Association between functionality and knowledge, attitudes, and practices of COVID-19 prevention in the older people

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Abstract

Objective: To analyze the association between functionality and knowledge, attitudes, and practices of COVID-19 prevention in the elderly population of Recife, Pernambuco, Brazil. *Method*: A cross-sectional study with remote data collection conducted between June and September 2020, involving 144 elderly individuals of both sexes who were served at COVID-19 reference points in eight districts. The dependent variable, knowledge, attitudes, and practices related to COVID-19 prevention, collected through the CAP Survey, was constructed using Latent Class Analysis. The primary independent variable was functionality in Instrumental Activities of Daily Living, collected through the Lawton and Brody scale. Data analysis utilized chi-square tests and multiple multinomial logistic regression analysis, with a significance level of 5%. *Results*: The majority of the participants, 44%, exhibited regular knowledge and attitudes with good COVID-19 prevention practices. Independent participants had 4.26 times greater odds (95% CI: 1.46; 12.38) of possessing excellent knowledge, attitudes, and prevention practices for the disease. Those with higher levels of education had 3.89 times greater odds (95% CI: 1.16; 12.99) of having excellent knowledge, attitudes, and practices compared to those with no education. Both comparisons considered a 95% confidence interval. *Conclusion*: COVID-19 prevention was influenced by functionality, indicating that greater functional independence led to better prevention among the elderly. This understanding directs public policies and actions aimed at the importance of disease prevention in the elderly population, as well as promoting healthy aging.

Keywords: Aged. COVID-19. Disease prevention. Functional status.

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INTRODUCTION

Coronavirus Disease 2019 (COVID-19) is an infectious disease caused by the Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2), transmitted through respiratory droplets from infected individuals. It can present as asymptomatic initially, eventually progressing to more severe manifestations of the illness[1].

Advanced age is associated with an increased vulnerability to infectious diseases, and in the elderly population, the risk of the disease being fatal is higher. In April 2021, 69.3% of the deaths occurred in individuals aged 60 and above. Consequently, given the significant worsening of the disease within this demographic, elderly individuals were included in the high-risk group[2-4].

The World Health Organization (WHO) recommended general protective measures against COVID-19 to curb the rapid spread of the virus. These measures included frequent handwashing, maintaining social distancing, avoiding touching the eyes, nose, and mouth, practicing respiratory etiquette, wearing face masks, and staying at home[5].

The combination of self-care prevention measures and confinement strategies proved effective in reducing the risk of COVID-19 transmission. However, both physical and social environments underwent abrupt changes. An environment with limited stimuli can lead to isolation, especially in the elderly population, which may result in alterations in functional capacity[6,7].

The term "functionality" refers to the presence of autonomy and independence, allowing an individual to take care of themselves and manage various aspects of their life. Autonomy entails the capacity to make decisions, considering cognitive and motivational factors, while independence involves the ability to perform tasks, taking into account issues of mobility and communication[8].

According to the WHO[2], functional capacity encompasses the ability to meet basic needs, the capacity to learn, grow, and make decisions, mobility, the ability to build and maintain relationships, and the ability to contribute. The decline in functionality with aging can lead to reduced mobility, increased social isolation, and a decrease in the quality of life[9,10].

Functional capacity in elderly individuals reflects their dependency in performing Activities of Daily Living (ADLs) and Instrumental Activities of Daily Living (IADLs), which are essential for autonomy. Dependency in these activities can influence a negative perception of overall health[11].

The Decade of Healthy Aging (2021-2030) is focused on promoting health, preventing diseases, maintaining intrinsic capacity, and enabling functional ability, with the goal of encouraging countries to enhance the well-being of the elderly population. In contrast to the concept of healthy aging, the pandemic-related protection recommendations have compelled elderly individuals to alter their daily routines, requiring them to stay at home and rely on support networks[2,12,13].

It is possible to investigate the behaviors of a specific population and identify potential pathways for intervention using the *Inquérito Conhecimentos, Atitudes e Prática (CAP)* – Knowledge, Attitudes, and Practices Survey –, which operates on the premise that health behavior begins with knowledge acquisition and may explain attitudes and the adoption of health practices, adapting to different contexts. In this study, the CAP Survey was developed by the research team and comprised semi-structured questions. Knowledge was considered adequate when the individual demonstrated an understanding of the disease, attitudes were assessed based on the acknowledgment of the importance of following preventive measures, and practices were confirmed when the participant reported engaging in COVID-19 prevention measures[14,15].

The concepts of knowledge, attitudes, and practices were employed based on previous studies using the CAP Survey. As demonstrated in the findings of Oliveira et al.[15], the tool proves to be valuable for health intervention planning and evaluation. The various methodological approaches to conducting the survey highlight the absence of a singular standardized pattern.

In the era of promoting active aging, the elderly population found themselves facing the COVID-19

pandemic, a situation that runs contrary to the principles of active aging. The pandemic has promoted social isolation, which contributes to a decline in an individual's functionality and, consequently, results in a decrease in their overall quality of life.

Therefore, researching and assessing the relationship between functionality and knowledge, attitudes, and practices related to COVID-19 prevention allows us to understand the actual functional impairments that the disease can impose on the elderly. This also helps in identifying potential preventive measures that can be utilized by this population to minimize the impact of the disease on their well-being.

In light of this context, the objective of this research was to analyze the association between functionality and the knowledge, attitudes, and practices of COVID-19 prevention in the elderly population of Recife, Pernambuco, Brazil.

METHOD

This is a cross-sectional study, part of a larger study titled "Teleconsultation for the Prevention and Control of Elderly Health in the Face of the COVID-19 Pandemic." Teleconsultants were provided with a list containing the elderly individuals served at COVID-19 reference points and contacted them until the list was exhausted. Details of the methodological approach can be found in the article referenced[16]. The research was conducted in accordance with Resolution Nº. 466/2012 and Resolution Nº. 510/2016 and received approval from the Research Ethics Committee involving human subjects, with approval number 4,089,705.

The study included individuals aged 60 years or older of both sexes who were served at COVID-19 reference centers distributed across the eight districts in the city of Recife, Pernambuco, Brazil, and who had access to a mobile phone and the internet. Exclusions were made for those without access to a phone and the internet and for individuals who answered "yes" to the third question in the cognitive assessment (Is forgetfulness preventing you from performing any daily activity?).

The study was conducted using a non-probabilistic sample. The researchers received a list of elderly individuals served at COVID-19 reference centers in the municipality. However, a substantial number of individuals declined to participate when contacted by phone. Consequently, the lists were exhausted during the recruitment of participants.

Data collection was conducted remotely from June to September 2020 using the Microsoft Teams platform through Google Forms. The platform complies with the HIPAA protocol, ensuring the confidentiality of information, and was made available by the *Núcleo Estadual de Telessaúde* of the Pernambuco State Health Department, along with technical support for training, management, and application handling. The Informed Consent Form (ICF) was electronically signed after the participant's acceptance, with both forms filled out by teleconsultants, consisting of multidisciplinary teams of professionals with higher education qualifications.

For the epidemiological survey, semi-structured research instruments were used, including a questionnaire about knowledge, attitudes, and practices related to COVID-19 prevention, based on the CAP Survey, which served as the foundation for COVID-19 prevention and control measures. Additionally, the survey encompassed functional capacity for IADLs (Lawton and Brody Scale) and a sociodemographic questionnaire.

The dependent variable was knowledge, attitudes, and practices (CAP) related to COVID-19 prevention, constructed from primary variables derived from the CAP Survey (Chart 1), developed by the authors using the Latent Class Analysis (LCA) method. As per Moreira[3], this statistical procedure aims to group individuals based on similar response patterns modeled with covariates. Consequently, it creates classes with greater intra-class homogeneity and inter-class heterogeneity. Nine indicator variables were considered: three related to knowledge, one related to attitudes, and five related to prevention practices. These variables were consolidated into the variable "knowledge, attitudes, and practices of COVID-19 prevention."

Chart 1. Primary dependent variables, indicators of latent classes, Recife, Pernambuco, 2020.

Variable	Definition	Categorization
Knowledge about the disease caused by the Coronavirus.	Understanding the disease (often interpreted as medical conditions associated with specific symptoms and signs).	(1) Yes (2) No
Knowledge about recommendations to prevent the disease caused by the Coronavirus.	Perceiving, understanding, or knowing a set of measures or advance preparation (of something) aimed at preventing (harm).	(1) Below median (2) Above median
Knowledge about the symptoms caused by the Coronavirus disease.	Perceiving, recognizing the most frequent symptoms of COVID-19.	(1) Below Median (2) Above Median
Understanding the usefulness of recommendations for preventing the disease caused by the Coronavirus.	Knows the importance of following advance measures to prevent something.	(1) Yes (2) No
Frequency of performing recommendations to prevent the disease caused by the Coronavirus.	Frequency of carrying out advance measures to prevent COVID-19.	(1) Always (2) Frequently (3) Sometimes (4) Rarely (5) Never
Frequency of handwashing recommendation compliance.	Frequency of handwashing as a preventive measure for COVID-19.	(1) Always (2) Frequently (3) Sometimes (4) Rarely (5) Never
Frequency of covering the nose and mouth when coughing or sneezing.	Frequency of covering the nose and mouth when coughing or sneezing as a preventive measure for COVID-19.	(1) Always (2) Frequently (3) Sometimes (4) Rarely (5) Never
Frequency of leaving home.	Frequency of leaving home.	(1) Always (2) Frequently (3) Sometimes (4) Rarely (5) Never
Use of a mask when leaving home.	Wearing a mask when leaving home as an advance measure to prevent disease.	(1) Yes (2) No (3) Other

Source: Authors (2020)

The latent class model identifies the number of classes that best define the object of study according to statistical criteria, such as entropy, which represents the probability of an individual being perfectly classified in a particular latent class. The closer the entropy value is to one, the better the model[3].

Other criteria such as the Akaike Information Criterion (AIC), Bayesian Information Criterion (BIC), and adjusted BIC were used to assess model fit, with lower values indicating better fit when comparing the current model to the previous one. In the analysis, lower values indicate a more suitable model[3].

To assess the evolution of the test model, likelihood ratio tests such as Vuong, Lo, Mendell, Rubin and Parametric Bootstrapped tests were utilized. A significance level of $p<0.05$ was considered statistically significant. These tests were used to determine if the chosen number of classes provides a better model fit compared to the number of classes in the previous model[3].

The main independent variable was the Lawton and Brody Scale, which has been analyzed for reliability and adapted to the Brazilian context. It assesses the performance of seven items related to

IADLs and classifies the elderly person as dependent, semi-dependent, or independent. Secondary independent variables used for model adjustment and potential confounding control included demographic and socioeconomic variables[9].

In the statistical analysis, the presence of an association between the independent variables and the dependent variable was investigated using the chi-square test at a significance level of 5%. Standardized Residual Analysis was conducted to explore the association between pairs of categories of the dependent and independent variables. This analysis allowed for the comparison of characteristic patterns within each category. Residuals (standardized differences between observed and expected counts) resulted in either an excess or a lack of occurrence. Values with a positive excess count exceeding 1.96 were considered statistically significant at a one-tailed significance level of 2.5%, as this involved examining excess occurrences only.

The measures of effect for the factors studied on the dependent variable were expressed as Odds Ratios (OR) and calculated through multiple multinomial logistic regression models. Variables with chi-square test p-values less than 0.25 were included in the multiple model. A significance level of 0.05 was considered for drawing conclusions from the findings.

DATA AVAILABILITY

All the data supporting the results of this study is available upon request to the corresponding author, Vanessa de Lima Silva.

RESULTS

A total of 629 elderly individuals were contacted, out of which 332 did not meet the inclusion criteria (use of a cellphone and the internet or responded "no" to the third question in the cognitive assessment), 125 refused to participate, and 172 agreed to participate. Among those who agreed to participate, 27 withdrew, and one elderly individual was excluded during analysis due to a single response to one of the questions. This resulted in a final sample of 144 elderly individuals. In the studied sample, the majority (75%) were functionally independent for IADLs, with ages ranging from 60 to 69 years (77.1%), mostly female (72%), of mixed race (55.6%), and married (41%). The primary source of income for most (63.9%) came from retirement, social benefits, or pensions, as opposed to formal or informal employment. The majority of families (44.4%) had a household income between 1.1 and 2.9 minimum wages, with the elderly person and another family member (47.9%) being responsible for the income. Regarding occupation, 36.8% worked in service provision, while an equal percentage was either unemployed, retired, or without occupation. The majority of elderly individuals were literate (87%) and had completed nine to eleven years of education (29.2%).

The CAP COVID-19 prevention classes of the participants were identified using a test of five latent class analysis models. To choose the most appropriate number of classes for the model with the best fit, parameters including AIC (Akaike Information Criterion), BIC (Bayesian Information Criterion), Adjusted BIC, Entropy and the statistical significance of LRT tests - Vuong-Lo-Mendell-Rubin, LRT Lo-Mendell-Rubin, and LRT Parametric Bootstrapped were used. It was determined that the model with three latent classes was the most suitable. Despite not having the best BIC, entropy, and LRT (Parametric Bootstrapped) values, it presented significant AIC, Adjusted BIC, Vuong-Lo-Mendell-Rubin (LRT), and Lo-Mendell-Rubin (LRT) values, demonstrating a greater number of statistically established criteria and better parsimony.

The three classes were named according to the responses to the nine primary questions in the CAP COVID-19 prevention questionnaire (Figure 1).

The classes were named based on three response patterns: Class one was named "excellent knowledge, attitudes, and practices," where more than 90% had knowledge of the coronavirus, the usefulness of preventive measures, and practiced them. Class two was named "good knowledge and attitudes, with regular practices," with a significant portion having knowledge of the coronavirus, but only about half of the people knew about preventive measures and practiced them. Class three was

named "regular knowledge and attitudes with good practices" because, despite people in this class having knowledge of the coronavirus and understanding the importance of prevention, none of them could provide a way to prevent it. About 68% practiced handwashing and covering their nose and mouth, and few left home and used masks when doing so.

It was observed that 44% of the respondents had regular knowledge and attitudes with good practices regarding COVID-19 prevention. This was followed by 37% of the participants with excellent knowledge, attitudes, and practices, and 19% who had good knowledge and attitudes with regular practices.

The association between functionality for IADLs and CAP COVID-19 prevention showed statistical significance in the simple analysis. In this analysis, it was also possible to identify the variables of family income and education associated with the knowledge, attitudes, and practices of the research participants (Table 1).

In the standardized residuals analysis, it was identified that there is a concentration of independent elderly individuals in the class of excellent knowledge, attitudes, and practices. Dependent elderly individuals, on the other hand, were concentrated in the class of regular knowledge and attitudes with good practices. Regarding family income, elderly individuals with incomes ranging from 1.1 to 2.9 minimum wages concentrated in the class of excellent knowledge, attitudes, and practices, while those with family income >3 minimum wages were in the class of good knowledge and attitudes with regular practices. Participants with 5 to 8 years of education were more present in the class of excellent knowledge, attitudes, and practices (Table 1).

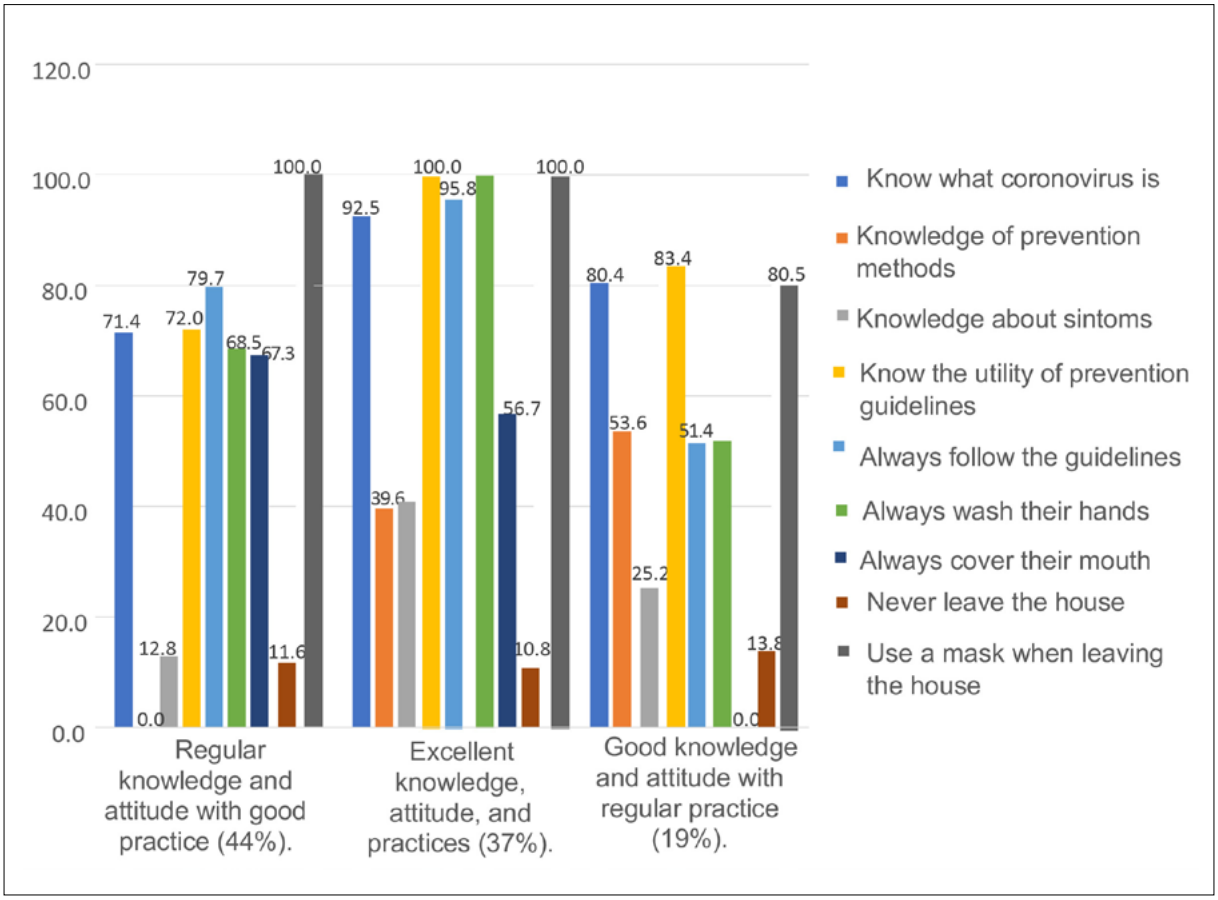

Figure 1. Probabilities of belonging to each latent class according to the considered appropriate response for evaluating knowledge, attitudes, and practices of COVID-19 prevention, Recife, Pernambuco, 2020.

Source: Authors (2020).

Table 1. Distribution of the elderly and the results of the simple analysis of the association between functionality, sociodemographic variables, and knowledge, attitudes, and practices of COVID-19 prevention, Recife, Pernambuco, 2020.

Variables	CAP (Latent Class)				
		Excellent Knowledge Attitudes and Practices	Good Knowledge and Attitudes with Regular Practices	Regular Knowledge and Attitudes with Good Practices	
	n (%)	n (%)	n (%)	n (%)	P
Functionality					
Independent	107 (74.3)	45 (84.9)**	21 (77.8)	41 (64.1)	0.033*
Dependent/Semi-dependent	37 (25.7)	08 (15.1)	06 (22.2)	23 (35.9)**	
Sociodemographic					
Age group					
60 to 69 years	111 (77.1)	41 (77.4)	23 (85.2)	47 (73.4)	0.475
70 years or more	33 (22.9)	12 (22.6)	04 (14.8)	17 (26.6)	
Sex					
Male	40 (27.8)	13 (24.5)	10 (37.0)	17 (26.6)	0.477
Female	104 (72.2)	40 (75.5)	17 (63.0)	47 (73.4)	
Race/Ethnicity					
White	28 (19.4)	08 (15.1)	08 (29.6)	12 (18.8)	0.806
Black	25 (17.4)	11 (20.8)	03 (11.1)	11 (17.2)	
Brown	80 (55.6)	30 (56.6)	14 (51.9)	36 (56.3)	
Yellow/Indigenous	11 (07.6)	04 (07.5)	02 (07.4)	05 (07.8)	
Marital Status					
Married	59 (41.0)	26 (49.1)	11 (40.7)	22 (34.4)	0.586
Judicially Separated/Divorced	24 (16.7)	09 (17.0)	06 (22.2)	09 (14.1)	
Widowed	35 (24.3)	10 (18.9)	06 (22.2)	19 (29.7)	
Single	26 (18.1)	08 (15.1)	04 (14.8)	14 (21.9)	
Main Source of Income					
Formal/Informal Work	38 (26.4)	12 (22.6)	09 (33.3)	17 (26.6)	0.866
Retirement/Social Benefit/Pension	92 (63.9)	36 (67.9)	15 (55.6)	41 (64.1)	
Other/Third Party	14 (9.7)	05 (9.4)	03 (11.1)	06 (9.4)	
Family Income					
<1 MW /1 MW	45 (31.3)	14 (26.4)	9 (33.3)	22 (34.4)	0.017*
From 1.1 to 2.9 MW	64 (44.4)	32 (60.4)**	7 (25.9)	25 (39.1)	
>3 MW (minimum wages)	35 (24.3)	7 (13.2)	11 (40.7)**	17 (26.6)	
Responsible for Family Income					
Elderly person and another family member	69 (47.9)	29 (54.7)	11 (40.7)	29 (45.3)	0.737
Only another family member	19 (13.2)	7 (13.2)	04 (14.8)	08 (12.5)	
Only the elderly person	56 (38.9)	17 (13.2)	12 (44.4)	27 (42.2)	
Occupation					
No Occupation/Unemployed/Retired	38 (26.4)	21 (39.6)	11 (40.7)	21 (32.8)	0.495
Homemaker/Volunteer work		16 (30.2)	04 (14.8)	18 (28.1)	
Service Provider	53 (36.8)	16 (30.2)	12 (44.4)	25 (39.1)	

to be continued

Continuation of Table 2

Variables	CAP (Latent Class)				
	n (%)	Excellent Knowledge Attitudes and Practices n (%)	Good Knowledge and Attitudes with Regular Practices n (%)	Regular Knowledge and Attitudes with Good Practices n (%)	P
Literacy					
Yes	126 (87.5)	49 (92.5)	22 (81.5)	55 (85.9)	0.329
No	18 (12.5)	04 (7.5)	05 (18.5)	09 (14.1)	
Education Level					
Higher (12 years or more)	34 (23.6)	10 (18.9)	10 (37.0)	14 (21.9)	0.054*
Middle School (5 to 8 years)	30 (20.8)	17 (32.1)**	05 (18.5)	08 (12.5)	
Technical or Teacher Training (9 to 11 years)	42 (29.2)	16 (30.2)	04 (14.8)	22 (34.3)	
Illiterate (no schooling)/ Primary School (1 to 4 years)	38 (26.4)	10 (18.9)	08 (29.6)	20 (31.3)	

Source: Authors (2020); n (number of older adults); p <0.05; *Chi-square test; **Standardized residuals >1.96.

The variables of functionality for IADL, family income, and education were included in the multiple analysis. In the final model, functionality and education remained significantly associated with knowledge, attitudes, and practices for the prevention of COVID-19. Independent individuals for IADL presented 4.26 (95% CI 1.46; 12.38) times more likely to have excellent knowledge, attitudes, and practices for COVID-19 prevention when compared to dependent individuals. Participants who studied for five to eight years presented 3.89 (95% CI 1.16; 12.99) times more likely to have excellent knowledge, attitudes, and practices for COVID-19 prevention when compared to those who never studied or studied for one to four years (Table 2).

Table 2. Multivariate analysis of the association between functionality and knowledge, attitudes, and prevention practices of COVID-19 in the elderly, Recife, Pernambuco, 2020.

	Excellent knowledge, attitudes, and practices				Good knowledge and attitudes with regular practices			
	OR*	ic95		p-value	OR	ic95		p-value
Functionality								
Dependent	4.26	1.46	12.38	**0.008***	2.42	0.74	7.92	0.14
Independent	1.00				1.00			
Education								
Higher (>12 years)	1.06	0.28	3.98	0.92	0.96	0.22	4.16	0.96
High School (5 to 8 years)	3.89	1.16	12.99	**0.02***	1.65	0.39	6.87	0.49
Scientific or Teaching (9 to 11 years)	0.93	0.30	2.85	0.90	0.32	0.07	1.42	0.13
Never Studied/ Elementary (1 to 4 years)	1.00				1.00			

Source: Authors (2020); *OR: Odds Ratio; IC: Confidence Interval.

DISCUSSION

COVID-19 prevention among the participants was found to be weak, as the majority fell into the category of regular knowledge and attitudes with good practices. Regarding functionality, most were considered independent in terms of IADLs, showing a higher chance of having excellent knowledge, attitudes, and practices for COVID-19 prevention compared to dependents. Education was also found to be associated with COVID-19 prevention.

Despite the present study representing elderly individuals at the beginning of the COVID-19 pandemic, a period when prevention guidelines were more intense, fragility in prevention among this population was identified. Souza Filho et al.17 observed that the behavior of most of their subjects demonstrated adherence to prevention measures but showed questionable knowledge about coronavirus information, which aligns with the class of regular knowledge and attitudes with good practices identified in the present study.

Batista et al.[18] demonstrated in their research that the majority of elderly individuals went out between one and two times a week for shopping, work, and bill payments. Older adults with multiple chronic conditions and advanced age left their homes for healthcare appointments, or they didn't go out at all. Those without underlying health conditions mentioned going out to meet friends or family. The elderly respondents reported always wearing masks and using hand sanitizer when leaving their homes.

Furthermore, regarding the prevention of COVID-19 among elderly individuals, Ygnations et al.[19] observed that there is a division into subgroups within this population, with those at higher risk of severe disease being more likely to adhere to preventive measures.

Therefore, the findings from the aforementioned studies support the findings of the current research regarding the profile of regular knowledge and attitudes with good preventive practices concerning COVID-19 in the elderly population.

Considering that the elderly population is the most vulnerable to acquiring COVID-19 and that they were subject to social distancing and isolation as one of the preventive measures for the disease is crucial for discussing COVID-19 prevention. However, it's important to highlight that there was a limitation in terms of the autonomy to come and go, affecting the entire context along with the sadness of losing loved ones and family distance, leading the elderly to the need to cope with social losses to face the new reality, requiring the challenge of creating strategies to readjust daily life[20,21].

Isolating and reducing the risk of contagion was of utmost importance. However, it is known that physical and social isolation for the elderly has public health implications, leading to an increased risk of cardiovascular diseases, autoimmune conditions, and mental health issues[22]. Comorbidities, losses, and the social distancing due to COVID-19 can be considered contributing factors to the fragility in adopting preventive measures for the disease among the elderly population.

Evaluating the functionality for ADLs, it was identified that more than half of the elderly participants were considered independent, which was also reported by Alexandrino et al.[23] and Sigrist, Oliveira and Fichman[24] in their research. In their studies, a significant portion of the participants did not exhibit a decline in functional capacity. They considered that functionality for ADLs is a health indicator in aging, reflecting the degree of independence in real-world activities.

In the present study, it was identified that functional independence for Activities of Daily Living (ADLs) was associated with the knowledge, attitudes, and practices of COVID-19 prevention in the elderly population. Elderly individuals who were functionally independent for ADLs had a better chance of having excellent knowledge, attitudes, and practices regarding COVID-19 prevention when compared to those who were functionally dependent for ADLs.

The knowledge, attitudes, and practices of COVID-19 prevention have shown to be a form of self-care for health. Understanding health as the capacity to adapt to physical, social, and emotional challenges, and self-care as an active role that individuals play in maintaining their own well-being[6].

Sun et al.[25] found in their research that the self-care ability of elderly people is positively correlated with their level of understanding of COVID-19. In other words, elderly individuals with a high self-care ability also have a better understanding of the disease. Therefore, it is important to enable the elderly population to comprehend the risks of COVID-19 so they can take preventive measures.

Relating independence to self-care practices, Vicente et al.[26] found that elderly individuals who were more independent in their ADLs were more likely to adhere to self-care practices. In other words, independence influences the adherence to self-care practices in the elderly population. Thus, the independence of elderly individuals is an important factor for self-care adherence, especially in the face of changes in daily activities imposed by diseases that require more autonomy from the individual. It's worth noting that the elderly individuals studied in their research had diabetes.

COVID-19 presents with characteristic and main symptoms such as cough, difficulty breathing, fever, and myalgia. However, as the disease worsens, complications can occur, including hypoxia, kidney failure, and infection. In some cases, ventilatory support, oxygenation, and medication treatment are required. It is known that the elderly population is more vulnerable to infection, making the maintenance of self-care important for this group. Elderly individuals who practice self-care can recognize symptoms and develop strategies to perform activities that promote better health and quality of life[27,28].

Therefore, the importance of self-care as a form of prevention of contagion and disease is evident, serving as one of the ways to control COVID-19. In this research, self-care can be considered as the forms of knowledge, attitudes, and practices for COVID-19 prevention. It is understood that the more independent the elderly individuals are, the higher their adherence to self-care practices. Consequently, greater independence is associated with better knowledge, attitudes, and practices for COVID-19 prevention among the elderly population.

Researchers have also found a relationship between functionality and self-perception of health, demonstrating that the more dependent an elderly person is, the more likely they are to have a negative assessment of their health. This is consistent with the findings of studies by Alexandrino[23], Lemes[11], and Fhon et al.[29], where functional capacity was considered a determinant of health in the elderly, and dependency could impact their health conditions and quality of life.

Therefore, functional independence can be considered a contributing factor to the elderly's adherence to COVID-19 prevention measures. The more independent they are, the better their perception of health, leading to greater knowledge and adherence to preventive guidelines in order to maintain good health.

Considering the educational background of the elderly participants in the study, the majority were literate and had studied for nine to eleven years. This differs from the studies conducted by Ygnations et al.[19], Barbosa and Sousa[10], and Manta, Souto and Ceballos[30], in which the majority of elderly participants had less than eight years of education, one to three years of schooling, and a basic education, respectively. This indicates that the population in this survey had a higher level of education compared to the studies mentioned.

Analyzing the association between years of education and knowledge, attitudes, and practices for COVID-19 prevention, it was found that elderly individuals who had studied for five to eight years had a better chance of having excellent knowledge, attitudes, and practices compared to those who had never studied or had studied for one to four years. This suggests that higher levels of education have a positive influence on the preventive practices of the elderly population for COVID-19.

The findings support the research by Tavares et al.[31] regarding the impact of low levels of education on negative health behavior. It's evident that elderly individuals with lower levels of education face difficulties in accessing and comprehending information, which hampers their knowledge and adherence to COVID-19 preventive measures.

The limitations of this study include the small number of participants, which can be attributed to the challenges of accessing elderly individuals during

the COVID-19 pandemic and difficulties in remote data collection. There was limited access to phones and the internet among the elderly population in Brazil. Remote data collection was the most feasible approach in the pandemic context, even though it posed its limitations.

Another limitation is the inability to establish causal inferences, which is inherent to cross-sectional designs and could lead to reverse causality in some associations. Nonetheless, this study contributes to expanding our understanding of the relationship between elderly individuals' functionality and COVID-19 prevention. This is an underexplored topic in the literature but of significant importance, as maintaining the functional independence of the elderly is also a way to prevent diseases.

CONCLUSION

Functionality for instrumental activities of daily living was associated with knowledge, attitudes, and prevention practices of COVID-19 in elderly individuals. The higher the functional independence, the better the COVID-19 prevention in the elderly population. COVID-19 prevention was identified as a form of self-care for the elderly population, influenced by functionality related to autonomy and independence.

The importance of conducting longitudinal studies on the influence of functionality in COVID-19 prevention in elderly individuals is emphasized. Knowledge of such associations is crucial for guiding public policies and actions aimed at preventing diseases in the elderly population, especially COVID-19. It is also important for promoting active and healthy aging. There is a need to encourage healthy and active aging, providing a greater possibility of functional independence in old age. It's equally important to consider actions for dependent elderly individuals since, in addition to their limitations, they are more susceptible to COVID-19.

AUTHORSHIP

- Aline S. de O. Silva – Writing the article; approval of the version to be published. Responsible for the work's aspects.
- Rafael da S. Moreira – Data analysis and interpretation.
- Amanda M. Pereira – Writing the article.
- Vanessa de L. Silva – Data conception, critical review, approval of the version to be published.

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