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Aphasia rate and user profile in a public referral hospital

Frequência de afasia e perfil de usuários em hospital público municipal de referência

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ABSTRACT

Purpose: To identify the rate of aphasia in users admitted to a public referral hospital and to characterize the sociodemographic and clinical profile of the sample studied. **Methods:** A descriptive cross-sectional study was carried out based on analysis of medical records and a brief bedside speech-language assessment. The study included younger or older adults, of both sexes, native speakers of Brazilian Portuguese, with stroke in the acute or subacute phase. **Results:** In a 3-month period, 13 users met the inclusion criteria, of whom 9 agreed to participate and 7 were evaluated. Three participants had aphasia, representing 42.8% of cases. Regarding the profile of the 9 participants, the majority were women, elderly and had medium educational level. The three users in the subgroup with initial diagnosis of aphasia had moderate-to-severe aphasia secondary to cortical-subcortical lesions. **Conclusion:** Given the rate of aphasia cases found among users hospitalized for primary acute and subacute strokes and the characteristics of this group, efforts toward providing health care for this population and mapping cases in other regions of the state and country are fundamental.

Keywords: Aphasia; Evaluation; Epidemiology; Health status indicators; Speech, Language and Hearing Sciences

RESUMO

Objetivo: Identificar a frequência de afasia em usuários internados em um hospital público municipal de referência e caracterizar o perfil sociodemográfico e clínico da amostra estudada. **Métodos:** Foi realizado um estudo transversal, descritivo, baseado em análise de prontuários e avaliação fonoaudiológica breve, à beira do leito. Foram incluídos no estudo adultos ou idosos, de ambos os sexos, falantes nativos do português brasileiro, com AVC, em fase aguda ou subaguda. **Resultados:** Em três meses, 13 usuários se enquadraram nos critérios de inclusão, nove consentiram em participar e sete foram avaliados. Dentre os participantes avaliados, três apresentaram quadro afásico, com proporção de 42,8% de casos. Quanto ao perfil, a maioria dos nove participantes era de mulheres, idosas e com escolaridade média. No subgrupo com diagnóstico inicial de afasia, os três usuários apresentaram quadros afásicos de grau moderado à grave, decorrente de lesões córtico-subcorticais. **Conclusão:** Considerando a proporção de casos de afasia encontrados em usuários internados em fase aguda e subaguda do primeiro AVC e as características desse grupo, é indispensável a atenção à saúde dessa população, bem como o mapeamento de casos em outras regiões do estado e do país.

Palavras-chave: Afasia; Avaliação; Epidemiologia; Indicadores básicos de saúde; Fonoaudiologia

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INTRODUCTION

Brain diseases have an overall estimated prevalence of 5-8 cases per 1,000 population in individuals aged over 25 years. These conditions are more frequent in middle-aged and older adults, where only 10-20% of cases occur in individuals aged under 45[1]. Stroke is one of the most important brain diseases, constituting the second-most-common cause of death worldwide in 2013, affecting around 110 persons in every 100,000 population per year[2]. In Brazil, stroke is one of the leading causes of death in the adult population.

Stroke is associated with a number of risk factors including sex, age, diabetes mellitus, tobacco and alcohol use, sedentary lifestyle, arterial hypertension, heart diseases, obesity and stress[3,4]. Some of these factors are avoidable and therefore conducive to preventive measures to reduce their incidence and prevalence[3,4]. However, different care approaches are recommended by the Ministry of Health in patients post-stroke, with regard to urgent-emergency and rehabilitation care, aimed at minimizing the deleterious effects on health.

Advances in treatment during the acute phase of stroke have significantly reduced mortality and morbidity, as well as the number and/or severity of sequela[2,4,5]. Despite the strides made in treatment, the large contingent of individuals with long-term deficits after stroke poses a major challenge for the health system in Brazil[1,2].

Common stroke sequela include deficits in communication abilities, such as aphasia[6]. Defined as a language disorder, aphasia leads to varying degrees of limitation in an individual´s ability to communicate effectively, albeit expressing themselves or understanding what is being said to them or what they are reading[6,7].

Studies on the incidence or prevalence of communication disorders attributable to neurological causes are scarce. International data on the incidence of aphasia after first stroke show rates of 7.1-43.0 per 100,000 population[7,8]. There are few national studies describing the number of new aphasia cases for a given time period and population[9]. Thus, some scholars have attempted to infer these data from the occurrence of new cases of stroke[6].

For early detection of aphasic conditions and determining incidence and prevalence in Brazil, there is a dearth of instruments that assess language and communication at bedside available for use in speakers of Brazilian Portuguese. Several tests have been adapted to Brazilian Portuguese, such as The Language Screening Test – LAST, versions A and B[10] plus the Bedside Evaluation Screening Test, 2nd version - BEST-2[11]. These tests, however, are not yet available for routine use in clinical practice.

The brief language evaluation protocol from the Montreal – Toulouse Aphasia Exam, Initial *Standard* Module, version Alpha (M1-Alpha)[12] provides an alternative tool, and some national studies have been carried out using this instrument[13,14]. The instrument is designed to screen for the presence of aphasia and also analyze the profile of language abnormalities and their symptoms.

Against this backdrop, the present study sought to investigate health indicators for aphasia in the young and older adult neurological population in Brazil in order to help guide the planning and management of health services specialized in providing care to this patient group. Further studies can contribute toward the development of protocols for early diagnosis of aphasic conditions and their management in acute and subacute phases, favoring a better prognosis of cases.

The objectives of this study were to determine the rate of aphasia after first stroke, in acute or subacute phases, among users admitted to a microregional public referral hospital in the state of Rio de Janeiro, and to characterize the sociodemographic and clinical profile of the group studied.

METHODS

A cross-sectional, descriptive study was conducted based on analysis of information collected from patient medical records and from brief speech-language clinical assessments performed at bedside. The study was approved by the Research Ethics Committee of the Institute of Health of Nova Friburgo of the Universidade Federal Fluminense (permit no. 2.636.560). All participants gave consent or permission to participate in the study, depending on their level of comprehension, by signing of the Free and Informed Consent Form or Free and Informed Agreement Form by guardians and patients, respectively. In the latter case, the legal guardian of the user also signed the form.

Participants

Users of a municipal public hospital within a health region of the state of Rio de Janeiro admitted to the Neurology ward between June and September 2018 were invited to take part in the study. The hospital is a medium-to-high complexity referral center, serving 10 cities within its microregion. Since 2017, this unit has comprised part of the Urgent and Emergency Care Network (UECN) as a type I urgent care center. In 2018, the facility offered 195 beds, of which 7 were dedicated to the neurology ward.

The study inclusion criteria were: younger or older adults, of both sexes, who were native speakers of Brazilian Portuguese, had ischemic stroke or hemorrhagic stroke, and were at an acute or subacute phase during the time of data collection (i.e. stroke within last 3 months). Clinical diagnosis of stroke was confirmed within the hospital facility studied by urgent cranial CT scan, in accordance with the clinical protocol and therapeutic guidelines of the Ministry of Health for thrombolysis in acute stroke. After first stroke, repeat scans were ordered according to the treatment adopted. This study collected data from the user´s last imaging scan, performed prior to speech-language evaluation.

Users unresponsive to verbal stimuli were excluded because they would be unable to undergo even a brief formal language assessment. In addition, users with a history of previous stroke or other neurological diseases affecting the central nervous system (CNS) were also excluded, given the objectives of the study.

Material

Sociodemographic and clinical data were collected using a Data Collection Form including the following aspects:

- Sociodemographic data: age, sex, education, profession/ occupation and place of abode;

- Neurological data: type of stroke, type of imaging scan, lesion site and risk factors for stroke;
- Assessment and management: result of brief evaluation and speech-language management.

The brief bedside assessment entailed application of the M1-Alpha test[12]. Given the lack of other specific batteries for evaluating language in adults at bedside available for Brazil, the M1-Alpha was used, where previous studies have been conducted in the Brazilian population applying the test[13,14]. The test assesses comprehension and expression of oral and written language and comprises 8 subtests: semi-structured interview, oral comprehension of words and phrases, written comprehension of words and phrases, copying, dictation, reading aloud, repetition and naming[14].

Procedures

Data was collected at the hospital by the research team, who made afternoon visits, once or twice a week, given there was no in-house speech-language therapist. Users were approached when together with their legal guardians. The study objectives, procedures and ethics safeguards were explained to the dyads. After consent or agreement had been granted by the participant and their legal guardian, the Data Collection Form was filled out using data from patient medical records and from the brief language evaluation. The evaluation took a maximum of 20 minutes and the tasks to be performed on the M1-Alpha Test were described to participants.

Results were recorded in medical charts and family members and users were advised on the need, or otherwise, for speech-language therapy treatment. All study participants initially diagnosed with aphasia or exhibiting evidence of other speech-language disorders, as well as those unable to take part but who reported speech-hearing complaints, were referred for investigation and treatment at the public referral speech-language service of the institution conducting the study.

When the user was eligible to take part in the study, but was unable to produce consistent responses, albeit due to change in level of consciousness/alertness, behavioral disturbances or absence of legal guardians at the time for signing of the free and informed consent form, the individual was referred to the speech-language service of the institution conducting the study. In these assessment cases, the evaluation was also carried out by the research team after hospital discharge, where condition duration (acute or subacute phase) was considered for inclusion in the study.

A descriptive statistical analysis of the data was performed. The health indicator of rate (relative frequency of given event)[15] was calculated, in this case for occurrence of aphasia. Categorical (e.g. sex, occupation and residence), as well as numerical (e.g. age and education) variables were analyzed. Variables were expressed as measures of central tendency (mean and median) and of dispersion (standard deviation, minimum and maximum), and as absolute and relative frequencies. All data were analyzed using a Microsoft Office Excel 2016 spreadsheet.

RESULTS

Rate of aphasia

During the study period, a total of 35 users occupying beds at the Neurology ward of the hospital were identified. Of this group, only 13 (37.1%) met the study inclusion criteria. The main reasons for exclusion were as follows: other CNS problems, history of previous stroke in chronic phase, clinical diagnosis of stroke unconfirmed by imaging scan, and/or non-responsive patient. A total of 15 (42.8%) users with speech-language deficits were referred to the speech-language therapy service of the institution responsible for conducting the study.

Nine of the 13 eligible users agreed to take part. Of this group, 1 refused to answer and 1 was unable to answer at the time of approach and failed to attend the speech-language therapy service recommended after hospital discharge. Thus, only 7 participants were assessed, of which 3 were diagnosed with aphasia, representing a rate of 42.8% of cases for the study period.

Sociodemographic characteristics

With regard to gender of the participants (n=9), 6 (66.6%) were women and 3 (33.3%) men. Age range of the sample was 55-94 years and mean age was 68.2 (SD=12.1) years. Regarding education, participants had 3-14 years of formal education and mean of 7.5 (SD=3.9) years. The data on educational level was not available for 3 of the participants.

Participants were categorized into the subgroups aphasic, non-aphasic and unassessed, for the characteristics of the variables sex, age and education (Table 1).

The analysis of occupation revealed a range of activities, where most of the group were categorized as “other forms of work” – domestic chores (45%), followed by occupation of seamstress (22.2%). The occupations identified among those with aphasia (n=3) were: “other forms of work” - domestic chores, seamstress and builder.

The hospital which conducted the study is the only public referral hospital within the microregion, located in the downtown region of the city (1st district). Distances between the hospital facility and the district of residence of the study participants are depicted in Figure 1.

Clinical characteristics

With regard to the neurological diagnosis of the sample studied (n=9), all participants had stroke, as confirmed by CT (100%). The neurological lesions identified had different topodiagnostic locations (Chart 1). Time since stroke for the overall group was a mean of 10 days (SD=12.8). Data on duration of the condition for each participant are given in Chart 1.

Risk factors identified in the overall group for occurrence of stroke were; systemic arterial hypertension (SAH), smoking, sedentary lifestyle, diabetes mellitus, heart disease, stress and obesity. SAH was the most common factor found, as shown in Figure 2. In the aphasic group, the most common risk factors for stroke were SAH and smoking, found in 3 cases.

Table 1. Sociodemographic data of subgroups (aphasic X non-aphasic X unassessed)

Variables/Subgroups	Aphasic	Non-aphasic	Unassessed
Sex (female:male)	**2:1**	**2:2**	**2:0**
Age			
Minimum	62.0	55.0	70.0
Maximum	70.0	60.0	79.0
Median	64.0	60.0	74.5
Mean	65.3	67.2	74.5
Standard deviation	4.1	18.1	6.3
Education			
Minimum	3.0	9.0	5.0
Maximum	9.0	14.0	5.0
Median	5.0	11.5	5.0
Mean	5.6	11.5	5.0
Standard deviation	3.0	3.5	0.0

Chart 1. Distribution of clinical variables, length of hospital stay for stroke and lesion site of subgroups

Participant	Subgroup	Length of hospital stay (days)	Lesion site
P02	aphasic	5	Subcortical
P04	aphasic	8	L F Lobe + subcortical
P05	aphasic	1	R FTP Lobes + subcortical
P03	non-aphasic	40	L O Lobe + subcortical
P06	non-aphasic	2	R TP Lobe + subcortical
P07	non-aphasic	5	subcortical
P09	non-aphasic	3	L F Lobe
P01	unassessed	20	R FTPO Lobes +subcortical
P08	unassessed	2	L F Lobe

Subtitle: F = frontal; O = occipital; P = parietal; T = temporal; R = right; L = left

Figure 1. Distribution of participants by distance between residence and hospital
Subtitle: Km = kilometers

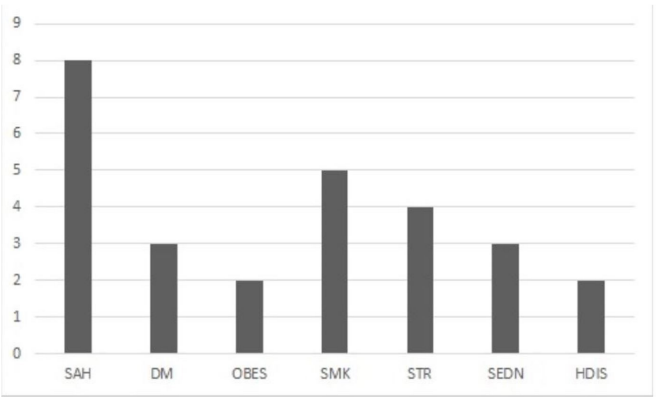

Figure 2. Distribution of risk factors for stroke among participants
Subtitle: SAH = systemic arterial hypertension; DM = diabetes mellitus; OBES = obesity; SMK = smoking; STR = stress; SEDN = sedentary lifestyle; HDIS = heart disease

Regarding type of aphasia, there were 2 cases of global aphasia classified as mixed (affecting both language production and comprehension) and 1 case of aphasia classified as receptive (sensory transcortical aphasia), associated with greater impairment of language comprehension.

Regarding the presence of comorbidities, no other associated speech-language complaints were identified in the aphasic group. For the other 2 subgroups (non-aphasics and unassessed), however, all individuals presented complaints suggestive of other types of acquired neurological communication or swallowing disorders, namely: acquired dyslexia and/or agraphia (2 participants), dysarthria (1 participant) and dysphagia (2 participants). One participant presented a language complaint, but this could not be explored further.

DISCUSSION

The rate of aphasia found in the present study was 42.8%. A study with a similar methodological design conducted by Lima[16] in Minas Gerais found a lower case rate (17.5%). In the study cited, a sample of 40 users of 2 hospitals were investigated, possibly explaining the disparity in findings compared to the present study. Other studies involving similar investigations in hospital services have been published in Brazil[17,18], but these failed to analyze the rate of new cases of aphasia[17], or did not distinguish the type of communication disorder identified[17,18].

No population-based national studies reporting indicators of morbidity for post-stroke aphasia, such as incidence or prevalence rates, were found. International studies report general incidence rates of 7.1 per 100,000 population in Chile[7], and

46 per 100,000 population in Switzerland[8]. These figures, however, cannot be compared with the present study owing to methodological differences.

According to data from the 2018 National Registry of Health Institutions (NRHI), the public network of the city where the study was carried out had 41 public health facilities. The 27 facilities comprising the Health Care Network (HCN) of the city provide care to stroke patients (19 Family Health Units-FHU, 1 Casualty Unit, 2 Basic Healthcare Units-BHUs, 2 Polyclinics, 1 Municipal Hospital, 1 Health Clinic and 1 Ambulatory clinic of the Municipal Health Secretariat). Of these services, speech-language treatment is only offered at the 2 BHUs, 2 Polyclinics and the Health Clinic[19]. Therefore, it should be noted that no speech-language therapists are available at the sites admitting acute stroke patients, i.e. services run by the UECN of the microregion of the city. This represents a shortcoming of the regional HCN which limits the integrality of care delivered to these users. The role of the speech-language therapists in the hospital component of the network is fundamental to cater to patient needs, provide family members and/or users with sound guidance and define specific treatment plans to address the communication problems of these individuals.

All users with speech-language complaints were referred to the Speech-Language service of the institution conducting the study, representing 42.8% of the hospitalized users identified by the research team during the study period. The group of users referred included 9 participants and 6 non-participants of the study. The high number of users requiring post-stroke speech-language therapy is consistent with the findings of a previous study carried out in São Paulo, showing that the speech-language problems diagnosed after brain lesion were attributable to stroke in 69.4% of cases[9]. The other speech-language problems observed involved dysphagia, acquired dyslexia or agraphia, or dysarthria. Other studies have also confirmed the occurrence of these disorders in acute or subacute phases of stroke[9,20]. In these studies, however, aphasia was the most frequent condition, supporting the current study findings.

In terms of socioeconomic profile, most participants were female, including among the aphasic group, contrasting with previous reports in the literature[9,20]. This gender disparity might be explained by peculiarities inherent to the local population assessed. The age-gender pyramid for the city´s population in 2010 comprised 61,973 younger and older adult males and 70,554 younger and older adult females[15], revealing a predominance of women in the population.

Comparisons showed that the subgroup of non-aphasics was younger than the aphasics, as measured by median age (Table 1). The majority of participants were elderly, confirming findings of a previous study reporting a higher incidence of stroke in older adults, particularly in developing countries[2].

With regard to education, the aphasic group had a lower educational level (5.6 years) than the non-aphasic group (11.5 years). Language performance of healthy individuals differs according to education[21], and this factor also influences therapy needs (particularly involving writing), as well as intervention strategies proposed in the treatment of persons with aphasia. In addition, a study carried out in São Paulo[22] found that low-educated older adults were worse informed, representing a barrier to early access to health services. In a recent study, an association between the factors aging, low education and low functional health literacy was also identified[23]. Consequently, this population is more prone to having trouble understanding the information received at health services, resulting in poorer adherence to the treatments prescribed.

With respect to the occupations held by participants, no discernable pattern was identified in the aphasic or non-aphasic subgroups. This result is similar to that of a North-American study of people with acquired progressive communication disorders, which found that only the occupation of teaching showed an association with treatment seeking, in cases of primary progressive aphasia or apraxia of speech[24].

For district of residence, most of the sample lived close to the hospital facility (within 8.0 km radius) (Figure1) and all but 1 of the participants lived in districts neighboring the central facility providing the service. This data raises the question of access by the population residing in districts located further away from the service.

This problem of distance may also apply to rehabilitation of the post-stroke communication sequela following hospital discharge, given that the sites with speech-language specialists (BHU, Polyclinics and Health Clinic) available are situated in the downtown region of the city. The FHU, more of which are available within the municipal HCN and located in outlying regions, i.e. situated in districts further out from the city center, do not provide a speech-therapy service for aphasic patients. This is because, according to NRHI data, the health teams of these services do not include speech-language therapists[19]. Access to speech-language interventions following hospital discharge is essential for the rehabilitation process of these patients.

Regarding the clinical profile of the group studied, ischemic stroke was the most frequent type, mirroring findings reported in the literature[25-28] showing this stroke subtype accounts for 70-80% of cases. The CT topodiagnostic findings for brain lesions disclosed a mixed pattern in all groups, involving cortical and/or subcortical lesions in lobes of both left and right hemispheres (Chart 1).

The most common risk factor for stroke identified in the groups was SAH, in line with data from the literature[20,28] showing a high prevalence of this condition. Despite evidence indicating a steady decline in smoking in Brazil[29], the proportion of smokers in the sample proved high (55.5%). Therefore, smoking emerges as a risk factor which may also help identify new cases of stroke in this population.

Concerning the aphasic subgroup, the disorders identified showed characteristic symptoms of moderate-to-severe receptive (comprehension) and mixed (production and comprehension) aphasias. The findings of this study revealed more severe forms of aphasia predominated among cases in the acute period of stroke (phase in which 3 cases were assessed), corroborating the results of a Danish study[30]. It should be noted that the impact on communication is even greater because of the severity of these conditions, often calling for speech therapy intervention within the hospital setting, as mentioned earlier, to best manage the general health care of the user in the period immediately following neurological lesion.

All patients were assessed during the acute period of stroke, except for one case evaluated in the subacute phase. In view of the phase of expected spontaneous recovery in cases of brain lesion, the true rate of aphasic conditions and other speech-language disorders in the chronic period of stroke is likely lower than the 42.8% found in this study.

It is important to bear in mind that the rate of initial diagnosis of aphasia was determined based on a small sample of the population who were service users. The lack of a speech-language

service within the hospital facility investigated, together with the frequency and length of data collection by the research team, were factors limiting the data gathered and which may have led to some cases being missed.

CONCLUSION

The rate of aphasia cases identified in users with acute or subacute stroke admitted to a referral hospital for the region studied was 42.8%. Regarding sociodemographic profile of the participants, patients were predominantly female, with low education (particularly in aphasic group), suggesting a possible high-risk subgroup. For clinical aspects, all patients had ischemic stroke, where the most common risk factors identified were systemic arterial hypertension and smoking, highlighting the need to strengthen policies aimed at screening and management of these health conditions in the local population. With regard to the aphasic subgroup, moderate-to-severe aphasias were diagnosed, underscoring the importance of addressing the communication needs of these users while still within the hospital setting.

Given the study period and negative impacts of aphasia on individuals affected, the provision of health care for this group and adoption of measures promoting screening, raising awareness and allowing early intervention for this condition, as well as mapping efforts encompassing other regions of the state and country are fundamental. The systematization of these national data is vital for health planning at a regional level and for the implementation of public policies aimed at stroke patients in Brazil.

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