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COMMUNICATION THERAPY FOR APHASIA

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Abstract:

Approximately one-third of patients with stroke encounter aphasia. Aphasia might reduce social networks. Therefore, aphasia management become a crucial thing. This paper aims to describe the communication therapy for aphasia. Method: This is a narrative literature review. Literature was taken from PubMed, Science Direct, and Google Scholar. The selected journal was published within 10 years (2013-2023). The types of therapy include Melodic Intonation Therapy, Constraint Induced Aphasia Therapy, Cognitive Therapy, Augmentative Communication, and AIUEO. Those types of therapy could be given in computer-based therapy. The most commonly used in Indonesia is AIUEO therapy. The patient should follow every sound and movement. This method might improve mild to moderate aphasia. In conclusion, communication therapy for aphasia is various. The choice depends on the available sources. In Indonesia, the most common type is AIUEO therapy.

Keywords: aphasia, communication, language therapy, speech therapy.

INTRODUCTION

Aphasia is mostly found in patients with stroke. More than 20% of stroke patients encounter acute aphasia. The language and speech impairment sometimes are predictable. The type of aphasia is related to lesion locations and patterns (Yourganov et al., 2015). Mild form aphasia deteriorates functional outcomes, quality of life, mood, social participation, and working ability. However, language deficits in the form of post-stroke aphasia are heterogeneous (Sheppard & Sebastian, 2022).

There is sufficient commonality in similar patterns of lesions within a particular aphasia type to differentiate them. Individuals with the same type of aphasia, such as Broca's aphasia, exhibit a similar pattern of impairment in comparison to individuals with different types of aphasia, such as Wernicke's aphasia (conduction aphasia). However, disability and task performance vary widely, even within patients who are diagnosed with the same type of aphasia (Fridriksson et al., 2018; Fridriksson & Hillis, 2021)

The predictability of aphasic impairment is influenced by two main factors. The first is that the anatomy of the territories responsible for cerebrovascular perfusion is rather similar in all individuals. Consequently, damage from strokes that affect the territory of a particular segment of a cerebral artery is somewhat similar in all patients (Fridriksson et al., 2018; Fridriksson & Hillis, 2021).

The most frequent cause of aphasia is a blockage in the region of the middle cerebral artery (MCA). The MCA splits into an inferior and a superior branch after emerging from the internal carotid artery. Strokes arising from occlusion of the lower division of the MCA produce distinct lesion patterns, but occlusions involving the superior division typically result in comparable patterns. The second factor is that, while speech and language processing cortex structure varies to some extent throughout individuals, the distribution of language is relatively constant among healthy persons (Fridriksson et al., 2018; Fridriksson & Hillis, 2021).

In other words, brain activation studies frequently show striking similarities in cortical regions selected to perform a particular speech or language task among healthy individuals. Therefore, disability in speech and language tends to follow roughly similar patterns in individuals after damage to a particular region of the brain. The major aphasia kinds are associated with certain lesion locations according to the traditional typology of aphasia, which was refined by Geschwind (1970). For instance, impairment to the Wernicke's and Broca's regions was linked to Wernicke's and Broca's aphasia, respectively (Fridriksson et al., 2018; Fridriksson & Hillis, 2021).

The Wernicke-Lichtheim paradigm oversimplifies the brain's role in speech and language processing, though, as several cortical and subcortical regions besides Wernicke's and Broca's areas have been found to be involved in speech and language processing. The dual stream model, which emphasizes connections between cortical regions and is associationist like the Wernicke-Lichtheim model, is the most modern models. Two large-scale processing streams are described by the dual stream model (Fridriksson et al., 2018; Fridriksson & Hillis, 2021).

Successful auditory comprehension depends on the processing of auditory-to-meaning information, which is supported by a ventral stream that is anchored in the bilateral temporal lobes. A region situated at the temporal-parietal junction and frontal speech areas of the left hemisphere makes up the unilateral organization of a dorsal stream, which processes auditory-to-articulation information. For the production of fluent speech, proprioceptive and auditory feedback is provided via the dorsal stream. Our research recently mapped the ventral and dorsal streams' grey matter localization to assess language deficits extensively in connection to post-stroke lesion location (Fridriksson et al., 2016).

The dorsal stream includes fronto-parietal regions such as the pars opercularis, pars triangularis, pre- and postcentral regions, and parts of the parietal lobe. On the other hand, the ventral stream encompasses a large portion of the lateral temporal lobe and extends through the uncinate fasciculus into the posterior-inferior frontal gyrus pars orbitalis. The dual stream model can be used to infer aphasic symptomatology, but it's crucial to remember that the model explains the physical underpinnings of normal speech and language processing, not disorders (Fridriksson et al., 2018).

In Indonesia, stroke is the leading cause of death. The most common complication is aphasia. One of the common complications is aphasia. Aphasia affects the ability to speak, understand speech, write, and read. This condition causes communication problems. Communication therapy is useful in treating aphasia (Syamima et al., 2022). Aphasia in stroke patients could decrease significantly the quality of life. Therefore, the management of aphasia is very crucial (Kariyawasam et al., 2020).

A person who has post-stroke aphasia has the risk of experiencing depression and having a smaller social network. Experiencing a stroke and aphasia can be extremely challenging to a person's identity and life goals; it has been called a traumatic and unpleasant occurrence. Even though individuals with aphasia are more likely to experience negative psychosocial outcomes after a stroke than people without the condition, people with aphasia are frequently left out of psychological stroke research. This is gradually beginning to change. For instance, studies have demonstrated the efficacy of assistant psychologists providing behavioural activation treatment, and recent feasibility trials have demonstrated the potential benefits of peer befriending and a singing intervention (Hilari et al., 2021; Northcott et al., 2021).

This paper endeavors to provide a comprehensive exploration of communication therapy tailored specifically for individuals grappling with aphasia, a common complication following stroke. Aphasia manifests as a profound impairment in the ability to comprehend and articulate speech, read, and write, thereby presenting formidable communication challenges. Recognizing the pivotal role of effective communication in daily functioning, quality of life, and psychosocial well-being, the management of aphasia assumes paramount importance. Through a thorough examination of current research and clinical practices, this paper aims to elucidate the principles, methodologies, and evidence-based interventions employed in communication therapy for aphasia. By offering insights into tailored therapeutic approaches, this endeavor seeks to empower clinicians, caregivers, and individuals affected by aphasia in navigating the complexities of post-stroke communication difficulties, ultimately striving towards enhancing rehabilitation outcomes and fostering a meaningful reintegration into social and personal spheres of life.

METHODOLOGY

The methodology employed in this study entails a narrative literature review, aiming to synthesize and analyze existing scholarly works pertaining to communication therapy for aphasia. A systematic search was conducted across reputable academic databases including PubMed, Science Direct, and Google Scholar, to identify relevant literature published within the timeframe of the past decade (2013-2023). The selection process encompassed a meticulous screening of peer-reviewed journals, ensuring the inclusion of recent and authoritative sources pertinent to the subject matter. By leveraging these diverse repositories of knowledge, this review endeavors to encompass a comprehensive range of perspectives, insights, and empirical evidence elucidating the efficacy, methodologies, and emerging trends in communication therapy for individuals afflicted with aphasia post-stroke. Through a rigorous examination and synthesis of the literature, this study seeks to offer valuable insights and inform clinical practices aimed at optimizing rehabilitation outcomes and enhancing the quality of life for individuals navigating the challenges of aphasia.

FINDINGS AND DISCUSSION

Damage to the brain regions responsible for producing and comprehending language, as well as its constituent parts (semantic knowledge, phonological, morphological, and syntactic), results in the disorder known as aphasia. Following a stroke, aphasia is widespread; estimates for acute and rehabilitative settings are 30 and 34%, respectively (Flowers et al., 2016).

As a result, various scientific bodies now promote speech and language therapy (SLT) as a crucial component of stroke rehabilitation. SLT is more beneficial than no therapy for post-stroke aphasia in terms of improved functional communication, reading, comprehension, writing, and expressive language, according to a 2016 Cochrane meta-analysis (Haro-martínez et al., 2021).

Aphasia is a typical post-stroke condition that persists for years. There are numerous negative repercussions of aphasia, many of which persist for a very long period. Considering what we now know about the prevalence and effects of post-stroke aphasia, we recommend consistent, continuous care. Above all, we strongly underscore the requirement of long-term interdisciplinary teamwork, given the complex and numerous damaging impacts associated with stroke survivors who also have aphasia (Flowers et al., 2016).

The acceptability of the intervention to individuals suffering from aphasia, particularly severe cases, is contingent upon four factors: (1) the viability of recruiting and retaining participants; (2) the acceptability of research procedures and outcome measures; and (3) the viability of speech-language pathologists delivering the intervention. Construct a two-group randomized controlled feasibility trial that uses nested qualitative research, blinded outcome assessors, and a wait-list design. Setting: Participants were recognized by two NHS Speech and Language Therapy London community programs as well as through neighbourhood channels (e.g., voluntary-sector stroke groups). Participants Must have developed aphasia at least six months after a stroke. Intervention: A psychological intervention designed to be linguistically accessible is called solution-focused brief treatment. Participants might offer up to six sessions over three months, starting either six months after the randomization or right after. Measures of outcome are primary indicators of acceptance and feasibility. At baseline, three and six months after randomization, and nine months (for the wait-list group alone), clinical outcomes were gathered. Edinburgh Mental Well-Being Scale was the candidate's primary outcome measure. In-depth interviews with participants and therapists were also conducted. Forty- two participants (43.8%) of the people that were enrolled had severe aphasia. Acceptability endpoints: 93.8% of individuals had ≥2 therapy sessions (90.6% had 6/6 sessions); therapy was viewed as valuable and acceptable by both participants (n = 30 interviews) and therapists (n = 3 interviews). Feasibility endpoints: 82.1% of eligible individuals gave their consent; 96.9% were followed up with after six months; missing data <0.01%; recruitment target was met within the predetermined 13-month recruitment window (Northcott et al., 2021).

Types of Aphasia

There exist several distinct types of aphasia, each characterized by specific patterns of language impairment and associated neurological damage (Fridriksson et al., 2018). One such type is Aphasia Battery, which arises from cortical network damage primarily affecting the dorsal stream, with lesser involvement of the ventral stream. This condition manifests in deficits across critical language proficiency domains such as speech fluency, repetition, and naming, all of which are integral to effective speech production. The severity and nature of aphasia can vary significantly among individuals, with anomia representing a notable subtype characterized by difficulties in naming objects. Anomia typically stems from lesions in posterior brain structures, including the angular gyrus, and is often considered a hallmark feature of aphasia.

Anomic aphasia, commonly referred to simply as anomia, represents a milder form of aphasia characterized by impoverished lexical retrieval and sparse speech content. Unlike some other types of aphasia, anomia does not exhibit a specific lesion location within the brain, with variability observed in the areas of neurological damage across affected individuals (Yourganov et al., 2015). This variability underscores the complexity of the cortical regions involved in regulating speech and language processing, where damage to any of these areas may lead to disruptions in language and speech abilities. Consequently, anomia serves as a poignant illustration of the intricate interplay between neural substrates and language function, highlighting the diverse manifestations of aphasia resulting from cortical pathology.

Discussion

The types of therapy include Melodic Intonation Therapy, Constraint Induced Aphasia Therapy, Cognitive Therapy, Augmentative Communication, and AIUEO. Those types of therapy could be given in computer-based therapy. The most commonly used in Indonesia is AIUEO therapy. The patient should follow every sound and movement. This method might improve mild to moderate aphasia (Al-shdifat et al., 2018; Fadhilasari, 2022; Haro-martínez et al., 2021; Tasari & Muryanti, 2023).

Patients who experience aphasia following a stroke can benefit from a variety of therapeutic techniques, the best-researched of which are melodic intonation therapy (MIT) and constraint-induced aphasia therapy. Comparative clinical trials haven't produced enough data yet, nevertheless, to prove one kind of therapy is superior to another (Brady et al., 2016).

The type and severity of the aphasia, as well as the therapist's experience and trust in each treatment, will therefore determine which is preferred. Since melodic intonation treatment is a commonly employed therapeutic approach in clinical settings, it is imperative to ascertain whether empirical data supports its effectiveness (Haro-martínez et al., 2021; Zumbansen et al., 2014).

MIT has been recommended mostly for individuals with non-fluent aphasia who have major language production faults, poor verbal agility, poor phrase repetition, an accentuated prosodic pattern in sentences, and somewhat maintained auditory comprehension. Aphasic patients are taught to mimic the prosodic pattern, intonation, and rhythm of vocal utterances that are first sung by the therapist. The patient subsequently attempts to repeat these words. The ultimate goal of MIT is to restore propositional speech. As the therapy advances, the therapist gradually withholds support and the patient increasingly suspends rhythm and intonation until, at last, things are generated autonomously and with their typical prosody. (Haro-martínez et al., 2021).

MIT has an advantage over other SLTs in that its software is structured and has been translated into other languages. The processes that underlie the consequences of (Cortese et al., 2015; Fontoura et al., 2014; Jacob et al., 2023). The effects of MIT on aphasia recovery are not well understood, but it might enhance brain plasticity through the neuroplasticity process and reorganization, activating mirror neuron systems, utilizing language and music-related elements (like pitch and rhythm) that reflect related or common processing pathways, and elevating the patient's mood and motivation. Several neuroimaging studies indicate that MIT stimulates brain plasticity by boosting left perilesional activation and activating language-capable areas of the right cerebral hemisphere (Haro-martínez et al., 2021).

Recent discoveries in neuroscience have given rise to the theory that language used for social engagement and communication produces synergistic effects in left perisylvian eloquent areas. To find out how communicative language function affects the results of intense aphasia therapy, we carried out a crossover randomized controlled trial. Procedures: The two types of training that were given to the eighteen patients with left-hemisphere lesions and chronic non-fluent aphasia were as follows: (i) Intensive Language-Action Therapy (ILAT, an extended version of Constraint-Induced Aphasia Therapy), which emphasized the importance of verbal utterances in social interactions and communication, and (ii) Naming Therapy, which concentrated on speech production itself. The training was conducted for six consecutive working days at the same high intensity (3.5 hours per session), using therapeutic materials and the quantity of speech that was similar between treatment groups. Results: Regardless of when this approach was used, a battery of standardized aphasia tests showed considerably better language skills with ILAT. On the other hand, it was shown that Naming Therapy only improved language performance when it was used at the beginning of the therapy and not when it was used following intense prior training (Stahl et al., 2016).

Although the discipline lacks a precise definition of dose versus intensity, both language therapy intensity and dosage are significant factors in the treatment of aphasia. When referring to the overall number of therapy hours offered during a treatment trial or the number of hours given in a given period of time, the phrases are occasionally used interchangeably (Harnish et al., 2014). In acute and subacute recovery stages, the issue of therapy intensity is not well studied. Recent studies indicate that patients can gain from increased intensity even in the acute/subacute stages of stroke. Even in the early stages of stroke recovery, it is possible to increase therapy intensity, as some researchers have shown (Carpenter & Cherney, 2017).

However, some researchers are skeptical about how well patients will tolerate intensive therapy in the first few weeks after stroke and have found patients are more likely to drop out of high intensity treatments. High intensity aphasia treatment is more advantageous than low intensity treatment, according to several research on chronic aphasia. In the chronic recovery phase, patients may gain more from lower intensity treatment, according to a recent study on chronic aphasia, even if there is evidence to support the opposite conclusion. In the end, Pierce and colleagues (185) come to the conclusion that further proof—that is, randomized trials with sizable sample sizes—is needed before it can be said with certainty that low-intensity therapy is more likely to be beneficial than high-intensity therapy (Sheppard & Sebastian, 2022).

Technological advancements (computerized speech) will enable medical professionals to give patients therapeutic resources outside of the clinic. To give their patients the best potential treatment outcomes, professionals must become knowledgeable about and comfortable with emerging technologies. Tele rehabilitation services will furthermore assist in increasing the number of patients eligible for therapy, since many patients have obstacles that keep them from accessing in-person therapy. Technological developments will affect diagnostic techniques as well. The diagnosis of aphasia now primarily relies on unique patient profiles rather than the more archaic method of grouping people into distinct categories. It should take more than just knowing the extent of comprehension and production deficiencies to create unique patient profiles. Instead, medical professionals need to look into the underlying conditions that each patient has that are causing deficits. For instance, one patient can suffer from a phonological impairment-related naming loss, whereas another patient might have a semantic network impairment (Palmer et al., 2019; Sheppard & Sebastian, 2022).

Technological developments will affect diagnostic techniques as well. The diagnosis of aphasia now primarily relies on unique patient profiles rather than the more archaic method of grouping people into distinct categories. It should take more than just knowing the extent of comprehension and production deficiencies to create unique patient profiles. Instead, medical professionals need to look into the underlying conditions that each patient has that are causing deficits. For instance, one patient can suffer from a phonological impairment-related naming loss, whereas another patient might have a semantic network impairment. Clinicians will be better equipped to deliver targeted, tailored therapy that has a higher chance of helping their patients if they take the time to identify each patient's underlying problem (Palmer et al., 2019; Sheppard & Sebastian, 2022).

Recently, intensive aphasia therapy programs have been pushed as the best course of treatment for aphasics. However, it is critical that all parties involved are aware of the client's possibility of both improvement and decline. The variable character of therapy response in individuals with chronic aphasia is highlighted. Approximately more than 20% patients continued to exhibit a discernible improvement following intense therapy. Intense aphasia programs are probably a good place to start for treatment responders in order to make a meaningful and long-lasting change, but they won't likely be enough to sustain gains over time without further and continuous communication gain reactivation. Research on aphasia should move from evaluating outcomes as soon as treatment ends to focusing on long-term maintenance as the primary indicator of therapy efficacy (Menahemi-falkov et al., 2021).

CONCLUSION

In conclusion, the landscape of communication therapy for aphasia is characterized by a diverse array of approaches, each offering unique advantages and tailored strategies to address the multifaceted nature of the condition. Among the prominent modalities are Melodic Intonation Therapy, Constraint-Induced Aphasia Therapy, Cognitive Therapy, Augmentative Communication, and AIUEO, each underpinned by distinct theoretical frameworks and therapeutic principles. The selection of a specific therapy modality is contingent upon various factors, including the availability of resources, the type and severity of aphasia exhibited by the individual, and the expertise and preference of the therapist. Moreover, the advent of computer-based therapy has expanded the repertoire of available interventions, facilitating innovative approaches to treatment delivery and accessibility. Notably, in the context of Indonesia, AIUEO therapy emerges as a prevalent choice, reflecting local preferences and resource availability. However, the efficacy and appropriateness of each therapeutic approach necessitate careful consideration of individualized factors, including the unique profile of the patient and the therapeutic goals outlined in their rehabilitation plan. Ultimately, the optimal selection of communication therapy for aphasia hinges upon a nuanced understanding of the condition, coupled with informed clinical judgment and a commitment to patient-centered care.

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