However, respondents who underestimated the danger of coronavirus paid less attention to the measures taken against the virus. If the respondent had relatives infected with COVID-19, they perceived the pandemic as more threatening and less understandable.

Strengths and limitations

The research conducted has several strengths. Firstly, to our knowledge it is one of the first studies exploring perceptions of the COVID-19 pandemic in Russia.

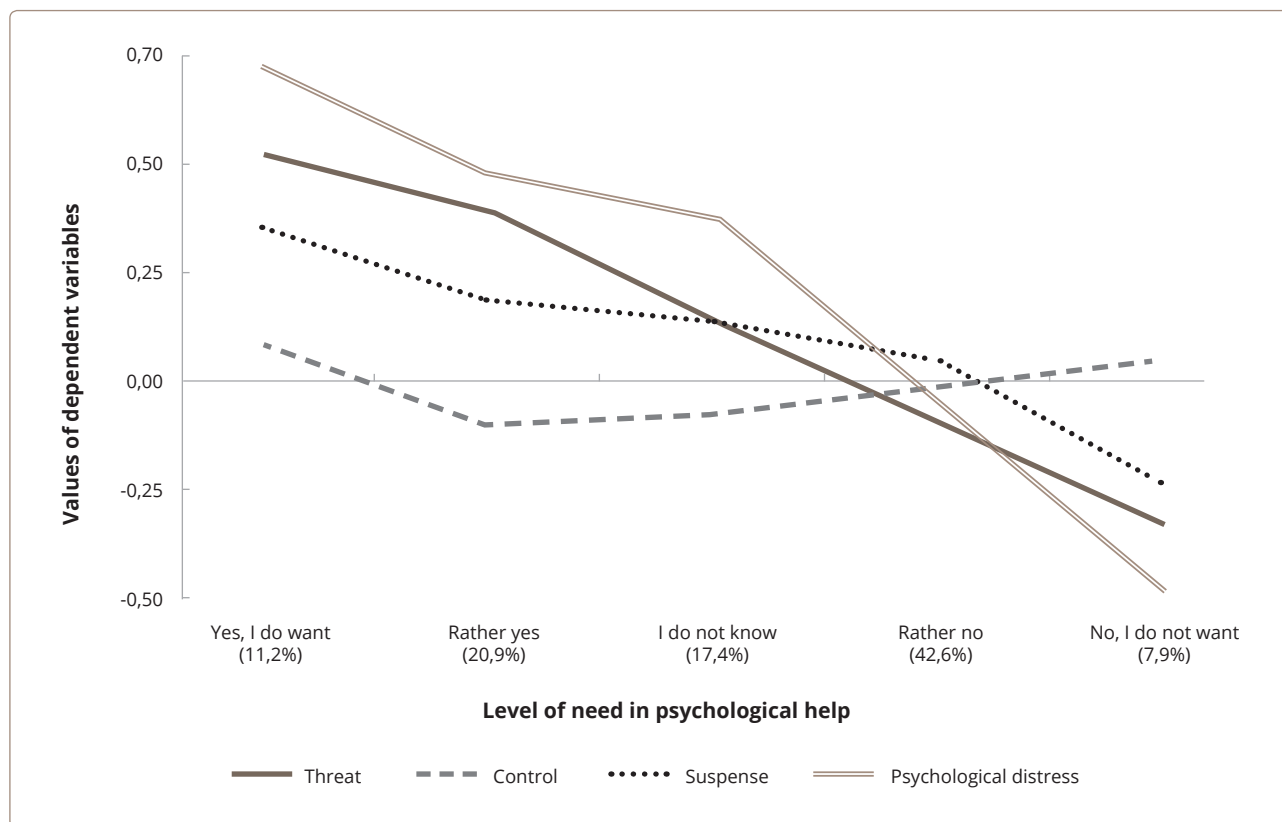


Figure 12. Levels of Psychological Distress and perceptions of the COVID-19 pandemic in groups with the need for psychological help.

Secondly, the study was representative, as it covered a large number of people across all regions of Russia, within different age groups, psychological types, professional affiliations, levels of education, etc. Thirdly, respondents received immediate feedback after the survey was completed, which allowed for psychological assistance and support to be provided.

The conducted research also has several limitations.

The first limitation relates to the inability to check the respondents' answers for deliberate distortions and lies. This is especially important for the parameters fixed at the beginning of testing, namely for the items of the socio-demographic questionnaire. However, this limitation is common to the vast majority of online surveys. On this basis, we can consider our data to be comparable with data from other similar studies.

Secondly, since the online survey was conducted, the information received was limited to a declared attitude toward the phenomena being studied. Therefore, despite the importance of assessing the respondents' emotional state, only an explicit evaluation was performed in this study because implicit data were not obtained.

Thirdly, convenience sampling was adopted for the purposes of this study. However, we believe that convenience sampling did not affect the representativeness of the study sample as people's consent to participate in our study did not correlate with the variables studied. In addition, the high values of Cronbach's Alpha and the normal unbiased nature of the sample data distribution on the scales used are similar to those obtained by the developers of these scales. This allows us to conclude that our sample does not significantly differ in its characteristics from the samples on which the scale data were adopted.

Fourthly, the final sample was not balanced by gender, which raises the question of the study participants' motivations. The larger number of women in the sample may be explained by their higher levels of stress and anxiety, which were the motives for participating in the study.

Fifthly, only negative mental states, including stress and anxiety, were taken into account in this study. The study did not diagnose a wide range of psychopathological symptoms that could be actualized under stress in the conditions of the COVID-19 pandemic and self-isolation.

Finally, we were unable to obtain a structural model that would have good explanatory power based on

the psychological features and socio-demographic characteristics identified for the analysis. In this regard, it seems necessary to continue the study with the expansion of the diagnostic base and the construction of more complex structural models.

Comparison with the existing literature

The higher level of psychological distress in women that has been identified in the current study is consistent with the population studies carried out in China [11, 12] and Italy [5]. Women in our study were significantly more likely to perceive the COVID-19 pandemic as a threat, whereas men see COVID-19 as a controlled and understandable disease. This data is similar to previous findings for the Russian population [2, 3, 32]. For example, M.Yu. Sorokin and colleagues [3] revealed, that various groups of people were under psychological stress during the pandemic, including people suffering from affective disorders, young people (≤ 20 years old), the unemployed, single/unmarried, without higher education, and women. The significant role of level of income in causing psychological distress found in the present study was similar to the results of another Russian study [2]. According to Karpenko and colleagues [2], the risk of financial problems in the future leads to distress during the pandemic.

Based on our findings, young respondents are more prone to psychological distress, perceiving a higher threat to their lives than the older generation, and who are more focused on pandemic control. Older people, in turn, concentrated less on control over the pandemic, yet have a greater feeling of suspense. Also, respondents in our study paid more attention to pandemic control when living with parents, demonstrating intensified sense of responsibility. This finding is consistent with Russian [2] and foreign studies [9, 33], reporting that fear of spreading the infection to others, including older relatives, may be a significant motivating factor with regard to following prevention measures.

Students experienced the greatest sense of control over the pandemic, while working people, in contrast, rated the sense of control over the pandemic as less pronounced. Thus, young women and students who are at risk of infection in the workplace are the most stressed. These findings are consistent with the existing studies reporting a higher risk of psychological distress among students [34] and women [3, 11] during the pandemic.

The study found that the emotional state of the population changed as the pandemic spread, depending on the measures taken at the national level and on the information available. Based on our results, the lowest level of psychological distress was registered on May 4, 2020, while the peak of distress among respondents fell on May 12, 2020. The improvement in the emotional state by May 4 can be explained by the so-called “May holidays” in Russia. Russians traditionally spend a lot of time relaxing and socializing with friends on these days. This phenomenon, from our point of view, is similar to the decrease in the anxiety level described in China during the “Lantern Festival” in February 2020 [3]. An increase in psychological distress on May 12, 2020, in turn, might be caused by the two public announcements made that day: (1) quarantine measures were mitigated, and online mode of work was cancelled, and (2) a maximum number of people were infected with coronavirus in Russia. The cancellation of the lockdown regime on the day when the maximum number of infected people was detected may have created the effect of the so-called “double message” [35]. It provoked anxiety and contributed to the deterioration of people’s psychological well-being. Such sensitivity to the information agenda was demonstrated in several studies [36–38].

Comparison of the current research findings with the above studies highlights that individual perceptions of the pandemic are important factors in mediating the “stress response” to COVID-19 [6, 11, 39]. This is consistent with empirical data obtained in stress psychology and the theoretical theories on emotions and transactional models of stress [40].

The present study showed that assessing the stressor in the form of a threat from the disease outbreak is linked to the individual choice of preventive measures, which is, in turn, important in preventing the spread of the disease. In our view, the link between threat and choice of preventive measures is similar in nature to the link between adherence to treatment and perception of the real disease.

The most pronounced factor in the perception of the pandemic is the presence of someone infected with COVID-19 among the family and friends. Increased psychological distress and perceiving the disease as unknown led to greater control over the pandemic. This data is consistent with findings from across the world indicating that having an infected relative or friend becomes a factor in psychological distress and the emergence

of distress, anxiety, and depressive feelings [5, 11, 41]. Furthermore, it has been defined that the presence of an infected relative or friend contributes to the perception of the pandemic as more threatening [42].

The construction of the Path Model revealed differences in the direct and indirect impacts of psychological distress on pandemic control. An increase in psychological distress affects a decreased sense of control over the pandemic. At the same time, a sense of threat from the pandemic and the lack of understanding of the disease leads to a desire for greater control, which is consistent with the findings of foreign researchers [43]. In addition, a psychological disadvantage indirectly increases the sense of threat from a pandemic and the feeling of suspense, which, in turn, increases control. This suggests that awareness of the risks of a pandemic may lead to greater control. However, if psychological distress increases, the opposite is true: the individual feels that they have little control over what is happening.

The perceptions of COVID-19 as an excessively exaggerated danger are associated with a lower intensity of psychological distress, a sense of understanding of the disease, and less control. This belief may have psychological benefits for reducing anxiety and stress but may result in fewer safety precautions being adopted and thus a greater risk of infection. At the same time, the exposure to real-life experiences in loved ones dramatically increases the suspense.

Impact for future practice and research

The results on the role of psychological distress and perceptions of the COVID-19 pandemic, taken together, appear rather contradictory, necessitating further research and the search for additional predictors of psychological well-being and distress during the COVID-19 pandemic. Obtaining such data will make it possible to formulate recommendations helping to maintain psychological well-being during the COVID-19 pandemic. The online system developed for the survey has become a tool for monitoring. Currently, the study is ongoing, and data is being collected further, which makes it possible to study these psychological characteristics in terms of their dynamics.

CONCLUSION

Through assessing a level of threat and fear of an unknown disease, we defined that psychological distress has a direct and mediated influence on the feeling of control over the pandemic. Psychological distress

directly leads to a decrease in the feeling of control over the pandemic. At the same time, psychological distress can indirectly lead to a feeling of greater control through an increased feeling of threat and suspense. Thus, if a person perceives the pandemic as threatening, they will pay more attention to controlling it, but if a person's mental state worsens, this may lead to feelings of lack of control over the pandemic.

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