CSP CADERNOS DE SAÚDE PÚBLICA
REPORTS IN PUBLIC HEALTH

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A decreased trajectory of loneliness among Brazilians aged 50 years and older during the COVID-19 pandemic: ELSI-Brazil

Trajetória de diminuição da solidão entre brasileiros com 50 anos ou mais durante a pandemia de COVID-19: ELSI-Brasil

Trayectoria decreciente de la soledad entre los brasileños de 50 años o más durante la pandemia de COVID-19: ELSI-Brasil

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doi: 10.1590/0102-311XEN106622

Abstract

This study aimed to estimate prevalence of loneliness among older Brazilian adults over the first seven months of the COVID-19 pandemic and to identify the predictors of loneliness trajectories. Pre-pandemic data derived from face-to-face interviews of participants of the 2019-2020 Brazilian Longitudinal Study of Aging *(ELSI-Brazil), which is a nationally representative study of community-dwelling individuals aged 50 years and over. Pandemic data were based on three rounds of telephone interviews among those participants, conducted from May to October 2020. Loneliness was measured by a single-item question, considering those who had at least two repeated measures. Explanatory variables included depression, living alone, leaving home in the last week, and virtual connectedness in the last month. Mixed-effects logistic regression was used to estimate odds ratios with their 95% confidence intervals (95%CI) and to investigate loneliness trajectories and their predictors. In total, 5,108 participants were included. The overall prevalence of loneliness in the pre-pandemic period was 33.1% (95%CI: 29.4-36.8), higher than the pandemic period (round 1: 23.6%, 95%CI: 20.6-26.9; round 2: 20.5%, 95%CI: 17.8-23.5; round 3: 20.6%, 95%CI: 17.1-24.6). A significant interaction ($p \leq 0.05$) was evidenced only between depression and time; participants with depression showed a greater reduction in loneliness levels. Although loneliness levels in Brazil have decreased during the pandemic, this pattern is not present for all older adults. Individuals with depression had a more significant reduction, probably due to feeling closer to their social network members during the stay-at-home recommendations.*

Longitudinal Studies; Depression; Physical Distancing; Epidemiology

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Introduction

The World Health Organization (WHO) recognizes loneliness as a major public health problem [1]. Loneliness can be defined as the negative subjective feeling that results from a discrepancy between desired and actual social connections [2,3]. Estimates have shown that over 20% of older adults in the United States [4], Eastern Europe [5], India [6], and six Latin American countries [7] reported feeling lonely. Due to the coronavirus disease 2019 (COVID-19), predictions that stay-at-home recommendations and social restrictions would negatively affect a broad set of mental health indicators were expected, including a rise in loneliness [8,9,10].

Among community-dwelling older adults, longitudinal data from high-income countries, such as Austria [11], the Netherlands [12], Norway [8], and Switzerland [13] confirmed higher loneliness levels during the pandemic, in comparison with the pre-pandemic period. However, in the United Kingdom, similar proportions of respondents reported that they felt less lonely (13.6%) or lonelier (11.1%) during the pandemic [14]. Data from the United States have shown mixed findings, with studies reporting either increased [14,15] or relatively stable loneliness levels during the pandemic [10,16].

For older adults, predictors of increased loneliness trajectories after the pandemic onset include being a woman [14], older age, being single [12,17], living alone, poor self-rated health [14], having higher psychological distress [17], and less financial satisfaction [14]. Although unexpected, having higher social support was also identified as a predictor of increased loneliness trajectories during the COVID-19 pandemic [17]. As social support was measured by the number of people close to the participants previous to the onset of the pandemic, perhaps social distancing is comparatively more harmful for people with more social relationships [17].

On the other hand, good physical functioning before the pandemic, high mastery [12], higher frequency of face-to-face contact outside the home [14], and satisfaction with the frequency of social interactions during the COVID-19 lockdown provided some protection against an increase in loneliness [13]. Mixed results have been found regarding virtual contact (i.e., how often the individual interacts with children, other family members, and friends who live apart via telephone, email, and social media) [14,16]. Albeit many people have resorted to virtual communication to maintain relationships with family members and friends who live apart, these controversial findings may suggest that interactions via telephone, video calls, text messaging, and social media may not be a qualitatively equivalent alternative to face-to-face contact. Firstly, digital media use depends on access to the internet and technological knowledge, which are often unevenly distributed across demographic and socioeconomic groups [14,18]. Besides, the most common means of virtual contact among older adults – telephone calls and text messaging – are generally unable to simulate face-to-face contact due to their lack of visualization [14,19]. Furthermore, digital media use can cause stress, and both digital stress and avoidance of use tend to be greater among older adults [14,20]. Thus, virtual contact may have a limited role in maintaining older adults' mental health, showing inconsistent benefits across groups.

In low- and middle-income countries, little information is available on changes in loneliness levels in this age group since the onset of the pandemic. Although Chile has shown stable levels from the end of 2019 to September 2020 [21], loneliness in Brazil has reduced from 32.8% (pre-pandemic) to 23.9% by June 2020 [22]. Predictors of loneliness trajectories remain not adequately explored.

Brazil has been one of the most severely affected countries due to the COVID-19 pandemic [23]. The community transmission throughout the country was declared in March 2020 by the Brazilian Ministry of Health, but the Federal Government did not issue a nationwide stay-at-home order, and the local governments imposed social restriction measures at different levels [24]. By December 2021, the country had registered more than 22 million confirmed cases, and deaths had exceeded 614,000 [25]. A decline in 2020 life expectancy at birth of 1.3 years and 0.9 years in life expectancy at age 65 was estimated, setting Brazil back to 2014 and 2012 levels, respectively [23].

Longitudinal changes in loneliness may differ across countries where different social restriction measures were introduced to face the COVID-19 pandemic. Also, little attention has been given to loneliness trajectories and their predictors, particularly in low- and middle-income countries with a high number of cumulative confirmed cases and deaths due to COVID-19. As loneliness damages both mental and physical health [1], and presents a similar mortality risk to well-established risk factors, such as smoking, physical inactivity, and obesity [26], its monitoring is crucial to the establishment of

strategies and policies that could mitigate its harmful effects. Moreover, evidence shows that loneliness is associated with more visits to health care provider, increased hospitalization and readmission rates, and longer length of stay [27]. Thus, this study aimed to estimate prevalence of loneliness among older Brazilian adults over the first seven months of the pandemic and to identify the predictors of loneliness trajectories.

Method

Data and sample

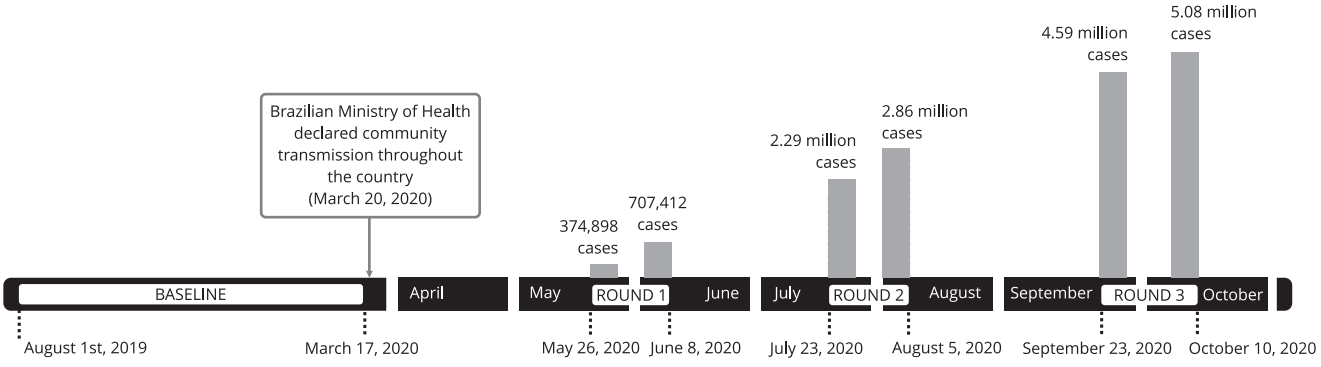
The *Brazilian Longitudinal Study of Aging* (ELSI-Brazil) is a nationally representative study of persons aged 50 years and older, conducted in 70 municipalities in the five regions of Brazil [28]. Pre-pandemic data for this analysis were obtained from the second wave of the ELSI-Brazil, conducted by face-to-face interview from August 2019 to March 2020, with 9,411 participants [29]. This pre-pandemic survey was considered the baseline for this study. Data of the pandemic period were collected in 2020 from three rounds of telephone interviews, conducted in May-June (first round), July-August (second round), and September-October (third round). Detailed information on the ELSI-Brazil study and the telephone surveys design can be found elsewhere [28,30].

Among baseline participants, 6,149 responded to the first round of the telephone survey; 6,752 responded to the second round; and 6,711 to the third. As loneliness is a subjective feeling, only the participants who answered the surveys without a proxy and those who had at least two repeated measures for loneliness (at baseline and at least one round) were included in this study. Thus, 5,108 participants (50 to 118 years), summing up to 20,432 interviews composed our sample. Figure 1 shows the study timeline and the national context regarding the number of cumulative confirmed cases in Brazil due to the COVID-19 pandemic at each time point.

The ELSI-Brazil (protocol 34649814.3.0000.5091) and the telephone surveys (protocol 34649814.3.0000.5091) were approved by the Research Ethics Committee of the Rene Rachou Institute, Oswaldo Cruz Foundation.

Figure 1

Study timeline and number of cases due to the COVID-19 pandemic in Brazil. *Brazilian Longitudinal Study of Aging* (ELSI-Brazil).



Source: Mathieu et al. [25].

Note: the figure reports the number of cumulative confirmed cases.

Measures

Loneliness was measured by the single-item question: "How often do you feel alone/lonely?". For the telephone surveys, respondents were asked to rate the item referring to the last 30 days. Responses were scored on a three-point Likert scale: hardly ever/never, sometimes, or often. Following previous research, we created a dichotomous measure of loneliness (lonely versus not lonely) to aid in the results interpretation, coding persons who responded "sometimes" or "often" as lonely [31].

Explanatory variables included the self-reported medical diagnosis of depression (yes or no), living alone (yes or no), leaving home in the last week (6 to 7 days, 3 to 5 days, 1 to 2 days, or did not leave home), and virtual connectedness in the last month (3 days or more per week, at least 1 day per week, less than 1 day per week, or no virtual connectedness). Leaving home was evaluated by the question: "In the last week, how many days did you leave home?". Virtual connectedness was assessed by the frequency of contact with relatives and friends via telephone, Skype, WhatsApp, or social media in the past 30 days, considering those who did not live with the participant. Data on the medical diagnosis of depression and living arrangement were measured only at baseline whereas leaving home and virtual connectedness variables were assessed only during the telephone survey rounds.

Covariates included age group (50-59, 60-69, 70-79, or ≥ 80), sex (female or male), schooling years (0-4, 5-8, 9-11, or ≥ 12), and place of residence (urban or rural).

Statistical analyses

Frequency distributions were performed to characterize the study population at baseline. Firstly, the prevalence of loneliness for the total population (overall prevalence) was estimated. Then, loneliness prevalence according to demographic, health, and social variables at each time point (baseline and in the three rounds performed during the COVID-19 pandemic) was calculated. Mixed-effects logistic regression was used to estimate odds ratios (OR) with their 95% confidence intervals (95%CI) and to investigate loneliness trajectory and its predictors (depression, living alone, leaving home, and virtual connectedness). Separate models for each explanatory variable were fitted, incorporating the time, then the time plus adjustment variables (age group, sex, schooling years, and place of residence), and, finally, an interaction term between time and explanatory variable (adjusted model + time interaction). Time was included in the models as categories (baseline, rounds 1, 2, and 3). The models included a random intercept and a random slope for time within-participant to account for the correlation between observations. Lastly, interaction terms were presented in plots.

All analyses were performed using Stata 16.0 (https://www.stata.com). The *svy* command was used to account for the complex survey design and survey weights, which were used to compensate for unequal selection probabilities and differential nonresponse to telephone surveys. Significance level was set at 5%.

Results

At baseline, 51% of participants were female, 50% were aged 50-59 years, and 88.2% lived in urban areas. The most frequent education group reported ≥ 12 years of schooling (37.3%). Furthermore, 86.5% of participants reported no medical diagnosis of depression and 77.6% declared not living alone. Table 1 shows further details of the prevalence of loneliness according to demographic, health, and social variables at baseline and in the three rounds performed during the COVID-19 pandemic.

Figure 2 shows the changes in loneliness prevalence over time. In the pre-pandemic period, the overall loneliness prevalence was 33.1% (95%CI: 29.4-36.8). It was higher than the prevalence observed in the three rounds carried out during the pandemic (round 1: 23.6%, 95%CI: 20.6-26.9; round 2: 20.5%, 95%CI: 17.8-23.5; round 3: 20.6%, 95%CI: 17.1-24.6).

Table 2 shows the results of the adjusted associations of each explanatory variable with loneliness. The fully adjusted models showed a positive association of loneliness with depression (OR = 2.49, 95%CI: 1.62-3.82), living alone (OR = 1.48, 95%CI: 1.04-2.10), and virtual connectedness in the

Table 1

Prevalence of loneliness according to demographic, health, and social variables at baseline and in three rounds performed during the COVID-19 pandemic. *Brazilian Longitudinal Study of Aging* (ELSI-Brazil).

Characteristics	Baseline (n = 5,108)		Round 1 (n = 4,108)		Round 2 (n = 4,471)		Round 3 (n = 4,206)	
	%	95%CI	%	95%CI	%	95%CI	%	95%CI
Age group (years)								
50-59	34.3	29.1-39.7	23.7	19.4-28.6	18.8	15.1-23.3	19.7	15.1-25.1
60-69	29.6	25.0-34.7	20.1	16.6-24.1	20.1	17.1-23.4	21.1	16.0-27.3
70-79	31.4	26.3-37.1	26.0	21.7-30.6	22.4	17.7-27.8	19.6	14.7-25.8
≥ 80	45.2	35.0-55.7	34.0	23.2-46.8	33.8	22.7-47.0	30.5	21.6-41.1
Sex								
Female	39.3	35.1-43.7	27.6	23.9-31.6	24.4	21.3-27.9	23.2	20.0-26.8
Male	26.5	22.6-30.8	19.4	15.9-23.5	16.3	12.6-20.7	17.8	13.0-24.0
Schooling (years)								
0-4	35.6	31.6-39.8	25.1	21.8-28.8	21.8	19.1-24.8	24.5	21.8-27.6
5-8	35.7	30.9-40.9	26.4	20.6-33.2	24.8	20.6-29.6	21.2	17.0-26.1
9-11	30.2	25.9-34.8	21.5	17.9-25.5	16.6	13.5-20.3	17.5	13.8-21.9
≥ 12	30.2	24.0-37.3	21.2	16.3-27.1	17.8	12.7-24.3	18.9	12.8-26.8
Place of residence								
Urban	33.3	29.6-37.1	23.5	20.3-27.0	20.9	17.9-24.2	20.8	17.0-25.2
Rural	31.5	24.9-38.8	24.4	19.2-30.5	17.1	13.2-21.9	19.2	12.4-28.5
Depression								
No	29.7	26.0-33.8	22.4	19.1-26.1	19.3	16.4-22.6	19.1	15.2-23.7
Yes	54.1	45.6-62.4	32.1	24.4-41.3	28.3	21.1-36.8	30.6	23.6-38.7
Living alone								
No	30.7	27.1-34.4	22.7	19.8-26.0	19.6	16.6-22.9	19.5	16.1-23.4
Yes	42.3	34.4-48.4	26.6	20.1-34.3	23.6	17.7-30.7	24.1	17.5-32.3
Leaving home in the last week (days)								
6-7	-	-	17.1	12.6-22.9	14.3	9.0-22.0	16.5	10.6-24.6
3-5	-	-	24.0	17.8-31.4	20.0	15.1-25.9	21.3	14.9-29.5
1-2	-	-	23.4	18.3-29.4	20.7	17.4-24.5	22.3	17.0-28.7
Did not leave home	-	-	28.2	23.8-33.0	25.8	21.0-31.2	22.5	17.9-27.8
Virtual connectedness in the last month								
3 days or more per week	-	-	22.3	19.2-25.9	20.7	17.3-24.5	19.0	15.4-23.2
At least 1 day per week	-	-	23.4	17.9-29.9	18.0	14.1-22.8	24.3	16.0-35.1
Less than 1 day per week	-	-	35.4	23.7-49.2	25.1	16.5-36.1	22.6	14.6-33.3
No virtual connectedness	-	-	26.7	19.7-35.0	23.8	17.2-31.9	23.5	16.0-33.3

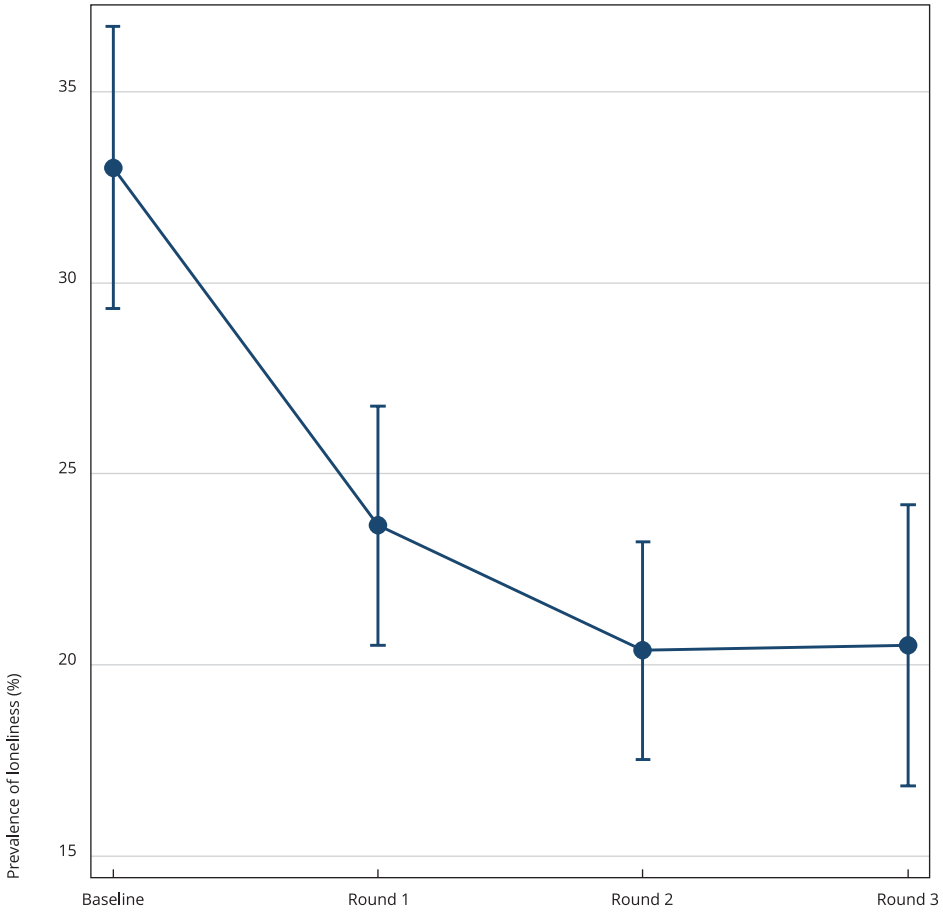
95%CI: 95% confidence interval.

last month – less than once per week (OR = 2.01, 95%CI: 1.19-3.39) and no virtual connectedness (OR = 1.54, 95%CI: 1.03-2.31).

Finally, the adjusted associations of loneliness trajectory with each explanatory variable were separately tested. A significant interaction term was observed only between time and depression. Specifically, at baseline, participants with depression had a significantly higher predicted probability of loneliness compared to those without depression. However, no significant difference was observed in the predicted probability of loneliness between participants with and without depression in rounds 1, 2, and 3 (Figure 3). Figures 4, 5, and 6 show the non-significant interactions between loneliness trajectory and living alone, leaving home in the last week, and virtual connectedness in the last month, respectively.

Figure 2

Prevalence of loneliness before (baseline) and during the COVID-19 pandemic (rounds 1, 2, and 3). *Brazilian Longitudinal Study of Aging* (ELSI-Brazil).



Discussion

Our findings revealed a decrease in loneliness levels among older Brazilian adults, decreasing from 33.1% before pandemic to 20.5% during the first four months of the pandemic and then leveling off until October 2020. Depression was the only predictor of change in loneliness levels over the analyzed period. Participants with depression in the pre-pandemic period showed a greater reduction in loneliness levels during the pandemic compared to those without depression.

Unlike previously published studies [10,11,12,13,14,15,16,17,21], to our knowledge only Brazil and Spain have observed decreased loneliness among older adults since the onset of the pandemic [32]. However, Spain reported loneliness reduction as an immediate effect of the nationwide lockdown due to COVID-19, assessed 10 days after the government imposed strict stay-at-home orders. Furthermore, although middle-aged and older Spaniards have been included in the sample (mean age = 55.7), no information on the age range was available. Although unexpected, our findings show consistency over time, once loneliness prevalence was similar across the three-time point analysis carried out during the pandemic.

Table 2

Adjusted models of the association between time, depression, living alone, leaving home, virtual connectedness, and loneliness. *Brazilian Longitudinal Study of Aging* (ELSI-Brazil).

Characteristics	OR *	95%CI	OR **	95%CI
Time				
Baseline	1.00		1.00	
Round 1	**0.50**	**0.37-0.67**	**0.50**	**0.37-0.67**
Round 2	**0.30**	**0.21-0.42**	**0.30**	**0.21-0.41**
Round 3	**0.21**	**0.12-0.38**	**0.21**	**0.12-0.36**
Depression				
No	1.00		1.00	
Yes	**2.86**	**1.83-4.47**	**2.49**	**1.62-3.82**
Living alone				
No	1.00		1.00	
Yes	**1.63**	**1.15-2.31**	**1.48**	**1.04-2.10**
Leaving home in the last week (days)				
6-7	1.00		1.00	
3-5	1.59	0.99-2.56	1.48	0.95-2.30
1-2	1.53	0.81-2.89	1.30	0.72-2.32
Did not leave home	**1.99**	**1.13-3.49**	1.55	0.95-2.52
Virtual connectedness in the last month				
3 days or more per week	1.00		1.00	
At least 1 day per week	1.17	0.74-1.85	1.16	0.74-1.84
Less than 1 day per week	**1.94**	**1.16-3.26**	**2.01**	**1.19-3.39**
No virtual connectedness	**1.53**	**1.05-2.23**	**1.54**	**1.03-2.31**

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

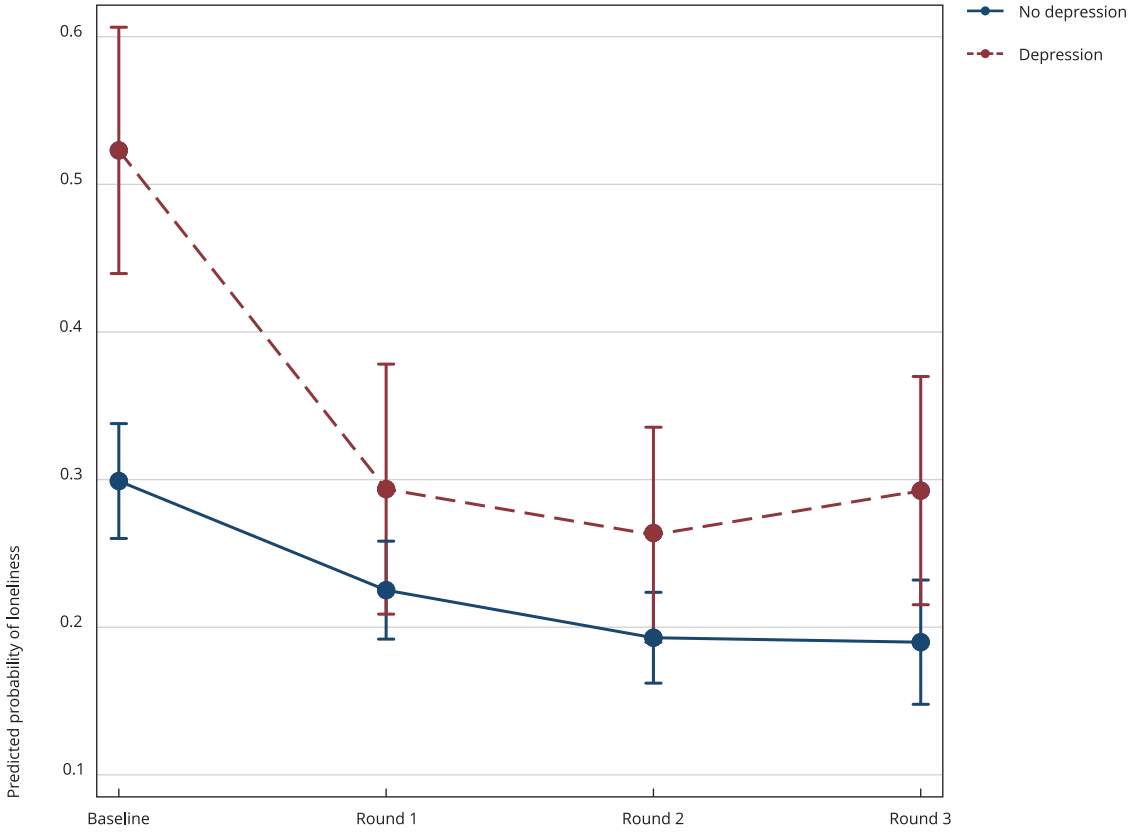
* All variables adjusted by time;

** Adjusted by time, age group, sex, schooling years, and place of residence.

A recent systematic review has recognized depression as a longitudinal predictor of loneliness, along with depressed mood, increase in depression, not being married/partnered, partner loss, limited social network, low level of social activity, and poor self-rated health [33]. Although these predictors positively explain the levels of loneliness, they do not necessarily explain the loneliness changes over time, and predictors of loneliness trajectories remain rather unexplored. Our results indicated depression as the only predictor of loneliness trajectory. Although it also seems unexpected that older Brazilian adults with depression would report the greatest reduction in loneliness, some hypotheses can be raised. Perhaps older Brazilian adults with depression probably felt closer to their network members during the stay-at-home recommendations. Some family members could be busy with their work and school commitments before the pandemic, becoming more available and with a higher degree of freedom to connect with the older ones during the pandemic [9], despite living apart. Moreover, co-residing with extended family members during the pandemic may play an additional role, making older adults less susceptible to suffering from loneliness [22]. Multigenerational households are a typical living arrangement in Brazil. This potential increase in social support may have reduced emotional loneliness. As loneliness is a multidimensional construct that represents a cluster of subjective and objective experiences of social integration and socioemotional states [32], some researchers consider its multiple facets and classify it into emotional, social, and existential loneliness [3,12,34]. Whereas emotional loneliness involves the absence of an intimate attachment, social loneliness originates from the absence of being embedded in a broader community or social networks, such as coworkers and neighbors [3,12]. On the other hand, existential loneliness is a sense of meaninglessness in life [12]. Due to the single nature of our loneliness measure, we cannot distinguish which loneliness

Figure 3

Predicted probability of loneliness before (baseline) and during the COVID-19 pandemic (rounds 1, 2, and 3), according to depression. *Brazilian Longitudinal Study of Aging* (ELSI-Brazil).



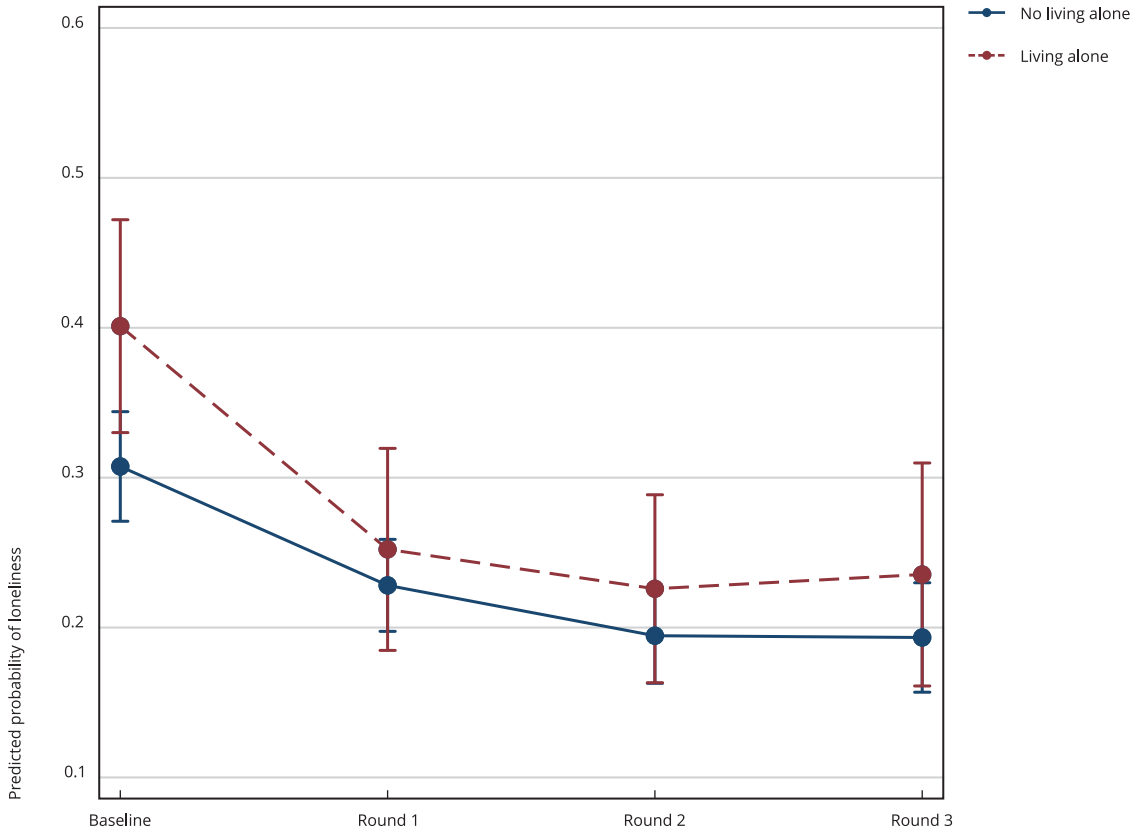
Note: adjusted by time, age group, sex, schooling years, place of residence, and interaction time*depression.

dimensions were affected. It is also possible that social integration and resources from before the pandemic have remained sustainable and provided extra protection against the occurrence or increase of loneliness during the pandemic [12] for many older Brazilian adults. Moreover, some details related to living arrangements, instrumental and emotional social support, and coping mechanisms might also partially justify our findings. Further investigations should explore the potential mediating and moderating effects of these variables in the relation between depression and loneliness.

Virtual connectedness has been widely recommended as an alternative to face-to-face contact to offsetting loneliness during the COVID-19 pandemic. Nevertheless, our results showed no significant effect of virtual connectedness on the loneliness trajectory. Findings from other countries on the potential benefits of virtual contact in tackling loneliness among older adults during the pandemic are still controversial [14,16]. These results suggest that virtual contact may not be a qualitatively equivalent alternative to face-to-face contact or that older adults who felt lonely were particularly more likely to initiate virtual contact [14]. Additionally, data from two research reports have shown that, in 2020, only 50% of Brazilians aged 60 and older reported internet use [35] and 62% of individuals in this age group had never used social media, such as WhatsApp or Facebook [36]. Therefore, digital exclusion in Brazil might also limit the potential benefits of virtual contact in decreasing loneliness levels.

Figure 4

Predicted probability of loneliness before (baseline) and during the COVID-19 pandemic (rounds 1, 2, and 3), according to living alone. *Brazilian Longitudinal Study of Aging* (ELSI-Brazil).



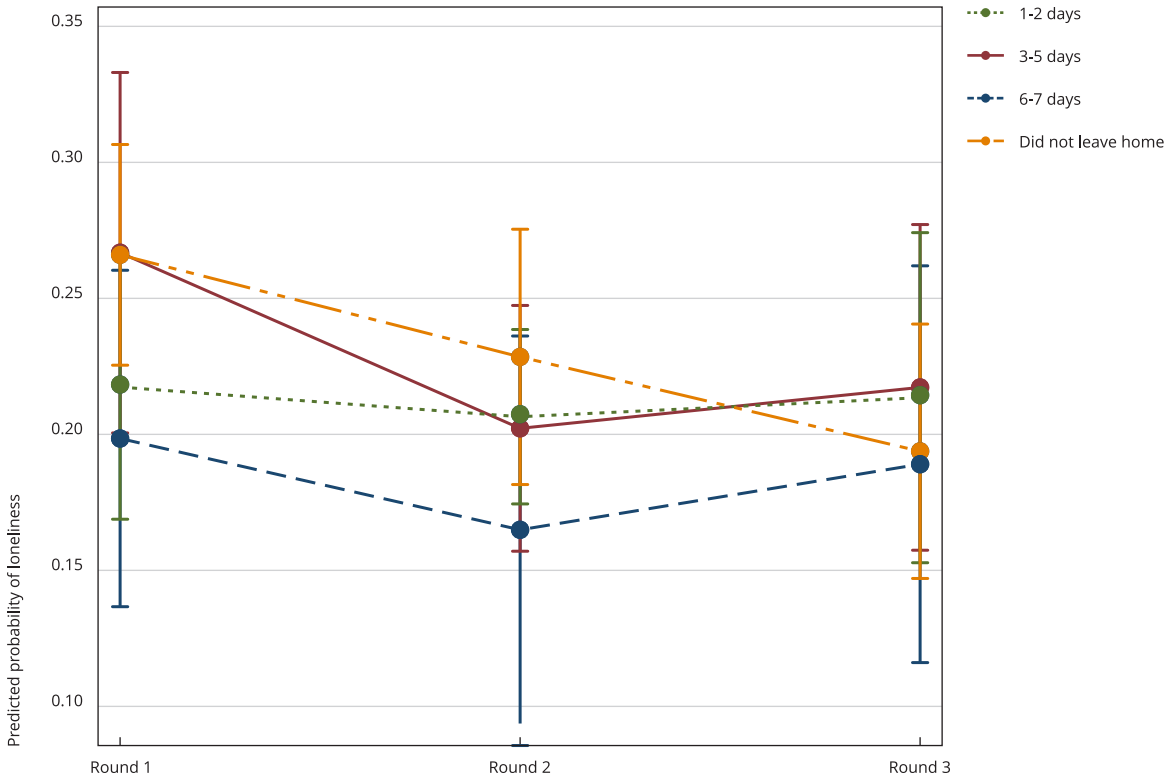
Note: adjusted by time, age group, sex, schooling years, place of residence, and interaction time*living alone.

Although loneliness levels have decreased, this pattern is not present for all older adults. Many of those with relatively high loneliness levels before the pandemic could be among the loneliest respondents during the pandemic. For instance, a study carried out in the United Kingdom exploring the loneliness trajectories in 38,217 adults from March to May 2020 found relatively stable loneliness levels, but it has also shown that those with the highest initial status had no signs of improvement [37].

As loneliness is a major public health problem, the health and care systems have a significant role in identifying and providing support for older adults at risk of or already experiencing loneliness [1]. Primary prevention might design programs to improve the ability people have to connect and promote social prescribing to stimulate loneliness prevention [3]. Social prescribing connects people to community resources (groups and services) that offer support for social, emotional, or practical needs, and may include activities such as arts, befriending, or sports, as well as debt, housing, or employment advice [38]. Secondary prevention might involve screening, particularly for individuals at risk, such as those recently retired or widowed, and interventions to help prevent loneliness in this at-risk group. In turn, tertiary prevention might refer those who are acutely or chronically lonely to programs for social skills training or therapy, as indicated [3]. Close monitoring by health care providers, mainly the primary care teams, knocking on doors in the community, keeping guided conversations, and motivational interviews may play a fundamental role for those who suffer from loneliness [1].

Figure 5

Predicted probability of loneliness during the COVID-19 pandemic (rounds 1, 2, and 3), according to the frequency with which participants left home in the last week. *Brazilian Longitudinal Study of Aging* (ELSI-Brazil).



Note: adjusted by time, age group, sex, schooling years, place of residence, and interaction time*leaving home last week.

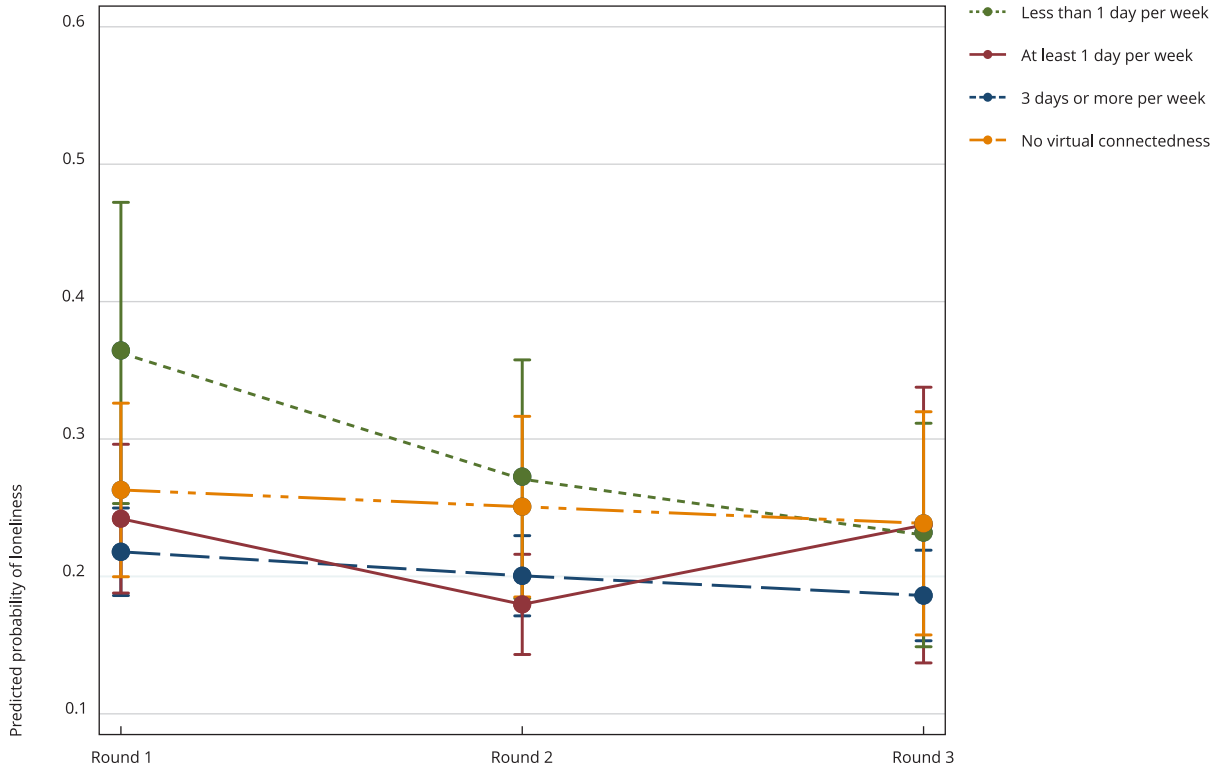
Although many psychosocial interventions have been developed to tackle loneliness among older adults, adequate empirical evidence is still lacking. The current scenario is characterized by low-quality trials, small samples, a lack of theoretical frameworks, mixed measures of loneliness, and short follow-up periods to assess the longer-term impact [1,3]. Key therapeutic elements of interventions must be identified, as well as their optimal intensity, frequency, and duration [39]. Also, the current evidence for what works to reduce loneliness is primarily for individual-level interventions. Little is known about the effect of community-level strategies on loneliness levels, such as campaigns (e.g., to reduce stigma and raise awareness of the importance of strong social connections) or infrastructure improvement (e.g., transport and digital inclusion) [3,38].

This study has several strengths. Most notably, its nationally representative sample of older adults enables the generalizability of our findings on the assessment of loneliness trajectories after the early stages of the COVID-19 pandemic. The availability of pre-pandemic data is also a further strength. To ensure the robustness of our results, alternative analyses based on latent class modeling (i.e., group-based trajectory) were conducted [40] (data not shown). However, the one-class trajectory obtained by the mixed-effects model provided the best fit, with the lowest values of both Akaike (AIC) and Bayesian information criteria (BIC).

The main limitations to indicate are those inherent to telephone surveys. However, the response rates of the telephone surveys were considered satisfactory and the sociodemographic characteris-

Figure 6

Predicted probability of loneliness during the COVID-19 pandemic (rounds 1, 2, and 3), according to virtual connectedness in the last month. *Brazilian Longitudinal Study of Aging* (ELSI-Brazil).



Note: adjusted by time, age group, sex, schooling years, place of residence, and interaction time*virtual connectedness.

tics of the participants were quite similar to the Brazilian population within the same age group [30]. Besides, considering the restrictions imposed by stay-at-home recommendations, a telephone survey was the most suitable interview mode. Secondly, pre-pandemic and pandemic questions used to measure loneliness were slightly different. At baseline, the measure has no reference to time, whereas in the telephone surveys, we considered the loneliness frequency in the last 30 days. However, both measures likely have similar capacities to capture the construct. A recent study assessing how large-scale aging studies assessed loneliness in 31 countries, including the ELSI-Brazil, has found high consistency levels across different measures [41]. Thirdly, our sample excluded people living in long-term care facilities where higher loneliness levels and even loneliness increases could be expected. Nevertheless, older adults living in long-term care facilities represent less than 1% of the population aged 60 years and older in Brazil [42]. Also, we could not study changes in living arrangements during the pandemic nor relevant variables that have a longitudinal impact on loneliness, such as coping behaviors, due to the short length of our telephone surveys.

Finally, our findings contribute to fostering a better understanding of the loneliness trajectories for older adults living in low- and middle-income countries, which may facilitate individual and community strategies to target interventions. Further in-depth studies could provide a better understanding of this phenomenon. Moreover, monitoring of loneliness levels during the ongoing pandemic and in the post-COVID scenario is recommended and may be implemented in the next waves of

ELSI-Brazil. Since no specific strategies such as programs or campaigns were developed at the national level for tackling loneliness among older Brazilian adults, our findings may corroborate the hypothesis that loneliness is a potentially modifiable outcome and can be improved without enlarging the individual's social network.

Contributors

L. S. Braga contributed to the study conception and design, data interpretation, and writing, approved the version to be published and agreed to be accountable for all aspects of the work. B. S. Moreira contributed to the study conception and design, data interpretation, and writing, approved the version to be published and agreed to be accountable for all aspects of the work. J. L. Torres contributed to the study conception and design, data interpretation, and critical review, approved the version to be published and agreed to be accountable for all aspects of the work. A. C. S. Andrade contributed to the study conception and design, data analysis and interpretation, and critical review, approved the version to be published and agreed to be accountable for all aspects of the work. A. C. L. Lima contributed to the study conception and design, data analysis and interpretation, and critical review, approved the version to be published and agreed to be accountable for all aspects of the work. C. T. Vaz contributed to the study conception and design, data interpretation, and critical review, approved the version to be published and agreed to be accountable for all aspects of the work. E. L. Machado contributed to the study conception and design, data interpretation, and critical review, approved the version to be published and agreed to be accountable for all aspects of the work. W. T. Caiaffa contributed to the study conception and design, data interpretation, and critical review, approved the version to be published and agreed to be accountable for all aspects of the work. C. P. Ferri contributed to the study conception and design, data interpretation, and critical review, approved the version to be published and agreed to be accountable for all aspects of the work. J. V. M. Mambrini contributed to the study conception and design, data analysis and interpretation, and critical review, approved the version to be published and agreed to be accountable for all aspects of the work

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Acknowledgments

ELSI-Brazil was supported by the Department of Science and Technology, Secretariat of Science, Technology, and Strategic Inputs, (DECIT/SCTIE/MS; grants: 404965/2012-1 and TED 28/2017); the Healthcare Coordination of Older Adults, Department of Strategic and Programmatic Actions, Secretariat of Health Care, Brazilian Ministry of Health (COSAPI/DAPES/SASMS; grants: 20836, 22566, 23700, 25560, 25552, and 27510); and the Brazilian National Research Council (CNPq; grant: 403473/2020-9).

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Resumo

Este estudo teve como objetivo estimar a prevalência de solidão entre idosos brasileiros nos primeiros sete meses da pandemia de COVID-19 e identificar os preditores das trajetórias de solidão, usando dados pré-pandemia oriundos de entrevistas presenciais de participantes do Estudo Longitudinal da Saúde dos Idosos Brasileiros *(ELSI-Brasil) de 2019-2020, um estudo de representatividade nacional com residentes da comunidade com 50 anos ou mais. Os dados durante a pandemia foram coletados em três rodadas de entrevistas telefônicas com os participantes, realizadas de maio a outubro de 2020. A solidão foi medida por uma questão de item único, considerando os casos com pelo menos duas medidas repetidas. As variáveis explicativas incluíram depressão, morar sozinho, sair de casa na última semana e conexão virtual no último mês. A regressão logística de efeitos mistos foi utilizada para estimar as razões de chances com seus intervalos de 95% de confiança (IC95%) e investigar trajetórias de solidão e seus preditores. Foram incluídos 5.108 participantes. A prevalência global de solidão no período pré-pandemia foi de 33,1% (IC95%: 29,4-36,8), um valor superior ao período pandêmico (rodada 1: 23,6%, IC95%: 20,6-26,9; rodada 2: 20,5%, IC95%: 17,8-23,5; rodada 3: 20,6%, IC95%: 17,1-24,6). Uma interação significativa ($p \leq 0,05$) foi encontrada apenas entre depressão e tempo; participantes com depressão apresentaram maior redução dos níveis de solidão. Embora os níveis de solidão no Brasil tenham diminuído durante a pandemia, esse padrão não se aplica a todos os idosos. Indivíduos com depressão tiveram uma redução mais significativa provavelmente por se sentirem mais próximos aos membros de suas redes sociais durante as recomendações de ficar em casa.*

Estudos Longitudinais; Depressão; Distanciamento Social; Epidemiologia

Resumen

Este estudio tuvo como objetivo estimar la prevalencia de la soledad entre los adultos mayores brasileños durante los primeros siete meses de la pandemia de COVID-19 e identificar los predictores de las trayectorias de la soledad. Los datos prepandémicos proceden de entrevistas cara a cara de los participantes del Estudio Longitudinal Brasileño sobre el Envejecimiento *(ELSI-Brasil) de 2019-2020, que es un estudio nacionalmente representativo de los habitantes de la comunidad de 50 años o más. Los datos de la pandemia se basaron en tres rondas de entrevistas telefónicas entre esos participantes, realizadas de mayo a octubre de 2020. La soledad se midió con una pregunta de un solo ítem, teniendo en cuenta los que tenían al menos dos indicativos repetidos. Las variables explicativas incluían la depresión, el hecho de vivir solo, salir de casa en la última semana y la conexión virtual en el último mes. Se utilizó una regresión logística de efectos mixtos para estimar las* odds ratios *con sus intervalos del 95% de confianza (IC95%) y para investigar las trayectorias de la soledad y sus predictores. Se incluyeron 5.108 participantes. La prevalencia global de la soledad en el periodo prepandémico fue del 33,1% (IC95%: 29,4-36,8), superior a la del periodo pandémico (ronda 1: 23,6%, IC95%: 20,6-26,9; ronda 2: 20,5%, IC95%: 17,8-23,5, ronda 3: 20,6; IC95%: 17,1-24,6). Sólo se evidenció una interacción significativa ($p \leq 0,05$) entre la depresión y el tiempo; los participantes con depresión mostraron una mayor reducción de los niveles de soledad. Aunque los niveles de soledad en Brasil han disminuido durante la pandemia, este patrón no se da en todos los adultos mayores. Aquellos individuos con depresión tuvieron una reducción más significativa, probablemente debido a que se sintieron más cerca de los miembros de su red social durante las recomendaciones de quedarse en casa.*

Estudios Longitudinales; Depresión; Distanciamiento Social; Epidemiología

Submitted on 14/Jun/2022
Final version resubmitted on 30/Sep/2022
Approved on 03/Nov/2022