

## The impacts on the mental health of residents of 16 favelas observed during the coronavirus pandemic in Brazil

O impacto da pandemia do coronavírus na saúde mental dos residentes de 16 favelas no Brasil

El impacto de la pandemia de coronavirus en la salud mental de los habitantes de 16 favelas en Brasil

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### Abstract

The COVID-19 pandemic in Brazil has caused a scenario of extreme social vulnerability, with high unemployment rates and severe cuts to social benefits and policies. Aims: analyze the impacts of the pandemic on the mental health and quality of life on people living in contexts of high-levels of armed and lethal violence and social fragility. Methods: A longitudinal cohort study was undertaken with a convenient sample of fifty individuals who live in 16 favelas in Rio de Janeiro (Brazil) before and during the COVID-19 pandemic. The interviews included enquired about the respondent's capacity to cope with the pandemic and their access to services as well as questions about mental health (Brief Symptoms Inventory), and Quality of Life (Manchester Short Assessment of Quality of Life). Results: The results revealed a decrease in the somatization dimension of the BSI scale and a worsening on the objective index (SIX) of quality of life. Mental health distress increased more in the male group when compared to the female group during the COVID-19 pandemic. It seems likely; therefore, the COVID-19 pandemic presents a major challenge for people living in a context of urban violence and social deprivation. Conclusions: The worsening of mental distress and quality of life during the pandemic impacts both genders and suggests the need for policies directed to health and employment protection.

**Keywords:** Coronavirus infections; COVID-19; Quality of Life; Mental Health; Violence.

### Resumo

A pandemia COVID-19 atingiu o cenário de extrema vulnerabilidade, com altas taxas de desemprego e severos cortes orçamentários nas políticas sociais. Objetivos: analisar os impactos da pandemia na saúde mental e na qualidade de vida de pessoas que vivem em violência e em contextos de privação social. Métodos: Foi realizado um estudo de coorte longitudinal de uma amostra conveniente de cinquenta indivíduos que moravam em favelas no Rio de Janeiro,

Brasil, antes e durante a pandemia COVID-19. As entrevistas incluíram condições para enfrentar a pandemia e acesso aos serviços, questões sobre saúde mental (Brief Symptoms Inventory) e Manchester Short Assessment of Quality of Life (MANSA). Resultados: Os resultados revelaram diminuição da dimensão de somatização da escala BSI e piora do índice objetivo (SIX) de qualidade de vida. O estresse mental aumentou mais no grupo masculino quando comparado ao grupo feminino durante a pandemia de COVID-19. Parece provável, portanto, que a pandemia COVID-19 represente um enorme desafio para as pessoas que vivem em um contexto de violência urbana e privação social. Conclusões: O agravamento do sofrimento mental e da qualidade de vida durante a pandemia impacta ambos os sexos e sugere a necessidade de políticas direcionadas para a saúde e proteção do emprego.

**Palavras-chave:** Infecções por Coronavírus; COVID-19; Qualidade de Vida; Saúde mental; Violência.

### **Resumen**

La pandemia de COVID-19 golpeó el escenario de extrema vulnerabilidad, con altas tasas de desempleo y severos recortes presupuestarios en las políticas sociales. Objetivos: analizar los impactos de la pandemia en la salud mental y la calidad de vida de las personas que viven en situaciones de violencia y en contextos de privación social. Métodos: Realizamos un estudio de cohorte longitudinal de una muestra conveniente de cincuenta individuos que vivían en favelas en Río de Janeiro, Brasil, antes y durante la pandemia de COVID-19. Las entrevistas incluyeron condiciones para enfrentar la pandemia y acceso a servicios, preguntas sobre salud mental (Inventario Breve de Síntomas) y Evaluación Corta de la Calidad de Vida de Manchester (MANSA). Resultados: Los resultados revelaron una disminución en la dimensión de somatización de la escala BSI y un empeoramiento del índice objetivo (SIX) de calidad de vida. El estrés mental aumentó más en el grupo de hombres en comparación con el grupo de mujeres durante la pandemia de COVID-19. Por lo tanto, parece probable que la pandemia de COVID-19 represente un enorme desafío para las personas que viven en un contexto de violencia urbana y privación social. Conclusiones: El agravamiento del sufrimiento mental y la calidad de vida durante la pandemia impacta a ambos sexos y sugiere la necesidad de políticas orientadas a la protección de la salud y el empleo.

**Palabras clave:** Infecciones por Coronavírus; COVID-19; Calidad de Vida; Salud; Mental; Violencia.

## **1. Introduction**

In Brazil, the COVID-19 pandemic is a phenomenon that is being experienced on a large scale and in tragic proportions. Brazil has become the second country in the world to break the mark of 580,000 coronavirus deaths and it has become the country with the third-highest number of confirmed coronavirus infections in the world (WHO, 2021).

The COVID-19 pandemic has caused a scenario of extreme social vulnerability, with high unemployment rates and severe cuts to social benefits and policies (Werneck & Carvalho, 2020). In this context, favela residents in large cities in Brazil face major challenges related to precarious conditions of employment and housing, denial of rights and an absence of state provision and services, especially with regard to health, education and public security (Redes da Maré, 2019). Maré is a conglomeration of 16 favelas with approximately 140 thousand people, living in more than 47 thousand households (Redes da Maré, 2019). In this territory, the violation of basic rights and an exposure to the constant risk of armed violence have a marked impact on the life of the residents (Redes da Maré, 2019). This context of extreme social vulnerability may contribute to poor mental health and have a consequent impact on the quality of life of this population. This situation is aggravated by recurrent exposure to serious situations of violence (Gonçalves, Queiroz & Delgado, 2017), caused by lethal police operations within the communities, conflict between the armed criminal organizations and the federal government's incentive to increase the civil population's access to guns (Krug, Mercy, Dahlberg & Zwi, 2021).

Deaths as a result of police actions cause a constant level of fear. Data from the Brazilian Yearbook of Public Security (Bueno & Lima, 2019) reveal that in 2019 11 out of every 100 intentional violent deaths were caused by police actions, more than 80% of them being black men and young adults. In Rio de Janeiro, in addition to armed criminal organizations, militias formed by current and ex-police and military also contribute decisively to the high rates of intentional violent deaths and disappearances.

A literature review of 102 studies about major disasters has demonstrated the potential range, magnitude, and duration of a disaster's effects on the mental health of different populations around the world (Norris, Friedman, Watson, Byrne, Diaz &

Kaniasty, 2002). Severe levels of impairment (e.g., worsening of physical and mental health conditions, decreasing quality of life (QOL) and barriers to the access to health services), were most likely to occur in samples that had experienced mass violence disaster compared to natural and technological ones. The onset and the duration of psychological distress are influenced by conditions of social support, employment and financial situation and previous history of trauma (Bueno & Lima, 2019). However, the course and severity of mental suffering triggered by major disasters can be modified and minimized by offering mental health care services (Watson, Brymer & Bonanno, 2020).

During previous epidemics of respiratory transmission such as SARS, it has been documented that the stress associated with health risks and required sanitary measures, including social distancing as well as the consequent financial problems are factors for the development of mental disorders (Hawryluck, 2005). In the current case of COVID-19, some authors (Izaguirre-Torres & Sicheb, 2020) hypothesize that at some time, the entire world population will suffer a mental disorder associated with the pandemic, even the ones that was not infected by the virus.

A review of the current literature about the impact of COVID-19 infection on the mental health in the general population showed that psychological impact indicates a public health priority for both authorities and policymakers who should include behavioral strategies to reduce the burden of disease and the dramatic mental health consequences of this outbreak (Serafini, Parmigiani, Amerio, Aguglia, Sher & Amore, 2020). In order to develop community-based strategies to face the challenges imposed by the pandemic and develop further research priorities we need more information about the pandemic's impact on mental health, especially for populations with social vulnerabilities (Gordon & Borja, 2020; Pablo et al, 2020).

We did not find any study that has investigated the repercussions of a pandemic on mental health and quality of life in a sample of populations living in conditions of social vulnerability. Therefore, the present study aims to analyze the impacts of the coronavirus pandemic on the mental health and QOL on people living in 16 favelas of Rio de Janeiro known as the Complexo da Maré.

## 2. Methodology

This quantitative, longitudinal cohort study is part of the research project "Building the barricades: three interdisciplinary studies on Mental Health, Wellbeing and Substance Use Disorders in the context of armed violence in Brazil" that focused on interviews with individuals who live in 16 favelas in the area of Maré in Rio de Janeiro (Cruz et al, 2020). We chose the quantitative nature, a method that uses observable indicators and trends, in order to be more suitable for ascertaining the interviewees' opinions and attitudes (Minayo & Sanches, 1993). Within the epidemiological studies, we opted for a longitudinal study to produce the variations of the mental health and Quality of Life characteristics of people that lives in Maré. Within these methods we presented a temporal sequence of population characteristics before and during COVID-19 pandemic. (Rouquayrol & Almeida, 2003). Interviews completed during a household survey were completed in February 2020 before the onset of the pandemic. During that household study, 146 of the 1,211 respondents agreed to be invited to a follow-up interview by providing a mobile phone number. Fifty individuals of those 146 answered the questionnaire devised for this present study, and for this reason, the sample may be considered a convenience sample. The inclusion criteria for the present study were: individuals aged over 18, who participated in the interview phase of the quantitative survey of the Building the Barricades study and agreed to be contacted on a second occasion to be reinterviewed. All the participants have given consent for their data to be used in the research. The exclusion criteria were applied for people with a lack of capacity to consent, who refused or withdrew consent, have cognitive impairments severe enough to prevent them from providing information for the study instruments, or respondents that did not answer all the questions/fields.

First, a trained interviewer sent a voice Whatsapp message recorded by the coordinator of Redes da Maré, a Research Consultant of the "Building the barricades" research project, inviting each of the 146 participants. Redes da Maré is a civil society institution that develops projects and actions to strengthen the guarantee of rights of the residents on Complexo da Maré, the voice message of the coordinator of Redes da Maré was a strategy intended to be a notable factor in building trust and responsivity at a very vulnerable time. After that a text message or voice call via WhatsApp, requesting authorization to send the questionnaire by message was sent. The interviewers made two additional contact attempts for individuals who did not answer the call or respond to the text messages.

The interview included basic information about specific concerns of the pandemic, objective conditions to cope with the situation, and access to services, as well as questions about mental health and quality of life. The following instruments are described in the study protocol: a questionnaire developed specifically for the *Building the Barricades* study (Cruz et al, 2020) including Sociodemographic profile; access to social and health services; mental health profile using 18-items Brief Symptoms Inventory (BSI); Quality of Life, using Manchester Short Assessment of Quality of Life (MANSA).

The BSI is a symptom inventory that includes questions of well-being and symptom levels characteristic of formal psychiatric disorders (Derogatis & Fitzpatrick, 2004). MANSA is a Quality of Life questionnaire that includes 16 questions. MANSA Subjective Quality of Life (SQL) comprises 12 questions about subjective domains related to how satisfied the interviewee is with life well-being, employment and financial situation, relationships (number and quality of friendships), leisure activities, accommodation, personal safety, people the person lives with (or living alone), sex life, relationship with family, physical and mental health. MANSA Objective Social Outcomes Index - SIX includes four objective questions about employment status, living alone or accompanied, housing (living in a house/apartment, shelter or homeless), and if the person has encountered/ has been visited by any friend in the past 7 days or not measured using a 7-point Likert scale (1=negative extreme, 7= positive extreme) (Priebe, Watzke, Hansson & Burns, 2008).

For descriptive analysis, means and standard deviations were calculated for continuous and percentages for categorical variables. Linear mixed-effect models were used to evaluate differences in mental health (anxiety, depression, somatization, and Global Symptoms Index) and quality of life over time, fitting parametric curves to the data. The model incorporated the variables time, gender, and the interaction term (time  $\times$  gender). All models were fitted using random intercept, and we assumed an unstructured variance-covariance pattern. All analyses were performed using SAS On demand for Academics, and statistical significance was set at  $p < 0.05$ .

The study protocol was approved by the Brazilian National Commission for Research Ethics under the number CAAE: 01944918.2.0000.5263. Data is available on request due to privacy/ethical restrictions. For further explanations about the data please request access from the corresponding author.

### 3. Results

Fifty individuals who live in the complex of favelas da Maré, Rio de Janeiro Brazil, were interviewed before and during the coronavirus pandemic. The sample consisted mostly of females ( $n=38$ ), were middle-aged (mean  $34.5 \pm$  SD 11.09), predominantly Black and light-skinned black (66%), with high school education and more (57.14%). Almost three-quarters described themselves as religious (72%). The proportion of those interviewed who reported being currently employed dropped from 56% to 44% during the pandemic. Almost half of the sample (46%) reported not having the means to provide financial support for themselves and their family. One-third had to count on irregular employment (34%), or government pandemic benefit (32%), and one-fifth had to count on family financial support (20%) (Table 1).

**Table 1.** Characteristics of the study participants.

<b>Variables *</b>	<b>All (n=50)</b>	<b>Male (n=12; 24%)</b>	<b>Female (n=38; 76%)</b>	<b>Individuals selected to the follow-up (n=146; 32.2% male, 67.8% female)</b>	<b>Study population at baseline (n=1211; 38.7% male, 61.3% female)</b>
<b>Age (yrs)</b>	34.5 ± 11.09	31.0 ± 8.72	35.6 ± 11.63	36.5 ± 13.07	43 ± 16.94
<b>Race/color (n=50)</b>					
White	16 (32.0)	5 (41.67)	11 (28.95)	38 (26.03)	382 (31.94)
Black	13 (26.0)	5 (41.67)	15 (39.47)	30 (20.55)	243 (20.32)
Light-skinned blacks	20 (40.0)	2 (16.67)	11 (28.95)	76 (52.05)	547 (45.74)
Asian / Indigenous	1 (2.0)	0	1 (2.63)	2 (1.37)	24 (2.01)
<b>Education completed (n=49)</b>					
Elementary or less	21 (42.85)	2 (16.67)	19 (51.35)	83 (57.24)	808 (66.88)
High school and more	28 (57.14)	10 (83.33)	18 (48.65)	62 (42.76)	400 (33.12)
<b>Religious (n=50)</b>					
Yes	36 (72.0)	7 (58.33)	29 (76.32)	101 (69.18)	890 (73.68)
No	14 (28.0)	5 (41.67)	9 (23.68)	45 (30.82)	318 (26.32)
<b>Employment status before/during pandemic (n=50)</b>					
Employed	28 (56.0)	8 (66.67)	20 (52.63)	84 (57.53)	676 (55.87)
Unemployed	22 (44.0)	4 (33.33)	18 (47.37)	62 (42.47)	534 (44.13)
<b>Monthly Income (in Reais)</b>	1926 ± 1268	2167 ± 985	1842 ± 1355	1781 ± 1205	1801 ± 1091
<b>Has means to self-support (n=42)</b>					
Yes	23 (46.0)	6 (50.0)	17 (44.74)	---	---
<b>Income source (n=50)**</b>					
Regular job	15 (30.0)	4 (33.33)	11 (28.95)	---	---
Irregular job	17 (34.0)	5 (41.67)	12 (31.58)	---	---
Family	10 (20.0)	4 (33.33)	6 (15.79)	---	---
Government pandemic benefit	16 (32.0)	6 (50.0)	10 (26.32)	---	---
Other	11 (22.0)	2 (16.67)	9 (23.68)	---	---

\* Data are mean ± standard deviation or n (%)

\*\*Accept more than one answer

Source: Authors.

The sample of the present study (N=50) does not differ from the sample of those who agreed to be interviewed in the follow-up (N=146) and from the baseline sample (N=2011) concerning race/color, religious practice, employment status and monthly income variables. Otherwise, our sample presents a lower mean age, higher percentage of women and higher education levels (Table 1).

In the sample as a whole, we observed a decrease in somatization dimension of the BSI scale ( $0.91 \pm 1.06$  to  $0.66 \pm 0.77$ ;  $p=0.05$ ) and worsening on the (SIX) index ( $4.48 \pm 1.07$  to  $3.90 \pm 0.99$ ;  $p<0.001$ ) (Table 2).

**Table 2.** Baseline for BSI and MANSA variables.

Variables	Male (n=14)				Female (n=38)				
	Before covid mean ± SD	During covid mean ± SD	Δ	p *	Before covid mean ± SD	During covid mean ± SD	Δ	p *	p **
<b>BSI</b>									
Anxiety	1.06 ± 1.45	1.36 ± 1.34	+0.3	0.16	0.95 ± 1.02	0.95 ± 0.72	0.0	0.98	0.31
Depression	1.00 ± 1.26	1.67 ± 1.49	+0.67	0.06	1.18 ± 1.15	1.05 ± 0.78	-0.14	0.43	0.03
Somatization	0.79 ± 1.35	1.00 ± 1.15	+0.21	0.38	0.94 ± 0.97	0.55 ± 0.58	-0.39	0.01	0.04
GSI	0.95 ± 1.15	1.34 ± 1.21	+0.39	0.04	1.02 ± 0.71	0.85 ± 0.60	-0.17	0.10	0.008
<b>MANSA</b>									
SIX	5.08 ± 1.08	4.17 ± 1.27	-0.91	0.001	4.68 ± 1.07	3.82 ± 0.90	-0.86	<0.001	0.89
SQL	4.56 ± 1.02	3.72 ± 1.33	-0.85	0.01	4.05 ± 1.12	4.12 ± 1.03	+0.07	0.63	0.004

\* linear mixed effect models including the variable time in the model

Source: Authors.

Mental health distress increased more in the male group when compared to the female group during the COVID-19 pandemic on the BSI dimensions for depression ( $p=0.03$ ) and somatization ( $p=0.04$ ) (Table 3). For the male group, the Global Symptoms Index – (GSI) scored significantly higher during the COVID-19 pandemic ( $0.95 \pm 1.15$  to  $1.34 \pm 1.21$ ;  $p=0.04$ ). Scores changed significantly in male and female groups in relation to depression ( $p=0.03$ ), somatization ( $p=0.04$ ), and on GSI ( $p=0.008$ ), with a worsening impact on the male group. For the female group cohort, we found that during the coronavirus pandemic, there was a decrease in the somatization dimension of BSI ( $0.94 \pm 0.97$  to  $0.55 \pm 0.58$ ;  $p=0.01$ ) (Table 3).

**Table 3.** Crude means and estimated changes from baseline for BSI and MANSA variables.

Variables	Male (n=14)				Female (n=38)				
	Before covid mean ± SD	During covid mean ± SD	Δ	p *	Before covid mean ± SD	During covid mean ± SD	Δ	p *	p **
<b>BSI</b>									
Anxiety	1.06 ± 1.45	1.36 ± 1.34	+0.3	0.16	0.95 ± 1.02	0.95 ± 0.72	0.0	0.98	0.31
Depression	1.00 ± 1.26	1.67 ± 1.49	+0.67	0.06	1.18 ± 1.15	1.05 ± 0.78	-0.14	0.43	0.03
Somatization	0.79 ± 1.35	1.00 ± 1.15	+0.21	0.38	0.94 ± 0.97	0.55 ± 0.58	-0.39	0.01	0.04
GSI	0.95 ± 1.15	1.34 ± 1.21	+0.39	0.04	1.02 ± 0.71	0.85 ± 0.60	-0.17	0.10	0.008
<b>MANSA</b>									
SIX	5.08 ± 1.08	4.17 ± 1.27	-0.91	0.001	4.68 ± 1.07	3.82 ± 0.90	-0.86	<0.001	0.89
SQL	4.56 ± 1.02	3.72 ± 1.33	-0.85	0.01	4.05 ± 1.12	4.12 ± 1.03	+0.07	0.63	0.004

\*p values correspond to variation for males/females before and during covid

Linear mixed effect models including the variables *time gender time × gender*

\*\*p values correspond to the interaction term *time × gender*

Source: Authors.

The male group showed a statistically significant decrease in Quality of Life during the COVID-19 pandemic (SIX - 0.91  $p = 0.001$ ; SQL -0.85  $p = 0.01$ ). In this group, the scores on Quality of Life questions decreased both on objective questions ( $5.08 \pm 1.08$  to  $4.17 \pm 1.27$ ;  $p=0.001$ ), and on subjective questions about satisfaction with life ( $4.56 \pm 1.02$  to  $3.72 \pm 1.33$ ;  $p = 0.01$ ). Subjective Quality of Life (SQL) also changed differently for males than for females, with a discernible worsening in the male group ( $p=0.004$ ) (Table 3).

#### 4. Discussion

The present study collected data before and during the pandemic and showed changes in BSI and MANSA scores, represented by worsening mental health and quality of life scores during the COVID-19 pandemic for people living in a

territory deprived of access to basic services and rights which is subject to high levels of armed conflict. The sample as a whole presented worsening of the objective score of MANSA. This score includes questions directed at objective conditions (housing, living alone or not, employment status, and having or not contact with family and friends). Our study also showed that the pandemic impacted differently on men and women in terms of BSI dimensions and MANSA scores.

The COVID-19 pandemic has been associated with mental health challenges related to the impairment of social and economic activities, and physical distancing and stay-at-home orders that require a mental health focus on a global level (Czeisler et al, 2020; Lima et al, 2020; Bhattacharjee & Acharya, 2020; Tsamakidis et al, 2020). Adverse mental or behavioral health conditions including symptoms of anxiety disorder or depressive disorder are more common during the periods of epidemics (Czeisler et al, 2020; Ougrin, 2020). Other studies developed since the beginning of the COVID-19 pandemic showed direct impacts on people's mental health and the mental health care system. Several studies show this impact on health team professionals (Johnson et al, 2020; Pearson, 2020) but few focused on the general population (Blanc et al, 2020).

People who live in low-income countries have suffered a deterioration of their mental health in multiple ways during the pandemic, related to the widespread prevalence of untreated trauma and other psychiatric conditions, unemployment, police brutality, hunger and limited or no access to mental health resources (Kene, 2020). There is a lack of studies about the impact of the COVID-19 pandemic on people living in deprived social contexts. According to Martin et al. (2020), homeless people have been severely affected by the pandemic. Their living conditions, comorbidity with different pathologies, and a greater frequency of mental disorders contribute to the vulnerability of part of the population to the pandemic impact (Martin et al, 2020).

The results of the present study suggest that the vulnerability of social conditions of the sample studied may contribute to the impact of the COVID-19 pandemic. A recent study demonstrated that education and employment situations may affect mental health, substance use, and suicidal ideation during the COVID-19 Pandemic. In this study about suicidal ideation during the COVID-19 Pandemic in the US, 40.9% of 5,470 respondents reported an adverse mental or behavioral health symptom. Among this group, the majority of the individuals have less than a high school diploma (66.2%), were essential workers (54.0%), and were unpaid caregivers for adults (66.6%) (Czeisler et al, 2020).

One of the most noticeable results of the present study is that worsening mental health conditions and a decrease of QOL were higher among males than females. The increased incidence of depression in men needs to be better understood, considering that depression is usually twice as common among women and that female stress-related depression is more commonly identified (Nolen-Hoeksema, 2001). During COVID-19, gender-associated mental health and quality of life have been shown to be related to a higher female vulnerability (Connor et al, 2020). In an exploratory qualitative study that incorporated triangulation to investigate new or increased stressful life events (SLEs) as a result of this pandemic in the U.S. (key informant interviews (N=34), two open-ended surveys (N=85 and 205 respectively) and two focus groups (N=10 and 15 respectively), showed that more males than females reported mental illness (Jean-Baptista et al, 2020). For the male group, the reduction in the quality of their mental health was accompanied by an increase in substance use. On the other hand, females related multiple stressors as a result of the pandemic compared to fewer responses from males (Jean-Baptista et al, 2020).

A panel of surveys representative of adults 18 years or older in the US during the COVID-19 pandemic, shows that suicidal ideation has been more prevalent among males than females during the pandemic<sup>17</sup>. The male group reported symptoms of adverse mental or behavioral health conditions such as depressive disorder and COVID-19-related trauma and stressor-related disorder, initiation of or increase in substance use to cope with COVID-19-associated stress (Czeisler et al, 2020).

One plausible explanation for this greater vulnerability for men is probably related to the fact that all disease results in

some form of social and personal unworthiness. In addition, men are culturally more socially responsible and charged for supporting the family. In the pandemic, job loss can be a source of aggravation for this population and impact on their mental health.

This hypothesis is supported by the finding of a study about gender differences and the effect of the ongoing COVID-19 situation conducted in London. The study showed that men are more frequently worried about national/ international impacts, finances, and work than women during the pandemic (Van der Vegt & Kleinberg, 2020). One qualitative study conducted with men residing in Brazil revealed that the pandemic provokes feelings and emotions that are part of the processes of the social-historical framing of the disease, such as tension, fear, and insecurity (Sousa, 2020). Men expressed fear in relation to the collapse in the Brazilian health system, the increased mortality from COVID-19 in Brazil, and uncertainties in the rupture of social interactions.

The literature demonstrated that mental health and QOL are phenomena that coincide. A study that evaluated Health-Related Quality of Life during the COVID-19 pandemic showed that some conditions increase the risk of pain/discomfort and anxiety/depression in general population in China, for example: older people, lower income and worried to be unemployed, have chronic disease, and worries about getting sick with COVID-19. In this study, men were more likely to report problems in mobility (6.1%) than women (2.4%) (Ping et al, 2020).

The employment situation is one of the vulnerabilities of the sample interviewed. Our results showed that employment dropped during the pandemic. Moreover, a quarter of the sample had no means for self and family support and the majority had irregular employment or had to count on family financial support, or government pandemic benefit. Unemployment had already been described as associated with problems of anxiety/depression problems in China during the COVID-19 pandemic (Ping et al, 2020). On the other hand, another study showed that higher symptoms from depression such as suicidal ideation were more prevalent among employed than unemployed respondents, and among essential workers than non-essential workers (Czeisler et al, 2020). In many societies, the male gender is associated with the responsibility of family financial support. This cultural background could be a possible explanation for the higher impact on the male group's mental health and QOL during the pandemic. Another possible reason could be the differences in preferred socialization spaces between men and women. Male leisure and socialization may occur more frequently out of domestic spaces and include activities such as sports, bars, chatting with friends on the streets and squares, while women often have leisure and socialization activities at home. Could the social isolation imposed by the sanitary measures of the pandemic have impacted men and women differently?

The impact of the pandemic on male groups is yet to be determined as is shown by Ma et al (2020) who found in a 770 cross-sectional study in China that in that group the increase of depression and decrease of QOL of life was less common among men during the covid pandemic.

Another noticeable result of the present study is that, although it is assumed that the impacts of the COVID-19 pandemic led to negative perspectives related to mental health in the female group, positive experiences were also observed, such as reduced somatization. This result is surprising considering that current literature describes the higher health risks and negative outcomes that affect women during the COVID-19 pandemic (Connor et al, 2020). Different hypotheses may be raised to explain the decrease in somatization among women. For instance, facing concrete threats may lower mental suffering due to subjective threats for this group. Female higher adherence to public health measures and social distance guidelines during the pandemic had already been described (Park et al, 2020). Women also more frequently discuss sickness and death and give more attention to internal and emotional processes (Van der Vegt & Kleinberg, 2020) which may help them to separate what is a concrete disease and what is somatization.

It is important to notice that the small size of the sample is the main limitation of the present study. Also, the use of a



convenience sample makes it necessary to confirm if our results are maintained in a larger representative sample. The data collection strategy determined by the need for social isolation required the use of a convenience sample. In addition, the interview procedure by application or by phone may have hindered higher adherence to the survey as it may have selected only those who felt their privacy was preserved to respond by these means. We cannot say how many of the interviewed had a private space to speak and many only had appropriate or necessary privacy in their bedroom or not at all. Nevertheless, this study represents an opportunity to collect data from the same participants before and during the pandemic and our results indicate that health and employment policy actions, specially ones that are gender-focused are necessary to prevent and ameliorate mental health distress and quality of life of people living in socially vulnerable conditions.

## 5. Conclusion

The present study contributes to the understanding of the impacts on mental health and QOL observed during the coronavirus pandemic of people who live in violent and socially deprived contexts. As the sample is composed of individuals who live in favelas in the Complex of Maré in Rio de Janeiro (Brazil) it speaks of those who live at the intersection of various social vulnerabilities. The results indicate the situation of vulnerability during COVID-19 from a longitudinal line of analysis including an increase in unemployment in a context of low education resulting in people not being able to support themselves and their families.

COVID-19 pandemic has become a huge challenge for both male and female populations living in a territory demarcated by violence and lack of social resources as demonstrated by the worsening of quality of life of the whole group and the impact on mental health and quality of life of the male group. The intense stress related to social distancing, increased economic disadvantage, and inequalities in health care may be relevant reasons for mental health and quality of life impact. Therefore, our findings may contribute to the development of future policy and interventions especially those aimed at health and employment security and based on gender differences.

COVID-19 pandemic has been associated with mental health challenges. The findings of this study related to a worsening of mental distress and quality of life during the pandemic and demonstrated the impacts on both genders, suggesting the need for policies directed to health and employment protection. Our results also indicate the necessity that mental health policy-making must address information from research on poverty especially in the case of people living in a context of urban violence and social deprivation. We recognize the necessity of future research that could elucidate the gender-based effects of the COVID-19 pandemic.

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