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Original research

Relationship between mood disorders and functional decline in older adults during the COVID-19 pandemic

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ABSTRACT

Introduction: During the COVID-19 pandemic, isolation and reduction in mobility have increased the rate of depression and anxiety. This paper reviews the incidence of mood disorders and functional decline in older adults during this period. **Methods:** We used the Geriatric Depression Scale, the Goldberg anxiety Scale, the Lawton and Brody, and Katz scales to draw our conclusions. **Results:** A total of 237 patients were clinically evaluated, being 163 women and 74 men. Of the 163 women in the study, 117 suffered from anxiety and 122 from depression. Also, 75 women out of the 163 included in the study, had COVID-19. Of the 74 men evaluated, 35 presented symptoms of anxiety and 27 of depression, the group age that presented the most anxiety were adults between 60 and 69 years old, and depression between 80 and 89 years old. Of these men, 22 had COVID-19. **Conclusion:** Confinement during the COVID-19 pandemic has increased depression and anxiety levels in older adults, which in turn has had significant impact on their mental health.

Key words: older persons; depression; anxiety; functional decline; pandemic.

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RESUMEN

Introducción: Durante la pandemia de la COVID-19, el aislamiento y la reducción en movilidad ha incrementado la tasa de depresión y ansiedad en la población. Este artículo analiza la incidencia de trastornos del estado de ánimo y del deterioro funcional en adultos mayores. **Métodos**: Se utilizó la Escala de Depresión Geriátrica, la Escala de Ansiedad de Goldberg, Lawton, Brody y Katz para obtener las conclusiones. **Resultados**: Se evaluó a un total de 237 pacientes, de los cuales 163 fueron mujeres y 74 hombres. De las 163 mujeres evaluadas, 117 tuvieron ansiedad y de este mismo grupo, 122 presentaron depresión. Además, 75 mujeres de las 163 incluidas en el estudio dieron positivo a COVID-19. De los 74 hombres evaluados, 35 presentaron ansiedad y 27 depresión. El grupo de edad que sufrió más síntomas de ansiedad fue el de 60 a 69 años y depresión el de 80 a 89 años. De estos hombres, 22 también dieron positivo a COVID-19. **Conclusión**: Los altos niveles de depresión y ansiedad debido al aislamiento tienen un gran impacto en la salud mental del adulto mayor.

Palabras clave: personas mayores; depresión; ansiedad; deterioro funcional; pandemia.

INTRODUCTION

What initiated as a group of patients presenting unexplained causes of pneumonia in Wuhan, China was in fact an affliction caused by the coronavirus or COVID-19 as was established by the World Health Organization. This outbreak turned into a worldwide pandemic.[1] The risk of COVID-19 is higher in older adults, being more severe in this age group, having the highest rate of severe illness, hospitalization, intensive care admission, and death. Mortality occurs in almost a quarter of elderly people above 80 years old.[1]

Depression and anxiety during the COVID-19 pandemic

To diminish the risk of COVID-19 exposure, social distancing was suggested and implemented. People stayed at home due to the fear of contracting the virus. This fear of getting sick along with the lack of treatment, the uncertainty about this illness in general, the risk of death, economic loss, changes in daily routine and ultimately the loss of social engagements, were all factors that contributed to the psychological distress and increase symptoms of mental illness among the population, being the older adults the most vulnerable.[1-3]

The high rate of depression and anxiety that occurred during this COVID-19 outbreak indicates the imperative necessity of mental care and prevention. One main concern is that while a permanent solution to fighting this virus is discovered, the entire world has to live with this uncertainty which in turn affects levels of depression and anxiety amplified by already pre-existing conditions regarding mental illness.[1-10]

Seniors are more likely to suffer from depressive and anxiety disorders because of the physiological changes that occur with age; but nevertheless, during the pandemic, many extrinsic factors arose, causing the geriatric population to suffer from these types of alterations in their emotional and mental state.[5-8]

First of all, life stressors such as belonging to a high risk population because of their age and comorbidities or having to deal with the death of their peers, generated additional concerns and anxiety among adults over 60 years old, causing severe psychological effects on this population that often go unattended.[5-6] Another predisposing factor is the lack of technological expertise. Online platforms are now being used to connect with others, and as a preventive measure during the pandemic, our routine activities happen in this space without the risk of being physically in contact with others. Nevertheless, most of the geriatric population is not skilled enough to use these platforms, so they find themselves with increased vulnerabilities, not being able to connect with others causing higher risks for developing panic and anxiety. Additionally, for older adults who lived alone, family visits were a major source of social interaction, which disappeared during the pandemic, leading to social isolation and a reduction of their quality of life, with increased susceptibility for depression.[5-7]

Both loneliness and social isolation have been associated with increased risk for coronary artery disease related death and are independent factors for higher all-cause mortality.[1-10] Exacerbated symptoms of depression may also be caused by loneliness, and may be accompanied by functional and cognitive decline, and a highest rate of suicidal attempts among older adults. Reason why it is very important to know the atypical presentation that might be seen in older adults that suffer depression in order to prevent negative outcomes.[1-10]

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One such outcome is the misdiagnosis of depression, which in the elderly population significantly impacts cognition as a dementing illness. It is important to keep this in mind to decrease the number of misdiagnosed patients, but also, because several studies have concluded that depression is associated with a higher risk of developing dementia or Alzheimer's later in life.[9] In older patients, complaining about being depressed may not be the primary symptom, instead, they may present with physical manifestations such as fatigue, weight loss, pain or memory deterioration. In some cases, they also refuse to eat, drink or use medication, and they may start having problems with self-care.[10-11]

Functional Impairment

Sedentarism is a global public health problem. It is the leading risk factor for obesity, chronic conditions, and mortality.[2] Older adults are at more risk of this type of lifestyle and during the pandemic, self-isolation is of great concern, making them more prone to frailty and sarcopenia.[12,13] Inactivity results in increased risk of fractures, recurrent falls, and functional limitations, all of this accompanied by poor mental health and a poor quality of life. Isolation has increased sedentary behaviors, such as spending a lot of time sitting or lying down. Maintaining physical activity in older adults with chronic conditions is important since it reduces the risk of complications. Many home-based activities, or aerobic exercise at home may help reduce these risks.[1-6]

It is important to have good social and medical support, so that adequate procedures and treatments or interventions can be done promptly. Some of the recommended approaches to address mental concerns are to maintain connections with the family utilizing either protective equipment or technological devices. Even though the lack of knowledge of technology presents itself as a limitation for some old people, there are ways to overcome those barriers. Other interventions include physical activity, with regular scheduling, exercise programs, music programs, and mental activities. Outdoor activities may be done, but with social distancing and with adequate protection. Meditation and other relaxation techniques are helpful for the mind and body and can decrease levels of anxiety and depression.[1-9]

Screening tools and rating scales can help us understand the impact of the pandemic on mental health. Medical assistance should be available promptly, this may be physically at the medical office or online. When these patients are taking psychiatric medications, primary caregivers should be aware of the correct intake and an adequate supply.[1-10]

METHODS

A comprehensive geriatric assessment of each patient was performed in person by a specialist geriatrician. Demographic data was collected such as age and sex, and clinical data such as the presence or absence of a SARS-CoV-2 infection diagnosed by PCR or antigen rapid tests.

Scales

Functional assessments were carried out using Katz Index of Independence in Activities of Daily Living scales (ADL), which was performed through the observation of patient performance. Patients were classified as "dependent" requiring assistance, or "independent" if they performed activity without assistance in the 6 items evaluated in the ADL. These six items were bathing, dressing, toileting, transferring, continence, and feeding. A score of 6 indicates complete independence, 4 indicates moderate impairment, and a score below 4 indicates severe functional impairment.

The other functional assessment was the Lawton-Brody Instrumental Activities of Daily Living Scale (IADL). There are eight domains of function assessed (ability to use the phone, shopping, food preparation, housekeeping, laundry, mode of transportation, responsibility of own medication, and the ability to handle finances), score ranges from 0 (low function, dependent) to 8 (high function, independent).

Regarding mental health, we used the Geriatric Depression Scale (GDS) short form, which consisted of 15 questions, a score above 5 suggested depression.

The other evaluation was the Goldberg Anxiety Scale. Each "Yes" scores one point. The higher the score, the more likely the individual taking the test has "low-functioning", or moderate to severe anxiety.

Functional imbalance, anxiety disorders, and depression were defined as a decline of at least one category of each variable during the first wave of the COVID-19 pandemic. After obtaining a signed informed consent from each patient or family member, the data was collected on anonymous data collection sheets, which were later entered into the database.

Statistical analysis

This paper reviewed the incidence of depression and anxiety in older adults, and its effect in functional decline. A

descriptive, quantitative, cross-sectional and non-experimental study was carried out. The group of patients evaluated were 237 patients between 60 and 100 years old that had appointments at a private geriatric medical office in Mexico City from March to November 2020. Out of these patients, 163 were women (68.78%), and 74 were men (31.22%). The statistical analysis measures of central tendency and dispersion were used; while for the difference of nominal variables the X^2 test was used. More specifically, for quantitative variables, the mean and deviation were calculated and used. For qualitative or categorical variables, we used frequencies and percentages; and to calculate the difference of categorical variables, the Chi-squared Test was applied. We obtained the prevalence by a proportion multiplied by 100. The statistical program SPSS, version 21, was utilized.

RESULTS

According to the population census of 2020 done by the INEGI (National Institute of Statistics and Geography), Mexico City's population divided by gender is 52.17% women and 47.83% men among which older adults (60 years and above) represent a quarter of this population, being the majority between 60 and 69 years old.[14,15]

Of the total number of older women in Mexico City, which is less than a million, 1.15% had a COVID-19 infection between March and November of 2020. The most affected age group was between 60 and 69 year olds.[14,15]

Of the total number of older men in Mexico City, which is a little more than half a million, 0.17% suffered from a COVID-19 infection, and the same age group was the most affected, between 60 and 69 year olds.[14,15]

A total of 237 patients that went to medical appointments in a private medical office, or that were evaluated at their homes in Mexico City, were clinically assessed. Out of these patients, 163 were women (68.78%), and 74 were men (31.22%) (Table 1).

In this study, among the older adults that had a positive COVID-19 test, 74 were women (31.22% from the total sample), and 22 were men (9.28% from the total sample). This means that 40.5 % of the 237 patients in the study got sick of COVID-19. Additionally, COVID-19 infections occurred more frequently in people between 60 and 69 years, regardless of gender (Table 1).

Table I. Data regarding relationship between having COVID-19 and functional decline or mood disorders divided by gender.

n=237	COVID-19 (n=96)	%	Non COVID-19 (n=141)	%	P value
Sex					
Female	74	31.22%	89	37.55%	> 0.001
Male	22	9.28%	52	21.94%	
Katz					
Dependent female	42	17.72%	88	37.13%	> 0.001
Dependent male	6	2.53%	52	21.94%	
Lawton-Brody					
Dependent female	46	19.41%	92	38.82%	> 0.001
Dependent male	8	3.38%	56	23.63%	
GDS					
Women depressed	74	31.22%	48	20.25%	> 0.001
Men depressed	22	9.28%	5	2.11%	
Goldberg Anxiety Scale					
Women with anxiety	74	31.22%	43	18.14%	> 0.001
Men with anxiety	22	9.28%	35	14.77%	

Note: Statistical Analysis made with Chi-squared Test. GDS: Geriatric Depression Scale.

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Out of the 163 women in the study, 117 (71.78%) suffered from anxiety and out of these 163 women, 122 (74.85%) had depression. Out of this group of patients, there was a strong correlation between COVID-19 and these two mood disorders with ($p < 0.001$). In other words, 100% of the patients with COVID-19 presented anxiety and depression (Figure 1 and 2).

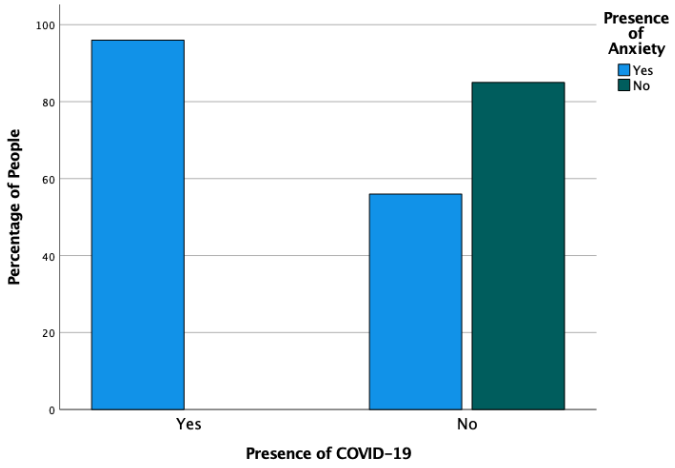

Figure 1. Presence of anxiety in patients with and without COVID-19.

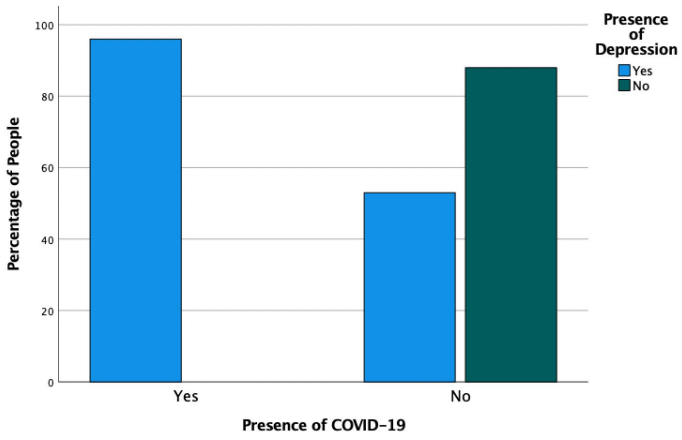

Figure 2. Presence of depression in patients with and without COVID-19.

Out of the 74 men evaluated, 35 (47.3%) presented symptoms of anxiety and 27 (36.49%) of depression, the age group that presented the most anxiety was between 60 and 69 year olds, and the ones who presented the most depression were between 80 and 89 years old. The incidence of depression in men was associated to a COVID-19 infection, but the anxiety was related to other factors. The group that suffered the most functional decline were older adults between 80 and 89 years old, occurring in almost 90% of these patients (Table 1). With regards to depression and anxiety, a link to COVID-19 was observed (Tables 2 and 3).

Table 2. Statistical Analysis regarding relationship between having COVID-19 in elders included in this study.

			Presence of anxiety		
			Yes	**No**	**Total**
Presence of COVID-19	**Yes**	**Count**	96	0	96
		% Presence of anxiety	63,2%	0,0%	40,5%
	No	**Count**	56	85	141
		% Presence of anxiety	36,8%	100%	59,5%
Total		**Count**	152	85	237
		% Presence of anxiety	100%	100%	100%

Table 3. Statistical Analysis regarding relationship between having COVID-19 and anxiety in elders included in this article.

			Presence of depression		
			Yes	No	Total
Presence of COVID-19	Yes	Count	96	0	96
		% Presence of depression	64,4%	0,0%	40,5%
	No	Count	53	88	141
		% Presence of depression	35,6%	100%	59,5%
Total		Count	149	88	237
		% Presence of depression	100%	100%	100%

The functional decrease in Activities of Daily Living was observed more in those people who did not suffer from a COVID-19 infection than in those who did (Figure 3). Functional decline in Instrumental Activities of Daily Living was also not related to having a COVID-19 infection, and the number of patients was similar to that of Activities of Daily Living (Figure 4).

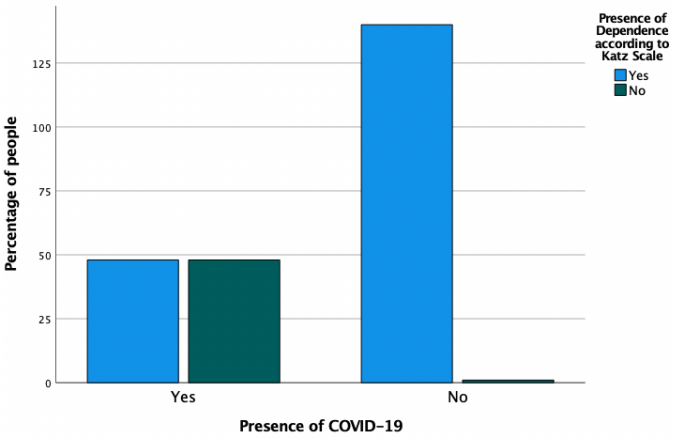

Figure 3. Presence of dependence according to Katz Scale in patients with and without COVID-19.

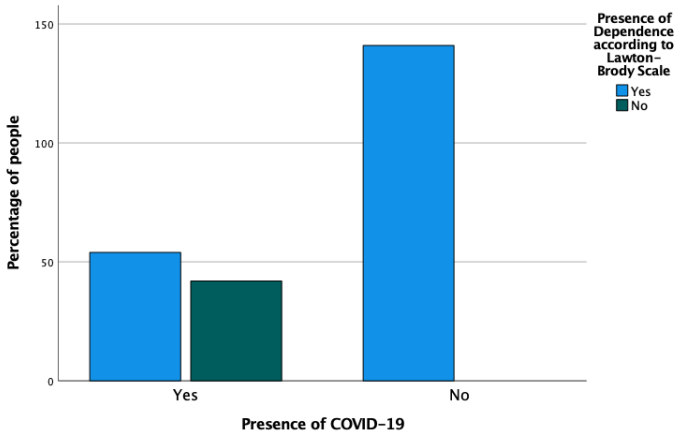

Figure 4. Presence of dependence according to Lawton-Brody Scale in patients with and without COVID-19.

We can conclude then that the functional decrease is not affected in the Activities of Daily Living, nor in the Instrumental Activities of Daily Living, by the COVID-19 infection in elderly patients ($p < 0.001$).

DISCUSSION

The findings of this study show that older adults presented a significant worsening of their functional and emotional status after the first wave of the pandemic, regardless of whether or not they were infected with SARS-CoV-2, but it was mostly related with isolation, which has led to an

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avoidable worsening of the overall condition in the elderly. Self-isolation has resulted in immobility, lack of cognitive stimulation, depression, and anxiety.

What this study illustrates is that depression and anxiety were clearly related to COVID-19 infection, while not all patients in the sample had anxiety/depression, all those who were infected did have anxiety and depression (statistical analysis in Tables 2 and 3).

Functional impairment, on the other hand, was not affected by the infection, since not all patients with COVID-19 had dependency on the Katz and Lawton Brody scales. Interestingly, all the patients who did not have the infection did have functional deterioration. Could it be that the infection helped some older patients to be more independent? This will be an interesting topic to investigate in future studies.

These findings may help us target geriatric patients with various interventions to prevent complications from functional decline or mental health problems; otherwise there could be a significant decline in the health of older adults. Since this is an observational article, these results cannot be considered conclusive or extrapolated to the general population, more studies are necessary.

CONCLUSION

The impact that the COVID-19 pandemic has had in older adults is overwhelming. This is observed and linked to social isolation more than the infection itself. The present study shows that depression and anxiety were clearly related to COVID-19 infections. Functional impairment, on the other hand was not affected by the infection. It is imperative to create strategies to prevent this, to guarantee a good quality of life. Some of the interventions are to stimulate patients to move and to do physical activities (indoors or outdoors) with all the cautions already known worldwide, and to implement the knowledge and use of technology so that there can be more communication with other people and the possibility of developing social skills. These findings help us acknowledge the risks that people over 60 have, to develop these conditions and help us find strategies to prevent them.

CLARIFYING NOTE

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CONFLICTS OF INTEREST

Members of the writing group declare no conflicts of interest.

ETHICAL DISCLOSURES

Protection of human and animal subjects. The authors declare that no experiments were performed on humans or animals for this study.

Confidentiality of data. The authors declare that they have followed the protocols of their work center on the publication of patient data.

Right to privacy and informed consent. The authors declare that no patient data appear in this article.

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