



Quality of life and post-stroke aphasic syndromes

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Abstract

Objective: Quality of life of patients with post-stroke aphasia is very important aspect of research and rehabilitation of these persons. The aim of this study was to investigate the impact of severity and type of aphasia on quality of life in patients after one year of onset of first-ever stroke.

Subjects and Methods: It was investigated 51 post-stroke adult aphasic patients (23 males and 28 females) who were treated at the Department of Neurology, University Clinical Center Tuzla, Bosnia and Herzegovina. For determining the severity and type of aphasia Boston Diagnostic Aphasia Examination was used and the quality of life was assessed using The Stroke and Aphasia Quality of Life Scale-39.

Results: Patients with aphasia have reduced quality of life at physical, communication, psychosocial and energy domain. Type of aphasic syndrome significantly affects quality of life ($r=0.677$, $p=0.00$). Patients with mixed nonfluent and Broca's aphasia have worst quality of life. Using the multiple comparison (Tukey-test) it was found that persons with these two aphasic syndromes have significantly lower quality of life compared to those with diagnosed anomic aphasia, transcortical sensory aphasia and alexia with agraphia ($p<0.05$). Aphasia severity was significantly correlated with quality of life ($r = 0.730$, $p = 0.00$).

Conclusions: Persons with mild post-stroke aphasia have higher of quality of life and persons with more severe post-stroke aphasia have lower qualities of life, one year after onset of first-ever stroke. Type of aphasic syndrome is significantly associated with quality of life. Subjects with mixed nonfluent and Broca's aphasia have worst quality of life.

INTRODUCTION

Diseases affecting blood vessels of the brain are the leading cause of aphasia in about 80% of adults. Ischemic stroke (embolic or thrombotic) as well as hemorrhagic (intracerebral hemorrhage) in the area of anterior cerebral circulation, especially in a territory of the left middle cerebral artery, is a common cause of aphasia syndromes. Temporary aphasia may also be found in patients with transient ischemic attack (TIA – in this case neurological deficit as well as disturbance of speech withdraws within 24h). The main characteristic of aphasia of vascular origin is sudden occurrence and possibility of partial or complete recovery of speech (2, 11, 15, 16).

Aphasia is common consequence of left hemispheric lesion and most common neuropsychological consequence of stroke, with prevalence of one third of all stroke patients in acute phase although exist reports on greater frequency (6, 15).

Quality of life is defined as individuals »perceptions of their position in life in the context of culture and of value systems where they live and in relation to their goals, expectations, standards and concerns« (1). The quality of life of persons with post stroke aphasia is a developing concept that is highly significant for research made in the field of their rehabilitation. Assessment of the quality of life is a very complex and sensitive process. Quality of life is, by its nature, dynamic and versatile and it depends on several factors.

Measuring the quality of life after aphasia is considered to be highly important for the following reasons: the main purpose of rehabilitation of people with aphasia is the improvement of their quality of life; understanding clients' perspectives in their lives is crucial for defining appropriate and effective interventions; the connection between aphasia and other disabilities and the quality of life can clearly be seen in assessments of the quality of life; assessments of quality of life can be used for assessing success, and clinicians are increasingly requested to show the positive effects of their interventions on everyday life of people with aphasia (19).

Through analysis of expert literature concerning aphasia it has been observed that significant research of the quality of life of people with aphasia is yet to be conducted in the speech-language territory of Bosnia and Herzegovina. The research results from other speech-language territories cannot always be literally applied, considering the specific features of languages in Bosnia and Herzegovina that are important in aphasia. Existing research focuses mainly on the quality of life of people after a stroke, without even an overview of the presence or absence of aphasia.

The aim of this study was to examine the effect that severity of aphasia and type of post stroke aphasic syndrome have on the quality of life of people with aphasia that was caused by a first-ever stroke, at least one year after onset.

SUBJECTS AND METHODS

Sample

For the needs of this research, we have analysed patients treated at the Department of Neurology of the University Clinical Centre Tuzla during 2008. Based on the speech-therapeutic and neurological findings, the patients with diagnosed aphasia were reviewed, and then selected according to the following criteria of the assessment tool used for measurement of the quality of life: persons with post stroke aphasia, at least one year after onset; with no brain damage prior to the stroke; persons who lived at home prior to the stroke; persons who have achieved at least 7 out of 15 points in the receptive part of the Frenchay Aphasia Screening Test (FAST). Out of all aphasic patients, 51 subject met the stated criteria (23 males and 28 females) aged between 41 and 86. The cause of aphasia in 88.2% subjects was ischemic stroke, whereas, in the remaining 11.8% the cause was hemorrhagic type of

stroke. Seven aphasic syndromes were diagnosed in a sample of 51 subjects: Broca's aphasia, anomia, conduction aphasia, transcortical motor aphasia, transcortical sensory aphasia, mixed non-fluent aphasia, and alexia with agraphia

Measurement instruments

Type of aphasic syndrome and its severity were determined by a shortened form of the Boston Diagnostic Aphasia Examination (BDAE, Short form) (8).

The assessment of quality of life was done by a sale of 39 items for the assessment of the quality of life for people with post stroke aphasia (*Stroke and Aphasia Quality of Life Scale-39-SAQOL-39*) (10). The quality of life questionnaire contains 39 questions from 4 areas: *Physical domain*: contains 17 questions covering self-care, mobility, work, functioning of upper extremities and the effect that the physical condition has on social life; *Communication domain*: contains 7 questions referring to speech functions and the effects of speech and language difficulties on family and social life; *Psychosocial domain*: contains 11 questions covering thinking processes, personality and mood; *Energy domain*: contains 4 questions, 3 of which refer to energy and exhaustion, and one refers to whether the subject has been in a situation in which he/she had to write things down in order to remember them.

The number of points for each of the 39 questions spanned between 1 and 5, 1 signifying the minimal or worse result, and 5 marking the maximum or best result. The final result of a specific aspect represents the sum of all points achieved from that area divided by the total number of questions from the same area.

The choice of subjects for the sample for assessment of quality of life was made through a criterion related to the subject's achieved result in the receptive part of FAST test (*The Frenchay Aphasia Screening Test-FAST*) (4). This result is calculated by adding together the score of the reading comprehension test and the score of the auditive comprehension test.

Statistical analyses

After the research was conducted, the gathered data was processed through a computer statistical program SPSS 16.0 created for the Microsoft Windows operating system. The basic statistic parameters were calculated: frequencies, result spans, minimum and maximum results, arithmetic mean and standard deviations. To determine the significance of differences, we used the ANOVA variance analysis with multiple comparisons using the Tukey test. Spearman's coefficient was used to determine the statistical significance of the correlation between the observed variables.

RESULTS

Distribution of subjects according to type of aphasic syndrome

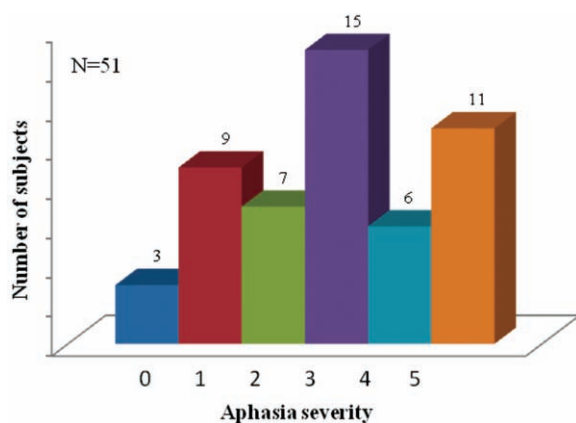
Regarding the type of aphasic syndrome, the most common was anomia, which was diagnosed in

20 subjects (39.2%), followed by Broca's aphasia in 14 subjects (27.5%), conduction aphasia in 5 subjects (9.8%), mixed nonfluent in 4 subjects (7.8%), and alexia with agraphia with the same frequency. The least common were transcortical types of aphasia, transcortical motor aphasia being diagnosed in 2 subjects (3.9%), just like transcortical sensory aphasia.

Distribution of subjects according to severity of aphasia

By analyzing results referring to the severity of aphasia it is clearly seen that all degrees of aphasia severity were present in the sample, from the most severe, with almost no ability of speech, to the least severe cases characterized by minimal, barely noticeable speech difficulties which were seen in 11 subjects (7 subjects with anomic aphasia and 4 subjects with diagnosed alexia with agraphia).

Most of the subjects with aphasia (29.4%) suffered from aphasia with the level of severity marked as 3 in the Boston diagnostics test, which may indicate possible communication in almost all topics from daily life, with a little help from the listener, but also signifies the reduced ability of spontaneous speech which makes conversations about specific subject virtually impossible (Figure 1).



0-No usable speech or auditory comprehension; 1-All communication is through fragmentary expression, great need for inference, questioning, and guessing by the listener. The range of information that can be exchanged is limited, and the listener carries the burden of communication; 2-Conversation about familiar subjects is possible with help from the listener. There are frequent failures to convey the idea, but the patient shares the burden of communication; 3-The patient can discuss almost all everyday problems with little or no assistance. Reduction of speech and/or comprehension, however, makes conversation about certain material difficult or impossible; 4-Some obvious loss of fluency in speech or facility of comprehension, without significant limitation on ideas expressed or form of expression; 5-Minimal discernible speech handicap, the patient may have subjective difficulties that are not obvious to the listener.

Figure 1. Distribution of subjects with aphasia according to the degree of severity of aphasia.

Quality of life

Regarding the observed variables of quality of life, results of descriptive statistics show that research subjects with aphasia achieved the highest scores in the physical domain of testing, from the minimal 1.35 to the maximum of 5 points, with the medial value of 3.38 points and 1.09 standard deviation. This variable was recorded with the smallest range of results. The average result achieved in the communication domain of testing was 2.91 points out of the maximum 5 with a standard deviation of 1.05. Results varied between 1 and 5 points. The arithmetic mean in the psychosocial testing amounted to 3.36 with the minimal result of 1 and maximum of 5, and standard deviation of 1.07. Mean value of 2.86 points achieved in the energy domain of the test shows that this variable received the lowest results from the subjects when compared to other areas. The total score of quality of life covers a range between 1.15 to 5 points with the mean value of 3.24 out of 5. Standard deviation was 0.97. By analyzing the results of observed variables, we have determined that research subjects with aphasia achieved humble results in all areas of assessment, consequently reducing the overall result of the quality of life for these persons. If we express the results in percentages, we can see that they are at an average level of 64.8%.

The influence of severity and type of post stroke aphasic syndrome on quality of life

Research subjects with different types of aphasic syndrome differed in the results achieved in all areas which were tested for quality of life, as well as in the overall score of quality of life (Figure 2). To determine the significance of these differences, we used one-way analysis of the variance (one-way ANOVA). Results show that there is a statistically significant difference in all variables of quality of life between subjects with aphasia regarding type of aphasic syndrome ($p < 0.05$). Based on results gathered from multiple comparison regarding the overall score of quality of life, we can determine that subjects with Broca's aphasia show significantly lower quality of life when compared to subjects with anomic aphasia ($p = 0.030$), or alexia with agraphia ($p = 0.003$). Research subjects with anomic aphasia achieved significantly higher scores in relation to subjects with mixed nonfluent aphasia ($p = 0.000$), whose quality of life was estimated to be lowest. Statistically significant differences in quality of life were seen between subjects with mixed nonfluent aphasia and subjects with transcortical sensory aphasia ($p = 0.010$), as well as subjects with alexia with agraphia ($p = 0.001$).

Differences between subjects with conduction aphasia and transcortical motor aphasia regarding the overall scores of quality of life can be considered accidental, when compared to other aphasic syndromes ($p > 0.05$).

Research subjects with different degrees of severity of aphasia achieved different results in all areas of quality of life, as well as the overall quality of life score (Figure 3).

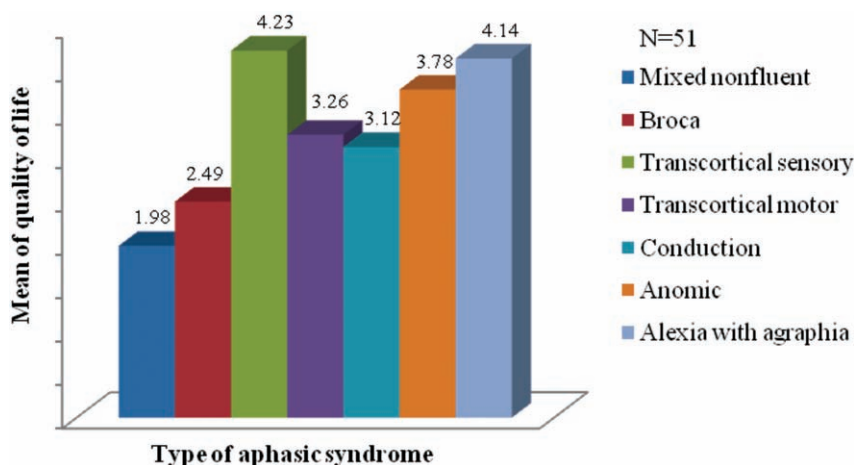


Figure 2. Distribution of mean of the total quality of life score according to the type of aphasic syndrome

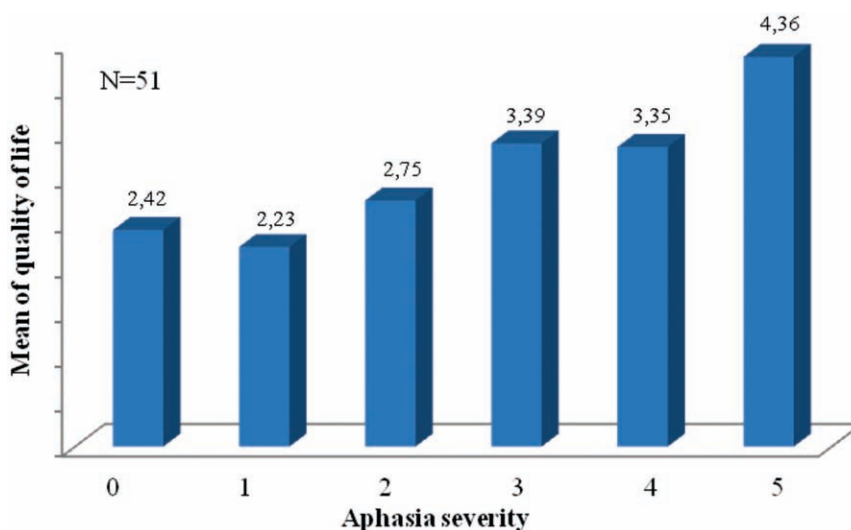


Figure 3. Distribution of mean of the total quality of life score according to the degree of severity of aphasia

Results of one-way ANOVA show that there is statistically significant difference in all quality of life variables between subjects with aphasia regarding the degree of severity of aphasia ($p < 0.05$).

Spearman's correlation analysis showed that quality of life in all areas observed depends on the type of aphasic syndrome and the degree of severity of aphasia (Table 1). Subjects with more severe types of aphasia, or more severe communication disorders, have lower overall quality of life. The correlation is positive and of medium intensity.

DISCUSSION

By analysing the results of this research dealing with the assessment of quality of life, we have determined that patients with poststroke-aphasia generally have reduced quality of life. The average value of the overall quality of life score was 3, 24 points out of the maximum 5. Results

that we have achieved were expected and are in concordance with similar research conducted by other authors. In the study of (12) the mean value of the overall quality of life score was 3.59 points. Ross and Wertz (13) compared the quality of life between 18 subjects with chronic aphasia and 18 subjects without brain damage (as a control group) in their research. The results showed that subjects with aphasia had significantly lower quality of life than subjects from the control group. Engell *et al.* (5) studied the correlation between quality of life and language performances. Authors reported that the overall quality of life score made a statistically significant correlation with the communication and systematic failures in spontaneous speech, including automatized elements, semantics, phonemic and syntactical mistakes, but not with articulation disorders.

Furthermore, the results of this study showed that patients diagnosed with mixed nonfluent aphasia and Broca's aphasia have the lowest quality of life when compared

TABLE 1

Connection of quality of life with aphasia severity and type of aphasic syndrome.

Variable		FD	CD	PSD	ED	TSQL
TA	Spearman (r_s)	.576**	.656**	.661**	.484**	.677**
	p	.000	.000	.000	.000	.000
	N	51	51	51	51	51
SJA	Spearman (r_s)	.641**	.702**	.692**	.564**	.730**
	p	.000	.000	.000	.000	.000
	N	51	51	51	51	51

TA	Type of aphasic syndrome		
AS	Aphasia severity	PSD	Psychosocial domain of quality of life
FD	Physical domain of quality of life	ED	Energy domain of quality of life
CD	Communication domain of quality of life	TSQL	Total score of quality of life

to subjects with other aphasic syndromes. The achieved results are expected if we consider the structure of the subject sample regarding the type of aphasic syndrome. According to information gathered from literature, and while analysing the ability for verbal communication, we can conclude that it is precisely the subjects with mixed nonfluent aphasia and Broca's aphasia who will achieve the lowest scores when it comes to the expressive and receptive component of verbal communication, as well as reading and writing abilities when compared to other aphasic syndromes from the sample. Posteraro *et al.* (12) concluded that persons with fluent aphasia have significantly higher quality of life than persons with non-fluent aphasia. The same authors determined that the difference is significant in the overall quality of life score measured by SAQOL-39, and in all areas except when it comes to energy.

Gainotti (1972) declares that people with fluent aphasia suffer from anxiety and depression, but also show a confusing amount of awareness and control. The author goes on to declare that, among patients with aphasia, those who have anomic aphasia (fluent aphasia) retained the highest level of control over their emotional reactions (14). People with nonfluent aphasia talk very little, but do have insight into the shortcomings of their own speech, and that communication can be a source of negative experiences, anxiety and fear for a person with a severe speech disorder, rather than a source of pleasure (7). These patients are very afraid because of the mistakes they make in calculating, writing down telephone messages, remembering names and a series of other difficulties in day-to-day activities. Because of their permanent concerns, patients tend to retreat; instead of facing the embarrassment of made mistakes (14).

Apart from that, most subjects who have been diagnosed with mixed nonfluent and Broca's aphasia, also suffer from motor deficits, such as hemiplegia or hemiparesis. Stošljević *et al.* (17) emphasize that the feeling of inferiority due to a physical handicap may lead to personality withdrawal, isolation, avoiding contact with the immediate or wider social environment, and problems with

social communication, whereas younger persons often demonstrate depression or negativism. Viitanen *et al.* (18) determined that persisting of motor deterioration has negative effects on various aspects of life satisfaction.

Hilari *et al.* (10) focused their research on identifying basic predictors of health quality of life (HRQL) for people with chronic aphasia. Authors concluded that the emotional state, level of activity, severity of communication difficulties and their overall health significantly affect on health quality of life of people with long-term poststroke aphasia. According to research conducted by Code (3), different types of aphasia, age and physical limitations represent significant predictors related to the amount of time persons with aphasia spend outside their homes in social activities, which is an important issue to be dealt with in future research.

CONCLUSIONS

Quality of life of people with aphasia is reduced in the physical, communication, psychosocial and energy aspect.

Degree of severity of aphasia is significantly related to the quality of life, and patients with more severe aphasia have lower quality of life.

Type of aphasic syndrome is significantly related to quality of life.

Patients with mixed nonfluent aphasia have the lowest quality of life in comparison to the patients with other types of aphasic syndromes.

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