

RESEARCH ARTICLE

Quality of life, mood, and cognitive performance in older adults with cognitive impairment during the first wave of COVID 19 in Argentina

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Abstract

Background and Objectives: In Argentina, government has established lockdown on 19 March 2020 to decrease SARS-COV-2 infection. The study aim was to understand how mandatory quarantine imposed due to COVID-19 pandemic has affected quality of life, mood, and cognitive performance of older adults with cognitive impairment.

Design: Longitudinal descriptive-observational study.

Participants: Patients with cognitive impairment attending to online cognitive training sessions.

Measurements: Participants have completed by themselves Quality of Life in Alzheimer's Disease scale (QOL-AD), Beck Depression Inventory (BDI-II), Test your Memory (TYM), and an attention and executive task created by our institution. Same assessments were done at the beginning of the lockdown and 7 months later.

Results: Fifty-one adults were included. An increase in BDI-II score ($p = 0.049$) and worse performance in one of the executive attention tests ($p = 0.012$) have been found. No significant differences in QOL-AD, TYM, verbal fluency, or memory tests total scores have been observed. Reviewing scales subitems, differences in changes in sleep habits ($p = 0.021$), energy level decrease ($p = 0.004$), worse subjective record of memory capacity ($p = 0.028$), and decrease in ability to do housework ($p = 0.007$) have been shown. In those who lived alone, BDI and TYM higher scores in BDI-II ($p = 0.030$) ($p = 0.022$) have been found.

Conclusion: Mandatory quarantine imposed due to COVID-19 pandemic was associated with worsening of mood, some quality-of-life variables, and decrease in attention in older adults with cognitive impairment in Argentina.

KEYWORDS

cognitive, cognitive impairment, cognitive performance, COVID-19, first wave, isolation, quality of life, quarantine

Key points

- These results provide evidence of the negative impact of social isolation in the emotional and cognitive sphere of patients with cognitive impairment

1 | INTRODUCTION

Coronavirus disease caused by the SARS-CoV-2 virus spread around the world and was recognized as a pandemic by the World Health Organization on 11 March 2020.¹ In Argentina, in order to gain time to prevent coronavirus spread and slow down the infection rate, from Thursday, March 19 at midnight, citizens had to stay at home respecting different isolation protocols.² Measures taken during quarantine lasted for months, until the end of November. Isolation affected the entire population, including older adults.

All around the world, several studies showed lockdown effects on mental health³; anxiety, depression, insomnia, and post-traumatic stress have been reported as the main set of symptoms in both health professionals and general population.⁴ Loneliness has always been identified as a strong predictor and social isolation as possible aggravating factors for neuropsychiatric and non-neuropsychiatric symptoms^{5,6} It has also been described that having economic stability and the belief of having received adequate information about the pandemic acted as protective factors against the mental conditions described.⁵

Changes in behavior and mood, mainly agitation, aggression, apathy, depression,⁷ and changes in sleep habits,⁸ have been observed in people with cognitive impairment and dementia as a consequence of confinement. This was associated with a psychotropic medication utilization increase.⁹

It is well known and essential for cognitively impaired older adults to continue participating in social activities to maintain a good quality of life.¹⁰ However, this unprecedented health crisis has forced us to quickly adapt to exceptional conditions. Both the impact of the outbreak itself and the isolation measures during quarantine, beyond interpersonal ties, have affected doctor-patient relationship^{11,12} generating a lack of clinical control capable of modifying changes in people's lifestyle and cognitive performance.¹³ Given this shortcoming, both health professionals and patients have had to adapt to virtual monitoring and treatment.¹⁴

Argentina is one of the countries with the oldest population in Latin America. The population 60 years and older amounts to 15.7% of the total population in 2020, almost 7.1 million people.¹⁵

Dementia prevalence is estimated in our country is 12.18% in subjects over 65 years.¹⁶ A pilot study has showed 23% cognitive impairment in 23% in subjects over 60 years. Prevalence between 60 and 69 years was 16.9%, between 70 and 79 years 23.3%, and in people over 80 years of age it was reached to 42.5%.¹⁷

Considering the potential epidemiological relevance, the aim of this paper is to evaluate mandatory quarantine imposed due to COVID-19 pandemic impact on quality of life, mood, and cognitive performance in cognitively impaired older adults who were participating in online cognitive-behavioral training groups.

2 | METHODS

Scales and tests have been sent to all participants in our cognitive-behavioral training program (CBTP) the last week of March 2020, at the beginning of mandatory isolation ($n = 298$)

and during the first weeks of October 2020 ($n = 251$), when most of the subjects still have restrictions in their daily life.

CBTP participants include groups of patients with subjective cognitive decline (SCD), mild cognitive impairment (MCI), and dementia, according to the current clinical criteria.¹⁸⁻²⁰

Our CBTP is based on 6-h-per-week different activities including cognitive and language stimulation, music therapy, stimulation through art, occupational and recreational therapy. These treatment therapies have changed from face to face to an online environment (Appendix A).

Patients completed Quality of Life in Alzheimer's Disease survey (QOL AD-patient version, self-administered),²¹ Beck Depression Inventory (BD-II),²² Test your Memory (TYM test, self-administered screening tool for higher intellectual functions),²³ and two tasks designed by our institution for this occasion, to evaluate attention and executive functions.

TYM naming task item has been adapted and instead of drawing, clock has been presented and participants had to indicate time that was showed (the correct answer as in the original test was scored with a 4). In addition to the verbal fluency task, other tests to measure cognitive flexibility ("write 5 words that start with M, when you finish write 5 more that start with A, and so on for one minute"), and immediate and delayed memory have been added. To evaluate this last function, the list of five words from the Memory Alternation Test (T@M)²⁴ have been utilized: cherry-elephant-green-axe-piano, and the volunteer has been asked to read and remember them and later, without rereading the list, to try to reproduce them on a black line.

Two additional tasks have been designed to explore executive attention. The first task was an audio dictation of reverse digits backward. Patients had to write the answer they thought was correct on the same digital platform (the tasks had an ascending difficulty from 3 to 5). The second task included another audio with a song fragment in which patients had to count the number of times they heard a designated word and write the answer with a maximum score of 19.

To avoid a possible learning effect in those patients who have performed a recent cognitive assessment, none of the cognitive assessments utilized in this study are part of the standard cognitive assessment performed at our center.

The study variables were analyzed. Data were evaluated with SPSS software and means, standard deviations, and *t*-test for repeated measures were calculated.

3 | RESULTS

Sixty-six participants have completed all questionnaires in March and 98 in October. Only 51 participants that have completed all the assessments at both timepoints have been included for analysis. In all cases, assessments have been completed in an autonomous way and questionnaire access was available only once without change possibility.

Fifty-one patients (43 women) have been included, with a 68.53 mean age (SD 8.06) and 14.33 mean education years (SD 2.63), 42 of

whom were retired. Twenty-three patients lived alone, 19 lived with one person and 9 lived with two or more people. Forty-nine patients have attended online CBTP at Favaloro Foundation Neuroscience Institute during the whole period but two participants completed the assessments in March and October but discontinued the CBTP before October. Fourteen of these 51 patients have also performed both tasks designed by our institution to evaluate executive attention. In terms of subjects diagnosis, 4 participants full field diagnostic criteria for SCD and 47 for MCI; none of the subjects met dementia criteria diagnosis. The Addenbrooke's Cognitive Evaluation—III (ACE III) mean was 92.58 (SD 5.57)²⁵ and Mini Mental State Examination mean was 29.12 (SD 1.17) (Table 1).²⁶

When comparing two timepoint administration (March vs. October), BDI-II score increase has been observed ($p = 0.049$). No significant differences were found in the QOL-AD total score ($p = 0.090$), TYM ($p = 0.067$), in the verbal fluency task ($p = 0.323$), nor in the five words list delayed recall ($p = 0.098$; Table 1).

A worse performance has been observed in the executive attention assessment counting the number of times a word was repeated while listening a song fragment audio ($p = 0.012$). No significant differences were found in the reverse digit test ($p = 1$; Table 2).

Further analysis within BDI-II questionnaire showed significant differences in changes in sleep habits between March and October ($p = 0.021$). In October, there were significant decreases in the number of hours of sleep, as well as awakenings 1 or 2 h earlier, without being able to fall asleep again. Moreover, in the follow-up evaluation, patients reported that they considered themselves less valuable when compared to others ($p = 0.048$). No significant differences were observed in the report of agitation ($p = 0.531$), irritability ($p = 0.083$), or fatigue ($p = 0.095$).

The QOL-AD questionnaire showed a significant decrease in the energy level between March and October ($p = 0.004$), a worse subjective record of memory capacity ($p = 0.028$) and a worse ability to do housework and other duties that patients needed to do ($p = 0.007$). We did not observe significant changes on the report of relationships with relatives ($p = 0.821$) or economic situation ($p = 0.472$) (Table 3).

When reviewing people who lived alone, higher scores have been observed in the BDI-II ($p = 0.030$) and TYM ($p = 0.022$) and no differences have been found in QOL-AD ($p = 0.423$) between March and October. Regarding people who lived with only one person, no

TABLE 1 Descriptive Information of the sample ($n = 51$)

Gender (female)	43
Retired	42
Age ^a	68.53 (8.06)
Years of education ^a	14.33 (2.63)
SCD/MCI/Dementia	4/47/0
ACE ^a	92.58 (5.57)
MMSE ^a	29.12 (1.17)

Abbreviations: ACE, Addenbrooke cognitive examination; MCI, mild cognitive impairment; MMSE, Mini Mental Status Examination; SCD, subjective cognitive decline.

^aMean (SD).

significant differences have been seen in BDI-II ($p = 0.941$), QOL-AD ($p = 0.896$) and TYM ($p = 0.161$).

In patients living with two or more people, there was a tendency to decrease the total quality of life score ($p = 0.056$), changing from March mean QOL-AD of 39 (SD = 4.98) to mean of 35.44 (SD = 5) in October. Within this group, no significant differences were found in either BDI-II ($p = 0.266$) nor TYM ($p = 0.699$).

4 | DISCUSSION

Quarantine measures have proven to be an effective way to mitigate COVID infections during the pandemic. Nonetheless, this study supports the evidence that isolation may increase clinically relevant symptoms in older adults, affecting their quality of life and neuropsychiatric diseases stability.

TABLE 2 Results March versus October

	March M (SD)	October M (SD)	t-Test
BDI-II	11.25 (6.88)	13 (8.01)	0.049
QOL AD	36.98 (4.09)	36.04 (4.8)	0.090
TYM	45.67 (2.93)	46.39 (2.68)	0.067
Fluency	12.51 (4.54)	13.22 (4.58)	0.323
Memory	3.1 (1.83)	3.53 (1.65)	0.098
Attention	18.5 (2.1)	15.43 (4.94)	0.012
Reverse digits	2.14 (0.77)	2.14 (0.663)	1.00

Note: $n = 14$.

* $p < 0.05$.

TABLE 3 Results March versus October

	March M (SD)	October M (SD)	t-Test
BDI-II			
Agitation	0.35 (0.594)	0.41 (0.497)	0.531
Changes in sleep habits	0.88 (0.683)	1.18 (0.767)	0.021*
Feeling of worthlessness	0.35 (0.594)	0.53 (0.758)	0.048*
Irritability	0.18 (0.434)	0.29 (0.51)	0.083
Fatigue	0.65 (0.658)	0.82 (0.684)	0.095
QOL AD			
Level of energy	2.8 (0.53)	2.51 (0.674)	0.004*
Relatives relationship	3.14 (0.633)	3.16 (0.674)	0.821
Subjective memory capacity	2.45 (0.541)	2.27 (0.666)	0.028*
Ability to do housework	2.88 (0.588)	2.61 (0.635)	0.007*
Economic situation	2.65 (0.658)	2.71 (0.61)	0.472

* $p < 0.05$.

It is well known that COVID-19 pandemic restrictions have affected subjects with MC/decline. Most affected domains for that population were communication, mood, movement, and compliance with the new measures.²⁷

However, this is the first longitudinal study that evaluated COVID mandatory quarantine effects on the quality of life and some specific cognitive functions in (SACO) older adults with cognitive disorders in Argentina and in Latin America.

Di Santo et al.¹³ showed an association between depression and living alone or living with others but having a bad cohabitation relationship. We have seen high depressive symptomatology in those who lived alone and a worsen quality-of-life trend in all of those who lived with two or more people. As stated by Cagnin et al.⁸ we have found noticeable changes in sleep habits. However, in contrast to previous published results, the study did not show increased irritability, agitation, or fatigue.

González-Sanguino et al.⁵ have reported a negative association between economic stability and depression. Even though our results do not show a greater concern for the patients' economic situation, we see greater depressive symptoms that may be related to quarantine prolongation that may work as stressor, as Brooks et al.²⁸ have been reported.

We have observed lower energy levels, worse perception about memory capacity, greater difficulty in doing household chores, and greater feelings of worthlessness. In addition, subjects who performed selective attention tasks showed worse performance after several months of isolation.

Given the discrepancy between our patients' perception of memory and the results of the tasks that evaluate this function, it is possible that the patients have a negative bias with respect to their real memory function.

Notably, those patients who lived alone showed better performance in TYM. This result may be due to a possible learning effect or, as reported by Hampel and Vergallo,¹⁴ a better handling of technologic tools (new tools for many of the patients at the beginning of isolation). Besides, it is possible that those who lived alone had a better performance in their daily activities and therefore a lower compromise of their cognitive functions. Our study participants have attended to training program during this period and remained in contact with health professionals. This interaction could have positively influenced into this self-administered test performance.

These results provide some evidence of the probable negative impact of social isolation on the emotional sphere, quality of life of patients with cognitive impairment,²⁹ and on the older adults cognitive functioning.³⁰

There are some important limitations in this study. We have utilized self-administered test that may lead to response errors related the tool utilization in cognitive impaired adults but not to subject real performance. Future studies should include validated tests taken by experts instead of self-administered assessments. This would also allow to add more impaired subjects and not only MCI

participants because self-administered assessments and scales is more difficult in subjects with dementia.

Another study limitation is that some of the assessments utilized were created or adapted for this study so don't have published normative data. Lack of ecological neuropsychological self-administered battery in the scientific literature and the clear need to evaluate the subjects when quarantine start has determined the decision to administer this novel assessment. Performing normative before the study data would have delayed study initiation and affected study objectives.

The other limitation is the size. It is important to highlight that our institution works with patients with different types of pathology that potentially affect cognition. A larger sample could differentiate patients according to their etiology, and thus have a more detailed knowledge of their clinical evolution according to their specific disease.

Finally, it could be assumed that cognitive-behavioral training group with health professionals who were worried about patients medical and psychosocial aspects could be potentially acted as a protective factor. This situation may avoid quality of life and cognitive performance deterioration. Future investigations may also consider including older adults naives to health institution follow-up and/or treatment.

The study shows that beyond health actions to reduce infection and mortality due to COVID, it is essential to be aware of the consequences in different spheres that confinement can have on the population, particularly on the most vulnerable, in order to make decisions that can mitigate these alterations. Actions such as increased social support and remote medical follow-up should be taken to reduce the cognitive and behavioral disturbances that affect patients with cognitive impairment.

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CONFLICT OF INTEREST

The authors declare no conflict of interests.

AUTHOR CONTRIBUTIONS

Irina Arag3n and Ignacio Flores were involved in formulating the research question, designing the study, collecting the data, performing the statistical analyses and writing the paper. G. Dorman was involved in analyzing the data and assisted with the writing. G. Rojas, N. Sierra Sanjurjo, and S. O'Neill were involved in designing the study, supervised the data collection, and approved the final paper.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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APPENDIX A

The cognitive-behavioral training program is designed as a prevention and rehabilitation center for people with complaints and/or cognitive difficulties with different etiologies. The treatment is carried out by an interdisciplinary team with neuropsychologists, speech pathologists, occupational therapists, neurologists, psychiatrists, and neuropsychiatrists.

The patients attend the groups with a frequency of twice a week, 3 h each time where they carry out activities of cognitive

and language stimulation, stimulation through art, music therapy, occupational and recreational therapy. Likewise, they are encouraged to socialize with their peer group and are provided with tools for technological empowerment, especially for older adults. In addition, they have follow-up medical consultations by our team doctors.

The groups were held in person until mid-March 2020, moving to synchronous online mode as of April 2020 with group video calls by Google Meet.