Research Article
The Quality of Life Levels Among Individuals with Various Types of Aphasia

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ABSTRACT

Purpose: It is very important to improve the quality of life (QoL) of individuals with aphasia (IwA) following stroke. Although it is known that aphasia affects QoL negatively, there is a need for studies to examine how QoL is affected considering different types of aphasia as this might have significant implcations on planning aphasia assessment and therapy. The aim of this study was to examine QoL levels among individuals with different types of aphasia.

Method: A total of 49 IwA were included in the study and categorized into seven groups referring to each aphasia type. These groups consisted of non-fluent aphasia [Broca's aphasia (n=7); transcortical motor aphasia (n=7); mixed transcortical aphasia (n=7)]; and fluent aphasia [Wernicke's aphasia (n=7); transcortical sensory aphasia (n=7); anomic aphasia (n=7); and conduction aphasia (n=7)]. Turkish versions of Stroke Aphasic Depression Questionnaire-Hospital version 10 (SADQ-H10-TR), Aphasia Impact Questionnaire-21 (AIQ-21-TR), and Stroke and Aphasia Quality of Life Scale-39 (SAQOL-39-TR) were used to measure QoL among IwA.

Results: No difference was observed between fluent and non-fluent IwA in terms of age, gender, education level, employment status, dominant hand, post-onset time, and psychological treatment received. While the overall scores of AIQ-21-TR and SADQ-10-TR were higher in non-fluent IwA compared with fluent ones, the overall score of SAQOL-39-TR was observed to be higher in fluent IwA compared to non-fluent IwA. The highest score in the overall score of AIQ-21-TR, including all subsections, was in the mixed transcortical aphasia group. According to the scores of SADQ-10-TR, the individuals with transcortical motor aphasia had the highest overall score and those with anomic aphasia had the lowest score.

Conclusion: The results of the study showed differences within scores of all the scales that evaluated QoL among all types of aphasia, demonstrating that the QoL levels were affected differently considering all types of aphasia.

Keywords: quality of life, aphasia types, aphasia effect, depression, social participation

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Farklı Afazi Tipine Sahip Bireylerin Yaşam Kalitesi Düzeyleri

ÖZET

Amaç: Afazi, iletişim, dil ve konuşma becerilerinin yanı sıra bireyin çevresiyle olan etkileşimini ve yaşam kalitesini de olumsuz etkileyen bir durumdur. Dolayısıyla, bu durum sadece dil becerilerini etkilemekle kalmaz, aynı zamanda bireylerin sosyal yaşantılarında değişikliklere yol açarak, aile içi ilişkilerini ve toplumsal etkileşimini farklılaştırabilir. Genelde bir dil bozukluğu olarak değerlendirilen afazi, aslında psikosoyal ve duygusal değişiklikleri de beraberinde getirerek bireylerin sosyal anlamda izole olmalarına neden olabilir ve yaşam kalitesini olumsuz etkileyebilir. İnme sonrası ortaya çıkan afazide yaşam kalitesinin artırılması ciddi önem taşımaktadır. Afazinin yaşam kalitesini önemli ölçüde etkilediği bilinmesine rağmen, farklı afazi tiplerini dikkate alarak yaşam kalitesinin nasıl etkilediğini ortaya çıkaran çalışmalara ihtiyaç duyulmaktadır, çünkü bu gereksinimin karşılanması afazi değerlendirmesi ve takibinde terapi süreçlerinin uygun şekilde planlanmasına önemli katkılar sunabilir. Bu çalışmanın amacı, farklı afazi tiplerinin yaşam kalitesi üzerindeki etkilerini araştırmaktır.

Yöntem: Çalışmaya toplam 49 afazili birey dahil edilmiştir. Bu bireylerin afazi alt tiplerine göre tutuk [Broca afazisi (n=7), transkortikal motor afazi (n=7), mikst transkortikal afazi (n=7)] ve akıcı [Wernicke afazisi (n=7), transkortikal sensöriyel afazi (n=7), anomik afazi (n=7) ve konduksiyon afazi (n=7)] olmak üzere yedi gruba ayrılmıştır. Türkçe konuşmak, inme sonrası 6 aydan uzun süre geçmiş olmak, inme öncesi herhangi bir bilişsel veya psikolojik sorun yaşamamak ve Afazi Dil Değerlendirme Testi'nin (ADD) alıcı dil bölümünden en az 20 puan almış olmak çalışmanın dahil edilme kriterleri olarak belirlenmiştir. Afazili bireylere ait afazi tipinin teşhisi nörolojik muayene, manyetik rezonans görüntüleme ve ADD skorları ile sağlanmıştır. Afazili bireylerin yaşam kalite düzeylerini ölçmek için; İnmeye Bağlı Afazide Depresyon Ölçeği Hastane Versiyonu-10 (SADQ-H10-TR), Afazi Etki Ölçeği (AIQ-21-TR) ve İnme ve Afazi Yaşam Kalitesi-39 Ölçeği'nin (SAQOL-39-TR) Türkçe versiyonları kullanılmıştır.

Bulgular: Akıcı ve akıcı olmayan afazili bireyler arasında yaş, cinsiyet, eğitim düzeyi, çalışma durumu, baskın el, inme sonrası geçen süre ve alınan psikolojik müdahale açısından fark gözlenmemiştir. AIQ-21-TR ve SADQ-H10-TR'nin toplam puan ortalamaları akıcı olmayan afazili bireylerde akıcı olanlara göre daha yüksek bulunurken, SAQOL-39-TR'nin toplam puanı akıcı afazili bireylerde akıcı olmayanlara göre daha yüksek bulunmuştur. AIQ-21-TR'nin en yüksek puanı, tüm alt bölüm ve toplam puanlar dahil olmak üzere mikst transkortikal afazili bireylerden elde etmiştir. SADQ-H10-TR puanlarında en yüksek puan transkortikal afazili grupta, en düşük puan ise anomik afazili gruptan elde etmiştir.

Sonuç: Çalışmanın sonuçları afazinin tüm alt tiplerinde yaşam kalitesini değerlendiren ölçek puanlarındaki farklılıklar olduğunu göstermekte ve afazi alt tiplerinin yaşam kalitesini farklı şekilde etkilediğini ortaya koymaktadır. Afazide yaşam kalitesini artırmak için, farklı alt tiplere yönelik elde edilen bulgular doğrultusunda yaşam kalitesi düzeylerinin düşmesine neden olan unsurların giderilmesi ve bireylerin sosyal yaşama katılımının güçlendirilmesi gerekmektedir. Bunu yaparken, spesifik afazi tipine dair müdahale edilmesi gereken yaşam kalitesi bileşen ve değişkenlerinin dikkate alınması önemlidir.

Anahtar Sözcükler: yaşam kalitesi, afazi tipleri, afazi etkisi, depresyon, sosyal katılım

Introduction

Aphasia is a condition that affects the understanding and expression of speech, language, and communication, as well as reading and writing. Therefore, it can alter a patient's mood and change their behavior towards family and society (Herath et al., 2022). More than a third of stroke survivors acquire this condition. In addition, aphasia may develop as a result of different causes such as dementia, head injuries, brain tumors, and side-effects of neurosurgery (Medicine, 2022). Some individuals with aphasia (IwA) have problems related to forming sentences, reading words, and/or comprehension during communication. All IwA have some difficulty finding the correct name for objects, places, people, or events (Herath et al., 2022). Aphasia is generally known as a language disorder, but the accompanying psychosocial and emotional changes cause social isolation and negative quality of life (QoL) (Northcott & Hilari, 2011; Thomas & Lincoln, 2008).

IwA have different levels of difficulty in speaking, understanding, reading and writing spontaneously. It is important to distinguish types of aphasia based on these symptoms. To date, several different methods have been developed to classify the different types of aphasia. The most popular of these is the Boston classification system, which was developed in the 1960s. According to the Boston classification system, aphasia can be divided into eight types: Wernicke, Transcortical Sensory, Conduction, Anomic, Broca, Transcortical Motor, Global, and Mixed Transcortical. Each of these types exhibits a specific profile of symptoms including fluent and non-fluent speech, language comprehension, and repetition skills (Sheppard & Sebastian, 2021).

In 2001, the World Health Organization proposed the International Classification of Functioning, Disability and Health (ICF) based on body function and structure, environmental and personal factors, and activities and participation to establish QoL (Simmons-Mackie & Kagan, 2007). It is known that QoL of IwA is impaired due to their inability to communicate in society, but communication support has resulted in positive QoL for IwA (Cruice et al., 2003; Simmons-Mackie

& Kagan, 2007). As in all other conditions, the ultimate goal in the treatment of aphasia is to improve QoL. In IwA, not only should language impairment be evaluated but also the QoL and its related components (functional performance, gender, age, community integration, QoL aspects, and cultural, environmental or personal factors) (Worrall & Holland, 2003).

QoL is very important in terms of planning the rehabilitation process of the IwA, determining the priority targets and taking the individual as a whole during the therapy stages, and performing the intervention on behalf of the whole. In addition to linguistic and communicative problems, other issues such as decreased participation in social activities, decreased satisfaction, and difficulty in fulfilling self-care skills, meeting basic needs and a serious decrease in QoL were reported (Cruice, Hill, et al., 2010; Cruice, Worrall, et al., 2010; Hilari, 2011). The feelings of inadequacy, loneliness and being a burden to their relatives not only causes problems for the IwA but also affects their family. For these reasons, it is very important to evaluate the QoL among IwA.

QoL is assessed with a general and condition-specific scale. General scales have wide applicability in many populations and diseases (Armağan, 2011). Many assessment tools have been developed to measure QoL in aphasia including Assessment for Living with Aphasia, Stroke and Aphasia Quality of Life Scale-39 (SAQOL-39), The Burden of Stroke Scale, American Speech-Language-Hearing Association's Functional Assessment of Communication Skills for Adults (ASHA FACS) (Paul-Brown et al., 2004), Communicative Effectiveness Index and Amsterdam-Nijmegen Everyday Language Test (Kasselimis et al., 2017; van der Meulen et al., 2010; Yourganov et al., 2015). A significant correlation was found between the severity of aphasia and pain, mobility, social-emotional area and total scores in the acute phase in IwA (Franzen-Dahlin et al., 2010). Bose et al. (2009) compared the participant performances obtained from SAQOL-39 and ASHA's Quality of Communication Life Scale (Paul-Brown et al., 2004) and determined that IwA achieved lower scores on both QoL scales compared to the healthy group. In the study conducted by Maviş et al. (2005),

primary caregivers stated that they could not spare time for themselves due to the burden brought on by IwA. Their activities were restricted, and their responsibilities increased. Özmen (2014), on the other hand, reported that IwA's social participation and their QoL decreased following stroke. Yeşilkaya (2013) compiled 27 articles covering the years 1989-2012 and determined that QoL of IwA was lower than healthy individuals, and factors such as increasing age, gender, being single, living alone, poor functional status, depression and anxiety had an effect on QoL among IwA.

In previous studies examining QoL levels of IwA in Türkiye, QoL levels of IwAs were shown to be lower than those of healthy individuals. However, no study investigating how QoL levels are affected in the context of aphasia types has been done. Therefore, this study aimed to evaluate QoL of aphasia types using the Turkish versions of SAQOL-39, AIQ-21, and SADQ-H10.

Method

Participants

This prospective study was conducted between 01.03.2023 and 01.05.2023. Written informed consent was obtained from primary caregivers (spouses and first-degree relatives) of IwA in accordance with the Declaration of Helsinki. The study consisted of 49 IwA diagnosed with Wernicke aphasia (n=7), conduction aphasia (n=7), transcortical sensory aphasia (n=7), anomic aphasia (n=7), Broca's aphasia (n=7), mixed transcortical aphasia (n=7) and transcortical motor aphasia (n=7). The inclusion criteria for IwA were as follows: To speak Turkish, post onset time more than 6 months, not having any cognitive or mental health problems before stroke, and having at least 20 points in the receptive language section of the Aphasia Language Assessment Test (ALA). IwA who do not meet the inclusion criteria were not included in the study. Diagnosis of the type of individuals with aphasia was made by neurological examination, Magnetic Resonance Imaging (MRI), and ALA scores. Aphasia types were distinguished according to comprehension ability, verbal fluency, and repetition performance in the language assessment sessions.

At the beginning of the study, ALA was administered to IwA by a Specialist Speech and Language Therapist (SLT). Then, 15 minutes later, the Turkish versions of AIQ-21, SAQOL-39, and SADQ-H10 were administered by the same SLT and data were recorded. The test results of the IwA were compared.

Data Collection Tools

Language Assessment Test for Aphasia (ALA)

ALA was developed by Toğram and Maviş (2012) for individuals with IwA (a) to identify their performances in all language areas, (b) to diagnose aphasia, and (c) to help SLTs select appropriate therapy targets (Toğram & Maviş, 2012). These authors conducted the validity, reliability, and standardization study for ALA applied to healthy individuals as well as IwA. ALA consisted of eight sections that evaluated language and speech characteristics. These included spontaneous language and speech, auditory comprehension, repetition, naming, reading, grammar, speech acts, and writing. A high score indicated effective use of language and speaking skills. The spontaneous language and speech assessment section consisted of two subsections: language and cognition assessment (20 points) and automatic speech assessment (12 points). The highest score obtained from this subsection was 32. The auditory comprehension assessment section consisted of five subsections: Command taking (8 points), understanding yes/no questions (10 points), understanding the objects (12 points), category-level comprehension (20 points), and understanding sentence diversity (16 points). The maximum score of the auditory comprehension assessment section was 66. The highest score obtained from the repetition section was 20. Assessment of naming consisted of three subsections: categorical naming (4 points), confrontation naming (20 points), and responsive naming (20 points). In the responsive naming subsection, there are five items for naming nouns and verbs each. The highest possible score for this section was 44. Only four sections of the test were used, and the maximum total score of these sections was 162. The reliability coefficients of the subsections of

the ALA test were between 0.94 and 0.99, and the reliability coefficient for the overall test was 0.99 (Toğram & Maviş, 2012).

Aphasia Impact Questionnaire-21 (AIQ-21)

AIQ-21 is the last section of the Turkish version of Comprehensive Aphasia Test (CAT-TR) (Maviş et al., 2022). AIQ-21 was adapted to Turkish (AIQ-21-TR) by Yaşar et al. (2022). AIQ-21-TR is an aphasia-friendly scale administered face-to-face to IwA and aims to evaluate the QoL of IwA. In the scale, there is a total of 21 items consisting of three sections: Communication, participation, and emotional state. The use of large fonts, minimum number of texts and simple pictures in the entire scale, and the repetition of the word "this week" at the beginning of each question is used to support the IwA so that these individuals could understand the scale more easily. In addition, the positive question sentences used in some questions aim to instill the thought of "you have positive things to do". All of the questions in the scale include questions to determine how the week goes for the IwA.

In the administration of AIQ-21-TR, the IwA were asked to rate the difficulty experienced between 0-4 with 4, being the worst and 0, being the best. The problems experienced by IwA in this process were in the inwardness of the person. Since the main purpose of interventions and approaches was to maximize the IwA, the perception of QoL in the scale was derived directly from the answers of the IwA themselves.

Stroke and Aphasia Quality of Life Scale-39 (SAQOL-39)

SAQOL-39 was developed by Hilari et al. (2003) to determine the QoL of IwA who had language and speech disorders. The adaptation of this scale to Turkish and its validity-reliability analyses were carried out by Noyan-Erbaş and Toğram (2016). The scale consisted of 39 items with a 5-point Likert structure to determine the QoL of the IwA. As a result of validity and reliability analyses, the Turkish version of the scale (SAQOL-39-TR) consisted of four sections, which was the

same as the original version. These sections were physical (17 items), communication (7 items), psychosocial (11 items), and energy (4 items).

The scores given for each item were in the range of 1–5. A high score indicated high QoL, while a low score indicated low QoL. After the application of the scale, five different scores were obtained regarding the sections of the scale as well as overall. These scores were obtained by averaging the subdivisions and the overall score.

Stroke Aphasic Depression Questionnaire Hospital version (SADQ-H10)

The SADQ scale was developed by Sutcliffe and Lincoln (1998) and included 21 questions. The goal of this scale was to determine the level of depression in aphasia due to stroke. The scale was developed based on observable behaviors thought to be associated with depressive mood. In the scale, there were questions in three different areas: (a) social interaction and physical pain, (b) sad-crying, and (c) loss of interest and motivation. Response options on this scale were "often", "sometimes", "rarely" and "never". The hospital version of the scale (SADQ-H10) was published by Lincoln et al. (2000). In this version, the number of items in the scale was reduced from 21 to 10 in order to increase the validity and internal consistency of the scale. The answer options were revised this week as "every day", "4-6 days", "1-3 days" and "never". The validity and reliability studies of the scale were conducted by Cobley et al. (2012). In the validity and reliability study including 165 IwA, the SADQ-H-10 scale was reported as valid and reliable observational screening scale for the identification of depressive symptoms in IwA. SADQ-H10 was adapted to Turkish (SADQ-H10-TR) by Oğuz and Yıldız (2022). The Cronbach's alpha internal consistency coefficient of the scale was found to be 0.62. The test-retest reliability correlation coefficient was determined as 0.85. It was observed that the scores of SADQ-H10-TR did not differ according to the aphasia type, age, gender, and language score.

The SADQ-H10-TR was filled by the caregiver according to the condition of IwA in the last week. A total score of 14 and above (min=0, max=30) obtained from the options scored between 0-3 indicated the presence of depression. In addition, a high total score indicated that the severity of depression was also high.

Statistical Analysis

Statistical analysis was performed using SPSS v20 statistical software. Kolmogorov-Smirnov test was used to test the null hypothesis for the data and its normal distribution. The mean, standard deviation, median, minimum and maximum values were given for continuous variables, while n and percentage values of categorical variables were used. Kruskal-Wallis test was used for data that did not show normal distribution in the comparison of groups. Mann Whitney U test was used for the comparison of the two groups for the data in which a significant difference was determined based on the Kruskal-Wallis test. Bonferroni correction was made to prevent type 1 error in pairwise comparisons. Spearman correlation was performed for factors that may have affected the test scores. For all statistics, a p-value of less than 0.05 was determined to be significant.

Ethics Committee Approval

Ethical approval from Bahçeşehir University was obtained (no: E-20021704-604.02.02-48382, date: 07.12.2022).

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Results

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The demographic characteristics of all participants included in the study are shown in Table 1. No difference was observed between fluent and non-fluent IwA in terms of age, gender, education level, employment status, dominant hand and post-onset time (Table 2).

Table 1

Demographic and Clinical Characteristics of IwA

Patient ID	Gender	Age	Education Level	Employment Status before stroke	Marital Status	Time post-onset (month)	Dominant Hand	Aphasia treatment	Psychological treatment
B1	F	56	High School	No	Married	9	Right	No	No
B2	F	53	University	Yes	Married	11	Right	No	No
B3	M	52	High School	Yes	Married	16	Left	Yes	Yes
B4	M	59	High School	Yes	Married	21	Right	No	No
B5	F	54	University	Yes	Single	18	Right	No	No
B6	F	50	High School	No	Married	11	Right	No	No
B7	M	52	High School	Yes	Married	17	Right	No	No
TM1	F	51	High School	Yes	Married	16	Left	No	No
TM2	F	51	University	Yes	Married	10	Right	No	No
TM3	F	46	High School	Yes	Married	11	Right	Yes	No
TM4	M	48	High School	Yes	Married	12	Right	No	No
TM5	M	63	High School	Yes	Single	17	Right	No	No
TM6	F	58	University	Yes	Married	18	Right	No	No
TM7	F	56	High School	No	Married	20	Right	No	No
TMIKS1	M	53	University	Yes	Married	14	Right	No	Yes
TMIKS2	M	52	High School	Yes	Married	13	Right	No	No
TMIKS3	M	53	High School	No	Married	16	Right	Yes	No
TMIKS4	F	54	University	Yes	Married	17	Right	No	No
TMIKS5	F	50	High School	No	Married	18	Right	No	No
TMIKS6	M	52	High School	No	Married	17	Right	No	No
TMIKS7	M	51	High School	Yes	Married	18	Right	No	No
W1	M	51	High School	Yes	Married	10	Right	No	No
W2	M	56	University	Yes	Married	9	Right	No	No
W3	F	53	High School	Yes	Single	11	Right	No	No
W4	F	52	High School	No	Married	16	Left	Yes	No
W5	F	59	High School	Yes	Married	18	Right	No	No

W6	F	42	High School	No	Married	19	Right	No	No
W7	M	50	High School	Yes	Married	17	Right	No	No
TD1	F	52	High School	Yes	Married	11	Right	No	No
TD2	F	51	University	Yes	Married	17	Right	No	No
TD3	F	43	High School	Yes	Married	16	Right	No	No
TD4	F	53	High School	Yes	Married	10	Right	No	Yes
TD5	M	52	High School	Yes	Married	11	Right	No	No
TD6	M	59	University	Yes	Married	12	Right	No	No
TD7	M	54	High School	Yes	Married	17	Right	No	No
I1	M	50	High School	Yes	Married	18	Right	No	No
I2	M	52	High School	Yes	Married	20	Right	No	No
I3	F	51	University	Yes	Single	14	Right	No	No
I4	F	51	High School	Yes	Married	13	Right	Yes	No
I5	F	46	High School	Yes	Married	16	Right	Yes	No
I6	F	48	High School	No	Married	9	Right	No	No
I7	F	63	High School	No	Married	11	Right	No	No
A1	F	45	High School	Yes	Married	16	Right	No	No
A2	F	56	University	Yes	Married	21	Left	No	No
A3	F	53	High School	Yes	Married	18	Right	Yes	No
A4	F	52	High School	No	Married	11	Right	No	No
A5	M	46	University	Yes	Married	17	Right	No	No
A6	M	54	High School	Yes	Married	16	Right	No	No
A7	F	50	University	Yes	Single	10	Right	Yes	No

Table 2

Comparison of Variables and Scales between Individuals with Fluent and Non-Fluent Aphasia

Variables	Non-Fluent Aphasia	Fluent Aphasia	Z; *p* value
Gender	n (%)	n (%)	
Male	10 (47.6%)	10 (35.7%)	*Z:* -0.830
Female	11 (52.4%)	18 (64.3%)	*p*: 0.406
Educational Level			
High School	15 (71.4%)	21 (75%)	*Z:* -0.277
University	6 (28.6%)	7 (25)	*p*: 0.782

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	Mean±S.D. Median (Min-Max)	Mean±S.D. Median (Min-Max)	
Employment Status			
Yes	15 (71.4%)	23 (82.1%)	*Z:-0.880*
No	6 (28.6%)	5 (17.9%)	*p*: 0.379
Dominant Hand			
Right	19 (90.5%)	26 (92.9%)	*Z: -0.298*
Left	2 (9.5%)	2 (7.1%)	*p*: 0.766
Psychological treatment			
No	19 (90.5%)	27 (96.4%)	*Z: -0.851*
Yes	2 (9.5%)	1 (3.6%)	*p*: 0.395
	Mean±S.D. Median (Min-Max)	**Mean±S.D. Median (Min-Max)**	
Age	53.04±3.80 52 (46-63)	51.57±4.67 52 (42-63)	*Z: -0.830* *p*: 0.406
Time post-onset (month)	15.23±3.44 16 (9-21)	14.42±3.63 16 (9-21)	*Z: -0.856* *p*: 0.392
AIQ-21-TR			
Communication	16.42±4.62 14 (11-24)	12.53±7.01 14.5 (0-22)	*Z: -0.368* *p*: 0.713
Participation	13.80±1.60 13 (11-16)	9.92±3.95 11 (3-15)	***Z: -4.160*** ***p< 0.001***
Emotional State	34.14±1.52 34 (29-36)	27.96±9.30 32 (11-36)	***Z: -2.687*** ***p: 0.007***
Overall Score	64.38±7.10 61 (51-75)	50.42±19.71 59.5 (15-71)	***Z: -2.821*** ***p: 0.005***
SADQ-H10-TR			
(H1) Does he/she have weeping spells? (1)	1.76±1.30 2 (0-3)	1.35±0.98 1 (0-3)	*Z: -1.090* *p*: 0.276
(H2) Does he/she have restless disturbed nights?	2.33±0.57 2 (1-3)	1.39±0.78 1.5 (0-3)	***Z: -3.967*** ***p<0.001***
(H3) Does he/she avoid eye contact when you talk to him/her?	2.61±0.49 3 (2-3)	1.28±0.93 1 (0-3)	***Z: -4.608*** ***p<0.001***
(H4) Does he/she burst into tears?	2.23±0.62 2 (1-3)	1.71±0.85 2 (0-3)	***Z: -2.215*** ***p: 0.027***
(H5) Does he/she complain of aches and pains?	2.14±0.79 2 (0-3)	2.35±0.73 2 (0-3)	*Z: -1.041* *p*: 0.298
(H6) Does he/she get angry?	1.28±0.71 1 (0-2)	1.17±0.90 1 (0-3)	*Z: -0.581* *p*: 0.561
(H7) Does he/she refuse to participate in social activities?	1.00±0.63 1 (0-2)	1.35±1.02 1 (0-3)	*Z: -1.263* *p*: 0.207
(H8) Is he/she restless and fidgety?	0.57±0.74 0 (0-2)	1.14±1.00 1 (0-3)	***Z: -2.030*** ***p: 0.042***
(H9) Does he/she sit without doing anything?	1.80±0.51 2 (1-3)	1.89±1.13 2 (0-3)	*Z: -0.682* *p*: 0.495
(H10) Does he/she keep him/herself occupied during the day?	2.47-0.81 3 (0-3)±	1.50±0.96 1 (0-3)	***Z:-3.449*** ***p: 0.001***
Overall Score	18.23±2.23 18 (15-22)	15.17±4.26 16 (7-23)	*Z:-.2572* ***p: 0.01***
SAQOL-39-TR			
Psychosocial	48.00±1.67 48 (44-50)	46.39±4.49 47.5 (37-52)	*Z:-0.814* *p*:0.416
Energy	18.14±1.52 19 (15-19)	19.35±0.67 19 (18-20)	***Z:-3.528*** ***p<0.001***
Communication	16.42±1.39 16 (14-19)	16.07±1.27 16.5 (14-18)	*Z:-0.481* *p*:0.630
Physical	34.42±6.46 33 (25-52)	79.64±1.96 80 (76-82)	***Z:-5.963*** ***p<0.001***

Overall Score	117.00±7.03 115 (108-137)	161.46±6.16 163.5 (149-169)	*Z:-5.944* *p<0.001*
ALA			
Spontaneous Language, Speech and Cognition Assessment	8.42±3.55 10 (3-12)	14.64±5.06 14.5 (3-20)	*Z:-4.175* *p<0.001*
Spontaneous speech	5.19±1.77 5 (3-9)	11.21±1.10 12 (8-12)	*Z:-6.043* *p<0.001*
Understanding commands	4.00±2.19 5 (0-7)	4.64±2.98 4.5 (0-8)	*Z:-0.981* *p:0.326*
Understanding yes / no questions	5.28±2.00 6 (1-8)	5.39±4.06 5 (0-10)	*Z:-0.285* *p:0.776*
Understanding the objects	6.90±4.93 10 (0-11)	6.92±4.34 6.5 (0-12)	*Z:-0.368* *p:0.713*
Understanding the categories	6.14±3.69 7 (0-10)	8.25±1.91 8 (2-10)	*Z:-1.972* *p:0.049*
Understanding the details within the category	5.95±4.11 8 (0-10)	5.07±4.25 3.5 (0-10)	*Z:-0.021* *p:0.984*
Simple sentence matching	4.95±3.48 6 (0-8)	4.17±3.31 3 (0-8)	*Z:-0461* *p:0.645*
Complex sentence matching	4.33±3.10 6 (0-8)	4.57±3.56 5 (0-8)	*Z:-1.252* *p:0.211*
Repetition	10.47±6.80 14 (0-18)	8.92±6.84 6 (0-18)	*Z:-0.276* *p:0.783*
Categorical naming	0.57±0.92 0 (0-2)	1.50±1.77 0 (0-4)	*Z:-1.779* *p:0.075*
Confrontation naming	5.71±2.70 6 (0-11)	7.5±7.49 4 (0-20)	*Z:-0.264* *p:0.791*
Noun naming	2.90±3.01 2 (0-8)	4.10±3.62 3 (0-10)	*Z:-1.217* *p:0.224*
Action naming	1.71±1.34 2 (0-4)	4.75±3.50 4 (0-10)	*Z:-3.089* *p:0.002*
Overall Score	72.57±22.15 75 (38-107)	91.67±35.32 95.5 (29-144)	*Z:-1.900* *p:0.057*

Z: Mann-Whitney U test

A comparison of scale scores derived from fluent and nonfluent IwAs is shown in Table 2. The fluent IwA's AIQ-21-TR score was statistically lower than nonfluent IwA (p: 0.005). Scores from all sections of the AIQ-21-TR were higher in non-fluent IwA. While emotional state and participation scores were found to be significantly higher in non-fluent IwA than in fluent IwA, the difference in the communication section was not significant. Fluent IwA's SADQ-H10-TR score was statistically lower than non-fluent IwA (p: 0.01). Considering the answers given to the questions asked in SADQ-H10-TR, the scores of the non-fluent IwA from the questions H2, H3, H4, H8 and H10 were significantly higher than the fluent IwA. The SAQOL-39-TR overall score of fluent IwA was significantly higher than the nonfluent IwA's overall score (p<0.001). When sections of SAQOL-39-

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TR were analyzed, the scores of fluent IwA in the energy and physical sections were significantly higher than the scores of non-fluent IwA. The scores of non-fluent IwA were higher compared to fluent IwA in communication and psychosocial sections. However, the difference was not significant.

Comparisons including fluent IwA and non-fluent IwA groups of all IwA included in the study are shown in Table 3. There was no difference between the groups in terms of age, time post-onset, gender, educational status, employment status, dominant hand and psychological treatment.

Comparison of AIQ-21-TR, SAQOL-39-TR and SADQ-H10-TR scores of all aphasia types is shown in Table 4. Individuals with conductive aphasia had the lowest scores in both the overall and all sections of AIQ-21-TR. The highest score in the AIQ-21-TR overall and among all sections was observed in the mixed transcortical aphasia group. In SAQOL-39-TR, individuals with Broca's aphasia had the lowest overall scores and the anomic IwA had the highest overall scores. Anomic IwAs received the highest scores from all subdivisions in SAQOL-39-TR. The lowest scores in the psychosocial and communication sections of the SAQOL-39-TR were found in conductive IwA. The lowest score in the energy section was in mixed transcortical IwAs, while the lowest score in the physical section was in individuals with Broca's aphasia. However, these scores were not significantly different from the other groups. The overall score of fluent IwA in SAQOL-39-TR was significantly higher than that of non-fluent IwA. In the overall scores of SADQ-H10-TR, the transcortical motor IwA had the highest total score and the anomic IwA had the lowest score.

Table 3

Comparison of ALA and Demographic and Clinical Features of All Aphasia types.

Variables	Broca	Transcortical motor	Mixed transcortical	Wernicke	Transcortical sensory	Anomic	Conduction
Gender							
Male	3 (42.9%)	2 (28.6%)	5 (71.4%)	3 (42.9%)	3 (42.9%)	2 (28.6%)	2 (28.6%)
Female	4 (57.1%)	5 (71.4%)	2 (28.6%)	4 (57.1%)	4 (57.1%)	5 (71.4%)	5 (71.4%)
Educational Level							
High School	5 (71.4%)	5 (71.4%)	5 (71.4%)	6 (85.7%)	5 (71.4%)	4 (57.1%)	6 (85.7%)
University	2 (28.6%)	2 (28.6%)	2 (28.6%)	1 (14.3%)	2 (28.6%)	3 (42.9%)	1 (14.3%)
Employment Status							

Yes	5 (71.4%)	6 (85.7%)	4 (57.1%)	5 (71.4%)	7 (100.0%)	6 (85.7%)	5 (71.4%)
No	2 (28.6%)	1 (14.3%)	3 (42.9%)	2 (28.6%)	0 (0.0%)	1 (14.3%)	2 (28.6%)
Dominant Hand							
Right	6 (85.7%)	6 (85.7%)	7 (100.0%)	6 (85.7%)	7 (100.0%)	6 (85.7%)	7 (100.0%)
Left	1 (14.3%)	1 (14.3%)	0 (0.0%)	1 (14.3%)	0 (0.0%)	1 (14.3%)	0 (0.0%)
Psychological Treatment							
No	6 (85.7%)	7 (100.0%)	6 (85.7%)	7 (100.0%)	6 (85.7%)	7 (100.0%)	7 (100.0%)
Yes	1 (14.3%)	0 (0.0%)	1 (14.3%)	0 (0.0%)	1 (14.3%)	0 (0.0%)	0 (0.0%)
Age	53.71±2.98 53 (50-59)	53.28±5.99 51 (46-63)	52.14±1.34 52 (50-54)	51.85±5.33 52 (42-59)	52.00±4.76 52 (43-59)	50.85±4.09 52 (45-56)	51.57±4.44 51 (46-63)
Time post-onset (in months)	14.71±4.42 16 (9-21)	14.85±3.84 16 (10-12)	16.14±1.95 17 (13-18)	14.28±4.15 16 (9-19)	13.4±3.10 12 (10-17)	15.57±3.86 16 (10-21)	14.42±3.86 14 (9-20)
ALA							
Spontaneous Speech, Language and Cognition Assessment	9.14±3.93 11 (3-12)	9.14±3.93 11 (3-12)	7.00±2.76 7 (3-10)	9.85±.357 11 (3-13)	11.57±4.11 13 (3-15)	19.71±0.75 [a,b c d e] 20 (18-20)	17.42±2.87 [a,b c] 19 (13-20)
Spontaneous speech	5.14±1.86 4 (4-9)	5.28±1.88 5 (3-9)	5.14±1.86 4 (4-9)	11.28±0.95 [a,b,c] 12 (10-12)	11.28±0.95 [a,b c] 12 (10-12)	11.42±1.51 [a,b c] 12 (8-12)	10.85±1.06 [a,b c] 10 (10-12)
Understanding commands	5.42±0.78 5 (5-7)	5.42±0.78 5 (5-7)	1.14±0.69 [a,b] 1 (0-2)	2.00±1.63 [a,b] 2 (0-4)	2.00±1.63 [a,b] 2 (0-4)	7.71±0.75 [a,b c d e] 8 (6-8)	6.85±1.06 [c,d e] 7 (5-8)
Understanding Yes / No questions	6.00±1.00 6 (5-7)	6.00±1.00 6 (5-7)	3.85±2.79 3 (1-8)	2.00±2.00 [a,b] 2 (0-4)	1.42±1.90 [a,b] 0 (0-4)	9.14±1.06 [a,b d e] 10 (8-10)	9.00±1.52 [d e] 10 (6-10)
Understanding Objects	10.28±0.75 10 (9-11)	10.28±0.75 10 (9-11)	0.14±0.37 [a,b] 0 (0-1)	3.14±2.26 [a,b] 4 (0-6)	3.14±2.26 [a,b] 4 (0-6)	11.14±1.57 [c d e] 12 (8-12)	10.28±2.21 [c,d e] 12 (7-12)
Understanding the Categories	8.28±1.97 9 (5-10)	8.28±1.97 9 (5-10)	1.85±2.34 [a,b] 1 (0-6)	7.42±0.97 [c] 8 (6-8)	6.28±2.13 6 (2-8)	9.71±0.75 [c d e] 10 (8-10)	9.57±0.78 [c e] 10 (8-10)
Understanding the details within the category	8.71±1.11 9 (7-10)	8.71±1.11 9 (7-10)	0.42±0.78 [a,b] 0 (0-2)	1.14±1.06 [a,b] 2 (0-2)	1.14±1.06 [a,b] 2 (0-2)	9.42±0.97 [c d e] 10 (8-10)	8.57±2.43 [c d e] 10 (5-10)
Simple sentence matching	7.28±0.95 8 (6-8)	7.28±0.95 8 (6-8)	0.28±0.75 [a,b] 0 (0-2)	1.14±1.06 [a,b] 2 (0-2)	1.14±1.06 [a,b] 2 (0-2)	6.85±1.57 [c d e] 8 (4-8)	7.57±1.13 [c d e] 8 (5-8)
Complex sentence matching	6.42±0.78 6 (6-8)	6.42±0.78 6 (6-8)	0.14±0.37 [a,b] 0 (0-1)	1.14±1.06 [a,b] 2 (0-2)	1.14±1.06 [a,b] 2 (0-2)	8.00±0.00 [a,b c d e] (8-8)	8.00±0.00 [a,b c d e] (8-8)
Repetition	1.42±0.97 2 (0-2)	14.28±1.79 [a] 14 (12-16)	15.71±2.42 [a] 16 (12-18)	3.71±1.79 [.b c] 4 (2-6)	14.00±5.03 [a] 14 (4-18)	16.00±2.00 [a d] 16 (14-18)	2.00±1.41 [.b c e f] 2 (0-4)
Categorical naming	0.00±0.00 0 (0-0)	1.42±0.97 2 (0-2)	0.28±0.75 0 (0-2)	0.57±0.97 0 (0-2)	0.57±0.97 0 (0-2)	0.85±1.57 0 (0-4)	4.00±0.00 [a,b c d e f] 4 (4-4)
Confrontation naming	4.85±2.49 6 (2-8)	7.42±2.07 7 (5-11)	4.85±2.67 5 (0-8)	4.85±6.51 2 (0-16)	5.71±6.15 4 (0-16)	2.00±2.30 2. (0-6)	17.42±2.22 [a,b,c f] 18 (14-20)
Noun naming	1.57±2.14 0 (0-5)	1.14±3.38 6 (0-8)	3.00±3.21 2 (0-7)	2.42±2.14 2 (0-6)	3.28±1.88 4 (0-6)	1.14±1.06 2 (0-2)	9.57±0.78 [a,b,c,d e f] 10 (8-10)
Action naming	1.28±1.38 1 (0-3)	2.28±1.11 2 (1-4)	1.57±1.51 1 (0-4)	3.14±3.02 2 (0-10)	4.57±3.95 4 (0-10)	2.57±1.51 2 (0-4)	8.71±1.11 [a,b c f] 9 (7-10)
Overall Score	75.85±5.04 75 (70-82)	96.42±6.47 [a] 99 (88-107)	45.42±5.65 [a,b] 45 (38-54)	53.85±16.89 [.b] 54 (29-76)	67.28±20.51 [.b] 71 (39-87)	115.71±6.67 [a c d e] 116 (104-124)	129.85±11.20 [a,b,c d e f] 129 (114-144)

Mann-Whitney U test, with Bonferonni correction, new p value = 0.0023;
[a]indicates that it is significant when compared with Broca's aphasia, [b]indicates that it is significant when compared with the transcortical motor aphasia, [c]indicates that it is significant when compared with the mixed transcortical

aphasia, [d]indicates that it is significant when compared with the Wernicke's aphasia, [e]indicates that it is significant when compared with the transcortical sensory aphasia, [f]indicates that it is significant when compared with the anomic aphasia.

Table 4

Comparison of SADQ-H10-TR, AIQ-21-TR and SAQOL-39-TR Scores of All Aphasia types.

Variables	Broca	Transcortical motor	Mixed transcortical	Wernicke	Transcortical sensory	Anomic	Conduction
AIQ-21-TR							
Communication	13.57±0.53 14 (13-14)	13.00±1.00 13 (11-14)	22.71±0.75[a,b] 23 (22-24)	14.42±0.78[c] 14 (14-16)	15.00±0.81[c] 15 (14-16)	19.42±2.22[a,b,d,e] 19 (17-22)	1.28±0.75[a,b,c,d,e,f] 1 (0-2)
Participation	13.00±1.00 13 (11-14)	12.71±0.95 13 (11-14)	15.71±0.48[a,b] 16 (15-16)	11.00±0.81[c] 11 (10-12)	11.57±0.97[c] 12 (10-13)	13.57±1.13[d] 13 (12-15)	3.57±0.53[a,b,c,d,e,f] 4 (3-4)
Emotional State	34.14±0.69 34 (33-35)	33.14±2.11 34 (29-35)	35.14±0.69 35 (34-36)	34.62±1.79 34 (32-36)	33.71±1.97 33 (31-36)	31.28±2.56[c] 31 (27-34)	12.57±1.13[a,b,c,d,e,f] 12 (11-14)
Overall Score	60.71±1.60 61 (58-63)	58.85±3.80 61 (51-62)	73.57±1.27[a,b] 74 (72.75)	59.71±1.70[c] 60 (57-62)	60.28±2.56[c] 60 (57-64)	64.28±5.52[c] 64 (58-71)	17.42±1.13[a,b,c,d,e,f] 18 (15-18)
SADQ-H10-TR							
Does he/she have weeping spells?	2.00±1.00 2 (1-3)	3.00±0.00 3 (3-3)	0.28±0.48[a,b] 0 (0-1)	2.71±0.48[c] 3 (2-3)	1.00±0.57[b, d] 1 (0-2)	0.71±0.75[b, d] 1 (0-2)	1.00±0.57[b, d] 1 (0-2)
Does he/she have restless disturbed nights?	2.14±0.69 2 (1-3)	2.85±0.37 3 (2-3)	2.00±0.00[b] 2 (2-2)	2.00±0.57 2 (1-3)	1.71±0.75[b] 2 (0-2)	0.71±0.75[b] 1 (0-2)	1.14±0.37[b, c] 1 (1-2)
Does he/she avoid eye contact when you talk to him/her?	2.57±0.53 3 (2-3)	2.28±0.48 2 (2-3)	3.00±0.00 3 (3-3)	2.28±0.75 2 (1-3)	0.85±0.69[a, c] 1 (0-2)	0.57±0.78[a, c] 0 (0-2)	0.93±0.53[c] 1 (1-2)
Does he/she burst into tears?	2.42±0.78 3 (1-3)	2.28±0.75 2 (1-3)	2.00±0.00 2 (2-2)	1.14±0.69[a] 1 (0-2)	2.28±0.48 2 (2-3)	1.14±0.69 1 (0-2)	2.28±0.75 2 (1-3)
Does he/she complain of aches and pains?	1.42±0.78 2 (0-2)	2.85±0.37[a] 2 (2-3)	2.14±0.37 2 (2-3)	1.71±0.75[b] 2 (0-2)	3.00±0.00[a, c, d] 3 (3-3)	2.14±0.69 2 (1-3)	2.57±0.53 3 (2-3)
Does he/she get angry?	0.71±0.48 1 (0-1)	1.14±0.69 1 (0-2)	2.00±0.00[a] 2 (2-2)	1.28±1.11 1 (0-3)	2.00±0.57 2 (1-3)	0.71±0.75 1 (0-2)	0.71±0.48[c] 1 (0-1)
Does he/she refuse to participate in social activities?	0.85±0.37 1 (0-1)	1.14±0.37 1 (1-2)	1.00±1.00 1 (0-2)	2.14±0.89 2 (1-3)	2.14±0.37[a, b] 2 (2-3)	0.85±0.697 1 (0-2)	0.28±0.48[e] 0 (0-1)
Is he/she restless and fidgety?	0.14±0.37 0 (0-1)	0.14±0.37 0 (0-1)	1.42±0.53[a,b] 1 (1-2)	1.28±0.75 1 (0-2)	0.57±0.53 1 (0-1)	2.42±0.53[a,b,e] 2 (2-3)	0.28±0.48[d, f] 0 (0-1)
Does he/she sit without doing anything?	2.14±0.37 2 (2-3)	1.57±0.53 2 (1-2)	1.71±0.48 2 (1-2)	2.85±0.37[b, c] 3 (2-3)	2.85±0.37[b, c] 3 (2-3)	0.42±0.53[a,d,e] 0 (0-1)	1.42±0.53[d,e] 1 (1-2)
Does he/she keep him/herself occupied during the day?	1.71±0.95 2 (0-3)	2.85±0.37 3 (2-3)	2.85±0.37 3 (2-3)	1.28±0.48[b, c] 1 (1-2)	1.42±0.78 1 (1-3)	0.85±1.06[b, c] 0 (0-2)	2.42±0.78 3 (1-3)
Overall Score	16.14±1.46 16 (15-19)	20.14±1.67 21 (17-22)	18.42±1.51 18 (17-21)	18.71±2.56 18 (15-23)	17.85±1.57 17 (16-20)	10.57±3.77[b,c,e] 9 (7-16)	13.57±2.82 13 (11-18)
SAQOL-39-TR							
Psychosocial	48.85±1.21 49 (47-50)	48.57±1.27 49 (47-50)	46.57±1.61 47 (44-48)	46.85±2.11 47 (43-49)	49.28±1.49 49 (47-51)	49.57±2.87 51 (45-52)	39.85±2.03[a b c d e f] 40 (37-43)

Energy	19.00±0.00 19 (19-19)	19.00±0.00 19 (19-19)	16.42±1.61 16 (15-19)	18.57±0.53 19 (18-19)	19.42±0.53 19 (18-19)	19.85±0.37 [a, b c d] 20 (19-20)	19.57±0.53 20 (19-20)
Communication	15.85±0.89 16 (14-17)	17.00±1.15 17 (16-19)	16.42±1.71 16 (14-19)	16.71±0.48 17 (16-17)	16.57±1.27 17 (14-18)	15.57±0.78 15 (15-17)	15.42±1.81 14 (14-18)
Physical	29.71±3.90 31 (25-34)	37.71±8.30 39 (26-52)	35.85±3.80 35 (31-41)	79.14±1.06 [a,b c] 80 (78-80)	80.42±0.78 [a,b c] 81 (79-81)	81.57±0.78 [a, b c d] 82 (80-82)	77.42±1.98 [a, b c f] 76 (76-81)
Overall Score	113.42±4.03 115 (108-118)	122.28±8.42 123 (11-137)	115.28±5.18 114 (110-126)	161.28±2.81 [a,b c] 162 (156-165)	165.71±1.79 [a, b c] 166 (163-168)	166.57±1.90 [a, b c] 167 (164-169)	152.28±2.56 [a, b c e f] 152 (149-157)

Mann-Witney U test, with Bonferonni correction, new p value = 0.0023
[a] indicates that it is significant when compared with Broca's aphasia; [b] indicates that it is significant when compared with the transcortical motor aphasia; [c] indicates that it is significant when compared with the mixed transcortical aphasia; [d] indicates that it is significant when compared with the Wernicke's aphasia; [e] indicates that it is significant when compared with the transcortical sensory aphasia; [f] indicates that it is significant when compared with the anomic aphasia.

There was no difference in the scores of SAQOL-39-TR, ALA, SADQ-H10-TR and AIQ-21-TR in terms of gender, age, education status, employment status, and time post-onset (see Table 5).

Table 5

The relationship of SADQ-H10-TR, AIQ-21-TR, and SAQOL-39-TR scores with age, gender, educational status, employment status, and disease duration.

	Non-Fluent Aphasia				**Fluent Aphasia**			
	AIQ-21-TR	**SADQ-H10-TR**	**SAQOL-39-TR**	**ALA**	**AIQ-21-TR**	**SADQ-10-TR**	**SAQOL-39-TR**	**ALA**
Gender	z=-0.145 p=0.885	z=-1.712 p=0.870	z=-0.553 p=0.580	z=-1.295 p=0.195	z=-1.102 p=0.271	z=-0.107 p=0.915	z=-1.306 p=0.192	z=-1.482 p=0.138
Employment Status	z=-0.725 p=0.469	z=-0.422 p=0.673	z=-0.993 p=0.321	z=-0.810 p=0.418	z=-1.493 p=0.135	z=-0.118 p=0.906	z=-1.951 p=0.051	z=-0.663 p=0.507
Education Status	z=-0.160 p=0.873	z=-0.801 p=0.423	z=-1.304 p=0.192	z=-0.186 p=0.853	z=-0.550 p=0.582	z=-0.118 p=0.906	z=-1.093 p=0.275	z=-0.585 p=0.559
Age	rho=0.105 p=0.594	rho=0.033 p=0.868	rho=0.030 p=0.838	rho=0.145 p=0.462	rho=-0.23 p=0.299	rho=0.178 p=0.441	rho=-0.36 p=0.100	rho=-0.86 p=0.709
Time Post-Onset	rho=-0.145 p=0.462	rho=-0.370 p=0.053	rho=-0.27 p=0.890	rho=0.125 p=0.525	rho=0.057 p=0.808	rho=0.240 p=0.295	rho=0.022 p=0.923	rho=-0.225 p=0.326

z *Mann-Whitney U test,*
rho *spearman correlation coefficient.*

Discussion

QoL has rapidly gained importance in healthcare over the past decade due to the increased use of Patient-Reported Outcomes Measure (PROMs). The ASHA's ultimate goal is to improve QoL by optimizing the communication skills of individuals with speech and language disorders. Similarly,

the Stroke Clinical Guidelines of the Royal College of Physicians in the UK have determined that the primary goals of stroke and aphasia rehabilitation are to maximize the patient's sense of well-being and QoL (Party, 2012). Although there is no consensus on the definition of health-related quality of life (HRQL), social, physical, emotional and cognitive well-being has been targeted. In a Canadian study of people living in long-term care facilities, 60 diseases and 15 conditions were evaluated. After adjusting for gender, age, and other diagnoses, aphasia was found to have more adverse effects on HRQL than Alzheimer's disease and cancer (Lam & Wodchis, 2010).

In a meta-analysis examining the effects of language impairment and related factors on HRQL following aphasia, it was reported that HRQL was adversely affected by the severity of aphasia, presence of emotional distress and/or depression, an existing communication disorder, activity restrictions, and other medical problems (Hilari et al., 2012). However, another meta-analysis emphasized that communication, support, establishing meaningful relationships, participation, positivity, independence and autonomy are important for successfully living with aphasia (Brown et al., 2012). HRQL is multifactorial and the relationship between demographic and cultural variables in IwA is unclear. HRQL has been shown to be associated with gender (Worrall et al., 2017), age (Cruice et al., 2003; Hilari et al., 2003; Manders et al., 2010), time since stroke (Manders et al., 2010), education (Manders et al., 2010; Worrall et al., 2017) and socioeconomic status (Lee et al., 2015; Worrall et al., 2017) in IwA. On the contrary, there have been studies showing that HRQL does not associate with gender (Franzen-Dahlin et al., 2010; Hilari et al., 2003; Nicholas et al., 2017), age (Bose et al., 2009; Nicholas et al., 2017; Worrall et al., 2017), time since stroke (Bose et al., 2009; Cruice et al., 2003; Hilari et al., 2003; Manders et al., 2010), education (Bose et al., 2009; Cruice et al., 2003), and socioeconomic status (Hilari et al., 2003) in IwA. In addition, cognitive status (Hilari et al., 2003; Manders et al., 2010), functional status (Hilari et al., 2003; Lee et al., 2015; Manders et

al., 2010; Worrall et al., 2017), fatigue (Bullier et al., 2020), and depression (Hilari et al., 2003; Lee et al., 2015; Worrall et al., 2017) have been associated with HRQL measurements in IwA.

In the study of Lee et al. (2015), IwA were determined to spare less time for shopping, markets, finance, participating in voluntary activities, and going out. It has also been reported that IwA have decreased frequency of social contact and participation in meetings with their friends. In the same study, IwA displayed significantly lower integration scores on the community integration questionnaire (CIQ) and significantly higher scores on the Geriatric Depression Scale (GDS). In the study of Lee et al. (2015), IwA and the healthy group were compared, while different subtypes of IwA were not compared. In another study, 12 people with Broca's aphasia were evaluated through Quality of Communication Life (Pallavi et al., 2018). It was observed that both the general scores and the domain-specific scores of individuals with Broca's aphasia were lower than the scores of healthy individuals. Moreover, IwA had the lowest scores in the area of socialization activities compared to other areas. According to the SAQOL-39-TR results in the study of Oğuz and Toğram (2019) on Turkish-speaking IwAs, the most affected areas were communication, physical, psychosocial and energy sections, respectively. A significant and positive correlation was found between the physical function scores of Short Form-36 (SF-36) and physical section scores of SAQOL-39-TR, and IwAs with lower QoL scores were also observed to have lower SF-36 scores. In addition, a negative and significant relationship was determined between the scores obtained from the Beck Depression Scale and the scores obtained from the SAQOL-39-TR including total and section scores. The scores of IwA including the total and section scores of SAQOL-39-TR were not affected by factors such as age, gender and time since stroke.

Studies of QoL in IwA defined positive and/or negative features that affect QoL by comparing only IwA and healthy individuals and were not compared the difference between aphasia types. In this study, IwA were first divided into two groups as fluent and non-fluent IwA. No difference was

observed between fluent and non-fluent IwA in terms of age, gender, education level, employment status, dominant hand, post-onset time, and psychological treatment received. The SADQ-H10-TR was used to identify the level of depression in IwA, and a score of 14 or higher indicated the presence of depression. The result of this test revealed the presence of depression in all IwA (see Tables 2 and 4). The high depression score in IwA confirmed the results of previous studies (Lee et al., 2015; Oğuz & Toğram, 2019; Pallavi et al., 2018). However, the higher overall score in non-fluent IwA indicated that the level of depression in the non-fluent IwA was also more severe. AIQ-21-TR and SAQOL-39-TR evaluated the QoL in IwA. In sections of AIQ-21-TR, emotional state and participation scores in non-fluent IwA were significantly higher than fluent IwA. Interestingly, the difference in communication section was not significant. Since a low score in AIQ-21-TR was associated with good QoL, fluent IwA had better QoL than non-fluent IwA. Looking at the subsection of SAQOL-39-TR, fluent IwA had significantly higher scores on the energy and physical section than non-fluent IwA. In the scoring of SAQOL-39-TR, a high score has been associated with good QoL. SAQOL-39-TR results showing that non-fluent IwA had worse QoL were consistent with AIQ-21-TR results showing that non-fluent IwA had worse QoL.

When the total and section scores of SAQOL-39-TR were examined, the physical section had the highest score according to studies of Hilari et al. (2003) and Noyan-Erbaş and Toğram (2016). Conversely, the average scores pertaining to psychosocial section of SAQOL-39-TR were the highest according to the study of İyigün and Toğram (2021). In the study of İyigün and Toğram, the communication section had the lowest average, while in the studies of Hilari et al. (2003) and Noyan-Erbaş and Toğram (2016), the energy section had the lowest score. In the study, the highest averages were in the psychosocial section of SAQOL-39-TR and the lowest averages were in the energy section of the same scale, which was consistent with the study of İyigün and Toğram (2021). Unlike previous studies, aphasia types were considered and compared in this study. The highest overall score in

SAQOL-39-TR was observed in anomic IwA, and the lowest was observed in individuals with Broca's aphasia. Low scores on the physical section of SAQOL-39-TR were observed in non-fluent IwA, broca, transcortical motor, and mixed transcortical IwA. Since the lesion in non-fluent IwA was usually in the frontal lobe and this lobe is an important center for motor movements (Kang et al., 2010), it is not surprising that low scores in the physical section of SAQOL-39-TR were seen in non-fluent IwA. The difference in the overall score of SAQOL-39-TR in fluent IwA and non-fluent IwA was due to the physical section of SAQOL-39-TR. The overall scores of SADQ-H10-TR and AIQ-21-TR were found to be higher in non-fluent IwA than in fluent IwA. Cangi et al. (2023) found that there was no significant difference between fluent and non-fluent aphasic groups in terms of depression and resilience. However, there was a negative correlation between total depression score and behavioral disorders. Contrary to Cangi et al. (2023), the score of SADQ-10-TR was significantly higher in non-fluent IwA than in fluent ones in the current study. Also, the results of AIQ-21-TR and SAQOL-39-TR, which evaluated QoL, were consistent with each other and with those of SADQ-H10-TR, which evaluated depression.

In addition to studies stating that there is a relationship between aphasia types and age (Brown & Grober, 1983; Castro-Caldas & Confraria, 1984), there have been other studies that reported a lack of relationship (Ellis & Urban, 2016; Laska et al., 2001; Yao et al., 2015). In the current study, no relationship was observed between aphasia types and age. Moreover, there was no difference between different types of aphasia in terms of gender, educational status, employment status, and post-onset time. In addition, no difference was observed in SAQOL-39-TR, ALA, SADQ-H10-TR and AIQ-21-TR scores in both fluent and non-fluent IwA in terms of gender, age, educational status, employment status and post-onset time (see Table 5).

To the best of the author's knowledge, no previous study has examined and compared QoL levels in different types of aphasia in Türkiye. The small number of IwA, the lack of pre- and post-treatment evaluation, and the fact that it was a single-center study are the limitations of the study.

Conclusion

To improve QoL in aphasia, interventions need to focus on not only on speech and language therapy but also on facilitating social activities, promoting emotional well-being, and strengthening social participation. While doing this, knowing the missing QoL parameter(s) in the specific aphasia type will guide intervention. The results of the study showed the differences in scale scores evaluating QoL in all types of aphasia, and the findings of this study will inform future studies.

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