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Artículo Original

Impartición de un programa individualizado, proactivo y neurocognitivo a distancia para la afasia progresiva primaria durante la pandemia de COVID-19

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RESUMEN

Presentamos un protocolo para el manejo lingüístico a distancia de la Variante Logopénica de la Afasia Progresiva Primaria (APP-Lv) en una paciente marroquí. La intervención fue diseñada para anticipar y reducir el deterioro neurocognitivo y lingüístico mediante un enfoque proactivo centrado en la persona. Este estudio de caso único implementó una versión culturalmente adaptada del protocolo de manejo proactivo de Rogers (2000), organizado en tres fases progresivas (temprana, intermedia y tardía) enfocadas en la predicción, la preparación y la anticipación. El protocolo adaptado se aplicó a la Sra. R, mujer diestra de 78 años. Los exámenes de resonancia magnética revelaron atrofia parietal izquierda, mientras que la estructura de ambos hipocampos se encontró preservada. Por su parte, los resultados de las evaluaciones neuropsicológicas indicaron un deterioro cognitivo general y un deterioro progresivo del lenguaje desde 2015 hasta el inicio del estudio (MoCA: 20/30 en 2019), además de un deterioro adicional en la evaluación post intervención (13/30 en 2020), junto con déficits en lectura, praxias y cálculo. Si bien el rendimiento en algunos subdominios del *Mini Linguistic State Examination* (MLSE) (específicamente sintaxis y lectura) disminuyó, en otros se mantuvo estable o mejoró levemente. Por otro lado, el autorreporte de los cuidadores (FROM-16) reflejó una reducción de la carga emocional y social, lo que sugiere un impacto positivo en el bienestar de la Sra. R y su familia. En general, la intervención favoreció el mantenimiento de la comunicación funcional y la participación social, mejorando la resiliencia frente a la neurodegeneración progresiva y los desafíos adicionales de la pandemia de COVID-19.

Palabras clave:
APP; Afasia progresiva primaria; Telerrehabilitación; Bienestar; COVID-19

Delivering a Remote Proactive and Neuro-Cognitive Individualized Program in Primary Progressive Aphasia During Covid-19 Pandemic

ABSTRACT

We present a remote protocol for the linguistic management of the Logopenic variant of Primary Progressive Aphasia (Lv-PPA) in a Moroccan patient. The intervention was designed to anticipate and mitigate neurocognitive and linguistic deterioration through a proactive person-centered approach. This single-case study implemented a culturally adapted version of Rogers' (2000) proactive management protocol, which is organized into three progressive phases—early, mid, and late—centered on prediction, preparedness, and anticipation. The adapted protocol was applied to Mrs. R, a 78-year-old right-handed women . MRI scans revealed left parietal atrophy, while both hippocampi remained structurally preserved. Neuropsychological assessments indicated a general cognitive decline and progressive language impairment from 2015 up to the beginning of the study (MoCA: 20/30 in 2019), and further decline at the post-intervention assessment (13/30 in 2020), along with additional deficits in reading, praxis, and calculation. While some Mini Linguistic State Examination (MLSE) subdomains (notably syntax and reading) declined, others remained stable or showed slight improvement. Additionally, caregiver-reported outcomes (FROM-16) reflected a reduction in emotional and social burden, suggesting a positive impact on Mrs. R's well-being and that of her family. Overall, the intervention supported the maintenance of functional communication and social participation, enhancing resilience in the face of progressive neurodegeneration and the added challenges of the COVID-19 pandemic.

Keywords:
PPA; Primary Progressive Aphasia; Tele-rehabilitation; Wellbeing; COVID-19

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INTRODUCTION

Cognitive Stimulation Therapy (CST) is one of the few non-pharmacological interventions for people living with dementia and has been shown to be both clinically effective (Chen et al., 2019; Gómez-Soria et al., 2023; Saragih et al., 2022) and cost-effective for patients, caregivers, and stakeholders (Knapp et al., 2022; Leung & Lane, 2022). Consistent with this evidence, the World Report on Alzheimer's Disease (Alzheimer’s Disease International, 2021) states that cognitive stimulation therapy (CST) should be routinely administered to people with dementia at an early stage. However, most studies on neurocognitive interventions have focused primarily on Alzheimer’s disease, and the application of CST to other forms of dementia—particularly Primary Progressive Aphasia (PPA)—has been notably limited and remains underexplored (Fonseca-Silva & Arias-Ramírez, 2020). Therefore, there is a pressing need to extend these efforts to other neurodegenerative conditions, particularly in non-Western patients with PPA, where awareness and access to specialized care may be limited. By addressing the unique challenges posed by PPA and other less common neurodegenerative disorders, we can improve the quality of life for affected individuals and their families worldwide.

Primary progressive aphasia, also known as Mesulam syndrome (Mesulam, 2001), is characterized by a gradual and isolated decline in language abilities, typically resulting from progressive focal atrophy in the left perisylvian areas of the dominant hemisphere. This condition can manifest as either fluent speech, where normal speech patterns are maintained, or non-fluent speech, and it may affect phonology, syntax, or semantics to varying degrees (Khayum et al., 2012). However, individuals affected by PPA do not conform to the conventional patterns associated with post-stroke Wernicke's or Broca's aphasia, likely due to the multifocal, partial, or progressive nature of the lesions involved (Khayum et al., 2012).

The classification proposed by Mesulam et al. (2014) presents PPA as a spectrum encompassing several distinct variants: 1) the non-fluent and agrammatic variant (nf-PPA); 2) the semantic variant (sv-PPA); 3) the logopenic variant (lv-PPA), which may or may not include difficulties with sentence repetition; and 4) the mixed variant (mv-PPA), which represents any combination of the aforementioned types. This multifaceted characterization of PPA syndrome reflects the complexity arising from the diverse regions of the brain that exhibit significant atrophy, alongside the progressive nature of the associated deficits (Ramanan et al., 2022).

In addition, several researchers have identified narrative discourse and graphic expression as potential early indicators of pre-linguistic impairments in PPA (Bose et al., 2022; Faroqi-Shah et al., 2020; Plonka et al., 2021; Slegers et al., 2021). Traditionally, significant early behavioral alterations serve as exclusion criteria for PPA. Nevertheless, emerging evidence suggests that behavioral symptoms may accompany—or even precede—the onset of language deficits. The prevalence of these neuropsychiatric symptoms across the three variants of PPA remains a subject of ongoing research. A study conducted by Maruta et al. (2017) reported that more than 80% of individuals with PPA presented behavioral changes, including depression, apathy, anxiety, agitation, irritability, diminished appetite, loss of insight, and disinhibition.

Among the variants, the sv-PPA is particularly associated with reduced empathy, disinhibited behavior, changes in eating habits and food preferences, as well as obsessive-compulsive tendencies. In contrast, negative symptoms such as apathy are more commonly observed in the nf-PPA and the lv-PPA. Nevertheless, the behavioral profile in lv-PPA presents a distinct progression pattern. A study by Keator et al. (2019) examined the relationship between language and behavioral symptomatology across the three PPA variants, revealing a unique correlation in lv-PPA between declining language performance and the emergence of behavioral disturbances— a pattern not observed in sv-PPA or nf-PPA. These findings suggest that individuals with lv-PPA may not exhibit prominent behavioral changes until language deficits become more pronounced. This temporal pattern aligns with the underlying pathophysiological mechanisms of lv-PPA, which show notable overlap with those of Alzheimer’s disease. Considering these findings, it is important to revisit prevailing conceptualizations of PPA to adequately capture the linguistic, cognitive, neuroanatomical, and biological complexities of each variant, as well as to incorporate specific assessment tools and methodologies (Teichmann, 2021).

Due to the heterogeneity of its clinical, linguistic, and neuroanatomical origins, a classification system has been developed (Gorno-Tempini et al., 2011; Mesulam et al., 2014) to facilitate standardized clinical diagnoses. They propose that, in addition to the neurological and neuropsychological assessment, the diagnosis has to be confirmed using neuroimaging techniques, such as Magnetic Resonance Imaging (MRI), to rule out specific causes of aphasia, such as stroke or tumors, and may indicate atrophy as a sign of the degenerative process. Additionally, functional imaging such as positron emission tomography (PET) may reveal localized hypometabolism, which can occur prior to observable atrophy on MRI (Gorno-Tempini et al., 2011).

A growing area of interest in the management of PPA concerns therapeutic interventions, which face substantial limitations due to the disease's progressive nature, individual variability in decline, and clinical diversity across variants (Machado et al., 2021; Semler et al., 2018). Consequently, most clinical interventions are documented as case reports or involve a limited number of participants (Croot et al., 2009; González et al., 2022; Rapp et al., 2005). Research focusing on behavioral aspects has predominantly examined word retrieval processes across all PPA subtypes, including sv-PPA (Beales et al., 2016; Jokel & Anderson, 2012), nf-PPA (Hameister et al., 2017; Henry et al., 2013), and Lv-PPA (Beeson et al., 2011; Ramanan et al., 2022). While these investigations have yielded encouraging findings regarding language recovery and preservation, the long-term sustainability of these therapeutic improvements remains to be thoroughly evaluated. More recently, the use of Transcranial Direct Current Stimulation (tDCS) has shown promise in enhancing both the generalizability and durability of therapy effects (De Aguiar et al., 2020). Finally, both in-person (Jokel et al., 2017) and online interventions (Morhardt et al., 2021; Rogalski & Khayum, 2018; Volkmer et al., 2021), tailored specifically for individuals with PPA and their caregivers, have demonstrated positive impacts on communication-related quality of life.

Importantly, despite the potential of tailored interventions, there is a noted discrepancy in the application of standardized intervention methods for PPA across different regions. For example, a survey conducted among speech-language therapists (SLTs) in Turkey found that none of the participants had developed a specific therapeutic approach for PPA, opting instead for traditional aphasia treatment techniques (Yaşa, 2023).

Remote Intervention Modality in Primary Progressive Aphasia

Traditionally, speech and language therapy for individuals with aphasia has been conducted through in-person sessions (Taiebine & Keegan, 2024b). However, recent technological advancements have paved the way for the investigation of remote intervention methods (Repetto et al., 2021; Taiebine & Keegan, 2024a). Research indicates that teletherapy, also known as telepractice or telerehabilitation, can produce results that are on par with conventional face-to-face treatment for individuals with PPA (Dial et al., 2019). This method not only enhances access to speech and language therapy but also aids in the preservation of therapeutic gains over time. This innovative approach presents numerous advantages for patients with PPA, especially those living in remote locations or experiencing mobility challenges (Dial et al., 2019; Schaffer & Henry, 2023). However, despite the promise of remote interventions, there exists a significant variation in the implementation of remote standardized treatment protocols for PPA across different regions. This underscores the urgent need for the formulation of evidence-based care pathways and heightened awareness among SLTs to enhance the accessibility and efficacy of PPA interventions. Further investigation is essential to establish and promote effective, evidence-based remote therapies for PPA, ensuring that individuals affected by this condition can receive the necessary support, irrespective of their geographical limitations.

Our study focused on outlining a model for remote interventions tailored for patients diagnosed with PPA. We implemented a culturally-modified intervention based on Roger's protocol (Rogers et al., 2000) of proactive management of PPA. The sessions were structured to mirror conventional in-clinic therapy, incorporating activities specifically designed to address the language, cognitive, and communication challenges associated with the condition.

COMPLIANCE WITH ETHICAL GUIDELINE

In this study, all ethical considerations were carefully observed. The participant and her family were fully informed about the objectives of the research and its therapeutic components, assured of the confidentiality of their personal information, and given the option to withdraw at any point. Although the study was conducted outside the scope of a formal ethics committee, it adhered to established ethical principles for working with individuals with neurocognitive conditions.

CASE PRESENTATION

Mrs. R is a 78-year-old, right-handed woman, widowed and retired from a family-owned business. She holds a bachelor's degree in economics. A neurological examination was conducted by her neurologist in 2015. Neurolinguistic assessment identified a clear logopenic variant of primary progressive aphasia (PPA), characterized by moderate anomia and mild dyssyntactic impairments, more prominent in written than in spoken language. In the years following the diagnosis, neuropsychological assessments have shown a general cognitive decline, marked by a progressive and predominant impairment in language (MoCA: 20/30). Over time, there has also been a significant deterioration in executive and attentional functions, which by the beginning of this study in 2019 were affecting both short- and long-term memory. Despite these changes, Mrs. R has maintained her daily living activities and consistently expresses awareness of—and concern about—her condition.

Remote intervention

Due to the context of the pandemic, telepractice sessions (2–3 per week) were provided from April 2020 to June 2020 via Skype and WhatsApp using a modified version of Roger's protocol of Proactive Management (See table 1). We coupled this intervention with digital reminiscence therapy (RT), in which the patient is guided chronologically through life experiences and encouraged to evaluate them while preserving her autobiographic memory.

Table 1. Roger's protocol of Proactive Management.

Early Stage of Management - Spoken Language Primary Means of Communication	Mid-Stage Management - Spoken Language and AAC Used	Late Stage Management - AAC Primary Means of Communication
- Provide information regarding PPA - Establish baseline diagnostic profiles of communication and cognition - Introduce proactive management philosophy - Assess communication needs and opportunities for social interaction - Introduce multimodality communication strategies including drawing, writing, gesturing, and communication book - Develop topic areas for personalized communication book - Educate communication partners on communication strategies that support communication and those that interfere with success	- Re-assess communication and cognition - Counsel individual and family to make long range decisions regarding financial matters and other responsibilities that may need to be reallocated - Identify areas of safety concern relative to maintaining independence - Work with family and individual to develop communication book that contains both words and symbols/pictures - Encourage family and individual to take responsibility for updating the book - Educate communication partners about the need for them to use multimodality communication as well as the individual with PPA	- Re-assess communication and cognition - Identify areas of safety concern to preserve physical well-being and safety of others - Emphasize fulfilment of the need for social interaction - Explore activities and responsibilities that the individual can still accomplish - Shift primary focus of intervention to family members

In accordance with the Modified Roger's protocol for Proactive Management of PPA (see Table 2), the primary therapeutic objectives of the remote intervention for Mrs. R were focused on the proactive management of her linguistic deterioration and the promotion of her ongoing functionality. Acknowledging her cognitive decline and notable language difficulties, the initial phase of the intervention was specifically designed to improve her daily communication skills and provide both her and her caregivers with effective coping mechanisms.

This process included facilitating the identification of needs and opportunities for social and remote engagement through activities such as constructing a family tree, leveraging social networks, and assembling a family album. Additionally, the intervention aimed to introduce and incorporate multimodal and prospective communication techniques, including the use of tablets and drawing, as well as the creation of a personalized communication diary that captured emotional insights.

Ultimately, the desired therapeutic outcome was to empower Mrs. R and her caregivers to sustain functional communication, maintain regular social interactions, and engage actively in daily life, thereby enhancing their resilience, especially in light of the challenges presented by the COVID-19 pandemic.

Assessment and Intervention

The initial neuropsychological assessment in this single-case study was conducted in January 2019, followed by a second evaluation during the COVID-19 pandemic in 2020. As part of the neurolinguistic assessment, Mrs. R was evaluated using the Mini Linguistic State Examination (MLSE), a brief screening tool designed to diagnose and monitor language disorders in individuals with neurodegenerative diseases (Patel et al., 2022). The MLSE is available in multiple languages, including Spanish (Matias-Guiu et al., 2021) and Moroccan Arabic (Taiebine et al., 2021; Taiebine & Faris, 2019). It comprises 11 subtests targeting core linguistic domains affected in PPA syndromes—motor speech, syntax, semantics, and phonology (Gorno-Tempini et al., 2011)—and can be administered in less than 20 minutes.

Table 2. Modified Roger's protocol of Proactive Management with patient.

Early Stage of Management - Spoken Language Primary Means of Communication
- Offer insights regarding PPA, including recent developments and notable individuals associated with the condition. - Create foundational diagnostic profiles that encompass both communication abilities and cognitive functions. - Evaluate communication requirements and potential avenues for social engagement through the use of questionnaires. - Implement diverse communication methods, such as drawing, writing, gesturing, and utilizing a communication book. - Formulate specific themes for a customized communication book, incorporating elements like a life book through applications and a diary. - Use of social media platforms, voice communications including analog and Voice over Internet Protocol (VOIP), Facebook, WhatsApp, Twitter, Face Time Zoom, and Web radio to promote social contact and face-to-face support, as well as useful apps and online videos. - Use of digital reminiscence therapy (e.g building a Memory Track, Memory Tree with sounds and videos or Family tree project by gathering photos, souvenirs and stories) and social/art games (e.g Board games, crossword puzzle books, paints, coloring Mandala, handmade crafts, chair exercises, virtual dance, Karaoke, yoga, virtual garden).

While these standardized measures (e.g., MoCA and MLSE) provided a baseline profile of Mrs. R's cognitive and linguistic abilities, the study primarily focused on qualitative outcomes to assess the effectiveness of the remote linguistic intervention. The primary focus of the intervention was placed on the patient's ability to maintain functional communication, social engagement, and daily living activities. Thus, the intervention included the development of supportive tools such as a personalized communication diary, designed to enhance everyday interactions and emotional expression rather than target specific linguistic skills. Accordingly, to capture changes beyond standardized testing, a qualitative, family-centered approach was employed. Patient's children, who were present during each telepractice session (conducted via phone and Zoom) played an active role in observing and reporting on her communication and well-being. Prior to the intervention, they were trained on the study protocol and the individualized therapeutic plan, ensuring consistency and reliability in their observations. Their insights were systematically collected and interpreted in line with the Family Reported Outcome Measure (FROM-16; Golics et al., 2014), which captures the socio-emotional impact of illness and intervention from the perspective of those closest to the patient. This tool assesses how a patient's condition affects family quality of life, focusing on two dimensions: emotional well-being (FROM-emotional) and personal and social life (FROM-personal). Higher scores reflect a greater negative impact.

RESULTS

The comparison between the neuropsychological assessment of Mrs. R conducted in 2019 and 2020 showed an overall cognitive decline with a progressive dominant language impairment (MoCa 20/30). Specifically, neuropsychological assessment revealed a further decline in Mrs. R's language abilities, particularly at the syntactic level, with signs of paragrammatism (dysyntaxia) evident in her spontaneous speech. These features were observed in the absence of alexia or hemineglect. Additionally, the presence of surface dysorthographia, spatial dyscalculia, and digital agnosia—without right-left disorientation—suggests a partial clinical presentation of Gerstmann syndrome. Visuo-perceptual abilities remained intact. Moderate gestural and ideomotor apraxia were noted, although orofacial praxis was preserved. In contrast, visuo-constructional praxis showed clear deterioration (see Table 3).

The comparison of neurolinguistic evaluations conducted before (2019) and after (2020) the intervention, using the MLSE, revealed a heterogeneous pattern of change in the patient's performance across various language subtests (see Table 4). Some subtests—such as picture naming, repetition of mono- and multisyllabic words, sentence repetition, semantic association, and oral comprehension of complex sentences—showed slight improvement or remained stable. In turn, declines were observed in single-word comprehension, oral comprehension of simple sentences, reading, and picture description. Writing also declined, though to a lesser extent. These findings suggest that the intervention did not produce uniform results across all linguistic domains. Instead, certain functions continued to deteriorate, reflecting both the selective impact of the intervention and the progressive nature of the underlying neurodegenerative condition. Nonetheless, the proactive therapeutic approach may have helped maintain the patient's motivation and engagement throughout the intervention period, despite the overall decline.

Table 3. Neuropsychological assessments of Mrs. R.

Tests	Initial Assessment in 2019	Follow-up Assessment in 2020
MoCA	Total score 20/30 Visuospatial/Executive 3/5 Naming 3/3 Attention 3/5 Language 1/3 Abstraction 2/2 Delayed Recall and Orientation 6/6	Total score 13/30 Visuospatial/Executive 0/5 Naming 2/3 Attention 1/6 Language 1/3 Abstraction 1/2 Delayed Recall and Orientation 5/6
TMT -Trail Making test	TMT A (2 Errors / 1 min 56 sec) TMT B (3 Errors / 13 min 31sec)	TMT A (2 Errors / 3 min 2 sec) TMT B Failed
Clock Drawing Test	3/10	1/10
Categorical and literal verbal fluency	Letter Fluency 11 - (4 intrusions) Semantic category fluency - Animals (9) 2 repetitions - Fruits (10) 1 intrusion	Letter Fluency 5 - (1 intrusions) Semantic category fluency - Animals (7) - Fruits (9) 1 intrusion
Digit span task	Digit span forwards (4) Digit span backwards (3)	Digit span forwards (4) Digit span backwards (4)
Praxis examination	Symbolic gestures 5/5 Pantomines 8/8 Abstract gestures 3/8	Symbolic gestures 4/5 Pantomines 6/10 Abstract gestures 3/8
IADL	7/8	7/8

Interestingly, comparison of MLSE performance across subdomains—motor speech, semantics, phonology, and syntax—alongside the global score between 2019 and 2020 reveals a pattern of selective decline (see Table 5). Motor speech remained stable, with a consistently high score of 29 out of 30. In contrast, declines were noted in semantics (from 28 to 26), phonology (from 25 to 23), and syntax, which showed the most marked reduction (from 7 to 5 out of 10). Consequently, the global MLSE score decreased from 89 to 84, indicating a general trend of linguistic deterioration over the one-year period, with motor speech emerging as a relatively preserved domain.

Table 4. MLSE results of Mrs. R by subtests in 2019 and 2020.

Subtests	Patient's results Pre-intervention in 2019	Patient's results Post-intervention in 2020
1- Picture naming (n=6)	4	5
2- Repetition of mono and multi-syllabic words (n=3)	3	3
3- Single word comprehension (n=3)	2	1
4- Repetition (n=3)	1	2
5- Semantic association (n=4)	3	3
6- Oral comprehension of sentences 1 (n=4)	4	3
7- Oral comprehension of sentences 2 (n=4)	4	4
8- Sentence repetition (n=4)	2	3
9- Reading (n=10)	4	1
10- Writing	10	8
11- Picture description	6	4

Table 5. MLSE results of Mrs. R by domains in 2019 and 2020.

MLSE subdomains	Patient's results in 2019	Patient's results in 2020
Motor speech (n=30)	29	29
Semantics (n=30)	28	26
Phonology (n=30)	25	23
Syntax (n=10)	7	5
Global score (n=100)	89	84

The Family FROM-16 showed that at baseline, family members reported a FROM-emotional score of 8, indicating a moderate effect, and a FROM-personal score of 14, reflecting a moderate to large effect, resulting in a total score of 22—corresponding to a very large overall impact on the family's quality of life. Following the intervention, projected scores decreased to 5 in the emotional domain, representing a small to moderate effect, and 10 in the personal domain, indicating a moderate effect, yielding a total score of 15. This decrease corresponds to a shift from a 'very large' to a 'moderate' overall impact, suggesting a beneficial effect of the intervention on family well-being.

The FROM-16 results suggest that the intervention may help family members cope with the challenges posed by lv-PPA and mitigate its negative impact on their well-being. Furthermore, the reported outcomes indicate that the intervention effectively supported the maintenance of functional communication, regular social interactions, and participation in daily activities. These improvements contributed to enhanced family resilience, serving as a meaningful qualitative indicator of the intervention's overall effectiveness.

DISCUSSION

Neurolinguistic analysis using the MLSE in 2019 confirmed a clear diagnosis of the logopenic variant of primary progressive aphasia (lv-PPA; Type 1, Giannini et al., 2017), with marked impairment in sentence repetition and lexical retrieval (dysnomia), along with mild syntactic deficits, especially evident in written language. The repetition of semi-complex and complex sentences was notably affected, likely due to limitations in verbal working memory. While both semantic and syntactic comprehension remained relatively preserved, performance deteriorated for longer linguistic items that placed greater demands on attentional and memory resources. Despite these deficits, the patient was able to maintain participation in indoor physical activities and other meaningful daily routines such as cooking, reading, and using social media to remain socially connected.

The remote intervention—delivered via phone and Zoom—benefited from the consistent involvement of Mrs. R's family, providing a valuable source of qualitative data to assess the effects of the proactive management approach. Their active participation contributed not only to the therapeutic process but also to a broader understanding of its real-life impact.

Performance on several MLSE subtests declined between 2019 and 2020, highlighting the ongoing progression of linguistic deterioration despite the intervention. However, when these neurolinguistic findings are considered alongside the qualitative data reported by Mrs. R's family, a broader view of the intervention's impact emerges. The intervention appears to have played a meaningful role in supporting the maintenance of functional communication, social engagement, and participation in daily life. These positive outcomes likely contributed to Mrs. R's resilience and sustained motivation, even in the context of advancing neurodegeneration.

It is important to note that while the intervention successfully supported compensatory communication strategies and emotional adaptation—as proposed in Rogers et al. (2000) proactive management framework—it was not sufficient to prevent decline across all linguistic domains. This underscores the importance of complementing objective linguistic assessments with patient- and caregiver-reported outcomes to more comprehensively evaluate intervention effectiveness, particularly in progressive conditions like PPA and during periods of heightened vulnerability such as the COVID-19 pandemic.

Patients with PPA are often well-suited for motivational support and counseling due to their relatively preserved autobiographical and episodic memory in early stages (Ramanan et al., 2020). In Mrs. R's case, motivational elements embedded in the remote sessions—such as conversations about her everyday life—contributed positively to her engagement. Within this context, the concept of motivational reserve (MR) is especially relevant. MR refers to the set of factors that enhance resilience to cognitive decline, complementing the concept of cognitive reserve (CR) (Forstmeier et al., 2021; Forstmeier & Maercker, 2008). According to Forstmeier & Maercker (2008), both MR and CR influence cognitive health outcomes, and high stress levels—such as those induced by the COVID-19 lockdown—may compromise these reserves. However, variables such as educational background, premorbid intellectual functioning, and emotional support networks also shape MR and CR, potentially explaining Mrs. R's preserved engagement and adaptability (Donders & Wang, 2023).

From a person-centered and longitudinal perspective, cases like that of Mrs. R align with narrative self-management experiences documented in the literature—most notably the autobiographical accounts of Douglas (2014, 2023), who described adopting a proactive and adaptive approach to manage his own non-fluent variant of primary progressive aphasia (nfv-PPA). This strategy, grounded in lived experience, involved forward-thinking planning and the use of specific adaptations aimed at preserving quality of life during the early stages of the condition. In the particular case of Mrs. R, her clinical profile may have evolved into a broader cognitive presentation—often referred to as PPA+—involving impairments beyond the language domain. Thus, while compensatory strategies may have contributed to delaying or mitigating certain aspects of cognitive decline, Mrs. R's experience highlights the critical importance of sustained co-therapy and emotional support from communication partners—particularly her consistently involved family members—as essential components of effective intervention (Croog et al., 2006; Kaiser & Panegyres, 2007).

Challenges in Remote Intervention Implementation

While Rogers et al. (2000) proactive protocol was successfully adapted to a remote format, several challenges emerged during its implementation. One major barrier was technological: the patient required support to become familiar with teletherapy platforms and navigate issues related to connectivity and audio-visual quality. These were addressed through preparatory sessions, simplified instructions, and alternative tools such as chat and screen sharing. Another key difficulty was maintaining engagement and attention in the home environment, where distractions and the absence of face-to-face interaction affected the session dynamics. To counter this, shorter and more frequent sessions were scheduled, and family support was mobilized to create a structured and quiet setting.

The need for remote interventions became especially pressing during the pandemic (Taiebine et al., 2024), reinforcing the relevance of e-mental health frameworks in dementia care (Dai et al., 2020). However, this case also illustrates broader structural challenges, particularly in low-resource contexts. Digital inequalities—related to internet access, digital literacy, and advanced disease stages—can significantly limit the feasibility of remote care. Addressing these inequities is vital to ensure that therapeutic models reach diverse populations, reducing barriers related to geography, transportation, and mobility (Rai et al., 2021; Taiebine et al., 2025).

As a single-case design conducted under pandemic constraints, this study has inherent limitations regarding generalizability and replicability. Nonetheless, it provides valuable insights into the implementation and potential of proactive interventions in lv-PPA. To build upon this foundation, future research should incorporate more robust designs such as case series, controlled studies, or randomized trials to assess long-term outcomes.

The present case supports the relevance of tailoring interventions to the sociocultural and linguistic realities of patients—particularly in underrepresented contexts. When adapted to cultural sensitivity, remote interventions can facilitate more inclusive and context-responsive approaches in speech language therapy. This work lays important groundwork for future studies to build and validate intervention models applicable across diverse populations.

CONCLUSION

This single-case study illustrates the potential benefits and limitations of a culturally adapted, proactive remote intervention for a patient with logopenic variant primary progressive aphasia (lv-PPA) during the COVID-19 pandemic. Although standardized assessments indicated continued linguistic deterioration in several domains, the preservation of functional communication, daily engagement, and social participation—reinforced by caregiver support and motivational strategies—highlights the broader value of a holistic and person-centered approach.

Grounded in Rogers' proactive protocol and delivered via telepractice, the intervention demonstrated that culturally and contextually tailored strategies can foster resilience and help preserve quality of life, even in the face of progressive neurodegeneration. It also underscored the importance of involving family members not merely as observers but as active therapeutic partners, and of integrating qualitative, patient- and caregiver-reported outcomes to enrich the interpretation of objective measures.

Looking ahead, there is a pressing need to adapt this protocol to Arabic, taking into account the socio-linguistic and cultural realities of the Moroccan context—including its diglossic nature, variable literacy levels, and socio-economic factors such as digital literacy, employment status, and opportunities for intellectual engagement. Such culturally grounded adaptations could serve as a foundation for developing replicable and effective intervention models suited to diverse clinical settings.

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