



The psychological suffering factor during the COVID-19 pandemic

O fator de sofrimento psicológico durante a pandemia de COVID-19

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ABSTRACT

Examining psychological suffering can come from clinical diagnosis, blood tests, genetic analysis, or self-reporting. Behavioral shifts and mental illnesses were registered with the advent of the COVID-19 pandemic. The study regarding depression, generalized anxiety, psychological distress, and sadness undertaken in different countries demonstrated that these constructs are strongly correlated. The investigation regarding the existence of a general factor for psychopathological disorders is considered to come from the same concept used by Spearman when illustrating, using factor analysis, the g factor of intelligence. This study aimed to investigate the existence of a general factor for psychological suffering experienced by the Brazilian population during the first wave of the COVID-19 pandemic. The fitness of three factorial solutions was tested based on four measured scales (overall health, anxiety, stress, and non-somatic pain). The best factorial solution was a model with a second-order factor (“suffering” factor) taking in the first-order factors from each questionnaire. A “suffering” factor arises from the relation present among all the mental health aspects investigated and lies above them, regardless of the responding group profile.

Keywords: psychological suffering, pandemic, COVID-19, general factor, mental health.

RESUMO

Examinar o sofrimento psicológico pode vir do diagnóstico clínico, exames de sangue, análise genética ou autorrelato. As mudanças comportamentais e as doenças mentais foram registradas com o advento da pandemia de COVID-19. O estudo sobre depressão, ansiedade generalizada, sofrimento psicológico e tristeza realizado em diferentes países demonstrou que essas construções estão



fortemente correlacionadas. Considera-se que a investigação sobre a existência de um fator geral para transtornos psicopatológicos vem do mesmo conceito usado por Spearman ao ilustrar, usando análise fatorial, o fator g da inteligência. Este estudo teve como objetivo investigar a existência de um fator geral para o sofrimento psicológico vivido pela população brasileira durante a primeira onda da pandemia de COVID-19. A adequação de três soluções fatoriais foi testada com base em quatro escalas medidas (saúde geral, ansiedade, estresse e dor não somática). A melhor solução fatorial foi um modelo com um fator de segunda ordem ("sofrimento") tomando os fatores de primeira ordem de cada questionário. Um fator "sofrimento" surge da relação presente entre todos os aspetos de saúde mental investigados e está acima deles, independentemente do perfil do grupo respondente.

Palavras-chave: sofrimento psicológico, pandemia, COVID-19, fator geral, saúde mental.

1 INTRODUCTION

The concept of suffering is applied to many terms used in everyday life, for example: "So and so suffered from depression; they suffered an accident..." [1]. Etymologically, suffering is associated with the term "endurance." By associating this term with Cassell's [2] definition, we have a series of physical, social, cultural, familial, and emotional situations that convergetoward the immersion of an individual's suffering. Pain, mainly when caused by an illness, can interfere with the individual's relationship with their peers and/or his environment [3]. According to Oliveira [4], suffering is related to physiological and social elements for many. However, part of this immense suffering stems from people themselves, from the conflict that arises from wanting to be who they are not, from wanting to be accepted as they are, as human beings with equal rights and duties as others.

2 MENTAL SUFFERING AS A UNIDIMENSIONAL CONSTRUCT

The examination of psychopathological suffering can come from clinical diagnosis, blood tests, genetic analysis, or self-reporting, as is the case for this study. In all these approaches, it is possible to find evidence of comorbidities among mental disorders [5, 6]. Studies on behavioral genetics treat said comorbidities as significant phenotypic correlations with substantial genetic



mediation. For instance, anxiety and depression are completely genetically correlated disorders [7]. De la Fuente et al. [8] showed that a genetic “g factor” accounts for an average of 58.4% of the genetic variance in cognitive traits, supporting a fundamental dimension of genetic sharing across diverse cognitive functions.

The investigation regarding the existence of a general factor of psychopathological disorders as a unidimensional construct utilizes the term “p factor,” basing itself on the same idea as Spearman when pointing out, through factorial analysis, the “g factor” for intelligence [9]. The p factor is, thus, a numerical indicator that is related to other psychopathological disorders. In other words, the diseases are loaded with “p,” or instead with the p factor. Hence, we find that the higher the p-factor numbers are for an individual or a group, the greater their levels or degrees of psychopathological disorders will be [5, 6].

2.1 MENTAL SUFFERING DURING THE COVID-19 PANDEMIC

With the advent of the COVID-19 pandemic, the necessary care is taken to contain the spread of the virus, such as social distancing, face mask use, and constant hand sanitizing [10] has breached the many forms of group interactions and how society functions. There is also a continuous influx of fake news, especially in Brazil, regarding the high number of COVID-19 deaths (<https://covid.saude.gov.br/>). Until the conclusion of this text, Brazil registered 685,000 deaths on September 20, 2022, due to COVID-19. Moreover, there are still dire economic issues, such as a lack of jobs and decreased income [11, 12].

Zhang et al. [13] revealed that females, younger adults, and those with fewer children had a higher likelihood of depression and anxiety symptoms than males, older adults, and those with more children. Antonelli-Ponti et al. [14] compared the stress levels of Brazilians and Portuguese, finding that Brazilians were more distressed than the Portuguese during the initial months of the COVID-19 pandemic. De Paiva Teixeira et al. [15] confirmed that historical conditions such as chronic illnesses such as a previously existing mental health disorder predicted a greater possibility of fear and peritraumatic distress during the



pandemic. Research conducted by the University of São Paulo on the magnitude of anxiety and depression during the pandemic period in eleven different countries showed that Brazil is the one that suffers the most from these disorders [16]. Besides, a meta-analysis of mental health symptoms in Latin America showed more psychological suffering in South America than in Central America, healthcare, and frontline healthcare workers and students [17].

An initial analysis regarding depression, generalized anxiety, psychological distress, and sadness (represented by aspects of non-somatic pain) demonstrated that all these constructs are strongly correlated. Another finding was that the female gender predicted more significant levels of mental suffering [18].

The present investigation is, therefore, a sequence of an initial examination of the Brazilian population conducted in May 2020. Abad et al. [19] analyzed the levels of both fear and peritraumatic distress among Brazilians and an attempt to verify the existence of a factor among depression, generalized anxiety, psychological distress, and non-somatic pain.

3 METHOD

This cross-sectional survey design refers to the second module of the research project entitled “Physical, psychological and cognitive reactions to COVID-19,” with data collected from May 9 to July 2, 2020, and approved by the Ethics Committee number 4.143.634.

3.1 PARTICIPANTS

Data was gathered from 862 participants of the Brazilian population. Participants were recruited by an online spreadsheet (Google Forms), disseminated on social networks, television, and by email as an information collection tool. The average age was 35.5 years old ($SD=13.1$), with most of the sample being female (74.4%), having higher education (71.1%), and having an occupation, job, or study (90.3%). Three of the federative units (states) in Brazil are more greatly represented here: 34% of the respondents live in Sergipe, in the



northeast region, 20.5% live in São Paulo, and 19.3% live in Minas Gerais, with these latter two being in the southeast of Brazil; the remaining 25,9% of respondents live in one of the other 24 states.

3.2 VARIABLES AND INSTRUMENTS

3.2.1 Sociodemographic survey

For this subject, a brief questionnaire was administered with general information and detailed questions about if they had chronic diseases (Yes or no) and levels of social isolation during the COVID-19 pandemic.

3.2.2 The Patient Health Questionnaire-9 (PHQ-9)

A concise instrument for assessing, diagnosing, and monitoring depressive disorders was administered following the DSM-IV criteria with nine statements. The participants report fatigue, depression, and difficulty focusing over the last two weeks. The response options range from 0 (not at all) to 3 (almost every day). It was adapted to Brazil with a sample of non-clinical adults, with a Cronbach's Alpha of 0.9 [20].

3.2.3 Generalized anxiety scale (GAD-7)

It contains seven statements about feelings of anxiety according to the DSM-IV criteria, with response options ranging from rarely (0) to almost every day (3). It was adapted to Brazil with a sample of undergraduate students, with Cronbach's Alpha 0.91 [21].

3.2.4 Kessler's psychological stress scale (K-5)

It was used with five statements related to the number of stressful sensations experienced, with response options ranging from (1) not once to (5) almost every day. The K-10 version was adapted to Brazil with a Cronbach's Alpha of 0.84 [22]. The adapted K-5 version was used in other studies in Brazil with a Cronbach's Alpha of 0.82 [18].



3.2.5 Non-Somatic Pain Scale (NSP)

An instrument that contains three statements related to the occurrence of non-physical pain. The answer options range from (1) never to (4) always. It was developed by da Silva and Ribeiro-Filho [3]. Its adapted version was used in other studies in Brazil with a Cronbach's Alpha of 0.84 [18].

4 PROCEDURE

Before responding to the questionnaire, candidates read and accepted the Participant's Consent Form. The online spreadsheet used to set up the survey consists of a five-part questionnaire, split into specific topics which encompass: a socio-demographic survey; the adapted Kessler psychological stress scale (K-5); the Patient Health Questionnaire-9 (PHQ-9); Generalized Anxiety Disorder (GAD-7); Non-Somatic Pain Scale (NSP).

4.1 DATA ANALYSIS

To verify the existence of a factor among the scales, we first utilized exploratory factor analysis (EFA), extracting the elements via principal axis factoring, Varimax rotation, and Kaiser normalization [23]. A second exploratory analysis was done to determine the number of factors via the parallel extraction factor analysis using the Factor 10.10.02 software [24].

The measures taken to make the model more adequate were based on the Kaiser-Meyer-Olkin (KMO) criteria, with the recommended score being 0.8 or above, as well as the Bartlett Sphericity Test ($p < 0.05$) the reliability of the items whose Cronbach's Alpha exceeded 0.7. Then, after the Confirmatory Factorial Analysis, done to define a reasonable model adjustment, we utilized the criteria summarized by Schumacker & Lomax [25], which χ^2/df less than 3.0; GFI (Goodness-of-fit Index), TLI (Tucker-Lewis Index), NFI (Normed Fit Index) and CFI (Comparative Fit Index) greater than 0.90 and with the RMSEA (Root-Mean-Square Error of Approximation) between 0.05 e 0.08.



5 RESULTS

5.1 EXPLORATORY FACTORIAL ANALYSIS AND RELIABILITY

Considering the Exploratory Factorial Analysis (EFA) as being adequate for application based on the criteria set by Kaiser-Meyer-Olkin (KMO) equal to 0,967 and the Bartlett Sphericity Test, which showed that $\chi^2 = 1451.33$; $df = 276$ and $p = 0.001$. The items whose factor loadings were more significant than 0.4 during the extraction were kept, with the commonality between 0.306 and 0.771 being noted. The results showed in Table 1. The parallel analysis, done using the Factor software, confirmed the adequacy of a unidimensional factorial structure.

Concerning reliability, Cronbach's Alpha = 0.957 was calculated for the 24 items of each scale. The minimal acceptable value for the alpha is 0.70, with low values representing a soft internal consistency. In return, the maximum expected value is 0.90, in which superior values are considered to indicate redundancy or duplication, meaning that various items measure the same element of the construct; thus, the redundant items have to be eliminated. Usually, values ranging between 0.80 and 0.90 are preferred [26].

Table 1. Exploratory factorial analysis results

Items	Communalities	Components			
		1	2	3	4
K6_1	.495		.577		
K6_2	.636	.616			
K6_3	.665	.533			
K6_4	.540		.591		
K6_5	.341		.464		
PHQ9_1	.588		.508		
PHQ9_2	.746		.590		
PHQ9_3	.445			.512	
PHQ9_4	.646			.588	
PHQ9_5	.516			.612	
PHQ9_6	.618		.467		



PHQ9_7	.545			.493	
PHQ9_8	.474			.500	
PHQ9_9	.306				.492
GAD7_1	.764	.711			
GAD7_2	.771	.751			
GAD7_3	.712	.712			
GAD7_4	.754	.723			
GAD7_5	.523	.562			
GAD7_6	.587	.591			
GAD7_7	.559	.569			
NPS3_1	.584				.600
NPS3_2	.609				.509
NPS3_3	.669				.651
Total variance % explained		51.22	5.57	4.84	4.22

Source: Authors

Thus, the EFA results showed the extraction of four factors corresponding to four scales. The initial eigenvalues indicate that the first factor accounts for 51.2% of the total variance of the 24 items. The four factors account for 65.9% of the entire real item variance. The first factor has nine correlated factor loadings, the second factor has six correlated factor loadings, the third factor has five correlated factor loadings, and the fourth has four correlated factor loadings. The GAD7 items are correlated in the same element, as are the NPS3 items. However, there are different questionnaires in the same factor, such as, for example, the PHQ9_9 being in the same factor as items from the NPS3 and articles from the K6 in different aspects.

5.2 CONFIRMATORY FACTORIAL ANALYSIS

A Confirmatory Factorial Analysis (CFA) was conducted on the obtained scores in order to verify the best structural factorial analysis among the three models: A) first-order factors from each correlated questionnaire (such as a



“suffering factor”); B) a second-order factor (“suffering” factor) taking in the first-order factors from each questionnaire; C) a first-order factor (“suffering” factor) taking in all items from the four questionnaires. Table 2 shows the adequacy indexes for each of the models that were tested.

Table 2. Indexes for each of the models that were tested

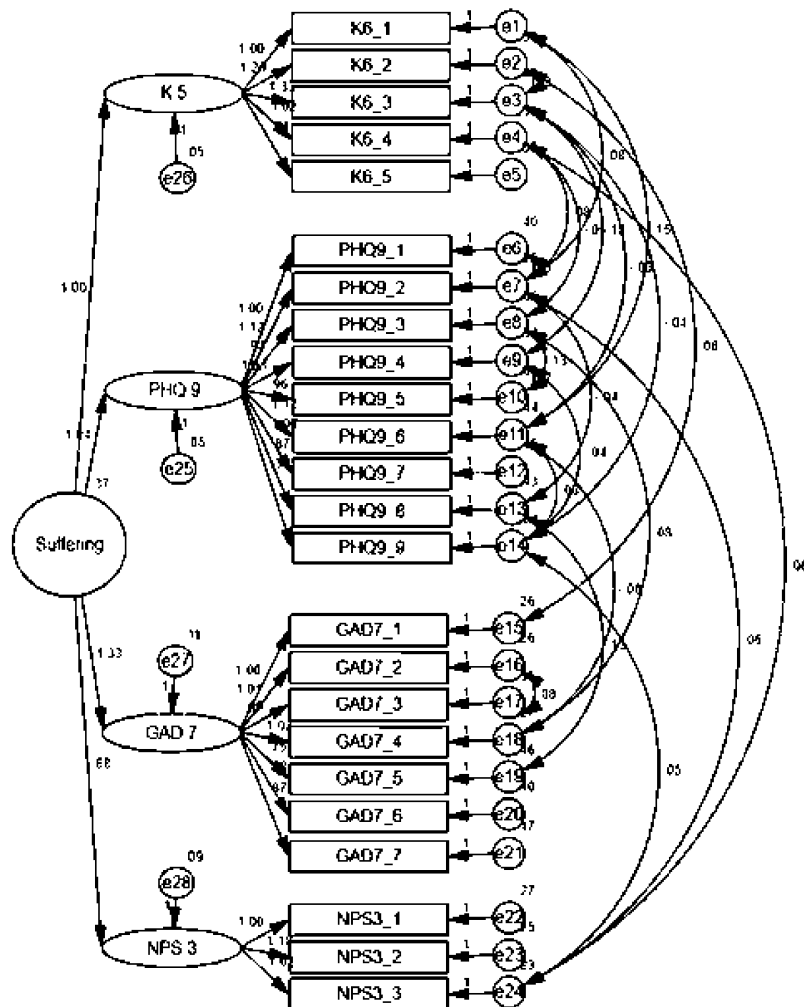
Model	χ^2	df	χ^2/df	RMSEA	RMSEA 90%CI (LO-HI)	GFI	CFI	NFI	TLI
A	1394.56	246	5.669	0.074	0.07-0.77	0.863	0.918	0.902	0.908
B	1410.07	248	5.686	0.074	0.07-0.078	0.861	0.917	0.901	0.908
C	2466.094	252	9.786	0.101	0.097-0.105	0.756	0.842	0.828	0.827
B _{adjusted}	716.08	226	3.169	0.050	0.046-0.054	0.932	0.965	0.950	0.957
Initial eigenvalues (Total)					12.29	1.33	1.16	1.01	
Sum of the factor loadings rotation squared					5.13	3.25	2.98	2.71	

Source: Authors

The B model, which is interesting to the present study, only reached some of the established adjustment criteria. Thus, the errors with a modification index greater than 15.0, as suggested by the IBM® SPSS® Amos 25.0 software, were correlated so that the adjustment index for the models could abide by the adopted criteria. Thus, with the appropriate adjustments, model B reached all the requirements for a reasonable adjustment of its factorial structure (see Table 2) shown in Figure 1.



Figure 1. Confirmatory factorial analysis model of suffering factor



Source: Authors

To better test the invariance of the model with the best adjustment was done in a Multi-group Analysis, comparing its factorial structures based on the gender of the participants (male or female), the presence of a chronic illness (yes or no), and whether or not they are socially isolated (yes or no). The multi-group analysis was made possible by the standard criteria of at least ten participants per item on the questionnaires (Morgado et al., 2018). The results showed that the models are invariable to the comparisons, pointing to the fact that people, regardless of gender, health conditions, or isolation status, interpreted the items similarly (Table 3).



Table 3. Indexes for each of the models that were tested

Comparison	Invariance	χ^2	df	$p <$	$\Delta\chi^2$	Δdf
Gender (Male X Female)	Configural	22.314	20	0.001		
	Factorial Weights	24.263	23	0.001	1.949	3
	Structural	24.931	24	0.001	2.617	4
	Residual	26.531	28	0.001	4.217	8
Chronic Illness (Yes X No)	Configural	18.056	20	0.001		
	Factorial Weights	21.995	23	0.001	3.939	3
	Structural	22.804	24	0.001	4.748	4
	Residual	28.248	28	0.001	10.192	8
Social Isolation (Yes X No)	Configural	17.848	20	0.001		
	Factorial Weights	24.500	23	0.001	6.652	3
	Structural	27.648	24	0.001	9.800	4
	Residual	32.040	28	0.001	14.192	8

Caption: χ^2 = qui-square; df = degrees of freedom; CFI = Comparative Fit Index;
RMSEA = Root-Mean-Square Error of Approximation.

Source: Authors

6 DISCUSSION

The present paper investigated the existence of a general factor for psychological suffering endured by Brazilians during the first wave of the COVID-19 pandemic. Anxiety and depression have been singled out as overlapping conditions from a genetic standpoint [7] and appear as comorbidities of one another [5]. Furthermore, it was also noteworthy that psychological stress and non-somatic pain corroborated with the studies and found a single factor for mental or psychopathological disorders [6].

Given the context of the pandemic and its consequences on many aspects of human life [27], psychological suffering appears as a form of expression regarding the conditions of the pandemic, which started to affect Brazil in early 2020. The opposite could be avoiding facing reality [4]. Therefore, the WHO [10]



pointed to “pandemic fatigue,” in which people stopped behaviors aimed at preventing COVID-19 over time due to being affected by a series of negative perceptions and emotions due to confinement and social isolation. Surviving and living in a chaotic environment boils down to enduring, as expressed by Cassell [2] in his definition of suffering.

A cross-sectional study in Spain showed high psychological distress (72%), with a higher percentage in women and people of lower middle age [28]. Comparing a nationally representative online sample in the U.S. in late April 2020 with another model of US users who participated in the 2018 National Health Interview Survey, US adults in April 2020 were eight times more likely to fit the criteria for mental severe distress (27.7% vs. 3.4%) and three times more likely to fit criteria for moderate or severe mental distress (70.4% vs. 22.0%). Differences between the 2018 and 2020 samples appeared across all demographic groups, with, more considerable differences among younger adults and those with children in the household [29].

A cohort study in the UK compiling 11 longitudinal studies found that mental health has deteriorated from before the COVID-19 pandemic, and this deterioration was sustained across the first year of the pandemic. Deterioration in mental health varied by sociodemographic factors, namely age, sex, and education, and did not recover when social restrictions were eased.

All these studies showed a significant deterioration in mental health during the ongoing COVID-19 pandemic, highlighting the need for improved mental health care provision and broader support to minimize the risk of longer-term mental health consequences and widening health inequalities [30]. Notably, the COVID-19 pandemic affected the lives of millions of people across all the continents in the world, mainly in the low-income classes, who were most affected by the lockdowns as many lost their only source of income. In addition, the uncertainty of the disease and its deadly nature, along with the lack of access to correct information, led to a deterioration of the mental health of the low-income and indigenous groups in South America [31].



In contrast to other findings of the differences in psychological suffering among groups [13–15, 17–19], the results of our study show that, when considering psychological torment unidimensionally, there are no differences among groups. For instance, Zhang, Batra, et al. [17] recommended specific interventions according to the characteristics of each group, which is useful, since provided that a basic service for all is carried out. The emergence of the general suffering concept opens avenues for exploring and developing psychotherapeutic approaches that address this broader construct. Caspi and Moffitt [5] argued that there is some anticipation of the problem, and a few psychotherapies emerged dealing with the concept of general suffering, such as dialectical behavior therapy and several cognitive-behavior protocols. But it is still a growing field of study, and more research needs to be done.

While the study found no differences in psychological suffering among different groups, it is essential to consider individual differences and tailor interventions accordingly. Healthcare professionals should know that certain groups, such as frontline healthcare workers, older adults, or individuals with pre-existing mental health conditions, may require specific interventions and support. Targeted interventions can be developed based on these groups' unique needs and circumstances.

The findings presented have several potential implications for mental health interventions and support during the COVID-19 pandemic. The existence of a general factor for psychological suffering suggests the importance of integrating mental health care into the overall healthcare system. Healthcare professionals should recognize that individuals experiencing psychological distress during the pandemic may not present with specific anxiety or depression symptoms but rather a broader spectrum of suffering. This calls for a holistic approach to mental health interventions that address the overall psychological well-being of individuals.

The paper highlights the potential for collaboration between health and social work. Social-emotional care, which focuses on providing emotional support and reducing suffering, can complement COVID-19 care and prevention efforts.



Policymakers should consider integrating social workers and mental health professionals into multidisciplinary teams to provide comprehensive support to individuals affected by the pandemic.

The study suggests the importance of early intervention, particularly during the early stages of the pandemic when psychological suffering was high. Healthcare professionals and policymakers should prioritize implementing mental health screening programs and interventions at an early stage to identify individuals at risk and provide timely support. Prevention strategies can focus on promoting resilience, coping skills, and social support networks to mitigate the long-term impact of the pandemic on mental health.

The paper emphasizes the need for further research in general psychological suffering. Future studies should explore this construct's underlying mechanisms and risk factors. Longitudinal studies can help understand the trajectory of psychological suffering during the pandemic and its long-term effects. Additionally, more and, more extensive, various samples should be used to enhance the generalizability of findings and enable more nuanced analyses.

The limitations of this study are a non-random sample, a relatively small sample, and the burden of chosen scales. We also had no control over the number of participants who learned about the survey and who decided to participate, in order to calculate a rate of adherence to the survey through the questionnaire. Nevertheless, the data corroborate other studies in the field, and we encourage other studies of this type, especially with early pandemic samples, where the numbers of psychological suffering were high.

7 CONCLUSIONS

Despite there being specific treatments for each aspect related to mental health, the existence of a general factor that demonstrates the psychological suffering endured during the pandemic sheds light on other forms of dealing with this period in time in a global and integrated manner, contemplating suffering in an ample scope, and helping people to manage their emotions as they arise. Moreover, a consonance of actions between health and social work seems very



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promising, seeing as how social-emotional care lessens suffering and affects COVID-19 care and prevention.



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