

Original Article

Discontinuation of health interventions among Brazilian older adults during the COVID-19 pandemic: REMOBILIZE Study

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Conflict of Interest

The authors have no conflict of interest to declare.

Author contribution

G.O participated in data collection, conception to manuscript, interpretation, final revision. M.R.P participated in concept design, data collection, data analysis, interpretation, drafting, critical revision, and approval of the article. D.S.P, A.S., and E.D participated in concept design, interpretation, critical revision, and approval of the article. C.A.L.: participated in concept design, conception to manuscript, interpretation, critical revision, and approval of the article. J.S.C.A participated in data collection, data analysis, interpretation, critical revision, and approval of the article.

Abstract:

Objective

To analyse changes in access to health interventions during the pandemic in Brazilian older adults and investigate the associated factors.

Methods

We conducted an online survey with Brazilian adults aged 60 years and older between May and June 2020. A multidimensional questionnaire was used to investigate interruptions to access to health care during the pandemic and associated factors (gender, age group, income, educational level, number of comorbidities, polypharmacy, activity limitation, and pain). Multiple logistic regression models were conducted to identify factors associated with interruptions in health care.

Results

Of the 1,482 older adults who responded to the survey, 56.5% reported they were receiving some health care before the COVID-19 pandemic, and 36.4% discontinued during the COVID-19 pandemic. The discontinuation rate was 64.4% (95% CI: 61.1 - 67.6). Only 3.4% of participants started interventions during the pandemic. Participants with multimorbidity (OR: 1.42; 95% CI: 1.06 - 1.90) were more likely to discontinue health interventions. Those who used polypharmacy (OR: 0.61; 95% CI 0.46 - 0.81), with higher education level (9+ years of education: OR 0.34; 95% CI 0.17 - 0.70), and with higher income level (over eight minimum wages: OR 0.54; 95% CI 0.36 - 0.81) were less likely to discontinue their health care during the pandemic.

Conclusion

Our study showed a high rate of discontinuation in health care in Brazilian older adults. The discontinuation rates were lower among older adults with high educational levels and with high income, and higher among older adults with multimorbidity. Active seeking for socially vulnerable older adults and strengthening community support could mitigate the adverse effects of the discontinuation of health care during the COVID-19 pandemic. Although teleconsultation might be a promising strategy, coordinated face-to-face visits conducted by health care services are required to overcome digital barriers in Brazil.

Keywords: older adults, geriatric care, interruption of health care, pandemic, COVID-19.

BACKGROUND

The SARS-CoV-2 pandemic, the novel coronavirus, has reached worldwide and grown into a public health crisis, requiring interventions to reduce the disease, such as distancing and social isolation (1,2). However, there was no consensus on a national policy for protective measures in Brazil, generating an alarming scenario of more than 17 million confirmed cases, with almost 500,000 deaths (June/2021) (3). Not surprisingly, health services and health care workers were fighting on the frontlines to combat the pandemic, with severe consequences for the system and those in need of care (4,5).

The coronavirus disease 2019 (COVID-19) has a significant impact among the older adults, who represent in the world, 31% of cases of infection, 45% of hospitalizations, 53% of admissions to intensive care units (ITU), and 80% of deaths (6,7). In Brazil, hospital mortality increased with age, corresponding to 42%, 55%, and 66% of hospitalized patients aged 60 to 69 years, 70 to 79, and 80 or more, respectively (8). Furthermore, older adults with low education, low income, and black and brown skin color were more affected by COVID-19 and had more severe disease cases, revealing structural health inequities. These vulnerable groups have a greater number of comorbidities and disabilities, increasing the risk of aggravation and death as a result of COVID-19 (8,9,10).

Necessary measures for COVID-19 care and containment of the pandemic can negatively affect older adults' physical and mental health. Recommendations to stay at home and social distancing increased sedentary behavior and decreased physical activity levels, resulting in harmful consequences on mobility. In addition, restricted mobility outside the home increases loneliness and social isolation, reducing access to health care (1,12,13,14,15).

Since the beginning of the COVID-19 pandemic, there has been a record of health disruption in 90% of countries (16), including outpatient care, elective surgical procedures, and non-essential services (17). Interruptions in services during the COVID-19 pandemic may impact ongoing health care and cause harmful consequences, such as insufficient monitoring and treatment of non-communicable diseases (NCDs), delayed diagnosis, and surgery interventions (18). Health inequities greatly impact the course of the COVID-19 pandemic, with a disproportionate burden on people living with high socioeconomic vulnerability. It ultimately might hurt interruptions in health care (19).

The evidence before the COVID-19 pandemic pointed to differences and inequalities in the access (maintenance or improvement of health while as opportunity to use) and continuity of health treatments in developing countries. Adherence to long-term therapeutic programs, such as rehabilitation, is an additional challenge due to the lack of transport and social support (17). Disability and pain are predictors for greater use of health services (20,21). The search for health facilities is greater among women, older adults, and those living with a spouse. Having fewer comorbidities and low income is associated with not search for care (5,20,22,23). The factors to access and utilize health services are related to health systems and their organization, education level, and health needs (22,23). However, especially in Brazil, the main problems have included hours of operation of health care facilities (20), delays in receiving care in the public health system, schedule a doctor visit, the waiting time to get the visit, access to the health unit, and home visit (20,22,23).

Social determinants can influence the interruption of health services and care during the COVID-19 pandemic. However, few studies still assess treatment interruption during the COVID-19 among Brazilian older adults. Understanding the relationships between health-system preparedness, health system capacity, and disruption is particularly important in a country marked by vast inequalities in socioeconomic characteristics (e.g., housing and employment status) and other health risks (age structure, burden of chronic disease, and disability).

Inequalities and lack of continuity in health care result in fragmented treatments, a higher number of hospital admissions, and avoidable visits to the emergency (24). To monitor the discontinuation of health care among older adults can collaborate in developing strategies for resuming care approaches after the period of social restriction. In the COVID-19 pandemic context, these surveys are still necessary to prepare health professionals about urgent demands and needs. The present study aimed to analyze changes in access to health interventions during the pandemic in Brazilian older adults and investigate the associated factors. We hypothesized that there was a increase in the health discontinuation rate during the pandemic in Brazilian older adults.

METHODS

This research was a cross-sectional study, as part of the Study Network on Mobility in Aging (REMOBILIZE). The REMOBILIZE has been conducting a longitudinal study with older adults with 60 years old and over, residents of all five macro-regions of Brazil, aiming to assess the impact of the pandemic on mobility in the Brazilian older adults. Baseline data were

collected between May and June 2020, with a follow-up schedule of three, six, and 18 months. In this study, we analyze the baseline data, which refer to the first quarter of 2020, when the COVID-19 pandemic was declared a public health emergency in Brazil.

Data Collection Procedures

Community-dwelling older adults (60 years or more) of both genders were included. There were excluded participants who were bedridden and or living at long-term care facilities. Participants who reported dementia or cognitive decline, severe vision or hearing problems, or severe communication limitations could participate in the survey through interviews answered by proxy or by telephone contact with a trained interviewee.

According to the snowball sampling methodology, participant recruitment was carried out by convenience, in the local community, and through social media. Snowball sampling methodology is one in which a small number of individuals with the same characteristics indicate other people in their social network or community to participate in the study (25).

The Research Ethics Committee approved the University Cidade de São Paulo (CAAE: 31592220.6.0000.0064). Participants agreed with the terms of the survey by clicking on the button “I agree to participate” (for the online survey) or verbally (for telephone interviews).

Outcome

We considered the discontinuation of health care before and during the COVID-19 pandemic as the outcome variable, a range of self-care and health promotion behaviors. Health interventions was defined as the use of services aiming to prevent and cure illnesses and maintain health and well-being (26,27). This health interventions included medical appointment and follow-up (diagnosis and treatment), use of medications, rehabilitation (conventional physiotherapy, psychology, occupational therapy, speech therapy, hydrotherapy, global postural re-education), dentistry, integrative therapies (acupuncture, yoga). Health behaviors included physical activities and health promotion as a gym, pilates, hydrogymnastics, gymnastics, dance, seniors' gym, walking, sports. Therefore, we categorized the variable into “continuity” (carrying out some care before and during the COVID-19 pandemic) and “discontinued” (carrying out some care before but not during the COVID-19 pandemic).

Independent variables

The independent variables included were sex, age group (60–69, 70–79, and 80 years old and over), race (White, Black, Brown, and Yellow/Indigenous), income in minimum wages (up to 1, 2–3, 4–7, 8–10, and above 10), educational level in years (illiterate, 1–4, 5–8, and 9 or more), number of comorbidities, polypharmacy (report of routine use of four or more medications [27]), functional limitation and presence of pain. We selected these variables according to the classic model by Andersen and Newman (1973), which considers individual factors as predisposing characteristics (age and sex), facilitators (such as educational level and income), and the self-reported health needs (comorbidity, polypharmacy, pain and functional limitation) (28), in addition to the social determinants of illness and health care in Brazil (29).

Based on the participant self-report of medical diagnoses, the selected comorbidities were arthritis, osteoporosis, asthma, congestive heart failure, myocardial infarction, neurological disease, stroke or transient ischemic attack, peripheral vascular diseases, diabetes mellitus type I or II, upper gastrointestinal diseases, depression, anxiety or panic attacks, visual impairment, hearing impairment, degenerative disc diseases, obesity, high blood pressure, urinary incontinence, fecal incontinence, and dizziness/vertigo. We considered older people reporting two or more diseases as having multimorbidity (30).

We assessed activity limitations using the Brazilian Multidimensional Functional Assessment Questionnaire (BOMFAQ). The participants reported their difficulty (yes/no) to perform 15 daily activities, of which eight basic activities of daily living (BADLs) (e.g., eating, bathing, and dressing) and seven instrumental activities of daily living (IADLs) (e.g., shopping, taking medication at the correct time, and walking nearby home). The number of activities performed with difficulty was summed (0–15), and the participants were categorized into two groups: those with mild (0–3 activities) and those with moderate to severe functional limitation (≥ 4 activities) (31).

Data analysis

We compared all variables in the study among older adults who continued and discontinued some health care, using the Pearson's chi-square test to select the variables to be included in the multiple models. The discontinuation rate refers to the difference in the proportion of people who performed some care during and before the COVID-19 pandemic divided by the proportion of those who performed it before the COVID-19 pandemic. We used odds ratio (OR) and respective 95% confidence intervals by logistic regression to estimate associations between independent variables and the outcome. Factors that showed statistically

significant associations ($p < 0.05$) with the outcome in the final model were selected as independent variables for adjustment of a multiple logistic regression model, which aims to estimate the predicted discontinuation probabilities. Predicted probabilities were presented with respective confidence intervals (95%). All analyses were performed using Stata[®] software version 14.0 (StataCorp LLP, CollegeStation, TX), and a statistical significance of 5% was considered.

RESULTS

Sample characteristics

In total, 1,482 older adults were included in this study. As illustrated in Figure 1, more than half of the participants (56.5%) reported performing some health care before the COVID-19 pandemic. Of the total, 36.4% discontinued this care at the beginning of the COVID-19 pandemic. The discontinuation rate was 64.4% (95% CI: 61.1 - 67.6). Figure 2 shows the main health care discontinued during the pandemic, highlighting medical follow-up (47.5%), physical activity (30.9%), and rehabilitation (14.6%).

Association between variables

Table 1 shows the sociodemographic characteristics, region of residence, health conditions, and functionality of the sample. The sample was mainly composed of female older adults (74.0%), between 60 and 69 years old (56.1%), race White (61.8%), with lower-income (62.4% up to 3 minimum wages), with a high educational level (60.9% aged nine years or more) and from the Southeast and Northeast regions (together, 85.75%).

We found that income, education, race, comorbidities, and polypharmacy were associated with discontinuing health care. Income of up to one minimum wage (39.1% of participants) was associated with the discontinued of health care. Compared to those who continued the health care, the proportions of race Black (7.5%) and Brown, Yellow or Indigenous (33.7%) were the ones with higher rates of discontinuation. For older adults with up to 8 years of educational level, the discontinuation rate was higher than the rate of continuity. On the other hand, a higher continuity rate for older adults with over nine years of an educational level was observed (72.2%). In addition, among those who discontinued health care, 45.0% reported two or more comorbidities, and 27.6% were using polypharmacy.

Table 2 presents the odds ratios (95% CI) of the adjusted multiple model. Income over than 8 minimum wages (OR = 0.54, 95% CI = 0.36 - 0.81), education level over than 9 years

(OR = 0.34, 95% CI = 0.17 - 0.70) and polypharmacy (OR = 0.61, 95% CI = 0.46 - 0.81) were the associated variables that were less likely to discontinued health care. Those who presented two or more comorbidities had a higher chance of health care discontinued (OR = 1.42, 95% CI = 1.06 - 1.90).

We found that older adults with an income of over eight minimum wages (63.8%, 95% CI: 54.8 - 62.9), who use polypharmacy (69.3%, 95% CI: 64.9 - 73.8), and those with over nine years of educational level (72.1%, 95% CI: 68.8 - 75.5) were the ones with the lowest probability of health care discontinued. In contrast, illiterate older adults, with an income of up to 1 minimum wage (80.2%, 95% CI: 65.9 - 84.4), with two or more comorbidities (78.9%, 95% CI: 75.4 - 82,4) were the most likely to interrupt the health care.

Figure 3 shows how the average discontinuation rate varied according to federation states represented by the participants in this study. Rio Grande do Sul, Santa Catarina, São Paulo, Acre, Goiás, Pará, Maranhão, Piauí, Paraíba, Alagoas and Sergipe were the states with the highest discontinuation rates, ranging from 91.6% to 100%. Amazonas, Paraná, Rio de Janeiro, Espírito Santo, Ceará and Rio Grande do Norte were the states with the lowest rates of discontinuation, from 56.2% to 85.6%.

DISCUSSION

This study indicates an overall health care discontinuation rate of 64.4% in the Brazilian older adults during the first months of the COVID-19 pandemic. Older adults with a higher number of comorbidities, low educational levels, and low income were more likely to experience discontinuation in their health care. On the other hand, wealthy older adults with high educational level and using polypharmacy were less likely to interrupt health care interventions during the Covid-19 pandemic. Furthermore, there were multiple and varied discontinuation rates of health care in different regions of Brazil.

The high discontinuation rate has been reported by several studies. Almeida et al. (2021) described a worsening in the health status of 29.4% of the participants and a need for continuity care of treatment in 25.5% (32). Cancellations of appointments were reported by 68.8% of Americans over 64 years old, and nearly half of them reported that surgeries or medical procedures were cancelled due to the COVID-19 pandemic. In the same study, 1.4% of the participants reported not having the medical care they needed (1). Macinko et al. (2020) also reported that 17.2% of Brazilian adults aged 50 years and over had their medical appointments and elective surgical cancelled during pandemic (5). Our results pointed out a

higher discontinuation rate when compared with other Brazilian study conducted by Macinko et al. (2020). While our study included participants 60 years old and over, they selected participants 50 years old and above, partially explaining this difference. Furthermore, our results encompass a wider range of health care activities, including rehabilitation services, medical appointments, surgeries, diagnostic procedures, and health promotion activities.

Our results showed that discontinuation in health care during the COVID-19 pandemic reflected Brazil's long-lasting structural social inequalities. The variables that explained higher rates of discontinuation in health interventions were income and educational level. In the literature, both have been described as directly proportional to seeking health care, besides being associated factors to the difficulty of accessing the health system (11,23). This is especially daunting in Brazil where older people are among the poorest half of the population had an average monthly income of R\$ 850.00 (US\$ 166.25) in 2019. In this population illiteracy rates reach 18.0% (33) and is even higher among older adults who are blacks and browns (30.7%). It is worth highlighting that, in homes where older adults are not the only source of income, they are still responsible for 70.6% of the total household income (33). Even before the pandemic, the economic and political crisis of the 2010s reduced the relative advantage of low-income older adults to spend directly with health care (34). However, the older adults with lower income have a 30% more chance of having catastrophic expenditures (ratio between disbursement for health and total household income) than those with higher income (35).

In 2020, with the COVID-19 pandemic, there was an 18% loss in the income generated by work in the Brazilian population (34). Although most Brazilian older adults count on income from pensions and retirement (73.6%), they noticed an even more significant decline in income for this group (22.0%) (34), which could be explained by the reduction in non-essential work activities during the pandemic period (36). It was possible to observe a gradient effect between higher income and less chance of discontinued health care.

Contradictory to our results, Macinko et al. (2020) showed a higher prevalence of appointments cancellation (PR: 1.77; 95% CI: 1.32 - 2.38) among older adults with high educational levels (over 9 years of schooling) (5). However, our results were not restricted to doctor appointments. We also observed a lower likelihood of discontinued health care among older adults with over eight minimum wages. Older people with a high income and high educational level have a wider range of alternatives to continue their health care, such as using digital technologies (telemedicine, telerehabilitation) and (38) private cars for transportation to health care appointments and exams that are frequently covered by their insurance packages.

The presence of a higher number of comorbidities explained the discontinuity of health care in our study. Inconsistent, previous studies show that people with multimorbidities present 30% more probability of seeking health care (20,40). The COVID-19 pandemic, however, leads to unique daily life experiences for the older population since they were recommended to stay at home and restrict social contact. A substantial increase in cancellations of 1.5 and 1.9 times more among older adults with two and three comorbidities was also observed, respectively (5). Fear of being infected and the widespread information that older people with multimorbidity were at a high risk of death and hospitalization in ICU possibly explains the adherence of this population to the social distancing (4).

Older adults who used polypharmacy were less likely (OR= 0.61 95% CI: 0.46 - 0.81) to discontinue their health treatments. This can be explained by the fact that many medications need a prescription to be purchased. Older adults who attend regular medical appointments have a 1.9 times greater chance of use polypharmacy (41). Although the use of multiple medications is not ideal for older adults due to drug interactions, the ideology of medicalization and the health care model centered on exposure to drugs still prevail as a concept for treating diseases (41). The probability of health care discontinuation was lower in all age groups among those who consumed 4 or more medication simultaneously (0.70%, 0.69%, and 0.67%, respectively for 60 to 69 years old, 70 to 79 years old, and over 80 years old) compared to those who did not use polypharmacy. During the COVID-19 pandemic, essential initiatives to guide patients and physicians were necessary for keeping compliance with drug treatment. As a strategy to minimize long-term negative results, the European Society of Cardiology issued an information note for physicians and patients not to discontinue antihypertensive drug treatment, as it could lead to a greater risk of infection and severity of COVID-19 (42). The Brazilian government recommended actions to avoid interruptions in the health care (43) but with a fragmented and uncoordinated effort. Other institutions such as the Fiocruz also developed documents to support actions for the continuity of health care among specific groups, such as individuals under mental health care.

Our results also revealed that about a third of the older adults reduced their practice of physical exercise during the COVID-19 pandemic. Increased sedentary behavior was reported by 14.9% of the Brazilian population during the COVID-19 pandemic compared to the pre-pandemic period. There was also a 4.4% reduction in motivation to perform the exercise and a 6.7% increase in a reason for health (14). Our results showed higher interruption values, which can be explained because they are related to an older sample.

Foreseen consequences of an older population that discontinued crucial health care actions such as physical activity and disease management are alarming. If this reality remains in the medium and long term, a higher falls rate, cardiorespiratory problems, obesity, difficulty in engaging with medication, and worse psychological conditions could be seen in the near future (44). Additionally, Brazil has huge social and health inequity, which were deeply worsened during the COVID-19 pandemic (23). There is an expected increase in health demand in post-COVID-19 treatment, which will add to the consequences of the discontinued health care, overloading the Unified Health System, which is already fragile in terms of human and financial resources and poorly prepared for long-term care.

As an alternative to face-to-face health care, the Federal Councils of health professionals recognized tele-assistance during the COVID-19 pandemic as an option (45). Although promising, this resource does not reach a large part of the Brazilian population, especially the older people with low educational levels and low income, much more likely to have digital illiteracy and poor access to the Internet.

Limitations

Although the present study is one of the few carried out on this topic during the pandemic and including participants living in different regions of Brazil, it is essential to highlight some limitations. First, we included i) a convenience sample using a digital interface, ii) the interviews were conducted online and by phone calls, and iii) unequal distribution between geographic macro-regions. Using a digital interface may have excluded some groups of older people and therefore does not guarantee our sample represents Brazil's older population in general. It is noteworthy that women, people who define themselves as white and people with higher educational levels account for a disproportionate share of our sample, in comparison to national data. This limits the external validation of our study, but it was the only feasible approach in the context of the COVID-19 pandemic. A second limitation is that the study has a cross-sectional design, precluding causal or risk inferences. For example, some older adults could have stopped using health services due to no longer needing them or completing treatment for acute or temporary conditions. There is a need for future longitudinal studies to explore these issues and to identify specific strategies for continuing treatments under unfavorable circumstances.

Thirdly, memory bias may have reduced the reliability of participant responses about their health care before the COVID-19 pandemic.

CONCLUSION

High discontinuation rates in health interventions among Brazilian older adults were identified and individuals with multimorbidity, low income and low educational levels were more affected during pandemic. Strategies for maintaining services within social protection measures could partially mitigate the adverse effects of discontinuity in health care during the COVID-19 pandemic. Proactive and coordinated actions seeking vulnerable older groups that interrupted treatments are urgently needed to mitigate negative consequences of discontinued health care. While addressing unmet needs remains a priority, studies investigating the consequences of discontinuation among specific groups might help to avoid redundancies in health care provision and better allocate health systems resources in the post-pandemic.

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Table 1. Sociodemographic characteristics, region of residence, health conditions and functionality of Brazilian older adults, according to reports of health care, before and during the COVID-19 pandemic. Remobilize Study, 2020.

Variables	Total	Health care	
	1,482 (100%)	Discontinuation 1,062 (75.5%)	Continuation 346 (23.5%)
Sex			
Female	1,096 (74.0)	798 (75.1)	250 (23.0)
Male	386 (26.0)	265 (24.9)	96 (8.9)
Age group (in years old)			
60–69	831 (56.1)	593 (55.8)	190 (17.9)
70–79	420 (28.4)	308 (29.0)	98 (9.2)
80+	229 (15.5)	161 (15.2)	58 (5.4)
Skin color/ ethnic			
White	914 (61.7)	624 (58.8%)	233 (21.2%)
Black	100 (6.8)	80 (7.5%)	17 (1.6%)
Yellow, Brown and Indigenous	466 (31.5)	357 (33.7%)	95 (8.8%)
Income (minimum wage^a)			
Up to 1	512 (34.5)	416 (39.1)	82 (7.6%)
2–3	413 (27.9)	299 (28.1)	96 (8.9%)
4–7	267 (18.0)	171 (16.1)	74 (6.8%)
8+	290 (19.6)	177 (16.7)	94 (8.7%)
Educational level (year of study)			
Illiterate	117 (7.9)	105 (9.9)	11 (1.0%)
1–4	282 (19.0)	221 (20.8)	54 (5.0%)
5–8	181 (12.2)	145 (13.6)	31 (2.8%)
9+	902 (60.9)	592 (55.7)	250 (23.3%)
Region			
South	56 (3.8)	39 (3.6)	14 (1.3%)
Southeast	638 (43.1)	467 (44.0)	150 (13.9%)
Midwest	54 (3.6)	40 (3.8)	8 (0.7%)
Northeast	630 (42.6)	444 (41.8)	151 (13.9%)
North	102 (6.9)	72 (6.8)	23 (2.1%)
Comorbidity ^b (2 or more)	639 (43.2)	478 (45.0)	121 (11.1%)
Polipharmacy	458 (30.9)	293 (27.6)	150 (13.9%)

Presence of pain	406 (27.4)	295 (28.8)	92
Functional limitation moderate to severe ^c	314 (21.2)	232 (21.8)	75

Missing: 74 participants (4.9%) referring to the older adults who did not undergo treatment before the COVID-19 pandemic

^aMinimum wage = R\$ 1.045,00.

^bIncludes arthritis, osteoporosis, asthma, congestive heart failure, myocardial infarction, neurological disease, stroke or transient ischemic attack, peripheral vascular disease, diabetes mellitus type I or II, upper gastrointestinal disease, depression, anxiety or panic attacks, visual changes, hearing impairment, degenerative disc diseases, obesity, high blood pressure, urinary incontinence, fecal incontinence and dizziness/vertigo.

^cRoutine use of 4 or more medications.

^dScore ≥ 4 on the BOMFAQ, which assesses the following daily activities (ADLs and IADLs): lying down or getting out of bed, eating, brush the hair, walking on a plane, taking a shower, dressing, going to the bathroom on time, climbing stairs, taking medication, walking the neighborhood, shopping, preparing meals, cutting toenails, driving and cleaning the house.

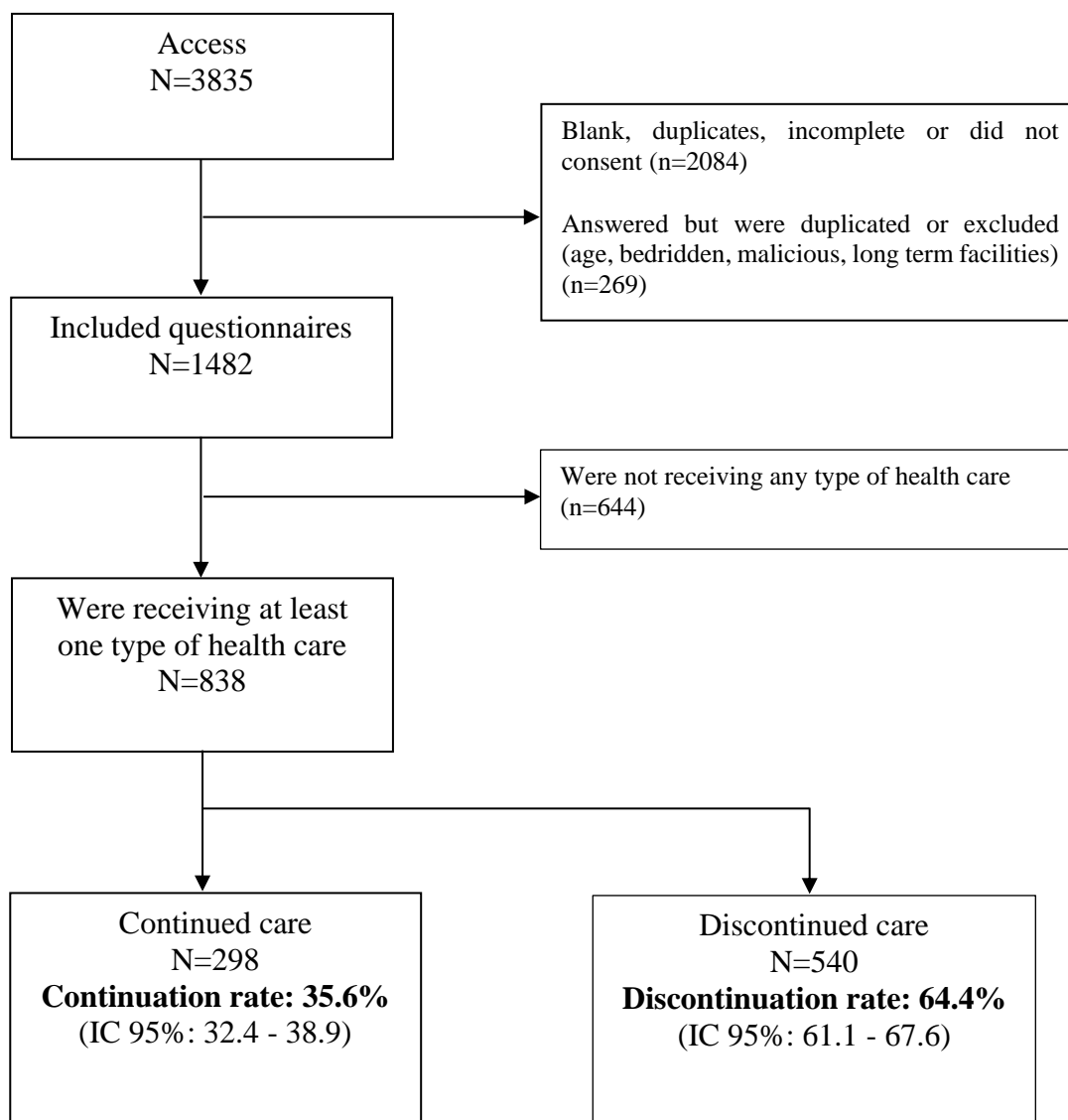


Figure 1. Flowchart of entry of participants in the study, prevalence and rates (discontinuation and continuation) of health care before and during COVID-19 pandemic among Brazilian older adults. REMOBILIZE Study, 2020.

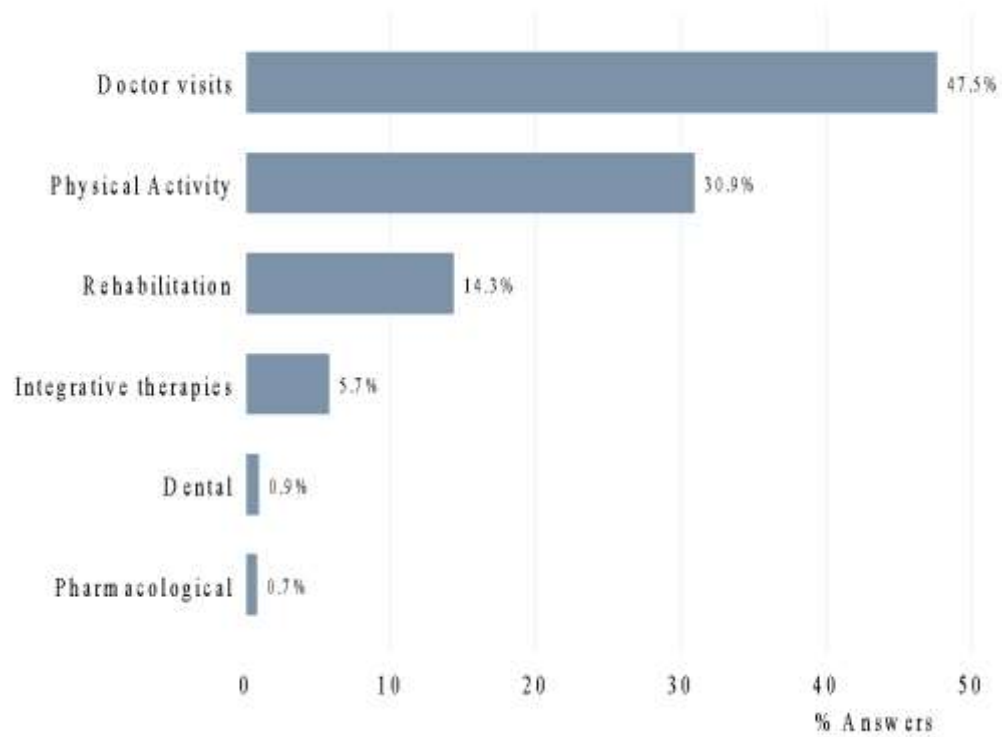


Figure 2. Discontinuity of health care before and during the COVID-19 pandemic among Brazilian older adults, according to self-report. REMOBILIZE Study, 2020.

Table 2. Factors associated with treatment discontinuation during the COVID-19 pandemic. Remobilize Study, 2020.

Variables	Odds Ratio	95% IC
Female sex (ref.: male)	1.18	0.88 - 1.57
Age group (in years old)		
60–69	1.00	
70–79	0.94	0.70 - 1.27
80+	0.84	0.56 - 1.27
Skin color/ ethnic		
White	1.00	
Black	1.39	0.79 - 2.45
Yellow, Brown, Indigenous	1.06	0.79 - 1.41
Income (minimum wage ^a)		
Up to 1	1.00	
2–3	0.76	0.53 - 1.09
4–7	0.65	0.43 - 0.98
8+	0.54	0.36 - 0.81
Educational level (year of study)		
Illiterate	1.00	
1–4	0.50	0.25 - 1.00
5–8	0.56	0.27 - 1.20
9+	0.34	0.17 - 0.70
Region		
South	1.00	
Southwest	1.01	0.52 - 1.93
Midwest	1.34	0.49 - 3.67
Northeast	0.94	0.49 - 1.81
North	0.92	0.42 - 2.03
Comorbidity ^b (2 or more)	1.42	1.06 - 1.90

Polifarmacy ^c	0.61	0.46 - 0.81
Presence of pain	1.17	0.87 - 1.57
Functional limitation moderate to severe ^d	0.95	0.66 - 1.37

^aMinimum wage = R\$ 1.045,00.

^bIncludes arthritis, osteoporosis, asthma, congestive heart failure, myocardial infarction, neurological disease, stroke or transient ischemic attack, peripheral vascular disease, diabetes mellitus type I or II, upper gastrointestinal disease, depression, anxiety or panic attacks, visual changes, hearing impairment, degenerative disc diseases, obesity, high blood pressure, urinary incontinence, fecal incontinence and dizziness/vertigo.

^cRoutine use of 4 or more medications.

^dScore ≥ 4 on the BOMFAQ, which assesses the following daily activities (ADLs and IADLs): lying down or getting out of bed, eating, brush the hair, walking on a plane, taking a shower, dressing, going to the bathroom on time, climbing stairs, taking medication, walking the neighborhood, shopping, preparing meals, cutting toenails, driving and cleaning the house.

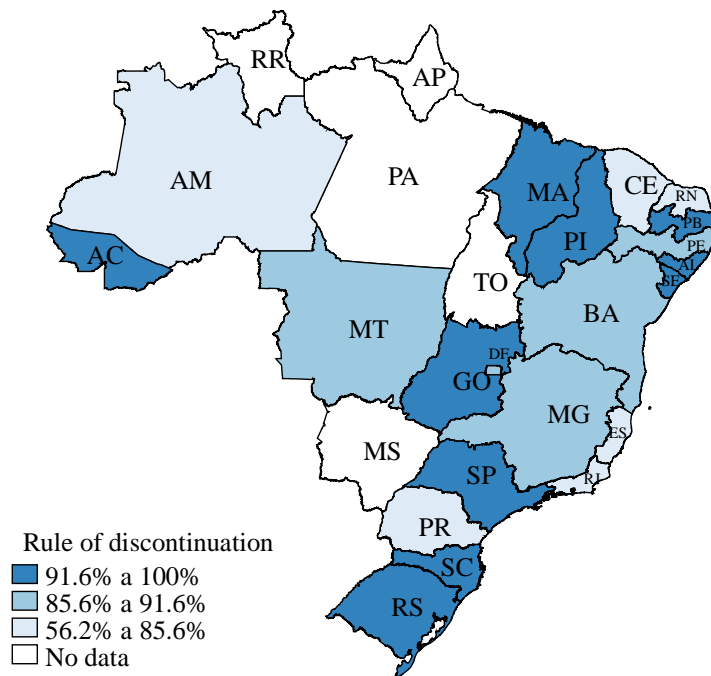


Figure 3. Difference in the rate of discontinuation of healthcare for older adults representing each Brazilian state. Remobilize Study, 2020.

Figure 3. Variation in the discontinuation rate of health care for older adults representatives of each Brazilian state. Remobilize Study, 2020.