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Original articles

Characterization of individuals with Acquired Brain Injury in working age

Caracterização de sujeitos com lesão cerebral adquirida em idade produtiva

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ABSTRACT

Purpose: to analyze the socio-demographic conditions, health conditions (including neurological diseases) of individuals with Acquired Brain Injury in working age, as well as their previous and current working conditions.

Methods: it is a descriptive study with a quantitative approach. Data were collected between June and December 2014, using a semi-structured interview.

Results: the study included 48 subjects with Acquired Brain Injury. The incidence among males (52.1%) and female (47.9%) was balanced; the average age at the time of injury was 48.7 years; 64.5% were married and 62.5% had incomplete elementary school; the occupation before the Acquired Brain Injury was domestic (18.7%); 47.9% of individuals were retired post-injury, only 6.3% returned to work and 93.7% would like to return. Concerning neurological impairments, 41.1% were affected by ischemic stroke (52.1% had aphasia and 52.2% right-sided hemiplegia). Physical health condition of 60.4% was considered moderate, while 58.3% considered the mental health as bad. 60.4% had never smoked and 93.7% stopped drinking alcohol after the injury. 62.5% were accompanied only by physiotherapy; 54.2% used some assistive resource. 58.4% of the leisure activities of the individuals were affected.

Conclusion: the average age of the individuals of this study is inferior to other national studies; the level of education is low; the previous occupations in relation to the lesion were low financial income and the retirement post-injury rate is high. Neurological sequelae negatively impact on life/health of individuals, and therapeutic resources are incomplete.

Keywords: Stroke; Aphasia; Hemiplegia; Retirement; Return to Work

RESUMO

Objetivo: analisar as condições sociodemográficas e de saúde (inclusive os agravos neurológicos) de sujeitos com LEA em idade produtiva, bem como suas condições pregressas e atuais de trabalho.

Métodos: estudo de natureza descritiva e de abordagem quantitativa. Os dados foram coletados entre junho e dezembro de 2014, por meio de uma entrevista semiestruturada.

Resultados: participaram do estudo 48 sujeitos com Lesão Cerebral Adquirida; a incidência entre o sexo masculino (52,1%) e feminino (47,9%) foi equilibrada; a média de idade, no momento da lesão, foi de 48,7 anos; 64,5% eram casados; 62,5% possuíam Ensino Fundamental Incompleto; a ocupação anterior à lesão mais frequente foi a de doméstica (18,7%); 47,9% dos sujeitos foram aposentados após a lesão, 6,3% voltaram ao trabalho, e 93,7% gostariam de retornar. Quanto aos comprometimentos neurológicos, 41,1% foram acometidos por Acidente Vascular Cerebral Isquêmico (52,1% apresentaram afasia, e 52,2% tiveram hemiplegia direita). A condição de saúde física de 60,4% foi considerada moderada; 58,3% avaliaram sua saúde mental como ruim; 60,4% nunca fumaram; e 93,7% pararam de ingerir álcool após a lesão. Notou-se, ainda, que 62,5% dos sujeitos eram acompanhados somente por fisioterapeutas e que 54,2% usavam algum recurso assistivo. Ademais, as atividades de lazer de 58,4% dos sujeitos estavam prejudicadas.

Conclusão: a média de idade dos sujeitos deste estudo é inferior a outros estudos nacionais; o nível de escolaridade é baixo; as ocupações anteriores à lesão eram de baixo rendimento financeiro; e o índice de aposentadoria após a lesão foi alto. As sequelas neurológicas impactam, assim, negativamente a vida/saúde dos sujeitos, condição agravada pelo fato de os recursos terapêuticos serem incompletos.

Descritores: Acidente Vascular Cerebral; Afasia; Hemiplegia; Aposentadoria; Retorno ao Trabalho

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INTRODUCTION

The phenomenon of globalization, which began in the late sixteenth century with the great discoveries and exploration trips of Europeans in Africa, Asia and the Americas, have strengthened in the last two or three decades of the twentieth century. Globalization is configured, thus, as an economic, social and cultural process that affects directly or indirectly any human being or the planet; however, its consequences do not reverberate equally for all involved, whether individuals, societies or places[1].

It is known that the impacts coming from globalization result in health hazards due to factors such as: new labor organizations often require the workers acting under undesirable and unhealthy sanitary and security conditions; constant degradation of the environment; changes in dietary habits; excessive consumption of alcohol and tobacco; spread of infectious diseases; and prevalence of diseases such as depression and its variations (mental disorders)[1]. Due to these aspects, health has been considered a global public good, a necessary condition for the advancement of globalization, that is, for world economic and social growth[1]. However, it may be observed influences of globalization in the increase of Chronic Noncommunicable Diseases (CNCDs), generating high number of premature deaths, while, for the survivors, loss in quality of life, causing negative economic impacts for those affected, their families and society in general[1,2].

In front of these findings, Brazil established the Strategic Action Plan for Confronting Chronic Noncommunicable Diseases (NCDs) - 2011-2022, including in this plan the prevention of cerebrovascular accident (CVA), infarction, systemic arterial hypertension (SAH), cancer, Diabetes Mellitus (DM) and chronic respiratory diseases, among others[2-4].

Acquired Brain Injury (ABI), mainly due to cardiovascular disease (such as CVA) and Traumatic Brain Injury (TBI), are the cause of functional disability in adults in working age[5]. In the state of Rio Grande do Sul (RS), during the period of one year (January to December 2014), have been reported 5,294 cases of CVA not specified (if hemorrhagic or ischemic) and 3,564 cases of TBI of individuals in working age. In the same period, in a city in the central region of this state (where the study was conducted), it was reported 72 cases of CVA and 65 of TBI in people of working age[6].

It is known that the survivors of ABI face many obstacles after the hospital stay. The first confrontation is to resignify the very concept of health/disease, because at this time individuals have transitional or, most often, permanent sequelae, which requires a reconstruction of themselves as a person[7]. Physical and/or linguistic and cognitive changes may also appear. Besides, individuals experience the restriction of their rights and duties to society, when they realize that their condition of equality guaranteed in the Brazil's Constitution[8] is affected because there are considerable constraints in their social, leisure and work activities, i.e. in their Activities of Daily Life (ADLs) and Instrumental Activities of Daily Life (IADLs).

Considering the aforementioned, this study aims to analyze the socio-demographic and health conditions (including neurological diseases) of subjects with ABI in working age as well as their previous and current working conditions.

METHODS

This descriptive and quantitative study was approved by the Ethics Committee on Human Research of the Federal University of Santa Maria - UFSM, number 680.520. The target audience consisted of individuals with ABI in working age (between 16 and 60 years for females and 16 and 65 years for males[9]). Data have been collected between June and December 2014, through an active search in different rehabilitation services of Physiotherapy, Speech Therapy and/or Occupational Therapy, by public or philanthropic providers or private provider associated to the public sector, i.e. complementary services for the municipal public health.

12 rehabilitation services collaborated with this research: eight of Physiotherapy, two of Speech Therapy and two of Occupational Therapy. 48 individuals with ABI in working-age (mainly with stroke) participated in this study, with different sequelae, as motor, sensory or global aphasia[10] and/or motor (hemiplegia and quadriplegia) or sensory limitations[11,12] who were in therapeutic treatment in public services of rehabilitation in the city, as described earlier. Individuals affected by aphasia with brain damage and aged less than 16 years, motor and/or sensory limitations were excluded from this study.

The first contact of the researcher with the subjects was conducted through a therapist responsible for this service, situation in which the individuals and/or their family were invited to participate in the research, scheduling then a meeting on their homes. During this meeting, they decided then to participate or not in the research. If so, they signed the Informed

Consent (IC) and answered orally and/or through alternative processes of meaning[10,13] to a semi-structured questionnaire, applied by the researcher and prepared exclusively for this study by the authors.

In the questionnaire, data were collected regarding the following criteria: age (current and at the time of the injury); sex; marital status; education; profession/occupation; employment status previous and after brain injury; diagnosis and present sequelae; injury time and sick leave; number of medical assessments; return to work (identifying the barriers faced to return to work activity and/or the desire to return to work); current physical, mental and leisure health conditions; use of assistive devices; and type of therapeutic treatment performed.

For the analysis of the collected data, descriptive analysis was performed with the Statistica 9.1 software.

RESULTS

This study showed a slightly bigger number of men, compared to women, in the studied population (Table 1). The average age of subjects was 48.7 years at the time of the injury and 54.8 years at the time of the research, indicating that the average time between the injury and the participation in this study is six years and two months. Regarding marital status, it was verified that most of the subjects were married, followed by divorced, single and widowed (Table 1).

The school level presented by participants in the study was relatively low: most had incomplete primary education, while only two subjects had Higher Education (one of them was postgraduate), according to Table 1. This characteristic contributes to the occupation of positions that require lower professional qualifications: 18.7% were maids; 12.5% were self-employed professionals, 12.5% worked in general services; 10.4% were public transportation drivers; 8.3% were rural workers; 6.2% worked as a university professor, 6.2% worked as security guards; 4.1% were metallurgist; and 21.1% had other professions (topographer, sales clerk, building doorman, joiner, nursing technician, accounting technician, real estate agent, caretaker, seamstress and seller).

Related to brain injury aspects, most participants could not tell the type of stroke nor had tests that allow to examine this question. Among individuals who were able to report the injury, ischemic stroke with language sequelae (aphasia) and motor sequelae (Table 1) were prominent.

When asked about tobacco use, it was observed that the majority did not smoke before the injury. It was also found that the consumption of alcohol has been greatly modified after the CVA – most of participants completely suspended the alcohol consumption, and a minority followed consuming it (Table 1).

In assessing the current health conditions, 12 individuals considered as good their physical health, 29 considered it moderate and seven rated it as bad. Concerning mental/emotional health, one individual considered it very good, 13 considered it good, 28 rated it as moderate, six rated it as bad. It was concluded, therefore, that there was a predominance of moderate as answer for both health aspects. In addition, more than half of patients with brain damage suffered changes in their leisure activities.

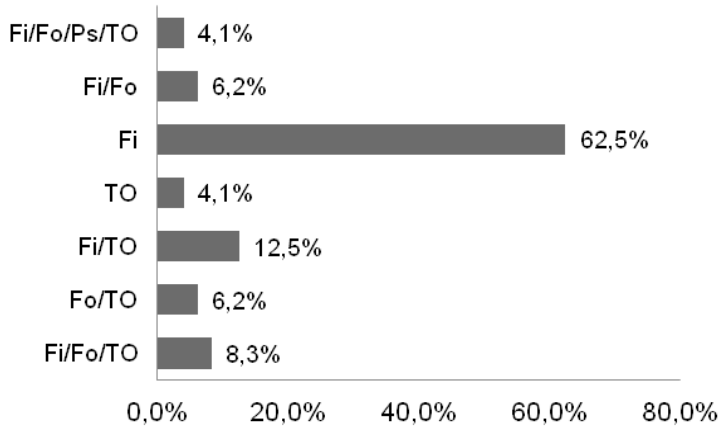
Regarding the use of assistive devices after injury, 16.7% need crutches, and 14.5% use a wheelchair; 10.4% use two or more assistive devices (associated as follows: glasses, crutch and orthosis; cane and glasses; crutch and glasses, and orthosis and glasses), and 8.3% use only glasses, while 4.3% use cane.

Due to the development conditions of this study (active search in rehabilitation services), all individuals studied were linked to a rehabilitation service – public (municipal, state or federal), philanthropic or private/service provider associated to the municipal system. It was found that most subjects were only assisted by physiotherapy treatment; other individuals had associations (physiotherapy and speech therapy, physiotherapy and occupational therapy, speech therapy and occupational therapy, or speech therapy, physiotherapy and occupational therapy). Only one patient was accompanied by a physiotherapist, speech therapist, occupational therapist and psychologist, while another was accompanied only by occupational therapist (Figure 1).

Table 1. Socio-demographic characterization of individuals with Acquired Brain Injury – ABI (n = 48)

Variable	Frequency (n)	Percentage (%)
Sex		
Female	23	47,9%
Male	25	52,1%
Marital Status		
Married	31	64,5%
Single	4	8,3%
Widowed	2	4,3%
Divorced	11	22,9%
Education		
Incomplete Elementary School	30	62,5%
Complete Elementary School	5	10,4%
Incomplete High School	1	2,1%
Complete High School	10	20,8%
Complete Higher Education	1	2,1%
Post-graduate	1	2,1%
Diagnosis		
Ischemic Cerebrovascular Accident	20	41,1%
Hemorrhagic Cerebrovascular Accident	7	15,3%
Did not know to specify the type of CVA	18	37,4%
Traumatic Brain Injury	3	6,2%
Sequelae Aphasia		
Yes	25	52,1%
No	23	47,9%
Hemiplegia		
Without motor sequelae	1	2,1%
Quadriplegia	2	4,1%
Right-sided Hemiplegia	25	52,2%
Left-sided Hemiplegia	20	41,6%
Current Health Conditions		
Physical Health Assessment		
Good	12	25,1%
Moderate	29	60,4%
Bad	7	14,5%
Mental/Emotional Health Assessment		
Very Good	1	2,1%
Good	13	27,2%
Moderate	28	58,3%
Bad	6	12,5%
Interferences in leisure activities after the injury		
Yes	28	58,4%
No	20	41,6%
Smoking		
Yes	6	12,5%
No	29	60,4%
Stopped smoking	13	27,1%
Drinking alcohol		
Yes	2	4,2%
No	1	2,1%
Stopped drinking	45	93,7%
Use of Assistive Device		
Yes	26	54,2%
No	22	45,8%

Data were presented in n (percentage).



Fi: Physiotherapy; Fo: Speech Therapy; Ps: Psychology; TO: Occupational Therapy

Figure 1. Therapeutic monitoring of individuals with Acquired Brain Injury - ABI

Before the injury, most subjects had employment, and few had no fixed job (they were independent workers) or were self-employed (individual contributors). It is worth mentioning that, after the injury, all individuals underwent medical assessment (the average number of assessment was 2.3 per person, while 50% had just one), and most participants have been retired – only three individuals were reinserted in labor activities (TABLE 2), being away from their jobs for an average time of 3.7 years.

All the individuals in this study demonstrated desire/expectation to return to work; however, this expectation came true for a minority: just one individual remained in the function (with guidance and necessary adaptations to return to the job), and two changed their functions (without guidance and/or adaptations to the job) (TABLE 2).

DISCUSSION

The result of this study corroborates other regional and national studies. A research in the city of Passo Fundo (RS), focused on the characterization of hospital admissions for stroke, found prevalence (53.6%) of stroke in men[14], while another study, dedicated to the TBI and conducted at national level, found injuries two to three times higher in men than in women[15].

The average age of the individuals of this study at the time of the injury was 48.7 years, a fact consistent with the results of other studies that say that people of working age are most affected by ABI – CVA and TBI[15,16]. In this regard, a study conducted nationally showed that stroke is responsible for 40% of early retirements in Brazil[17].

Most participants in this study were married, as verified also in three other studies: one with 289 people who have had stroke in working age, accompanied by the Unified Health System (SUS) in the city of Recife, Pernambuco (PE)[18]; another study conducted in Natal, Rio Grande do Norte (RN), with a group of 45 people who had stroke and varied age[19], and a third performed in Jequié, Bahia (BA), which involved a group of 20 people diagnosed with stroke with different ages[20]. Related to TBI, a study conducted with a group of 56 participants in São José do Rio Preto, São Paulo (SP), showed that 56% were single and 40% were married[21].

The educational level of participants was relatively low. Low education is seen as one of the vulnerability factors that are discussed on CNCDs[22], and it is closely associated with increased prevalence of bad health habits[23], such as the no consumption of healthy foods, inactivity, tobacco use and consumption excessive alcohol[2].

Other studies also indicate that poor health conditions[24]and CNCDs[25] are more frequent among individuals with lower educational levels. In addition, these individuals are more affected by globalization, because the changes imposed by this process (new technologies and speed of changes in the labor market, for example) require increasingly technical expertise to meet changing demands of the labor market, which makes it more demanding and restricted over time[26]. The labor activity of these individuals tends to be characterized by actions more manual, requiring more physical performance than intellectual engagement[27].

Table 2. Working Conditions of Individuals Pre and Post Acquired Brain Injury (n=48)

Variable	Frequency (n)	Percentage (%)
Insured Category		
Employee in different sectors	31	64,5%
Maid	9	18,7%
Independent worker/Individual taxpayer	6	12.5%
Temporary Worker	2	4,2%
Daily Working Hours		
4h	1	2,1%
8h	32	66,6%
12h	14	29,2%
More than 12h	1	2,1%
Current Situation in Social Security		
Away from work with social security benefit	14	29,2%
Away from work without social security benefit	8	16,6%
Retired early	23	47,9%
Reinserted at work	3	6,2%
Returned to work		
Yes	3	6,3%
No	45	93,7%
Would like to return to work		
Yes	45	93,7%
No	0	0,0%
Returned	3	6,3%
Would like to return to the same work activity		
Yes	45	93,7%
No	0	0,0%

Data were presented in n (percentage).

This type of work corresponds to domestic or independent activities, as reported in this study.

In this sense, Medina and collaborators[27] and Falcão and collaborators[18] indicate that low educational level is a negative factor for the recovery of individuals affected by ABI. According to these authors, the higher level of education may contribute to an increased survival of these individuals, helping them to return to work.

Many studies[11-28] indicate that the most common cause of ABI are CVA, and the derivatives of ischemic events (ICVA) the most frequent, as indicated by the data in this study, in which 41.1% of subjects were affected by ischemic stroke. ICVA has as a main risk factor the SAH, DM, hypercholesterolemia (high cholesterol), smoking and genetic factors[29]. Most of these factors are preventable and treatable through good Basic Care[3,30] services that could be performed,from the point of view of the authors of this study, by professionals such as speech therapists, physiotherapists and occupational therapists – potential members of the Support Center for Family Health (NASF). Such professionals can contribute to the development of preventive actions that seek to raise awareness about NCDs and their consequences, increasing thus the actions of teams of Basic Care.

Aphasia and hemibody affections were the most frequent sequelae of this study, which negatively influence the physical and mental/emotional health of subjects by limitations in performing basic activities of daily life (self-care and mobility, for example) and more complex activities, such as work and leisure, generating, therefore, family, social and economic impacts[31].

Smoking was not a predominant factor in this study. However, the same cannot be said regarding the consumption of alcohol, as 93.7% stopped drinking alcohol after the brain injury. It is known that the

association between smoking and excessive alcohol consumption is one of the main factors contributing to the increased risk of stroke, mainly Hemorrhagic Cerebral Vascular Accident (HCVA), significantly increasing morbidity and mortality rates in the adult population[32].

Morbidities resulting from brain injuries can be minimized by the use of assistive devices (glasses, crutch, cane, wheelchair, for example). The assistive features as Decree No. 3.296, of December 16, 1999, in the article 19, are described as the elements that minimize one or more motor, sensory or mental limitations of people with disabilities. This decree states that the purpose of these devices is to assist in overcoming barriers to communication and mobility, allowing the full social inclusion of people with disabilities[33]. The assistive devices, therefore, aim to rehabilitate or improve the performance of functions that can be lost or severely affected after the brain injury[34].

Associated with assistive devices, therapeutic/rehabilitation processes are essential to improve the survival conditions of people with neurological injuries. In this study, it was verified, however, that the model of care in rehabilitation, offered by the municipality to individuals with ABI, presents some gaps, because they are independent services (fragmented configuration) with little or no coordination among professionals, which compromises the physical, linguistic-cognitive, social and labor rehabilitation of individuals. This configuration requires individuals with ABI to move from one service to another, and it's possible to conclude that the "rehabilitation routes" are organized by the individual itself, and not by the local health system.

It is possible to observe that the integrated/articulated rehabilitation processes are essential for individuals with ABI to continue their conditions of autonomy and independence in ADLs, IADLs, leisure and labor activities. Despite the understanding of the importance of multi-professional teams to guarantee the rehabilitation process, it is assumed that there are still barriers to effective and expand them. Such barriers can be associated with the hierarchy of basic knowledge in relation to peripheral knowledge, the overlap of professional roles and the lack of autonomy and collective accountability[35].

Concerning the data related to working conditions, it has been highlighted the significant index of individuals in working age who are retired (47.9%) due to brain injuries and, above all, the low percentage of individuals reinserted at work (6.3%). It's possible to say that, in the context of the city where this study has been conducted, individuals with ABI have been away from work or have been retired and exposed to an inefficient system of rehabilitation activities; on the one hand, it was evidenced few incentive to return to work, although they are subjected to a routine of medical assessments, and, on the other hand, it was noted that the rehabilitation processes favored the recovery of physical sequelae.

The return to work of participants in this study was much lower than the index presented in another research (not recent, but the only found about the theme) conducted in Poitiers (France) by Neau and collaborators[36]. This study, focused on a group of individuals with ABI between 15 and 45 years old, found that 70% of participants, on average, returned to work eight months after the injury, and there was about 26% of need for adaptations in the occupation of these individuals. However, in this study the desire of returning to work was unanimous: 93.7%, i.e., the total of not reinserted participants would like to return to the functions exercised before the injury, even considering that they worked in low pay activities.

According to Scopel[37], the intense routine of medical assessments is a factor that discourages the individual away from work due to health impairment, because each new assessment requires further evidences (due to the fact that is not the same doctor of the previous assessment). In this context, individuals undergo a pilgrimage of medical consultations seeking experts for the improvement of the analysis and diagnosis of their clinical condition. Individuals away from work describe the assessment as an unpleasant situation, because they are subjected to a series of questions and/or situations of disrespect about their problems, factors that contribute to the intensification of feelings of impotence and worthlessness, as well as for the development of depressive disorders[38].

Possibly, the low rate of return to work of individuals with ABI participating in this study is a reflection of a set of factors identified by the research conducted by Falcão and collaborators[14], such as limitations in language (aphasia), depression, motor and sensory impairments, the absence of adaptations – either in the post or function in the workplace – and the lack of guidance by the responsible entities. However, it is emphasized that the return to labor activity should be encouraged by health professionals, since work occupies a central place in the life of contemporary people. Having multiple personal and social meanings,

the work is a key element in the formation of collectives, usually organized around the work activity[39].

CONCLUSION

This study showed a balance between the number of men and women in working age affected by ABI. The average age of the subjects at the time of injury was 48.7 years old, which is relatively lower than the national average, which is 50 years old.

Most of the participants were married; the most frequent education level was incomplete elementary school; and the most usual occupations were related to manual labor. Many workers have been retired after injury, and very few returned to work, despite all of them expressing their desires of returning to their work activities. In this sense, it is noteworthy that early retirement is a factor that can lead to conflicts of social identity and feelings of uselessness, disqualification and revolt, exposing workers to other diseases. In addition, the routine of pilgrimage seeking the rehabilitation associated with numerous medical assessments required by Social Security have been generating emotional distress and suffering for the individuals with ABI.

The limitations imposed by ABI negatively impact life/health of the individuals, which now need help from others (caregivers) for the performance of daily activities as well as assistive and therapeutic resources for sustaining life. In addition, the results of this study revealed precarious condition of assistance for rehabilitation in the municipality where the survey was conducted. The itinerary of services is prepared by the individuals with ABI, and not created by a network of services to sustain the recovery and labor reinsertion process. There is not any rehabilitation center specialized for adult individuals with brain injury, neither it's evidenced integration between health services and even less between them and the National Institute of Social Security (INSS) – entity responsible for medical assessment. Many individuals were deprived of returning to their work activities and, consequently, they have been retired early, generating onus to Social Security.

This study, in a way, also highlighted the need for attention of the municipality Basic Care in order to promote actions to minimize the occurrence of CNCDs and thus reduce health disorders caused by them, as well as focusing on the reorganization and expansion of rehabilitation services in order to meet the guidelines of SUS. It's also necessary to promote real integration between rehabilitation professionals and those responsible for medical assessments – services that receive and accompany patients with brain damage.

It is suggested, therefore, to conduct further studies with this theme. This will allow the production of more evidences on the needs of patients with brain damage in relation to rehabilitation and return to work.

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