COMUNICAÇÃO BREVE

The impact of the COVID-19 pandemic on Quality of Life among Local Residents in south of Brazil

O impacto da pandemia da COVID-19 na Qualidade de Vida em residentes locais no sul do Brasil

El impacto de la pandemia COVID-19 en la Calidad de Vida de los residentes locales en el sur de Brasil

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Abstract

Introduction: The impact of restrictive measures during the COVID-19 pandemic resulted in negative effects on the Quality of Life (QoL). It is important to evaluate this measure in a specific region with a homogeneous profile and with high rates of transmission during the pandemic in a developing nation as Brazil. **Objectives:** The objective of this study was to assess through an online self-reported questionnaire the impact of COVID-19 pandemic on QoL in a specific region in the South of Brazil, called "Vale do Taquari", in the initial stage of the COVID-19 outbreak. **Methods:** This study was conducted with 325 individuals. We assessed sociodemographic variables and depression, anxiety, stress symptoms (Depression, Anxiety and Stress Scale-21 (DASS-21), sleep quality (The Pittsburgh Sleep Quality Index PSQI), post-traumatic stress symptoms (Impact of Event Scale-IES-R scale) and QoL (The World Health Organization quality of life assessment (WHOQOL-bref). **Results:** Reduced psychological symptoms, better sleep quality, shorter duration of social isolation, not experiencing stressful situations during the pandemic, higher education and older age were associated with increased QoL. **Conclusion:** Our results could be used as a historical reference and help assist local authorities to define future intervention strategies, since we will probably need to deal with the deleterious effects of the pandemic even after its complete control.

Keywords: COVID-19; Quality of life; Brazil

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Resumo

Introdução: O impacto das medidas restritivas durante a pandemia de COVID-19 resultou em efeitos negativos na Qualidade de Vida (QV). É importante avaliar essa medida em uma região específica com perfil homogêneo e com altas taxas de transmissão durante a pandemia em uma nação em desenvolvimento como o Brasil. **Objetivos:** o objetivo deste estudo foi avaliar, por meio de um questionário autoaplicável online, o impacto da pandemia de COVID-19 na QV em uma região específica do Sul do Brasil, denominada "Vale do Taquari", na fase inicial do Surto de COVID-19. **Métodos:** Este estudo foi realizado com 325 indivíduos. Foram avaliadas variáveis sociodemográficas e sintomas de depressão, ansiedade e estresse (Depression, Anxiety and Stress Scale-21 (DASS-21), qualidade do sono (The Pittsburgh Sleep Quality Index PSQI), sintomas de estresse pós-traumático (Impact of Event Scale-IES-R scale) e QV (The World Health Organization quality of life assessment (WHOQOLbref). **Resultados:** sintomas psicológicos reduzidos, melhor qualidade do sono, menor duração do isolamento social, não vivenciar situações estressantes durante a pandemia, ensino superior e idade avançada foram associados ao aumento da QV. **Conclusão:** Nossos resultados podem ser usados como referência histórica e ajudar as autoridades locais a definir futuras estratégias de intervenção, pois provavelmente precisaremos lidar com os efeitos deletérios da pandemia mesmo após seu controle total.

Palavras chaves: COVID-19; Qualidade de vida; Brasil

Resumen

Objetivos: El impacto de las medidas restrictivas durante la pandemia de COVID-19 resultó en efectos negativos en la Calidad de Vida (CV). Sería importante evaluar esta medida en una región específica con un perfil homogéneo y con altas tasas de transmisión durante la pandemia en un país en desarrollo como Brasil. El objetivo de este estudio fue evaluar, a través de un cuestionario autoadministrado en línea, el impacto de la pandemia COVID-19 en la CV en una región específica del sur de Brasil, denominada "Vale do Taquari", en la fase inicial del COVID-19. **Métodos:** Este estudio se llevó a cabo con 325 individuos. Se evaluaron variables sociodemográficas y síntomas de depresión, ansiedad, estrés (DASS-21), calidad del sueño (The Pittsburgh Sleep Quality Index (PSQI), síntomas de trastorno de estrés postraumático (Impact of Event Scale-IES-R) y CV (WHOQOL-bref). **Resultados:** reducción de síntomas psicológicos, mejor calidad del sueño, menor tiempo de aislamiento social, no experimentar situaciones estresantes durante la pandemia, educación superior y vejez se asociaron con un aumento de CV. **Conclusión:** Nuestros resultados pueden ser se utiliza como referencia histórica y ayuda para ayudar a las autoridades locales a definir estrategias de intervención futuras, ya que probablemente tendremos que hacer frente a los efectos nocivos de la pandemia incluso después de su completo control.

Palabras clave: Calidad de Vida; COVID-19; Brasil

Introduction

The COVID-19 pandemic resulted in an impact on the daily life routine in most people around the world. Despite the efforts to contain the virus, unfortunately, a significant and growing number of deaths has been reported in all continents, and Brazil is being severely affected by the COVID-19 transmission[1]. Local governments everywhere adopted some type of social distancing as a way to prevent the spread of the virus. The impact of this restrictive measure, especially in the early stage of the pandemic, when feelings of uncertainty and fear of becoming infected prevailed, resulted in higher levels of psychiatric symptoms, economic crisis, and negative effects on the quality of life (QoL)[2].

The studies about QoL – which is the "individual's perception of their position in life in the context of the culture in which they live and in relation to their goals, expectations, standards and concerns''[3] – during pandemic suggest differences between countries. Developing nations, with compromised health structures, have been greatly affected[2,4]. Few studies link the current pandemic to reduced QoL in Brazil[5,6]. These studies indicated that females, lower educational levels, testing positive for COVID-19, and unemployed participants showed worse QoL, as well as higher rates of QoL were associated with less depressive symptoms. However, Brazil is a continental country, with differences in culture, socioeconomic levels, and patterns of social isolation measures. Knowing that these characteristics may influence QoL, it is important to evaluate this construct in a more homogeneous population to reduce possible confounders.

Therefore, we aim to assess the impact of COVID-19 pandemic on QoL in a region in the South of Brazil called "Vale do Taquari", during the initial stage of the COVID-19 outbreak. This population has similar culture, socioeconomic status, and social distance policies adopted by the local governments, as well as high rates of contamination[7,8]. More specifically, we aimed to: i) describe QoL of participants; ii) investigate the relationship between QoL and sociodemographic, pandemic related, and psychological symptoms variables; and iii) explore which variables contribute most to the likelihood that participants have better QoL. Particular attention will be given to the physical, psychological, social, and environmental domains of QoL.

Methods

Participants comprised 325 individuals from "Vale do Taquari'' in Rio Grande do Sul, Brazil. The project was approved by the local ethics' committee (CAAE number 34754020.2.0000.5310) and all participants provided electronic informed consent. The subjects were drawn from an online questionnaire, built in the Google Forms Platform and conducted between August and September/2020. Evaluations included clinical and sociodemographic variables, and the following instruments: Depression, Anxiety and Stress Scale-21 (DASS-21)[9], The Pittsburgh Sleep Quality Index (PSQI)[10], and The World Health Organization quality of life assessment (WHOQOL-bref) with four domains (physical, psychological, social relationships, and environment)[11]. Statistical analyses were completed in Statistical Package for the Social Sciences (SPSS v20). We first described participants' characteristics. Then, we investigated the magnitude of the relationships between QoL and sociodemographic, pandemic related, and psychological symptoms variables. Finally, we conducted linear logistic regressions with

the backwards method based on the probability of the Wald statistic to explore the likelihood that participants had better QoL in each specific QoL domain. Participants were considered to have better QoL if scored 3 or 4 on each domain ("good" and "very good" according to the WHOQOL-bref guideline). Significance was set at p < 0.05, 2-tailed.

Results

Sample characteristics are described in Table 1. Overall quality of life was correlated with age (r=0.232,p<0.001), years of study (r=0.189,p=0.001), depressive symptoms (r=-0.65,p=<0.001), anxiety symptoms (r=-0.49,p<0.001), stress symptoms (r=-0.51,p<0.001), and sleep quality (r=-0.54,p<0.001). Further, overall QoL was also correlated with experiencing stressful situations during the pandemic (r=0.252,p<0.001).

Table 1. Sample characteristics

	Participants (n = 325)
Sociodemographic variables	
Age (years)	36.41 (±15.12)
Gender (female)	75.4% (n=242)
Education (years)	14.57 (±2.52)
Marital status	44.6% single (n=145) 49.8% married (n=162)
Occupation	52.5% working (n=170) 34.6% studying (n=112) 10.8% retired (n=35)
Have children	41.8% (n=136)
Self-reported previous diagnosis of mental disorder (yes)	10.5% (n=34)
Pandemic related variables	
Risk group for developing severe Covid-19 (yes)	19.1% (n=62)
Considers that experienced stressful situations during the pandemic (yes)	59.4% (n=193)
Social distancing duration (days)	91.09 (±55.65)
Psychological symptoms variables	
DASS-21 Total score	
DASS-21 Depression score	6.77 (±6.19) 26.1% with severe symptoms
DASS-21 Anxiety score	5.38 (±5.47) 30.4% with severe symptoms
DASS-21 Stress score	9.17 (±6.04) 30.4% with severe symptoms
PSQI score	7.32 (±3.91)
Quality of life variables	
WHOQOL-BREF Total score	14.83 (±3.04)
WHOQOL-BREF Physical domain score	3.67 (±0.72) 61.4% with good/very good
WHOQOL-BREF Psychological domain score	3.55 (±0.72) 57.2% with good/very good

WHOQOL-BREF Social Relationships domain score	3.52 (±0.80) 57.0% with good/very good
WHOQOL-BREF Environment domain score	3.83 (±0.63) 73.1% with good/very good

n=number of participants
PSQI = Pittsburgh Sleep Quality Index
DASS-21= Depression, Anxiety and Stress Scale-21
WHOQOL-BREF= The World Health Organization quality of life assessment – Bref

Similar relationships were found for QoL domains (Table 2).

Table 2. Correlation between sociodemographic variables, psychological symptoms, and quality of life

	WHOQOL-BREF			
	Physical	Psychological	Social Relationships	Environmental
Age	r = 0.162, p = 0.004	r = 0.337, p < 0.001	r = 0.106, p = 0.057	r = 0.171, p = 0.002
Gender	r = -0.049, p = 0.387	r = -0.104, p = 0.063	r = 0.062, p = 0.265	r = -0.082, p = 0.145
Years of education	r = 0.162, p = 0.004	r = 0.214, p < 0.001	r = 0.064, p = 0.253	r = 0.213, p < 0.001
Family income	r = 0.061, p = 0.291	r = 0.067, p = 0.249	r = 0.046, p = 0.423	r = 0.057, p = 0.322
Psychological Symptoms	r = -0.487, p < 0.001	r = -0.634, p < 0.001	r = -0.369, p < 0.001	r = -0.408, p < 0.001
Depression symptoms	r = -0.522, p < 0.001	r = -0.674, p < 0.001	r = -0.428, p < 0.001	r = -0.441, p < 0.001
Anxiety symptoms	r = -0.413, p < 0.001	r = -0.529, p < 0.001	r = -0.270, p < 0.001	r = -0.372, p < 0.001
Stress symptoms	r = -0.421, p < 0.001	r = -0.561, p < 0.001	r = -0.324, p < 0.001	r = -0.327, p < 0.001
Sleep quality	r = -0.554, p < 0.001	r = -0.141, p = 0.013	r = -0.343, p < 0.001	r = -0.338, p < 0.001
Experienced stressful situations during the pandemic	r = 0.194, p < 0.001	r = 0.259, p < 0.001	r = 0.157, p = 0.004	r = 0.211, p < 0.001
Social isolation duration	r = -0.052, p = 0.355	r = 0.016, p = 0.775	r = -0.133, r = 0.016	r = 0.035, p = 0.524

In order to investigate which variables contributed most to the likelihood that participants have better QoL, we conducted four separate logistic regression models with backwards method to ascertain the effects of age, sex, education, psychological symptoms, sleep quality, experiencing stressful situations during the pandemic, and social isolation duration on the likelihood that participants had better QoL in each specific domain.

The model predicting **physical QoL** was statistically significant ($X^2(2)$=7.163,p=0.028), however, there were no significant main effects of the predictors.

The model predicting **psychological QoL** was statistically significant ($X^2(3)$=127.382,p<0.001) and explained 46.4% (Nagelkerke R^2) of the variance, correctly classifying 79.4% of cases. In this model, better sleep quality (Odds ratio=0.841 [95%CI.769,0.919],ß=-0.174,S.E.=0.046,Wald=14.482,p<0.001) and reduced psychological symptoms (Odds ratio=0.913 [95%CI0.908,0.955],ß=-0.071,S.E.=0.013,Wald=30.444,p<0.001) were associated with increased psychological QoL.

The model predicting **social relationships' QoL** was statistically significant (X^2(4)=49.316,p<0.001) and explained 20.2% (Nagelkerke R^2) of the variance, correctly classifying 64.0% of cases. In this model, better sleep quality (Odds ratio=0.906 [95%CI0.841,0.975],ß=-0.099,S.E.=0.038,Wald=6.839,p=0.009), reduced psychological symptoms (Odds ratio=0.968 [95%CI0.951,0.985],ß=-0.033,S.E.=0.009,Wald=13.135,p<0.001), and shorter social isolation duration (Odds ratio=0.994 [95%CI0.989,0.999],ß=-0.006,S.E.=0.002, Wald=6.603,p=0.010) were associated with increased social relationships' QoL.

The model predicting **environmental QoL** was statistically significant (X^2(4)=51.859,p<0.001) and explained 23.2% (Nagelkerke R^2) of the variance, correctly classifying 76.2% of cases. In this model, not experiencing stressful situations during the pandemic (Odds ratio=0.428 [95%CI0.224,0.817],ß=-0.849,S.E. =0.330,Wald=6.613,p=0.010), higher education (Odds ratio=1.206 [95%CI1.069,1.361], ß=-0.187,S.E.=0.062, Wald=9.243,p=0.002), better sleep quality (Odds ratio=0.882 [95%CI0.818,0.951], ß=-0.126, S.E.=0.038, Wald=10.713,p=0.001), and older age (Odds ratio=1.026 [95%CI 1.005,1.047],ß=0.025,S.E.=0.010,Wald=5.924, p=0.015) were associated with increased environmental QoL.

Discussion

We assessed quality of life (QoL) domains of participants from a particular region of Brazil and investigated their relationships to sociodemographic, psychological, and pandemic related factors. The domains of physical, psychological, social relationships, and environmental QoL were differently impacted, bringing interesting perspectives regarding the possible outcomes of the pandemic to QoL.

Our results indicated an overall regular QoL of participants during the early stages of the COVID-19 pandemic, however around 40% of individuals showed reduced physical, psychological, and social relationships QoL. The environmental domain seemed to be the least impacted, with only 26.9% of participants reporting reduced QoL. These results are in line with previous studies[12]. Higher age and educational level were associated with a better perception of QoL, except for the social relationships' domain, which is supported by a similar study that suggested younger adults as the most psychologically fragile subjects in the context of the pandemic[5].

Reduced psychological symptoms and better sleep quality showed main effects for increased psychological QoL. Conversely, characteristics related to pandemic, such as social isolation duration or perceived stress during the pandemic, were not. Thus, there might not be a direct effect of the pandemic in this domain, but rather a consequence of a prior vulnerability to mental disorders, as suggested in previous studies[13]. We further found that less psychological symptoms and better sleep quality were also related to social relationships' QoL. Moreover, we found that a shorter duration of social isolation was a significant predictor of this domain. Previous studies showed that social connectedness is a direct predictor of QoL during the COVID-19 pandemic[14]. Therefore, those who have not been in social isolation for a long period of time may have had more social contact and increased their perception of QoL in this domain. Interestingly, increased environmental QoL was associated with not experiencing stressful situations during the pandemic, higher education, and older age. This result suggests that a lower educational level may impact well-being, hindering access to paid work and

economic resources, which may lead to a reduced sense of control over one's life, resulting in perceived stress and worse sleep quality[15].

Our results must be interpreted in light of limitations. We had a smaller sample size compared to previous studies[5], which comprised mostly females (75.4%). Further, we did not measure social and family support, that might be important to QoL during pandemic times. Nonetheless, this report is noteworthy in several respects. It is the first study that investigated QoL in a specific region with similar culture and strategies to face the pandemic. The clinical relevance of these results suggests that more attention needs to be paid to vulnerable groups identified in this study, implementing psychological interventions for vulnerable individuals who cope with the long-term consequences of this pandemic. Our results also could be used as a historical reference and help assist local authorities to define future intervention strategies, since we will probably need to deal with the deleterious effects of the pandemic even after its complete control.

Conclusions

Therefore, we showed that mental health factors, as expected, were significantly related to QoL, mainly to psychological and social relationships' domains. Thus, improving overall mental health might lead to important outcomes for the individual's psychological wellness. However, there might be consequences to QoL that will only be managed once the pandemic is controlled and life returns to some type of "normality", more specifically to the subject's satisfaction with their social relationships and environment.

Conflicts of Interest: The authors declare no conflict of interest.

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Individual contributions: Joana Bücker was responsible for the conception and design of the study;

Joana Bücker and Letícia Czepielewski were responsible for participants inclusion;

Letícia Czepielewski was responsible for management and statistical analysis;

Letícia Czepielewski and Joana Bücker were responsible for the interpretation of data and writing of the report.

We confirm that the manuscript has been read and approved by all named authors and that there are no other persons who satisfied the criteria for authorship who are not listed.

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