Major depressive episode in mothers during the COVID-19 pandemic: a population-based study in the Southern Brazil

Episódio depressivo maior entre mães durante a pandemia da COVID-19: um estudo populacional no Sul do Brasil

Episodio depresivo mayor en madres durante la pandemia de COVID-19: un estudio de base poblacional en el sur de Brasil

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Abstract

The COVID-19 pandemic has changed individuals and families, causing adverse psychological effects, especially in young adults, women, and parents. This study aimed to verify the prevalence of current major depressive episode (CMDE) in mothers of preschoolers (up to five years old) and its associated stressors during the COVID-19 pandemic in a municipality in the Southern Brazil. This is a cross-sectional, population-based study with mothers. All mothers were interviewed by telephone call during the COVID-19 pandemic. We used the Mini-International Neuropsychiatric Interview *(M.I.N.I. Plus) to assess the presence of CMDE. Statistical analysis was conducted using the chi-square test and a multivariate logistic regression. We evaluated 666 mothers. The prevalence of CMDE was 12.3%. Mothers with financial losses had 2.1 (95%CI: 1.3-3.4) more odds of presenting CMDE than those financially stable. We observed that financial losses were determinant for the higher prevalence of depression in mothers.*

Depression; COVID-19; Pandemics; Mothers; Mental Health

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Introduction

The severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) or COVID-19, had its first registration in December 2019, in China [1]. As a strategy against its dissemination, protective measures were established, such as social distancing/isolation, closing daycare centers and schools, directly changing families' routines.

Although protective measures are essential to stop the spread of the virus, they may have harmful effects on mental health. A study found negative psychological effects such as post-traumatic stress symptoms, confusion, and anger, associated with longer quarantine time, fear of infection, frustration and financial losses [2]. Evidence shows that the COVID-19 pandemic and the policies to control the spread of the virus are related to increased depression and anxiety, especially in young adults, women, and parents [3,4,5].

Research is essential for planning effective policy measures to reduce the impact of the pandemic on individuals' lives, mainly those who feel its overwhelming effect, such as mothers. Studies on the association between the COVID-19 pandemic and mental health are still being developed. So far, most studies on the subject use self-report instruments that assess symptoms of depression and not its diagnosis. Thus, we aimed to verify the prevalence of the current major depressive episode (CMDE) and its stressors caused by the pandemic in mothers of preschoolers (up to five years old) from a city in the Southern Brazil.

Methods

A cross-sectional, part of a population-based longitudinal study with mothers and their children in Pelotas (Rio Grande do Sul State), a city in the Southern Brazil. For the baseline, 50% of 488 sectors of the urban area of the municipality were randomly selected in 2016. All houses in these sectors were visited, in search for women up to 24 weeks pregnant. Pregnant women were evaluated at the moment of identification (first wave, N = 983) and in the following stages: 60 days after the first interview (second wave), three months after childbirth (third wave), 18 months after childbirth (fourth wave) and 21 months after childbirth (fifth wave). Waves 4 and 5 were suspended due to the onset of the pandemic. To understand the impact of the COVID-19 pandemic on maternal and child mental health, a new stage was initiated in October 2020 (sixth wave). This study data was collected in the sixth wave, in which children had a mean age of approximately 35 months.

The data were collected by trained health students by telephone calls with the mothers and by filling out an online form. Life changes because of the COVID-19 pandemic, as well as mental health issues around CMDE, were part of the study.

The variables related to the pandemic were: working from home, financial losses due to getting fired or having wage reduction, family income (in Brazilian Reais – BRL) in the last month, race/skin color, living with a partner, time without leaving home for non-essential activities, family member needs to leave home to work, COVID-19 diagnosis in mothers, COVID-19 diagnosis of a family member, death of a family member due to COVID-19, following all or almost all distancing recommendations, number of people living in the house. Furthermore, the Epidemiological Weeks (EW) in which we conducted the evaluations were categorized: from EW 44/2020 to EW 50/2020; from EW 51/2020 to EW 6/2021; and from EW 7/2021 to EW 24/2021.

To assess the presence of CMDE the *Mini-International Neuropsychiatric Interview* (M.I.N.I. Plus) was used [6]. This is a semi-structured diagnostic interview, resulting in clinical diagnoses. It is divided into independent modules, in which each module corresponds to a disorder. For this study, the CMDE module was used. In Brazil, the CMDE module scored 0.90 for sensitivity and 0.93 for specificity, with a total accuracy of 93% [7].

A post hoc power analysis in the OpenEpi website (http://www.openepi.com) was performed, considering the following prevalence: 12.3% exposed people, 87.7% unexposed people, and the bilateral 95% confidence interval (95%CI). The power found was 100%.

The software IBM SPSS 22.0 (https://www.ibm.com/) was used for statistical analysis. Absolute and relative frequencies and the chi-square test were performed. A multivariate logistic regression was conducted, including all variables that showed a p-value < 0.20 in the chi-square test.

The ethical standards of the *Declaration of Helsinki* were followed in all procedures. The study was approved by the Research Ethics Committee of the Catholic University of Pelotas (protocol n. 47807915.4.0000.5339). All mothers gave verbal consent authorizing their participation. Women diagnosed with CMDE were referred to a brief psychotherapeutic intervention.

Results

Out of the 674 mothers evaluated, 666 fully responded to the M.I.N.I. Plus. Among these, 12.3% were diagnosed with CMDE.

Table 1 shows the descriptive analysis of the COVID-19 pandemic stressors and its association with CMDE in mothers. Regarding the changes occurred because of the pandemic and the prevalence of CMDE among mothers, we found that 18.3% of the mothers who reported financial losses during the pandemic had a diagnosis of depression, whereas those who did not report financial losses the prevalence was 9.7% (p = 0.002).

Mothers who experienced financial losses had 2.1 (95%CI: 1.3-3.4) more odds to present CMDE than those financially stable (Table 2).

Discussion

This study aimed to verify the prevalence of CMDE and its associated stressors during the COVID-19 pandemic in mothers of preschoolers (up to five years old) in a city in the Southern Brazil. We found that financial losses were associated with a higher prevalence of CMDE in mothers.

Similarly, Feter et al. [8] found that people who had their income affected by social restrictions showed higher rates of depression. The financial impact was the main reason of 45.3% of the respondents mentioning anxiety and depressive symptoms during the COVID-19 pandemic.

Regarding other pandemic variables, we hypothesized that they would also be associated with a higher prevalence of CMDE in mothers. According to other studies, lower family income and a longer period of social distancing were associated with higher rates of depression [9,10], but this result was not observed in our study.

These differences can be explained by two factors. The first is that other studies [8,11] used scales that assessed depressive symptoms, while we aimed to diagnose the disorder. The second factor concerns the period in which the data were collected. While data collection in other studies occurred at the beginning of the pandemic, such as Choi & Hui [12], our assessments started approximately seven months after the implementation of the restrictions in Brazil. Therefore, we believe that at this moment most of the uncertainties about the virus and its consequences had already been clarified and individuals were more adapted to the circumstances, thus making financial impact the main reason for the depressive episode in the studied population.

As a limitation, we believe that the prevalence of CMDE may be underestimated, since in the previous stages of the larger study mothers who had this diagnosis were referred to a brief psychotherapeutic intervention for the treatment of symptoms. This may have affected depression rates during the pandemic.

Finally, among other stressful variables, financial losses were determinant for a higher prevalence of depression in mothers. The COVID-19 pandemic has increased social inequalities in Brazil and other countries [13]. Therefore, it is essential to treat mental health issues in the most vulnerable groups, neutralizing negative impacts for individuals and the society.

Table 1

Descriptive analysis of the COVID-19 pandemic stressors and its association with the prevalence of current major depressive episode (CMDE) in mothers. Pelotas, Rio Grande do Sul State, Brazil, 2020-2021.

Characteristics	n (%)	CMDE n (%)	p-value
Working from home			0.406
No	496 (74.5)	58 (11.7)	
Yes	170 (25.5)	24 (14.1)	
Financial losses (got fired or had wage reduction)			0.002
No	464 (69.7)	45 (9.7)	
Yes	202 (30.3)	37 (18.3)	
Family income in the last month (BRL)			0.391
Up to 1,800	225 (33.8)	30 (13.3)	
1,801-3,100	218 (32.7)	30 (13.8)	
3,101 or more	223 (33.5)	22 (9.9)	
Race/Skin color			0.125
White	478 (71.8)	53 (11.1)	
Non-white	188 (28.2)	29 (15.4)	
Living with a partner			0.330
No	143 (21.5)	21 (14.7)	
Yes	523 (78.5)	61 (11.7)	
Time without leaving home for non-essential activities (months)			0.108
Up to 1	280 (42.0)	26 (9.3)	
2-4	166 (24.9)	26 (15.7)	
5 or more	220 (33.0)	30 (13.6)	
Family member needs to leave home to work			0.229
No	190 (28.5)	28 (14.7)	
Yes	476 (71.5)	54 (11.3)	
COVID-19 diagnosis in mothers			0.793
No	614 (92.2)	75 (12.2)	
Yes	52 (7.8)	7 (13.5)	
COVID-19 diagnosis of a family member			0.483
No	614 (92.2)	74 (12.1)	
Yes	52 (7.8)	8 (15.4)	
Death of a family member due to COVID-19			0.423
No	629 (94.4)	79 (12.6)	
Yes	37 (5.6)	3 (8.1)	
Following all or almost all distancing recommendations			0.663
No	117 (17.6)	13 (11.1)	
Yes	549 (82.4)	69 (12.6)	
Number of people living in the house			0.133
Up to 3	271 (40.7)	25 (9.2)	
4	216 (32.4)	31 (14.4)	
5 or more	179 (26.9)	26 (14.5)	
Epidemiological Weeks			0.208
44/2020 to 50/2020	319 (47.9)	40 (12.5)	
51/2020 to 6/2021	193 (29.0)	18 (9.3)	
7/2021 to 24/2021	154 (23.1)	24 (15.6)	
Total	666 (100.0)	82 (12.3)	

Table 2

Logistic regression analysis of current major depressive episode (CMDE) according to COVID-19 pandemic stressors in mothers. Pelotas, Rio Grande do Sul State, Brazil, 2020-2021.

Characteristics	OR	95%CI	p-value
Financial losses			
No	1.0		
Yes	2.1	1.3-3.4	0.003
Race/Skin color			
White	1.0		
Non-white	1.4	0.8-2.3	0.193
Time without leaving home for non-essential activities (months)			
Up to 1	1.0		
2-4	1.8	1.0-3.2	0.059
5 or more	1.5	0.9-2.7	0.138
Number of people living in the house			
Up to 3	1.0		
4	1.6	0.9-2.9	0.089
5 or more	1.7	0.9-3.1	0.091

95%CI: 95% confidence interval; OR: odds ratio.

Contributors

F. T. Coelho contributed to the study concept, investigation, data analysis, and writing. C. C. Scholl contributed to the data analysis, investigation, writing, and review. J. B. Silveira, D. B. Mello, M. R. Santos, L. A. Ferreira, and R. S. Stigger contributed to the investigation, writing, and review. J. P. Trettim, M. B. Matos, and R. T. Pinheiro contributed to the writing and review. L. A. Quevedo contributed to the data analysis, writing, and review. All the authros approved the final version of the manuscript.

Additional informations

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Resumo

A pandemia da COVID-19 tem levado a mudan-ças em indivíduos e famílias, com efeitos psicoló-gicos adversos, principalmente em adultos jovens, mulheres e pais e mães. O estudo buscou averiguar a prevalência de episódio depressivo maior atual (EDMA) em mães de pré-escolares (até 5 anos de idade) e estressores associados durante a pandemia da COVID-19 em uma cidade no Sul do Brasil. Este é um estudo transversal aninhado em um estudo de base populacional com mães. Todas as mães foram entrevistadas através de contato te-lefônico durante a pandemia da COVID-19. Os autores usaram a Mini-International Neurop-sychiatric Interview (M.I.N.I. Plus) para ava-liar a presença de EDMA. A análise estatística foi realizada, calculando o qui-quadrado e a regres-são logística multivariada. Foram avaliadas 666 mães. A prevalência de EDMA foi de 12,3%. Mães com perdas financeiras apresentaram probabilida-de 2,1 vezes maior (IC95%: 1,3-3,4) de apresentar EDMA, comparadas com aquelas que mantiveram a situação financeira. Com base nos resultados, os autores observaram que perdas financeiras foram determinantes para a prevalência maior de de-pressão materna.

Depressão; COVID-19; Pandemias; Mães; Saúde Mental

Resumen

La pandemia de COVID-19 ha provocado cam-bios en los individuos y las familias, causando efectos psicológicos adversos, especialmente en los adultos jóvenes, las mujeres y los padres y ma-dres. El objetivo de este estudio fue verificar la prevalencia del episodio depresivo mayor actual (EDMA) en madres de preescolares (hasta 5 años) y sus estresores asociados durante la pandemia de COVID-19 en una ciudad del sur de Brasil. Se trata de un estudio transversal anidado en un estudio poblacional con madres. Todas las madres fueron entrevistadas mediante contacto telefónico durante la pandemia de COVID-19. Se utilizó la Mini-International Neuropsychiatric Inter-view (M.I.N.I. Plus) para evaluar la presencia de EDMA. El análisis estadístico se realizó calcu-lando la prueba de chi-cuadrado y una regresión logística multivariante. Se evaluaron 666 ma-dres. La prevalencia de EDMA fue del 12,3%. Las madres con pérdidas económicas tenían un 2,1 (IC95%: 1,3-3,4) más probabilidades de presen-tar EDMA que las que mantuvieron su situación económica. Teniendo en cuenta los resultados, observamos que las pérdidas económicas fue-ron determinantes para la mayor prevalencia de depresión materna.

Depresión; COVID-19; Pandemias; Madres; Salud Mental