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Research Article

Association of Loneliness, Social Isolation and Daily Cognitive Function in Mexican Older Adults Living in Community during the First Wave of COVID-19 Pandemic Lockdown

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Abstract

Loneliness and social isolation are known risk factors for cognitive decline; their effect in Older Adults (OA) after COVID-19 lockdown is emerging.

Objective: To establish an association between loneliness and social isolation, with daily cognitive function in Mexican OA during the first wave of the COVID-19 pandemic.

Methods: Cross-sectional study, daily cognitive function was deter-mined with the Everyday Cognition Scale (E-Cog). Loneliness and social isolation were binomial variables.

Results: The mean age was 65.4 ± 7.9 years, 75.7% were women. The mean E-Cog was 57.4 (SD: ± 19.1). Eighty four percent of participants reported loneliness, 79.9% reported social isolation. Multivariate regression model showed a positive and statistically significant association between loneliness and E-Cog, adjusted by age, sex and education level (β: 0.41, 95% CI: 0.22-0.38, p: <0.01).

Conclusion: These data suggest the need for increased vigilance of those who have loneliness due to its potential deleterious effect on cognitive function.

Keywords: Cognitive performance; COVID-19; Loneliness; Older adults; Social-isolation

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Introduction

The pandemic caused by SARS-CoV2, the etiologic agent of COVID-19, represents an unprecedented social and health emergency. In Mexico, according to data from the World Health Organization, as of January 2022, there have been 4, 258, 2836 accumulated cases and 313,479 deaths related to COVID-19 since the pandemic began. Lockdown started on March 23rd, 2020, and it extended over a year, with a peak (average number of infections per day) on January 20th, 2021 [1]. Since Older Adults (OA) are particularly susceptible to develop severe manifestations of the disease and complications that increase disability and decrease quality of life [2], it was a priority that this population sector remains isolated as an effective prevention strategy; however, this represented a new challenge for older adults' mental health. At this point, two different terms must be introduced: a), Social isolation, which is defined as having few social contacts and little commitment to others and the community in general [3], b), Loneliness, which refers to the adverse emotional state experienced subjectively related to the perception of unsatisfied intimate and social needs [4].

Prevalence suggests that nearly one-third of older adult's experience loneliness and/or social isolation, and a subset (5%) reports often or always feeling lonely [5]. Although loneliness does not have the status of a clinical disease by itself, it is associated with several negative health outcomes like stress, sleep disturbances, depressive symptoms, cognitive impairment, coronary heart disease, stroke and mortality [6].

On the other hand, partial or total restriction of social interaction could generate negative consequences for the health of OA, especially in those with chronic diseases, disabilities and geriatric syndromes [2]. Social isolation may cause impairment in social recognition memory, thereby potentially increasing risk of long-term perceptions of loneliness (i.e., animals exposed to social isolation later have difficulties with social recognition) [7]. However, it does not affect other types of memory. This may be related to the specific neural network which processes social information in the mammalian brain which includes: olfactory bulbs, medial nucleus of the amygdala, lateral septum and

the pyramidal layer of neurons of the hippocampus which makes a trajectory in the shape of an inverted C, specially in the region called CA2 [8].

We aim to examine the influence of loneliness and social isolation in daily cognitive function in a sample of Mexican older adults living in the community during the first wave of COVID-19 pandemic lockdown and assess characteristics associated with loneliness.

Materials and Methods

Design and sampling

Cross-sectional study derived from the cohort "The impact of COVID 19 on well-being, cognition, and discrimination among older adults in the United States and Latin America." carried out in a population of non-institutionalized people aged 55 or older. A non-probabilistic sampling was performed, selecting, for convenience, those in the United States, as well as several in Spanish and Portuguese-speaking countries of Latin America. A detail description of the methodology is summarized in the study by Ganesh M, et al., [9].

Participants

For this study, we included participants who resided in Mexico (n = 308), during the first six months of lockdown (March-August 2020).Those who completed the previously described surveys in the first stage or baseline of the SARS-CoV2 pandemic were chosen. All participants completed a one hour-long survey (online with a computer or smartphone or through a phone call with a trained researcher, for help) which was conducted in Spanish. Collected data were managed using the REDCap (Research Electronic Data Capture) tool, a software designed for the research data capture which is located at the Massachusetts General Hospital [10]. All measurements were translated to Spanish following the World Health Organization guidelines to ensure accuracy.

Dependent variable

Systematic assessment of daily cognitive function offers the potential to improve our understanding of the determinants of functional decline, specific cognitive impairments, [11] mild changes in daily function and daily cognition frequently occur in the early stages of neurodegenerative diseases of aging, including during the stage of Mild Cognitive Impairment (MCI) [12]. Thus we assessed them with the Everyday Cognition Scale (E-Cog). This instrument has been designed to subjectively assess cognitive and functional abilities, an improvement if compared to its performance 10 years ago. It exhibits excellent psychometric properties including good test-retest reliability (r = 0.82, p <0.001). It also provides evidence of various aspects of validity such as content and construction as well as convergent, divergent and external validity. E-Cog comprises 39 items through which six cognitive domains are evaluated, and they are: memory, language, visuospatial and perceptual skills, planning, organization and divided attention. Each item is rated using a four-point Likert scale that ranges from 1: better or no change, to 4: consistently much worse (Table 1 in the supplement) [13]. Each functional domain was defined by the underlying cognitive abilities thought to be the most critical to those daily living activities, higher score indicates greater deterioration [14].

Additionally, it has been proposed as an instrument to assess Subjective Cognitive Decline (SCD): Any occasion SCD = any item scored ≥2, but none ≥3; any consistent SCD = any item scored ≥3

[15]. The suggested cutoff point based on a cross-sectional comparison of the ADNI cutoff to discriminate between normal cognition and cognitive impairment is 1.31 for the participant and 1.36 when applied to the informant (iECog). However, this score has not yet been validated in mexican population [16].

Independent variable

Loneliness: The De Jong Gierveld Loneliness Scale [17] measures emotional (items 1, 5 and 6) and social loneliness (items 2, 3 and 4) by three items each, with a total of six items for general loneliness. Participants select an answer from four options which are: "yes", "more or less", "no" or "no answer". Negatively worded items were inverted; afterward these item scores were added to obtain a total for each participant. Higher scores indicate greater loneliness (Table 2 in the supplement).

Social isolation: The Epidemic-Pandemic Impacts Inventory (EPII) [18] is a questionnaire developed and designed to assess the personal impact of the coronavirus pandemic in various domains of personal and family life. The EPII consists of 92 items in 10 categories that assess employment (11 items), education (2 items), home life (13 items), social activities (10 items), economy (5 items), emotional health and well-being (8 items), physical health (8 items), physical distancing and quarantine (8 items), history of infection (8 items) and positive change (19 items). For the present study, the subscale of physical distancing and quarantine was used. The responses were summed (yes versus no), and the mean of this subscale was calculated. A higher number in the score suggests a higher load/difficulty (Table 3 in the supplement).

Subjective memory complain: The 7-Memory questionnaire has been validated to assess cognitive changes in older people [19,20], and the answers consist of "yes" or "no" according to the subjective memory complaint. The responses were summed to obtain a maximum score of 7. Higher scores represent a greater subjective memory complaint (Table 4 in the supplement).

Sociodemographic and clinical variables

Information on age, gender, marital status, educational level by years of education, occupation, self-perception of health status, self-reported comorbidities and the use of medications were included. In addition, the Charlson Comorbidity Index (modified from 2010) was calculated to classify comorbidity as mild (1-3), moderate (4-6), and severe (greater than 6) [21,22].

Statistical analyses

Descriptive statistics using arithmetic means, standard deviations, frequencies and proportions examined in sociodemographic and health variables was performed. The presence of loneliness, social isolation and subjective memory complaint were binomial variables. rho Spearman correlations were examined to establish the relationship between the E-Cog total score as well as the outcome measures. In order to determine the association between loneliness, isolation with E-Cog, univariate linear regression models were constructed using normalized E-Cog global score by Natural Logarithm (Ln) which were later adjusted for potentially confounding variables (age, sex and education) on multivariate linear regression. In addition, to search for an association between the binomial variables previously described, the participants were categorized into tertiles of the global E-Cog score with the following ranges: Tertile 1 (T1): 37.46 -46;

Tertile 2 (T2): 46.01-58 and Tertile 3 (T3): 58.01 or more and were compared using ANOVA. A value of p <0.05 was considered statistically significant. All statistical analyses were conducted using SPSS version 25.0 for MAC (Chicago, IL, USA), figures were made with RStudio (R version 4.1.0, RStudio, Inc., Boston, MA).

Results

From a total of 308 participants, 4 participants were excluded for incomplete surveys. Finally, 304 participants were included for statistical analysis from which 75.7% were women (n = 233) with a mean age of 65.4 years (SD: ± 7.9), only 8.4% reported COVID-19 symptoms. Most subjects were married/civil union (48.7%). Those who lived alone were distributed within the following groups: single (17.2%), widowed (14.6%), and divorced/living alone (19, 48%). The average years of education was 15 (SD: ± 3.0). In terms of occupation, most participants were retired (33.1%), followed by economically active people (25.9%) and housewives (21.3%) (Table 1).

Total number of participants (n)	308
Age, years mean ± SD	65.4 (7.9)
Sex, n (%)	
Male	75 (24.3)
Female	233 (75.7)
Education, years mean ± SD	15 (3.0)
Marital status, n (%)	
Single	53 (17.2)
Married/civil union	150 (48.7)
Divorced/living alone	60 (19.5)
Widowed	45 (14.6)
Working status, n (%)	
Employed	79 (25.9)
Unemployed	31 (10.2)
Retired	101 (33.1)
Housewife	65 (21.3)
Other	29 (9.5)
Self-perception of health, n (%)	
Good	294 (95.6)
Poor	14 (4.4)
Drugs, n (%)	
0-4	301 (97.7)
5 or more	7 (2.3)
Charlson comorbidity index n (%)	
1 - 3	241 (77.2)
4 - 6	61 (19.8)
7 - 9	9 (2.9)
Mean, SD	2.74 (4.0)
Comorbidity (n,%)	
Systemic Arterial Hypertension	98 (31.8)
Diabetes Mellitus	50 (16.2)
Gastrointestinal	36 (11.6)
Depression	29 (9.4)
Hypothyroidism	28 (9.0)
COVID-19-Symptoms (n,%)	26 (8.4)

Table 1: Participants sociodemographic characteristics.

Several health conditions were registered by the participants' self-report, and they were classified based on ICD-10 [World Health Organization, 2016] diagnoses in the following categories: cardiovascular, gastrointestinal, mental health, neurological, orthopedic, renal, infectious and rheumatological. The five most frequently reported were: Hypertension (High Blood Pressure) (31.8%), Diabetes Mellitus (16.2%), Gastrointestinal (11.6%) where Gastroesophageal Reflux Disease and Gastritis were included, Depression (9.4%) and Hypothyroidism (9.0%). To determine the burden of comorbidity, the Charlson Comorbidity Index was calculated [21,22] and classified as mild (1-3 points), moderate (4-6 points), and severe (7-9 points) comorbidity with a frequency of 77.3%, 19.8% and 2.9% respectively, with a mean of 2.7 (SD: ± 4.0) points which corresponds to moderate comorbidity. The self-perception of health was good up to 95.6% (Table 1).

Up to 84.0% (n = 259) had loneliness with a mean affirmative item in the De Jong Gierveld Loneliness scale of 4.13 (SD: ±1.1) while 79.9% (n = 246) of the participants identified themselves with social isolation using the EPII scale (Table 2). On the other hand, the E-Cog total score was 57.6 (SD: ±18.8) and average score 1.4 (SD: ±0.49) with the following highest scores for these cognitive domains: memory (14.1, SD±5.5), language (13.7, SD±5.0) and visuospatial (9.1, SD±3.1).

De Jong Gierveld Loneliness Scale		
Loneliness [n (%)]	259 (84.0)	
Total (mean ± SD)	4.13 (1.1)	
1-2	12 (3.9)	
3-4	154 (49.8)	
5-6	93 (30.1)	
EPII Physical Distancing and Quarantine		
Social isolation [n (%)]	246 (79.9)	
Total positive items (mean ± SD)	1.99 (1.5)	
Self-report		
EPII 1-3	180 (58.3)	
EPII 4-6	55 (17.8)	
EPII 7-8	2 (0.6)	
Other family member		
1-3	139 (45)	
4-6	20 (6.5)	
7-8	149 (48.5)	
Everyday Cognition Scale (E-Cog)		
Cognitive domains (mean ± SD)	Global	Average[a]
Memory	14.1 (5.5)	1.2 (0.4)
Language	13.7 (5.0)	1.3 (0.4)
Visuospatial	9.1 (3.1)	1.3 (0.5)
Planning	6.3 (2.2)	1.5 (0.72)
Organization	8.1 (3.2)	1.7 (0.68)
Divided attention	6.2 (2.9)	1.5 (0.49)
E-Cog total score[a]	57.6 (18.8)	1.4 (0.49)
E-Cog Ln[b]	4.0 (0.2)	
Tertil	[n (%)]	
1 (37.46 - 46)	24 (7.8)	
2 (46.01 - 58)	33 (10.7)	
3 (58.01 or more)	245 (79.3)	
7-Memory Questionnaire		
Subjective Memory Complaint [n (%)]	226 (73.1)	
Affirmative items (mean ± SD)	2.28 (2.0)	
1-3	132 (42.7)	
4-7	92 (29.8)	

Table 2: Questionnairies.

aAverage score: E-Cog global divided by the number of items of each domaing; final average score was obtained from the sum of the means of each domain divided by six.

bE-Cog Ln: Normalized E-Cog score by natural logarithm.

While 73.1% of the participants reported memory complaint, evidenced with affirmative items in the 7-Memory Questionnaire, the mean affirmative items were 2.2 (SD: ±2.0), and the major complaints were: in difficulty of remembering things from one second to the next (48.9%) and remembering a short list of items (43.3%). Since there is no cut-off point validation for E-Cog in Mexicans, distribution was examined by tertiles with the following ranges: Tertile 1 (T1): 37.46 -46; Tertile 2 (T2): 46.01-58 and Tertile 3 (T3): 58.01 or more (Figure 1). Those with loneliness have the higher scores (T2 and T3), while those with less perception of loneliness had a better performance on E-Cog, this results were statistically significant, (Table 3, Figure 2). Loneliness scale (rho 0.219, p<0.005) and EPII Physical Distancing and Quarantine (rho 0.178, p<0.05) showed positive Spearman correlation.
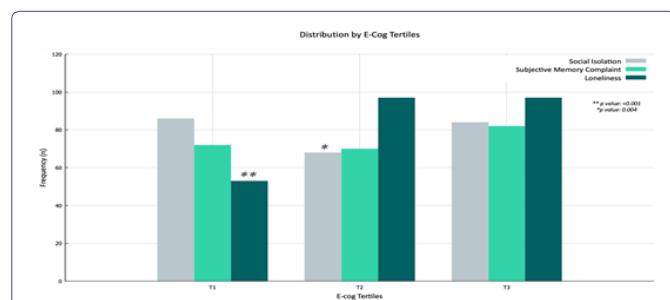

Figure 1: Distribution of participants by E-Cog tertiles.

Lower E-Cog (T1) scores have a lower frequency of loneliness. The aquamarine bars represent loneliness in participants (at least 1 positive response in De Jong Gierveld questionnaire); gray bars represent self-reported social isolation (at least 1 positive response in EPII); green bars represent the participants with a subjective memory complaint (at least 1 positive item in the 7-Memory questionnaire). The Y-axis expresses the frequency of participants (n), the X-axis shows the score obtained in E-Cog divided by tertiles (T1: 37.46 - 46; T2: 46.01-58; T3: 58.01 or more).

E-Cog (score)	T1	T2	T3	c2
Loneliness [n (%)]	53 (17.3)	97 (31.8)	97 (31.8)	<0.001
Social Isolation [n (%)]	86 (28.2)	68 (22.3)	84 (27.5)	0.004
SMC +[n (%)]	72 (23.6)	70 (22.9)	82 (26.9)	0.21

Table 3: Distribution by E-Cog tertiles.

SMC: Subjective Memory Complaint

Tertil 1: 37.46 -46; Tertil 2: 46.01-58;Tertil 3: 58.01 or mores

Using the cut-off point suggested by Van Hartel et al., 49.1% (n: 150) had a score <1.31 indicating normal cognition, while 50.9% (n: 154) had a higher score, corresponding to cognitive impairment [16]. The perception of loneliness was higher in the second group (76.62% vs 73.3%), as was social isolation (87.66 vs 71.33) (Table 4), the demographic characteristics were similar in both groups.

Table 5 describes the multivariate regression model with normalized E-Cog score (Ln) adjusted by age, sex and education. There's a significant relationship between the E-Cog score and participants with loneliness (β: 0.41; 95 % CI: 0.21-0.38, p<0.001), this model explains the 16.1% of the variability of the E-Cog score. In contrast, there was no association between social isolation (β: 0.01; 95 % CI: -0.067-0.88, p: 0.74). Finally, exploring the adjusted linear regression model with the cut-off point 1.31 (Table 6), we found a negative and statistically significant association with loneliness (β: -0.046; 95%

CI: -0.080, -0.013; p 0.007) and isolation (β: -0.168; 95% CI: -0.089, -0.018; p 0.003), compared to SMC where a positive association with ECog was found (β: 0.812; 95% CI: -0.16, -0.11; p< 0.001).
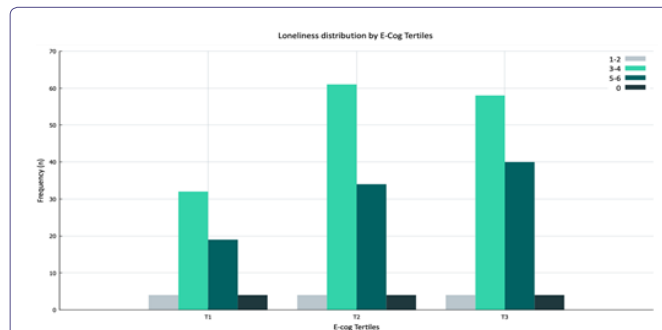

Figure 2: Loneliness distribution of participants by E-Cog tertiles.

Lower E-Cog (T1) scores have a lower frequency of loneliness, mean affirmative items in the De Jong Gierveld Loneliness scale was 4.13 (1.1). Bars are placed in ascending order according to the affirmative items, the darkest bar represents the participants without loneliness (0 affirmative items). The Y-axis expresses the frequency of participants (n), the X-axis shows the score obtained in E-Cog divided by tertiles (T1: 37.46 - 46; T2: 46.01-58; T3: 58.01 or more).

n: 305	E-Cog <1.31 [n: 150 (49.1%)]	E-Cog >1.31 [n:154 (50.9 %)]	c2
Charlson comorbidity index			
0-2	86 (57.33)	77 (50)	
3-4	49 (32.66)	55 (35.7)	
5-6	9 (6.0)	18 (11.6)	0.24
7 or more	6 (4.0)	4 (2.59)	
Loneliness Affirmative items	110 (73.33)	118 (76.62)	
1	12 (8.0)	29 (18.83)	
2	36 (24.0)	23 (14.93)	
3	28 (18.66)	14 (9.09)	0.09
4	16 (10.66)	17 (11.03)	
5	8 (5.33)	17 (11.03)	
6	10 (6.66)	18 (11.68)	
Social Isolation Affirmative items	107 (71.33)	135 (87.66)	
1	30 (20.0)	34 (22.07)	
2	39 (26.0)	38 (24.67)	
3	14 (9.33)	31 (20.1)	
4	15 (10.0)	20 (12.98)	0.01
5	6 (4.0)	9 (5.84)	
6	2 (1.33)	2 (1.29)	
7	1 (0.66)	1 (0.64)	
Subjective Memory Complaint Affirmative items	81 (54.0)	139 (90.2)	
1	34 (22.66)	15 (9.74)	
2	24 (16.0)	17 (11.03)	
3	16 (10.66)	26 (16.88)	
4	4 (2.66)	36 (23.37)	<0.001
5	1 (0.66)	19 (12.33)	
6	1 (0.66)	16 (10.38)	
7	1 (0.66)	10 (6.49)	
COVID-19 Symptoms	10 (6.66)	16 (10.38)	0.24

Table 4: Ecog distribution with cut-off point.

	β	CI 95%	p value
Loneliness	0.41	0.21-0.38	<0.001
Social isolation	0.01	-0.06-0.88	0.74
Subjective Memory Complaint	0.03	-0.51-0.90	0.58

Table 5: Association of loneliness, social isolation and subjective memory complaint with daily cognitive function multivariate regression model: E-Cog (Ln)+

Social isolation detected by EPII: physical distancing and quarantine.

Loneliness was determined with 1 or more affirmative items in the De Jong Gierveld Loneliness Scale.

Subjective Memory Complaint was determined with 1 or more affirmative items in the 7-Memory Questionnaire.

+Model adjusted for age, sex and years of education.

	β	CI 95%	p value
Loneliness	-0.046	-0.080 , - 0.013	0.007
Social isolation	-0.168	-0.089 , - 0.018	0.003
Subjective Memory Complaint	0.812	-0.16 , - 0.11	<0.001

Table 6: Association of loneliness, social isolation and subjective memory complaint with daily cognitive function (E-Cog)++ Linear regression model.

Social isolation detected by EPII: physical distancing and quarantine.

Loneliness was determined with 1 or more affirmative items in the De Jong Gierveld Loneliness Scale.

Subjective Memory Complaint was determined with 1 or more affirmative items in the 7-Memory Questionnaire.

+Model adjusted for age, sex and years of education. ECog was dependent variable using a suggested cutoff point of 1.31 (average).

Discussion/Conclusion

In this study, with data from a remote survey conducted in older adults living in the community, carried out during the first wave of the COVID-19 pandemic in Mexico, we found a positive and statistically significant association with self-perception of loneliness and daily cognitive function. The frequency of loneliness in the participants is higher than that reported in the literature, being 84% compared to 30.9% and 43.1% reported by a cohort of older adults in California (San Francisco) and Canada, respectively, during the COVID-19 pandemic [23]. This feeling of loneliness appears to be even greater compared to the increase reported during confinement, for instance, in a cohort study of older adults in primary care in Hong Kong (n: 538, age: 70.6 + 6.1). Loneliness measured by the De Jong Gierveld scale during the COVID-19 pandemic increased from 1.6 to 2.9 positive items on average while the participants in our study had an average of 4.13 (1.1) positive items [24]. Consistent with previous studies [25], most of the participants with loneliness were women.

Older adults with the lowest report of loneliness were found in the lowest E-Cog scores, that is, those who referred loneliness during lockdown had a worse performance in the global E-Cog score. These findings coincide with those reported by Kim et al., who points out that loneliness predicts worse performance in several cognitive domains such as: immediate memory, visuospatial skills and processing speed [26]. In two previous studies, carried out as cohorts from China and Argentina using the E-Cog scale, the additional memory domains, such as language, divided attention and planning [27] were associated with a lesser impact on functionality compared to FAQ (Functional Assessment Questionary) without showing an association with hippocampal hypometabolism, and the ROI (Regions of Interest) of Alzheimer's disease compared to the memory-related domain [12] which could suggest greater usefulness for the detection of amnestic cognitive profiles compared to other scales.

The mechanism that explains how loneliness impacts on cognitive functions remarks a strong relationship with chronic stress underlying prolonged periods of loneliness, increased glucocorticoid activation and hypercortisolism. These physiological alterations occur differently depending on the loneliness' period length. Thus, transient loneliness can activate the Hypothalamic-Pituitary-Adrenal (HPA) axis to negatively regulate inflammatory responses while persistent loneliness is associated with increased production of pro-inflammatory cytokines such as: tumor necrosis factor-alpha (TNFα), Interleukin 1-beta (IL-1β), Interleukin 6 (IL-6), among others (COX-2 and iNOS) [6,28]. This state of chronic inflammation decreases dopamine signaling, circadian rhythm and monoamine levels (serotonin, norepinephrine and dopamine) which in turn synaptic plasticity and neuronal survival decrease. Consequently, neurodegeneration increases, perpetuating axis dysfunction HPA (hypothalamus-pituitary-adrenal) and physiological reward mechanisms [29]. In cohort studies, loneliness was associated with poorer performance in different types of memory, with a faster decline in semantic memory compared to episodic memory [30].

Although we found a trend in the positive correlation between loneliness and isolation, the results were not statistically significant with the E-Cog performance. This could be due to the fact that some of the participants might have not felt socially isolated at the beginning of confinement since data were collected in the first wave of lockdown. These results suggest that the concepts of loneliness and social isolation affect cognition by different and, probably, independent mechanisms. Unlike what is reported in the English Longitudinal Study of Aging, social isolation is associated with decreased episodic memory and verbal fluency after a 4-year follow-up period [30]. On the other hand, a Spanish study in older adults showed that greater social isolation is associated with lower scores in neuropsychological assessment batteries, reflected in both the global cognitive score and worse performance in verbal fluency and forward digits [31]. In animal models, these findings have been related to alterations in the CA2 region of the hippocampus, [7,8] therefore, it is plausible to detect social isolation as an additional risk factor for cognitive impairment. In general, social interaction generates demands that protect and maintain cognition, leaving isolated people vulnerable to impaired cognition [26,32]. Thus, we propose that social isolation in the participants of our study comes from an emergent situation as part of the preventive measures of contagion.

Previous studies with older adults during confinement as a result of COVID-19 in China report that being a woman and living alone carries a greater risk of perceived isolation since they depend more on family members and friends for social support. This was reduced due to social distancing during COVID-19 [33]. However, this condition of physical distancing does not imply the deprivation of the feeling of accompaniment, protection or closeness to people in the form of an emotional connection as it occurs when experiencing loneliness. That is, the significant effects of loneliness, conceptualized as (self-perceived) social isolation, on general cognitive function can be found together but not always [26,32].

Limitations and Strengths

Our study has some limitations, the design of the study, derived from an online survey. We do not have information prior to COVID-19 pandemic lockdown in these older adults, so we cannot know if they had isolation before the starting point of the study. We recognize that the E-Cog results were not compared with informant scores since there are previous studies where people with mild cognitive impairment reported performing better (lower scores) compared to the informants' report (family members, caregivers) [27]. On the other hand, although E-Cog has shown good test-retest reliability, even in the Spanish version, where both global and domain-specific scores have shown different trajectories in participants with cognitive impairment, dementia and cognitive health [13,19,27] so, based on suggested cut-off point derivated from cross-sectional studies, [16] this sample had similar characteristics in unimpaired cognition and probably cognitive impaired. Among the strengths of the study, we were able to describe the health characteristics of a sample of Mexican older adults from the community during the first wave of the SARS-CoV2 pandemic. As far as we know, this is the first study conducted on Mexican older adults with daily cognitive function. Although loneliness and social isolation are usually empirically associated, they should be approached as distinct and independent phenomena.

Conclusion

In our study, we found that OA with loneliness have impairment in daily cognitive function which strongly suggests the need to increase vigilance of those identified with loneliness resulting from the deleterious effect on cognition, regardless of their isolation condition, in which case, differences are recognized between the natures of both. The SARS-CoV2 pandemic brought multiple challenges but also valuable lessons for clinicians. Regarding cognition, it was possible to recognize a latent but forgotten risk factor: loneliness. A frequent condition in older adults prior to the contingency, and that provides greater vulnerability, especially in those who already had cognitive impairment. A better understanding of this phenomenon will allow the development and adaptation of evidence-based interventions to address and prevent its impact on cognitive decline.

Acknowledgement

Data availability statement

All data generated or analyzed during this study are included in this article. Further inquiries can be directed to the corresponding author.

Conflict of interest statement

The authors have no conflicts of interest to declare.

Supplement

https://www.heraldopenaccess.us/fulltext/Gerontology-&-Geriatric-Medicine/Supplement.docx

References

1. Secretaria de Salud (2020) Institucion nacional de salud publica, IMSS, INEGI, CONAPO ROP de la salud. Boletín E Boletín estadístico: 1-27.

2. Sepúlveda-Loyola W, Rodríguez-Sánchez I, Pérez-Rodríguez P, Ganz F, Torralba R, et al. (2020) Impact of Social Isolation Due to COVID-19 on Health in Older People: Mental and Physical Effects and Recommendations. J Nutr Heal Aging 24: 938-947.

3. Freedman A, Nicolle J (2020) Social isolation and loneliness: the new geriatric giants: Approach for primary care. Can Fam Physician 66: 176-182.

4. Luanaigh CO, Lawlor BA (2008) Loneliness and the health of older people. Int J Geriatr Psychiatry 23: 1213-1221.

5. Kotwal AA, Holt-Lunstad J, Newmark RL, Cenzer I, Smith AK, et al. (2021) Social Isolation and Loneliness Among San Francisco Bay Area Older Adults During the COVID-19 Shelter-in-Place Orders. J Am Geriatr Soc 69: 20-29.

6. Akhter-Khan SC, Tao Q, Ang TFA, Itchapurapu IS, Alosco ML, et al. (2021) Associations of loneliness with risk of Alzheimer's disease dementia in the Framingham Heart Study. Alzheimers Dement 17: 1619-1627.

7. Mumtaz F, Khan MI, Zubair M, Dehpour AR (2018) Neurobiology and consequences of social isolation stress in animal model-A comprehensive review. Biomed Pharmacother 105: 1205-1222.

8. Leser N, Wagner S (2015) The effects of acute social isolation on long-term social recognition memory. Neurobiol Learn Mem 124: 97-103.

9. Manca R, De Marco M, Venneri A (2020) The Impact of COVID-19 Infection and Enforced Prolonged Social Isolation on Neuropsychiatric Symptoms in Older Adults With and Without Dementia: A Review. Front Psychiatry 11: 585540.

10. Harris PA, Taylor R, Thielke R, Payne J, Gonzalez N, et al. (2009) Research electronic data capture (REDCap)--a metadata-driven methodology and workflow process for providing translational research informatics support. J Biomed Inform 42: 377-381.

11. Farias ST, Mungas D, Harvey DJ, Simmons A, Reed BR, et al. (2011) The measurement of everyday cognition: Development and validation of a short form of the Everyday Cognition scales. Alzheimer's Dement 7: 593-601.

12. Hsu JL, Hsu WC, Chang CC, Lin KJ, Hsiao IT, et al. (2017) Everyday cognition scales are related to cognitive function in the early stage of probable Alzheimer's disease and FDG-PET findings. Sci Rep 7: 1719.

13. Farias ST, Mungas D, Reed BR, Cahn-Weiner D, Jagust W, et al. (2008) The Measurement of Everyday Cognition (ECog): Scale Development and Psychometric Properties. Neuropsychology 22: 531-544.

14. Russo MJ, Cohen G, Chrem Mendez P, Campos J, Martín ME, et al. (2018) Utility of the Spanish version of the Everyday Cognition scale in the diagnosis of mild cognitive impairment and mild dementia in an older cohort from the Argentina-ADNI. Aging Clin Exp Res 30: 1167-1176.

15. Rueda AD, Lau KM, Saito N, Harvey D, Risacher SL, et al. (2015) Self-rated and informant-rated everyday function in comparison to objective markers of Alzheimer's disease. Alzheimer's Dement 11: 1080-1089.

16. van Harten AC, Mielke MM, Swenson-Davis DM, Hagen CE, Edwards KK, et al. (2018) Subjective cognitive decline and risk of MCI: The Mayo Clinic Study of Aging. Neurology 91: 300-312.

17. De J, Gierveld J, Tilburg T Van (2006) A 6-Item Scale for Overall, Emotional, and Social Loneliness: Confirmatory Tests on Survey Data. Res Aging 8: 582-598.

18. Grasso DJ, Briggs-Gowan MJ, Ford JD, Carter AS (2020) Epidemic-Pandemic Impacts Inventory (EPII). EPII.

19. Filshtein T, Chan M, Mungas D, Whitmer R, Fletcher E, et al. (2020) Differential Item Functioning of the Everyday Cognition (ECog) Scales in Relation to Racial/Ethnic Groups. J Int Neuropsychol Soc 26: 515-526.

20. Go RC, Duke LW, Harrell LE, Cody H, Bassett SS, et al. (1997) Development and validation of a structured telephone interview for dementia assessment (STIDA): The NIMH genetics initiative. J Geriatr Psychiatry Neurol 10: 161-167.

21. Brusselaers N, Lagergren J (2017) The Charlson Comorbidity Index in Registry-based Research. Methods Inf Med 56: 401-406.

22. Charlson ME, Charlson RE, Peterson JC, Marinopoulos SS, Briggs WM, et al. (2008) The Charlson comorbidity index is adapted to predict costs of chronic disease in primary care patients. J Clin Epidemiol 61: 1234-1240.

23. Savage RD, Wu W, Li J, Lawson A, Bronskill SE, et al. (2021) Loneliness among older adults in the community during COVID-19: A cross-sectional survey in Canada. BMJ Open 11: 044517.

24. Wong SYS, Zhang D, Sit RWS, Yip BHK, Chung RY, et al. (2020) Impact of COVID-19 on loneliness, mental health, and health service utilisation: A prospective cohort study of older adults with multimorbidity in primary care. Br J Gen Pract 70: 817-824.

25. Zovetti N, Rossetti MG, Perlini C, Brambilla P, Bellani M (2021) Neuroimaging studies exploring the neural basis of social isolation. Epidemiol Psychiatr Sci 30: 29.

26. Kim AJ, Beam CR, Greenberg NE, Burke SL (2020) Health Factors as Potential Mediators of the Longitudinal Effect of Loneliness on General Cognitive Ability. Am J Geriatr Psychiatry 28: 1272-1283.

27. Marshall GA, Zoller AS, Kelly KE, Amariglio RE, Locascio JJ, et al. (2014) Everyday Cognition Scale Items that Best Discriminate Between and Predict Progression From Clinically Normal to Mild Cognitive Impairment. Curr Alzheimer Res 11: 853-861.

28. Bzdok D, Dunbar RIM (2020) The Neurobiology of Social Distance. Trends Cogn Sci 24: 717-733.

29. Wilkialis L, Rodrigues N, Majeed A, Lee Y, Lipsitz O, et al. (2021) Loneliness-based impaired reward system pathway: Theoretical and clinical analysis and application. Psychiatry Res 298: 113800.

30. Shankar A, Hamer M, McMunn A, Steptoe A (2013) Social isolation and loneliness: Relationships with cognitive function during 4 years of follow-up in the English longitudinal study of ageing. Psychosom Med 75: 161-170.

31. Lara E, Caballero FF, Rico-Uribe LA, Olaya B, Haro JM, et al. (2019) Are loneliness and social isolation associated with cognitive decline? Int J Geriatr Psychiatry 34: 1613-1622.

32. Burns J, Movsisyan A, Jm S, Coenen M, Kmf E, et al. (2020) Travel-related control measures to contain the COVID-19 pandemic: a rapid review. Cochrane Database Syst Rev 10: CD013717.

33. Brailean A, Steptoe A, Batty GD, Zaninotto P, Llewellyn DJ (2019) Are subjective memory complaints indicative of objective cognitive decline or depressive symptoms? Findings from the English Longitudinal Study of Ageing. J Psychiatr Res 110: 143-151.

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