

## Subjective well-being of residents of the Rio de Janeiro metropolitan region during COVID-19

*Bem-estar subjetivo de residentes da região metropolitana do Rio de Janeiro durante a COVID-19*

*Bienestar subjetivo de residentes de la región metropolitana de Río de Janeiro durante el COVID-19*

Deise Breder dos Santos Batista<sup>1</sup> ; Adriana Lenho de Figueiredo Pereira<sup>1</sup> ; Alan de Souza Campello Junior<sup>1</sup> ; Claudia da Silva Teixeira de Santana<sup>1</sup> ; Juliana Amaral Prata<sup>1</sup> ; Claudia Silvia Rocha Oliveira<sup>1</sup> 

<sup>1</sup>Universidade do Estado do Rio de Janeiro. Rio de Janeiro, Brazil

### ABSTRACT

**Objective:** to identify the level of subjective well-being and associated factors in residents of the Rio de Janeiro metropolitan region during the COVID-19 pandemic. **Method:** this cross-sectional study of a sample of 143 residents of the region was conducted from January to May 2021. The electronic, self-administered questionnaire comprised the five items of the WHO-5 Well-Being Index. Analysis was by Mann-Whitney, Chi-square and Fisher's Exact tests ( $p$ -value < 0.05). **Results:** overall, the sample scored 51.1 in subjective well-being; men scored lower (46.04) than women (53.42). Well-being showed a statistical association with illness from COVID-19; residence in the Baixada Fluminense; feelings of boredom, frustration, annoyance, anguish, loneliness and nervousness during social isolation; and risk of exposure to SARS-CoV-2 on alternative transport. **Conclusion:** subjective well-being seems to have been harmed by the Covid-19 pandemic, and mental health care must be expanded in the health system.

**Descriptors:** COVID-19; Adult Health; Psychological Distress; Stress, Psychological; Health Promotion.

### RESUMO

**Objetivo:** identificar o nível do bem-estar subjetivo e seus fatores associados em residentes na região metropolitana do Rio de Janeiro durante a pandemia da COVID-19. **Método:** estudo transversal, com amostra de 143 residentes nessa região, de janeiro a maio de 2021. Os cinco itens do Índice de Bem-Estar da OMS-5 integraram o questionário eletrônico, autoadministrado. Análise pelos testes de Mann-Whitney, Qui-quadrado e Exato de Fisher,  $p$ -valor < 0,05. **Resultados:** o escore do bem-estar subjetivo da amostra foi de 51,1, sendo esse escore menor nos homens (46,04) do que nas mulheres (53,42). O bem-estar apresentou associação estatística com adoecimento pela COVID-19; residência na Baixada Fluminense; sentimentos de tédio, frustração, aborrecimento, angústia, solidão e nervosismo durante o isolamento social; e risco de exposição ao SARS-CoV-2 no transporte alternativo. **Conclusão:** o bem-estar subjetivo demonstrou ter sido prejudicado pela pandemia da Covid-19 e cuidados de saúde mental devem ser ampliados no sistema de saúde.

**Descritores:** COVID-19; Saúde do Adulto; Angústia Psicológica; Estresse Psicológico; Promoção da Saúde.

### RESUMEN

**Objetivo:** identificar el nivel de bienestar subjetivo y sus factores asociados en residentes de la región metropolitana de Río de Janeiro durante la pandemia del COVID-19. **Método:** estudio transversal, con una muestra de 143 residentes en esta región, de enero a mayo de 2021. Los cinco ítems del Índice de Bienestar OMS-5 formaron parte del cuestionario electrónico autoadministrado. El análisis se hizo por las pruebas de Mann-Whitney, Chi-cuadrado y la prueba Exacta de Fisher,  $p$ -valor < 0.05. **Resultados:** la puntuación de bienestar subjetivo de la muestra fue de 51,1, siendo menor en los hombres (46,04) que en las mujeres (53,42). El bienestar mostró una asociación estadística con la enfermedad por COVID-19; residencia en Baixada Fluminense; sentimientos de aburrimiento, frustración, molestia, angustia, soledad y nerviosismo durante el aislamiento social; y riesgo de exposición al SARS-CoV-2 en transporte alternativo. **Conclusión:** el bienestar subjetivo parece haber sido perjudicado por la pandemia de Covid-19 y la atención a la salud mental debe ser ampliada en el sistema de salud.

**Descriptores:** COVID-19; Salud del Adulto; Distrés Psicológico; Estrés Psicológico; Promoción de la Salud.

## INTRODUCTION

The pandemic of the disease caused by the new coronavirus (SARS-CoV-2), COVID-19, has overloaded health services and negatively interfered with accessibility, continuity and quality of health care, considering its high person-to-person transmissibility and symptomatology ranging from mild symptomatic conditions to severe acute respiratory syndrome, which can lead to complex hospitalizations and deaths<sup>1,2</sup>. Considering these epidemiological characteristics and while the main preventive measures for coping were based on social isolation and confinement, populations in different countries suffered the social, economic and psychological consequences of these recommendations<sup>2</sup>.

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Corresponding author: Deise Breder dos Santos Batista. E-mail: [deisebreder08@gmail.com](mailto:deisebreder08@gmail.com)  
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This scenario potentiated inequalities and vulnerabilities associated with the interruption of social protection networks and barriers in accessing essential and specialized health services, as well as increasing cases of violence in the domestic environment and caused experiences of stress, loneliness, irritability, insomnia, fear, confusion, anger, frustration, boredom and uncertainties, which can trigger psychic suffering and mental disorders, especially depression<sup>2-5</sup>.

Therefore, insecurity regarding income, social weaknesses, fear of contamination, uncertainties about the future, distancing from everyday life, diagnosis and belonging to risk groups for COVID-19 reveal the potential of the pandemic context to affect health<sup>6,7</sup>.

The World Health Organization (WHO) defines health as a state of physical, mental and social well-being, not just the absence of disease, meaning a broader and more comprehensive approach to health, equating the importance of mental and physical aspects in health. Therefore, psychological well-being is an important part of general well-being and has been associated with reduced mortality rates in healthy populations and individuals with morbidity. Excellent well-being can allow health messages to be seen in a more positive way by highlighting the benefits of engaging in specific behaviors, which can more effectively favor changes in health behavior<sup>8,9</sup>.

Considering this, instruments for the assessment of well-being were developed, such as the WHO Well-Being Index (WHO-5), which aims to measure subjective well-being (SWB) through five questions. The WHO-5 has been translated into more than 30 languages, including Brazilian Portuguese, and has been applied in a wide range of fields of study due to its validity and reliability for depression screening<sup>9</sup>.

General well-being can be affected when people perceive risks or threats to their health, as in the COVID-19. These perceptions express the susceptibility and severity to which the individual is exposed. Therefore, they are configured as an essential component to drive changes in behavior<sup>4,6,7</sup>.

For these reasons, health services play an important role in meeting the physical and emotional needs of individuals and communities, as well as offering listening, support and qualified care during the COVID-19 and after its control, due to its effects on people's quality of life and well-being<sup>2,6,7</sup>.

Based on these notes, this study aimed to identify the level of subjective well-being and its associated factors in people living in the metropolitan region of Rio de Janeiro during the COVID-19 pandemic.

## METHOD

Observational, cross-sectional study that used an electronic, self-administered questionnaire posted on the Internet. Due to the restrictions imposed by the COVID-19 pandemic, there was an increase in searches using these instruments, but online searches had already gained prominence previously due to the popularization of mobile devices connected to the internet network and the use of media and social media. Despite providing primary data collection, this type of research has limitations, such as the low response rate to electronic questionnaires, which should be considered when reporting its results<sup>10</sup>.

The intentional and convenience sample studied consisted of a total of 143 adult individuals residing in the first metropolitan region (MR1) of the state of Rio de Janeiro (RJ). MR1 integrates 12 cities, where 60.8% of the population of Rio de Janeiro live, estimated at 10 497 016 inhabitants in 2019, according to the Department of Informatics of the Unified Health System (DATASUS).

The city of Rio de Janeiro comprises 64% of the total population of MR1, the other inhabitants come from the cities of Duque de Caxias, Nova Iguaçu, Belford Roxo, Sao Joao de Meriti, Mage, Mesquita, Nilopolis, Queimados, Itaguaí, Japeri and Seropédica, integrating the Baixada Fluminense area. In this study, the 12 cities of MR1 were divided into two sub-regions of health, the first sub-region was represented by the city of RJ and the second sub-region by the cities of Baixada Fluminense.

Men and women living in the cities of MR1 in the state of Rio de Janeiro were included in the study, regardless of previous history of infection by SARS-CoV-2. Individuals under 18 years old were excluded.

Data collection took place from January to May 2021, starting with the recruitment of volunteer participants through the dissemination of the research on social media pages, which were created for this purpose, as well as their access link in messaging applications.

The self-administered electronic questionnaire was created based on studies on the risk perceptions of the population in epidemics<sup>2,4,5</sup> and on SWB<sup>6-9</sup>. This instrument was evaluated by a group of doctoral judges in the health

area and previously tested with volunteers, whose responses were excluded. Three questions and their statements were adjusted for wording clarity.

The first part of the electronic questionnaire was accessed by 154 people, but 143 individuals completed all responses. The progression in this instrument conditioned the affirmative answer for those over 18 years old and for those living in a city that is part of MR1 of RJ, according to selection criteria. The negative answer to these questions caused its automatic closure.

In this study, the dependent variable is subjective well-being, measured using the WHO-5, consisting of five statements: feeling happy and in a good mood, feeling calm and relaxed, feeling active and vigorous, waking up feeling refreshed and relaxed, having a daily life full of interesting things. These are answered according to the five-point Likert scale. The risk perception variable was measured through questions about the intensity of risk, ranging from low, medium or high, of being exposed or infected in the neighborhood or community, work or school, in public transport (bus, subway or train) and alternative transport (private car, Van or motorcycle type transport, including those linked to smartphone apps), as well as the risk of having impaired health when infected with Sars-CoV-2; getting sick when coming into contact with Sars-CoV-2; become seriously ill by becoming infected with the coronavirus and die by becoming ill by COVID-19.

Complementarily, feelings caused by the period of social isolation were investigated, such as boredom, frustration, annoyance, worry, anguish, loneliness, fear, nervousness and guilt. Finally, the sociodemographic variables included the city where they live, gender, age, skin color, work activity, pre-existing chronic disease and positivity for COVID-19.

Data were stored in Microsoft Excel® spreadsheets and analyzed using the R statistics software, version 4.1.1. Initially, descriptive statistics were performed using absolute and relative frequencies, mean (M), median (Me), standard deviation (SD) and quartile (Q). Subsequently, the score of each of the five questions was verified, which can vary from 0 to 5. The raw score was calculated by the sum of the values of the five answers, which can vary from 0 to 25, this sum being multiplied by 4, obtaining the overall SWB score. This score can vary from 0 to 100 points, with zero absence of well-being and 100 points, the maximum of well-being. A score lower than 13 or 50 reveals impaired SWB and suggestive of a depressive state<sup>8,9</sup>.

Subsequently, the bivariate analysis was performed using the Mann-Whitney, Chi-square and Fisher's exact tests. The Mann-Whitney test was applied to verify significant differences between variables with two response categories and another quantitative variable. The Chi-square test and Fisher's exact test attempted to verify the association between categorical variables, the first being used to compare two nominal qualitative variables, while Fisher's exact test was applied when the variable comprised less than five responses or observations. For all analyses, a 95% confidence level and  $p$ -value < 0.05 were adopted.

The research protocol complied with the country's research legislation, with approval by a Research Ethics Committee and adoption of the strategy of mandatory affirmative response for participation in the study, after reading and accepting the summarized Informed Consent Form, which conditioned progression through the questionnaire.

## RESULTS

The sample of 143 (100%) individuals consisted of 98 women (68.5%) and 45 men (31.5%), whose mean age was 32.2(±12.6) years old. Most participants lived in the city of Rio de Janeiro (64.3%), while the others lived in cities in Baixada Fluminense (35.7%). Respondents who had a job predominated (52.4%), followed by students (30.8%) and retirees (4.9%). About a quarter (25.9%) of respondents had a pre-existing chronic disease and 37.8% of the total sample had already been diagnosed with COVID-19.

Regarding the WHO-5 well-being index in the sample, the mean score was 12.77(±4.96) and the overall score was 51.1 (±22.65). Women obtained a score of 13.35 (±5.37) and 53.42 (±21.48), and among men, the score was 11.51 (±6.12) and 46.04 (±24.5). There was no statistically significant difference between genders.

Table 1 presents the analyzes of the WHO-5 scores according to sociodemographic variables.

**TABLE 1:** Subjective well-being scores by WHO-5 index according to sociodemographic variables of adults (n=143). First metropolitan region, RJ, Brazil, 2021.

Variables	n (%)	WHO-5 subjective well-being		p-value <sup>3</sup>
		Score<50 n = 66 (%)	Score≥50 n = 77 (%)	
<b>Age group (Years old)<sup>1</sup></b>				0.66*
18 to 38 years old	109 (76.2)	52 (78.8)	57 (74)	
39 to 59 years old	27 (18.9)	12 (18.2)	15 (19.5)	
60 years or older	7 (4.9)	2 (3)	5 (6.5)	
<b>City</b>				<0.05**
Rio de Janeiro	92 (64.3)	35 (53)	57 (74)	
Baixada Fluminense	51 (35.7)	31 (47)	20 (26)	
<b>Gender</b>				0.05**
Female	98 (68.5)	40 (60.6)	58 (75.3)	
Male	45 (31.5)	26 (39.4)	19 (24.7)	
<b>Partner</b>				0.67**
Yes	43 (30.1)	21 (31.8)	22 (28.6)	
No	100 (69.9)	45 (68.2)	55 (71.4)	
<b>Color<sup>2</sup></b>				0.55***
White	77 (53.8)	35 (53)	42 (54.5)	
Brown/black	65 (45.5)	30 (45.5)	35 (45.5)	
<b>Work activity</b>				0.38**
Yes	75 (52.4)	32 (48.5)	43 (55.8)	
No	68 (47.6)	34 (51.5)	34 (44.2)	
<b>Pre-existing chronic disease</b>				0.13**
Yes	37 (25.9)	21 (31.8)	16 (20.8)	
No	106 (74.1)	45 (68.2)	61 (79.2)	
<b>Diagnosis of COVID-19</b>				<0.05**
Yes	54 (37.8)	19 (28.8)	35 (45.5)	
No	89 (62.2)	47 (71.2)	42 (54.5)	

**Legend:**

<sup>1</sup> Age (Years old): Mean=32.2 (SD=12.6); Median=27(Q1=24; Q3=37); Variation: 19-73, p-value=0.72\*

<sup>2</sup> It includes an adult with yellow skin color and score<50

<sup>3</sup> 5% significance level

\*Mann-Whitney test; \*\*Chi-square test; \*\*\*Fisher's Exact Test

When verifying the association between SWB and sociodemographic variables, according to the impaired level (score<50) and the preserved one (score≥50), a significant statistical result (p<0.05) was identified for living in cities in the Baixada Fluminense. Most (60.8%) of people living in the Baixada Fluminense had their SWB impaired, while 61.9% of those living in RJ exhibited a preserved SWB. The occurrence of the diagnosis of COVID-19 also presented a statistically relevant result.

Regarding the reliability of information sources on COVID-19, scientists (93.7%), universities (92.3%) and health departments (88.4%) were evaluated as more reliable, with a lower percentage to the Ministry of Health (79.7%). It is noteworthy that a portion of the respondents evaluated that the information circulating in group applications (11.7%) and social network pages (14.7%) are reliable and about one fifth of the respondents do not trust the information conveyed by the traditional media, such as mass circulation newspapers (23%) and broadcast or closed television news (28%). There was no statistically significant result between these variables and the SWB.

The data analyzed from the subjective well-being scores according to the feelings caused by the period of social isolation resulting from the COVID-19 pandemic are shown in Table 2.

**TABLE 2:** Subjective well-being scores according to feelings caused by the period of social isolation resulting from the COVID-19 pandemic (n=143). First metropolitan region, RJ, Brazil, 2021.

Variables	n (%)	WHO-5 subjective well-being		p-value <sup>1</sup>
		Score<50 n = 66 (%)	Score≥50 n = 77 (%)	
<b>Boredom</b>				<0.05
Never/sometimes	47 (32.9)	14 (21.2)	33 (42.9)	
Always	96 (67.1)	52 (78.8)	44 (57.1)	
<b>Frustration</b>				<0.01
Never/sometimes	62 (43.4)	15 (22.7)	47 (61)	
Always	81 (56.6)	51 (77.3)	30 (39)	
<b>Annoyance</b>				<0.05
Never/sometimes	66 (46.2)	22 (33.3)	44 (57.1)	
Always	77 (53.8)	44 (66.7)	33 (42.9)	
<b>Concern</b>				0.53
Never/sometimes	27 (18.9)	11 (16.7)	16 (20.8)	
Always	116 (81.1)	55 (83.3)	61 (79.2)	
<b>Anguish</b>				<0.05
Never/sometimes	58 (40.6)	18 (27.3)	40 (51.9)	
Always	85 (59.4)	48 (72.7)	37 (48.1)	
<b>Loneliness</b>				<0.05
Never/sometimes	79 (55.2)	28 (42.4)	51 (66.2)	
Always	64 (44.8)	38 (57.6)	26 (33.8)	
<b>Fear</b>				0.12
Never/sometimes	53 (37.1)	20 (30.3)	33 (42.9)	
Always	90 (62.9)	46 (69.7)	44 (57.1)	
<b>Nervousness</b>				<0.01
Never/sometimes	52 (36.4)	16 (24.2)	36 (46.8)	
Always	91 (63.6)	50 (75.8)	41 (53.2)	
<b>Guilt</b>				<0.01
Never/sometimes	105 (73.4)	41 (62.1)	64 (83.1)	
Always	38 (26.6)	25 (37.9)	13 (16.9)	

Legend: <sup>1</sup>Chi-square test, p-value<0.05.

As for the feelings that emerged during the period of social isolation, most participants felt continuously (always) worry (81.1%), boredom (67.1%), nervousness (63.6%) and fear (62.9%). With the exception of worry and fear, there was a statistically significant result for other feelings such as boredom, frustration, annoyance, anguish, loneliness, nervousness and guilt.

Considering the situations of violence caused by the partner or ex-partner, 17 (11.9%) answered that they had already been afraid of their partner, seven (4.9%) had had forced sexual activity and six (4.2%) suffered physical aggression during the COVID-19 pandemic, with these affirmative responses coming mainly from women. These data showed no statistical association with SWB.

The perception of high risk occurred when the respondents considered: exposure or contagion by SARS-CoV-2 in public transport (86.7%), having health impaired by COVID-19 (83.2%), and exposure or contagion by SARS-CoV-2 in the neighborhood or community (77.6%) and at work or school (75.5%). The risk of being exposed to SARS-CoV-2 in alternative transport was the only statistically significant data (p<0.05), being evaluated as low (15.2%), moderate (19.7%) and high (65.2%) by participants with impaired SWB. In individuals with preserved SWB, the percentages of low, moderate and high risk were 5.2%, 36.4% and 58.4%, respectively, for this type of transport.

## DISCUSSION

The men who composed the studied sample had impaired SWB (46.04), denoting that the mental health of these individuals may have been affected by the COVID-19 pandemic, while in women SWB remained preserved (53.42). The fact that the sample studied here was intentionally and mostly female (68.5%) may have influenced these findings, as population studies have found that SWB among women is lower than among men during COVID-19. In a study on the mental health of more than three thousand Germans during the pandemic, the average score of the WHO-5 index was 51.44 for women and 47.52 for men. The predominance of women in electronic surveys was reported as a possible influence on these results, denoting that the study of SWB according to gender requires further research<sup>6</sup>.

The SWB expresses the way individuals experience the world and the satisfaction they feel with this experience are conditioned by gender, culture, age, socioeconomic status and characteristics of the urban environment, factors that can influence quality of life. In cities where individuals have lower incomes, SWB scores tend to be lower. However, when they live in locations with better urban infrastructure and where the population has a high educational profile, the SWB increases in correspondence with the better conditions of the urban space<sup>11</sup>.

SWB among people living in the Baixada Fluminense was lower than among those living in the city of RJ. This finding seems to be related to the social and economic impacts of the pandemic, which affect these two areas of the MR1 differently. From this perspective, it was found that, in the metropolitan region of RJ, both individuals who live in neighborhoods in the West Zone, with the exception of Barra da Tijuca, and those who live in cities in the Baixada Fluminense are more likely to suffer from income loss, 1.47 and 1.67 times more, respectively, compared to those living in the South Zone of that city, where socioeconomic indicators are higher<sup>12</sup>. Therefore, the COVID-19 pandemic has resulted in the worsening of preexisting socioeconomic inequalities<sup>13</sup>.

From this perspective, restrictions on public life resulting from COVID-19 are associated with reductions in psychological and physical well-being, which tend to be uneven. In high- and middle-income countries, mean SWB scores by the WHO-5 index were lower during the pandemic compared to the ones previously observed, but these indicators remained uneven, being higher in high-income countries than in middle-income<sup>2,14</sup>.

The repercussions on psychological well-being were identified in this study, despite the sample studied presenting the SWB preserved by the measured WHO-5 global score. However, during the period of social isolation, participants recurrently felt boredom, frustration, annoyance, anguish, loneliness, nervousness and guilt, which are statistically associated with SWB. The confinement and the decrease in people's socialization resulting from the restrictions imposed by COVID-19 had psychological impacts that manifest themselves in negative feelings, indicating the need for care directed at mental health during and after the pandemic<sup>5</sup>.

Regarding the population's trust in information sources, about 10% of the sample values information coming from applications and social networks, even though most people believe in official and scientific disclosures<sup>15</sup>. Belief in conspiracy theories and fake news correlates with high inconsistency in adherence to preventive practices for COVID-19 contamination. In addition, resistance to the adoption of protective health behaviors is related to political traits related to authoritarianism and conservatism, causing attitudes of low confidence in the information conveyed by the traditional media<sup>15,16</sup>.

The Brazilian context of coping with COVID-19 lacked articulation between the governmental spheres, generating conflict between the recommendations issued at the federal level and the control measures advocated by science and adopted by most state and municipal governments, as well as including attitudes of denialism science in national politics, with important consequences for different segments of society<sup>16,17</sup>. Despite this adverse scenario, most participants have confidence in the information coming from scientists and universities, meaning that strategies for the dissemination and popularization of science must be instituted to fight fake news and its deleterious effects on public health.

Another problem resulting from the pandemic is its negative impact on relationships and family life, where social isolation has had an impact on the increase in cases of domestic violence. This phenomenon has been observed in several countries, such as Germany, where the prevalence of interpersonal violence at the beginning of the pandemic was estimated at 5%, including verbal, physical and sexual violence, accentuating negative feelings and damage to the well-being of the population<sup>6</sup>. So, the reality of large metropolises in Latin America, including Brazil, is even more challenging, considering the security problems that plagued these regions even before COVID-19, especially those that affect the well-being of women<sup>3</sup>. Therefore, studies on the relationship between violence and SWB should be developed to support actions to support people and families, as well as improvements in public policies for preventing and coping with this social and public health problem.

With regard to the use of transport, the pandemic has imposed travel interruptions and affected mobility around the world. Airplanes and buses were considered vehicles with great potential for viral propagation, and the behavior of avoiding them was identified in ten countries<sup>18</sup>. Commuting using public transport was evaluated by the sample of this study as more risky than alternative transport, since its conditions do not ensure physical distancing and adequate ventilation. This finding should be further studied, as transport has interfaces with access to health services.

The findings of this study corroborate the reports on the negative effects of COVID-19 on the SWB of individuals due to the restrictions and social uncertainties caused by the necessary measures to control the pandemic, affecting their mental health and demanding strategic policies to ensure their well-being and quality of life of the population<sup>2,5,14</sup>.

## Limitations of the study

The limitation of the study regards its methodological design and sample size, which do not allow generalizations of its results. Despite this, it is believed that the findings described shed light on important issues to be considered about the strategic areas in the care of the population in this third year of the pandemic and in the years to come, such as the promotion of mental health, prevention of domestic violence, the communication in health and the role of universities and scientists in popularizing scientific information that promotes healthy and safe behavior for individuals and communities.

## CONCLUSION

The study identified that the SWB in the individuals studied is at the preserved level, but the well-being of men was more affected than that of women. Emotional responses suggestive of negative repercussions on the mental health of the respondents due to the pandemic were verified, as well as cases of intimate partner violence. The SWB of the participants showed a statistical association with illness from COVID-19; residence in the Baixada Fluminense area; feelings of boredom, frustration, annoyance, distress, loneliness and nervousness during social isolation and risk of exposure to SARS-CoV-2 in alternative transport.

The study sheds light on the psychosocial needs that may arise from the ongoing pandemic and the emerging demands for care strategies aimed at health promotion and disease prevention, such as impaired emotional responses and situations of violence identified here.

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