

Maria Tereza Maynard Santana¹
Regina Yu Shon Chun²

Language and functionality of post-stroke adults: evaluation based on International Classification of Functioning, Disability and Health (ICF)

Linguagem e funcionalidade de adultos pós-Acidente Vascular Encefálico (AVE): avaliação baseada na Classificação Internacional de Funcionalidade, Incapacidade e Saúde (CIF)

Keywords

International Classification of
Functioning Disability and Health
Cerebrovascular accident
Speech, Language and Hearing Science
Language
Speech

Descritores

Classificação Internacional de
Funcionalidade Incapacidade e Saúde
Acidente Vascular Cerebral
Fonoaudiologia
Linguagem
Fala

Correspondence address:

Maria Tereza Maynard Santana
Avenida Paulo Silva, 84, Bairro
Farolândia, Aracaju (SE), Brazil,
CEP: 49032500.
E-mail: mariateresamaynard@gmail.com

Received: November 26, 2015

Accepted: August 04, 2016

ABSTRACT

Purpose: Cerebrovascular accident is an important Public Health problem because of the high rates of mortality and sequelae such as language disorders. The conceptual health changes have led to the incorporation of functional and social aspects in the assessments as proposed by the World Health Organization in the International Classification of Functioning, Disability and Health. The purpose was to evaluate and classify language aspects, functionality and participation of post-stroke individuals based on the concepts of the International Classification of Functioning, Disability and Health and characterize the sociodemographic profile of participants. **Methods:** Data collection was carried out through the application of a clinical instrument to evaluate language, participation and functionality in fifty individuals based on the International Classification of Functioning, Disability and Health. **Results:** The age of the participants varied between 32 and 88 years, and the majority were elderly men. Among body functions, the participants reported more difficulties in “memory functions”. As for activity and participation, more difficulties were reported in “recreation and leisure”. As for environmental factors, the component “healthcare professionals” was indicated as a facilitator by the majority of participants. **Conclusion:** The results show the impact of language difficulties in the lives of post-stroke adults and reinforce the applicability of the International Classification of Functioning, Disability and Health as an important complementary tool for assessing language, functionality and participation in a comprehensive and humane approach, towards the improvement of health assistance in ambulatory care.

RESUMO

Objetivo: O Acidente Vascular Encefálico é um importante problema de Saúde Pública, com alto índice de mortes e sequelas, tais como alterações de linguagem. As mudanças conceituais da saúde, ao longo do tempo, levaram à incorporação de aspectos funcionais e sociais como propõe a Organização Mundial de Saúde na Classificação Internacional de Funcionalidade, Incapacidade e Saúde. O objetivo foi avaliar e classificar aspectos de linguagem, funcionalidade e participação de pessoas pós-Acidente Vascular Encefálico com base conceitual da Classificação Internacional de Funcionalidade, Incapacidade e Saúde e caracterizar o perfil sociodemográfico dos participantes. **Método:** A coleta de dados ocorreu pela aplicação de instrumento clínico para avaliação de linguagem, participação e funcionalidade em cinquenta indivíduos, com base na Classificação Internacional de Funcionalidade, Incapacidade e Saúde. **Resultados:** A idade variou de 32 a 88 anos, sendo a maioria do gênero masculino. Em relação a *funções do corpo*, os participantes referiram maior dificuldade em funções da memória; nos aspectos de atividade e *participação*, verificou-se maior dificuldade em recreação e lazer; e nos *fatores ambientais*, os profissionais de saúde foram indicados como facilitadores para a maioria dos participantes. **Conclusão:** Os resultados mostram o impacto das dificuldades de linguagem na vida das pessoas pós-Acidente Vascular Encefálico e reafirmam a aplicabilidade da Classificação Internacional de Funcionalidade, Incapacidade e Saúde como importante instrumento complementar à avaliação de linguagem, funcionalidade e participação numa abordagem integral e humanizada, em prol do aprimoramento da assistência à saúde no atendimento ambulatorial desse grupo.

Study carried out at Universidade Estadual de Campinas – UNICAMP - Campinas (SP), Brazil.

¹ Universidade Federal de Sergipe – UFS - Sergipe (SE), Brazil.

² Universidade Estadual de Campinas – UNICAMP - Campinas (SP), Brazil.

Financial support: Coordenação de Aperfeiçoamento de pessoal de Nivel Superior (CAPES).

Conflict of interests: nothing to declare.

INTRODUCTION

The theme of this work is centered in language, participation and functionality issues in the outpatient medical care of adults post Cerebrovascular accident (CVA).

CVA is considered the principal cause of Chronic Noncommunicable Diseases (NCDs)⁽¹⁾, besides being a major public health problem with increasing socioeconomic impact⁽²⁻⁵⁾. According to the World Health Organization (WHO), CVA is the leading cause of death in Brazil⁽⁴⁻⁶⁾ and the second cause worldwide⁽⁷⁾ and in developed countries in the WHO's *ranking*, only behind ischemic heart disease⁽¹⁾. It is also the leading cause of disability^(3,6-12). CVA can occur at any age for various reasons and is positively correlated with the number of risk factors. Thus, risk factors must be controlled^(1,3,4,13).

The consequences of CVA are many^(1,9,12,14) depending on various factors such as location and extent of the injury and the living and health conditions of the patient. One of the consequences is aphasia^(8,11,15). This can trigger psychological and social problems^(15,16). Thus, the impact of aphasia in the life of individuals may be potentially neglected and underestimated if social factors are ignored. Because patients cannot satisfactorily communicate, they may isolate themselves, avoiding social, family and work activities, and resulting in limited social participation^(12,16,17). Therefore, aphasia not only interferes with the physical conditions of individuals, but also with various contextual instances in which they live^(15,16).

The perspective of Expanded Clinic is assumed here. In this perspective, it is understood that health practices must focus not only on the disease, but also on the individuals, their contexts and complexities in a humanised care perspective⁽¹⁸⁾. In this approach, care aims at practices that may comprehend individuals in their entirety⁽¹⁹⁾, including horizontality, listening and appreciation, and giving priority to different situations of life contexts⁽¹⁹⁾. The clinic gains a new meaning and sets a new sense when incorporates the social needs of individuals in their practices. Therefore, the care ruled by the principles of the expanded clinic changes the goal of professionals, as in the case of Speech Therapy.

The humanized approach of the speech therapy assessment prioritizes the alliance between technical knowledge and human relations. It seeks the identity, characteristics of daily life, mutual knowledge, personal experience and contexts, giving greater credence to the complaints brought by the patient⁽²⁰⁾. Thus, the aim of the present study is to pursue this view in the Speech Therapy outpatient care of people who have suffered CVA.

In this context, the use of the conceptual basis of the International Classification of Functioning, Disability and Health - ICF as a tool allows incorporating various aspects of human health under the perspective of comprehensive care. For this, different individual health determinants are related, considering the unique characteristics of people and seeking to encompass activity, participation and contextual factors in the health of disabled people^(12,13,21). However, because this is an extensive and overarching conceptual basis, which is important to increase its descriptive power, its practical application is challenging. Thus, in this study, we used a protocol⁽²²⁾ drawn up

on the basis of the ICF, with language domains related to CVA and aiming to evaluate and classify the language, participation and functionality of people who have suffered a stroke, since the ICF shows the items to be evaluated, but does not give details on how to do it⁽²²⁾.

Therefore, the objective of the study is, firstly, to evaluate and classify language, functionality and participation features of post-stroke adults using the ICF as conceptual basis, and secondly, characterize the sociodemographic profile of this population based on that instrument, in order to understand factors and determinants that affect the lives of post-stroke adults.

METHODS

This study is a cross-sectional, descriptive and non-experimental research approved by the Research Ethics Committee under n° 442.958/2013. The sample is composed of fifty individuals assisted in a Neurovascular Ambulatory of the Clinic Hospital of the Universidade Estadual de Campinas in São Paulo. Participants were over 18 years of age, of both genders, diagnosed with Ischemic or Hemorrhagic Stroke, and over three months after ictus. Patients with other neurological disorders were excluded because their inclusion would compromise the understanding of the clinical instrument used for data collection. Participants were invited to participate and all signed the Informed Consent (IC). As data collection procedure, information was surveyed from medical records to verify the diagnosis CVA and characterization of individuals regarding the variables age, gender, level of education and profession. The instrument has two parts and includes twelve components and thirty fields of the ICF⁽²²⁾. Data classification considered various sources of information, as recommended in the ICF⁽²¹⁾. These include the own patients, their caregivers/companions and the researchers, using the ICF qualifiers for assessing the severity of the problem.

ICF codes require the use of one or more qualifiers that indicate the magnitude of the health status or the severity of the problem. The qualifiers are coded with numbers after a dot, and the use of codes should be accompanied by at least one qualifier⁽²¹⁾. Responses through the ICF are obtained from qualifiers, as described in the Chart 1.

The instrument was applied by two researchers individually, with the objective to perform intra-examiner agreement of the analysis for reliability of responses. Items whose complications occurred after stroke were considered disabilities and problems. Prior limitations to the stroke were classified as "not applicable".

Data were subjected to statistical description of summary measures (frequency). For analysis of the scores of the components

Chart 1. Qualifiers of ICF as to the severity of the problem⁽²¹⁾

xxx.0 There is NO problem (none, absent, negligible)	0-4%
xxx.1 MILD (light, low,...) problem	5-24%
xxx.2 MODERATE (average, regular,...) problem	25-49%
xxx.3 SEVERE (high, extreme,...) problem	50-95%
xxx.4 COMPLETE (total,...) problem	96-100%
xxx.8 unspecified	
xxx.9 not applicable	

of the ICF, the chi-square test was used, and when necessary, also the Fisher's exact test. The significance level for this study was 5%, $p < 0.005$. Qualifiers 8 and 9 were excluded from the descriptive statistical analysis because they do not describe the problem. They were inserted as *missing*.

RESULTS

The age of participants ranged from 32 to 88 years, with 57.8% aged 60 or older. Most respondents reported having four years of formal school education (42%), and 50% of the participants are retired. Table 1 shows further information on the characterization of participants such as recurrence of the CVA and side of the body affected after injury.

Most of the sample had the right side of the body affected, i.e. persons with the left hemisphere injured and language changes prevailed, with consequent functional and social implications.

The analysis of intraexaminers agreement on the answers of the ICF components showed that there was excellent agreement in 25 (twenty five) components and good agreement five (5). Body Functions components may be described in Table 2.

The item in which participants reported greater difficulty (60%) was Memory functions (b144). They reported frequent forgetfulness, for example, to take medicine, where they keep their things or to recall the name of family members. A percentage of 46.9% of participants also mentioned having difficulties in Mental

functions of language (b167). In this study, findings indicate that most classified these difficulties as mild. This includes, for example, problems in understanding extensive discussions, but without detriment of the dialogue. In orientation functions (b114), 34% of respondents reported difficulties in indicating the time they left the house, who accompanied them to the clinic, the place and date of the interview. To a lesser extent, in Articulation functions (b320), 32.7% of respondents mentioned difficulties of articulatory amplitude and precision, which can impair speech intelligibility. In Fluency and rhythm of speech functions (b330), 27.7% of participants reported difficulties in speech fluency in long dialogues and conversations. Some participants (27.6%) pointed difficulties in Hearing functions (b230), as for example in hearing low intensity sounds in situations of conversation and when watching TV. People who indicated hearing problems prior to the CVA were classified as "not applicable". In Voice functions (b310), 22.9% of individuals reported several complaints regarding voice production after the CVA, such as monotony, doughy voice and need to make effort to speak. A percentage of 18.3% of participants reported difficulties in Mental functions of sequencing complex movements (b176), such as in the production of speech. The responses of the Activity and Participation component are described in Table 3.

Items with major implications for participants were: Recreation and leisure (d920) (61.1%), for example, participating in recreational activities such as walks in parks, *malls* and travels; Writing

Table 1. Characteristics of participants

		NUMBER (N)	FREQUENCY (%)
Gender	Female	22	44%
	Male	28	56%
	Total	50	100%
Incidence of CVA	First CVA	32	64%
	Recurrent CVA	18	36%
	Total	50	100%
Impaired side of the body	Both	4	8%
	Right	24	48%
	Left	21	42%
	None	1	2%
	Total	50	100%

Table 2. Classification distribution of participants regarding the ICF components of body functions

CIF ITEM	Individuals affected N (%)	QUALIFIERS					
		0	1	2	3	4	m
b114- Orientation functions	17(34)	32(64)	8(16)	5(10)	2(4)	2(4)	1(2)
b144- Memory functions	30(60)	20(40)	9(18)	10(20)	8(16)	3(6)	0(0)
b176- Mental functions of sequencing complex movements	9(18.3)	40(81.6)	5(10.2)	1(2)	1(2)	2(4.1)	1(2)
b320 - Articulation functions	16(32.7)	33(67.3)	12(24.5)	2(4.1)	0(0)	2(4.1)	1(2)
b310 - Voice functions– b310	11(22.9)	37(77.1)	7(14.6)	0(0)	4(8.3)	0(0)	2(4)
b330 - Fluency and rhythm of speech functions	13(27.7)	34(72.3)	5(10.6)	4(8.6)	3(6.4)	1(2.1)	3(6)
b167- Mental functions of language	23(46.9)	26(53.1)	12(24.5)	7(14.3)	3(6.1)	1(2)	1(2)
b230- Hearing functions	13(27.6)	34(72.3)	8(17)	5(10.6)	0(0)	0(0)	3(6)

Caption: 0 = No disability; 1 = Mild impairment; 2 = Moderate impairment; 3 = Severe impairment; 4 = Complete impairment; m = missing

Table 3. Classification distribution of participants regarding the ICF components of activity and participation

CIF ITEM	Individuals affected N (%)	QUALIFIERS					
		0	1	2	3	4	m
d160- Focusing attention	26(52)	24(48)	5(10)	8(16)	13(26)	0(0)	0(0)
d310- Receiving spoken messages	22(44)	28(56)	10(20)	6(12)	6(12)	0(0)	0(0)
d315- Receiving nonverbal messages	12(34)	38(76)	6(12)	1(2)	2(4)	3(6)	0(0)
d330 - Speaking	23(46)	27(54)	10(20)	8(16)	3(6)	2(4)	0(0)
d350 - Conversation	19(38)	31(62)	11(22)	2(4)	3(6)	3(6)	0(0)
d325- Receiving written messages	18(39.1)	28(60.9)	7(15.2)	3(6.5)	2(4.3)	6(13)	4(8)
d345- Writing messages	25(55.6)	20(44.4)	7(15.6)	6(13.3)	4(8.9)	8(17.8)	5(10)
d115 - Listening	6(13)	40(87)	5(10.9)	0(0)	1(2.2)	0(0)	4(8)
d360- Using communication devices and techniques	20(41.7)	28(58.3)	6(12.5)	1(2.1)	4(8.3)	9(18.8)	2(4)
d450 - Walking	26(53.1)	23(46.9)	10(20.4)	7(14.3)	5(10.2)	4(8.2)	1(2)
d750- Informal social relationships	14(20)	36(72)	3(6)	5(10)	2(4)	4(8)	0(0)
d760- Family relationships	9(18.4)	40(81.6)	2(4.1)	3(6.1)	2(4.1)	2(4.1)	1(2)
d860- Basic economic transactions	23(49)	24(51)	2(4.3)	1(2.1)	3(6.4)	17(36.2)	3(6)
d910- Community Life	15(51.7)	14(48.3)	2(6.9)	2(6.9)	3(10.3)	8(27.6)	21(42)
d920- Recreation and Leisure	22(61.1)	14(38.9)	4(11.1)	0(0)	6(16)	12(33)	14(28)

Caption: 0 = No disability; 1 = Mild impairment; 2 = Moderate impairment; 3 = Severe impairment; 4 = Complete impairment; m = missing

messages (d345) (55.6%), mainly in writing texts, letters, notes and, in the case of some individuals, the own name; focusing attention (d160) (52%), as in keeping attentive in dialogues or inability to complete the activities; walking (d450) (53.1%), needing aid and a longer time; and in the item Community life (d910) (51.7%), for example, in participating in religious or volunteer activities in their community. A significant part of participants (49%) pointed out difficulties in basic economic transactions (d860), which demonstrates loss in autonomy to carry out activities such as shopping by themselves and verify the change. In the item Speaking (d330), 46% of individuals reported difficulties in transmitting complex and long messages; in Receiving spoken messages (d310), 44% of participants reported losses in understanding messages received through speech. In item Using communication devices and techniques (d360), 41.7% reported difficulty using telephone and computer; 39.1% in Receiving written messages (d325), such as reading texts, messages, tickets, receipts, bus board and names. In the Conversation item (d350), 38% of participants reported difficulties, for example, to talk to people in the house in the everyday activities and participate in chatting.

In relation to specific language difficulties, a comparison between participants with language problems (46.9% impaired in mental functions of language) and participants without language problems (53.1% unimpaired in mental functions of language) is shown in Table 4.

Participants who reported difficulties in the item of Mental functions of language (b167) had higher and more severe impairments in areas of activity and participation when compared to those who reported having no deficiency in this item. The results show great impact on completion of activities and participation in people with language disorders. These include: Focusing attention (d160), Receiving spoken messages (d310), Receiving nonverbal messages (d315), Speaking (d330), Conversation

(d350), Receiving written messages (d325), Writing messages (d345), Using communication devices and techniques (d360), Walking (d450), Informal social relationships (d750), Family relationships (d760) and Basic economic transactions (d860). Thus, the results in Table 4 show that language changes trigger other implications in the lives of post-stroke adults in psychological, social and attitudinal aspects. Regarding the components of environmental factors, these should be classified as facilitators or barriers to the participants, according to their reports.

One of the main facilitators in the perception of participants is pointed in the health professionals item (e355) (83.6%), covering answers classified in different degrees. This indicates that, for the group studied, health professionals are very helpful in the process of health and rehabilitation after CVA. Only 14.2% considered this item as a barrier due to the lack, difficult access or delay in receiving health care, as well as complaints about the neglect in the case of some professionals. Regarding item immediate family (e310), 79.1% of participants indicated that close relatives help in what they need. Also in the extended family (e315), there is reference to a similar percentage (70.8%) of family members who do not live with them, but help in their health demands. As for the item of acquaintances, associates, colleagues, neighbors and community members (e325), to 76.6% of participants, this is a neutral factor. Such people do not help nor cause them trouble, and to 59.1% of participants, friends (e320) are also a neutral factor. Some items were not considered because of the high frequency of *missing* data; more than 80% of respondents reported that this item had no application in their daily lives, or they were unable to give an answer. Items with *missing* data over 80% were: communication devices and technology, as 86% of respondents did not know how to use the phone and computer, and caregivers, as 88% did not have the help of such professionals.

Table 4. Classification distribution of participants regarding the change of language and the affected activity and participation areas

ICF item	No change in Language N (%)				With change in Language N (%)			
	1	2	3	4	1	2	3	4
d160- Focusing attention	1(12.5)	2(25)	5(62.5)	0(0)	4(22.2)	6(33.3)	8(44.4)	0(0)
d310- Receiving spoken messages	5(83.3)	1(16.6)	0(0)	0(0)	5(31.2)	5(31.2)	6(37.5)	0(0)
d315- Receiving nonverbal messages	1(100)	0(0)	0(0)	0(0)	5(45.4)	1(9)	2(18.1)	3(27.2)
d330 - Speaking	5(100)	0(0)	0(0)	0(0)	5(27.7)	8(44.4)	3(16.6)	2(11.1)
d350 - Conversation	2(100)	0(0)	0(0)	0(0)	9(52.9)	2(11.7)	3(17.6)	3(17.6)
d325- Receiving written messages	3(100)	0(0)	0(0)	0(0)	4(26.6)	3(20)	2(13.3)	6(40)
d345- Writing messages	3(42.8)	2(28.5)	1(14.2)	1(14.2)	4(22.2)	4(22.2)	3(16.6)	7(38.8)
d115 - Listening	3(100)	0(0)	0(0)	0(0)	2(66.6)	0(0)	1(33.3)	0(0)
d360- Using communication devices and techniques	4(66.6)	1(16.6)	0(0)	1(16.6)	2(14.3)	0(0)	4(28.6)	8(57.1)
d450 - Walking	2(25)	5(62.5)	0(0)	1(12.5)	7(41.2)	2(11.8)	5(29.4)	3(17.6)
d750- Informal social relationships	1(50)	1(50)	0(0)	0(0)	2(16.7)	4(33.3)	2(16.7)	4(33.3)
d760- Family relationships	1(100)	0(0)	0(0)	0(0)	1(12.5)	3(37.5)	2(25)	2(25)
d860- Basic economic transactions	2(28.6)	0(0)	2(28.6)	3(42.8)	0(0)	1(6.25)	1(6.25)	14(87.5)
d910- Community Life	1(20)	1(20)	1(20)	2(40)	1(11.1)	0(0)	2(22.2)	6(66.7)
d920- Recreation and Leisure	2(22.2)	0(0)	1(11.1)	6(66.7)	2(15.4)	0(0)	5(38.5)	6(46.1)

Caption: 0 = No disability; 1 = Mild impairment; 2 = Moderate impairment; 3 = Severe impairment; 4 = Complete impairment

DISCUSSION

Results call for a reflection on the implications of impaired language on the functionality and participation of people who have suffered CVA.

In terms of age, we observed in the results that most participants are elderly. Age is an important factor in the incidence of CVA, since the risk increases twice every ten years after 55 years of age⁽⁴⁾. As noted in Table 1, there is a slight predominance of males among post-stroke people (56%) in the survey. This is similar to other studies⁽²³⁻²⁵⁾ and it is justified by a higher incidence and risk of CVA among men⁽⁴⁾. Moreover, most participants were male elderly⁽²⁵⁾. These findings confirm that the elderly are group with highest risk for CVA⁽²⁵⁾. Regarding the occurrence of CVA (Table 1), most of respondents had one event and the findings show that the health monitoring has favored greater control of risk factors⁽³⁾. Several authors discuss the importance of taking action to prevent the occurrence of new lesional events^(1,3,4,10,14) such as hypertension, atrial fibrillation, diabetes, prevention of clot formation, changes in lifestyle (diet, exercise, quality of working life, stress reduction), reducing cholesterol and reducing alcohol intake. The data shown in Table 1 also indicate results for the side of the body that was affected after the CVA, with predominance of hemiparesis on the right side. This represents higher prevalence of lesions in the left hemisphere, thus causing language changes and consequent implications on functionality and social participation. Other studies^(23,24) have found higher incidence of left hemiparesis. In CVA, the implications are quite different for each person.

In the Body functions item, some participants reported losses in Fluency and rhythm of speech functions (b330) and Memory functions (b144), similar to other studies⁽¹³⁾. Such difficulties, according to this study, compromise the resume of professional occupation. Most respondents with language disabilities indicated

deficiency in the items Orientation functions (b114) and Mental functions of language (b167), as already reported by other authors⁽²⁶⁾. These results show that linguistic-cognitive condition affects the daily activity, functionality and social participation of individuals with language impairment. The responses of participants in the item Mental functions of language (b167) and the interference ratio of the items activity and participation showed that language changes undermine the realization of activities and social participation. In Voice functions (b310), some participants made complaints such as monotony, slurred voice and need to make effort to speak after CVA, as reported by other authors⁽²⁷⁾.

The responses of participants in the item Mental functions of language (b167) and the interference ratio of the items activity and participation showed that language changes undermine the realization of activities and social participation with high severity. The results show great impact on the realization of activities and participation of people with language disorders, compared to people without language changes. These include: focusing attention (d160), Receiving oral messages (d310), Receiving nonverbal messages (d315), Speaking (d330), Conversation (d350), Receiving written messages (d325), Writing messages (d345), Using communication devices and techniques (d360), Walking (d450), Informal social relationships (d750), Family relationships (d760) and Basic economic transactions (d860). Thus, the results indicate that language changes trigger implications for the lives of post-stroke adults regarding psychological, social and attitudinal aspects, besides the already mentioned organic aspects.

The use of ICF made it possible to understand the language impairment beyond its organic dimension. It is not only a neurological issue, or a social issue, because the language discourse instance makes enunciation and social interaction possible^(15,17). The analysis of social implications furthers our understanding

on that language is present in various contexts of individuals⁽¹⁵⁾. The findings regarding the impact on activity and participation corroborate data from another study⁽²⁸⁾ that points out that the professionals interviewed (speech therapists) recognize the impact of aphasia not only in the linguistic dimension, but also in other areas of speech therapy, such as in swallowing, in addition to personal, family, social, professional, economic levels. Thus the impact in health is seen from an integral perspective and from the point of view of quality of life. In the item focusing attention (d160), participants reported difficulty in staying attentive to the dialogue or being able to finish activities, as well as in the item Speaking (d330), in which most participants reported not being understood by others. These findings may make impossible for them to return to their previous occupation, thus impairing their functionality^(13,26).

The item walking (d450) obtained large percentage of respondents who indicated a disability, just as in other studies^(13,26) where respondents had mobility difficulties, imbalance, muscle weakness in hemibody, difficulties for standing, need for assistive technologies for mobility such as canes and wheelchairs.

In the item Community Life (d910), most individuals reported that the difficulty in displacement inside and outside the home compromised their independence and restricted their participation in social situations such as going to religious celebrations. The same happened in the item Recreation and Leisure (d920). Most participants reported some difficulty that results in limiting social interaction with family and friends. Results of this item showed that the CVA compromised social, family and work participation. These results are similar to other studies⁽²³⁾ where sedentary habits and lack of leisure activities were observed. Regarding Environmental Factors, all participants indicated the items Communication Devices and Technology (e125), Immediate family (e310), Caregivers (e340) and Health professionals (e355) as facilitators. This has also been found in other studies^(13,26). Many participants indicated that the aspects of Environmental Factors were facilitators in their lives. However, the findings related to these selected items as barriers, although with small percentages, cannot be ignored. Some examples are the item Health Professionals (e355), in which 12.2% of respondents found difficulty in accessing services or reported flaws in the quality of care in the absence of qualified professionals to meet their needs as well as neglect in the case of some professionals; Friends (e320) with 4.7%; Extended Family (e315), with 2.1%; and Immediate Family (e310), with 2.3% of people indicating the estrangement of these people or problems to their health caused by these people. These results show negative impacts of CVA in habits and life contexts of the participants. A reflection on which intervention could improve the quality of care for this population and the access to health professionals is necessary, as well as to encourage social relationships with the people that are closer to these patients, for maintaining their quality of life.

The use of ICF allowed to enhance the analysis of language of the individuals in addition to the organic aspects and illness, beholding issues of functionality, participation and contextual factors. The present results are similar to another study with the ICF within the context of Speech Therapy in Brazil⁽²⁹⁾. As our findings, participants in this study⁽²⁹⁾ had more evident constraints

for Participation in everyday activities. These limitations are experienced in different ways. The family and access to health professionals become facilitators for participation and functionality of these people.

It is, therefore, fundamental that health professionals understand the individual in their context, to a more comprehensive understanding, considering individuals, their social contexts and the health system in order to reflect on the effects of disability⁽³⁰⁾, as in the case of post-stroke adults. The theoretical framework associated to the ICF as a conceptual basis for data analysis in this study made it possible to broaden the clinical look, valuing the subjectivity of post-stroke adults and understanding them in their different social instances. The change in approach opens up the possibility of seeing these individuals with health disorders in different way, considering their different styles and life experiences. This approach helps professionals to self-analyze their practices with a view aiming at attention to humanized and integral health care.

FINAL REMARKS

The results show the impact of CVA on language, participation and functionality of the group studied by analyzing, using the ICF. The findings indicate that post-stroke adults, with regard to body functions, have greater difficulty in the areas of orientation function (times, places and people), memory function (recalling activities carried out on a daily basis) and mental functions of language (understanding long conversations and maintaining dialogs). As for activity and participation, most had problems to focus attention, write simple and complex messages, walk, participate in their social environment, recreation and leisure activities usually performed in moments prior to the CVA. It was noted that, regarding environmental factors, health professionals as well as family members who live with the individuals and those who do not live them are themselves key facilitators aspects in the case of the majority of respondents by favoring the maintenance of health and social relations in their lives.

Another important finding relates to the fact that people with post-stroke language changes report more implications for Activity and Participation when compared to people without language impairments. Language changes resulted in social implications such as difficulties in informal social relations, family relations, basic economic transactions and maintaining dialogue due to impaired ability to focus attention, understand messages, speech and conversation. These findings underline the importance of language in the various contextual instances of people.

The use of ICF as a conceptual basis made it possible to analyze the different aspects of life and health of people who have suffered CVA, as well as to broaden the view beyond organic aspects and physical consequences for the issues of activity and participation of the population group. This approach is compatible with a vision of language and clinic based on humanized and comprehensive care.

ICF allowed the analysis of language in post-stroke people beyond the organic aspects, incorporating social and emotional aspects and therefore contributing to a greater understanding

of the functionality, participation and of contextual factors of the study participants.

Thus, this research opens doors to the reflection of a new look in health and its determinants, making it possible to combine the organic aspect with functionality and contextual factors.

The continuity of studies addressing the applicability of the ICF in speech therapy is considered relevant and timely, as the clinical application and development of research using the ICF within the Brazilian health is still scarce. In this direction, the importance of its implementation in universities, health centers and hospitals is reinforced, seeking greater dissemination among students and professionals. Study based on the ICF promote a scientific perspective to the understanding of health and its determinants in the population studied, under a comprehensive and humane approach, offering more subsidies for the improvement of health care in outpatient assistance, in this case, particularly in the context of speech therapy of people affected by CVA.

ACKNOWLEDGEMENTS

The authors thank Graziella Batista Dallaqua for her contribution and Dr. Li Min Li for the partnership at the Neurovascular Outpatient Clinic of the Clinical Hospital of the Universidade Estadual de Campinas (UNICAMP), and the Coordenação de Aperfeiçoamento de pessoal de Nível Superior (CAPES) for the assistance provided to the execution of the research.

REFERENCES

1. WHO: World Health Organization [Internet]. Neurological disorders: public health challenges. Geneva: WHO; 2006 [citado em 2014 Dez 09]. Disponível em: http://www.who.int/mental_health/neurology/neurological_disorders_report_web.pdf
2. Saposnik G, Del Brutto OH. Stroke in South America: a systematic review of incidence, prevalence and stroke subtypes. *Stroke*. 2003;34(9):2103-8. PMID:12907823. <http://dx.doi.org/10.1161/01.STR.0000088063.74250.DB>.
3. Feigin V. Stroke in developing countries: can the epidemic be stopped and outcomes improved? *Lancet Neurol*. 2007;6(2):94-7. PMID:17239789. [http://dx.doi.org/10.1016/S1474-4422\(07\)70007-8](http://dx.doi.org/10.1016/S1474-4422(07)70007-8).
4. Nadruz W Jr. Diagnóstico e tratamento dos fatores de risco. *Rev Com Ciência*. 2009;109(1):1-3.
5. Brasil [Internet]. Doenças crônicas não transmissíveis. Brasília: Ministério da Saúde; 2012 [citado em 2014 Set 14]. Disponível em: <http://portalsaude.saude.gov.br/index.php/oministerio/principal/secretarias/svs/doencas-cronicas-nao-transmissiveis>.
6. Fernandes PT, Avelar WM, Mory SB, Hansen R, Min LL. Perception and attitudes towards stroke by professionals of emergency Medical Service in an Urban City in Southeastern Brazil. *J Stroke Cerebrovasc Dis*. 2009;18(3):195-7. PMID:19426889. <http://dx.doi.org/10.1016/j.jstrokecerebrovasdis.2008.09.007>.
7. Lavados PM, Hennis AJ, Fernandes JG, Medina MT, Legetic B, Hoppe A, et al. Stroke epidemiology, prevention, and management strategies at a regional level: Latin America and the Caribbean. *Lancet Neurol*. 2007;6(4):362-72. PMID:17362840. [http://dx.doi.org/10.1016/S1474-4422\(07\)70003-0](http://dx.doi.org/10.1016/S1474-4422(07)70003-0).
8. Feigin V, Lawers CMM, Bennett DA, Zorowitz RD, Anderson CS. Epidemiology of stroke In: Stein J, Harvey RL, Macko RF, Winstein CJ, Zorowitz RD, organizadores. *Stroke recovery and rehabilitation*. New York: Demos Medical; 2009. p. 31-44.
9. Kumar S, Selim MH, Caplan LR. Medical complications after stroke. *Lancet Neurol*. 2010;9(1):105-18. PMID:20083041. [http://dx.doi.org/10.1016/S1474-4422\(09\)70266-2](http://dx.doi.org/10.1016/S1474-4422(09)70266-2).
10. Go AS, Mozaffarian D, Roger VL, Benjamin EJ, Berry JD, Blaha MJ, et al. Heart disease and stroke statistics – 2014 Update: A report from the American Heart Association. *Circulation*. 2014;128:1-267.
11. WHO: World Health Organization [Internet]. WHO STEPS stroke manual. Geneva: WHO; 2005. [citado em 2014 Out 20]. Disponível em: <http://www.who.int/chp/steps/Manual.pdf>
12. Wallace GL. Profile of life participation after stroke and aphasia. *Top Stroke Rehabil*. 2010;17(6):432-50. PMID:21239367. <http://dx.doi.org/10.1310/tsr1706-432>.
13. Oliveira AIC, Silveira KRM. Utilização da CIF em pacientes com seqüela de AVC. *Rev Neurocienc*. 2011;19(4):653-62.
14. Seshadri S, Wolf PA. Lifetime risk of stroke and dementia: current concepts, and estimates from the Framingham Study. *Lancet Neurol*. 2007;6(12):1106-14. PMID:18031707. [http://dx.doi.org/10.1016/S1474-4422\(07\)70291-0](http://dx.doi.org/10.1016/S1474-4422(07)70291-0).
15. Morato EM, Tubero AL, Santana AP, Damasceno B, Souza FF, Macedo HO, et al. Sobre as afasias e os afásicos. Campinas: Universidade Estadual de Campinas; 2004.
16. ASA: American Stroke Association [Internet]. Types of Aphasia. Dallas: ASA; 2013 [citado em 2015 Mar 21]. Disponível em: http://www.strokeassociation.org/STROKEORG/LifeAfterStroke/RegainingIndependence/CommunicationChallenges/Types-of-Aphasia_UCM_310096_Article.jsp#_V1cVy9KrTIU
17. Chun RYS. Processos de significação de afásicos usuários de Comunicação Suplementar e/ou Alternativa. *Rev Soc Bras Fonoaudiol*. 2010;15(4):598-603. <http://dx.doi.org/10.1590/S1516-80342010000400021>.
18. Campos GWS. A clínica do sujeito: por uma clínica reformulada e ampliada. São Paulo: Hucitec; 2003. (Coletânea Saúde Paideia).
19. Ayres JRCM. Cuidado e reconstrução das práticas de saúde. *Interface*. 2004;8(14):73-92. <http://dx.doi.org/10.1590/S1414-32832004000100005>.
20. Goulart BNG, Chiari BM. Avaliação clínica fonoaudiológica, integralidade e humanização: perspectivas gerais e contribuições para reflexão. *Rev Soc Bras Fonoaudiol*. 2007;12(4):335-40. <http://dx.doi.org/10.1590/S1516-80342007000400014>.
21. CCOMS: Centro Colaborador da Organização Mundial da Saúde para a Família de Classificações Internacionais. CIF: Classificação Internacional de Funcionalidade, Incapacidade e Saúde. São Paulo: Editora da Universidade de São Paulo; 2003.
22. Dallaqua GB. Avaliação das necessidades de fala e linguagem em sujeitos pós-AVC: instrumento clínico baseado na CIF [dissertação]. Campinas: Universidade Estadual de Campinas; 2014.
23. Nunes S, Pereira C, Silva MG. Evolução funcional de utentes após AVC nos primeiros seis meses após a lesão. *EssFisionline*. 2005;1(3):3-20.
24. Gama GL, Novaes MM, Franco CIF, Araújo DP, Galdino GS. Habilidade manual do paciente hemiplégico comparado ao idoso saudável. *Rev Neurocienc*. 2010;18(4):443-7.
25. Pereira ABCNG, Alvarenga H, Pereira RS Jr, Barbosa MTS. Prevalência de acidente vascular cerebral em idosos do Município de Vassouras, Rio de Janeiro, Brasil, através do rastreamento de dados do Programa Saúde da Família. *Cad Saude Publica*. 2009;25(9):1929-36. PMID:19750380. <http://dx.doi.org/10.1590/S0102-311X2009000900007>.
26. Martins AJG. Fatores ambientais na funcionalidade de pessoas com AVC [dissertação]. Aveiro: Universidade de Aveiro, Escola Superior de Saúde da Universidade de Aveiro; 2010.
27. Godoy JF, Brasolotto AG, Barretin-Félix G, Fernandes AY. Achados de neuroimagem e voz no acidente vascular encefálico. *CoDAS*. 2014;26(2):178-74. PMID:24918512.
28. Leal APS. Avaliação da afasia pelos terapeutas da fala em Portugal [dissertação]. Aveiro: Universidade de Aveiro, Escola Superior de Saúde da Universidade de Aveiro; 2009.
29. Pommerehn J, Delboni MCC, Fedosse E. Classificação Internacional de Funcionalidade, Incapacidade e Saúde e afasia: um estudo da participação

- social. CoDAS. 2016;28(2):132-40. PMID:27191876. <http://dx.doi.org/10.1590/2317-1782/201620150102>.
30. Sampaio RF, Luz MT. Funcionalidade e incapacidade humana: explorando o escopo da classificação internacional da Organização Mundial da Saúde. Cad Saude Publica. 2009;25(3):475-83. PMID:19300836. <http://dx.doi.org/10.1590/S0102-311X2009000300002>.

Author contributions

Both authors participated in all stages of the article preparation. MTMS participated in the data collection, analysis, interpretation and writing of the article and RYSC participated in the condition of supervisor; in the idealization of the study, data interpretation and article writing.