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Short communication

Habituating to pandemic anxiety: Temporal trends of COVID-19 anxiety over sixteen months of COVID-19

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ABSTRACT

The impact of COVID-19 anxiety on mental health and its association with preventive measures is well-established. We aimed to study how COVID-19 anxiety and its dimensions vary over time (16 months) in a sample of individuals (N = 2717) suffering from mental distress in the pandemic context that participated in a randomized clinical trial testing psychosocial interventions in Brazil. Results showed that pandemic anxiety reduced over time. COVID-19 influences fear of others being infected and concerns about mental health being affected by COVID-19 were more significant than the fear of being infected or the physical health influenced by COVID-19. A similar temporal effect was not found for burnout, and this effect was not correlated with the number of COVID-related deaths. Habituation to pandemic anxiety or higher intolerance of uncertainty at the beginning of the pandemic is putative mechanisms for the patterns observed in the data. They might have implications for mental health interventions in the pandemic scenario and motivational strategies for prevention. *Trial registration number:* Plataforma Basil (CAAE: 30608420.5.0000.5327), ClinicalTrials.gov (NCT04632082; November 17, 2020).

1. Introduction

The impact of COVID-19 on individuals goes beyond physical health. The emergence of the pandemic had an essential impact on mental health, precipitating symptoms' onset and lasting more than the SARS-CoV-2 virus itself (Ornell et al., 2020; Taquet et al., 2021). The COVID-19 anxiety is one of the cognitive and emotional process responsible for this impact, associated with psychological distress, anxiety, and depressive symptoms (Karadem et al., 2021). On the other hand, COVID-19 anxiety is associated with mitigation behaviors and intention to get vaccinated (Iorga et al., 2021; Scrima et al., 2022). Understanding how the pandemic anxiety varies along the pandemic situation could contribute to understanding the development of coping strategies in face of a new stressor.

This study aimed to investigate how pandemic anxiety varies over time in Brazil, one of the countries most affected by COVID-19 worldwide. Also, we assessed how burnout varies over time and the association between COVID-19 anxiety and COVID deaths in this population. We hypothesized that the COVID-19 anxiety would be more significant in the initial months of the pandemic and would be associated with COVID-19 deaths. We hypothesized that burnout scoring would worsen over time and be higher in the worst month in deaths.

2. Method

2.1. Design and participants

We used data from a randomized controlled trial that assessed several types of brief telepsychotherapy for health professionals to cope with mental suffering in pandemic (NCT04632082). This study was widely publicized in different news, radio and professional emails throughout the national territory. All adults who made contact requesting assistance for mental distress related to the pandemic situation were included. For a brief period, we included teachers and essential professionals. Overall, 2717 individuals were included in this study (119 in May 2020; 133 in June 2020; 169 in July 2020; 154 in August 2020; 194 in September 2020; 162 in October 2020; 73 in November 2020; 54 in December 2020; 234 in January 2021; 302

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February 2021; 537 March 2021; 234 in April 2021; 83 in May 2021; 49 in June 2021; 73 in July 2021; 41 in August 2021; 63 in September 2021; 43 in October 2021). The mean age of the participants was 36.47 (SD = 9.5), and most of the individuals were women (86.2 %) and health professionals (78.7 %). The sample was also comprised of teachers (10.6 %), other essential services workers (6.9 %), and other professional categories (3.7 %). All participants gave their written informed consent before entering the study (Ethics Committee of Hospital de Clínicas de Porto Alegre, number 20160301).

2.2. Procedures

All participants who agreed to participate in the study were initially assessed by self-report questionnaires for screening purposes. The pandemic anxiety was assessed through four questions from The Coronavirus Health Impact Questionnaire V0.3 (CRISIS) developed by the National Institute of Mental Health, the Child Mind Institute, and the NYS Nathan S. Kline Institute (Nikolaidis et al., 2021) and translated into Brazilian Portuguese by members from our research team. The questions assess worries about being infected, about friends or family being infected, about physical health being influenced by COVID-19, and about mental health being influenced by COVID-19. The answers are rated in a Likert scale that ranges from 0 (not at all) to 4 (extremely).

Burnout was assessed by Burnout Assessment Tool, which provides measures of exhaustion, emotional and cognitive impairment, and mental detachment associated with work (Schaufeli et al., 2020). We used the 12-item version, and answers range from 1 (never) to 5 (always). Number of deaths from COVID-19 was acquired through data provided by the Brazilian Ministry of Health (Ministério da Saúde do Brasil, n.d.).

2.3. Statistical methods

We performed an exploratory analysis to assess the dimensions of COVID-19 anxiety. One-way ANOVA with post-hoc Tukey was used to assess how the COVID-19 anxiety and burnout scores vary when compared to the first month assessed and to the worst month in COVID-19 deaths. The Related-Sample Friedman's Two-Way Analysis of Variance by Ranks (nonparametric tests) was used to assess the difference between the COVID-19 anxiety's dimensions over time. Supplementary analyses exploring how COVID-19 anxiety correlated with deaths were performed using linear regression analysis. A two-sided p-value of 0.05 or less was statistically significant. All analyses were performed in the IBM SPSS Statistics, Version 20.0 program.

3. Results

The mean difference in pandemic anxiety compared to the first month assessed (May 2020) was lower in October 2020 (mean difference = 2.12, SE = 0.46, p = 0.001), November 2020 (mean difference = 2.22, SE = 0.56, p = 0.010), January 2021 (mean difference = 2.14, SE = 0.43, $p < 0.001$), February 2021 (mean difference = 2.48, SE = 0.41, $p < 0.001$), July 2021 (mean difference = 2.2, SE = 0.57, p = 0.013), August 2021 (mean difference = 3.25, SE = 0.69, $p < 0.001$), September 2021 (mean difference = 4.1, SE = 0.59, $p < 0.001$), and October 2021 (mean difference = 4.18, SE = 0.68, $p < 0.001$). Regarding the worst month in COVID-19 deaths in Brazil (April 2021), only February 2021 had lower pandemic anxiety (mean difference = 1.29, SE = 0.33, p = 0.011). Fig. 1 depicts how COVID-19 anxiety varies with deaths on a monthly basis. Concerning its dimensions, the fear of friends or family being infected, and mental health be influenced by COVID-19 were on average greater than the fear of being infected or the physical health be influenced by COVID-19 over time. Table 1 explores these results.

Supplementary analyses revealed that burnout scoring did not vary over time, not even differ from the worst month in COVID-19 deaths (between groups p-value = 0.109). The regression analysis revealed no association between COVID-19 anxiety and COVID deaths (p-value = 0.16).

4. Discussion

According to our hypothesis, the COVID-19 anxiety reduced over

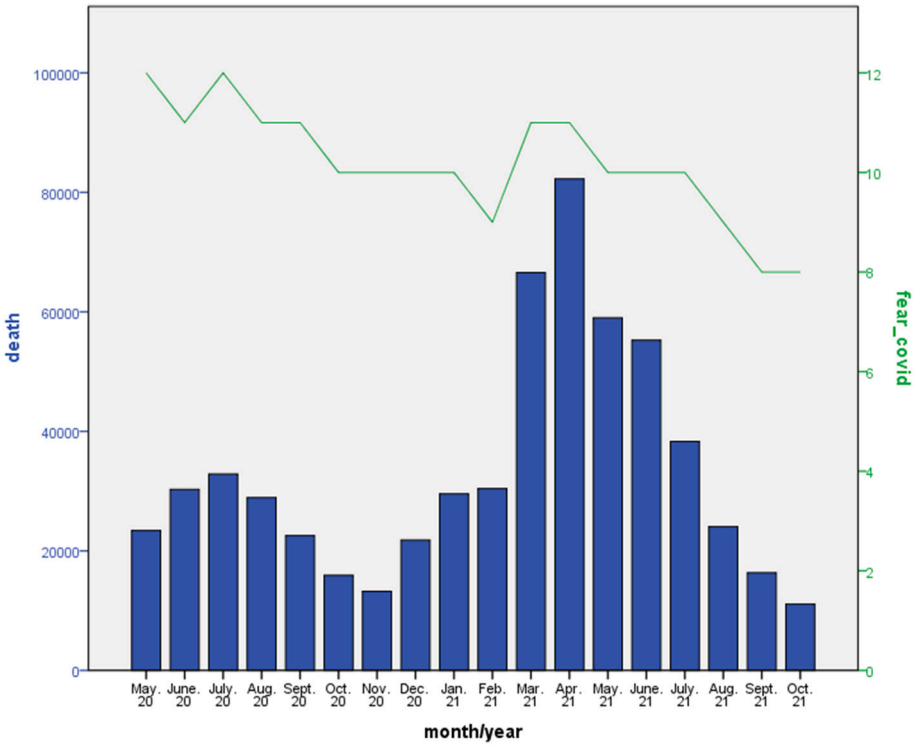

Fig. 1. Mean of COVID-19 anxiety and deaths over time.

Table 1
Significant results for mean difference between each COVID-19 anxiety dimension over time.

Month	Comparison (I-J)	p value[a]
May 2020	Physical health – **mental health**	0.002
	Physical health – **others be infected**	0.001
June 2020	Physical health – **others be infected**	0.002
	Physical health – **mental health**	<0.001
July 2020	Physical health – **mental health**	0.022
	Physical health – **others be infected**	0.002
	Be infected – **mental health**	0.042
	Be infected – **others be infected**	0.004
August 2020	Physical health – **others be infected**	0.001
	Physical health – **mental health**	< 0.001
	Be infected – **others be infected**	0.043
	Be infected – **mental health**	0.015
September 2020	Be infected – **others be infected**	< 0.001
	Be infected – **mental health**	< 0.001
	Physical health – **others be infected**	< 0.001
	Physical health – **mental health**	< 0.001
October 2020	Physical health – **others be infected**	< 0.001
	Physical health – **mental health**	< 0.001
	Be infected – **others be infected**	< 0.001
	Be infected – **mental health**	< 0.001
November 2020	Be infected – **others be infected**	0.014
January 2021	Physical health – **mental health**	0.003
	Physical health – **others be infected**	< 0.001
	Be infected – **mental health**	0.027
	Be infected – **others be infected**	< 0.001
	Mental health - **others be infected**	0.046
February 2021	Be infected – **mental health**	< 0.001
	Be infected – **others be infected**	< 0.001
	Physical health **– mental health**	< 0.001
	Physical health – **others be infected**	< 0.001
March 2021	Physical health – **mental health**	< 0.001
	Physical health – **others be infected**	< 0.001
	Be infected – **mental health**	< 0.001
	Be infected – **others be infected**	< 0.001
	Mental health - **others be infected**	0.001
April 2021	Physical health – **mental health**	< 0.001
	Physical health – **others be infected**	< 0.001
	Be infected – **mental health**	< 0.001
	Be infected – **others be infected**	< 0.001
May 2021	Be infected – **mental health**	0.01
	Be infected – **others be infected**	0.006
	Physical health – **mental health**	0.012
	Physical health – **others be infected**	0.008
June 2021	Physical health – **others be infected**	< 0.001
	Be infected – **others be infected**	0.002
July 2021	Physical health – **mental health**	0.001
	Physical health – **others be infected**	< 0.001
	Be infected – **mental health**	0.004
	Be infected – **others be infected**	< 0.001
August 2021	Be infected – **others be infected**	0.025
September 2021	Be infected – **mental health**	0.001
	Physical health – **mental health**	0.023
October 2021	Be infected – **mental health**	0.012

Note: in bold letters, the most impacted dimension.
[a] Assessed through related-sample Friedman's Two-Way analysis of variance by ranks adjusted for multiple comparisons.

time, for instance the last months analyzed (from July 2021 to October 2021) presented consecutively lower scores compared to the first month assessed. The important fear items were 'worrying about others being infected by COVID-19' and 'mental health being affected by COVID-19' instead of 'being infected' or 'physical health being affected by COVID-19'. In opposition to what was initially hypothesized, we found that burnout levels did not differ over time, suggesting specificity of this phenomenon to the pandemic anxiety. Contrary to our hypothesis, pandemic anxiety was not associated with COVID-19 deaths since the pandemic anxiety assessed in April 2021 (the worst month in mean death rates) scored higher only when compared to February 2021 but not when compared to the other months considered.

The finding that pandemic anxiety tends to reduce over time despite the context (deaths worsening) and the fact that burnout did not vary over time suggest two processes associated with pandemic anxiety. The first of these processes, intolerance of uncertainty, refers to the desire for predictability and an active engagement in the pursuit of certainty, as well as paralysis of cognition and action in the face of uncertainty (Birrell et al., 2011) and has been implicated in understanding pandemic anxiety (Baerg and Bruchmann, 2022; Taylor, 2022). The second, habituation, denotes a process in which in which a perpetual exposure to a risk tends to decrease the anxiety of people towards the risk (Foa and Kozak, 1986; Guazzini et al., 2022). Regarding habituation, our data highlight that since pandemic anxiety reduce throughout time, individuals might need additional motivational strategies to continuously engage in preventive behaviors (Iorga et al., 2021; Scrima et al., 2022). On the other hand, considering that pandemic anxiety is associated with mental suffering (Karadem et al., 2021), assessing intolerance of uncertainty, the fear about others being infected by COVID-19, and the fear of having the mental health impacted by COVID-19 may be crucial for treating mental health suffering in the pandemic scenario. Also, vaccination may be a factor associated with the reduction of the fear about others being infected since it seemed to reduce as vaccination has advanced in the country lacking its importance in the last two months analyzed.

Therefore, our findings can direct future interventions for preventive strategies and mental health. The finding that concerns about mental health being affected by COVID-19 seem to take precedence over the other dimensions reinforces the need for intervention strategies directed at alleviating mental distress. Maybe cognitive restructuring or even acceptance strategies to deal with uncertainty in an unknown scenario might be an essential tool that should be included in brief protocols developed to assess anxiety in this scenario. Finally, it is important to emphasize that the results represent data from a predominant sample of female healthcare professionals dealing with COVID-19 who sought care for mental distress issues, so they might not reflect pandemic anxiety in the general population.

Statements and declarations

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CRediT authorship contribution statement

Marianna de Abreu Costa
- Conceived of the presented idea
- Verified the analytical methods and performed the statistical analysis
- Discussed the results
- Drafting the manuscript
- Final approval of the version to be submitted

Christian Haag Kristensen
- Conceived of the presented idea
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- Final approval of the version to be submitted

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Gisele Gus Manfro
- Conceived of the presented idea
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- Final approval of the version to be submitted

Giovanni Abrahão Salum
- Conceived of the presented idea

- Verified the analytical methods
- Discussed the results
- Revising the manuscript critically
- Supervised the findings of this work
- Final approval of the version to be submitted

Conflict of interest

The authors declare no conflict of interest.

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