Journal of Associated Medical Sciences 2024; 57(3): 98-106

JAMS
Journal of Associated Medical Sciences

Scopus Indexed & Thai-Journal Citation Index Centre (TCI)

Journal of Associated Medical Sciences

Journal homepage: https://www.tci-thaijo.org/index.php/bulletinAMS/index

Effectiveness of telespeech therapy on language abilities in people with aphasia: A pilot study

Tanyasiri Prasertsrisak Phuanjai Rattakorn*

Communication Disorders,Department of Occupational Therapy, Faculty of Associated Medical Sciences, Chiang Mai University, Chiang Mai Province, Thailand

ARTICLE INFO

Article history:
Received 7 March 2024
Accepted as revised 3 July 2024
Available online 10 July 2024

Keywords:
Telepractice, aphasia, intervention, speech therapy.

ABSTRACT

Background: Aphasia is a condition that happens when certain areas of the brain responsible for language are damaged, causing difficulties in communicating. Treatment involving speech and language interventions is essential for rehabilitating communication abilities. However, due to accessibility and distancing challenges, access to these medical services has been restricted, especially during COVID-19. Telepractice was introduced as an alternative approach to speech and language therapy. However, there currently needs to be more research on its application, specifically within the aphasia population in Thailand.

Objective: This study aimed to investigate the effectiveness of telepractice in aphasia intervention to enhance the general practice standard and to explore satisfaction with using telepractice in speech therapy among aphasia patients and their caregivers.

Materials and methods: Sixteen participants were recruited for this study, comprising eight aphasia patients and eight caregivers. A standardized aphasia test, the Thai Adaptation of the Western Aphasia Battery (TWAB), was used for pre- and post-assessments. Additionally, satisfaction surveys were employed to gauge significant satisfaction levels among participants. A one-month telepractice intervention (12 sessions in total) was conducted between the pre- and post-assessments to determine the effectiveness of telepractice based on its impact on TWAB test scores.

Results: Overall, this study revealed a significant improvement in the Aphasia Quotient (AQ) as measured by the TWAB test (p=0.011). However, only the repetition and naming sub-tests showed significant improvement between pre- and post-assessment (p=0.019 and p=0.011). The satisfaction levels were reported as high to very high.

Conclusion: This study demonstrated the effectiveness of telepractice in aphasia intervention, particularly in improving naming and repetition skills and eliciting a high to very high level of satisfaction among patients and their caregivers.

Introduction

Aphasia, a condition impacting communication, results from left hemisphere brain pathology,[1] particularly affecting the primary language cortex. Its severity varies, affecting speaking, word retrieval, comprehension, sentence construction, reading, and writing.[2] The prevalence of aphasia after stroke indicates that it occurs more frequently in older individuals compared to younger ones. About 15% of people under 65 years old who experience a stroke will develop aphasia, whereas the likelihood increases to 43% in individuals over 85 years old.[3] Speech and language pathologists (SLPs) are pivotal in evaluating

* **Corresponding contributor.**
Author's Address: *Communication Disorders, Department of Occupational Therapy, Faculty of Associated Medical Sciences, Chiang Mai University, Chiang Mai Province, Thailand*
E-mail address: phuanjai.rattakorn@cmu.ac.th
doi: 10.12982/JAMS.2024.052
E-ISSN: 2539-6056

and rehabilitating individuals with aphasia, aiming for continuous, effective, standardized therapy overseen by certified professionals. However, obstacles like transportation costs, rural residency, and lack of specialized care, including access to speech-language pathologists, hinder access to services.[4]Additionally, the COVID-19 pandemic poses challenges, particularly for elderly aphasia patients, hindering in-person therapy attendance due to close contact risks. Adapting therapy becomes imperative, with telepractice emerging as a crucial solution, offering increased access while minimizing risks.[5]

Telepractice employs conferencing technology, fostering multidisciplinary collaboration to enhance therapy continuity, frequency, and duration. Synchronous and asynchronous modes, primarily through videoconferencing, are common.[6] For speech therapy, optimal effectiveness requires at least three sessions per week, with a minimum of nine sessions necessary to achieve significant progress. Studies show that telepractice is as effective as in-person sessions and reduces costs.[4] Collaboration between speech-language pathologists (SLPs) and caregivers plays an essential role in telepractice in overcoming the lack of tactile cues. Although there is limited research in Thailand, this study aims to investigate the effectiveness of telepractice in improving speech and language therapy for individuals with aphasia. This will help to increase accessibility to treatment for people with communication difficulties.

Materials and methods

Materials

This study utilized assessment tools and survey forms to comprehensively evaluate individuals with aphasia and their caregivers. The SD-SLP-01 Screening test for aphasia was used initially to identify individuals with aphasia, followed by the Thai Adaptation of Western Aphasia Battery (TWAB) to provide a detailed assessment of their linguistic function and severity levels of aphasia. Satisfaction surveys were designed and utilized to measure the satisfaction levels of participants with aphasia and their caregivers concerning the telepractice interventions. Importantly, no fees were collected for telepractice at either location, in line with the hospitals' regulations. As a result, there was no bias in satisfaction levels due to cost, ensuring a fair comparison of participant satisfaction with telepractice.

Screening test for aphasia (SD-SLP-01)[7]

This study uses the SD-SLP-01 Screening test for aphasia to screen individuals for receptive and expressive language skills. The test consists of a 30-item list, and individuals are assessed based on their ability to complete each test item. Those who score less than 27 are considered to have aphasia. This tool is included in the study's inclusion criteria to determine whether individuals have aphasia.

Thai Adaptation of Western Aphasia Battery (TWAB)[8]

Thai Adaptation of Western Aphasia Battery (TWAB) comprises four subtests, each serving as a distinct measure of linguistic function. These subtests include Spontaneous Speech, which assesses the individual's ability to produce language; Auditory Verbal Comprehension, which evaluates the comprehension of spoken language; Repetition, focusing on the ability to repeat spoken words or phrases; and Naming, which assesses the ability to name objects or respond to naming cues. These subtests collectively provide a comprehensive evaluation of various language skills, categorizing individuals into specific types of aphasia based on their performance.

The scores obtained in each subtest can help categorize individuals into specific types of aphasia. Additionally, the TWAB test generates an Aphasia Quotient (AQ) score, which indicates the individual's auditory-verbal communication ability and the extent of aphasia severity. AQ scores range from 0 to 100, with lower scores indicating more significant language deficits. An AQ score of 94.7, the lowest observed among individuals without aphasia, can be used as a threshold to differentiate between normal individuals and those with aphasia.[8]

The study utilized the Aphasia Quotient (AQ) score from the Thai adaptation of the Thai Adaptation of Western Aphasia Battery (TWAB) as a baseline to compare with the post-test scores following the intervention.

Satisfaction survey forms

The study employed satisfaction survey forms designed by the researchers to evaluate the satisfaction levels of participants with aphasia and their caregivers regarding the telepractice interventions. The survey includes two forms, one tailored for participants with aphasia and another for their caregivers. The survey form for aphasic participants utilizes a three-point satisfaction scale (dissatisfied, neutral, satisfied) accompanied by symbolic pictures to alleviate linguistic challenges. The form for caregivers employs a five-point satisfaction scale (very dissatisfied, dissatisfied, neutral, satisfied, very satisfied). For aphasic participants, scores ranging from 1.00 to 1.66 were categorized as dissatisfied, 1.67 to 2.33 as neutral, and 2.34 to 3.00 as satisfied. Regarding caregivers, scores from 1.00 to 1.50 were considered very dissatisfied, from 1.51 to 2.50 as dissatisfied, 2.51 to 3.50 as neutral, 3.51 to 4.50 as satisfied, and 4.51 to 5.00 as very satisfied.[9]

Participants recruitment

Participants were Thais with aphasia and their caregivers. The individuals with aphasia were recruited from two hospitals in Thailand, Phaholpolpayuhasena Hospital in Kanchanaburi and the AMS Clinical Service Center (Speech Clinic) at Chiang Mai University. Inclusion criteria for individuals with aphasia were as follows: 1) Individuals assessed with SD-SLP-01, a screening test for aphasia, with a score lower than 27, indicating the presence of aphasia; 2) Attaining an auditory comprehension score of more than 42 out of 60 in the yes-no question subtest from Thai Adaptation of Western Aphasia Battery (TWAB). 3) Having chronic aphasia (at least six months post-onset); 4) Managing conditions like high blood pressure and/or

seizures with medication; 5) Being able to sit up properly during telepractice sessions; 6) Possessing sufficient cognitive ability, understanding, and attention to engage in telepractice; 7) Having Thai as their native language;(8) No visual or auditory impairments; and 9) Being proficient in reading and writing in Thai before the onset of aphasia. The exclusion criteria included complications that could impact the effectiveness of telepractice, such as experiencing recurrent strokes. Additionally, participants were not receiving on-site speech therapy.

The caregivers who participated in this study had to meet the following requirements: 1) Be at least 18 years old; 2) Have Thai as their native language; 3) Be proficient in reading and writing in Thai; 4) Have no visual or auditory impairments; 5) Possess the necessary equipment and skills to use telepractice tools, such as Zoom cloud meetings, tablets or computer, earphones, and microphones; and 6) Be able to facilitate telepractice, assist the person with aphasia, and implement advice from the speech and language pathologist.

The study included eight Thais with aphasia and their caregivers. Table 1 presents information about the participants with aphasia, while Table 2 details their caregivers. Table 3 shows TWAB scores and types of aphasia for each individual with aphasia.

Table 1. Information on participants with aphasia.

General information	Numbers (%)
Gender	
Male	6 (75.0)
Female	2 (25.0)
Age	
20-39	1 (12.5)
40-59	5 (62.5)
>60	2 (25.0)
Average age and standard deviation	54.62±10.87
Educational level	
Diploma	1 (12.5)
Bachelor's degree	3 (37.5)
Higher than bachelor's degree	4 (50.0)

Table 2. Information of caregivers of participants with aphasia

General information	Numbers (%)
Gender	
Male	3 (37.5)
Female	5 (62.5)
Age	
20-39	2 (25.0)
40-59	2 (25.0)
>60	4 (50.0)
Average age and standard deviation	54.62±14.75
Relationship to individuals with aphasia	
Relatives (sister, father)	2 (25.0)
Spouses	5 (62.5)
Children	1 (12.5)

Table 3. TWAB scores of participants with aphasia.

	P1	P2	P3	P4	P5	P6	P7	P8
Spontaneous speech								
Functional content (10)	7	8	8	5	9	10	10	7
Fluency (10)	5	4	6	4	5	8	9	4
Total (20)	**12**	**12**	**14**	**9**	**14**	**18**	**19**	**11**
Auditory verbal comprehension								
Yes/no questions (60)	42	48	51	54	60	60	51	54
Auditory word recognition (60)	58	57	57	46	59	58	55	57
Sequential command (80)	36	68	65	58	80	76	50	54
Total (10)	**6.8**	**8.65**	**8.65**	**7.4**	**9.95**	**9.7**	**7.8**	**8.25**
Repetition								
Repetition	*60*	*90*	*61*	*94*	*80*	*94*	*92*	*91*
Total (10)	*6.0*	*9.0*	*6.1*	*9.4*	*8.0*	*9.4*	*9.2*	*9.1*
Naming								
Object naming (60)	45	44	53	38	60	60	57	56
Word fluency (20)	6	3	8	5	6	13	17	8
Sentence completion (10)	6	10	8	6	10	8	8	6
Responsive speech (10)	8	6	10	6	10	10	6	10
Total (10)	**6.5**	**6.3**	**7.9**	**5.5**	**8.6**	**9.1**	**8.8**	**8.0**
Aphasia quotient (100)	62.2	71.9	73.3	62.6	81.1	92.4	89.6	72.7
Type of aphasia	Wernicke	Transcortical motor	Conduction	Transcortical motor	Anomic	Anomic	Anomic	Transcortical motor

Study design

This study is an experimental research study using a group pretest-posttest design to determine the effectiveness of telepractice on people with aphasia.[10] Participants with aphasia (with assistance from their caregivers) received 1-hour session of speech therapy three times a week for four weeks (12 sessions in total). The TWAB assessment, before and after the intervention, was conducted on-site by research assistants with at least five years of experience working as speech and language pathologists. The therapy was provided by the primary researcher, who has nine years of experience as a speech and language pathologist. After the telepractice, the study investigated the effectiveness of telepractice and the satisfaction of both participants with aphasia and their caregivers.

Data analysis

In this study, statistical analysis was conducted using Stata software version 17. Descriptive statistical analysis was employed for demographic data, calculating and representing percentages, means, and standard deviations. The primary objective was to evaluate the effectiveness of telepractice for speech therapy, reflecting an individual's language ability and the severity of aphasia. The study compared pretest and posttest scores of the Thai Adaptation of the Western Aphasia Battery (TWAB) to determine changes in the Aphasia Quotient (AQ) score. Nonparametric statistics, specifically the Wilcoxon Matched-Pairs Signed-Ranks Test, were utilized for comparison, with a significance level set at $p<0.05$. Additionally, satisfaction survey forms were used to assess the satisfaction levels of participants with aphasia and their caregivers. The average total scores of each survey form were calculated to indicate the degree of satisfaction, represented as a percentage.

Results

TWAB scores

The study found that following speech therapy telepractice, the Aphasia Quotient (AQ) scores of all the participants with aphasia significantly increased. Additionally, the overall scores for each subtest also showed an increase. The raw scores before and after treatment are presented in Table 4.

Table 4. TWAB scores of participants with aphasia before and after receiving telepractice.

	P1 Pre/Post	P2 Pre/Post	P3 Pre/Post	P4 Pre/Post	P5 Pre/Post	P6 Pre/Post	P7 Pre/Post	P8 Pre/Post
Spontaneous speech								
Functional content (10)	7/7	8/8	8/9	5/5	9/10	10/10	10/9	7/8
Fluency (10)	5/5	4/5	6/6	4/4	5/9	8/9	9/9	4/4
Total (20)	**12/12**	**12/13**	**14/15**	**9/9**	**14/19**	**18/19**	**19/18**	**11/12**
Auditory verbal comprehension								
Yes/no questions (60)	42/48	48/54	51/60	54/42	60/60	60/57	51/51	54/54
Auditory word recognition (60)	58/58	57/58	57/55	46/50	59/60	58/58	55/56	57/59
Sequential command (80)	36/30	68/76	65/74	58/60	80/80	76/80	50/66	54/42
Total (10)	**6.8/6.8**	**8.65/9.4**	**8.65/9.45**	**7.4/7.6**	**9.95/10**	**9.7/9.75**	**7.8/8.65**	**8.25/7.75**
Repetition								
Repetition	60/60	90/92	61/87	94/100	80/98	94/94	92/100	91/94
Total (10)	**6.0/6.0**	**9.0/9.2**	**6.1/8.7**	**9.4/10**	**8.0/9.8**	**9.4/9.4**	**9.2/10**	**9.1/9.4**
Naming								
Object naming (60)	45/48	44/44	53/58	38/40	60/60	60/60	57/58	56/58
Word fluency (20)	6/6	3/4	8/16	5/6	6/12	13/14	17/17	8/11
Sentence completion (10)	6/6	10/10	8/8	6/6	10/10	8/8	8/4	6/6
Responsive speech (10)	8/8	6/8	10/10	6/4	10/10	10/10	6/10	10/10
Total (10)	**6.5/6.8**	**6.3/6.6**	**7.9/9.2**	**5.5/5.6**	**8.6/9.2**	**9.1/9.2**	**8.8/8.9**	**8.0/8.5**
Aphasia quotient (100)	62.20/63.2	71.9/76.4	73.3/84.7	62.6/64.4	81.1/96	92.4/94.7	89.6/91.1	72.7/80.55

When employing the Wilcoxon test to compare pre- and post-scores, the study identified a significant improvement in the Aphasia Quotient (AQ) score: the pre-median was 73 (62.6-92.4), and the post-median was 80.55 (63.2-96), with a *p* value of 0.011.

The study results showed significant differences in the repetition subtest, with a pre-median of 90.5 (range: 60-94) and a post-median of 94 (range: 60-100), resulting in a p-value of 0.019. Significant differences were also observed in the naming subtest, with a pre-median of 7.95 (range: 5.5-9.1) and a post-median of 8.7 (range: 5.6-9.2), yielding a *p* value of 0.011. After the intervention, the median scores for Digit Span Forward increased from 6 to 7 (*p*=0.042) and Word Fluency from 7 to 11 (*p*=0.019).

No significant differences were found in the scores of the spontaneous speech subtest and auditory comprehension subtest following the telepractice intervention. Table 5 presents the differences between pre- and post-TWAB test scores for each subtest and Aphasia Quotient (AQ) scores.

Table 5. Data analysis results of TWAB scores of participants with aphasia before and after receiving telepractice.

Topics	N	pre			post			Mean difference	Median difference	Z	*p* value
		Mean	SD	Median (min-max)	Mean	SD	Median (min-max)				
Spontaneous speech											
Functional content	8	8	1.69	8 (5-10)	8.25	1.67	8.5 (5-10)	-0.25	0	-1.000	0.317
Fluency	8	5.62	1.92	5 (4-9)	6.37	2.26	5.5 (4-9)	-0.75	0	-1.723	0.085
Total	**8**	**13.62**	**3.42**	**13 (9-19)**	**14.62**	**3.74**	**14 (9-19)**	**-1**	**-1**	**-1.673**	**0.094**
Auditory verbal comprehension											
Yes/no questions	8	52.5	6	52.5 (42-60)	53.25	6.16	54 (42-60)	-0.75	0	-0.436	0.663
Auditory word recognition	8	55.87	4.15	57 (46-59)	56.75	3.15	58 (50-60)	-0.87	-1	-1.427	0.154
Sequential command	8	60.87	14.41	61.5 (36-80)	63.5	18.57	70 (30-80)	-2.62	-3	-0.912	0.361
Total	**8**	**8.4**	**1.08**	**8.45 (6.8-9.95)**	**8.67**	**1.17**	**9.02 (6.8-10)**	**-0.27**	**-0.13**	**-1.757**	**0.079**
Repetition	8	82.75	14.43	90.5 (60- 94)	90.62	13.12	94 (60-100)	-7.87	-4.5	-2.339	0.019*
Total	**8**	**8.27**	**1.44**	**9.05 (6-9.4)**	**9.06**	**1.31**	**9.4 (6-10)**	**-0.78**	**-0.45**	**-2.339**	**0.019***
Naming											
Object naming	8	51.62	8.26	54.5 (38-60)	53.25	7.99	58 (40-60)	-1.62	-1.5	-2.179	0.029*
Word fluency	8	8.25	4.59	7 (3-17)	10.75	4.92	11.5 (4-17)	-2.5	-1	-2.351	0.019*
Sentence completion	8	7.75	1.67	8 (6-10)	7.25	2.12	7 (4-10)	0.5	0	1.000	0.317
Responsive speech	8	8.25	1.98	9 (6-10)	8.75	2.12	10 (4-10)	-0.5	0	-0.656	0.511
Total	**8**	**7.59**	**1.32**	**7.95 (5.5-9.1)**	**8**	**1.44**	**8.7 (5.6-9.2)**	**-0.41**	**-0.2**	**-2.880**	**0.011***
Aphasia quotient	8	75.77	11.17	73 (62.6-92.4)	80.72	12.95	80.55 (63.2-96)	-4.95	-2.45	-2.521	0.011*

Satisfaction survey forms

After completing all 12 telepractice sessions, Only the research assistant administered a satisfaction assessment to individuals with aphasia and their caregivers. Table 6 depicts the satisfaction levels of caregivers of participants with aphasia regarding telepractice. Based on the data presented in Table 6, caregivers' satisfaction level towards telepractice is very high across all five aspects. These aspects are as follows: 1) user guide for telepractice-with an average score ranging from 4.625 to 4.875; 2) utilization of Zoom Cloud Meeting for telepractice-having an average score of 4.75; 3) telepractice sessions - with an average score ranging from 4.5 to 4.875; 4) benefits of telepractice with an average score ranging from 4.75 to 4.875; and 5) overall satisfaction-having an average score of 4.75. The caregivers find telepractice very beneficial and are highly satisfied with it.

Table 6. Satisfaction levels of caregivers of participants with aphasia regarding telepractice.

Questions	Very satisfied	Satisfied	Neutral	Disatisfied	Very dissatisfied	Average
User's guide telepractice						
1. The font size is visible and clear, making it easy to read	6 (75.0)	2 (25.0)	0	0	0	4.75
2. The size and color of the pictures are clearly visible	5 (62.5)	3 (37.5)	0	0	0	4.625
3. The user's guide is easy to read and follow	6 (75.0)	2 (25.0)	0	0	0	4.75
4. It contains enough necessary information	7 (87.5)	1 (12.5)	0	0	0	4.875
Utilization of Zoom cloud meeting for telepractice						
1. The convenience of using Zoom makes it easy to use	6 (75.0)	2 (25.0)	0	0	0	4.75
2. Utilizing Zoom for telepractice is practical	6 (75.0)	2 (25.0)	0	0	0	4.75
3. Using Zoom makes it easy to communicate smoothly with speech and language pathologists	6 (75.0)	2 (25.0)	0	0	0	4.75
Telepractice sessions						
1. Duration of the session	4 (50)	4 (50)	0	0	0	4.5
2. The activities and utensils, such as pictures	7 (87.5)	1 (12.5)	0	0	0	4.875
3. Providing advice during the session	6 (75.0)	2 (25.0)	0	0	0	4.75
Benefits of telepractice						
1. Telepractice through Zoom saves time and travel expenses	7 (87.5)	1 (12.5)	0	0	0	4.875
2. Telepractice sessions at home are more comfortable, and the environment is familiar	7 (87.5)	1 (12.5)	0	0	0	4.875
3. Reduction in concern about disease transmission during in-person sessions	7 (87.5)	1 (12.5)	0	0	0	4.875
4. Telepractice via Zoom reduces wait times for training appointments and increases the frequency of speech therapy sessions	6 (75.0)	2 (25.0)	0	0	0	4.75
Overall satisfaction						
Overall satisfaction	6 (75.0)	2 (25.0)	0	0	0	4.75

Similarly, for participants with aphasia, the satisfaction assessment results of individuals with aphasia towards telepractice are consistently high across all six aspects, namely (see Table 7): 1) convenience in training through Zoom, with an average score of 2.875; 2) telepractice through Zoom saves time and travel expenses, with an average score of 3; 3) telepractice session duration and frequency have an average score of 2.625; 4) telepractice through Zoom reduces waiting time for training appointments, with an average score of 3; 5) reduction in concern about disease transmission during in-person sessions has an average score of 2.875; and 6) overall satisfaction with telepractice has an average score of 3. Individuals with communication disorders have provided high satisfaction ratings for telepractice across these criteria.

Table 7. Satisfaction levels of participants with aphasia regarding telepractice.

Questions	Dissatisfied	Neutral	Satisfied	Average
1. Convenience in training through Zoom	0	1 (12.5)	7 (87.5)	2.875
2. Telepractice through Zoom saves time and travel expenses	0	0	8 (100)	3
3. Telepractice session duration and frequency	0	3 (37.5)	5 (62.5)	2.625
4. Telepractice through Zoom reduces waiting time for training appointments	0	0	8 (100)	3
5. Reduction in concern about disease transmission during in-person sessions	0	1 (12.5)	7 (87.5)	2.875
6. Overall satisfaction with telepractice	0	0	8 (100)	3

Discussion

The study examined the effectiveness of delivering speech and language therapy via telepractice for individuals with aphasia, assessing their language abilities before and after receiving the intervention through the Thai Adaptation of the Western Aphasia Battery (TWAB) assessment. The analysis employed nonparametric statistics, specifically the Wilcoxon Matched-Pairs Signed-Ranks Test, with a significance level set at 0.05.[11]The statistical analysis revealed significant differences in Aphasia Quotient (AQ) scores before and after participating in the study, indicating a notable improvement in the overall language abilities of each participant. This highlights the effectiveness of telepractice in enhancing the linguistic skills of individuals with aphasia.

In comparing pretest and posttest AQ scores following telepractice, the median AQ score increased from 73 at pretest to 80.55 at posttest, with a p-value of 0.011, indicating a statistically significant improvement. This finding aligns with previous research on iAphasia and the Korean version of the Western Aphasia Battery (KWAB) by Choi *et al*.,[12] which reported an approximate 24.80% increase in AQ, as well as the results of the study by Jacob *et al*.[13] Furthermore, comparing the raw scores of participants 5 and 6, whose pretest scores were 81.10 and 92.40, respectively, with posttest scores of 96 and 94.70, respectively, demonstrates significant improvement. According to the criteria established by Woranwan *et al*.,[8] an AQ score of 94.7, the lowest observed among individuals without aphasia, serves as a threshold for distinguishing between normal individuals and those with aphasia. Both participants meet the threshold based on this criterion, indicating notable progress.

Examining the scores within each subtest, the study identifies significant improvement in the repetition and naming subtests. At the same time, no notable changes were observed in the spontaneous speech and auditory comprehension subtests. One possible hypothesis for the lack of substantial improvement in the spontaneous speech and auditory comprehension subtests is that participants initially had relatively strong skills in these areas. Individuals with aphasia participating in the study might have retained specific proficiency in spontaneous speech and auditory comprehension even before the telepractice intervention. Only one participant (P2) had Wernicke's aphasia, characterized by comprehension difficulties, while the remaining participants had relatively strong skills in this area. Consequently, the lack of significant changes in these subtests may indicate that the intervention did not substantially impact participants who already demonstrated proficiency in spontaneous speech and auditory comprehension skills.

The satisfaction assessments' results for caregivers and individuals with aphasia highlight a consistently high level of contentment with the telepractice intervention. As depicted in Table 6, caregivers expressed robust satisfaction across various dimensions, including the user guide, utilization of Zoom cloud meeting, telepractice sessions, perceived benefits, and overall satisfaction. The average scores within the very high range underscore the positive impact and effectiveness of telepractice, emphasizing its user-friendly nature and perceived advantages. Similarly, as indicated in Table 7, individuals with aphasia conveyed notable satisfaction in multiple aspects, such as convenience in training through Zoom, time and cost savings, and reduced waiting times.[14,15] This study considered the bias from the service cost on satisfaction levels. The billing for telepractice in all sessions was done using the same process as the usual service. Therefore, we thought that the differences in satisfaction scores were not due to this bias. The overall satisfaction score reflects a positive response from individuals with aphasia, affirming the acceptability and success of telepractice in addressing their specific needs and concerns.[16]

The consistently high satisfaction levels from both groups underscore the feasibility and acceptability of telepractice as an effective mode of delivering speech therapy for individuals with aphasia. These findings are consistent with existing research demonstrating the effectiveness of telepractice and emphasize its potential integration into everyday clinical practice to enhance accessibility and improve outcomes in speech and language therapy. They provide valuable insights into how telepractice positively affects language skills, highlighting its potential as an accessible and effective form of communication therapy.[17]

Limitations

During the data collection phase, limitations were encountered, primarily stemming from the instability of internet connections, leading to issues such as sound loss or video lag during video conferencing sessions. These disruptions, often linked to external factors such

as heavy rainfall or nearby construction noise, prompted various troubleshooting efforts by the researcher. Adjustments included rescheduling sessions and advising participants on alternative connectivity options. Patients and speech and language pathologists needed help scheduling appointments, requiring weekend sessions and flexible time slots. A weekly confirmation system was implemented to enhance scheduling efficiency. Fatigue also posed a significant concern among aphasia patients during telepractice sessions due to prolonged screen time and the absence of tactile cues. The speech and language pathologists took proactive measures to address fatigue, such as monitoring patient responses and providing breaks or private discussions with caregivers.

For future studies, several recommendations should be considered. Firstly, During the session, we should be mindful of fatigue resulting from prolonged screen time, which can lead to increased tiredness for the patient compared to face-to-face sessions. Secondly, comparative experiments between in-person and remote training should be expanded to evaluate the effectiveness of remote methods. Caution should also be exercised to ensure that the duration between pretest and posttest TWAB assessments is at least 3 months apart, minimizing the risk of bias and preventing participants from recalling the questions. Thirdly, follow-up evaluations should be conducted one-month post-training to assess the maintenance of improvements in patients' abilities. Lastly, a remote training system should be developed to enhance access in areas without speech and language pathologists or adequate equipment, potentially through network collaborations with community hospitals, to streamline patient appointments and support, thereby minimizing missed opportunities and waiting times.

Conclusion

This study evaluated aphasia patients who underwent telepractice for speech therapy by comparing their TWAB scores before and after training, revealing improved language abilities post-training. However, it is crucial to acknowledge the study's limitation with only eight participants, suggesting that the findings may not generalize to the broader population and highlighting its preliminary nature as a pilot study. Nonetheless, these results support the hypothesis that telepractice effectively enhances the language abilities of aphasia patients.

Regarding satisfaction with telepractice, both individuals with aphasia and caregivers reported high to very high satisfaction levels. This consistently positive feedback underscores telepractice's feasibility and acceptability as a valuable tool in speech therapy. These insights are pivotal for integrating telepractice into routine clinical practice to improve accessibility and treatment outcomes for individuals with aphasia.

In conclusion, this study provides valuable insights into the positive impact of telepractice on linguistic abilities and advocates for its potential as an accessible and effective communication therapy intervention.

Furthermore, telepractice could serve as a promising alternative for individuals with various communication impairments, thereby advancing inclusivity and enhancing the efficiency of speech therapy interventions.

Conflict of interest

The authors declare no conflict of interest regarding the publication of this paper.

Ethical approval

This study constitutes part of the thesis and fulfills the requirements for a master's degree in communication disorders. It has obtained ethical approval from the Faculty of Associated Medical Sciences Research Ethics Committee, Chiang Mai University (Approval ID: AMSEC-64EX-123) and Phaholpolpayuhasena Hospital (Approval ID: 2023-01). Each participant was provided with comprehensive information regarding the research, and their informed written consent was obtained before participation in the study commenced.

Acknowledgements

The researcher deeply appreciates the staff at Phaholpolpayuhasena Hospital in Kanchanaburi and the AMS Clinical Service Center (Speech Clinic) at Chiang Mai University for their cooperation in recruiting participants for this study.

References

[1] Berthier ML. Poststroke aphasia. Drugs Aging. 2005; 22(2): 163-82. doi.org/10.2165/00002512-200522020-00006

[2] Parr S, Byng S, Gilpin S. Talking about aphasia: Living with loss of language afterstroke. McGraw-Hill Education (UK); 1997.

[3] American Speech-Language-Hearing Association. Aphasia. 2016[cited 2024 Jul 3]. Available from: https://www.asha.org/Practice-Portal/Clinical-Topics/Aphasia/.

[4] Knepley KD, Mao JZ, Wieczorek P, Okoye FO, Jain AP, Harel NY. Impact of telerehabilitation for stroke-related deficits. Telemed e-Health. 2021; 27(3): 239-46. doi.org/10.1089/tmj.2020.0036

[5] Fong R, Tsai CF, Yiu OY. The implementation of telepractice in speech language pathology in Hong Kong during the COVID-19 pandemic. Telemed e-Health. 2021; 27(1): 30-8. doi.org/10.1089/tmj.2020.0155

[6] Øra HP, Kirmess M, Brady MC, Winsnes IE, Hansen SM, Becker F. Telerehabilitation for aphasia–protocol of a pragmatic, exploratory, pilot randomized controlled trial. Trials. 2018; 19(1): 1-10. doi.org/10.1186/s13063-018-2702-7

[7] Suphawatjariyakul R, Lorwatanapongsa P, Euasirirattanapaisan A. Handbook for helping people with aphasia. Saraburi: Thaisiri Printing; 2012.

[8] Teerapong W. The comparison of language abilities of Thai aphasic patients and Thai normal subjects

by using Thai adaptation of Western Aphasia Battery[Thesis]. Nakhon Pathom: Mahidol University; 2000.

[9] Joshi A, Kale S, Chandel S, Pal DK. Likert scale: Explored and explained. Br J Appl Sci Technol. 2015; 7(4): 396-403. doi.org/10.9734/BJAST/2015/14975

[10] Fitz-Gibbon CT, Morris LL. How to design a program evaluation. Sage; 1987.

[11] Vanichbuncha K. Statistics for research. 6th ed. Bangkok: Chulalongkorn Business School; 2013.

[12] Choi YH, Park HK, Paik NJ. A telerehabilitation approach for chronic aphasia following stroke. Telemed e-Health. 2016; 22(5): 434-40. doi.org/10.1089/tmj.2015.0100

[13] Jacobs M, Briley PM, Fang X, Ellis C. Telepractice treatment for aphasia: Association between clinical outcomes and client satisfaction. Telemed Rep. 2021; 2(1): 118-24. doi.org/10.1089/tmr.2020.0025

[14] Nguyen M, Waller M, Pandya A, Portnoy J. A review of patient and provider satisfaction with telemedicine. Curr Allergy Asthma Rep. 2020; 20(11): 1-7. doi.org/10.1007/s11882-020-00969-4

[15] Palasik S, Irani F. Evaluating telepractice: Measuring success, cost-benefit, & outcomes. In: Telepractice in Speech-Language Pathology. 2013:187.

[16] Weidner K, Lowman J. Telepractice for adult speech-language pathology services: A systematic review. Perspect ASHA Spec Interest Groups. 2020; 5(1): 326-38. doi.org/10.1044/2019_PERSP-19-00146

[17] Aueworakhunanan T, Dejket P, Phakkachok S, Punkla W. Exploring the feasibility of implementing telepractice innovation for speech-language pathologists in Thailand. Ramathibodi Med J. 2024; 47(1): 32-46. doi.org/10.33165/rmj.2024.47.1.266036