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International Classification of Functioning, Disability and Health, and aphasia: a study of social participation

Classificação Internacional de Funcionalidade, Incapacidade e Saúde e afasia: um estudo da participação social

Keywords

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ABSTRACT

Purpose: To identify and analyze the impact of aphasia on social participation and daily activities of people affected by this disease, as well as to understand implications of environmental factors on limitations and restrictions of participation according to the criteria established by the International Classification of Functioning, Disability and Health. **Method:** Data presented and discussed were collected from 12 people of both sexes with aphasia participating in an Interdisciplinary Group for Coexistence. Data were collected between October 2011 and March 2013 and analyzed based on the International Classification of Functioning, Disability and Health checklist. **Results:** All subjects had restrictions on performing and participating in their daily activities, either by biological, environmental or socio-cultural factors. **Conclusions:** The restriction in participation was the most evident, mostly due to environmental factors than sequels resulting from the brain injury.

RESUMO

Objetivo: Este estudo identifica e analisa o impacto das afasias na participação social e nas atividades cotidianas das pessoas por elas acometidas, bem como visa conhecer as implicações dos fatores ambientais nas limitações e restrições da participação, segundo os critérios estabelecidos pela Classificação Internacional de Funcionalidade, Incapacidade e Saúde. **Método:** São apresentados e discutidos dados de 12 pessoas de ambos os sexos com afasia que participavam de um Grupo Interdisciplinar de Convivência. Os dados foram coletados entre outubro de 2011 e março de 2013 e analisados com base na *check list* da Classificação Internacional de Funcionalidade, Incapacidade e Saúde. **Resultado:** Todos os sujeitos apresentaram restrições no desempenho e para a participação em suas atividades cotidianas, seja por determinantes biológicos, ambientais ou socioculturais. **Conclusão:** A restrição na participação foi a mais evidente, decorrente mais dos fatores ambientais do que das sequelas advindas das lesões cerebrais.

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INTRODUCTION

Aphasias are language disorders caused by focal brain injuries; in terms of a Neurolinguistic guided by enunciative and discursive language theories, aphasias are alterations of language resulting from strokes, tumors, and traumatic brain injuries (TBI). Such injuries interfere in oral language (understanding and production) and in writing (reading and production) and, also, may cause other cognitive alterations, such as difficulties of attention, perception, and memory^(1,2).

For some time now, the neuropsychological and/or neurolinguistic literature approaches the impact of aphasias in people's lives. According to Morato, the quality of life of a subject with brain injury is proportional to the intensity of the impact of aphasia, which, in turn, depends on the cause of the injury and its extension degree, the characteristics of the subject (age, occupation, cultural interests, school education, humor, among others), as well as the way they, their family, and their friends react against this language alteration⁽³⁾.

Similarly, health professions such as, for example, occupational therapy and speech-language pathology and audiology have highlighted the motor (hemiplegia) and/or sensory (hemiparesis) impairments that, usually, accompany aphasias and cause abrupt changes in life style and in quality of life of the subjects affected, producing (greater or smaller) restrictions in order to fulfill instrumental and/or daily life activities, in family and/or magnified social interactions. These restrictions require a certain level of permanent care and health management⁽⁴⁾.

Another study⁽⁵⁾ also mentions transformations in family life of people with neurological sequelae; its authors state that, because they are usually chronic impairments, changes in family dynamics may even interfere in the rehabilitation process.

The impact of brain injuries on affected subjects reverberates as impairments and disadvantages. It is worth noting that the World Health Organization (WHO) states that the concepts of impairment and disadvantage must be analyzed from the relation of each subject to their environment. They occur when the subjects face cultural, physical, and/or social barriers that prevent them from accessing the different society systems available⁽⁶⁾.

The International Classification of Functioning, Disability and Health (ICF) presents itself as an important model to describe functionality and disability in performing daily life activities and in social participation of people with aphasia. It also helps, greatly, in the definition of methods, resources, and therapeutic devices built from the interrelations to the inside and outside reality, in the network of social, affective relations, in daily life activities of the affected subjects, in order to expand their autonomy, independency, and social participation.

The ICF is a reference classification for the description of the health states, which establish the common language for a complete description of the health experience of a given person⁷. "It encompasses all aspects of human health and some relevant components [...] related to the well-being and describe them in terms of health domains and domains related to health"^(8, p. 11). The ICF shifts the paradigm of the disease focus to the health focus, allowing the understanding of the health condition or state within specific contexts.

As a health classification, it introduces a new comprehension model to the health situation of individuals or populations, which is more dynamic, complex, and compatible to the multidimensional framework involving human experience. The ICF consists of two parts: Part 1 – Functionality and Disability (Functions of the Body [b], Structures of the Body [s] and Activity and Participation [d]) and Part 2 – Contextual Factors (Environmental Factors [e] and Personal Factors).

The objective of this study was to analyze the impact of aphasias in social participation and in daily life activities of people affected by them, as well as to know the implications of environmental factors in the limitations and restrictions of participation according to the criteria established by the ICF model.

METHODS

This study was performed in a public university in the countryside of Rio Grande do Sul, involving the programs of Occupational Therapy and Speech-Language Pathology and Audiology. The research was developed after the approval of the Research Ethics Committee of the referred educational institution, under number 0324.0.243.000-11, according to the Resolution No. 466/12 of the National Health Council, regarding researches with human beings.

This study is qualitative; it describes and interprets health data of people with dysphasia according to theoretical and methodological references supporting them. It consisted of 12 people, members of the Interdisciplinary Group of Coexistence (IGC), aged 18 years or older, who agreed to take part in the research and signed the informed consent. It is noteworthy that the inclusion criteria of the subjects was having neurological diagnosis for aphasia and participating in clinical follow-up, in Occupational Therapy or in Speech-Language Pathology and Audiology, simultaneously to their participation in IGC.

The collection of the data was carried out from the ICF checklist. There was agreement among the researchers regarding the qualifiers used in the research. The evaluation process was conducted in up to three sessions, by a single evaluator, lasting approximately 40 minutes each, in the period from October 2011 to March 2013. The evaluations were performed in the Coexistence Group room, after their weekly meetings and, in two cases, the data collection was performed in the homes of the subjects.

It is worth mentioning that the ICF organizes information into two parts: (i) functionality and disability, and (ii) contextual factors. The first is divided into two components: functions of the body (represented by letter b) and activity and participation (represented by letter d). The later is also divided into two components: environmental factors and personal factors (both represented by letter e). The description of functionality and disability involves a qualifier assigned by a general scale from 0 (zero) to 4. Zero indicates no impairment; 1, mild impairment; 2, moderate impairment; 3, severe impairment, and 4 complete impairment. The contextual factors are analyzed according to the same scale; the environmental factors are indicated with barriers or facilitators: 0, zero – no facilitator/

barrier; -1, -2, -3 and -4 represents mild, moderate, severe, and complete barrier, respectively; +1, +2, +3, and +4 represents mild, moderate, severe, and complete facilitator, respectively. The personal factors are not subject to classification, but described by relevant aspects reported and manifested by the evaluated subjects.

RESULTS

All subjects in this study took part in the weekly meetings, during 2.5 hours, of the IGC (space for interaction among aphasic and non-aphasic subjects – their family/caretakers and students of Speech, Language and Hearing Sciences and Occupational Therapy), in which many activities and discursive practices were approached, such as: conversation circle, workshops for telling and retelling oral and written stories (autobiographical, historical and/or daily events), poetry interpretation, jokes, proverbs, as well as workshops for craft, self-care, body expression, and daily life practical activities. Extracurricular activities of recreation and culture (picnics, parties on holidays, sightseeing and museum visitation, musical and movies auditions, among others) were held with varied duration between 4 and 12 hours.

Table 1 presents the sociodemographic and lesion profile of the subjects of this study; 9 were males and 3 were females. The mean age among men was 61.5 years and 35 years for women.

All subjects suffered from lesion episodes by stroke, having been diagnosed with aphasia by means of neurological evaluation and brain imaging tests (magnetic resonance imaging or computerized tomography).

The health state of the subjects in this study, also classified by the interpretation of the ICF checklist, is presented in four tables. Part 1 (functionality and disability) is presented in

Table 2 and refers, respectively, to the results on body function disabilities (Parte 1a) and disabilities of body structures (Parte 1b). In Table 3, we present the results of Part 2 (activity limitation and participation restriction) and, in Table 4, the results regarding Part 3 (environmental factors).

In this study, all participants reported disability (with singular intensity) of their body functions, which negatively interfered in daily life: decision making, abstract thinking, planning, mental flexibility, and plan execution – superior cognitive functions –, as well as in the recognition and use of language – language mental functions (Table 2). Therefore, they reported difficulties in activities of reading, writing, calculation, and problem solving – learning and knowledge application – and in the performing of multiple tasks – general tasks and demand –, in receiving verbal messages, in speech and in conversation – communication (Table 3).

The subjects of this study indicated the body structures, related to movement and sensory/pain and neuromusculoskeletal functions, as disabilities that interfere in their daily lives. There are also disorders reported for balance, pain, mobility of the joints, muscle strength, and tone in upper and lower limbs (Table 2).

There was predominance of difficulties in activities involving language and the events depending on it: intrapersonal interaction (intimate), interpersonal interaction (basic and complex) – in formal and informal relations with family and strangers, meal preparation, household chores, helping others, goods and services acquisition, basic economic transactions and performing of paid work (Table 3). It should be noted that most subjects reported difficulty in verbal interpretation (receiving verbal messages), however they did not report difficulty in interpreting nonverbal language (receiving nonverbal messages).

Table 1. Sociodemographic and lesional data

| Subject | Gender | Age | Marital status | School education | Occupation prior to the lesion | Duration of the lesion (years) | Type of aphasia | Main linguistic manifestation |
|---------|--------|-----|----------------|------------------|-------------------------------------|--------------------------------|-----------------|---------------------------------------|
| S1 | M | 65 | Married | C.H.S. | Graphic assistant | 2.2 | Sensory | Jargonaphasia |
| S2 | M | 38 | Single | I.C.D. | Security guard | 4.7 | Motor | Perseveration |
| S3 | F | 25 | Single | I.H.S. | Bakery clerk | 3.5 | Motor | Anomie, agrammatism and paraphasias |
| S4 | M | 69 | Married | I.E.S. | Driver | 3.1 | Motor | Anomie, perseveration and paraphasias |
| S5 | F | 42 | Single | I.H.S. | Cleaning woman | 5.6 | Mixed | Verbal stereotyping |
| S6 | M | 64 | Married | C.C.D. | Mathematics teacher | 2.7 | Motor | Anomie and agrammatism |
| S7 | M | 60 | Married | C.H.S. | Environmental monitoring technician | 2.0 | Sensory | Jargonaphasia |
| S8 | M | 67 | Married | I.E.S. | Agriculturist | 3.4 | Mixed | Anomie, jargons and presbyphonia |
| S9 | M | 53 | Divorced | I.E.S. | Clerk | 4.1 | Sensory | Anomie, Jargonaphasia and logorrhea |
| S10 | F | 34 | Single | I.C.D. | Student | 2.6 | Motor | Verbal stereotyping |
| S11 | M | 66 | Married | I.H.S. | Foreman | 5.7 | Sensory | Jargonaphasia |
| S12 | M | 63 | Divorced | C.E.S. | Topographer | 11.4 | Mixed | Anomie, agrammatism, and paraphasias |

Caption: S: Subject; M: male; F: female; I.E.S.: incomplete elementary school; C.E.S.: complete elementary school; I.H.S.: incomplete high school; C.H.S.: complete high school; I.C.D.: incomplete college degree; C.C.D.: complete college degree

Table 2. Disability of the functions (Part 1a) and body structures (Part 1b)

| Domain | Component | S1 | S2 | S3 | S4 | S5 | S6 | S7 | S8 | S9 | S10 | S11 | S12 |
|---|--|----|----|----|----|----|----|----|----|----|-----|-----|-----|
| Mental Functions (b1) | Sleep (b134) | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 4 | 2 |
| | Orientation – time, place, person (b114) | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 3 | 0 |
| | Consciousness (b114) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 4 | 0 |
| | Memory (b144) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 2 | 0 | 2 | 4 |
| | Attention (b140) | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 3 | 0 |
| | Perception functions (b156) | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 2 | 0 |
| | Emotional functions (b152) | 3 | 0 | 0 | 4 | 0 | 0 | 0 | 3 | 0 | 2 | 4 | 0 |
| | Superior cognitive functions (b164) | 3 | 2 | 3 | 4 | 4 | 3 | 4 | 3 | 3 | 3 | 3 | 4 |
| Sensory and pain functions (b2) | Language mental functions (b167) | 4 | 2 | 3 | 2 | 3 | 4 | 4 | 4 | 3 | 4 | 4 | 4 |
| | Vision (b210) | 1 | 3 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 1 | 0 |
| | Vestibular – balance function (b235) | 1 | 3 | 1 | 1 | 0 | 3 | 2 | 3 | 1 | 3 | 2 | 0 |
| Functions of the cardiovascular system (b4) | Pain (b280) | 2 | 0 | 0 | 2 | 4 | 1 | 0 | 3 | 0 | 1 | 3 | 0 |
| | Heart functions (b410) | 1 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 0 |
| | Blood pressure (b420) | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 3 | 3 | 0 | 3 | 3 |
| Neuromusculoskeletal Functions (b7) | Functions of the respiratory system (b440) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 1 | 0 |
| | Mobility of the joints (b710) | 1 | 0 | 3 | 1 | 2 | 0 | 2 | 2 | 0 | 3 | 2 | 3 |
| | Muscle strength (b730) | 3 | 0 | 3 | 0 | 2 | 1 | 1 | 2 | 0 | 3 | 1 | 4 |
| Nervous system structure (s1) | Muscle tone (b735) | 4 | 4 | 0 | 0 | 0 | 2 | 1 | 2 | 0 | 3 | 1 | 4 |
| | Brain (s110) | 3 | 4 | 4 | 3 | 3 | 3 | 4 | 4 | 3 | 4 | 4 | 4 |
| Movement-related structures (s7) | Upper limbs (s730) | 3 | 3 | 3 | 0 | 3 | 4 | 2 | 2 | 0 | 4 | 2 | 4 |
| | Shoulder region (s720) | 0 | 3 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 3 | 2 | 0 |
| | Pelvis (s740) | 0 | 3 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 4 | 2 | 0 |
| | Torso (s760) | 0 | 3 | 0 | 0 | 0 | 0 | 3 | 2 | 0 | 3 | 2 | 0 |
| | Lower limbs (s750) | 3 | 3 | 3 | 1 | 1 | 4 | 3 | 2 | 0 | 4 | 2 | 4 |

Caption: S: Subject; 0: No disability; 1: mild disability; 2: moderate disability; 3: severe disability; 4: complete disability; s: body structure; b: body functions

Most subjects reported attitude and physical, practical or emotional support from people they live with every day, as complete facilitators. However, there were subjects, in lesser number, who reported complete barriers in this aspect. As for the services, training policies, work and employment, most subjects in this study classified it as a barrier (Table 4).

Finally, the results raised by means of the ICF checklist, are presented next, in a flowchart (based on the model proposed by the WHO)⁸, in an attempt to systemize, in a unified way, the restrictions in participation and in activities resulting from the complex interaction/relation between health condition and environmental factors (Flowchart 1). It is emphasized that this interaction is dynamic, as an intervention in an element can potentially modify one or various others and, also, that the biopsychosocial model of ICF, multidirectional and multidimensional, rejects the exclusive existence of a linearity situation, which would indicate the participation restriction as a consequence for disability.

DISCUSSION

The IGC activities performed, as indicated in the previous section, in the midst of dialogic processes^(1-3,9,10) favor the production/interpretation of verbal language (oral and written) and

of alternative meaning processes (gestures, drawings, paintings, among others)^(2,10). In other terms, the living together – made possible in and for the group – promoted the living exercise of the language^(2,10) and the effective/adaptive use of the impaired body structures, boosting the subjects toward autonomy, improving their expressiveness and the everyday performance, despite the limitations imposed by the neurological injury.

It is noteworthy that similar findings, regarding age, were found in other studies^(11,12): predominance of middle-aged adults with stroke, demonstrating that aphasia manifests specially in the productive age range. Certainly, such evidence is minor when compared to the increased aging of the elderly population and their association to stroke⁽¹²⁻¹⁴⁾.

In the comparison between age and education it was found that younger people in this study have higher education. Another study⁽¹¹⁾ pointed out the same fact: most subjects affected by stroke aged equal or under 65 years old had education above incomplete elementary school (incomplete or complete high school and incomplete or complete college degree), and that most of the subjects aged over 65 years had been educated up to incomplete elementary school level.

Note that, although the number of women affected is lower than the number of men, the age of onset, for females, was almost half. Such a fact, in a certain way, is revealed by the

Table 3. Active limitation and Participation Restriction (Part 2)

| Domain | Component | S1 | S2 | S3 | S4 | S5 | S6 | S7 | S8 | S9 | S10 | S11 | S12 |
|---|---|----|----|----|----|----|----|----|----|----|-----|-----|-----|
| Learning and knowledge application (d1) | Listening (d115) | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 |
| | Learning how to read (d140) | 4 | 2 | 0 | 0 | 0 | 0 | 4 | 4 | 0 | 1 | 4 | 4 |
| | Learning how to write (d145) | 4 | 3 | 3 | 0 | 0 | 0 | 4 | 4 | 4 | 1 | 4 | 3 |
| | Learning how to calculate (d150) | 4 | 0 | 0 | 0 | 0 | 0 | 4 | 4 | 4 | 1 | 4 | 0 |
| | Problem solving (d175) | 4 | 0 | 0 | 0 | 0 | 0 | 3 | 4 | 4 | 1 | 4 | 0 |
| General Tasks and Demands (d2) | Performing a single task (d210) | 4 | 0 | 0 | 0 | 0 | 0 | 1 | 4 | 0 | 1 | 4 | 0 |
| | Performing multiple tasks (d220) | 4 | 4 | 4 | 0 | 0 | 4 | 4 | 4 | 0 | 2 | 4 | 2 |
| Communication (d3) | Communication – receiving verbal messages (d310) | 0 | 0 | 3 | 0 | 4 | 2 | 4 | 3 | 4 | 4 | 4 | 0 |
| | Communication – receiving nonverbal messages (d315) | 4 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 |
| | Speech (d330) | 4 | 3 | 3 | 1 | 4 | 3 | 4 | 4 | 3 | 4 | 4 | 2 |
| | Nonverbal message production (d335) | 4 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 |
| | Conversation (d350) | 4 | 2 | 4 | 1 | 4 | 3 | 4 | 4 | 4 | 3 | 3 | 2 |
| Mobility (d4) | Lifting and carrying objects (d430) | 4 | 2 | 3 | 0 | 0 | 4 | 1 | 1 | 0 | 2 | 2 | 4 |
| | Fine hand use (d440) | 4 | 1 | 4 | 0 | 4 | 4 | 1 | 1 | 0 | 1 | 3 | 4 |
| | Walking (d450) | 2 | 4 | 0 | 0 | 0 | 2 | 1 | 2 | 0 | 2 | 2 | 1 |
| Personal care (d5) | Washing oneself (d510) | 4 | 3 | 0 | 0 | 0 | 4 | 0 | 4 | 0 | 2 | 0 | 0 |
| | Caring for body parts (brushing teeth, shaving...) [d520] | 4 | 3 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 2 | 0 | 0 |
| | Getting dressed (d540) | 4 | 0 | 0 | 0 | 0 | 2 | 0 | 4 | 0 | 2 | 4 | 0 |
| | Eating (d540) | 1 | 1 | 0 | 0 | 0 | 2 | 0 | 1 | 0 | 1 | 1 | 0 |
| | Caring for their own health (d570) | 4 | 3 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 4 | 0 |
| Domestic life (d6) | Acquisition of goods and services (going shopping, etc.) [d620] | 4 | 4 | 3 | 4 | 0 | 4 | 4 | 4 | 4 | 2 | 4 | 4 |
| | Preparing meals (d630) | 4 | 4 | 3 | 4 | 1 | 4 | 9 | 9 | 4 | 1 | 9 | 3 |
| | Household chores (cleaning the house, washing dishes, clothes, etc.) [d640] | 4 | 4 | 3 | 4 | 1 | 4 | 9 | 9 | 4 | 4 | 9 | 4 |
| | Helping others [d660] | 4 | 4 | 0 | 4 | 0 | 0 | 1 | 4 | 4 | 2 | 3 | 4 |
| | Basic interpersonal interactions (d710) | 4 | 3 | 0 | 0 | 1 | 0 | 4 | 3 | 1 | 3 | 3 | 0 |
| Interpersonal relations and interactions (d7) | Complex interpersonal interactions (d720) | 4 | 4 | 4 | 1 | 4 | 0 | 4 | 4 | 4 | 4 | 4 | 0 |
| | Relations with strangers (d730) | 4 | 4 | 4 | 0 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 0 |
| | Formal relations (d740) | 4 | 4 | 4 | 0 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 |
| | Informal social relations (d750) | 4 | 4 | 0 | 0 | 1 | 4 | 4 | 4 | 3 | 2 | 4 | 0 |
| | Family relations (d760) | 2 | 0 | 2 | 4 | 0 | 4 | 3 | 3 | 2 | 3 | 3 | 4 |
| | Intimate relations (d770) | 3 | 4 | 0 | 4 | 0 | 0 | 3 | 3 | 2 | 3 | 3 | 4 |
| | Informal education (d810) | 3 | 2 | 0 | 0 | 0 | 0 | 3 | 9 | 0 | 2 | 2 | 0 |
| Main areas of life (d8) | Paid work (d850) | 9 | 4 | 4 | 4 | 4 | 0 | 4 | 9 | 4 | 4 | 4 | 4 |
| | Basic economic transactions (d860) | 4 | 4 | 0 | 4 | 0 | 0 | 4 | 4 | 4 | 2 | 4 | 4 |
| | Community life (d910) | 4 | 4 | 0 | 0 | 0 | 4 | 2 | 3 | 0 | 3 | 3 | 0 |
| Community, social, and civic life (d9) | Recreation and leisure (d920) | 4 | 4 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 3 | 3 | 0 |
| | Religion and spirituality (d930) | 4 | 4 | 0 | 0 | 0 | 0 | 9 | 0 | 0 | 0 | 0 | 0 |
| | Political life and citizenship (d950) | 4 | 4 | 0 | 0 | 0 | 0 | 4 | 3 | 0 | 0 | 3 | 0 |

Caption: 0: No disability; 1: mild disability; 2: moderate disability; 3: severe disability; 4: complete disability; S: subject; d: activity and participation

census data: according to IBGE⁽¹⁵⁾, cerebrovascular diseases are the main cause of death in Brazil among females aged from 20 to 59 years and the fifth cause of death among males in the same age range. Such diseases are the second cause of death for men aged between 50 and 59 years.

This situation culminated with the elaboration of the National Policy of Comprehensive Attention to Men's Health⁽¹⁶⁾, which brings about many comparative studies between men and women,

proving that men are more vulnerable to diseases, especially severe and chronic ones. This vulnerability is connected to the fact that men do not search, as women do, for health-care services⁽¹⁷⁾.

Throughout this research, seven men reported having never sought for health-care prior to the brain injury, according to them because they believe that "being sick" was a condition of being unable to perform daily life activities. In addition to that, it is

Table 4. Environmental factors (Part 3)

| Component | | S1 | S2 | S3 | S4 | S5 | S6 | S7 | S8 | S9 | S10 | S11 | S12 |
|---|---|----|----|----|----|----|----|----|----|----|-----|-----|-----|
| Domain Products and technology (e1) | Products or substances for personal consumption (food, drugs) [e110] | +4 | 4 | 0 | +3 | 0 | 3 | 0 | 4 | +4 | 0 | 4 | 4 |
| | Products and Technology for personal use in daily life (e115) | +4 | 4 | 1 | 0 | 2 | 3 | 0 | 0 | +4 | 0 | 0 | 4 |
| | Products and technology for mobility and personal transportation in environments (e120) | 2 | 4 | +0 | 0 | 0 | +3 | 0 | 0 | +4 | 0 | 0 | 4 |
| | Products and technology used in architecture and construction of public buildings (e150) | 2 | 4 | 2 | 0 | +2 | +3 | 0 | 0 | 0 | 0 | 0 | 4 |
| | Products and technology used in architecture and construction of private buildings (e155) | 2 | 4 | 2 | 0 | +0 | +3 | 0 | 0 | 0 | 0 | 0 | 4 |
| Natural environment (e2) | Weather (e225) | 4 | 4 | 1 | 3 | 1 | 4 | 0 | 0 | 0 | 1 | 3 | 0 |
| Support and relationships (e3) | Immediate family (e310) | +4 | +4 | +3 | 1 | +0 | 4 | 2 | +4 | +4 | 4 | +3 | 4 |
| | Friends (e320) | +4 | 0 | +0 | 1 | 4 | +4 | 4 | 3 | +4 | +1 | 4 | 0 |
| | Acquaintances, companions, colleagues, neighbors, and community members (e325) | +4 | +4 | +0 | +3 | 4 | 4 | 4 | 2 | 4 | 0 | +3 | +3 |
| | Caretakers and personal assistants (e340) | +4 | +4 | 0 | 3 | +0 | +4 | +4 | +4 | +4 | +1 | +4 | 4 |
| | Health professionals (e355) | +2 | +4 | 1 | +4 | +4 | +4 | +4 | +2 | +4 | +2 | 2 | +4 |
| Attitudes (e4) | Other professionals who provide health-related services (e360) | +2 | +4 | 1 | +4 | +4 | +4 | +4 | +2 | +4 | 0 | 2 | +4 |
| | Individual attitudes of immediate family members (e410) | +4 | +4 | +3 | 1 | +0 | +4 | +4 | +3 | +4 | 4 | +4 | 4 |
| | Individual attitudes of friends (e420) | +4 | 0 | 4 | 0 | 4 | +4 | 4 | 4 | +4 | +1 | 4 | +4 |
| | Individual attitudes of caretakers and personal assistants (e440) | +4 | +4 | 0 | +3 | +0 | +4 | +4 | +4 | 4 | 0 | +4 | 4 |
| | Individual attitudes of health professionals (e450) | +4 | +4 | +4 | +4 | +4 | +4 | +4 | +3 | +4 | 0 | 2 | +4 |
| Services, systems, and policies (e5) | Individual attitudes of health-related professionals (e455) | +4 | +4 | +4 | +4 | +4 | +4 | +4 | +2 | +4 | 0 | 2 | +4 |
| | Transportation services, systems, and policies (e540) | +1 | 4 | +0 | +4 | +4 | 0 | +3 | +3 | +3 | 4 | 3 | +4 |
| | Social security services, systems, and policies (e570) | +4 | +4 | +4 | +4 | +4 | +4 | +4 | +4 | +4 | +4 | +4 | +4 |
| | Health services, systems, and policies (e580) | 2 | 4 | +1 | +3 | 1 | +4 | 2 | 3 | +3 | +3 | +3 | +4 |
| | Education and training services, systems, and policies (e585) | 0 | 3 | 4 | +3 | 4 | +4 | 4 | 0 | 0 | 4 | 3 | 4 |
| Job and employment services, systems, and policies (e590) | 0 | 4 | 4 | 0 | 4 | 0 | 4 | 4 | 0 | 4 | 3 | 4 | |

Caption: 0: No barrier; 1: mild barrier; 2: moderate barrier; 3: severe barrier; 4: complete barrier; 0: no facilitator; +1: mild facilitator; +2: moderate facilitator; +3: considerable facilitator; +4: complete facilitator; S: subject; e: environmental factors

culturally ingrained in our society the paradigm of masculinity, with the idea that illness is a sign of weakness. This, many times, ends up delaying or preventing men to seek for prevention care which could delay or avoid certain injuries, such as the ones resulting from stroke, from occurring^(17,18).

Men presented more risk factors to stroke and, therefore, are more affected than women⁽¹¹⁾. Women, on the other hand, have the culture of “self-care”, developed by motherhood and monitoring of their children’s health⁽¹⁷⁾, which does not imply into effective prevention of brain injuries, as happened to three of the women in this study. The youngest one (25 years old) did not consider relevant the medical alert on her health (obesity, hypertension, and smoking) and, thus, she did not follow the prevention and drugs recommendations made by the professional (Part 4 – other contextual information):

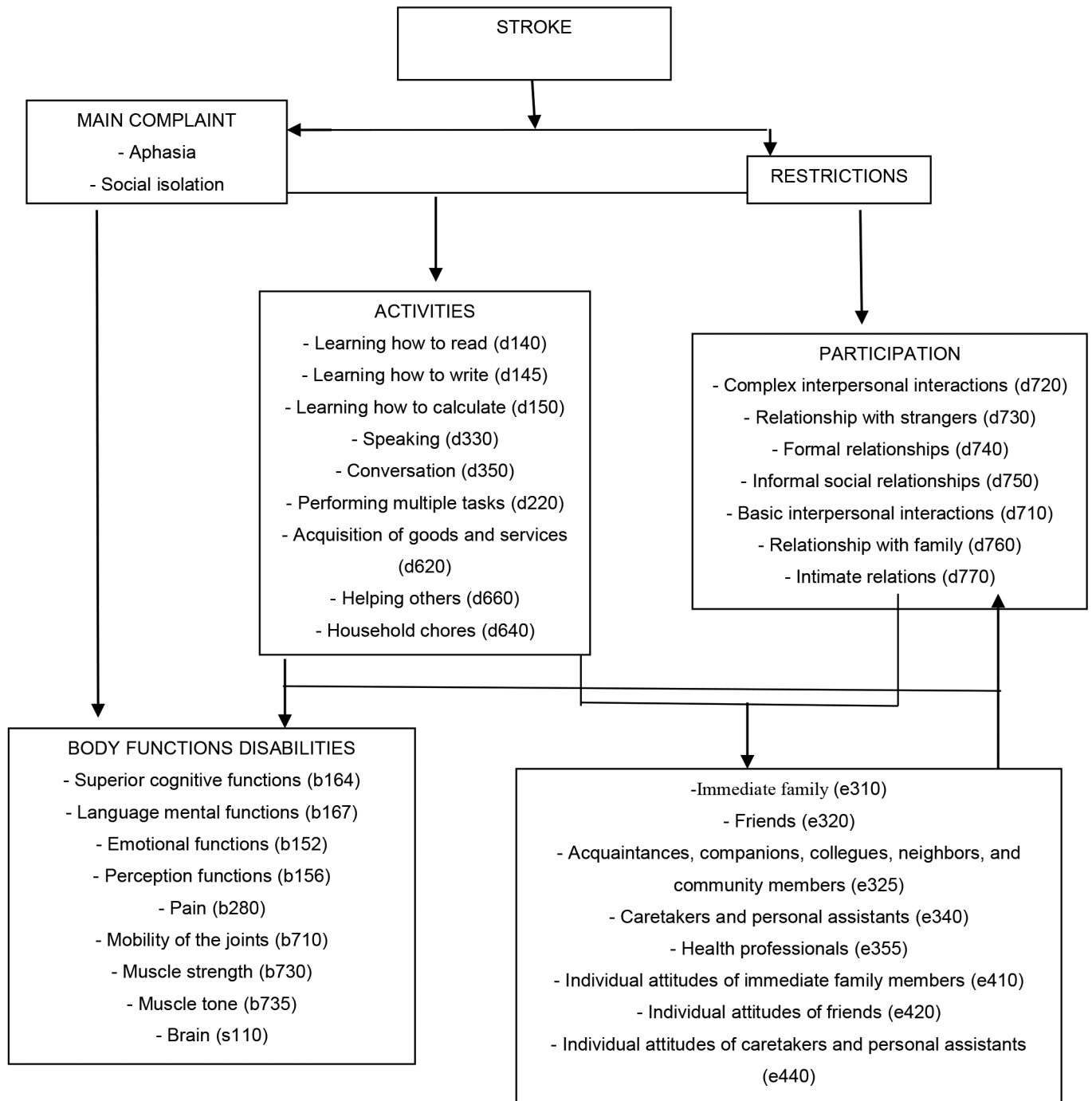
[...] my doctor told me I was obese, had high blood pressure, had to stop smoking and practicing physical exercises and that I urgently needed to change my habits and take drugs to control my blood pressure, to avoid

future cardiovascular diseases. But, when I got home, my family and many friends, started mocking me saying it was “bullshit”, that high blood pressure was elderly stuff. So, I stopped taking my meds and forgot what the doctor had said [...] (Statement S3; November 24th, 2011).

This shows how people’s paradigms, habits, and beliefs may interfere in their acceptance (or not) of health treatments⁽¹⁸⁾.

Some studies^(11,19) associated the occurrence of stroke to the presence of risk factors (sedentary lifestyle, obesity, hypertension, atherosclerosis, dyslipidemia, smoking, among others), which is also demonstrated in this study. Another study⁽²⁰⁾ shows the occurrence of a smaller frequency of strokes and other cerebrovascular etiologies among young people as old as 20 years of age, possibly due to being less vulnerable to risk factors.

It is known that the location, the extent of the brain damage, the initial clinical care and the rehabilitation associated to the uniqueness of the subject and their environmental factors, determine the restrictions and limitations subsequent to the lesion episode. In this study, all participants reported disability



Flowchart 1. Interactions of the ICF
Caption: d: Activity and participation; b: body functions; e: environmental factors

(with unique intensity) of their body functions, which interfere negatively in the routine of their superior cognitive functions and language mental functions. And, therefore, report having difficulties in learning and applying knowledge, in general tasks and demands and in communication.

The disability in superior cognitive functions and language mental functions brings consequent difficulty in taking part in activities – as shown by Franchi, an important Brazilian linguist: the language, before being communication, is the creating process

in which we organize and inform our experiences⁽²⁰⁾. It is by means of language that we organize all cognitive processes, once that we interact, understand and feel the physical and social world; it is the constitutive activity that both sustains and is sustained by social interaction^(10,20).

The body structures related to movement and to affected sensory/pain and neuromusculoskeletal functions are pointed out by the subjects of this study as disabilities that interfere in their daily lives. Such conditions result from brain lesions

and are sequelae (hemiplegia and hemiparesis), which impair (at different intensities) the person's daily life. Another study⁽²¹⁾ showed hemiparesis as the most common stroke sequelae and, also, associates the physical and functional limitations to environmental factors (it highlights that they directly affect the functionality of the subjects), which imposes difficulties in participating in tasks and daily life activities. Check Table 3 for the limitations in activities and the restriction to participation.

Due to aphasia, there is predominance of difficulty in the activities (Table 3) involving language and the events depending on it. However, it should be noted that most subjects reported having difficulties in verbal interpretation (receiving verbal messages) and did not report having difficulties in nonverbal language interpretation (receiving nonverbal messages). This fact reveals that other forms of language (gesture, drawings, and objects) may be used in order to ensure interaction of and with aphasic people, promoting social inclusion.

The disability (difficulty, in our terms) as emphasized by ICF, is a restriction resulting from the complex relation between health condition (personal factors) and external factors (circumstances in which the subject lives). According to the ICF, the environmental factors make up the physical, social, and conduct environment in which people live on their lives; they are, therefore, external to the subjects and may have a positive or negative influence on their performance in participation and in activities⁸. The environment in which the aphasic subject lives has a direct influence on their participations and their activity, therefore it is extremely important in reducing or eliminating the restrictions caused by brain injuries⁽²²⁾.

It is noteworthy that different environments may have different impact on a same subject; an environment with barriers, or without facilitators, restricts their participation, as more enabling environments improve it⁽⁶⁾. In the case of aphasic subjects, the evaluation of environmental factors may be a path for a more appropriate and efficient intervention⁽²³⁾. However, it is extremely difficult to evaluate something as "multifaceted" as the environment and its dynamic influence on human behavior⁽²⁴⁾. Table 4 presents the barriers and/or environmental facilitators experienced by the subjects of this study.

Most subjects reported the physical, practical, or emotional support of people who live daily with them as complete facilitators. However, there are subjects, in lesser number, who report complete barriers in this aspect.

With regard to the services, systems, and reintegration policies in jobs and employments, most subjects of this study classified them as barriers (Table 4). All of them receive sickness benefit or disability retirement, although many are still in productive age.

In another study⁽²⁵⁾, 25% of the subjects affected by stroke indicated as complete facilitators the immediate family and the health professionals. Such evidence was proven higher in this study, since 33% of the subjects considered a complete facilitator the immediate family support and 58% considered a complete facilitator the support of health professionals. By the way, the IGC is configured as the service which integrates the subjects, the family, health professionals, and students and, as it cares for, it encourages the use of language and committed body structures, favoring the performance of activities and

social participation, in addition to promoting and expanding the knowledge regarding aphasias and sensory and motor difficulties of the aphasic subjects and their families/caretakers.

The medium complexity services dedicated to rehabilitation, in Brazil, are characterized by the difficulty of access and by the inexistence of integration between their actions (lack of planning actions, disregarding real needs/profile of the population, few investment in professional qualification and low regulation of the existent offer), which hinders the recovery process of the population in need of those health services⁽²⁶⁾. They need urgent and continuous investments for the materialization of the public policies in different territories/spaces of life and health⁽²⁷⁾. It should also occur the review of the current legislation, the identification of failures in available services for better planning of the actions, contemplating such complex singularity of people⁽²⁸⁾.

Thus, it may be inferred that brain injuries from a stroke cause an imbalance in physical, social, and psychological functioning of the subjects, which determines, along with environmental factors, restrictions in activities and in the participation of the affected people. The limitation imposed by the injury lead aphasic subjects to adapt to a new physical, emotional, and social condition, which, many times, is permeated by feelings of frustrations, whether it is by the loss of individual functionality, whether it is by their inadequacy to the new roles assigned to them. In this phase, family and friends are configured as an important network in supporting and overcoming the difficulties and limitations of the injured subjects, serving as a lever for the stimulation of participation and their performance in their activities⁽²⁹⁾. In this study, it was observed that this support network moves away past the initial period after the stroke:

[...] friends ... family backed away ... stroke; they said ... wife they feel embarrassed for not understanding what I want to say. [...] I prefer not to relate ..., because they say I'm mentally disabled because I can't talk right.
(Statement S6; April 2nd 2012).

Social isolation affects both the subjects and their families, having a negative influence in their quality of life.

FINAL CONSIDERATIONS

This study characterized the life conditions and health of 12 aphasic subjects (by stroke); 9 were men (between 38 and 69 years of age) and 3 were women (between 25 and 42 years of age).

It could be noted that all subjects indicated impairment of their body functions (with greater or lesser intensity), highlighting the difficulties regarding superior cognitive functions and language mental functions. Therefore, they reported difficulties in learning and applying their knowledge, in general tasks and demands – communication.

People with aphasia had severe restriction in their participation in activities, which involve language and events depending on it: intrapersonal interaction (intimate), interpersonal interactions (basic and complex ones) – informal and formal relations with family and strangers, preparation of meals, household chores, helping others, acquisition of goods and services, basic economic

transactions, and performing paid work. Most of them (67%) reported difficulties in verbal interpretation (receiving verbal messages), contrary to nonverbal language interpretation (16.6%).

As for the environmental factors, most subjects reported attitude and physical, practical, and emotional support from the people they live with as complete facilitators. The same does not apply to the services, systems, and work reintegration policies, classified, by most subjects, as barriers.

Therefore, the research showed restrictions resulting from the complex relation between aphasia (internal factors) and the external factors which represent the circumstances in which the subject lives (Flowchart 1).

The use of ICF allowed the understanding of the impact of aphasia in the survival of brain-injured subjects. It is relevant to studies related to aphasic subjects once it allows a multidimensional view of the aspects involving aphasia, that is, it explains the interaction between the biological, psychological, and social matters, in addition to maintaining a standardized language which allows the interaction between several areas of health, worldwide.

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Author contributions

JP performed the collection and interpretation of the data and participated in the elaboration of the manuscript; MCCD and EF participated in the elaboration of the manuscript and in its review.