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RESEARCH ARTICLE

Factors associated with cognitive impairment in Latin American older adults: A cross-sectional observational study of COVID-19 confinement

Miguel Ramos-Henderson[1] | **Marcio Soto-Añari**[2] | **Jorge Herrera-Pino**[3] | **María F. Porto**[4,5] | **Loida Camargo**[6] | **Heike Hesse**[7] | **Robert Ferrel-Ortega †**[8] | **Cesar Quispe-Ayala**[9] | **Claudia García de la Cadena**[10] | **Neyda Mendoza-Ruvalcaba**[11] | **Nicole Caldichoury**[12] | **Cesar Castellanos**[13] | **Claudia Varón**[14] | **Dolores Aguilar**[9] | **Regulo Antezana**[9] | **Juan Martinez**[15] | **Norbel Román**[16] | **Carolina Boza**[16] | **Alejandro Ducassou**[17] | **Carol Saldías**[18] | **Norman López**[19]

[1]Centro de Investigación e Innovación en Gerontología Aplicada (CIGAP), Facultad de Salud, Universidad Santo Tomás, Antofagasta, Chile

[2]Departamento de Psicología, Universidad Católica San Pablo, Arequipa, Perú

[3]College of Medicine, Florida International University, Miami, Florida, USA

[4]Neuroscience Area, L'Institut d'Investigació Biomèdica de Bellvitge (IDIBELL), Barcelona, Spain

[5]Department of Cognition, Development and Educational Psychology, Universitat de Barcelona, Barcelona, Spain

[6]Facultad de Medicina, Departamento Médico, Grupo de investigación Neurociencia y Salud Global, Universidad de Cartagena, Cartagena de Indias, Colombia

[7]Observatorio COVID-19, Universidad Tecnológica Centroamericana, Tegucigalpa, Honduras

[8]Programa de Psicología, Facultad de Ciencias de la Salud, Universidad Magdalena, Santa Marta, Colombia

[9]Facultad de Derecho y Ciencias Políticas, Universidad Nacional de Huancavelica, Huancavelica, Perú

[10]Departamento de Neuropsicología, Facultad de Ciencias Sociales, Universidad del Valle de Guatemala, Guatemala City, Guatema

[11]Departamento de Ciencias de la Salud Enfermedad como Proceso Individual, Universidad de Guadalajara, Cutonala, México

[12]Departamento de Ciencias Sociales, Universidad de Los Lagos, Osorno, Chile

[13]Dirección ejecutiva, Instituto Dominicano para el Estudio de la Salud Integral y la Psicología Aplicada (IDESIP), Santo Domingo, República Dominicana

[14]Dirección ejecutiva, Fundación Acción Familiar Alzheimer Colombia-AFACOL, Bogotá, Colombia

[15]Departmet of Education, Universidad Ana G. Méndez, San Juan, Puerto Rico

[16]Centro de Investigación en Hematología y Trastornos Afines, Universidad de Costa Rica, San José, Costa Rica

[17]Vicerrectoría Regional y Escuela de Psicologia, Faculta de Medicina y Ciencias de la Salud, Universidad Mayor-Temuco, Temuco, Chile

[18]Facultad de Ciencias de la Salud, Universidad San Sebastián, Valdivia, Chile

[19]Departamento de Ciencias Sociales, Universidad de La Costa, Barranquilla, Colombia

Correspondence
Prof. Norman López, PhD, Full Professor, Universidad de La Costa, Calle 58 # 55—66, Barranquilla, Atlántico 080002, Colombia.
Email: nlopez17@cuc.edu.co

Abstract

INTRODUCTION: The effects of COVID-19 confinement have been severe, especially in older adults. Therefore, we analyzed the factors associated with cognitive impairment (CI) in Latin America (LA).

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METHODS: We conducted a cross-sectional observational study with a total of 5245 older adults from 10 countries in LA.

Measurement: We used the Telephone Montreal Cognitive Assessment (T-MoCA) and the Eight-item Informant Interview to Differentiate Aging and Dementia (AD8) scale.

RESULTS: We found that age, depressive symptomatology, bone fractures, being widowed, having a family member with dementia, and unemployment were associated with an increased risk of CI. In contrast, higher education, hypertension with continuous treatment, quarantine, and keeping stimulating cognitive and physical activities were associated with a lower probability of CI. No significant association was found between suffering from diabetes or being retired and CI.

DISCUSSION: It is essential to conduct follow-up studies on these factors, considering their relationship with CI and the duration of confinement.

KEYWORDS
cognitive impairment, confinement, COVID-19, Latin America, older adults

1 | INTRODUCTION

Since the beginning of the pandemic, the older elderly have been identified as a high-risk group, due to their weaker immune system response.[1] They frequently use health services, with high hospitalization rates[2] and a higher prevalence of co-morbidities. These factors increase the risk of mortality from a possible infection with COVID-19.[3] It is therefore normal that many health and recreational services were suspended, giving way to confinement, which increased isolation, loneliness, and stress.[4]

In older adults with cognitive impairment (CI), the effects of confinement have been more severe and alarming, as they have limited access to information[5] and to social and medical care. Such limitations have increased cognitive and neuropsychiatric symptomatology.[6] Unfortunately, this situation was more critical in Latin America (LA), due to the limited resources of the health-care systems and the late response of the authorities compared to the rest of the world.[7] Additionally, given the rapid aging trend of older adults in LA,[8] the projected prevalence of dementia in the population in 2050 has tripled.[9] Unlike in Europe and the United States, the onset of dementia in Latin American countries occurs at an early age, and mainly affects illiterate or less educated people.[10] This resulted in a pre-pandemic prevalence ranging from 7.1% to 11.5% in adults older than 60.[11] However, recent studies have revealed a significant increase in the prevalence of dementia during the COVID-19 pandemic, which reached 15.6%. This reflects a considerable variability depending on the country and is more associated with ethnicity and a lower level of education.[12]

The Lancet Commission has recently identified 12 modifiable risk factors for dementia across the life cycle that could reduce the number of cases by up to 40%.[13] Nevertheless, there are other factors associated with CI that have not been studied in LA, and which are relevant in the context of the pandemic. For example, there has been an increase in falls and bone fractures among the elderly,[14] as well as more older adults who became widowed due to COVID-19–related deaths,[15] bringing with it emotional alterations. In this respect, a 30.27% prevalence of depressive disorders among LA older adults during confinement has recently been reported.[16] Previous studies[17] have described that having a history of bone fractures is an independent risk factor for CI, along with depression and widowhood.[18]

On the other hand, high levels of idleness after retirement have been shown to increase the risk of CI,[19] while participation in cognitively stimulating activities has been shown to reduce the risk.[20] Last, while hypertension and diabetes are known risks for CI, there is evidence that appropriate pharmacological treatment may reduce this risk.[21] Therefore, considering that these factors have not been studied deeply in LA and that they may be liable to increase during the pandemic, the objective of this study was to analyze the factors associated with cognitive impairment in Latin American older adults.

2 | MATERIALS AND METHODS

2.1 | Design

A cross-sectional observational study was conducted in 10 countries: Argentina, Bolivia, Chile, Colombia, Dominican Republic, Ecuador, Guatemala, Mexico, Peru, and Venezuela during the SARS-Cov-2 pandemic in older adults (aged ≥60). Older adults receiving outpatient care in public and private clinics, as well as community centers, were invited to participate in the study. The following exclusion criteria were used: previous diagnosis of dementia or mild cognitive impairment, depressive or anxiety disorder during the period of confinement, hearing problems, or testing positive for SARS-Cov-2 infection. A total of 6350 subjects were initially assessed; however, 665 were excluded based

on the exclusion criteria. An additional 440 subjects were excluded because they provided incomplete data or did not have a relative or caregiver available for assessment. Details about the inclusion and exclusion criteria are described in Soto-Añari et al.[22] All participants gave written informed consent in accordance with the Declaration of Helsinki, using digital tools or face-to-face deferred consent. The study is part of the international multicenter project titled "Cognitive Telephone Screening Study of Latin American and Caribbean Elderly Adults." It was reviewed and approved by the ethics committee of the coordinating institution of the project, Universidad de la Costa (Act No. 080), Research Project Code: INV.140-02-003-15.

2.2 | Process

In April 2020, a group of Latin American researchers and clinicians was formed. Then, in April and May, a cognitive, functional, and depressive symptomology instrument was prepared and tested on 680 participants, with minor linguistic and cultural adaptation. The process for the assessment of participants and their relatives took approximately 45 minutes and was conducted by telephone. The assessments were conducted in two phases, from July to October 2020. Phase one was the screening stage that considered the cutoff scores of the Telephone Montreal Cognitive Assessment (T-MoCA)[23] and the Eight-item Informant Interview to Differentiate Aging and Dementia (AD8),[24] which was applied to a relative. In phase two, the presumptive diagnosis was reviewed and validated by neuropsychologists and neurologists at each center using the 2011 criteria of the National Institute on Aging (NIA) for cognitive impairment.

2.3 | Instruments

Assessors collected sociodemographic, clinical, and COVID-19 confinement data by telephone, which were entered into a Google form. Questions focused on age, years of formal education, sex, nationality, marital status, morbidity, occupation, and habits during the pandemic. We consulted about the quarantine and the day they began confinement, which varied by country, and the spread of the SARS-Cov-2 virus across the region. As for diseases, older adults were asked about their diagnosis of hypertension and diabetes using dichotomous questions (yes/no). If "yes," they were asked whether they were on stable pharmacological treatment through another dichotomous question (yes/no). Following this pattern, they were also asked whether they had a relative diagnosed with dementia, and whether they had experienced a bone fracture in the last year. Regarding occupation and habits, a dichotomous question (yes/no) was asked to inquire whether they were under quarantine at the time of assessment and whether they had a job or an unremunerated occupation. About cognitively stimulating activities, the following dichotomous question (yes/no) was asked: "Do you do any type of cognitively stimulating activity such as board games, sudoku, chess, word search, or crossword puzzles?" Similarly, to assess physical activity, the question was: "Do you currently engage in any type of physical activity at home, such as walking, jogging, stationary cycling, or aerobic exercise?"

The short form of the Yesavage Geriatric Depression Scale was used to assess mood. This scale has five questions that use a yes/no dichotomous answer aimed at finding depressive symptomatology and has been validated in Latin American countries.[25] For cognitive assessment, the short form of the T-MoCA (Mini-MoCA) was used.[23] This test has five items that provide for a telephone assessment of memory, verbal fluency, and orientation, and is widely used in the Latin American population.[26] Last, the AD8 scale was used for functional assessment.[24] It is made up of eight items that allow an informant to assess whether there have been changes in the functional aspects consulted. It is sensitive to CI and has been validated in Latin American populations.[27]

RESEARCH IN CONTEXT

1. **Systematic Review**: The prevalence of dementia is projected to triple in low- and middle-income countries such as in Latin America. There are other risk factors for dementia that have increased during the COVID-19 pandemic, in addition to population-attributable risk factors. Knowledge of these factors is important for early intervention in those who might be at increased risk for dementia.
2. **Interpretation**: This cross-sectional study, conducted on a large sample of Latin American older adults during the confinement associated with COVID-19, suggests that sociodemographic factors, habits, and past medical history (morbidity), as well as their adequate treatment, are associated with a greater or lesser risk of cognitive impairment.
3. **Future Directions**: It is important to identify those older adults who show factors associated with cognitive impairment and to conduct longitudinal studies that analyze the influence of these factors over time and after the COVID-19 confinement.

2.4 | Statistical analysis

Descriptive statistics were used for sociodemographic, clinical, cognitive performance, and functional status variables. The cutoff scores of the Mini-MoCA and AD8 tests were used to determine CI; that is, a positive CI corresponded to participants scoring < 11 points on the Mini-MoCA test and > 2 points on the AD8. Binomial logistic regression was used to determine the association of sociodemographic and clinical variables with CI. Analyses were performed using the SPSS 25 statistics software.

3 | RESULTS

3.1 | Sociodemographic characteristics, health, and quarantine days

Most subjects were women (66.1%), aged between 60 and 80 years (90.8%, range 60–94). Fifty percent of the participants had less than 12 years of education. Compared by country (Table 1), differences were observed in the prevalence of hypertension, diabetes, family members with dementia, bone fractures, unemployment, retirement, physical activity, cognitive activity, and days in quarantine. The most common pathology was hypertension, for which the majority reported stable pharmacological treatment (91.5%). The prevalence of dementia was 15.6%, with Bolivia showing the highest statistic, and Argentina the lowest. In terms of race, there was a predominance of mestizos and a low representation of indigenous people (2.2%).

3.2 | Factors associated with cognitive impairment

As shown in Table 2, older age and depressive symptomatology were associated with a higher risk of cognitive impairment. Likewise, being unemployed but not retired, having family members with dementia, being widowed, and having a history of bone fractures were risk factors for CI. On the other hand, having hypertension with stable pharmacological treatment, engaging in physical and cognitive activities, being a woman, and having undergone many days of quarantine, were associated with a lower risk of CI. No association was found between suffering from diabetes or being on unstable hypertension treatment and CI.

4 | DISCUSSION

The results show that a positive CI association was found in older subjects, with lower levels of education and no occupation. In contrast, engaging in cognitively stimulating activities and physical activities showed a negative association.

Although the prevalence of dementia in LA is similar to that of developed countries, a significant increase has been observed in relatively young subjects, which may be associated with a lower level of education, leading to an earlier onset of dementia symptoms.[28] Age indeed represents a risk factor, but the effect on cognition would be modulated by several variables. One of them is the level of education, which is a relevant factor in various studies.[29] In this regard, we found a higher level of education was associated with a lower risk of CI, thus confirming schooling as a factor of cognitive reserve.[30,31] Although years of schooling are a common way to assess the level of cognitive reserve, other authors[32] argue that more weight can be added if variables such as work complexity or level of occupation are included.[33]

In this sense, a positive association with CI was found in older adults who did not have an occupation or were inactive workwise, consistent with the idea that unemployment increases CI in older adults who are inactive.[19] But, in this study, only unemployment and not retirement were associated with a higher risk of CI. This can be explained by the fact that those who receive a pension maintain a more stable economic situation.[34] Involuntary job loss has been reported to significantly affect the mental health of older adults.[35] In turn, these periods of inactivity due to unforeseen causes predict cognitive decline.[36] It is important to consider this factor given that COVID-19 confinement disproportionately affected the elderly, resulting in unemployment rates of 15%.[37]

Furthermore, engaging in cognitively stimulating activities was found to be another variable modulating the risk of CI, as previously described.[20] It seems that the component associated with the interaction, participation in cognitively demanding and stimulating activities is a protective factor of cognitive health.[38] This has reinforced the idea that high levels of activity may be a protective factor against CI.[39] Nevertheless, it is worth mentioning that the pandemic has made places for social interaction among the elderly virtually inaccessible.[4] Therefore, measures should be taken to maintain levels of occupation and cognitive stimulation despite confinement.

We found that a history of bone fracture increased the risk of CI. In LA, the prevalence of bone fracture varies between 15% and 28% and shows a positive correlation with age.[40] A recent meta-analysis[41] reported a prevalence of bone fractures ranging from 3.5% to 46.5% in older adults in community settings. In this case, 29% of the participants reported having sustained a bone fracture in the last year, among whom a higher CI association was found. Some cohort studies suggest that a history of bone fracture represents an independent risk factor for dementia in people > 65 years of age[17] with evidence that a history of radius, hip, or spine fracture increases the risk of CI.[42] Recognizing that the elderly are at particularly high risk of suffering bone fractures,[43] it is important to pay attention to fracture prevention given their impact on cognition; the statistics of hip fractures among older adults have increased significantly during the pandemic,[14] especially among older adults living alone.[44]

Depressive symptomatology was found to have a positive association with CI, which has been amply demonstrated in previous studies.[45] Recent research has described higher executive dysfunction and functional impairment in Latin American seniors suffering from depression.[46] This condition accounts for 7% of the modifiable risk of dementia in this region.[47] In this sense, 21% of this sample corresponds to widowed older adults, among whom a positive CI association was observed. Previous meta-analytic studies[18] have concluded that widowed older adults have a 1.2 times higher risk of developing CI. In addition, recent reports show 30.27% of depressive disorders in older adults during confinement in LA, with being widowed one of the associated risk factors.[16] Therefore, we believe that attention should be paid to older adults and widowers, as COVID-19–related confinement has increased depressive symptomatology in these subjects.[48]

Recent evidence suggests that controlling hypertension and diabetes may reduce up to 17% of dementia cases in LA.[47] Although an association between hypertension and CI has been described,[49] the use of calcium channel blockers as a treatment has been proven to

TABLE 1 Descriptive data by country.

Frequency (%)/mean ± SD											
	Total	Argentina	Bolivia	Chile	Colombia	Ecuador	Guatemala	Mexico	Peru	Dom.Rep.	Venezuela
N	5245	511 (9.7)	565 (10.7)	472 (8.9)	712 (13.5)	436 (8.3)	340 (6.4)	648 (12.3)	601 (11.4)	384 (7.3)	576 (10.9)
Hypertension											
No	2879 (54.8)	230 (45.0)	368 (65.1)	230 (48.7)	378 (53.0)	228 (52.2)	210 (61.7)	360 (55.5)	417 (69.3)	188 (48.9)	270 (46.8)
Yes, no CT	193 (3.6)	8 (1.56)	44 (7.7)	3 (0.6)	18 (2.5)	20 (4.5)	5 (1.4)	22 (3.39)	38 (6.32)	14 (3.6)	21 (3.6)
Yes, CT	2173 (41.4)	273 (53.4)	153 (27.0)	239 (50.6)	316 (44.3)	188 (43.1)	125 (36.7)	266 (41.0)	146 (24.2)	182 (47.3)	285 (49.)
Diabetes											
No	4256 (81.1)	419 (81.9)	450 (79.6)	337 (71.3)	604 (84.8)	349 (80.0)	259 (76.1)	480 (74.0)	520 (86.5)	319 (83.0)	519 (90.1)
Yes, no CT	114 (2.1)	12 (2.3)	26 (4.6)	4 (0.84)	14 (1.9)	10 (2.2)	7 (2.0)	11 (1.6)	21 (3.49)	5 (1.3)	4 (0.6)
Yes, CT	875 (16.6)	80 (15.6)	89 (15.7)	131 (27.7)	94 (13.2)	77 (17.6)	74 (21.7)	157 (24.2)	60 (15.65)	60 (15.6)	53 (9.2)
Relative with dementia											
Yes	803 (15.3)	111 (21.7)	76 (13.4)	132 (27.9)	98 (13.7)	66 (15.1)	62 (18.2)	105 (16.2)	33 (5.4)	53 (13.8)	67 (11.6)
Bone fracture											
Yes	1531 (29.1)	119 (23.2)	217 (38.4)	164 (34.7)	185 (25.9)	138 (31.6)	115 (33.8)	176 (27.1)	171 (28.4)	104 (27.0)	142 (24.6)
Unemployed											
Yes	719 (13.7)	6 (1.2)	141 (25.0)	62 (13.1)	96 (13.5)	51 (11.7)	48 (14.1)	23 (3.5)	187 (31.1)	43 (11.2)	62 (10.8)
Retired											
Yes	2281 (43.4)	417 (81.6)	196 (34.7)	322 (68.2)	249 (35.0)	170 (39.0)	112 (32.9)	257 (39.7)	156 (26.0)	134 (34.9)	268 (45.5)
Physical ly active											
No	1700 (32.4)	103 (20.1)	215 (38.0)	134 (28.3)	197 (27.6)	159 (36.4)	87 (25.5)	231 (35.6)	247 (41.0)	110 (28.6)	217 (37.6)
Cognitive ly active											
No	1386 (26.4)	75 (14.6)	178 (31.5)	77 (16.3)	161 (22.6)	120 (27.5)	65 (19.1)	175 (27.0)	267 (44.4)	129 (33.5)	139 (24.1)
Under quarantine											
Yes	4546 (86.6)	473 (92.5)	521 (92.2)	332 (70.3)	610 (85.6)	383 (87.8)	271 (79.7)	517 (79.7)	536 (89.1)	337 (87.7)	566 (98.2)
Cognitive impairment											
Yes	818 (15.5)	40 (7.8)	161 (28.4)	76 (16.1)	92 (12.9)	72 (16.5)	58 (17.0)	67 (10.3)	144 (23.9)	45 (11.7)	63 (10.9)
Depression											
Yes	1588 (30.3)	112 (21.9)	191 (33.8)	158 (35.5)	220 (30.9)	130 (29.8)	84 (24.7)	252 (38.9)	229 (38.1)	89 (23.2)	123 (21.4)
Dementia											
Yes	818 (15.60)	40 (7.83)	161 (28.50)	76 (16.10)	92 (12.92)	72 (16.51)	58 (17.06)	67 (10.34)	144 (23.96)	45 (11.72)	63 (10.94)

(Continues)

TABLE 1 (Continued)

	Frequency (%)/mean ± SD										
	Total	Argentina	Bolivia	Chile	Colombia	Ecuador	Guatemala	Mexico	Peru	Dom.Rep.	Venezuela
Race											
White	1985 (37.8)	455 (89.0)	120 (21.2)	324 (68.6)	227 (31.8)	109 (25,0)	92 (27.0)	229 (35,3)	68 (11.3)	66 (17.1)	295 (51.2)
Black	63 (1.2)	1 (0.1)	0 (0,0)	0 (0.0)	20 (2.8)	6 (1.3)	6 (1.7)	8 (1.2)	3 (0.4)	3 (0.7)	16 (2.7)
Mestizo	2957 (56.3)	11 (10.76)	388 (68.6)	97 (20.5)	426 (59.8)	302 (69.2)	217 (63.8)	406 (62	504 (83.8)	259 (44.9)	259 (44.9)
Indigenous	118 (2.2)	0 (0.0)	48 (8.49)	23 (4.8)	12 (1.68)	8 (1.8)	2 (0.5)	1 (0.1)	19 (3.1)	4 (0.69)	4 (0.6)
Other	122 (2.3)	0 (0.0)	9 (1.5)	28 (5.9)	27 (3.7)	0 (0.0)	0 (0.0)	0 (0.0)	7 (1.1)	0 (0.0)	2 (0.3)
Days in quarantine	123.1 ± 42.4	128.5 ± 40.6	107.5 ± 44.0	119.6 ± 58.8	128.5 ± 45.3	119.6 ± 34.5	149.2 ± 31.8	138.5 ± 32.1	118.8 ± 43.7	113.7 ± 39.6	114.7 ± 32.8
Age	69.6± 7.2	70.7 ± 7.0	68.9 ± 7.2	69.9 ± 6.5	69.2 ± 7.2	69.2 ± 7.6	69.2± 7.6	70.0 ±7.8	70.1 ± 7.6	69.3 ± 6.8	68.9 ± 6.9
Education (years)	11.0± 5.8	12.3 ± 5.2	9.8 ± 5.7	12.4 ± 4.6	9.8 ± 5.7	11.0 ± 6.1	11.0 ± 5.7	10.9 ± 5.9	8.6 ± 6.1	11,2 ± 5.8	13.4 ± 5.3

Abbreviation: Dem. Rep., Dominican Republic; No CT, not undergoing continuous treatment; SD, standard deviation.

reduce the risk of dementia.[21] In turn, the use of antihypertensive drugs would improve cognitive performance in older adults suffering from this condition. In fact, discontinuation of the antihypertensive treatment has been associated with an increase in blood pressure.[50] This emphasizes the importance of ensuring the use of antihypertensive pharmacological treatment during the pandemic, as it would positively contribute to the cognitive health of the elderly. Interestingly, in our study, comparing hypertensive subjects who maintained stable pharmacological treatment to those who were not hypertensive, pharmacological treatment was found to be protective against CI. In this regard, some participants may have reported that they did not have hypertension when they did. Older adults with hypertension are often unaware that they have this condition in LA.[51] Therefore, it is important to have confirmation of the diagnosis to establish its association with CI.

It was surprising to find that diabetes was not associated with cognitive impairment in this study, despite the available evidence.[52] This could be because most of the diabetic subjects in this research were on stable treatment, which would have attenuated the risk associated with CI. In the same vein, drugs such as pioglitazone have been reported to reduce the risk of CI in diabetic patients by up to 47%, like metformin, which is also a widely used drug in these patients.[52] In this regard, some authors claim that there is a dependency between age and risk factors for cognitive impairment, with the effect of factors such as diabetes decreasing in older segments;[53] these discrepancies were explained in this study, in which 47% of diabetics were ≥70 years.

A positive association with CI was found in those subjects who reported a family history of dementia, which has been well established previously.[54] CI risk has been reported in individuals with first-, second-, and third-degree relatives with a history of dementia diagnosis.[55] In this respect, it is important to pay attention to older adults with a family history of dementia, as the results suggest that they may experience a higher risk of CI during confinement.

Finally, due to the characteristics of the findings, it is worth discussing the protective effect of the elderly person's sex, physical activity, and days of confinement in our study. We found that being a woman was associated with a lower risk of cognitive impairment. In this regard, although it is stated that women are more at risk of developing dementia due to Alzheimer's disease, it is also reported that vascular dementia is more prevalent in men. Some modifiable factors appear to modulate the risk differently in men and women.[56] It is important to analyze longitudinally how sex and other factors longitudinally relate to CI. It is possible that this finding is related to the predominance of women in our sample. Therefore, this statement should be treated with caution and in future studies, it will be necessary to balance the sample according to sex.

While it is true that COVID-19 confinement has produced changes in the routine and accessibility of the elderly and has therefore worsened neuropsychiatric conditions of patients suffering from dementia, recent studies with the rest of the elderly population are not conclusive.[57] In this study, a greater number of days in quarantine was found to be protective against CI. It should be noted that most of the participants in this research were accompanied by a family member.

TABLE 2 Factors associated with cognitive impairment.

	Cognitive impairment		
	OR	(95% CI)	*P*
Age	1.057	(1.043–1.070)	<0.001**
Years of education	0.929	(0.910–0.947)	<0.001**
Depressive symptomatology	1.222	(1.141–1.308)	<0.001**
Days in quarantine	0.995	(0.993–0.997)	<0.001**
Hypertension (RC = no hypertension)			
Undergoing continuous treatment	0.793	(0.645–0.974)	0.027*
Not undergoing continuous treatment	1.414	(0.927–2.157)	0.107
Diabetes (RC = no diabetes)			
Undergoing continuous treatment	0.951	(0.733–1.233)	0.706
Not undergoing continuous treatment	0.892	(0.491–1.620)	0.708
Relative suffering from dementia (RC = No)			
Yes	1.488	(1.147–1.930)	0.003*
Bone fracture history (RC = no)			
Yes	1.322	(1.079–1.619)	0.007*
Widowed (RC = no)			
Yes	1.595	(1.279–1.988)	<0.001**
Unemployed (RC = no)			
Yes	1.881	(1.476–2.396)	<0.001**
Retired (RC = no)			
Yes	1.009	(0.816–1.249)	0.928
Performs physical activity (RC = no)			
Yes	0.808	(0.661–0.987)	0.037*
Performs cognitive activities (RC = no)			
Yes	0.614	(0.498–0.757)	<0.001**
Woman (RC = man)			
Yes	0.659	(0.532–0.817)	<0.001**

Abbreviations: CI, confidence interval; OR, odds ratio; RC, reference category.
*$P<0.05$
**$P<0.001$.

This may explain the significance of the association found, as mental health problems in older adults have been strongly associated with aspects such as loneliness or isolation.[58] This seems to be supported by the fact that some studies have found a lower risk of CI in those who receive more visits from family.[59] Previous studies have reported no association between length of confinement and cognitive decline.[60,61] In this sense, it is possible that the confinement measures implemented in some countries of the region, together with family accompaniment, may have had a positive impact on this aspect.[62] However, the incipient nature of their implementation makes it necessary to analyze this in future research.[63]

Likewise, we found that older adults who reported doing physical activity had less risk for CI, consistent with Iso-Markku et al.[64] It is therefore important to analyze this aspect when physical inactivity is considered to explain 5% of the risk of dementia in LA[47] and that access to physical activity during COVID-19 confinement was restricted to the elderly.[4]

Despite the interesting results, the present study is not without limitations. First, follow-up studies are needed to accurately estimate the effect of the COVID-19 pandemic on the risk of CI. On the other hand, telephone screening tests were used for cognitive and functional assessment and, therefore, there is a need to add more thorough cognitive measurements, and to consider the use of specific tests for cognitive domains that are not influenced by demographic or cultural variables and standardized for the region. Because the telephone contact lasted an average of 45 minutes, some factors, such as the fatigue, could influence the results. These aspects were not controlled in the present study. Future research could consider the use of video calls and more than one session to control these aspects, as well as the addition of more cognitive variables.

It is important to increase the number of subjects from ethnic minorities given their low participation in this study. Furthermore, the role of physical activity as a protective factor against CI should be analyzed. Future research could consider other item formats (not only dichotomous, as in our study). Other classification systems that consider intensity, frequency, and type of physical activity may provide useful information.[1] The same limitation extends to our assessment of cognitive activity, as well as not considering the characteristics of confinement by each country as potentially influential variables in our results. Also, it would be important to consider the largest possible number of previously studied risk factors, while considering the need to harmonize data and methods in LA.[65]

One of the main limitations of this research is the paucity of information on the quarantine process and confinement practices, which makes it difficult to contextualize the results. Although reported quarantine days are available, they showed high variability among countries. Future research should address these issues in more detail and longitudinally assess their impact on CI. On the other hand, we only included older adults who were accompanied by their relatives, so it was not possible to assess the effect of more extreme social isolation. Finally, the present study did not control for individuals infected with COVID-19 at the time of assessment. This limitation should be addressed in future research considering the potential effect of COVID-19 on cognition.[66]

We conclude that there is a positive association of CI in older Latin American adults, widowed, unemployed, with a family member with dementia, with a history of bone fracture, and with greater depressive symptomatology. In contrast, more years of education, engagement in cognitively and physically stimulating activities, and stable treatment for hypertension were negatively associated with cognitive decline.

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CONFLICT OF INTEREST STATEMENT

The authors declare no conflicts of interest. Author disclosures are available in the supporting information.

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