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Older people and new technologies: challenges for devising solutions to promote digital inclusion

Aging brings to the fore situations and challenges for society to devise solutions that can support the lives of older people and contribute to their well-being¹. A timely issue, a number of aspects associated with digital inclusion reveal that “inclusion” can help promote a longer, more dignified and better quality life.

The first aspect involves the hiatus between older age and the exponential advance in technology. The pace of technological innovations, interfaces and digital devices has led to a shift in older people’s way of life, requiring this group to master e-skills in order to ensure inclusion in the digital world².

Countless activities are mediated by technology, such as the use of ATMs or apps for banking operations; virtual meetings for work, education or leisure; information and communications technology devices including Smartphones and multi-function printers with built-in fax/scanners; online medical visits and service bookings over the internet; virtual tours of museums as a cultural alternative; and an array of technology resources and devices which support physical activity, besides health promotion and monitoring.

Today, making the most of the triumph of longer lives means engaging in activities mediated by technology products and devices. However, the older population remains a group that faces the greatest barriers to connectivity³.

The second aspect is the fact that older individuals are staying longer in the job market, albeit due to changes in pension/retirement rules, as a means of topping up their income, or because they are the sole breadwinner. Concomitantly, there has been a growth in the market that employs on-line platforms or mobile apps to offer their services⁴ (e.g. apps for personal transportation, shipping goods and food delivery), posing a further challenge for older individuals who need, or wish, to be involved in this type of work.

The third aspect relates to the rise in the prevalence of chronic diseases, particularly among the older population, calling for longitudinal care models. Health services are placing greater emphasis on the individual in managing and nurturing their own health, often requiring the use of monitoring tools (e.g. glucose meters or blood pressure monitors) and communication with health services via apps^{1,5}. These cases illustrate the need for investment in digital inclusion programs for health education to enable management of chronic diseases within the home setting⁶.

In the current scenario, ageism toward older individuals constitutes a barrier to the process of digital inclusion. The notion that older age precludes learning leads to the reinforcement of stereotypes that fail to embrace the diversity and individuality of aging, with the consequent risk of propagating a distorted image

of this phase of life. Age-related prejudice toward older people gives rise to gerotechnological anxiety and low perceived self-efficacy, leading to intergenerational conflicts and abandonment of technologies. Thus, tackling agism is vital in order to promote digital equality⁶.

The aspects outlined provide windows of opportunity towards securing the right to learning throughout the lifespan and acknowledging the importance of intergenerational collaboration and support. In recognizing the ongoing ability to acquire new skills and learn new tasks (including competencies for using new technologies), digital inclusion programs have proven ideal forums for extending learning and promoting continuing education⁶.

The process of digital literacy is predominantly promoted by intergenerational assistance and support⁵. This contact between generations allows differences to be embraced and mutual learning to be fostered through interaction of the youngest and oldest members of society. This sense of solidarity brings the learner closer to the teacher, fosters a rewarding relational environment, boosts feelings of self-efficacy, while broadening the opportunity for participation of older people. This strategy contributes to lifelong learning and allows individuals to feel part of the globalized world^{3,7}.

Lilian Dias Bernardo¹ 






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Violence against older people in Brazil: associated factors according to the type of aggressor

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Abstract

Factors associated with violence against older Brazilians were analyzed according to the type of aggressor. Population-based cross-sectional study with secondary data from the National Health Survey in 2013, totaling 11,697 individuals aged 60 years or older in Brazil. The dependent variable was having suffered violence by a known or unknown aggressor, and the independent variables were divided into blocks (Socioeconomic and demographic; Self-perception and health care; Health service use; Health status/disease and Functioning). The effect of the independent variables on the response variable was expressed by the “Odds Ratio” with a 95% Confidence Interval. Hierarchical models of simple and multiple multinomial logistic regression were performed. In the simple analysis, variables with p -value <0.05 were elective for multiple analysis. A thematic map was constructed according to the spatial distribution of violence, by state. White skin color, <68 years, knowing how to read and write, sleep problems, not feeling pleasure in doing activities and having a physical disability were associated with the unknown aggressor. Poor health, smoking, discrimination in the health service and feeling bad about oneself were associated with the known aggressor. Discrimination by type of illness and little difficulty going, out alone were associated for both aggressors. States with the highest number of cases of violence found were Amapá, Paraná, Mato Grosso, Amazonas and Rio Grande do Norte. Thus, estimating the prevalence of violence against older people, the type of aggressor, as well as associated factors, is essential for identifying and preventing individual, institutional and structural abuse.

Keywords: Violence. Old man. Older people abuse. Aged, 80 and over.

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INTRODUCTION

There are 962 million individuals aged 60 or over in the world, the expectation is to at least double in 2050 and triple in 2100, reaching 3.1 billion people¹. Even in the face of such a rise in the number of older people and the increase in life expectancy, society is still not attentive to these subjects and this invisibility exposes them to hidden violence².

With aging, individuals become more vulnerable, due to dependence on other people for basic activities of daily living, there is a cognitive deficit or natural limitations of aging itself, which generates less power of defense and facilitates the action of aggressors³.

According to the World Health Organization (WHO)⁴, violence is the use of physical force or power, in a threat against oneself, other individuals, groups or communities that may cause suffering, death, psychological damage, decline in development or deprivation, and may be physical, psychological, sexual, financial, negligence, abandonment and self-neglect.

When dealing with abuse against older people, the WHO defines it as a punctual or repeated act or, even in the absence of an action, that occurs in the face of a relationship of trust and that causes harm, suffering or anguish for the older person⁵. According to data from a systematic review and meta-analysis developed by Yon et al (2017)⁶, violence affects one in six older individuals in the world, totaling about 141 million victims, among an estimated population in 2015 of 901 million people over 60 years old.

The type of interpersonal violence, intrafamily or domestic, occurs between sexual partners or other family members, however, because the aggressor is known to the victim and is part of their relationship, there is possibly a high underreporting among these abused older people⁶. In these cases, it is clear that there is a greater search for family reorganization than for judicial penalties⁷.

Furthermore, official homicide statistics omit information about the relationship between perpetrator and victim, making it difficult to identify the aggressor. When dealing with non-fatal violence that are referred to hospital emergency services,

several factors influenced the report of the aggression suffered, among them, whether or not the aggressor was known to the victim⁸.

Regarding the aggressor not being known (such as bandits, police, providers of any type of service, or anyone who has no blood or affective bond with the victim) there is in Brazil, as well as in other parts of the world, a culture that belittles and discriminates against individuals based on their age, attitudes identified by the terms ageism or etarism. In addition to structural, contextual violence and negligence on the part of public policies so that all the rights of the older person are guaranteed⁹.

When considering that violence against older people is a complex and multifactorial problem, the relevance of carrying out studies with this population is highlighted, especially the understanding of the prevalence of violence in older people, according to the type of aggressor.

Studies have shown that most aggressors are family members, usually with mutual dependence between victim and aggressor, financial or care, which makes it difficult for the coexistence to be interrupted. In addition to family members, caregivers were highlighted as the main aggressors^{10,11}. From the discovery of the aggressor, the search, detection and notification of violence and the abused older people are evidenced for a cessation of these acts through early interventions by health professionals.

Without this clarification, it is difficult to formulate effective national action plans and structural policies for violence prevention. Given the above, the objective is to identify the factors associated with violence against older people in Brazil, according to the type of aggressor (known or unknown).

METHODS

Population-based cross-sectional study with secondary data. The probabilistic cluster sample consisted of individuals aged 60 years or older, interviewed in the National Health Survey (PNS) in 2013, in Brazil, totaling 11,697 people. The interviews were carried out in over 64,000 households (response rate =94%).

The PNS is a survey carried out by the Brazilian Institute of Geography and Statistics (IBGE) and the Ministry of Health, constituting the most complete survey of health and its determinants, part of the Integrated System of Household Surveys (SIPD)¹².

The specific part of the individual questionnaire for individuals aged 60 years or older was selected. The independent variables are described in Chart 1, divided into blocks, according to the hierarchical model.

Chart 1. Independent variables and classification according to the hierarchical model. Brazil, 2022.

BLOCKS	QUESTIONS
Socioeconomic and demographic	Sex? Color or race? Age? Do you live with a spouse or partner? What is the marital status? Can you read and write?
Self-perception and health care	In general, how would you rate your health? Do you currently smoke any tobacco products? In the last three months, did you practice any kind of physical exercise or sport? (do not consider physiotherapy). How often do you usually consume alcoholic beverages?
Use of health service	Have you ever felt discriminated against or treated worse than other people in the health service by a doctor or other health professional for: Lack of money? Social class? Race/Color? Type of occupation? Illness? Religion/belief? Age? Another motive?
State of Health/Illness	In the last 12 months, were you hospitalized for 24 hours or more? Has a doctor or mental health professional (such as a psychiatrist or psychologist) diagnosed you with: -Depression? -Another mental illness, such as schizophrenia, bipolar disorder, psychosis, or OCD (Obsessive Compulsive Disorder)? In the past two weeks, how often did you: -Have you had sleep problems, such as difficulty falling asleep, waking up frequently at night, or sleeping more than usual? -Did you have problems with not feeling rested and ready during the day, feeling tired, without energy? -Did you feel bothered by having little interest or did you not feel pleasure in doing things? -Did you have trouble concentrating on your usual activities? -Have you had eating problems, such as having a lack of appetite or eating a lot more than usual? -Did you feel depressed, “down” or hopeless? -Did you feel bad about yourself, feeling like a failure or feeling like you let your family down? -Did you use any medication to sleep?
Functionality	Do you participate in organized social activities (clubs, community or religious groups, senior living centers, etc.)? Do you drive a car? Do you have a physical disability? Do you have any hearing impairment? Do you have any visual impairment? In general, how difficult is it to go out alone using public transport such as the bus, subway, taxi, car, etc.?

Source: Prepared by the author. The questionnaire and details of the PNS sampling plan are available at: http://www.ibge.gov.br/home/estatistica/populacao/pns/2013/default_microdados.shtm

The dependent variable was derived from two questions: “*In the last 12 months, have you suffered any violence or aggression from an unknown person (such as bandits, police officers, robbers, etc.)?*” and “*In the last 12 months, have you suffered violence or aggression from a known person (such as father, mother, child, spouse, partner, boyfriend, friend, neighbor)?*” In this sense, a single dependent variable was built with three categories of answers: 1) did not suffer violence (reference); 2) suffered violence from a known person and; 3) suffered violence from an unknown person.

To associate the dependent variable with the independent variables, two statistical approaches were used. Initially, the chi-square test with Rao-Scott correction was used for complex samples. The significance level was 5%, and standardized residual values >1.96 were considered. In the second approach, simple and multiple models of multinomial logistic regression were used, based on the assumption of the hierarchical approach of Victora, et al (1997). The reference category of the dependent variable was not having suffered violence and the measure of effect was expressed by the Odds Ratio (OR), and respective 95% Confidence Intervals¹³.

Initially, a simple analysis was performed in blocks and variables with $p < 0.25$ were elective for multiple analysis. At the end, variables with $p < 0.05$ remained in the final model of each block and were considered adjustment factors for subsequent blocks. All analyzes were performed considering the weights and sample strata contained in the PNS database, from the perspective of hierarchical analyses. This type of analysis is based on conceptual models for explaining the associations, which can contribute to elucidate mechanisms that have so far been little explored¹⁴.

A thematic map was constructed according to the spatial distribution of violence against older people according to the type of aggressor, by Federation Unit. The *software* used was QGIS version 2.18 (free tool) which had the functionality of storage, management, manipulation, spatial analysis and generation of thematic map, an important subsidy for decision making.

With this, the importance of georeferencing is observed, which consists of showing epidemiological data according to geographic information, taking into account the position on the earth's surface¹⁵. Therefore, when we spatially localize violence against older people and the types of aggressors (known or unknown), we know the spatial distribution of these conditions throughout the Brazilian territory.

The PNS project was approved by the National Commission on Ethics in Research for Human Beings, of the National Health Council (CNS), under opinion number 328,159, on June 26, 2013.

RESULTS

Among the sample studied, 97.1% of the older people stated that they had not suffered any type of violence, while 1.7%, 95% CI (1.5-2.2) reported having suffered violence from an unknown person and 1.3%, 95% CI (1.1-1.7) violence from a known person. In addition, 60.4% were female, 54.6% were white, 54.2% did not live with a spouse or partner, 44.3% were married and 77.4% knew how to read and write.

In the simple logistic regression analysis, of the 34 variables analyzed, 30 had $p < 0.25$ and were tested in the multiple model. At the end, 13 variables remained with statistical significance, $p < 0.05$ (Table 1).

Table 1. Association of violence in older people by known and unknown people with the five blocks of analyzed variables, according to the multiple model of multinomial logistic regression. Brazil-2013.

Variables	Unknown		Known		<i>p</i> -value
	OR	95%CI	OR	95%CI	
Block 1: Socioeconomic and Demographic Factors^a					
Color or race					0.010*
Black	1		1		
White	2.53	1.28~4.99†	1.34	0.63~2.86	
Yellow and Indigenous	3.50	0.83~14.77	0.08	0.01~0.64†	
Brown	1.77	0.88~3.58	1.35	0.63~2.90	
Age					0.038*
>68 years	1		1		
<68 years	1.68	1.07~2.64†	1.35	0.63~2.90	
Can you read and write?					0.001*
No	1				
Yes	2.76	1.63~4.70†	1.01	0.61~1.70	
Block 2: Self-perception and Health Care Factors^b					
Health assessment					0.020*
Very good or good	1		1		
Regular	1.13	0.70~1.83	0.88	0.53~1.44	
Very bad or bad	1.21	0.55~2.65	2.39	1.29~4.43†	
Do you smoke any tobacco products?					0.008*
I dont smoke	1		1		
Yes, daily	1.51	0.76~3.00	2.17	1.21~3.89†	
Yes, less than daily	2.63	0.78~8.83	4.09	1.18~14.19†	
Block 3: Health Service Use Factors^c					
Discrimination in the health service by a health professional due to:					
Disease type?					0.002*
No	1		1		
Yes	3.78	1.37~10.48†	3.04	1.35~6.87†	
Race/color motive?					0.001*
No	1		1		
Yes	3.22	0.75~13.77	0.02	0.00~0.18†	
For religion/belief?					0.006*
No	1		1		
Yes	0.15	0.02~1.29	6.06	1.63~22.52†	

to be continued

Continuation of Table 1

Variables	Unknown		Known		<i>p</i> -value
	OR	95%CI	OR	95%CI	
Block 4: Health/Illness Status Factors^d					
In the past two weeks:					
Did you have sleep problems?	1		1		0.026*
No	1.64	0.91~2.96	1.93	0.10~3.75	
Less than half the days	2.07	0.81~5.32	0.86	0.41~1.81	
More than half of the days	1.83	1.01~3.30†	1.70	0.98~2.95	
Did you feel bothered by having little interest or did you not feel pleasure in doing things?					0.010*
No	1		1		
Less than half the days	0.97	0.47~2.00	1.10	0.51~2.39	
More than half of the days	3.43	1.45~8.15†	1.67	0.71~3.89	
Almost everyday	0.36	0.14~0.90†	0.75	0.34~1.66	
Did you feel bad about yourself, feeling like a failure or feeling like you've let your family down?					<0.001**
No	1		1		
Less than half the days	1.16	0.60~2.22	3.87	1.91~7.85†	
More than half of the days	2.08	0.59~7.31	0.80	0.25~2.56	
Almost everyday	2.61	0.53~12.71	5.14	2.23~11.88†	
Block 5: Functionality Factors^e					
Do you have a physical disability?					0.011*
No	1		1		
Yes	5.53	1.66~18.45†	0.54	0.18~1.68	
Difficulty level to go out alone using transport such as bus, subway, taxi, car, etc?					
Not able	1		1		0.004*
Has great difficulty	1.60	0.31~8.19	2.16	0.67~5.97	
Has little or no difficulty	6.46	1.66~25.08†	3.13	1.14~8.64†	

Multiple logistic regression. OR *odds ratio*; 95% CI 95% confidence interval; * $p < 0.05$; † variable category with $p < 0.05$; ^a Adjusted by Block 1 variables; ^b Adjusted by Block 1 and Block 2 variables; ^c Adjusted by the variables of Block 1, Block 2 and Block 3; ^d Adjusted by the variables of Blocs 1, Block 2, Block 3 and Block 4; ^e Adjusted by the variables of Block 1, Block 2, Block 3, Block 4 and Block 5.

In the multiple logistic regression of Block 1, admitting the reference category of color or race “Black”, whites were approximately 2.5 times more likely to suffer violence from an unknown person and the yellow and indigenous people had a 92% less chance of suffering violence from a known person.

With regard to age, older people below the median (68 years old) were 1.68 times more likely to suffer violence from an unknown person. And those who could read and write (reference “does not know how to read and write”) were 2.76 times more likely to suffer violence also from an unknown person.

In Block 2, after adjusting the variables of Block 1, in the health assessment variable (reference “very good or good”), those who evaluated their health as “very bad or bad” were 2.39 times more likely to suffer violence from a known person; smoking any tobacco product (reference “I do not currently smoke”), those who smoked daily were 2.17 times more likely to suffer violence from a known person and those who smoked less than daily, approximately 4 times more likely to suffer the same type of violence

In Block 3, after adjusting the variables in Blocks 1 and 2, the variables of discrimination in the health service: by type of disease, were 3.78 times more likely to suffer violence from an unknown person and 3 times more from a known person, compared to those who have not suffered. Discrimination by religion/belief generated 6 times more chances of suffering violence from a known person compared to those who denied having suffered.

When analyzing Block 4, after adjusting the variables in Blocks 1, 2 and 3, who had sleep problems, such as difficulty falling asleep, waking up frequently at night or sleeping more than usual (reference “no day”), “almost every day” was 1.83 times more likely to suffer violence from an unknown person. Those who felt bothered by having little interest or did not

feel pleasure in doing things (reference “no day”), more than half of the days were 3.43 times more likely to suffer violence from an unknown person.

The older person who felt bad about themselves, thinking they were a failure or thinking they had let their family down (reference “no day”), in “less than half of the days” were 3.87 times more likely to suffer violence from a known person and in “almost every day”, 5.14 times more chances of this type of violence.

In the last block, after adjusting the variables with statistical significance from the previous blocks, those with physical disabilities, compared to those without, were 5.53 times more likely to suffer violence from an unknown person. Those who had little or no difficulty going out alone, using transport such as the bus, subway, taxi, car, etc. (reference “not able”) were 6.46 times more likely to suffer violence from an unknown person and 3.13 times more likely to suffer violence from a known person.

With regard to violence against older people, by Federation Unit, according to Figure 1, it was observed that the state with the highest rate was Amapá (7.1%), followed by Paraná (6.4%), Mato Grosso (6.2%), Amazonas (5.9%) and Rio Grande do Norte (5.0%). While the lowest rates of violence against older people were in Pernambuco (2.4%), Piauí (2.3%), Minas Gerais (2.0%), Rio de Janeiro (1.6%), Bahia (1.4%) and Paraíba (1.1%).

Violence by unknown person was considerably higher than by known person in Mato Grosso (4.7%), Amazonas (3.8%), Rondônia (3.0%), Roraima (2.9%), Federal District (2.6%), São Paulo (2.2%), Alagoas (1.9%) and Bahia (1.1%). By known person was considerably higher in Rio Grande do Norte (3.2%), Tocantins (3.0%), Santa Catarina (2.6%), Pará (2.4%) and Espírito Santo (2.1%). In the other states, the types of violence were similar.

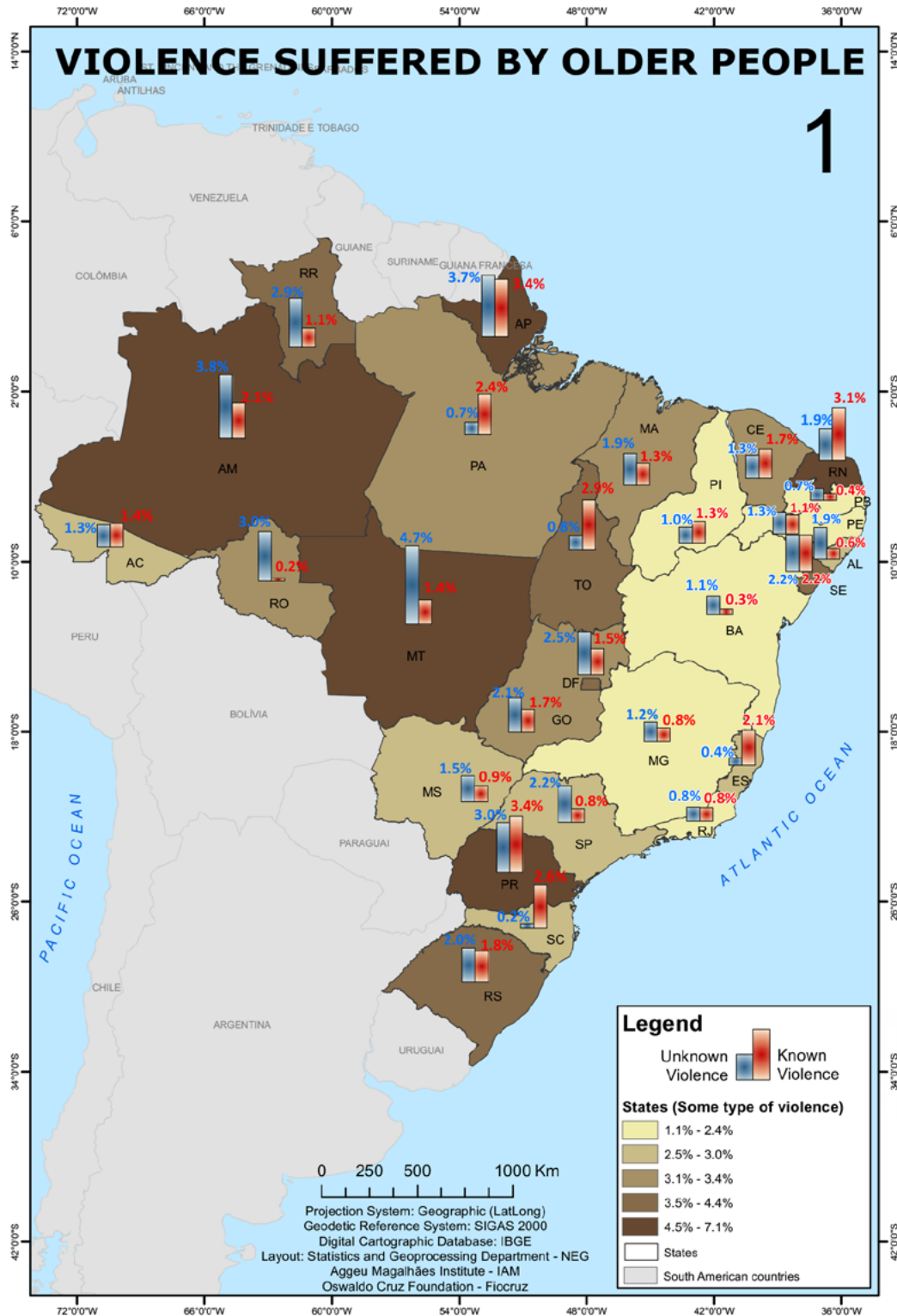


Figure 1. Map of violence against older people in Brazil. Brazil, 2013.

DISCUSSION

These results constitute a collaboration for the recognition of violence at the national level, through them, the violence perpetrated by known and unknown family members and their associated factors are evidenced. Such findings were based on questions about having suffered violence from an unknown person, that is, who are not part of their coexistence, such as bandits, police officers, robbers, etc. Or if they suffered violence from a known person, such as a father, mother, child, spouse, partner, boyfriend, friend, neighbor in the last 12 months.

As a result, there was a divergence of this study in relation to research carried out in Mexico and Korea, given that in these countries most cases of violence were perpetrated by members of the family. In Brazil, most cases of violence were committed by unknown persons. This finding suggests that in Brazil the high rates of social violence reflect on the older population and make them more susceptible victims^{17,18}.

Color or race, age, knowing how to read and write, health assessment, smoking, discrimination in the health service, depressive symptoms, physical disability and degree of difficulty going out alone seem to explain the differences in the type, frequency and place of violence against older people. In this sense, it is necessary to increase knowledge about the dynamics of the social determinants of violence.

Regarding race/color, white older people were more likely to suffer violence from an unknown person compared to black people. The fact that white people historically have better living and employment conditions makes them more functionally independent for basic and instrumental daily activities, leading to greater exposure to external causes of violence. Additionally, this group has greater purchasing power, which makes it a more attractive victim¹⁸.

The yellow and indigenous people were less likely to suffer violence from a known person, which can be explained by the unity and respect for elders in the indigenous tribes. Corroborating this thought, a study carried out with indigenous people of the Guarani-Mbyá ethnic group demonstrated that older people

in the tribe are important for organizational decision-making, policies, protection and implementation of the rights and duties of the community. In addition to transmitting traditions, they are respected for the life experience they have¹⁹.

The younger the individual and the less difficulty he has going out alone, the more independent he will be to take walks, have a more active social life. As a result, they become more exposed compared to the oldest, who are often unable to go out unaccompanied due to the natural limitations of aging. In addition, it is known that it is common for a person with compromised health to demand greater care from relatives or close people and, therefore, they are more likely to be abused by family members^{3,18}.

Descriptive study with a qualitative approach, carried out with older people in the northwest of Rio Grande do Sul, showed that between 60-69 years old, it is common that the functional capacity is not compromised by the aging process, consequently they interact with more people and have greater decision-making power, thereby decreasing the chances of being targets of abuse²⁰. In addition, there is a high level of violence reported in this age group, which can be justified by the autonomy of life, greater demand for health services or protection services for older people, thus allowing greater detection and investigation of cases of violence, which justifies the findings³.

It is suggested that those who can read and write are more empowered, due to access to education, in some cases, better income and quality of life, which makes them more exposed to violence by unknown persons. As well as improving the reporting of violence, denunciation and notification³. However, according to Gil et al.²¹, older people who have no schooling are more likely to report violence, those with ten years or more of schooling are 60% less likely to make a complaint.

While Miya Chang¹⁷ stated in her research that those who have less years of education are more vulnerable and at greater risk of violence, however by a known person. This fact can perhaps be explained because domestic violence can often happen due to a historical naturalization in the social context where the older people live. In addition to dependence, fear

of retaliation or abandonment and the embarrassment that older people have to denounce their own spouses, children, nephews or other close people¹⁰.

Older people who use tobacco were more likely to suffer violence from a known person. According to Zaitune²², there is an association between older smokers and self-reported depression/anxiety. Regarding smoking cessation, people who did not suffer physical violence had a 67% greater chance of quitting smoking²³. It is not possible to infer whether older people suffer more violence because they are smokers or whether they are smokers as a result of the violence suffered, due to the cross-sectional nature of the study.

Discrimination in the health service, or in any environment, can be classified as psychological violence. This type of violence is characterized by verbal or gestural offense, to terrify, humiliate or exclude from social life²⁴. All this can lead to low demand for health services in cases of violence.

The health service can also be the locus of reproduction of institutional violence, as it favors the repetition of violent behaviors in the treatment and care of the older people. This type of violence is understood to mean that practiced in health services, through actions or omissions, namely, from lack of access to rights to poor quality of services, such as lack of attention, respect, consideration of popular knowledge, discrimination, unnecessary queues, among others²⁵.

Ignorance of the aging process, combined with prejudice, can lead to violent acts such as those mentioned above, in addition to mistakes in prescriptions for medications, exams and diets. So the health professional does not recognize it as a practice of violence due to the naturalization of these processes in daily practice²⁵. Therefore, according to Ruela-Gonzalez¹⁶, the low demand for health services in cases of violence may explain the underreporting and low prevalence of these cases in health systems, making it essential to investigate the factors associated with the underutilization of health services after an event of violence or abuse.

Regarding the block "State of health/disease", the questions are similar to those contained in the Beck-

II Depression Inventory (BDI-II)²⁶. The BDI-II was adapted to the Brazilian population by Gorenstein, Pang, Argimon and Werlang in 2011 and measures the severity of depressive symptoms and can be applied to different samples^{27,28}.

Therefore, through the questions contained in that block, symptoms of depression were associated with violence, coinciding with other studies. The more intense the symptoms, the more chances of violence¹⁶. A systematic review found that the diagnosis of depression was a risk factor found in almost all types of violence, but could not infer whether older people suffered violence because they were depressed or whether they acquired these depressive symptoms due to the mistreatment suffered, since most of the studies were cross-sectional and therefore suspend causality⁰³. The importance of screening for depressive symptoms in the older people is evident, in order to prevent abuse, through interventions according to risk factors.

Those with physical disabilities were more likely to suffer violence from an unknown person. Disability generates an additional limitation to those typical of aging, increasing vulnerability and exposure to violence, as it reduces the power of defense and makes victims more susceptible. In addition, it is also in line with ageism, discrimination can generate violence when the older people have some type of disability that takes them away from a standard of normality that society attributes, as well as dependence for locomotion and lack of accessibility also make them more exposed to violence⁹.

With regard to violence against older people by Federation Unit, it was observed that the states with the most violence against older people were Amapá, Paraná, Mato Grosso, Amazonas and Rio Grande do Norte. While Pernambuco, Piauí, Minas Gerais, Rio de Janeiro, Bahia and Paraíba had the lowest rates of violence against older people.

While the homicide rate/100,000 inhabitants by Federation Unit in 2016 showed the following: Sergipe (64.7), Alagoas (54.2), Rio Grande do Norte (53.4), Pará (50.8), Amapá (48.7), Pernambuco (47.3), Bahia (46.9), Goiás (45.3), Acre (44.4) and Ceará (40.6), with 6 states in the Northeast region, 3 in the North region and 1 in the Midwest²⁹.

As a methodological limitation, this study presented intrinsic restrictions to studies that use secondary databases, namely: the researcher cannot interfere in the questionnaire that was used, the studied variables were pre-established; the objectives of the primary research were different from the current research and prevented new information from being acquired; long questionnaires, such as those applied in the PNS, can generate memory bias, in which the participant forgets or loses the will to report past events.

Furthermore, violence was not asked by type (physical, psychological, sexual, abandonment, neglect, financial or economic, self-neglect, medication, emotional or social). Only the term violence was used, which may have been associated only with physical violence; and finally, the fear of talking about violence to unknown people (interviewers), which certainly led to underreporting.

It has been shown that the confinement generated by COVID-19 increased the levels of stress, anxiety and depression in the population³⁰. In addition, for the older person with cognitive impairment, quarantine with a family member was recommended to avoid acute confusion or delirium in the older person and contamination by caregivers³¹. According to the newspaper “O Globo”³², during this period there was an increase of almost 600% in reports of violence registered on the “Dial 100”. The absence of specific policies aimed at this public in order to face the impacts of the pandemic enhances the feeling of abandonment and indicates negligence on the part of the public power towards this population, characterizing structural violence.

Despite the time limitation of this study, with data from almost 10 years ago, knowing the violence in 2013 will become a baseline for comparison with data from 2019, since at the time of conclusion of the study, data from the PNS 2019 were not yet available. Associated with new studies related to the increase in violence due to the COVID-19 pandemic.

However, despite the limitations common to the methodological design, this study deals with an essential contribution to the field of violence against older people in the Brazilian population, with

emphasis on the type of aggressor, generating the possibility of a new look at the theme and serving as an instrument for planning and institutions of actions and public policies for the prevention of violence. Therefore, there is a need to train health professionals to detect, notify and actively search for the older people and aggressors, in order to stop violent practices, which are often interpreted as an acceptable pattern of relationships.

CONCLUSION

It was evident that being white, being < 68 years old, declaring knowing how to read, suffering discrimination in the health service due to some type of illness, having sleep problems almost every day, having no interest or pleasure in doing things, having a physical disability or a small degree of difficulty going out alone, using transportation such as the bus, subway, taxi, car were risk factors for aggression by a known person.

While those who assessed their health as very bad or poor, use tobacco, suffered discrimination in the health service due to illness, religion/belief, or who felt bad about themselves, feeling like a failure or disappointing their family were risk factors for violence by an unknown person.

Estimating the prevalence of violence against older people, the type of aggressor, as well as associated factors, is essential for identifying and preventing individual, institutional and structural abuse. Additional research on this topic is recommended, with a focus on social determinants that may use different methodologies, considering the sociocultural, economic and health context of this population.

Also noteworthy is the encouragement of public policies and strategies in families and communities to prevent violence against older people, based on a culture of respect for human rights and the participation of multiple actors in the social process of improving the well-being of these people in family and in society.

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Hospital discharge and multidisciplinary guidelines for elderly patients with COVID-19: integrative review

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Abstract

Objective: to search for available scientific evidence on multidisciplinary guidelines offered by health professionals to older patients diagnosed with COVID-19 after hospital discharge. **Method:** an integrative literature review was carried out on the databases/virtual library selected: Lilacs, MEDLINE/Pubmed, Scopus and CINAHL (EBSCO). The search strategy involved use of combinations with the following Health Science Descriptors (DeCS) and Medical Subject Headings (Mesh): Elderly (Aged); Covid-19; Aftercare and Patient Discharge combined using Boolean operators “AND” and “OR”. **Results:** relevant articles published between January 2019 and January 2022 were identified, of which four were retrieved for inclusion and analysis. The selected studies addressed the theme of continuity of care with the perspective of intervention in health rehabilitation and symptom management and/or supervision of the functional recovery of older patients, with guidelines devised by an interprofessional team. **Conclusion:** the study revealed the scarcity of publications on the topic of guidance provided by health care teams to older patients from the perspective of hospital discharge. The study also served to highlight the importance and need for future scientific output addressing the functional impact of COVID-19 on this population, from hospital admission to post-discharge at home, supported by strategic actions or institutional protocols that disseminate educational information preparing patients for hospital discharge and promoting self-care, well-being and quality of life of older people.

Keywords: Elderly. Patient discharge. COVID-19. Health Education.

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INTRODUCTION

COVID-19 is a disease that presents in a number of ways, ranging from asymptomatic to highly severe cases, where older people and individuals with pre-existing disease are particularly vulnerable. Some complications secondary to the disease can be significant and prolonged, affecting different organs and systems (cardiopulmonary, neurological, musculoskeletal, gastrointestinal and psychosocial). These complications often mean the patient requires a process of functional rehabilitation or provision of continued care in the home setting after hospital discharge to manage clinical and functional needs of COVID survivors^{1,2}.

Following acute infection, the main problems reported by older COVID-19 survivors include decline in quality of life, due to persistent symptoms involving functional impairment that confer dependence, in addition to physical, cognitive, mental and social dysfunctions. These outcomes corroborate the need for post-discharge care for patients hospitalized with severe forms of the disease³.

Multi-disciplinary monitoring is vital to promote good progress, with the aim of restoring quality of life of patients impacted by COVID-19. The World Health Organization notes that the multi-systemic nature of the disease means an interprofessional team may be needed to manage the recovery of patients, through personalized evidence-based rehabilitation as a strategy to restore functional capacity⁴.

The Brazilian Ministry of Health stipulates that rehabilitation services and their interprofessional teams should support users infected by COVID-19 and presenting functional deficits in the post-acute period. They should also embrace the demand of preparing patients for hospital discharge, coordinate complex cases, and ensure continuity of healthcare treatment⁵. However, hospital services face difficulties establishing protocols and/or basic instruments which integrate systematized information from the multidisciplinary health team, toward health prevention, promotion or maintenance, related to instructions on continued care for discharged patients after returning home.

The process of hospital discharge represent a point when patients and family members are most frail regarding understanding and processing information provided by the health team, and when it is sometimes unclear to them why the patient is being sent home while still suffering the effects of COVID-19. In this context, the interprofessional hospital team has the key goal of establishing a dialog based on trained listening, involving technical approaches to ensure self-care strategies post-discharge^{6,7}.

Therefore, given the limitations of hospital management and challenges faced, where it is unclear whether home-based support can monitor the patient properly amid the need to provide continued care, health teams must seek to optimize the hospital discharge processes and their follow-up and decide on the optimal timing for discharge in terms of greatest stability and support for the patient and their caregivers⁸.

This scenario prompted the present integrative review of the scientific literature, to help health professionals provide structured discharge of older patients infected by COVID-19, aimed at mapping the available scientific evidence on multidisciplinary guidance offered by health professionals for older COVID-19 patients after hospital discharge.

METHOD

An integrative review was conducted based on defined stages, adopting a strategy for identifying, assessing and analyzing the existing evidence in the relevant literature on the topic, with a view to incorporating these findings into professional clinical practice. The stages were: defining the guiding research question; search strategy using health sciences descriptors; defining of inclusion and exclusion criteria with literature search, designating the information to be extracted from studies and assessment of those included; interpretation of results and synthesis of data obtained⁹.

In the first stage of the study, the following guiding research question was proposed: *“What is the main multi-professional guidance offered to older patients diagnosed with COVID-19 following hospital discharge?”*

With the aim of identifying studies and documents with different types of methodological design, a search strategy was devised based on descriptors and key words in line with the purpose of the review, for application to relevant databases in health area. Boolean operators (OR, AND) were used to combine terms and perform the search. A single search strategy was developed and adapted for each information source (databases and virtual libraries), altering these as necessary. The databases and virtual library selected for searching were the Latin American and Caribbean Literature in Health Sciences - LILACS, the Medical Literature Analysis and Retrieval System Online - MEDLINE/Pubmed, Scopus and the Cumulative Index to Nursing and Allied Health Literature - CINAHL (EBSCO).

The search was conducted by combining terms from the Health Sciences Descriptors (DeCS) and Medical Subject Headings (MESH) databases: Idoso (*Aged*); COVID-19; Cuidados Posteriores (*Aftercare*) and Alta do Paciente (*Patient Discharge*) combined using Boolean operators “AND”/“OR” (Chart 1).

The inclusion criteria of articles selected in this study were: primary studies investigating preparations for hospital discharge of older patients diagnosed with COVID-19, published in English, Portuguese and Spanish between 2019 and 2022, answering the pre-defined guiding research question, and whose full text versions were available online. This search period was elected because it represents the time window from the initial outbreak of the COVID-19 pandemic (2019) to its “less aggressive” phase (2022).

Studies on the topic, but not addressing the guiding research question, were excluded, as were duplicates, reviews, letters, editorials, news, books and chapters, as well as articles not available in full. In order to ensure methodological rigor, the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) recommendations were used (PRISMA, 2020), involving the following steps for organizing studies: identification, screening (entailing the process of article selection according to the pre-defined eligibility criteria), and inclusion¹⁰.

Chart 1. Data sources and records retrieved (1,806) on multi-disciplinary guidance offered to older patients with COVID-19 after hospital discharge. João Pessoa, Paraíba, Brazil, 2022.

Databases/ Virtual libraries	Search terms	Results
LILACS	("Patient Discharge" OR "Patient Discharges" OR "Discharge Planning" OR aftercare OR "After Care" OR "After Treatment" OR "After Treatments" OR "Follow Up Care" OR "Discharge Plannings" OR "Alta do Paciente" OR "Alta Hospitalar" OR "Alta do Hospital" OR "Planejamento da Alta" OR "Alta del Paciente" OR "Alta Hospitalaria" OR "Alta de Paciente" OR "Alta del Hospital" OR "Planificación del Alta" OR "Salida del Paciente" OR "Assistência ao Convalescente" OR "Assistência de Seguimento" OR "Assistência do Seguimento" OR "Atendimento de Seguimento" OR "Atendimento do Seguimento" OR "Cuidado de Seguimento" OR "Cuidados de Seguimento" OR "Seguimento Assistencial" OR "Cuidados Posteriores" OR "Cuidado de Seguimento" OR "Cuidado del Convaleciente" OR seguimiento) AND ("COVID-19" OR "covid 19" OR "COVID19" OR "SARS-CoV-2" OR "sars cov 2" OR "Novel Coronavirus" OR "2019 nCoV" OR "Novo Coronavírus" OR "Nuevo Coronavirus") AND (aged OR elderly OR "80 and over" OR "Oldest Old" OR nonagenarian OR nonagenarians OR octogenarians OR octogenarian OR centenarians OR centenarian OR geriatric OR "Middle Aged" OR "Middle Age" OR idoso OR idosos OR idosa OR idosas OR "Pessoa de Idade" OR "Pessoas de Idade" OR anciano OR ancianos OR "Adulto Mayor" OR "Persona Mayor" OR "Persona de Edad" OR "Personas Mayores" OR "Personas de Edad" OR "Idoso de 80 Anos ou mais" OR centenarios OR nonagenarios OR octogenarios OR velhíssimos OR "Anciano de 80 o más Años" OR viejísimos OR geriátrico OR geriátricos OR geriátrica OR geriátricas OR "Meia Idade" OR "Mediana Edad") AND (db:("LILACS"))	49

to be continued

Continuation of Chart 1

Databases/ Virtual libraries	Search terms	Results
Medline/Pubmed	("Patient Discharge"[MeSH Terms] OR "Patient Discharge"[All Fields] OR "Patient Discharges"[All Fields] OR "Discharge Planning"[All Fields] OR "Aftercare"[MeSH Terms] OR "Aftercare"[All Fields] OR "After Care"[All Fields] OR "After Treatment"[All Fields] OR "After Treatments"[All Fields] OR "Follow Up Care"[All Fields] AND ("COVID-19"[Mesh] OR "covid-19"[All Fields] OR "covid 19"[All Fields] OR "COVID19"[All Fields] OR "SARS-CoV-2"[Mesh] OR "SARS-CoV-2" OR "SARS CoV 2" OR "Novel Coronavirus" OR "2019 nCoV") AND ("Aged"[MeSH Terms] OR "Aged"[All Fields] OR "Elderly"[All Fields] OR "aged, 80 and over"[MeSH Terms] OR "80 and over"[All Fields] OR "Oldest Old"[All Fields] OR "Nonagenarian"[All Fields] OR "Nonagenarians"[All Fields] OR "Octogenarians"[All Fields] OR "Octogenarian"[All Fields] OR "Centenarians"[All Fields] OR "Centenarian"[All Fields] OR "geriatric"[All Fields] OR "Middle Aged"[Mesh] OR "Middle Aged" OR "Middle Age")	893
Scopus	TITLE-ABS-KEY("Patient Discharge" OR "Patient Discharges" OR "Discharge Planning" OR Aftercare OR "After Care" OR "After Treatment" OR "After Treatments" OR "Follow Up Care" OR "Discharge Plannings") AND TITLE-ABS-KEY("COVID-19" OR "covid 19" OR "COVID19" OR "SARS-CoV-2" OR "sars cov 2" OR "Novel Coronavirus" OR "2019 nCoV") AND TITLE-ABS-KEY(Aged OR Elderly OR "80 and over" OR "Oldest Old" OR Nonagenarian OR Nonagenarians OR Octogenarians OR Octogenarian OR Centenarians OR Centenarian OR geriatric OR "Middle Aged" OR "Middle Age")	704
CINAHL (EBSCO)	("Patient Discharge" OR "Patient Discharges" OR "Discharge Planning" OR Aftercare OR "After Care" OR "After Treatment" OR "After Treatments" OR "Follow Up Care" OR "Discharge Plannings") AND ("COVID-19" OR "covid 19" OR "COVID19" OR "SARS-CoV-2" OR "sars cov 2" OR "Novel Coronavirus" OR "2019 nCoV") AND (Aged OR Elderly OR "80 and over" OR "Oldest Old" OR Nonagenarian OR Nonagenarians OR Octogenarians OR Octogenarian OR Centenarians OR Centenarian OR geriatric OR "Middle Aged" OR "Middle Age")	160

The protocol containing these descriptors, databases of the virtual library and number of texts retrieved on the databases, was previously registered on the online repository *Figshare*, available with open access at DOI: <https://doi.org/10.6084/m9.figshare.19294298.v1>.

The results of the searches were exported to EndNote, a citations manager to organize and identify duplicate articles for removal⁹, a stage performed to ensure methodological rigor of the search. Subsequently, the studies were exported to the Rayyan¹¹ app for selection according to the exclusion and inclusion criteria defined, listing the respective reasons. During this stage, 2 experienced reviewers were recruited, having been provided with the necessary explanations on how to proceed by the first author. The file produced by the Rayyan app was then divided between this pair of reviewers who, working individually and independently, in a blinded fashion, critically assessed the criteria

and methods used in the studies identified in order to determine their methodological validity. Publications not meeting the eligibility criteria were excluded, while studies with potential for inclusion were retained, as per recommendations for this type of review^{12,13}.

The data from the search were analyzed using an online tool developed by the researchers (synthesis matrix), according to the instructions provided through a validated form¹⁴, adapted to the specificities of this review. The main parameters included study title, author, publication year, country, language, study objective, design type and methodological characteristics, population and principal results, to confer reliability to the present study.

After screening of the articles based on titles and abstracts, their eligibility was determined by in-depth reading of the full texts, as per recommendations for this type of review¹³. No changes were necessary in

as far as all texts were deemed eligible for inclusion in the final review. Any disagreements and doubts between the reviewers were discussed and resolved at a meeting with the first author until 90% concordance was reached among them. References obtained from the gray literature were considered solely for refining the discussion of the findings.

The quality of evidence of the studies reviewed was classified into levels based on the following guidelines: 1-evidence obtained by systematic review or meta-analysis; 2-derived from well-designed randomized controlled clinical trials; 3-obtained by well-designed non-randomized clinical trials; 4-obtained by well-designed cohort and case-control studies; 5-obtained by systematic review of descriptive qualitative studies; 6-originating from descriptive qualitative studies; and 7- from opinion of authorities and/or reports of expert committees¹⁵.

Methodological quality was ensured by using the standardized critical appraisal tool Checklist for Prevalence Studies of the Joanna Briggs Institute (JBI)¹⁶ for measuring the level of quality of the studies included in this review, comprising 9 questions applied independently by the reviewers.

The results of this study are expressed descriptively and in table form (synthesis chart) according to its objective. The characteristics of the studies, principle results and limitations were highlighted, in addition to the possibility of guiding future investigations. Thus, a descriptive summary of the tabulated results was also produced.

RESULTS

A total of 1,806 records were identified (January 2019 to January 2022) from the sources of data previously outlined in the Methods section. After exclusion of duplicates and selection of studies based on title and abstract, 171 were analyzed in full, of which only 4 were included in the final review, having

met the pre-defined inclusion criteria (Figure 1). Of the initial 1,806 studies identified, 49 were found on LILACS, 893 on Medline/Pubmed, 704 on Scopus and 160 on CINAHL (EBSCO).

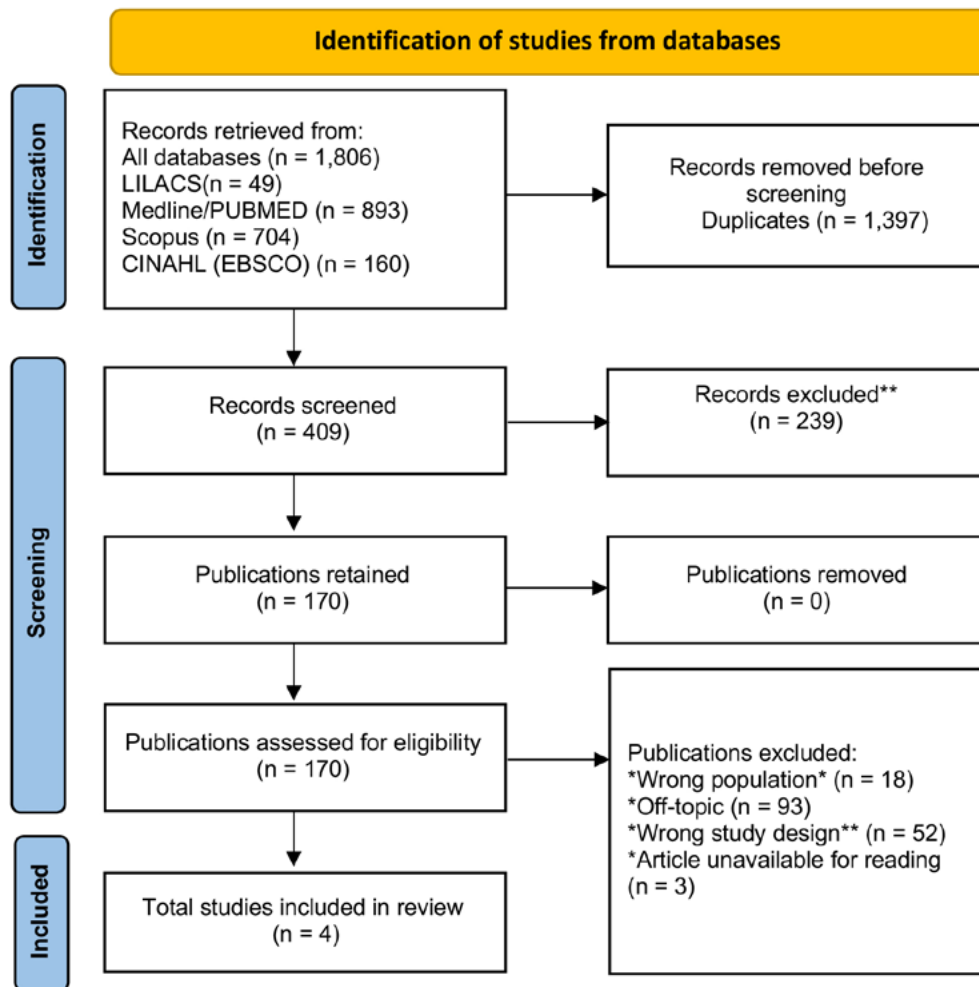
Results revealed that most of the articles published and included in this integrative review pertained to a recent timeframe in the literature, predominantly published between 2021 and 2022 during the pandemic outbreak. The studies were conducted internationally, mostly on the Asian continent (50%), with a predominance of studies in the area of physiotherapy (50%). The target population were older patients diagnosed with COVID-19 and thus, aged 60 years or over; the professional guidance provided to patients was mostly in verbal form (75%), whereas discharge instructions tended to be in written form (25%).

The type of methodological approach employed in the studies reviewed were a Randomized Clinically Controlled Trial (25%), a Descriptive Observational Study (25%), a Case Study (25%), and a Retrospective study of Medical Records (25%).

For level of evidence of the studies reviewed, 1 article (25%) (A1) was classified as level 2 – a randomized clinical trial, while the remaining studies (75%) (A2, A3 and A4) were descriptive and classified as level 6.

Regarding the results of the methodological quality analysis using the tool by the Joanna Briggs Institute (JBI), the assessment of the studies included in this review are presented in Chart 2, where A1 and A3 were rated as having “MODERATE”, while A2 and A4 were deemed as “HIGH” methodological quality.

The characteristics of publications reviewed (Chart 3) include article, title and database in which study was published, the authors and year of publication, method design type, country of origin, objective, and principal results.



*Wrong population defined as studies not including individuals aged ≥ 60 years and who were previously hospitalized for COVID-19; **Wrong study design defined as reviews of available scientific literature, whether systematic, meta-analyses or integrative.

Figure 1. Flow diagram of selection process of articles on multi-disciplinary guidance offered to older patients with COVID-19 after hospital discharge. João Pessoa, Paraíba, Brazil, 2022.

		Methodological Quality – JBI (Joanna Briggs Institute)									
		Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Score
Articles	Nambi G, et al. ¹⁷	●	●	●	●	●	●	●	●	●	Moderate
	Gootenberg DB, et al. ¹⁸	●	●	●	●	●	●	●	●	●	High
	Saeki T, et al. ¹⁹	●	●	●	●	●	●	●	●	●	Moderate
	Loerinc LB, et al. ²⁰	●	●	●	●	●	●	●	●	●	High

Q1: Was the sample frame appropriate to address the target population?
 Q2: Were study participants sampled in an appropriate way?
 Q3: Was the sample size adequate?
 Q4: Were the study subjects and the setting described in detail?
 Q5: Was the data analysis conducted with sufficient coverage of the identified sample?
 Q6: Were valid methods used for the identification of the condition?
 Q7: Was the condition measured in a standard, reliable way for all participants?
 Q8: Was there appropriate statistical analysis?
 Q9: Was the response rate adequate, and if not, was the low response rate managed appropriately?

Classification
 ● Yes
 ● No
 ● Unclear

Chart 2. Characteristics of the methodological quality of publications included in the integrative review on multi-disciplinary guidance to older patients with COVID-19 following hospital discharge. – João Pessoa, Paraíba, Brazil, 2022.

Chart 3. Characteristics of publications included in integrative review on multi-disciplinary guidance to older patients with COVID-19 at hospital discharge – João Pessoa, Paraíba, Brazil, 2022.

Identifier of study	Title / Authors/ Databases	Method / Country / Year of Publication	Objective	Principal Results
A1	<i>Comparative effectiveness study of low versus high-intensity aerobic training with resistance training in community-dwelling older men with post-covid-19 sarcopenia: A randomized controlled trial /</i> Nambi G, Abdelbasset WK, Alrawaili SM, Elsayed SH, Verma A, Vellaiyan A, Saleh AK. / MEDLINE/Pubmed	Randomized controlled trial / Saudi Arabia / 2022	To find and compare the clinical and psychological effects of low and high-intensity aerobic training combined with resistance training in community-dwelling older men with post-COVID-19 sarcopenia symptoms.	All participants (n=38) had post-COVID-19 sarcopenia and received resistance training to improve clinical and psychological measures; they were randomized into two groups: low-intensity aerobic training group and high-intensity aerobic training group. Low-intensity aerobic training exercises are more effective in improving the clinical (muscle strength) and psychological (kinesiophobia and quality of life) measures than high-intensity aerobic training in men with post-COVID 19 sarcopenia.
A2	<i>Developing a pulse oximetry home monitoring protocol for patients suspected with covid-19 after emergency department discharge /</i> Gootenberg DB, Kurtzman N, O'Mara T, Jennifer YG, Chiu D, Shapiro NI, Dagan A. / MEDLINE/Pubmed	Prospective observational study / United States of America(USA) / 2021	to assess feasibility and describe a protocol for ED-based outpatient pulse-oximetry monitoring with structured follow-up and to determine rates of ED return, hospitalisation and hypoxia among participants.	The patients (n=76) used instructions at home for self-referral to the ED at a higher rate than direct referral during phone call checkin.
A3	<i>Long-Term Decreased Exercise Capacity of covid-19 Patients Who Received Mechanical Ventilation in Japan: A Case Series /</i> Saeki T, Ogawa F, Matsumiya M, Yamamura M, Oritsu H, Nonogaki M, Nakamura T. / MEDLINE/Pubmed	Case study / Japan/ 2021	To observe the long-term exercise capacity of patients who received mechanical ventilation due to COVID-19–associated ARDS (Acute Respiratory Distress Syndrome)	After hospital discharge, patients (n=4) were advised to engage in home exercises, such as walking, lower-limb muscle strength training using a closed kinetic chain, upper-limb strength training using the Thera-Band (Hygenic Akron,OH), and balance training.

to be continued

Continuation of Chart 3

Identifier of study	Title / Authors / Databases	Method / Country / Year of Publication	Objective	Principal Results
A4	<i>Discharge characteristics and care transitions of hospitalized patients with covid-19 /</i> Loerinc LB, Scheel AM, Evans ST, Shabto JM, O'Keefe GA, O'Keefe JB. / MEDLINE/Pubmed	Retrospective review of medical records/ United States of America (USA) / 2021	To describe the demographics, baseline comorbidities,	Despite high levels of electrolyte abnormalities and Acute Kidney Injury (AKI) during admission, only 31 patients out of a total 52 were advised and instructed to perform follow-up bloodwork. -The majority of patients (225, 72.6%) had documented advice to continue isolation at discharge, but only 56 (18.1%) patients had documentation of specific instructions on the duration of isolation, most often 14 days from discharge (median 14 days, range: 3–14).

After full reading of the articles selected, common themes emerged which were elected in 2 categories and pooled to focus interpretations of the review: “Older patients with persistent symptoms recruited in local hospitals to provide continuity of the care process through rehabilitation” and “Management of symptoms and/or supervision of functional recovery”.

DISCUSSION

Continuity of the care process through rehabilitation

Sarcopenia and COVID-19 appear to be predictors of worse prognosis in the older population at large²². Intervention programs for older individuals are important, where physiotherapy can prevent complications due to frailty and diminished functional capacity which arose during the lockdown period amid the pandemic²³. Moreover, physical activity throughout the life span can promote mitochondrial health in all tissues and represents an effective countermeasure against sarcopenia²¹.

In Saudi Arabia, study A1, investigating sarcopenia and physical dysfunction in older men impacted by COVID-19 lock downs or admitted to hospital, found that these individuals needed to engage in regular low-intensity exercise to obtain best functional outcomes, including quality of life¹⁷.

Continuity of the care process through a rehabilitation approach with low-intensity training proved a key care management strategy for these individuals left frail post-discharge or after lockdown. Also, the study underscores the importance of establishing instructions for performing physiotherapy exercises properly under direction.

In Japan, sarcopenia was considered a risk factor for infection by Sars-Cov-2 in older people and individuals with chronic non-communicable diseases, and also exacerbated the chances of severe COVID-19 involving cytokine storms and respiratory insufficiency²⁴.

In Spain, sarcopenia, besides being considered a clinical condition associated with COVID-19 affecting hospitalized older patients with acute or chronic infection, also posed a high risk of mortality and nutritional deficit in this group²⁵.

The main health advice in follow-up rehabilitative physiotherapy reported in study A1 included low-intensity aerobic exercises given by a trained physiotherapist, with proper COVID-19 guidelines. Sessions started with warm-ups, including static stretching of upper and lower limb muscles. Subsequently participants engaged in low-intensity aerobic exercises, including treadmill and cycle

ergometer, followed with resistance training and gentle stretching of all major muscles¹⁷.

Articles A1 and A3 provided guidance on physiotherapeutic rehabilitation as a form of continued care for older patients with COVID-19 post-discharge. Complementary studies show that physiotherapists play a key role in combatting the disease by promoting recovery of functional capacity and the respiratory system, and the process of management in health care networks^{17,19,26,27}.

Besides these specialists, other health professionals have been important in combatting COVID-19 in the area of in-patient hospital care, such as occupational therapists enhancing functional occupational performance with independence/autonomy, preparing patients for discharge and reintegration into the community²⁸; psychologists with intervention strategies during and after hospital stays, as well as psychological support for patients and family members²⁹; speech-language therapists with recommendations and education on vocal hygiene, recovery from dysphagia and dysphonia, guidance on tracheostomy, prevention of broncho aspiration and adaptation to food consistencies^{30,31}, in addition to physicians and nurses in caring for patients infected with the disease.

With respect to post-COVID-19 follow-up needs, in a Japanese study on care delivered to older patients, a pulmonary physiotherapy rehabilitation protocol was devised with guidance on home-based exercises following hospital discharge, such as walking, training, lower-limb muscle strength training using a closed kinetic chain, upper-limb strength training using the Thera-Band, and balance training.

Among the articles reviewed on post-discharge rehabilitation and physiotherapy advice, there was a lack of reporting of type of methodology adopted at the time of offering this guidance, such as health education tools for use by patients. To this end, one potential post-discharge monitoring strategy for guiding patients constitutes the use of printed copies or plan of rehabilitation via smartphone for tele-monitoring and tele-support, including pre-recorded videos of exercises based on early intervention^{18,32}.

Along the same lines of disease rehabilitation post-discharge, a study published in Singapore showed that the physiotherapy team provided customized care, including printed materials on exercises to be performed at home independently. The main guidance given included: walking and climbing stairs; range of motion exercises; limb strengthening exercises; energy conservation, stimulation, planning and prioritizing activities; diaphragm respiration exercises; and walking aids and emergency contacts¹⁹.

Even when treatment at a rehabilitation service is required, technical health care advice is still needed during the period between the return home and seeking of a specialist rehabilitation service in the health care network, to provide continued self-care treatment to promote quality of life and well-being of older people with prolonged symptoms, even after hospital discharge.

The scientific findings on deficits in physical functioning of older adults after COVID-19 validate the recommendations to refer survivors for individualized multi-component evaluation¹, aimed at identifying clinical needs remedied through health education to promote and maintain health and, whenever possible, to remove or reduce the need for prolonged rehabilitation interventions.

Management of symptoms and/or supervision of functional recovery

Regarding effective strategies for monitoring COVID-19 patients, a North-American study suggested that out-patient pulse oximetry can potentially help in the challenge of monitoring patients with COVID-19 after discharge, and advise them to return for treatment when necessary. The key factors that enabled successful monitoring of patients were: a multidisciplinary protocol involving ED physician, technician, nurse and electronic health record; effective follow-up instructions and phone calls; and health system communication with patient, ED physician and primary care physician¹⁸. Data from study A2¹⁸ led to instructions for self-referral to the ED, providing patients with monitoring and follow-up of respiratory function based on oximetry,

besides giving written instructions on identifying hypoxia and on using the device (oximeter), with a document attached to the patient's discharge packet.

Such monitoring is seldom workable in Brazil, since the vast majority of visits take place under the National Health System (SUS) for patients that typically cannot afford to purchase these devices.

Around 80% of patients reported more severe cognitive impairments associated with the degree of pulmonary dysfunction over the long term, respiratory symptoms, suggesting a possible link to restricted delivery of oxygen to the brain³⁰. Cognitive sequelae (73% at discharge, 46% at 1 year and 47% at 2 years after discharge) indicate that severe cases of the disease associated with acute respiratory distress syndrome (ARDS) may negatively impact cognitive performance of survivors over the long term³³.

One of the strengths of the North-American study (A2¹⁸) is the preparation of physicians, ED technicians and nurses to monitor symptoms, even if sporadically, and the written strategy of instructions with a health education approach based on self-care by the patient to identify the limits of COVID-19 sequela.

Many patients requiring hospital care for the disease had persistent symptoms, even 110 days after discharge, including fatigue (55%), dyspnea (42%), memory loss (34%), concentration problems and sleep disturbances (28% and 30.8%, respectively), requiring long-term follow-up and supervision, besides rehabilitation programs³⁴.

Prolonged symptoms were found in studies conducted in France³⁵, Turkey³⁶, the United Kingdom³⁷, the United States³⁸ and Brazil³⁹ showing that post-discharge, patients still had respiratory, cardiological, psychological, emotional and social problems.

A strong predictor of the need for follow-up, both for patients who were hospitalized and those discharged home directly from the ED, was older age. Multidisciplinary follow-up of these patients proved crucial to prevent late symptoms⁴⁰. These findings are consistent with the results of study A2¹⁸, whose participants had a median age of 51.7 years,

with regard to patients with COVID-19 that required closer monitoring and guidance post-discharge.

A significant contingent of COVID-19 survivors presented factors of functional disability and psychological disorders, such as anxiety at discharge⁴¹. The risk persisted and the data corroborates the need for following up patients after discharge for continued care, with the use of protocols to assess them, preventing complications of COVID-19, besides providing the necessary resources to optimize home-based care⁴².

The study performed in Georgia (A4), exploring post-discharge care transitions of hospitalized patients with COVID-19 and reporting hospital information with data compiled from charts and care plans, revealed that little is known about the follow-up healthcare needs of patients hospitalized COVID-19 after hospital discharge.²⁰ In Brazil, a similar study recommended an interprofessional team approach with deployment of preventive measures, rehabilitation techniques clinical management strategies to address the care and quality of life of patients⁴³.

The results of the North-American study showed that 75 patients (24.2%) required some home service at discharge, including care provided by physiotherapists or occupational therapists (13,5%), nursing (5,2%) and home oxygen therapy (41,13.2%)⁴⁴. Patients with memory loss, mental confusion or cognitive impairment can be referred for neurology care, physiotherapy and occupational therapy or for ENT and speech-language therapy in cases of dysphagia⁴⁵. These results highlight the importance of coordinated efforts by an interprofessional team, with interventions and technical approaches centering on holistic health care for patients recovering from COVID-19 complications.

Regarding cognitive impairment, a Brazilian study showed that occupational therapists have developed educational material for prevention and management of *delirium* in patients with COVID-19 in the hospital setting⁴⁶. In another investigation⁴⁷, severe neurological disorders, such as *delirium*, encephalopathy and altered mental state were associated with the need for continued rehabilitation.

In the A4 study, the majority of patients (72.6%) had documented advice to continue isolation at discharge, but only 18.1% received specific instructions on the duration of isolation. Despite high levels of electrolyte abnormalities and Acute Kidney Injury during admission, only 31 patients were advised and instructed to perform follow-up bloodwork^{20,48}.

After discharge, patients recovering from COVID-19 should remain under lockdown conditions and stay alert to rest, nutrition, body temperature and infection prevention, besides undergoing routine control blood tests to detect Sars-Cov-2 and, when necessary, reassessment with a chest CT scan⁴⁶.

If these patients attain a level of clinical stability in the hospital setting, the medical teams should decide on the timing of discharge home. However, upon returning home patients often fail to understand or recognize the significance of persistent symptoms sufficiently to seek health services for reassessment⁴⁹. There is a dearth of publications exploring the capacity of patients to appreciate their own health care process, identify their actual needs after discharge from hospital for COVID-19, and also grasp the instructions and directions given on managing persistent symptoms in order to postpone the need for rehabilitative intervention.

This review showed that Asian countries had the highest scientific output (50% of publications) of studies on the topic. Bibliometric indicators reveal that many studies on the prevention and control of COVID-19 were conducted in China, contributing valuable data to inform health care practices worldwide, having become the epicenter of the pandemic⁴⁷⁻⁴⁹.

Of the four articles¹⁷⁻²⁰ analyzed in this review, all addressed the subject of continued care post-discharge. Concerning the question of multidisciplinary guidance and its methodology, it is clear there are no concerted efforts to incorporate this type of approach into interventions, but rather to ensure follow-up involving supervised rehabilitation of functional deficits.

Based on the articles analyzed on the topic, a limitation was evident in the conception of methodologically robust studies with higher levels of scientific evidence to inform interprofessional teams in the hospital setting on the use of intervention strategies centered on health prevention, promotion and maintenance, favoring broader, safer and effective self-care.

The study has some limitations, including the lack of scientific output with materials and information on the topic investigated, revealing a gap in knowledge on hospital care and health education strategies aimed at interprofessional planning of the discharge of older patients with COVID-19. However, the study adds to the knowledge in the field, underscoring the importance of the topic and indicating the need for further contributions in theory and practice toward novel responses/solutions to address the problems seen in older patients post-COVID-19 after discharge.

CONCLUSION

The main publications covered in this review addressed care continuity through interventions involving rehabilitation and symptoms management and/or overseeing functional recovery, with guidance provided by multi-professional teams.

AUTHOR CONTRIBUTIONS

- Wendy Chrystyan Medeiros de Sousa – Project Administration, Formal Analysis, Conceptualization, Data Curation, Manuscript Writing – First draft, Manuscript Writing – Review and Editing, Investigation, Methodology, Resources, Supervision, Validation and Visualization.
- Renata Clecia Neves Leite – Formal Analysis, Data Curation, Manuscript Writing – First draft, Manuscript Writing – Review and Editing, Methodology, Validation and Visualization.
- Renata Gomes Barreto – Manuscript Writing – First Draft, Manuscript Writing - Review and Editing.

- Cícera Patrícia Daniel Montenegro – Manuscript Writing – First draft, Manuscript Writing – Review and Editing.
- Fábio de Souza Terra – Manuscript Writing - Review and Editing, Methodology.
- Maria Lúcia do Carmo Cruz Robazzi – Project Administration, Formal Analysis, Conceptualization, Manuscript Writing - First Draft, Manuscript Writing – Review and Editing, and Visualization.

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