Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Elsevier hereby grants permission to make all its COVID-19-related research that is available on the COVID-19 resource centre - including this research content - immediately available in PubMed Central and other publicly funded repositories, such as the WHO COVID database with rights for unrestricted research re-use and analyses in any form or by any means with acknowledgement of the original source. These permissions are granted for free by Elsevier for as long as the COVID-19 resource centre remains active.
Short communication

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

Marianna de Abreu Costa a,*, Christian Haag Kristensen b, Carolina Blaya Dreher a, Gisele Gus Manfro a, Giovanni Abrahão Salum a

a Hospital de Clínicas de Porto Alegre, Centro de Pesquisa Clínica, Porto Alegre, Rio Grande do Sul, Brazil
b Programa de Pós-Graduação em Psicologia, Pontifícia Universidade Católica do Rio Grande do Sul, Porto Alegre, Brazil

ARTICLE INFO

Keywords:
COVID-19
Fear
Worry
Anxiety
Pandemic anxiety

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 processes 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 (Jorga 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

* Corresponding author.
E-mail address: mariannacos@gmail.com (M.A. Costa).

https://doi.org/10.1016/j.jad.2022.06.077
Received 1 April 2022; Received in revised form 21 May 2022; Accepted 23 June 2022
Available online 27 June 2022
0165-0327/© 2022 Elsevier B.V. All rights reserved.
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 being 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
significant results for mean difference between each COVID-19 anxiety dimension over time. The important fear items were ‘worrying about others being infected’ and ‘mental health being affected 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

This study was funded by Hospital de Clínicas de Porto Alegre and Ministério da Saúde do Brasil.

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
- Discussed the results
- Revising the manuscript critically
- Final approval of the version to be submitted

Carolina Blaya Dreher
- Conceived of the presented idea
- Discussed the results
- Revising the manuscript critically
- Final approval of the version to be submitted

Gisele Gus Manfro
- Conceived of the presented idea
- Discussed the results
- Revising the manuscript critically
- Final approval of the version to be submitted

Giovanni Abráhamo Salum
- Conceived of the presented idea

Table 1

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

Note: in bold letters, the most impacted dimension.

Assessed through related-sample Friedman’s Two-Way analysis of variance by ranks adjusted for multiple comparisons.
- 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.

Acknowledgments

We thank Hospital de Clínicas de Porto Alegre and Ministério da Saúde do Brasil for funding this study as well as all participants that accepted being part of this study.

References

Baerg, L., Bruchmann, K., 2022. COVID-19 information overload: intolerance of uncertainty moderates the relationship between frequency of internet searching and fear of COVID-19. Acta Psychol. 224, 103534 https://doi.org/10.1016/j.actpsy.2022.103534.

Birrell, J., Meares, K., Wilkinson, A., Freeston, M., 2011. Toward a definition of intolerance of uncertainty: a review of factor analytical studies of the intolerance of uncertainty scale. Clin. Psychol. Rev. 31 (7), 1198–1208. https://doi.org/10.1016/j.cpr.2011.07.009.

Foça, E.B., Kozak, M.J., 1986. Emotional processing of fear: exposure to corrective information. Psychol. Bull. 99 (1), 20–35. https://doi.org/10.1037/0033-2909.99.1.20.

Guazzini, A., Pesce, A., Marotta, L., Duradoni, M., 2022. Through the second wave: analysis of the psychological and perceptive changes in the Italian population during the COVID-19 pandemic. Int. J. Environ. Res. Public Health 19 (3), 1635. https://doi.org/10.3390/ijerph19031635.

Iorga, M., Iurcov, R., Pop, L.-M., 2021. The relationship between fear of infection and insomnia among dentists from Oradea metropolitan area during the outbreak of Sars-CoV-2 pandemic. J. Clin. Med. 10 (11), 2494. https://doi.org/10.3390/jcm10112494.

Karadem, F.B., Demirda, A., Işık, Ü., Kılç, F., 2021. Investigation of the psychiatric factors that determine the fear of COVID-19 in healthcare workers and hospital staff in a university hospital in Turkey. J.Community Psychol. jcop.22657 https://doi.org/10.1002/jcop.22657.

Ministério da Saúde do Brasil. Painel de casos de doença pelo coronavírus 2019 (COVID-19) no Brasil pelo Ministério da Saúde (n.d.). https://covid.saude.gov.br/.

Nikolaidis, A., Paksarian, D., Alexander, L., Dunn, J., Dunn, J., Nielsen, D.M., Droney, I., Kang, M., Douka, I., Bromet, E., Milham, M., Stringaris, A., Merikangas, K.R., 2021. The Coronavirus Health and Impact Survey (CRISS) reveals reproducible correlates of pandemic-related mood states across the Atlantic. Sci. Rep. 11 (1), 8139. https://doi.org/10.1038/s41598-021-87270-3.

Ornell, F., Schuch, J.B., Sordi, A.O., Kessler, F.H.P., 2020. “Pandemic fear” and COVID-19: mental health burden and strategies. Braz. J. Psychiatry. https://doi.org/10.1590/1516-4446-2020-0008.

Schaufeli, W.B., Desart, S., De Witte, H., 2020. Burnout Assessment Tool (BAT)—development, validity, and reliability. Int. J. Environ. Res. Public Health 17 (24), 9495. https://doi.org/10.3390/ijerph17249495.

Scrima, F., Micelli, S., Caci, B., Cardaci, M., 2022. The relationship between fear of COVID-19 and intention to get vaccinated. The serial mediation roles of existential anxiety and conspiracy beliefs. Personal. Individ. Differ. 184, 111188 https://doi.org/10.1016/j.paid.2021.111188.

Taquet, M., Geddes, J.R., Husain, M., Luciano, S., Harrison, P.J., 2021. 6-Month neurological and psychiatric outcomes in 236 379 survivors of COVID-19: a retrospective cohort study using electronic health records. Lancet Psychiatry 8 (5), 416–427. https://doi.org/10.1016/S2215-0366(21)00084-5.

Taylor, S., 2022. The psychology of pandemics. Annu. Rev. Clin. Psychol. 18, 2.1–2.29. https://doi.org/10.1146/annurev-clinpsy-072720-020131.