

EMOTIONAL REGULATION AND DISTRESS DURING THE SOCIAL ISOLATION OF THE COVID-19 IN BRAZIL

REGULAÇÃO EMOCIONAL E DISTRESS DURANTE O ISOLAMENTO SOCIAL DA COVID-19 NO BRASIL

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Abstract: During COVID-19 Outbreak isolation measures were taken in most countries, although effective in combating the pandemic, were also associated with an increase in complaints related to psychological disorders, forming a symptomatological set called distress, characterized by increased indicators of depression, anxiety and stress. This study aimed to investigate indicators of distress, depression, anxiety and stress and their associations with demographic variables and with two indicators of emotional regulation: emotional suppression and cognitive restructuring. The sample was composed of 924 participants, both genders, between 18 and 72 years old ($M = 36.8$, $SD = 11.70$). Participants answered a Depression, Anxiety and Stress Scale - Short Form; Emotional Regulation Questionnaire and Sociodemographic questionnaire. The present study identified three distinct subgroups of variable that must have some attention: age, gender, and race/ethnicity. Multinomial regression showed that women, younger people and people self-identified as black have the worst results in distress. Finally, the effects of emotional regulation were seen only in emotional suppression acting on stress and depression.

Keywords: Depression, Anxiety, Emotional regulation, COVID-19

Resumo: Durante o surto de COVID-19, medidas de isolamento foram tomadas na maioria dos países, embora eficazes no combate à pandemia, também foram associadas a um aumento de queixas relacionadas a distúrbios psicológicos, formando um conjunto sintomatológico denominado distresse, caracterizado pelo aumento de indicadores de depressão, ansiedade e estresse. Este estudo visou investigar indicadores de distress, depressão, ansiedade e estresse e suas associações com variáveis demográficas e com indicadores de regulação emocional, supressão emocional e reestruturação cognitiva. A amostra foi composta de 924 participantes de ambos os sexos, entre 18 e 72 anos ($M = 36,8$; $SD = 11,70$). Os participantes responderam uma Depressão, Ansiedade e Escala de Estresse - Forma Curta; Questionário de Regulação Emocional e Questionário Sociodemográfico. O presente estudo identificou três subgrupos distintos de variáveis que devem ter alguma atenção: idade, sexo e raça/etnia. A regressão multinomial mostrou que mulheres, pessoas mais jovens e pessoas auto-identificadas como negras têm os piores resultados em distress. Finalmente, os efeitos da regulação emocional foram vistos apenas na supressão emocional agindo sobre o estresse e a depressão.

Palavras-Chave: Depressão, Ansiedade, Regulação Emocional, COVID-19

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In December 2019, the world was alerted with the discovery of a new coronavirus, responsible for severe acute respiratory syndrome of coronavirus 2 (SARS-CoV-2) (Zu et al., 2020), identified as the agent that causes coronavirus disease (COVID-19), name officially adopted by the World Health Organization (WHO). The warning was that the disease had the potential to spread beyond its country of origin, China, which happened in fact. It spread rapidly and advanced borders, such almost one year later, it reached over 125 million cases and more than 2.75 million deaths all over the continents (WHO, 2021). In Brazil, the first case was confirmed on February 26; and during this study - March, 2020 - there were more than 500 suspected cases. One year later, March 2021, Brazil had already counted more than 300.000 deaths and more than 12,000,000 infected, becoming a focus of concern worldwide, because of the fast increase of cases, hospitalizations, and deaths (Brazil, 2021).

The adoption of social isolation and lockdown measures has been done by several countries in attempt to control the virus transmission and reduce the search for the health system. In some countries the measures were more effective than in others, such as New Zealand and Australia (Cousins, 2020), which managed to minimize the transmission and consequent number of cases and deaths. Such isolation measures, although effective in combating the pandemic, were also associated with an increase in complaints related to psychological disorders, forming a symptomatological set called distress, characterized by increased indicators of depression, anxiety and stress (Brooks et al., 2020). In addition, effects such as confusion, anger and post-traumatic stress were reported. Other important aspects related to epidemics are fears about the virus or infection, frustration, decreased income, inadequate information and stigma (Maia & Dias, 2020).

Studies in previous epidemic outbreaks have already revealed a strong association of health emergency situations, adopting restrictive measures, with psychological and emotional effects (Idoiaga Mondragon et al., 2017; Van et al, 2010), including high complaints of anxiety, stress and depression (Carvalho et al., 2020; Ozamiz-Etxebarria et al, 2020). Specifically, related to the new covonavirus pandemic, a study conducted in China found a strong association of increased fear and other negative emotions, as well as anxiety and stress (Wang et al., 2020). As indirect effects, and especially for groups in social isolation, researchers also found increased alcohol and tobacco use during the first months of the epidemic in China.

With the arrival of the virus in Europe, highly affected countries such as Spain and Italy, which have adopted severe isolation measures, have also conducted studies on the psychological impacts on the population. In Spain, higher levels of depression, anxiety and stress were found among younger people and chronically ill people who adhered to social isolation as a protection measure against COVID-19 (Ozamiz-Etxebarria et al, 2020). In Italy, similar results were found in a sample of adolescents, adding the fact that there were differences in subgroups by affected regions and group variables such as social class and race (Buzzi et al., 2020), raising the hypothesis that poorer people suffer higher morbidity and comorbidity. In Portugal, despite the more controlled number of cases, a significant increase in depression, anxiety and stress was also found in a sample of university students compared before and during social isolation (Maia & Dias, 2020). Still with a sub-sample of college students, a Chinese study reported that one-third of the youths presented severe anxiety symptoms during social isolation, and half of the sample self-declared that their emotional lives were shaken (Wang et al 2020).

Psychological variables, as reported in the above studies, play roles that vary according to a series of personal and group characteristics, forming what are called risk and protection strategies (Prati et al., 2009). Among the individual variations in these strategies are cognitive and emotional resources, such as emotional regulation, which has been reported as a highly associated strategy for managing distress situations (Aldao, 2012; Berking & Wupperman, 2012), by helping people to control their emotions during threatening and stressful situations (Garnefski & Kraaij, 2007). In addition, emotional regulation strategies are fundamental in the process of behavioral adaptation in adverse and atypical situations (Sheppes et al, 2015).

Emotional regulation can be characterized as a process of initiating, maintaining, and modifying an individual's subjective emotional experiences (Gross, 2014). According to this model, expressive suppression and cognitive reappraisal are the most common emotion regulation strategies. Expressive suppression, which refers to the inhibition of external cues (such as facial expression) and cognitive reappraisal, which involves reframing emotion-eliciting experiences or stimuli in order to dampen their impact. Thus, it is fundamental to recognize the role of emotional regulation in the way people are coping with the psychological consequences resulting from the COVID-19 pandemic and the consequent social isolation measures (Restubog et al, 2020). As described in previous work on psychological effects in epidemic situations such as SARS outbreak; Avian H1N1 flu; Ebola virus (Bults et al., 2011; Maunder et al., 2003; Schultz et al., 2016).

According to Restubog et al (2020), emotional regulation can play a crucial role in moderating psychiatric symptoms that characterize the distress in several situations, in addition to being a fundamental component of behavioral maintenance in situations of restriction caused by epidemics. Relevant behavioral effects are the need for social isolation, maintenance of hygiene habits and decisions on health service searches.

This study aimed to investigate indicators of distress, depression, anxiety and stress and their associations with demographic variables and with indicators of emotional regulation, emotional suppression and cognitive restructuring. In addition, we investigated the effects in relation to comorbidity among the three psychological measures.

METHOD

Participants

The sample was composed of 924 participants, both sexes, between 18 and 72 years old ($M = 36.8$; $SD = 11.70$), from Sergipe, Brazil. Most of them (69.7%; $n = 613$) indicated living in the capital (Aracaju). The majority (95.6%; $n = 882$) affirmed to hold complete or incomplete Higher Education ($n = 882$) and the others (4.5%; $n = 42$) complete or incomplete High Education.

Material

Sociodemographic and health questionnaire. Used to collect information such as gender (male, female), age (in years), education (up to elementary or high school complete or incomplete) and racial/ethnic group (white, brown, black, yellow, indigenous).

Depression, Anxiety and Stress Scale - Short Form (DASS-21) (Apóstolo et al., 2006; Vignola & Tucci, 2014). A four-point likert type scale composed of 21 items of occurrence of symptomatic behaviors, which generates independent scores on symptoms of anxiety, depression and stress over the last week. Cronbach's alphas in this study were 0.83, 0.88, 0.89 and 0.94 for anxiety, depression, stress and total scale factors, respectively.

Emotional Regulation Questionnaire (Gross & John; 2003; Gouveia et al., 2018). An instrument with 10 items, measured on a Likert concordance scale (from 1 to 7), which measures two dimensions of emotional regulation, producing scores on cognitive reappraisal and emotional suppression factors. Cronbach's alpha was 0.67 for the factor cognitive reevaluation and emotional suppression and .66 for the total score.

Procedures

The survey took place from April 3rd to April 16th, 2020, period under state decree of quarantine and social isolation by the Sergipe Government (Sergipe, 2020). Sampling was done for convenience and snowball, by public invitation in social networks. Those who accepted filled out an online form regarding mental health during the period of confinement. All declared consent to the survey through confirmation of the Informed Consent Form, which was the first screen of the electronic survey questionnaire. The survey was approved by the National Research Ethics Council (Conselho Nacional de Ética em Pesquisa - CONEP; parecer n. 3.954.144).

Data Analysis

The data were analyzed using the SPSS program (version 24), both for descriptive statistics (absolute and relative frequencies, means, medians and standard deviations), and for inferential statistics (three binomial and one multinomial logistic regression). For the binomial logistic regressions, the anxiety, depression and stress scores were dependent variables, all dichotomized by the median, considering the non-parametric distribution of total. In addition, the DASS-21 screening diagnoses were categorized by combining the presence of single or simultaneous diagnoses. The outcome variable was then called the categorization of comorbidities, represented by the groups (a) no diagnosis, (b) one diagnosis (any of three possible diagnoses), (c) two diagnoses (two of three possible diagnoses) and (d) three diagnoses (all possible on the scale) in DASS-21. This variable (categorization of comorbidities) was also used as a dependent variable and was applied in the multinomial logistic regression. In the binomial and multinomial models the independent variables cognitive reappraisal and emotional suppression, both of the SRQ, were dichotomized by the mean. Gender (male or female), occupation (with or without fixed income) and age (divided into four strata: up to 30 years, over 30 to 40, over 40 to 50 and over 50 years) were also independent variables. The skin color was categorized into white, black and pardo. Individuals who declared themselves yellow, indigenous and others were excluded because of the low numerical representativity in the sample.

In summary, four modeling were performed, one with each dependent variable established for this investigation: screening diagnoses (1) of anxiety, (2) of depression, (3) of stress, and (4) categorization of comorbidities. All regressions were performed using backward LR (binomial logistic regression) and backward stepwise (multinomial logistic regression) methods, which do not require the selection of variables prior to the final modeling (Field, 2009). For the evaluation of binomial models, the following indicators were observed: Omnibus test (expected to be statistically significant), Nagelkerke R^2 (expected the higher the better, corresponding to the explained variance of the final model), Hosmer and Lemeshow test (expected not to be statistically significant) and correct predictive capacity of the model (expected around 70%). In the evaluation of the multinomial model, the adjustment of the model (expected to be significant), Nagelkerke's Pseudo- R^2 (same interpretation of the binomial model) and the predictive ability of the model (expected close to 50% of hits in the overall percentage) were observed. The multicollinearity evaluation was performed for all models and no problems were found in the composition or final solution of the models. It is worth noting that all Odds Ratio (*OR*) values below 1 were converted by the formula $1/OR$ for the purpose of standardizing the description of the findings. The *p* value adopted was less than 0.05 for all stages of the binomial and multinomial regressions.

RESULTS

The sample was predominantly female (79.0%; $n = 730$). The age strata were relatively balanced, with more people up to 30 years (35.3%; $n = 326$), followed by those over 30 and up to 40 years (26.7%; $n = 247$), over 40 up to 50 years (23.8%; $n = 220$) and over 50 years (14.2%; $n = 131$). More than half (61.7%; $n = 570$) declared having a fixed income and the others declared not having a fixed income or being unemployed (38.3%; $n = 354$). As for race/ethnicity, individuals who reported yellow and indigenous were excluded from the sample due to their low numerical representativity in the total composition. Those who declared themselves pardos composed the majority of the sample (54.3%; $n = 502$), with whites in second place (34.2%; $n = 316$) and blacks as the smallest portion (11.5%; $n = 106$).

The mean of cognitive reappraisal factor was 28.4 points ($SD = 5.97$), when categorized, 47.9% ($n = 443$) of participants remained in the stratum below the mean. The mean of de factor emotional suppression was 14.5 points ($SD = 5.13$), with 51.7% ($n = 478$) above the mean point of the variable. The medians of anxiety, depression and stress were, respectively: 2, 4 and 6 points. After categorization, 48.8% ($n = 451$) of the individuals were above the median of the anxiety score, 41.9% ($n = 387$) of the median of depression and 44.8% ($n = 414$) of the stress variable. When the amount of diagnoses in DASS-21 (categorization of comorbidities) was analyzed, it was found that 36.9% ($n = 341$) remained in the "undiagnosed" group. With only one diagnosis, 17.0% ($n = 157$) of the participants, two diagnoses 19.8% ($n = 183$) and 26.3% ($n = 243$) were classified in the group with three diagnoses.

Logistic Regressions

Three binomial and one multinomial logistic regressions were performed. Therefore, the results were presented by dependent variable, Table 1 summarizes all the information on the evaluation of the models and the respective findings for each outcome. For anxiety, only age and race-ethnicity remained in the final model. Regarding age, the youngest (up to 30 years) composed the group with the highest exposure. In relation to being over 30 and under 40 years of age, the youngest (up to 30) were 70% more likely to be among those who were above the median of anxiety ($OR = 1.7$). Similar outcome was seen in the comparison with participants over 40 and up to 50 years old (both with $OR = 2.5$). In addition, participants who declared themselves black had 70% chance of being in the group with higher anxiety ($OR = 1.7$), when compared to whites. There was no significance in the comparison between blacks and whites.

For depression and stress outcomes, age and emotional suppression factor were left in the final models. Similar to anxiety, the relationship between age and depression followed the pattern that the youngest had an increased chance of being in the group above the median of depression and stress, which varied between two and three times more, when compared to the older groups. For emotional suppression, those who scored above the average were 80% more likely to score higher in depression ($OR = 1.8$) and 40% more likely to have higher stress scores ($OR = 1.4$). Gender, in turn, was significant only for the stress outcome, with females showing two and a half times higher chances of high stress ($OR = 2.5$).

Finally, in multinomial logistic regression, age was a predictive factor for having one diagnosis (more than 30 to 40 years, $OR = 1.9$), two diagnoses (up to 30 years, $OR = 2.6$) and three diagnoses (up to 30 years, $OR = 4.7$). Gender was predictor for two and three diagnoses (female, $OR = 2.4$ and 2.8, respectively). Emotional suppression was predictor for only three diagnoses (above the average of emotional suppression, $OR = 1.8$).

Table 1. Binomial Logistic Regression Indicators for Stress, Anxiety and Depression in DASS-21

		OR	1/OR	p-value
Binomial Regressions				
<u>Anxiety¹</u>				
Age	Up to 30 years old	-	-	-
	Over 30 to 40 years old	.6	1.7	.001
	Over 40 to 50 years old	.4	2.5	< .001
	Over 50 year old	.4	2.5	< .001
Ethnicity	White	-	-	-
	Pardo	1.1	-	.468
	Black	1.7	-	.015
<u>Depression²</u>				
Age	Up to 30 years old	-	-	-
	Over 30 to 40 years old	.4	2.5	< .001
	Over 40 to 50 years old	.4	2.5	< .001
	Over 50 year old	.3	3.3	< .001
Emotional suppression	Up to mean	-	-	-
	Above mean	1.8	-	< .001
<u>Stress³</u>				
Age	Up to 30 years old	-	-	-
	Over 30 to 40 years old	.6	1.7	.004
	Over 40 to 50 years old	.4	2.5	< .001
	Over 50 year old	.4	2.5	.001
Emotional suppression	Up to mean	-	-	-
	Above mean	1.4	-	.017
Gender	Male	-	-	-
	Female	2.5	-	< .001
Multinomial Regression (categorization of comorbidities)⁴				
<u>One diagnosis</u>				
Age	Up to 30 years old	1.4	-	.302
	Over 30 to 40 years old	1.9	-	.038
	Over 40 to 50 years old	.9	-	.624
	Over 50 year old	-	-	-
<u>Two diagnoses</u>				
Age	Up to 30 years old	2.6	-	.001
	Over 30 to 40 years old	1.5	-	.225
	Over 40 to 50 years old	1.0	-	.915
	Over 50 year old	-	-	-
Gender	Male	-	-	-
	Female	2.4	-	< .001
<u>Three diagnoses</u>				
Age	Up to 30 years old	4.7	-	.001
	Over 30 to 40 years old	1.8	-	.072
	Over 40 to 50 years old	1.2	-	.611
	Over 50 year old	-	-	-
Gender	Male	-	-	-
	Female	2.8	-	< .001
Emotional Suppression	Up to mean	-	-	-
	Above mean	1.8	-	.001

Notes. * Variables with no statistical significance in each model were excluded from the table. 1. Anxiety Outcome: Omnibus test = 63.995 ($p < .001$). Hosmer e Lemeshow X^2 test = 2.228 ($p = .946$). R^2 de Nagelkerke = .089 (8.9%). Percent of correctly predicted cases = 62%. 2. Depression Outcome: Omnibus test = 70.860 ($p < .001$). Hosmer e Lemeshow X^2 test = 8.947 ($p = .256$). R^2 de Nagelkerke = .094 (9.4%). Percent of correctly predicted cases = 66%. 3. Stress Outcome: Omnibus test = 72.544 ($p < .001$). Teste de Hosmer e Lemeshow $X^2 = 12.852$ ($p = 0.117$). R^2 de Nagelkerke = .104 (10.4%). Percent of correctly predicted cases = 62%. 4. Categorization of comorbidities outcome: X^2 ratio = 105.809 ($p < .001$). Pseudo- R^2 de Nagelkerke = .116 (11.6%). Percent of correctly predicted cases = 43%.

DISCUSSION

Increasingly, exposure to COVID-19 is recognized as a cause of emotional disorders. Using the multinomial regression model approach, results from the current study provide empirical support for differential effects of COVID-19 exposure variables and emotion regulation on depression, anxiety and stress. During the current pandemic situation, it is important not to dissociate the people and their mental health from the context in which they are inserted (Pereira et al., 2020). Mental health has been widely considered, and is associated with, a self-assessment that individuals make about their own lives. Thus, although the mental health problems being reported as a result of isolation likely to occur in any person, it is known that there are segments of the general population that are especially more vulnerable. Some groups, many of them already vulnerable before the pandemic, are highlighted and deserve special attention, among them minorities and population in poverty (Brennan et al., 2020). The present study identified three distinct subgroups of variable that must have some attention: age, gender and race/ethnicity.

For the first group of regressions analyzed, the age variable showed an effect on the anxiety outcome, with young people being the most likely to have a negative outcome. Young people are reported with one of the groups with the highest perceptions of changes in their routines, such as studies and work (they are out of school and with less opportunities to work after the outbreak). They were limited in the possibilities of interaction with social groups, which is so relevant in this period of life, as well as limited financial plans and work goals. For this group, the loss of privacy and financial dependence became a reality, especially for those who live or have returned to live with their family (Cerqueira-Santos et al., 2020). One of the main impacts of isolation for young people, which causes the aggravation of vulnerability suffered, is the distancing from social support networks, especially friends and sexual-affective relationships (McDonald, 2018). The support of family and friends is related to lower incidences of mental health disorders such as depression, suicide ideation and anxiety (Darwich et al., 2012; Rosario et al., 2012).

A second relevant variable in the analyses of this study was race/ethnicity. The group of people self-declared as black presented a higher chance of anxiety outcome. Social and political inequality already had an unequal impact on the physical and mental health of this population, recurrently victimized by prejudice in Brazil. However, at a delicate moment in humanity, social inequalities tended to increase for those who already suffered from it. It is known, for example, that the reported rates of depression and substance abuse in this population were already high, and they become even more serious through social isolation (Kline, 2020). In addition, access to care services for this population was already difficult, since most make use of the public health system. As a rule, in Brazil, race is linked to social class, which places most people self-declared black with the poorest in the sample.

Studies around the world have found similar data to those presented here, which show the increase in the victimization of the population and blacks during the pandemic. Since the physical aggravation of the disease, with higher morbidity and mortality rates (Yancy, 2020); as well as in psychological aspects (Ebor et al., 2020; Novacek et al., 2020). The data point to the need for discussion on intersectionality in health impact and access to treatment. Bowleg (2020) highlights that minority groups such as blacks have experienced similar situations in other epidemics, with more aggravated physical and psychological effects, for example, experiencing more serious consequences of HIV stigma.

Still thinking about the most affected groups, the data from this study reveal that women have a greater chance of an outcome for stress. These findings are consistent with what has been investigated and discussed around the world (Campbell, 2020; Pieh et al., 2020; Qiu et al., 2020). The effects of quarantine are felt more widely by women who live with their families and have had overloaded tasks, accumulating household and home office activities. In addition, data indicate that they are the most


vulnerable to situations of domestic violence during confinement, as summarized by the World Health Organization (WHO, 2020).

Finally, the effects of emotional regulation were seen only in emotional suppression acting on stress and depression. The findings reported here are in line with other studies, demonstrating that the regulation of emotions plays a key role in addressing fears arising from the epidemic (Hamidein et al., 2020; Oh et al., 2020). As in this study, the researches put anxiety as the main negative outcome. However, cognitive reassessment has been indicated as the best coping strategy. In this sample the emotional suppression strategy plays a negative role in increasing stress and depression, validating the hypothesis that tension, fear and bad news about the pandemic need effective emotional moderators (Van Bavel et al., 2020).


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