Protective behaviors for COVID-19 among Brazilian adults and elderly living with multimorbidity: the ELSI-COVID-19 initiative

Comportamentos de proteção contra COVID-19 entre adultos e idosos brasileiros que vivem com multimorbidade: iniciativa ELSI-COVID-19

Comportamientos de protección contra la COVID-19 entre adultos y ancianos brasileños que viven con multimorbilidad: la iniciativa ELSI-COVID-19

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Abstract

To measure the occurrence of protective behaviors for COVID-19 and sociodemographic factors according to the occurrence of multimorbidity in the Brazilian population aged 50 or over was the objective of this study. We used data from telephone surveys among participants of ELSI-Brazil (Brazilian Longitudinal Study of Aging)*, conducted between May and June 2020. The use of non-pharmacological prevention measures for COVID-19, reasons for leaving home according to the presence of multimorbidity and sociodemographic variables were evaluated. among 6,149 individuals. Multimorbidity was more frequent in females, married, aged 50-59 years and residents of the urban area. Most of the population left home between once and twice in the last week, increasing according to the number of morbidities (22.3% no morbidities and 38% with multimorbidity). Leaving home every day was less common among individuals with multimorbidity (10.3%) and 9.3% left home in the last week to access health care. Hand hygiene (> 98%) and always wearing a mask when leaving home (> 96%) were almost universal habits. Greater adherence to social isolation was observed among women with multimorbidity when compared to men (PR = 1.49, 95%CI: 1.23-1.79). This adherence increased proportionally with age and inversely with the level of education. The protective behavior in people with multimorbidity seems to be greater in relation to the others, although issues related to social isolation and health care deserve to be highlighted. These findings can be useful in customizing strategies for coping with the current pandemic.*

Multimorbidity; COVID-19; Behavior; SAR-CoV-2; Chronic Disease

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Introduction

Today, society and healthcare systems across the globe are being challenged by the emergence of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). In December 2019, Hubei province in China reported the first cases of a novel coronavirus and the disease now called COVID-19. Not long after, cases appeared all over the world, and on April 7th, 2020, World Health Organization (WHO) conferred it the status of pandemic [1]. Up to August 21, 2020, there were over 22.5 million confirmed cases of COVID-19 in 216 countries and over 789,000 related deaths. In Brazil, the first confirmed reported case was on February 26th, 2020, and the count is already at almost 3.5 millions cases and 111,00 deaths (World Health Organization. WHO coronavirus disease (COVID-19) Dashboard. https://covid19.who.int/).

In the early phase, COVID-19 resembles a simple upper respiratory infection and in most cases, it will have few or no symptoms. SARS-CoV-2 can cause severe acute respiratory syndrome (sars) and can affect other physiological systems, similar to MERS-CoV (middle eastern respiratory syndrome coronavirus) [2]. Older people and those with previous chronic diseases are more likely to develop a more severe form of COVID-19 [3,4,5,6,7]. Multimorbidity (defined as 2 or more chronic conditions in the same person at the same time) is an important risk factor, since it is in itself a predictor for risk of death [5,8]. Studies of the Brazilian adult population show that the prevalence of multimorbidity is 22.2% (≥ 2 morbidities) and 10.2% (≥ 3 morbidities) [9]. About 67.8% of Brazilians, over 50 years of age, live with multimorbidity [10].

Multimorbidity and COVID-19 have important correlations with health inequities, and people with worse socioeconomic status seem to be more affected [11,12,13]. Some authors have revisited the term syndemic (i.e. synergistic pandemic – originally used in the 1990s on the discussions of the AIDS pandemic and its correlation with substance abuse or violence in the USA) to show inequality in chronic conditions and in social determinants of health and the impact they have on the rates of infection and mortality by COVID-19 [14]. This adds to the fact that Brazil is one of the most unequal countries in the world and in the last 4 years has had a 33% rise in poverty and the highest [15]. We observed the robustness of this association in the last months, with the change of the epicenter of the pandemic to the poorer North and Northeastern states of the country, where infection and lethality by COVID-19 have been disproportionately high [16,17].

As mitigation strategies for the outbreak of COVID-19, many countries have repressed the movement of its citizens and protected the higher risk groups in an effort that these measures, especially in the elderly, could minimize the number of cases and deaths [18,19,20]. In Brazil, the Ministry of Health declared that there was community transmission of COVID-19 in the entire country as of March 20th, 2020 [21]. In an attempt on non-pharmacological measures, they tried to implement social distancing (especially for those above 60 years old – who were told to only leave their homes in extreme necessities), banned crowd gatherings and encouraged face masks and correct hand washing techniques.

Thus, in face of the high prevalence of chronic morbidities and multimorbidities, mainly in older Brazilians, combined with social inequalities and the recognition of the community transmission of the new coronavirus; we aimed with this study to measure the prevalence of protective protective behaviors for COVID-19, sociodemographic factors and multimorbidity in a cohort of Brazilians above 50 years of age.

Methods

Sample

Individual data was used from the participants of the *Brazilian Longitudinal Study of Aging* (ELSI-Brazil) [22].This is a longitudinal study with a population design, started in 2015-2016, intending to represent the population of 50 years and older in Brazil. The second wave of the cohort started in August 2019, but it was interrupted on March 17th, 2020 due to the SARS-CoV-2 pandemic. We have at the moment data on 9,177 people.

We started a telephone inquiry, as a complement of the initial study, specifically to understand COVID-19 in this population. All participants of the 2nd wave of ELSI-Brazil were eligible for this telephone inquiry, called ELSI-COVID-19 initiative and the interview lasted approximately 5 minutes. We sought to understand: protective non-pharmacologic behaviors for COVID-19 (staying home, face masks usage and hand hygiene); reasons for leaving home (going out); social or family support for the purchase of food and medication; medical diagnosis of COVID-19 (and confirmatory testing); healthcare usage and mental health issues. Telephone interviews took place between May 26th and June 8th, 2020 and further methodological details of ELSI-COVID-19 initiative is described elsewhere [23].

Hence, we got information on 6,149 participants (67% of the 2nd wave of ELSI-Brazil). Of these, 27.8% had an informant as primary responders. We calculated the sociodemographic characteristics of our sample and they did not differ to the Brazilians older than 50 years in all the analyzed factors.

Variables

The outcome variable of our study was "protective behaviors for COVID-19". We asked about: going out (frequency and motives); face masks usage when going out and hand hygiene (water and soap or hand sanitizers with alcohol). We then categorized reasons for going out: essential (buying food or medication, working, paying bills, and health-related) and non-essential (gathering with friends or family, physical activities, and others).

For evaluation of multimorbidity we asked and counted the following conditions [24]: (1) hypertension; (2) stroke; (3) heart attack; (4) angina; (5) heart insufficiency; (6) chronic kidney disease; (7) Alzheimer's disease; (8) Parkinson's disease; (9) Chronic obstructive pulmonary disease (COPD); (10) diabetes; (11) rheumatoid arthritis; (12) asma; (13) cancer; (14) depression; and (15) obesity. All these conditions had a weighted count of one (1) for every instance and were self-reported (based on a previous medical diagnosis); except for obesity (where the body mass index – BMC cutoff: ≥ 30kg/m^2 for below 60 years, and ≥ 27kg/m^2 for those older) [25,26]. We considered the following categories: no chronic morbidity; at least 1 chronic morbidity; and multimorbidity (≥ 2 chronic conditions). We classified individuals who did not know the answer or did not respond to any of the questions on morbidities (1.3%) as no morbidity.

Major exposures were: sex (man, woman); age (50-59; 60-69; 70-79 and ≥ 80) and years in formal education (never went to school; 1-4; 5-8 and ≥ 9 years). the covariates were self-reported skin color/race (white, black/pardo, Asian, indigenous); marital status (married, widowed, single); the number of people who lived in the house (1, 2 and ≥ 3); urban or country dwelling; and geopolitical region in Brazil (North, Northeast, Central, Southeast, South).

Statistical analysis

We used Stata SE 15.0 (https://www.stata.com) and we conducted prevalence calculations (%) coupled with 95% confidence intervals (95%CI). We estimated the prevalence of protective behaviors in each morbidity category. Then we did a multivariate analysis using Poisson regression with backward elimination so we could consider the variables that were confounders in the analysis. We stratified the multivariate analysis by morbidity number (0, 1, and ≥ 2) and analyzed the outcome "not going out" with sex, age, and formal education. For each stratum, we included all other covariates (skin color, number of people living in the house, urban or country, and geopolitical region) in the model at each hierarchy level. After the first fit, we excluded the variable with the highest $p > 0.20$ and ran the analysis again; we repeated this as long as there were in the resulting model variables with $p > 0.20$. The prevalence rates (PR) and the 95%CI presented on the table reflect the model fit for all variables with $p < 0.20$. We considered statistically relevant the correlations with 95%CI that did not include the number 1. We considered the sample parameters and weights obtained by telephone inquiry of every individual, in all analyses.

Ethical aspects

The Oswaldo Cruz Foundation (Fiocruz) Research and Ethics Committee of Minas Gerais approved the ELSI-COVID-19 initiative inquiry (under CAAE: 34649814.3.0000.5091).

Results

Our sample of 6,149 represented 54 million Brazilian nationals aged 50 and older. Of those who had multimorbidities (45.8%), the majority were female (61.6%), married (58.9%), between 50-59 years (36.7%), self-reported as white (52.2%) and residents in the Southeast region (42.3%). When we tested for formal education, 40.6% had 9 or more years in school. The majority lived in urban dwellings (87.1%) and more than half shared their home with 2 or more persons (Table 1).

The prevalence of protective behaviors for COVID-19 in our population in the morbidities strata is in Table 2. Most had gone out 1 or 2 times in the last week or did not go out at all. The number of morbidities correlated with "never going out"; from 22.3% in those with no morbidities to 38% in those with multimorbidities. "Going out every day" was higher in those without morbidities (21.1%) and lower in those with multimorbidities (10.3%). The primary reasons for going out (independent of morbidity category) were: to buy medication or food, for work, and for paying bills. In those with multimorbidity, 9.3% reported leaving the home in the last week to seek help with their health issues; while 9.1% of those without morbidities reported going out to gather with friends or family.

Table 1

Characteristics of study population according to the presence of multimorbidity. Telephone inquiry ELSI-COVID-19 initiative, 2020.

Variables	Without multimorbidity		Multimorbidity
	No morbidity % (IC95%)	1 morbidity % (IC95%)	≥ 2 morbidities % (IC95%)
Sex			
Female	47.4 (40.6-54.3)	48.9 (44.3-53.4)	61.6 (57.0-66.0)
Male	52.5 (45.6-59.3)	51.1 (46.5-55.6)	38.3 (33.9-42.9)
Age (years)			
50-59	63.1 (56.0-69.8)	49.4 (44.3-54.7)	36.7 (30.1-43.9)
60-69	23.1 (18.7-28.2)	27.0 (24.0-30.3)	33.7 (30.4-37.3)
70-79	9.1 (6.5-12.7)	15.9 (12.9-19.5)	20.1 (16.0-25.0)
≥ 80	4.4 (2.9-6.6)	7.4 (5.5-9.8)	9.2 (6.9-12,2)
Race			
White	56.1 (45.3-66.2)	49.6 (41.1-58.0)	52.2 (44.1-60,2)
Black/Brown	43.1 (33.0-53.7)	49.6 (41.4-57.9)	47.0 (38.9-55,3)
Yellow	0.7 (0.1-3.0)	0.1 (0.0-1.4)	0.3 (0.0-2.8)
Indigenous	0.1 (0.0-0.4)	0.5 (0.1-2.8)	0.3 (0.1-0.6)
Schooling (years)			
None	5.6 (3.9-8.1)	7.7 (6.0-9.8)	7.5 (5.6-9.9)
1-4	16.5 (13.2-20.4)	20.6 (17.7-23.9)	22.6 (19.9-25.6)
5-8	25.2 (21.0-29.9)	28.0 (23.6-32.9)	29.1 (24.9-33.8)
≥ 9	52.5 (45.0-59.8)	43.5 (37.7-49.5)	40.6 (34.5-47.0)
Marital status			
Single	30.7 (24.5-37.6)	24.4 (19.8-29.8)	22.9 (17.0-30.1)
Married	59.4 (51.3-67.0)	60.8 (54.9-66.3)	58.9 (53.3-64.2)
Widowed	9.9 (7.5-12.9)	14.7 (11.8- 18.1)	18.0 (14.9-21.6)

(continues)

Table 1 (continued)

Variables	Without multimorbidity		Multimorbidity
	No morbidity % (IC95%)	1 morbidity % (IC95%)	≥ 2 morbidities % (IC95%)
Number of residents in household			
1	23.6 (16.1-33.1)	22.1 (17.7-27.2)	23.9 (18.6-30.1)
2	37.8 (32.0-43.9)	38.4 (33.8-43.1)	40.4 (36.2-44.6)
≥ 3	38.5 (30.6-47.1)	39.4 (32.9-46.4)	35.6 (30.2-41.5)
Area of residence			
Urban	89.9 (85.6-92.9)	85.5 (78.6-90.4)	87.1 (82.8-90.5)
Rural	10.1 (7.0-14.3)	14.4 (9.5-21.3)	12.8 (9.4-17.1)
Geopolitical region			
North	3.4 (1.0-10.7)	6.7 (2.4-17.1)	7.7 (1.7-27.9)
Northeast	28.9 (16.1-46.4)	28.5 (18.2-41.6)	24.9 (16.3-36.0)
Southeast	40.0 (25.4-56.7)	37.9 (26.4-51.0)	42.3 (28.7-57.1)
South	19.8 (7.4-43.3)	15.4 (7.4-29.5)	14.2 (7.5-25.4)
Central	7.6 (2.7-19.7)	11.2 (5.1-22.9)	10.8 (5.2-21.0)

95%CI: 95% confidence interval.

Table 2

Prevalence of protective behaviors for COVID-19 according to the presence of multimorbidity. Telephone inquiry ELSI-COVID-19 initiative, 2020.

Variables	Without multimorbidity		Multimorbidity
	No morbidity % (IC95%)	1 morbidity % (IC95%)	≥ 2 morbidities % (IC95%)
Going out last week (times)			
No	22.3 (18.3-26.8)	32.9 (28.0-38.3)	38.0(33.8-42.4)
1-2	34.3 (29.2-39.8)	34.8 (30.8-39.1)	38.7 (33.7-43.9)
3-5	22.2 (16.1-29.8)	12.9 (10.4-15.8)	12.9 (10.6-15.7)
Almost every day	21.1 (15.1-28.8)	19.4 (15.8-23.5)	10.3 (8.2-12.9)
Reasons for going out			
Essential			
Buying food or medication	58.1 (51.2-64.7)	51.8 (46.7-56.9)	44.2 (39.3-49.3)
Working	27.5 (21.1-35.1)	17.1 (13.5-21.4)	10.9 (8.6-13.7)
Paying bills	18.7 (14.7-23.3)	15.6 (12.9-18.8)	15.5 (12.6-18.9)
Health-related care	4.4 (2.9-6.5)	5.5 (3.8-8.1)	9.3 (7.5-11.5)
Non-essential			
Find friends or family	9.1 (5.3-15.3)	5.8 (3.9-8.4)	4.7 (3.4-6.5)
Exercise or walking	5.5 (2.9-10.1)	4.0 (2.6-5.9)	3.5 (2.4-5.0)
Another reason	8.9 (6.5-12.1)	7.2 (5.3-9.8)	6.3 (4.7-8.4)
Face masks usage when going out			
Ever	96.6 (94.2-97.9)	96.9 (95.1-98.1)	98.1 (96.8-98.9)
Sometimes	2.5 (1.3-4.9)	2.1 (1.3-3.6)	1.6 (8.9-2.8)
Never	0.9 (0.3-2.0)	0.9 (0.4-2.3)	0.3 (0.1-0.7)
Hand hygiene (water/soap or alcohol gel)			
Ever	96.7 (93.3-98.4)	97.3 (95.7-98.3)	97.8 (96.0-98.8)
Sometimes	3.0 (1.3-6.4)	2.3 (1.5-3.4)	1.2 (0.6-2.2)
Never	0.3 (0.1-0.9)	0.4 (0.06-2.7)	1.0 (0.3-3.1)

95%CI: 95% confidence interval.

"Wearing face masks always" when going out was above 96% across all morbidity categories. In those with multimorbidity, the prevalence of "never wearing" and "sometimes not wearing" were lower than in the groups with 0 or 1 morbidity. We observed the same trend with hand hygiene; overall 98% the individuals adhered, and it was higher in those with multimorbidity (Table 2).

Persons with less formal education years stayed more at home across all morbidity categories. In those that went out only for essential reasons, we observed higher years in school (Figure 1a). Women reported that they got out less than men, but in the multimorbidity group there is a difference between sexes in going out. Men in this group had a higher prevalence of going out for essential reasons compared to women. And both men and women with 1 or ≥ 2 morbidities had lower "going out for essential reasons" than those with no morbidities (Figure 1b). Older persons reported less "going out" (for any reason) across all morbidity strata. We saw an inverse relationship in the subclass of "going out for essential reasons", where younger persons were more likely to go out for this reason, and this was also across all morbidity strata (Figure 1c).

When analyzing the outcomes adjusted by sociodemographic characteristics, we found that social distancing ("never going out") was higher in women with multimorbidity compared to men (PR = 1.49; 95%CI: 1.23-1.79). It also had a positive correlation with age and an inverse correlation with formal education (Table 3).

Discussion

Multimorbidity correlated with the adoption of current protective behaviors for COVID-19; mainly social distancing in the week previous of the inquiry. People with multimorbidity stayed home almost twice as much as those with no morbidities. The reasons for going out were more because of essential necessities (buying medication, food, and working) in the multimorbidity subgroup than in those without health conditions. Only going out for health reasons was higher in the multimorbidity strata, showing the relevance in organizing the health system to prioritize and prepare for the higher healthcare needs and burdens of this population. Women, older and less formal educated persons left their homes less in all morbidity strata. Face masks and hand sanitation were almost universal.

In our sample, most of the interviewed did not leave their home, or left 1 or 2 times in the last week. It is very plausible to expect that older persons should be the ones to better self implement the protective measures, as the evidence on worse prognosis in the elderly infected with SARS-CoV-2 brought clear government responses in this population all over the world [6]. Yet a Malaysian study showed that although citizens were adopting these measures, these were less adopted in the 50 or older and the wealthier subgroups [27]. In the Philippines, 62.9% of the interviewed avoided gatherings [28]. In German elders, although the level of knowledge was high, the perception of risk and the adoption of preventive measures were very low [29]. Australian avoided gatherings as the most common behavior (66.7%) and elders were 4 times more represented in those that said they were (highly/very highly) preoccupied with COVID-19 [30].

In contrast, a study that analyzed 27 countries of high, middle and low income, found that elderly people could not do more social distancing than those aged 50 or 60 years [18]. The authors show that there was high adherence to the sanitary recommendations across all age categories, and there was no increase in this adherence with age. They also concluded that the elderly are not, necessarily, more respondents to self-imposed isolation and willfulness to isolation, they are not the most disciplined in preventive measures, especially face masks usage out of the home. Last, as a recommendation, they hypothesize that the adoption of individual-centered care and empathy could be fundamental for adherence to the preventive measures focused on these more vulnerable individuals [31].

Our study showed higher adherence to social distancing ("never going out") in women with multimorbidity when compared with men, there was a positive correlation with age and inversely with formal education levels. We hypothesize that the highest frequency of preventive behaviors in women arose by their higher consciousness on the importance of healthy habits related to the prevention of diseases and health promotion in this population [32]. Epidemiologic policy, including the closing of schools to stop transmission of COVID-19, which occurred in China, Hong Kong (SAR China), Italy, South Korea and also in Brazil, can have different effects in women, in so far as they are responsible
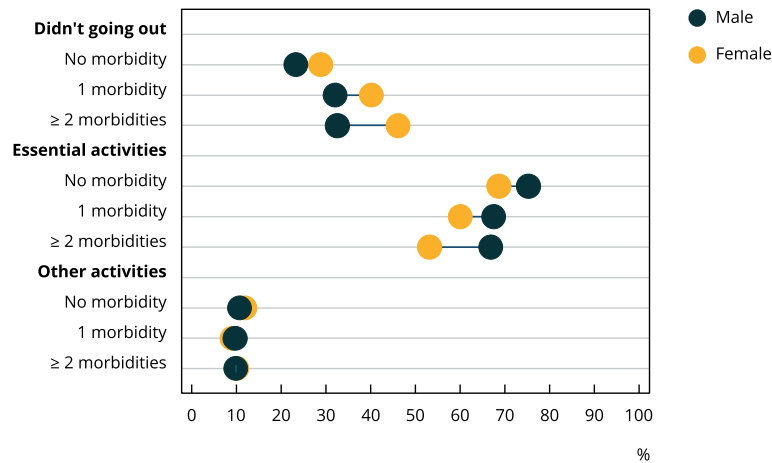
Figure 1

Prevalence of protective behaviors for COVID-19 among individuals with and without multimorbidity according to schooling, sex and age. Telephone inquiry ELSI-COVID-19 initiative, 2020.
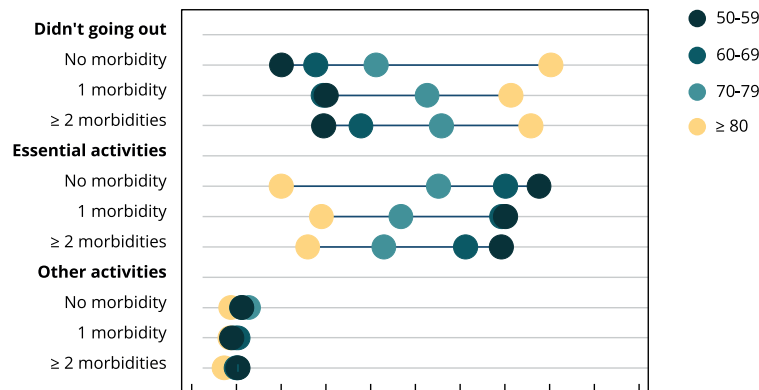
1a) Schooling (years)
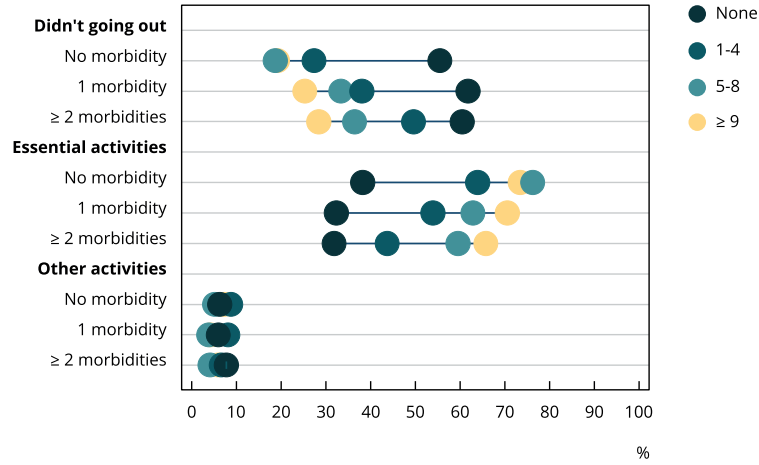
1b) Sex

1c) Age (years)

Table 3

Adjusted analysis * between no going out with sex, age and schooling stratified by the number of morbities. Telephone inquiry ELSI-COVID-19 initiative, 2020.

Variables	Number of morbidities		
	No morbidity	1 morbidity	≥ 2 morbidities
	PR (IC95%)	PR (IC95%)	PR (IC95%)
Female [reference: male]	1.35 (0.88-2.07)	1.35 (1.07-1.70)	1.49 (1.23-1.79)
Age (years) [reference: 50-59]			
60-69	1.55 (0.92-2.62)	1.00 (0.74-1.35)	1.32 (1.03-1.70)
70-79	2.06 (1.12-3.79)	1.60 (1.19-2.14)	1.99 (1.56-2.53)
≥ 80	4.02 (2.50-6.47)	2.36 (1.78-3.14)	2.64 (1.94-3.58)
Schooling (years) [reference: never studied]			
1-4	0.68 (0.48-0.97)	0.76 (0.65-0.90)	1.02 (0.86-1.21)
5-8	0.61 (0.39-0.95)	0.79 (0.60-1.05)	0.84 (0.72-0.99)
≥ 9	0.61 (0.38-0.98)	0.57 (0.41-0.79)	0.71 (0.56-0.90)

95%CI: 95% confidence interval; RP: prevalence rates.

* Adjust, by backward elimination in a hierarchical level, for: sex, age, skin color, education, number of residents, area of residence and geopolitical region.

for the informal care of the families, diminishing their working and economic prospects [34]. During the outbreak of Ebola in Western Africa in 2014-2016, women had a higher propensity of infection because of their predominant roles as caregivers in families and health professionals in the front line [34]. Incorporating gender in the analysis of health research, with support for past studies in epidemics, is paramount for identifying health interventions with high effectiveness and to promote equity.

Individuals with multimorbidity left less the home when compared to those with no morbidity (28% versus 22.3%, respectively). This can represent good adherence to protective measures, but can also overload the capacity of Emergency Rooms if they only appear in advanced stages of decompensation of their chronic illness. When the reason "health-related" for going out appeared in the research in the multimorbidity strata, it seems more research on this topic is necessary. Finding a balance between social distancing and the need for follow-up of the health issues of multimorbidities can be challenging in this population, in the families, and in health care services alike [35]. Hence, Primary Care is indispensable for the promotion of adequate geriatric care, as close to their homes as possible, and enabling telehealth in all forms (anywhere and in any instance that is feasible) as long as social distancing measures are in place [36,37,38].

The lower formal education subgroup also stayed at home more, independently of morbidity strata. Previous research also showed that those with higher incomes were less prone to obey the health recommendations and had a lower fear and more control over their pandemic situations [39,40]. Formal education represents a relevant socioeconomic indicator with the impact of elderly health and correlates with a higher occurrence of multimorbidity, and nowadays with social distancing [41]. This occurrence can lead to worse outcomes if the care for these individuals, mainly in mental health, are ineffective in reaching the more vulnerable in the present context [42]. Before the pandemic the more frequently multimorbid profile was that of women, older people, and those with less formal education, and we found that that is the same profile of those who mostly stay at home [10]. Beyond the "risk groups" for infection and prognosis for SARS-CoV-2, including the elderly and those with chronic illness, a comprehensive approach towards the vulnerable population by the health care system and policymakers has the potential to better respond to the pandemic's socially determined health problems (historic, current or future) [7].

Among participants, we observed that most only left their homes when the need arose for buying food or medication or for work or paying bills. It is noteworthy that fear of scarcity in essential provisions is an important concern in the elderly [43]. Going out every day was less frequent in those with multimorbidity, but among those, 9.3% reported having gone out because of health issues.

It is of major importance to maintain adequate follow-up of the health issues of the population, since there are already projections of new waves, especially those related to decompensation of chronic health problems [35]. In one study most people could have self-isolated with help and support of family and friends. However, they were very preoccupied: with possible difficulties in buying food and supplies (48%) and with health care access (39%). Being responsible for children, family members with disabilities and elderly parents were the greatest impeditives for those who declared that they could not self isolate at home (8%) [30].

Broadening this analysis, 9.1% of those with no morbidity reported going out to gatherings with their family or friends, may reflect that social distancing and isolation measures disproportionately affect older individuals. Elders have routine social contact out of their homes, by entertaining in community centers or religious temples and centers. If addressed, these necessities could reduce loneliness, depression, and cardiovascular morbidity [44]. People 50 years or more have less than half the number of close contacts when compared with those aged 18-29 and the number continues to drop with ageing [45].

In those that responded going out in the last week, wearing face masks was a behavior adopted by the large majority (96%) across all morbidity strata. In Malaysia, as many as 50% reported not using it [27]. It is noteworthy that neither in Malaysia nor in Brazil (before the current pandemic), was the habit of wearing face masks routine, not even when sick. Moreover there was a shortage of personal protective equipment at the beginning of the pandemic. In the Philippines, only 28% of the population used it, probably for the same reasons as the Malaysians [28].

Among those with multimorbidity, the prevalence of "never using face masks" and "using sometimes" are smaller than those with 0 or 1 morbidity. Granted that there are feasibility in predicting increased protective behavior adherence in those with a higher risk of hospitalization and death by COVID-19. There are signs that we should review these expectations, primarily when thinking of softening sanitary measures [18]. Effective communication on risk mitigation strategies for specific populations (e.g. the elderly or the multimorbid) would be crucial.

The prevalence of hand sanitization (water and soap or hand sanitizers with alcohol) was approximately 98% in our population, and it was even higher in those with multimorbidity, following the same trends in other countries [27,28]. In an Australian study, hand sanitization was hygiene's most adopted behavior (76.6%). Those who most feared COVID-19 had higher adoption of hand sanitization. Hand hygiene is an easily adopted strategy; it is easy to comprehend, easily engaging, and available, and it is one of the primary focuses in many governmental communications internationally [30]. A study showed that in the U.K. and the U.S.A., up to 92% of residents would adopt hygiene behaviors [46].

The present study has some limitations. Morbidities were self-reported (except obesity), even if asked to report on those medically diagnosed. This is prone to skew the real prevalence of multimorbidity. However, this bias tends to under-represent the prevalence of illnesses. If this error was not present in the sample, we could have an increase in behavior differences since some individuals of those with 0 or 1 morbidities would then be multimorbid. But we predict that this bias would be small in our population, since we included the most prevalent chronic morbidities in this population and only 1.3% responded they did not know or did not respond to the morbidity questions. We also analyzed self-reporting preventive behaviors, and there was no methodological strategy to test the quality of this reporting. And finally, in our inquiry, we defined social isolation as "not leaving home", but we did not gather information on having guests coming over, for example.

In the present context, new challenges arise from our study. Research on COVID-19 and its impact on health care systems and on the individual person must be paired with inclusion and social responsibility, mainly in the elderly. Future research should look in more depth at aspects such as the complexity of care in the elderly (multimorbidity, frailty, cognitive decline, and living in homes for the elderly) [7,47,48]. The correlation of morbidity with sanitary measures aimed at protective behaviors for COVI-19 should consider the social determinants of health in Brazil. These factors that influence the adoption of protective behaviors have the potential to affect people with higher vulnerability and are in greater need of care.

Contributors

S. R. Batista and B. P. Nunes participated in the conception of the manuscript, writing the first version of the article and critical review of the content. A. S. S. Souza and J. Nogueira participated in the writing of the first version of the article, data analysis and critical review of the manuscript. F. B. Andrade, E. Thumé, D. S. C. Teixeira, M. F. Lima-Costa and L. A. Facchini participated in the study design and critical review of the manuscript. All authors approved the final version to be published and are responsible for all aspects of the work, including ensuring its accuracy and integrity.

Additional informations

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Resumo

Objetivou-se medir a ocorrência de comportamentos de proteção contra a COVID-19 e fatores sociodemográficos segundo a ocorrência de multimorbidade na população brasileira com 50 anos ou mais de idade. Foram utilizados dados de inquérito telefônico entre participantes do ELSI-Brasil (Estudo Longitudinal da Saúde dos Idosos Brasileiros), conduzido entre maio e junho de 2020. Avaliou-se o uso de medidas de prevenção não farmacológica para COVID-19, motivos para sair de casa segundo a presença de multimorbidade e variáveis sociodemográficas. Participaram do estudo 6.149 pessoas. Multimorbidade foi mais frequente no sexo feminino, em casados, na faixa etária 50-59 anos de idade e em moradores da zona urbana. A maior parte da população saiu de casa entre uma e duas vezes na última semana, percentual que aumentou segundo o número de morbidades (22,3% sem morbidades e 38% com multimorbidade). Sair de casa todos os dias teve menor ocorrência entre indivíduos com multimorbidade (10,3%), e 9,3% saíram de casa na última semana para obter atendimento de saúde. Higienização de mãos (> 98%) e sempre usar máscara ao sair de casa (> 96%) foram hábitos quase universais. Observou-se maior adesão ao isolamento social entre as mulheres com multimorbidade quando comparadas com os homens (RP = 1,49; IC95%: 1,23-1,79); esta adesão aumentou proporcionalmente com a idade e inversamente ao nível de escolaridade. O comportamento de proteção em pessoas com multimorbidade parece ser maior em relação aos demais, embora questões relacionadas ao isolamento social e cuidado em saúde mereçam ser destacadas. Esses achados podem ser úteis na customização de estratégias de enfrentamento atual da pandemia.

Multimorbidade; COVID-19; Comportamento; SARS-CoV-2; Doença Crônica

Resumen

El objetivo fue medir la ocurrencia de comportamientos de protección contra la COVID-19 y factores sociodemográficos, según la ocurrencia de multimorbilidad, en la población brasileña con 50 años o más de edad. Se utilizaron datos de la encuesta telefónica entre participantes del ELSI-Brasil (Estudio Brasileño Longitudinal del Envejecimiento), realizado entre mayo y junio de 2020. Se evaluó el uso de medidas de prevención no farmacológica para la COVID-19, motivos para salir de casa, según la presencia de multimorbilidad y variables sociodemográficas. Participaron del estudio 6.149 personas. La multimorbilidad fue más frecuente en el sexo femenino, en casados, en la franja de edad 50-59 años de edad y en residentes de la zona urbana. La mayor parte de la población salió de casa entre una y dos veces en la última semana, porcentaje que aumentó según el número de morbilidades (22,3% sin morbilidades y 38% con multimorbilidad). Salir de casa todos los días tuvo una menor ocurrencia entre individuos con multimorbilidad (10,3%), y 9,3% salieron de casa en la última semana para obtener atención en salud. La higienización de manos (> 98%) y siempre usar mascarilla al salir de casa (> 96%) fueron hábitos casi universales. Se observó una mayor adhesión al aislamiento social entre las mujeres con multimorbilidad cuando se compararon con los hombres (RP = 1,49; IC95%: 1,23-1,79); esta adhesión aumentó proporcionalmente con la edad y fue inversamente proporcional al nivel de escolaridad. El comportamiento de protección en personas con multimorbilidad parece ser mayor respecto a los demás, a pesar de que las cuestiones relacionadas con el aislamiento social y cuidado en salud merezcan ser destacadas. Estos resultados pueden ser útiles en la personalización de estrategias de combate a la actual pandemia.

Multimorbidad; COVID-19; Conducta; SAR-CoV-2; Enfermedad Crónica