

Study of Anxiety among Students Depending on the Location of Urban or Rural Areas during Isolation during a Pandemic and COVID-19

Razin M. Ragimov^a, Naida M. Abdullaeva^b and Patimat Y. Magomedova^c
Russia State Budget Educational Institution Dagestan State Medical Academy, Makhachkala, Russia

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Abstract: The article analyzes the influence of personal and situational anxiety on the quality of life of students of medical universities in Russia. The purpose of this study was to determine significant differences in students' anxiety depending on the place of stay in urban or rural areas during the period of isolation. The Spielberger-Hanin scale (State-Trait Anxiety Inventory - STAI) and the visual analogue scale (VAS) EQ-5D-3L were used for the study. 183 students took part in the work, of which 36 people (19.67 %) stayed in rural areas, 147 people (80.33 %) – in urban areas during the period of forced self-isolation. Based on the experiment carried out and the interpretation of the data obtained, we obtained data that in the groups of subjects who were in urban areas, there were higher indicators of situational and personal anxiety and lower scores on VAS EQ-5D-3L in comparison with pre-pandemic normative data on Russia in this age group, which indicates the potential negative impact of the pandemic on the psychological well-being of medical students, the effect of which can be correlated with the consequences of social isolation, which is higher in urban compared to rural areas.

1 INTRODUCTION

Most of the population of Russia, to one degree or another, has undergone a long stay at home with an alternating weakening of the regime and periods when quarantine measures were weakened based on the average statistical indicators of the number of cases in the country. Many authors associate these circumstances with significant potential psychological stress and “pandemic fatigue” among the population, especially among progressive youth (Holmes, O'Connor, Perry, Trace, Wessely, Arseneault, 2020).

The World Health Organization (WHO) has recognized the negative impact of the pandemic on society and has emphasized the urgent need to research mental health issues (Kluge, Malik, Nitzan, 2020). The abundance and activity of negative information presented in the media, as well as a closed space in which there is no place for social activity, plays an important role in the formation of

negative mental reactions to the situation of a pandemic in the world. WHO has called this unique set of circumstances “infodemic”, referring to the “flow of information about the COVID-19 pandemic” from governments, scientists, the media, social media, and friends and family, which makes it difficult to perceive the correctness of information, its distortion and a person's loss of orientation between actual and perceived risks (Wise, Zbozinek, Michelini, Hagan, Mobbs, D., 2020), (Dryhurst, Schneider, Kerr, Freeman, Recchia, van der Bles, 2020). Proof of this hypothesis was a study by Russian scientists on the relationship between increased media consumption and an increased level of situational anxiety during the COVID period, which proved the presence of a correlation (Nekliudov, Blyuss, Cheung, Petrou, Genuneit, Sushentsev, 2020).

A large proportion of medical students' fears are caused by a constant feeling of uncertainty and anxiety, lack of optimal physical activity, and an

^a <https://orcid.org/0000-0002-5442-5528>

^b <https://orcid.org/0000-0002-9616-9606>

^c <https://orcid.org/0000-0002-5703-3968>

abundance of free time to watch the media (students on self-isolation).

Against this background, it is interesting that there are situations that at least partially exclude the impact of the information flurry. Based on this, we formulated the goal of our study, which was to test the hypothesis about the existence of significant differences between the level of anxiety and the quality of life of students staying in a period of isolation in rural and urban areas.

“As the devastating effects of COVID-19, including social distancing, now dominate our daily lives ... our anxieties and fears must be better understood and addressed,” notes Dr. Hans Kluge (Kluge, Malik, Nitzan, 2020). Studying the mental health of students and the factors of deterioration in its quality during a pandemic and quarantine will help predict the consequences of long-term self-isolation. A study of the impact of the SARS-CoV-1 epidemic on public health has shown that the pandemic has made its own adjustments in the psyche of people and postcoid symptoms are the subject of numerous studies and they are not limited only to the treatment of somatic manifestations (Bauerle, Teufel, Musche, Weismuller, Kohler, Hetkamp, 2020). This may indicate long-term measures in the prevention of the negative effects of the impact of quarantine measures and the virus itself on the livelihoods of the population.

2 STUDY METHODS

The study was conducted at the end of April 2020 as part of a study examining the psychosocial impact of the COVID-19 pandemic on the general population and was a continuation of international scientific research (Nekliudov, Blyuss, Cheung, Petrou, Genuneit, Sushentsev, Levadnaya, Comberiat, Warner, Tudor-Williams, Teufel, Greenhawt, Galvin, Munblit, 2020).

For the convenience of interviewing students, we compiled a questionnaire of 50 items, which included general questions such as: about protective measures during the COVID-19 pandemic ("did you take precautions during the isolation period", "what personal protective equipment were used"); demographic data (gender, age) so questions from scales of adapted questionnaires, such as:

1. Spielberger-Hanin scale (State-Trait Anxiety Inventory - STAD);
2. visual analogue scale (VAS) EQ-5D-3L.

The full Spielberger-Hanin scale includes 20 questions for determining personal anxiety and 20

questions for identifying the level of situational anxiety. The items identifying anxiety are graded on a scale of 1-4 and 4-1, with the score multiplied by 20 and divided by 6. A score below 30 points indicates a low level of anxiety, above 45 – on increased anxiety (Spielberger, 1983).

The visual analogue scale EQ-5D-3L is used to assess the quality of patients' health. The first part assesses an individual's health in 5 dimensions, including mobility, self-care, daily activities, pain/discomfort, and anxiety/depression. Possible answers: 1) no violations; 2) moderate violations; 3) severe violations. The second part invites the subject to assess their health on their own (making a mark at the correct scale level) on a 100-point scale, where 0 means the worst state of health that can be imagined, and 100 means the best (van Reenen, 2015), (Sullivan, Ghushchyan, 2006). Out of 5 items, 234 combinations of health conditions are possible. Each answer includes one of 3 options, with a score of 1-3 to create a unique 5-digit score for a person's health status. There are standardized sets of values for converting scores to a composite index, and they exist for several countries.

The survey was conducted in a remote format. Each participant filled out the questionnaire anonymously. To participate in the program, informed consent was obtained in electronic or oral form. A total of 183 medical students, aged 18-36, who have a mobile phone with the ability to send text messages or access the Internet, took part in the study.

According to the place of residence in the countryside of the Republic of Dagestan, it was divided into three districts, which in percentage terms were — (58.6 % — mountainous, 20.6 % — foothill, 20.8% — flat). The gender distribution in rural areas during the period of self-isolation was represented by 7 young men (17.5 % of the isolated male students) and 29 girls (20.2 % of the isolated female students). The distribution of students in the period of self-isolation in urban areas (Makhachkala, Astrakhan, Tomsk, Derbent, Khasavyurt, Kizilyurt) was represented by 33 boys (82.5 %) and 114 girls (79.8 %).

In accordance with the hypothesis of the study, 4 groups were formed for the experiment:

Group 1 – girls who were in self-isolation in villages;

Group 2 – girls who were in self-isolation in cities;

Group 3 – young men who were in self-isolation in the villages;

Group 4 – young men who were in self-isolation in cities.

The statistical analysis included the description of central trends as the mean for continuous quantitative variables, corresponding to a normal distribution. Qualitative data are presented in the form of absolute and their percentage.

For categorical data, the statistical significance of differences in groups was determined by calculating the Chi-square test (2), for quantitative data – Student's t-test. A P-score of less than 0.05 was taken as critical. Statistical analysis was performed using SPSS 20 for Windows.

The mean VAS EQ-5D-3L score for group 2 was 0.77 ± 0.027 (CI 0.69-0.82, standard error 2). For group 4, the average VAS EQ-5D-3L score was 0.83 ± 0.009 .

For 5 parameters measured in EQ-5D-3L, representatives of groups 2 and 4 in 19.8 % indicated problems (response level 2 for an item on a 1-3 point scale) with daily activities, 3.1 % with self-care, 26.0 % with mobility, 47.1 % with pain/discomfort, and 53.4 % with anxiety/depression problems. The results of groups 1 and 3 are shown in Table 3.

The percentage distributions are shown in Figure 1.

3 STUDY RESULTS

The results of the survey conducted on the STAI scale are presented in Table 1.

Table 1: Percentage of study results on the STAI scale.

Gender	Girls				Young men			
Anxiety form	Situational		Personal		Situational		Personal	
Terrain Degree	Village (group 1), %	City (group 2), %	Village (group 1), %	City (group 2), %	Village (group 3), %	City (group 4), %	Village (group 3), %	City (group 4), %
Low anxiety	13.8	6,9	25.9	6.1	14.1	28.7	17	15
Moderate anxiety	55.1	37.9	33.9	25.4	70.5	42.5	64	45
Increased anxiety	31.1	55.2	40.2	68.5	14.4	28.8	17	39

Table 2: Comparison of population mean and study results on the VAS EQ-5D-3L scale.

Gender	Girls				Young men			
Level	Village (1 group), from 1.0		City (2 group), from 1.0		Village (group 3), from 1.0		City (4 group), from 1.0	
Points	0.84±0.003	0.85±0.012	0.85±0.001	0.77±0.027	0.91±0.001	0.90±0.004	0.90±0.001	0.83±0.009

Table 3: Comparison of the average of each of the five parameters of the EQ-5D-3L.

Indicators	Average indicators for the population before the pandemic, %	Revealed indicators for the village (groups 1 and 3), %	Revealed indicators for the city (groups 2 and 4), %
Mobility	24.8	25.8	26.0
Personal care	4.6	2.2	3.1
Daily activities	13.0	16.5	19.8
Pain and discomfort	38.4	39.4	47.1
Anxiety and depression	38.0	43.1	53.4

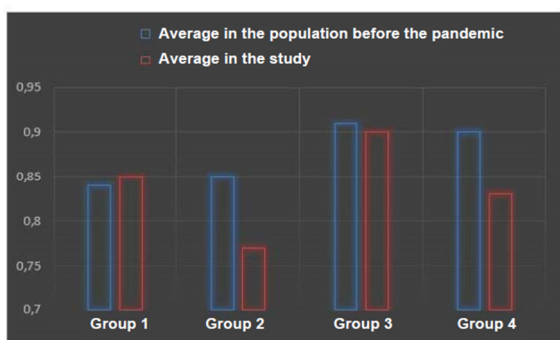


Figure 1: Comparison of VAS EQ-5D-3L results during a pandemic in rural/urban areas and non-pandemic averages.

4 DISCUSSION OF RESULTS

In girls who were in self-isolation in rural areas (group 1), we diagnosed a predominantly moderate level of situational anxiety of 55.1 % (16 people) in comparison with the second group 37.9 % (38 people) of girls who were in the period of isolation in urban areas. Girls of the second group are characterized by a higher indicator of anxiety, 55.2 % (17 people). Wherein, personal anxiety as a character trait in respondents of both groups was increased – 55.2 % and 68.5 % (group 1 and group 2, respectively), which does not refute the study results that women are characterized by increased anxiety in relation to men. There were no statistically significant differences in the mean results of anxiety on the STAI scale at each level.

Young men who were on self-isolation in rural areas (group 3) and were on self-isolation in cities (group 4) had a moderate percentage of situational anxiety: 70 % and 64 %, while a lower percentage of personal anxiety: 42 % and 45 %. The data obtained confirm the data that personal anxiety as a character trait is much higher in women.

It shall be noted that the average indicators of the increased level of anxiety in group 3 are lower than in group 4 in situational anxiety (47.5 ± 0.03 versus 69.8 ± 0.011 , $p < 0.01$) and in personal (50.4 ± 0.07 versus 56.3 ± 0.09 , $p < 0.05$). The lowest mean value of moderate anxiety was shown by group 3 (32.2 ± 0.13 versus 37.5 ± 0.12 in group 4, $p < 0.05$). In the representatives of the group 4, the indicator of low personal anxiety is higher than in the group 3 (27.8 ± 0.09 versus 25 ± 0.12 , $p < 0.05$).

Comparison of the average statistical distribution of data obtained according to the results of the VAS EQ-5D-3L method for group 2 (covid period) is significantly lower than the average standard score

for the urban population of this age group available in the pre-covid period (average score -0.85 ± 0.001 , standard error 0.1) (Peng, Lee, Tsai, Yang, Morisky, Tsai, 2010). For group 4, the average statistical value obtained during the VAS EQ-5D-3L method is also lower than the average standard score (mean score 0.90 ± 0.001 , standard error 0.2). No significant gender differences were noted (see Table 2).

For 5 parameters measured in the EQ-5D-3L, the results of groups 2 and 4 differed significantly from the population norms of anxiety and depression (higher, 53.4 % versus 38.0 %, $p < 0.001$), pain and discomfort (higher, 47.1 % versus 38.4 %, $p < 0.001$) and everyday activities (lower, 19.8 % versus 13.0 %, $p < 0.001$) (see Table 3). In groups 1 and 3, significant changes were not observed in comparison with the average indicators for the population, which is shown in Figure 1.

5 CONCLUSIONS

Interpretation of the results obtained allowed us to conclude that the quality of life of students of medical universities in Russia during the pandemic has significantly deteriorated as a result of an increase in situational anxiety. We are not aware of any previous studies in Russia on the correlation between place of residence and the level of anxiety, except for the aforementioned Russian publication on the influence of the media. In addition, there are studies conducted during the pandemic in Asia and Germany, which indicate general negative trends in the psyche of people associated with COVID (Bauerle, Teufel, Musche, Weismuller, Kohler, Hetkamp, 2020), (Rabin, Gudex, Selai, Herdman, 2014).

The results of our study indicate that personal anxiety, as a constant, does not change depending on the location during the period of isolation, whether it is an urban or rural area. Significant indicators were identified for situational anxiety, which correlates with the place of residence during a pandemic. The indicators of situational anxiety among male students living in rural areas are significantly lower than in the other three samples.

The COVID-19 epidemic has brought about dramatic changes to everyone's daily life. Also, like any global processes, it provoked a rise in the level of anxiety, depression and other pathological states of the psyche of people. This poses new challenges for psycho-prevention and crisis counseling for a wide range of people, including their future colleagues, for specialists in the field of psychology and psychiatry. Based on the results of the study, we believe that it is

necessary to involve psychologists and psychotherapists in preventive work with medical students in order to explain the rules of behavior in a situation of all-round psychological pressure. It is imperative to develop methods of dealing with the consequences of prolonged self-isolation. It is also especially important, if possible, to choose quiet rural areas and villages remote from cities as a territory for self-isolation, which plays an important role in reducing the level of anxiety and depression, as well as the quality state of health and its subjective perception.

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