



# Neuropsychological Assessment in Times of Social Distancing: What Can Telemedicine Offer to Older Adults?

**María Josefina Gonzalez Aguilar**

Facultad de Ciencias Biomédicas - Universidad Austral

**\*Corresponding author:** María Josefina Gonzalez Aguilar, Facultad de Ciencias Biomédicas - Universidad Austral.

**Received Date:** July 21, 2021

**Published Date:** August 06, 2021

## Abstract

Neuropsychological assessment is responsible for exploring cognitive performance through the administration of standardized tests. It collaborates with the clinical diagnosis and delivers objective information on cognitive deficits and abilities. Telemedicine is a tool that can be used to distribute medicine in a different and novel way to any part of the world and is especially useful for places where physical access to hospitals is difficult or impossible. The use of technology for neuropsychological evaluation is growing at an accelerated rate, both due to the advancement of technological facilities and, currently, due to the present health emergency context. Older adults were the first group to get confined, so they are protected from the daily activities that may be associated to the COVID-19 virus, but an interesting paradox has arisen: older adults are confined at home for protection, but with this measure, many of them are not able to receive medical attention. Given the growing demand to provide services in virtual mode due to the COVID-19 pandemic, it is important to review the usefulness of teleneuropsychology and its benefits for attending older adults with cognitive complaints or a dementia diagnosis. Teleneuropsychology is a novel approach and the literature on this professional practice is still very limited, since to date there are few research studies on the use of this modality.

**Keywords:** Cognitive complaints; COVID-19; Neuropsychological assessment; Older adults; Telemedicine

## Introduction

### Origin and objectives of teleneuropsychology

Telemedicine is a tool that can be used as a way to distribute medicine in a different and novel way to any part of the world, and it is especially useful for inaccessible places where people are not able to visit a specialist or a nearby hospital [1]. Telemedicine was originally thought as a way to assist people living in rural areas. This sort of clinical attention offered the possibility of connecting these people with specialized medical care, avoiding the transport of patients, allowing the reduction of economic cost and loss of time [2].

As time went by, advances in technologies and the availability of broadband connections in most homes and workplaces expanded

telemedicine services bringing a whole new paradigm on how clinical attention may be offered [3]. For the past decade, the use of internet in the daily work of neuropsychologists acquired more relevance, and the use of technology in the assessment-treatment process became more and more common in the professional practice [4]. Psychological treatment via telemedicine has been demonstrating its efficacy and satisfaction comparable to that of face-to-face attention in a wide variety of clinical settings and with specific populations, in the same way that its use has been shown to be effective for the diagnosis and treatment of various mental disorders [5]. The effectiveness and feasibility of the use of technology in psychological evaluation, diagnosis and treatment has promoted its use in other areas of psychology, such

as neuropsychology. Teleneuropsychology is defined as the use of audiovisual technology to establish clinical contact with patients to carry out neuropsychological assessments and treatments, recognizing that this has reduced accessibility problems and has allowed the provision of health services in contexts of social distancing [6]. Neuropsychologists perform a variety of roles in different hospital and outpatient settings, either virtually or in person. When a neuropsychologist assesses a patient with a cognitive complaint or a suspected brain damage, the main objectives are to detect and characterize cognitive performance, guide a differential diagnosis and offer recommendations (to the patient and to the family) on daily life activities [7]. Computerized and virtual neuropsychological practices have been slowly integrated into research and professional activities bringing with it the development of computer-based versions of tests that until then could only be carried out using paper and pencil [8,9].

### **COVID-19, social distancing, and neurocognitive assessment**

The COVID-19 pandemic is a global health crisis that has created sudden and unique challenges within the field of clinical neuropsychology. In this context, added to the novelty of this type of virtual approaches, studying the use of teleneuropsychology is relevant and necessary. Currently, the COVID-19 pandemic has profoundly impacted the world, causing significant changes in the daily functioning of society. The policies of social distancing have had enormous repercussions in the health sector, being that these had to be incorporated in a continuous process of modernization, where the field of neuropsychology had to evolve rapidly to incorporate evaluations to be carried out virtually. The various circumstances due to the health emergency confinement required that this care modality, which was before seen just as an alternative, had to become more effective in the face of the high demand [10]. In this way, the pandemic has pushed neuropsychology to become a discipline to evolve beyond traditional settings. In this context, teleneuropsychology could make it possible to measure and monitor cognition performance from home and may also help to identify the optimal time for a comprehensive face to face assessment [11]. Social distancing requirements associated from the COVID-19 pandemic persisted for a long time (and still persist in some countries), and future sanitary contexts may require patients and professionals to have a solid communication system to continue treatment virtually. In this sense, it is essential to have virtual alternatives available for neuropsychology which will improve the access to neuropsychological services [12].

### **The impact of lockdown and the social distancing policy in older adults' health**

The COVID-19 outbreak disrupted violently in the healthcare systems and caused a deep economic and social depression [13]. During early 2020, lockdown and social distancing were the first policies that most countries adopted to slow down the spread of the virus, while massive communication services advised the general

population to avoid going out if it was not urgent [14]. Older adults were considered part of the most vulnerable population and these policies were targeted mainly to them. These measures might have prevented older adults from getting infected, but also impacted negatively in the follow-up of previous health conditions and the need of attention of new medical needs, such as novel cognitive complaints. In this way, professionals had to think of a way to offer continuity of care while protecting this vulnerable population from getting infected [15,16]. During lockdown, non-urgent procedures and most face-to-face visits were suspended, leaving many patients in front of a different dangerous situation: a drastic drop in spontaneous and non-urgent visits to the health care centers [14]. In this context, telemedicine has become critical when providing care and continuity to this vulnerable groups [17,18], and raised concerns about the way illnesses are categorized: is Alzheimer disease or Parkinson disease more or less urgent to attend than a respiratory syndrome? When should older adults with cognitive complaints or cognitive disabilities attend to a medical care health center? [15,17]. Mild cognitive impairment is an intermediate state between normal cognitive ageing and dementia and is a risk factor to progress to dementia in the years following the diagnosis [19]. In this way, early assessment and treatment of mild cognitive impairment in older adults is critical and must be addressed as a pending priority that must be revised in the actual context [16]. Reports around the world show that many patients with chronic diseases delayed their face-to-face visits to their doctors because of fear of getting infected [20-23]. The neglect of patients with neurologic and cognitive complaints has been alarming from early 2020 onwards, and leave health care professionals facing four main pending issues [15]: a) manage the morbimortality of the COVID-19 pandemic, b) consider how non-COVID-19 risk factors (such as hypertension, diabetes, stroke, etc.) must be approached, c) think how we may compensate the care of chronic diseases in older adults (such as cognitive impairment) that were mistreated during times of social distancing, and d) face the post COVID-19 stress effects in health professionals and patients.

### **Usefulness and limitations of teleneuropsychology**

Currently, the applications of teleneuropsychology are growing, but the literature published over the years is still not conclusive regarding the representativeness of cognitive performance through virtual administration and the correlation between this setting and the face-to-face setting [24]. At present, teleneuropsychology is still in development and, despite its many benefits, it has not become a part of the routine of the health care professionals [25]. There is evidence that neuropsychological assessments can produce reliable and valid evaluations [26-33]. In the other hand, some studies have shown subtle differences in task performance when comparing face-to-face assessments with those of tele neuropsychology [34-38]. The benefits of teleneuropsychology include convenience, user satisfaction, potential cost reductions, and improved access (for geographic reasons). In this way, research findings suggest greater

patient acceptability with virtual methods, with 15% of older adults feeling less anxious, 7% finding it easier to concentrate, and a 29% reporting that the assessment was more interesting and fun by participating in video-based assessments [39]. Justice-related problems also arise in terms of equitable access to care through teleneuropsychology: while having access to technology (electronic devices, internet connection) can be a barrier to virtual services, difficult access to transportation may be a barrier to face-to-face services [16].

## Conclusion

During the last two years and especially due to the COVID-19 pandemic, telemedicine and particularly teleneuropsychology have been showing several benefits in the possibility of offering health care services to older adults that cannot access face-to-face visits. Future studies should profoundly analyze local validity and representativeness of teleneuropsychology protocols to facilitate neurocognitive assessment utilizing virtual platforms [16]. Before the COVID-19 pandemic, the American Psychological Association and the Joint Task Force for the Development of Telepsychology Guidelines addressed this issue and gave professionals some guidelines for the adequate offer of virtual services, but the acute nature of the actual context left clear that those guidelines were somehow limited and insufficient [16]. In this context and due to the unprecedented need of novel ways to treat our patients, teleneuropsychology is showing a strong will of expansion, even after the COVID-19 pandemic. Future studies must address the analysis of validity and reliability of this type of attention compared to the face-to-face traditional evaluation, as teleneuropsychology has arrived to stay as a novel form of healthcare delivery.

## Acknowledgements

None

## Conflicts of interest

None

## References

- Tachakra S, Lynch M, Newson R, Stinson A, Sivakumar, et al. (2000) A comparison of telemedicine with face-to-face consultations for trauma management. *Journal of telemedicine and telecare* 6(1): 178-181.
- Kosterink SM, Huis in t Veld, RMHA Cagnie B, Hasenbring M, Vollenbroek Hutten MMR (2010) The clinical effectiveness of a myofeedback-based teletreatment service in patients with non-specific neck and shoulder pain: a randomized controlled trial. *J Telemed Telecare* 16(6): 316-321.
- Parmanto B, Saptono A (2009) Telerehabilitation: State-of-the-art from an informatics perspective. *Int J Telerehabil* 1(1): 73-84.
- Soto Pérez F, Franco M, Monardes C, Jiménez F (2010) Internet y psicología clínica: revisión de las ciberterapias. *Revista de psicopatología y psicología clínica* 15(1): 19-37.
- Richardson LK, Frueh BC, Grubaugh AL, Egede L, Elhai JD (2009) Current directions in videoconferencing Tele-mental health research. *Clin Psychol (New York)* 16(3): 323-338.
- Bilder RM, Postal KS, Barisa M, Aase DM, Cullum CM, et al. (2020) Inter Organizational Practice Committee recommendations/guidance for tele neuropsychology in response to the COVID-19 pandemic. *Arch Clin Neuropsychol* 35(6): 647-659.
- Casaletto KB, Heaton RK (2017) Neuropsychological assessment: Past and future. *J Int Neuropsychol Soc* 23(9): 778-790.
- Cernich AN, Brennana DM, Barker LM, Bleiberg J (2007) Sources of error in computerized neuropsychological assessment. *Arch Clin Neuropsychol* 22(1): 39-48.
- Schlegel R, Gilliland K (2007) Development and quality assurance of computer-based assessment batteries. *Archives of Clinical Neuropsychology* 22(1): 49-61.
- Adams JL, Myers TL, Waddell EM, Spear KL, Schneider RB (2020) Telemedicine: A valuable tool in neurodegenerative diseases. *Curr geriatr rep* 9(2): 72-81.
- Hewitt KC, Rodgin S, Loring DW, Pritchard AE, Jacobson LA (2020) Transitioning to telehealth neuropsychology service: Considerations across adult and pediatric care settings. *Clin Neuropsychol* 34(7): 1335-1351.
- Tailby C, Collins AJ, Vaughan DN, Abbott DF, O Shea M, et al. (2020) Teleneuropsychology in the time of COVID-19: The experience of The Australian Epilepsy Project. *Seizure* 83: 89-97.
- C Huang, Y Wang, X Li (2020) Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China. *Lancet*. 395: 497-506.
- Calandri IL, Hawkes MA, Marrodan M, Ameriso SF, Correale J, et al. (2020) The impact of an early strict nationwide lockdown on the pattern of consultation for neurological diseases. *J Neurol Sci* 418: 117084.
- Chen PM, Hemmen TM (2020) Evolving Healthcare Delivery in Neurology During the Coronavirus Disease 2019 (COVID-19) Pandemic. *Frontiers in neurology* 11: 578.
- Kitaigorodsky M, Loewenstein D, Curiel Cid R, Crocco E, Gorman K, et al. (2021) A Tele neuropsychology Protocol for the Cognitive Assessment of Older Adults During COVID-19. *Front. Psychol* 12: 651136.
- Allegri R, Sevlever G (2020) Invited commentary: the elusive paradox: the woods behind the trees. *Neurology Blogs*.
- Hatcher-Martin JM, Adams JL, Anderson ER, Bove R, Burrus TM, et al. (2020) Telemedicine in neurology: Telemedicine Work Group of the American Academy of Neurology update. *Neurology* 94: 30-38.
- Alzheimer's Association (2020) 2020 Alzheimer's disease facts and figures. *Alzheimers Dement* 16: 391-460.
- Krumholz HM (2020) Where have all the heart attacks gone? *New York Times*.
- Tam CCF, Cheung KS, Lam S, Wong A, Yung A, et al. (2020) Impact of Coronavirus Disease 2019 (COVID-19) Outbreak on ST-Segment-Elevation Myocardial Infarction Care in Hong Kong, China. *Circ Cardiovasc Qual Outcomes* 13(4): e006631.
- Cohen B, Shaw D (2020) Cardiac Arrest Deaths at Home in New York City. Have Increased by a Startling 800%.
- Coronavirus in Argentina: only 50% of intensive care beds occupied, an encouraging fact. In: *Clarín Society*.
- Hames JL, Bell DJ, Perez Lima LM, Holm Denoma JM, Rooney T, et al. (2020) Navigating uncharted waters: Considerations for training clinics in the rapid transition to telepsychology and telesupervision during COVID-19. *Journal of Psychotherapy Integration* 30(2): 348-365.
- Perez P, Ramos Usuga D, Arango Lasprilla J (2021) Teleneuropsychology in Spanish-speaking countries: A critical look at the use of Information and Communication Technologies in neuropsychological evaluation. *Iberoamerican Journal of Neuropsychology* 4(1): 1-27.
- Ciemins EL, Holloway B, Coon PJ, McClosky-Armstrong T, Min SJ (2009) Telemedicine and the mini-mental state examination: Assessment from a distance. *Telemedicine Journal and E-Health: The Official Journal of the American Telemedicine Association* 15(5): 476-478.

27. DeYoung N, Shenal BV (2019) The reliability of the Montreal Cognitive Assessment using telehealth in a rural setting with veterans. *Journal of Telemedicine and Telecare* 25(4): 197-203.
28. Galusha Glasscock JM, Horton DK, Weiner MF, Cullum CM (2016) Video teleconference administration of the Repeatable Battery for the assessment of Neuropsychological Status. *Archives of Clinical Neuropsychology: The Official Journal of the National Academy of Neuropsychologists* 31(1): 8-11.
29. McEachern W, Kirk A, Morgan DG, Crossley M, Henry C (2008) Reliability of the MMSE administered in-person and by telehealth. *The Canadian Journal of Neurological Sciences Le Journal Canadien Des Sciences Neurologiques* 35(5): 643-646.
30. Menon AS, Kondapavalru P, Krishna P, Chrismer JB, Raskin A, et al. (2001) Evaluation of a portable lowcost videophone system in the assessment of depressive symptoms and cognitive function in elderly medically ill veterans. *The Journal of Nervous and Mental Disease* 189(6): 399-401.
31. Turkstra LS, Quinn Padron M, Johnson JE, Workinger MS, Antoniotti N (2012) In-person versus telehealth assessment of discourse ability in adults with traumatic brain injury. *The Journal of Head Trauma Rehabilitation* 27(6): 424-432.
32. Vahia IV, Ng B, Camacho A, Cardenas V, Cherner M, et al. (2015) Telepsychiatry for neurocognitive testing in older rural Latino adults. *The American journal of geriatric psychiatry: official journal of the American Association for Geriatric Psychiatry* 23(7): 666-670.
33. Vestal, L, Smith Olinde L, Hicks G, Hutton T, Hart J Jr (2006) Efficacy of language assessment in Alzheimer's disease: comparing in-person examination and telemedicine. *Clinical Interventions in Aging* 1(4): 467-471.
34. Cullum CM, Weiner MF, Gehrman HR, Hynan LS (2006) Feasibility of telecognitive assessment in dementia. *Assessment* 13(4): 385-390.
35. Grosch MC, Weiner MF, Hynan LS, Shore J, Cullum CM (2015) Video teleconference-based neurocognitive screening in geropsychiatry. *Psychiatry Research* 225(3): 734-735.
36. Hildebrand R, Chow H, Williams C, Nelson M, Wass P (2004) Feasibility of neuropsychological testing of older adults via videoconference: Implications for assessing the capacity for independent living. *Journal of Telemedicine and Telecare* 10(3): 130-134.
37. Wadsworth HE, Dhima K, Womack KB, Hart J Jr, Weiner MF, et al. (2018) Validity of teleneuropsychological assessment in older patients with cognitive disorders. *Archives of Clinical Neuropsychology: The Official Journal of the National Academy of Neuropsychologists* 33(8): 1040-1045.
38. Wadsworth HE, Galusha-Glasscock JM, Womack KB, Quiceno M, Weiner MF, et al. (2016) Remote neuropsychological assessment in rural American Indians with and without cognitive impairment. *Archives of Clinical Neuropsychology: The Official Journal of the National Academy of Neuropsychologists* 31(5): 420-425.
39. (2013) Joint Task Force for the Development of Telepsychology Guidelines for Psychologists. *Guidelines for the practice of telepsychology. Am Psychol* 68(9): 791-800.