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# Difficulty in performing activities of daily living and the need for help in older adults: evidence on social distancing models from the ELSI-COVID-19 initiative

## Dificuldade em atividades de vida diária e necessidade de ajuda em idosos: discutindo modelos de distanciamento social com evidências da iniciativa ELSI-COVID-19

## Dificultad en actividades de la vida diaria y la necesidad de ayuda en ancianos: discutiendo modelos de distanciamiento social com evidencias de la iniciativa ELSI-COVID-19

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**Abstract**

*To analyze whether the older adults with difficulty or need of help to perform basic or instrumentals activities of daily living are more socially distanced in times of COVID-19. A total of 4,035 older adults participated in the telephone interviews from the second wave of the* Brazilian Longitudinal Study of Aging *(ELSI-Brazil). Difficulty, need and receiving help were classified into: (1) independents; (2) had difficulty without need for care; (3) had difficulty, needed and have received care from someone within their household; (4) had difficulty, needed and have received care from someone outside their household; and (5) had difficulty and needed care but did not receive it. Social distancing was categorized as follows: did not leave their houses in the last 7 days, left their houses for essential activities and went out for non-essential activities. Multinomial regression model adjusted for age, sex, schooling and great geographical region was performed. Older adults who had difficulty, needed and have received help from within their homes (odds ratio – OR = 2.34 95%CI: 1.25-4.39) or from outside their homes (OR = 3.94; 95%CI: 2.24-6.92) were more socially distanced. Age increased the odds of not going out (OR = 1.06; 95%CI: 1.03-1.09) while be men reduced it (OR = 0.48; 95%CI: 0.33-0.70). Living in the South of Brazil has increased the odds of the respondents going out for essential activities (OR = 1.77; 95%CI: 1.01-3.10). Older adults who had difficulty, needed and have received help from within or outside their homes did not leave their homes in the last 7 days. Even with social distancing, these older adults can not have their exposure to COVID-19 reduced, weakening the theory of selective social distancing.*

*Social Isolation; Disability; COVID-19; Caring; Aged*

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## Introduction

The World Health Organization (WHO) declared the COVID-19, caused by the novel coronavirus (SARS-CoV-2), as a pandemic on the 11th of March 2020 [1,2,3]. The COVID-19 is an infection of the respiratory system mainly transmitted via respiratory droplets [4]. Its main symptoms are nasal congestion, a continuous cough, dyspnoea, fever, tiredness and, occasionally, diarrhoea and central nervous system disturbances. However, the COVID-19 could also be asymptomatic [1,5,6].

At present, despite the absence of a COVID-19 vaccine or a widely approved medication [7], there are various recommendations to the public to prevent the transmission of the virus such as: covering mouth and nose when sneezing or coughing, use of face masks, regular and thorough cleaning of hands with an alcohol-based hand rub or wash them with soap and water and keeping social distancing [8,9,10].

Social distancing aims at reducing the physical contact of individuals within their community to decrease the transmission rate of the virus. There are two types of social distancing. The selective social distancing is a strategy recommended specially to protect high risk groups such as older adults, pregnant women and individuals with uncontrolled chronic conditions (hypertension, diabetes and cardiovascular diseases). The other approach is known as the wider social distancing that does not select priority groups [10,11,12]. In Brazil, in the beginning of the pandemic, the wider social distancing model was adopted as the main strategy to combat the virus. However, during the pandemic, this type of social distancing has been gradually relaxed and there have been calls to use the selective social distancing to replace it.

However, it is important to mention that a considerable proportion of the elderly population reports difficulties in performing their instrumental activities of daily living (IADL) [13] that are associated with the capacity to have an independent life within the community where they live. In addition to their difficulties in preforming IADLs, they may also have difficulties with their basic activities of daily living (BADL) [14] that include tasks related to self-care and survival and may require help to perform them. Usually, help is provided by individuals who live within the same household or from outside the household of the dependent older adult. Those who live outside the household travel to provide care. Therefore, older adults with difficulties in performing their BADLs and/or IADLs and need help from someone outside their households could be at risk of being exposed to the virus and being contaminated within a wider social distancing scenario.

Therefore, in order to gather data to establish the best social distancing approach for older adults, especially those who are dependent on care, the objective of the present study was to assess whether older adults with difficulties in performing their BADLs and/or IADLs, and require help to perform them, are more socially distant during the COVID-19 pandemic.

## Methods

### Study design

This is a cross-sectional study that used data from the second wave of the *Brazilian Longitudinal Study of Aging* (ELSI-Brazil), a nationally representative population-based cohort study of non-institutionalized community-dwelling Brazilians aged 50 years and older. In order to ensure its representativeness, the sampling design was done combining three consecutive stages: municipalities (primary units), census tracts and households. ELSI-Brazil was conducted in 70 municipalities of the 5 major geographic regions of the country [15]. Further details can be found in previous publication [16] and at ELSI-Brazil's homepage (http://elsi.cpqrr.fiocruz.br/).

## COVID-19 telephone interview

ELSI-Brazil second wave started in August 2019 and was interrupted on the 17th March due to the COVID-19 pandemic. Until its interruption, 9,177 participants were interviewed and had their physical measurements assessed following the same research instruments and procedures adopted at baseline. All participants who took part in the second wave of ELSI-Brazil and had a landline telephone or mobile phones were eligible for the COVID-19 telephone interview (ELSI-COVID-19 initiative) i.e. 6,149 (67%) eligible respondents participated in the telephone interview. The sample characteristics of the telephone interview participants were similar of the Brazilian population aged 50 and older in relation to the sociodemographic data analysed such as age, sex, number of people living in the household, schooling years, great geographic region and urban/rural residence.

The telephone interview was done between the 26th May and 8th of June 2020. The content included information on adherence to the preventive measures (social isolation, use of facial masks and hand hygiene), reasons for going out, help with buying food and medicine, difficulties to get medicine, difficulties to get a COVID-19 medical diagnosis and testing, use of health services (recent attempt to book a health appointment, where and whether treatment was received, among other aspects) and mental health (sleep, depression and loneliness). The interview was designed to be short i.e. around five minutes long and conducted by previously trained interviewers, preferably those who have conducted the household interviews of the second wave of ELSI-Brazil.

For the present analyses we included all telephone interview participants aged 60 and older i.e. 4,292. Out of those, 257 were excluded due to missing data on at least one of the covariates (age, sex, schooling years and great geographic region) resulting in a final analytical sample of 4,035 individuals.

The data on age, sex, schooling years, BADL, IADL, need for help with BADL/IADLs difficulties and great geographic region came from the second wave of ELSI-Brazil [17]. The data on social distancing were collected through the ELSI-COVID-19 telephone interview. ELSI-Brazil and the ELSI-COVID-19 initiative were approved by the ethics committee of René Rachou Institute, Oswaldo Cruz Foundation (caae: 34649814.3.0000.509 and caae: 34649814.3.0000.5091, respectively).

## Activities of daily living

The BADLs were assessed using the modified Katz index [14] (bathing/showering, eating, walking, getting in and out of bed, dressing and using the toilet). The IADLs were assessed using the modified Lawton scale [18] (preparing meals, using public transport, shopping, making telephone calls, managing own finances and taking medication). Having a difficulty was defined as a participant who needed and received help to perform their BADLs and/or IADLs. Therefore, based on their level of difficulty, need and care received, the participants were classified into five groups: (1) independents; (2) had difficulty without need for care; (3) had difficulty, needed and have received care from someone within their household; (4) had difficulty, needed and have received care from someone outside their household; and (5) had difficulty and needed care but did not receive it. The independent group was the reference category.

## Social distancing status

The level of social distancing was defined by the frequency and reasons for participants to leave their houses in the last 7 days. Non-essential reasons were physical activity, to meet friends or other reasons not mentioned. Essential reasons mentioned were going out to buy medication, to attend a medical appointment or paying bills. Going to work was not considered to be an essential reason since our objective was to assess those with BADLs and/or IADLs difficulties who needed help to perform those tasks. The level of social distancing was defined as follows: went out for non-essential activities (reference group), left their houses for essential activities and did not leave their houses in the last 7 days.

### Covariates

The sociodemographic characteristics included were age (years), sex, schooling years (illiterate, 1 to 4, 5 to 8 and 8 or more years) and great geographic region (North, Northeast, Southeast, South and Central).

### Statistical analysis

Descriptive analyses were done to characterize the sample. Comparisons between the groups in relation to their type of social distancing were performed using the Wald test and Rao-Scott (averages) and the chi-squared test with a Rao-Scott correction (proportions) and their respective 95% confidence intervals (95%CI). For all analyses, the sampling design and derived weights for the telephone interview were considered.

A multinomial regression model adjusted for age, sex, schooling years and great geographic region was performed to assess whether older adults who had difficulties in performing basic and/or instrumental activities of daily living and needed help were more socially distant during the COVID-19 pandemic period investigated.

For the interpretation of the results, those participants who went out to carry out non-essentials activities (outcome) and those without BADL and IADL difficulty and needed help (exposure) were considered the reference groups (odds ratio – OR = 1.00). Significance level was set at $p < 0.05$. We used a multinomial regression model adjusted for sex, schooling years and great geographic region to calculate the predicted probability of staying at home in the last 7 days by difficulty, need and receipt of help to perform BADL or IADL by age.

All analyses were performed using Stata15 SE (https://www.stata.com).

## Results

Out of 4,035 participants, 37.2% went out for essential activities and 48.4% did not leave their houses in the last 7 days. The older adults who did not leave their homes in the last 7 days were older, mainly women, less independent and reported more BADLs or IADLs difficulties for which they needed and received more help from individuals outside their households than those older adults who went out to do essential or non-essential activities. Furthermore, the group of participants who did not go out in the last 7 days had fewer schooling years than those who left their house to do essential activities. Finally, the group of participants who did not go out in the last 7 days had more BADL or IADL difficulties and also needed and received more help from individuals within their households than those from the group that went out to do non-essential activities (Table 1).

The results from the multinomial regression are presented in Table 2. Older adults who had difficulties in performing their BADLs or IADLs and needed and received help from individuals within (OR = 2.34; 95%CI: 1.25-4.39) or outside their households (OR = 3.94; 95%CI: 2.24-6.92) stayed longer in their homes in the last 7 days. On the other hand, this fact was not observed among those older adults who needed help with their BADLs or IADLs difficulties but did not manage to get help. Increasing age was accompanied by an increased chance of not going out in the last 7 days (OR = 1.06; 95%CI: 1.03-1.09) while being male reduced this chance (OR = 0.48; 95%CI: 0.33-0.70). Going out due to essentials activities were more reported in the South region of Brazil (OR = 1.77; 95%CI: 1.01-3.10).

Figure 1 display the predicted probability of staying at home in the last 7 days by having a BADL or IADL difficulty, need and receipt of help and by age. This probability increased with age in all groups. However, those participants who had a difficulty, needed and received help from people within or outside their households as well as those who had a difficulty, needed but did not received help were more socially distant than independent older adults or those with difficulties who did not need help with them.

**Table 1**

Sociodemographic characteristics by social distancing status in 4,035 participants from the *Brazilian Longitudinal Study of Aging initiative* (ELSI-COVID-19 initiative) telephone interview (26th May to 8th June 2020).

| | Total (N = 4,035) | Went out for non-essential activities (n = 580) 14.4% | Went out for essential activities (n= 1,502) 37.2% | Did not go out in the last 7 days (n = 1,953) 48.4% |
|---|---|---|---|---|
| Age [SD] | 70.3 ± 7.6 | 68.5 ± 6.7 | 67.9 ± 5.9 | 72.8 ± 8.8 *,** |
| Sex [% (95%IC)] | | | | |
| Men | 44.5 (42.5-48.5) | 53.0 (44.5-61.3) | 51.1 (46.2-55.8) | 37.3 (33.5-41.3) *,** |
| Schooling (years) [% (95%CI)] | | | | |
| Higher than 8 | 36.7 (31.3-42.5) | 39.0 (28.6-50.7) | 41.9 (35.7-48.3) | 30.8 (24.6-37.8) |
| 5-8 | 27.2 (23.7-31.1) | 29.7 (22.9-37.4) | 29.8 (25.4-34.6) | 23.9 (19.8-28.5) |
| 1-4 | 25.7 (23.3-28.2) | 24.0 (19.1-29.6) | 22.1 (19.3-25.2) | 29.8 (26.6-33.1) ** |
| Illiterate | 10.4 (8.0-13.3) | 7.3 (3.7-13.8) | 6.2 (4.3-8.8) | 15.6 (12.6-19.1) ** |
| Great geographic region [% (95%CI)] | | | | |
| North | 4.4 (1.7-11.4) | 4.1 (1.3-12.1) | 4.7 (1.7-12.2) | 4.4 (1.5-11.7) |
| Northeast | 25.2 (16.1-37.1) | 23.3 (12.7-38.7) | 23.6 (14.9-35.2) | 27.5 (17.4-40.4) |
| Southeast | 42.7 (30.2-56.1) | 48.2 (33.3-63.5) | 42.5 (29.7-56.4) | 40.8 (28.1-54.9) |
| South | 17.3 (8.5-31.8) | 12.7 (6.8-22.6) | 19.5 (9.9-35.0) | 16.6 (7.1-34.1) |
| Central | 10.4 (5.0-20.6) | 11.7 (5.1-24.2) | 9.7 (4.1-21.5) | 10.7 (5.6-19.5) |
| BADL/IADL | | | | |
| Independents | 77.9 (73.1-82.0) | 88.0 (82.4-92.0) | 83.5 (77.2-88.3) | 68.7 (62.1-74.6) *,** |
| Had difficulty but did not need help | 5.1 (3.8-6.8) | 3.4 (1.5-7.5) | 6.2 (4.0-9.6) | 4.7 (3.6-6.1) |
| Had difficulty, needed and received help from someone within their household | 5.4 (3.7-7.7) | 2.7 (1.6-4.5) | 3.4 (2.0-5.9) | 8.2 (5.7-11.7) * |
| Had difficulty, needed and received help from someone outside their household | 8.8 (6.9-11.1) | 3.1 (2.2-4.5) | 5.3 (2.9-9.4) | 14.2 (11.2-17.8) *,** |
| Had difficulty, needed but did not receive help | 2.8 (1.4-5.7) | 2.7 (1.3-5.9) | 1.4 (0.5-4.1) | 4.2 (1.7-9.7) |

95%CI: 95% confidence interval; BADL: basic activities of daily living; IADL: instrumental activities of daily living; SD: standard deviations;
Notes: the data are shown as averages and their SD as well as proportions and their 95%CI. All estimates were calculated taking into account sampling design and weights for those who participated in the telephone interview. Non-essential activities included physical activity, meeting friends or other reasons not mentioned. Essential activities mentioned were going out to buy medication, to attend a medical appointment or paying bills. Level of statistical significance = $p < 0.05$.

* Statistically difference from the group that went out for non-essential activities;

** Statistically difference from the group that went out for essential activities.

**Table 2**

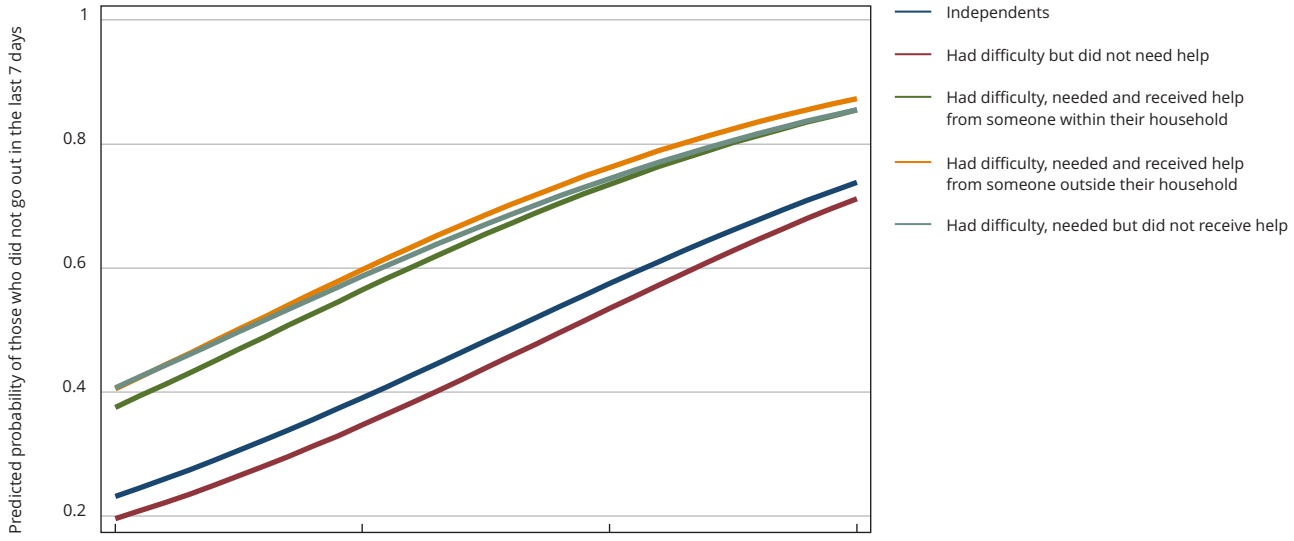
Final multinomial regression model assessing the association between having a difficulty and need for help in performing basic or instrumental activities of daily living with social distancing in the last 7 days in 4,035 participants from the *Brazilian Longitudinal Study of Aging initiative* (ELSI-COVID-19 initiative) telephone interview (26th May to 8th June 2020).

| | Went out for essential activities OR (95%IC) | Did not go out in the last 7 days OR (95%IC) |
|---|---|---|
| Age | 0.98 (0.95-1.01) | 1.06 (1.03-1.09) * |
| Sex | | |
| Women | 1.00 | 1.00 |
| Men | 0.94 (0.63-1.40) | 0.48 (0.33-0.70) * |
| Schooling (years) | | |
| Higher than 8 | 1.00 | 1.00 |
| 5-8 | 0.88 (0.53-1.49) | 1.01 (0.60-1.70) |
| 1-4 | 0.83 (0.51-1.34) | 1.27 (0.80-2.02) |
| Illiterate | 0.76 (0.42-1.38) | 1.63 (0.80-3.33) |
| Great geographic region | | |
| Southeast | 1.00 | 1.00 |
| South | 1.77 (1.01-3.10) * | 1.44 (0.73-2.84) |
| Central | 0.96 (0.55-1.68) | 1.06 (0.58-1.93) |
| North | 1.25 (0.48-3.26) | 1.27 (0.56-2.88) |
| Northeast | 1.16 (0.71-1.88) | 1.18 (0.65-2.14) |
| BADL/IADL | | |
| Independents | 1.00 | 1.00 |
| Had difficulty but did not need help | 2.11 (0.86-5.19) | 1.25 (0.55-2.82) |
| Had difficulty, needed and received help from someone within their household | 1.43 (0.77-2.69) | 2.34 (1.25-4.39) * |
| Had difficulty, needed and received help from someone outside their household | 1.99 (0.88-4.48) | 3.94 (2.24-6.92) * |
| Had difficulty, needed but did not receive help | 0.55 (0.13-2.32) | 1.24 (0.35-4.35) |

95%CI: 95% confidence interval; BADL: basic activities of daily living; IADL: instrumental activities of daily living; OR: odds ratio.
Notes: essential activities mentioned were going out to buy medication, to attend a medical appointment or paying bills.
* $p < 0.05$.

**Figure 1**

Predicted probability of staying at home in the last 7 days by difficulty, need and receipt of help to perform BADL or IADL, by age, in older people in the community participating in the *Brazilian Longitudinal Study of Aging initiative* (ELSI-COVID-19 initiative) telephone survey.




BADL: basic activities of daily living; IADL: instrumental activities of daily living.

## Discussion

Our main findings showed that older adults with difficulty in performing their BADLs or IADLs who needed and received help from individuals within or outside their households remained more socially distant in the last 7 days. On the other hand, this fact was not observed among those older adults who had BADLs or IADLs difficulties and needed but did not get help to perform them.

The loss of functional capacity has physical, psychological and social implications later in life [19,20,21,22]. Even before the COVID-19 pandemic, the care provided to this population group was already fragile within a scenario of inequalities [23].

Therefore, some health strategies have been prescribed specifically for older adults as they are a risk group. For example, older adults who need clinical interventions, but do not need help in performing their BADL or IADL activities, have been monitored via telephone consultations with a health professional [24]. However, not all aspects have been properly taught through, since older adults who need and receive help may have been more exposed to the coronavirus transmitted by their helpers [11]. In addition, older adults who have difficulties and needed but did not receive help could find themselves being even more marginalised in relation to access to care and essential support. These scenarios raise serious concerns, since this population group has more comorbidities and are more likely to have health complications and long hospitalizations and, therefore, overwhelming even more the health services during this pandemic [19,20,23].

Based on the findings from the present study, older men were less socially distant than women and with increasing age the level of social distancing has increased. These findings corroborate with those from Alsan et al. [23] investigating 5,198 American participants. The authors found that the largest differences in knowledge and behaviours towards the COVID-19 pandemic were associated with gender and age, with men and those younger than 55 years being more likely to go out. With regards to going out to do essential activities, this behaviour was reported more often among older adults living in the

South region of Brazil where social distancing measures were more flexible due to a lower COVID-19 incidence rate compared to other geographic regions during the telephone interview period [25,26,27,28].

Social distancing has been used as a preventive strategy to fight the pandemic [9]. However, for its implementation, specific vulnerability characteristics of segments of the society should be considered i.e. socioeconomic condition, physical and mental health, environment and how comfortable households are [9,26].

Modelling studies [11,27] testing the efficacy of social distancing interventions in groups stratified by age showed that the selective social distancing was not efficient in containing and controlling the new COVID-19 cases. On the other hand, the wider social distancing when implemented to all age groups equally was significantly more efficient to flat the infection curve.

Therefore, our findings suggest that the selective social distancing, which is an option for the risk groups, may not be an effective preventive strategy for older adults who are functionally dependent and need help in performing their BADLs or IADLs, since this group may be exposed to the coronavirus by their asymptomatic carers.

The present study has three strengths. First, the study was conducted in a large nationally representative sample. Second, this is the first study to analyse data from a COVID-19 telephone interview on social distancing in individuals with BADLs and IADLs difficulties who needed help in Brazil. Third, all the data collection was conducted without exposing the participants to any contamination risk, that would be likely to happen in a personal interview.

On the other hand, a potential limitation of this study relates to the fact that the interview was conducted by telephone, especially when telephone calls were not answered, refused or the telephone number were invalid. However, to minimize such potential source of bias, specific weights were calculated for the telephone interview participants.

## Conclusions

Older adults who needed help in performing their BADLs or IADLs from individuals within or outside their households did not go out in the last 7 days. However, even for those who were socially distant, the fact that they needed help from other people who probably did not practice social distancing, might not be enough to reduce their exposure to contamination by the coronavirus. Therefore, selective social distancing for this at-risk population group may not be a good model.

## Contributors

D. C. Oliveira, C. M. Oliveira, M. F. Lima-Costa e T. S. conceived the study design, analysed the data and interpreted the findings. All authors equally contributed with the writing and revision of the final version of the manuscript.

## Additional informations

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## Resumo

*Analisar se idosos com dificuldade ou necessidade de ajuda para desempenhar atividades básicas ou instrumentais de vida diária estão mais distanciados socialmente em tempos de COVID-19. Participaram das entrevistas telefônicas 4.035 idosos participantes da 2ª onda do* Estudo Longitudinal de Saúde dos Idosos Brasileiros *(ELSI-Brasil). Classificou-se a dificuldade, necessidade e recebimento de ajuda em: (1) independentes; (2) com dificuldade e não precisa de ajuda; (3) com dificuldade, precisa e recebe ajuda de pessoa de dentro de casa; (4) com dificuldade, precisa e recebe ajuda de pessoa de fora de casa; e (5) com dificuldade, precisa, mas não recebe ajuda. O distanciamento social foi categorizado como: não saiu de casa nos últimos 7 dias, saiu de casa para atividades essenciais e saiu de casa para atividades não essenciais. Modelo de regressão multinomial controlado por idade, sexo, escolaridade e região do Brasil foi utilizado. Permaneceram mais distanciados socialmente os idosos que apresentavam dificuldade, necessitavam e recebiam ajuda de pessoa de dentro* (odds ratio – *OR = 2,34; IC95%: 1,25-4,39) ou de fora de casa (OR = 3,94; IC95%: 2,24-6,92). A idade aumentou a chance de não sair de casa (OR = 1,06; IC95%: 1,03-1,09) e ser homem a diminuiu (OR = 0,48; IC95%: 0,33-0,70). Viver na Região Sul aumentou a chance dos idosos saírem para atividades essenciais (OR = 1,77; IC95%: 1,01-3,10). Idosos com dificuldade, que precisam e recebiam ajuda de pessoas de dentro ou de fora de casa não saíram de casa nos últimos 7 dias. Mesmo com o distanciamento social, esses idosos podem não ter sua exposição ao COVID-19 reduzida, enfraquecendo a teoria do distanciamento social seletivo.*


*Isolamento Social; Incapacidade; COVID-19; Cuidado; Idoso*


## Resumen

*Analizar si los ancianos con dificultad o necesidad de ayuda para desempeñar actividades básicas (ABVD) o instrumentales de la vida diaria (AIVD) están más distanciados socialmente en tiempos de COVID-19. Participaron en las entrevistas telefónicas 4.035 ancianos de la encuesta de la segunda fase del* Estudio Brasileño Longitudinal del Envejecimiento *(ELSI-Brasil). Se clasificó la dificultad, necesidad y recepción de ayuda en: (1) independientes; (2) con dificultad y no necesita ayuda; (3) con dificultad, necesita y recibe ayuda de una persona de dentro de casa; (4) con dificultad, necesita y recibe ayuda de persona de fuera de casa; y (5) con dificultad, necesita, pero no recibe ayuda. El distanciamiento social fue categorizado como: no salió de casa en los últimos 7 días, salió de casa para actividades esenciales y salió de casa para actividades no esenciales. Se usó un modelo de regresión multinomial controlado por edad, sexo, escolaridad y región de Brasil. Permanecieron más distanciados socialmente los ancianos que presentaban dificultad, necesitaban y recibían ayuda de una persona de dentro* (odds ratio – *OR = 2,34; IC95%: 1,25-4,39) o de fuera de casa (OR = 3,94; IC95%: 2,24-6,92). La edad aumentó la oportunidad de no salir de casa (OR = 1,06; IC95%: 1,03-1,09) y el sexo masculino disminuyó (OR = 0,48; IC95%: 0,33-0,70). Estar en la Región Sur aumentó la oportunidad de que los ancianos salgan para actividades esenciales (OR = 1,77; IC95%: 1,01-3,10). Los ancianos que necesitan ayuda de personas de dentro o de fuera de casa no salieron de casa en los últimos 7 días. Incluso con distanciamiento social, los ancianos que reciben ayuda de personas no distanciadas no tienen su exposición reducida a la COVID-19, lo que debilita la teoría del distanciamiento social selectivo.*


*Aislamiento Social; Incapacidad; COVID-19; Cuidar; Anciano*

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