Nursing diagnosis: impaired physical mobility in patients with stroke*

DIAGNÓSTICO DE ENFERMAGEM: MOBILIDADE FÍSICA PREJUDICADA EM PACIENTES ACOMETIDOS POR ACIDENTE VASCULAR ENCEFÁLICO

DIAGNÓSTICO DE ENFERMERÍA: MOVILIDAD FÍSICA DISMINUIDA EN PACIENTES AFECTADOS POR ACCIDENTE VASCULAR ENCEFÁLICO

Alice Gabrielle de Sousa Costa[1], Ana Railka de Souza Oliveira[2], Felipe Emmanuel Coelho Alves[3], Daniel Bruno Resende Chaves[4], Rafaella Pessoa Moreira[5], Thelma Leite de Araujo[6]

ABSTRACT

The study aimed to investigate the occurrence of Nursing Diagnosis Impaired Physical Mobility in patients with stroke. This exploratory study was developed at rehabilitation units from November 2007 to march 2008, through an interview and physical examination. Nursing diagnoses were made using NANDA Taxonomy II. A total 121 patients were evaluated. Subjects' average age was 62.1 years, 52.3% were males with an average 1.5 stroke events in 3.4 years. The diagnosis was present in 90%, with an average of 5.8 defining characteristic. Difficulty turning was the most present characteristic and there were 3.4 related factors per patient, and most reported decreased strength and endurance besides neuromuscular impairment (100%). There should be a closer look towards this diagnosis when planning interventions after a stroke with aiming at health promotion for these patients.

KEY WORDS

Nursing diagnosis.
Stroke.
Motor activity.

RESUMO

O estudo teve como objetivo investigar a ocorrência do diagnóstico de enfermagem Mobilidade Física Prejudicada em pacientes com AVE. Estudo exploratório, desenvolvido em unidades de reabilitação, de novembro de 2007 a março de 2008, por meio de entrevista e exame físico. A Taxonomia II da NANDA foi utilizada para a identificação do diagnóstico. Foram avaliados 121 indivíduos, com idade média de 62,1 anos, 52,3% homens, com média de 1,5 episódio de AVE em 3,4 anos. O diagnóstico esteve presente em 90%, com média de 5,8 características definidoras. Dificuldade para virar-se foi a característica mais presente, e 3,4 fatores foram relacionados por paciente, com destaque para a Força muscular diminuída, além de Prejuízos neuromusculares (100%). Destaca-se a necessidade de enfocar-se esse diagnóstico no planejamento das intervenções após o AVE, com vistas à promoção da saúde desses pacientes.

DESCRITORES

Diagnóstico de enfermagem.
Acidente cerebral vascular.
Atividade motora.

RESUMEN

El estudio tuvo como objetivo investigar la ocurrencia del diagnóstico de enfermería Movilidad física disminuida en pacientes con AVE. Estudio exploratorio, desarrollado en unidades de rehabilitación, desde noviembre de 2007 a marzo de 2008, a través de entrevistas y exámenes físicos. Para la identificación del diagnóstico se utilizó la Taxonomía II de la NANDA. Fueron evaluados 121 individuos, con edad media de 63,1 años, 52,3% hombres, con un promedio de 1,5 episodios de AVE en 3,4 años. El diagnóstico se verificó en el 90%, con una media de 5,8 características distintivas. La dificultad para darse vuelta fue la característica más presente, con 3,4 factores relacionados por paciente, con relevancia de la fuerza muscular disminuida, además de trastornos neuromusculares (100%). Se destaca la necesidad de enfocarse ese diagnóstico en el planeamiento de las intervenciones posteriores al AVE, en vistas a la mejoría de la salud de dichos pacientes.

DESCRIPTORES

Diagnóstico de enfermería.
Accidente cerebrovascular.
Actividad motora.

* Extracted from the "Acidente vascular encefálico: análise dos diagnósticos de enfermagem da classe atividade/exercício", Postgraduate Degree Program of the Federal University of Ceará, 2008.

[1] Nurse. Student of the Masters in Nursing Program at Federal University of Ceará. Holder of a CAPES grant. Fortaleza, CE, Brazil. alice_gabrielle@yahoo.com [2] Nurse. Student of the Masters in Nursing Program at Federal University of Ceará. Holder of a CAPES grant. Fortaleza, CE, Brazil. railkaufc@yahoo.com.br [3] Clinical Nurse at Hospital de Messejana Dr. Carlos Alberto Studart Gomes. Fortaleza, CE, Brazil. filipeemmanoel@yahoo.com.br [4] Clinical Nurse at Hospital de Messejana Dr. Carlos Alberto Studart Gomes. Fortaleza, CE, Brasil. dbresende@yahoo.com.br [5] Nurse. Student of the Doctorate in Nursing Programa at Federal University of Ceará. Holder of a CNPq grant. Fortaleza, CE, Brazil. rafaellapessoa@hotmail.com [6] PhD. in Nursing. Professor of the Undergradute and Graduate Nursing Courses at Federal University of Ceará. Researcher with CNPq. Fortaleza, CE, Brazil. thelmaaraujo2003@yahoo.com.br

Received: 08/03/2009
Approved: 11/17/2009

Portuguese / English: www.scielo.br/reeusp

INTRODUCTION

Strokes have a high potential for causing disabilities, present mostly in age groups of 60 years or more. This age group also comprises inherent physiologic alterations to the age as muscle strength and tendon reflexes decrease, in addition to difficulties in body balance and changes in gait speed.

In Brazil, the number of people who have had a stroke is signigicant. For that reason, the continuous investigation of these people's health needs is considerably important. The nursing diagnostic process stands out with a view to identify the main defining features and develop a future efficient and individualized action plan.

A lack of studies performed in the country about nursing diagnosis in people who survived this pathology also stands out. Studying nursing diagnosis, more specifically Impaired physical mobility in survivors of this health injury is unfold as important for evidence-based nursing practice.

OBJECTIVES

Investigate events of Impaired physical mobility nursing diagnosis in people with strokes in the rehabilitation period and to identify the main defining features and factors related to such diagnosis.

LITERATURE REVIEW

The nursing process has been the main methodological instrument for a professional practice systematic performance. Nursing diagnosis is understood as a stage of the process responsible for providing means for proposing exclusively nursing interventions regarding the detected health problems. In addition to being a work tool for those professionals, they provide the use of appropriate language, facilitating the communication with patients[1].

Currently, various classification systems are found in Nursing Diagnosis (ND), as the *North American Nursing Diagnosis Association* (NANDA) taxonomy. The 2008 NANDA edition, used in this study, comprises the taxonomic structure II, with 13 domains, 47 classes and 187 nursing diagnoses.

Among those domains, Activity/Rest has five classes. One of them is denominated Activity/Exercise and comprises eleven approved nursing diagnoses. That class is defined as moving body parts (mobility), performing work or actions frequently (but not always) against resistance[2].

Among diagnoses in that class, Impaired physical mobility is included, understood as physical movement limitation, whether independent or intentional, of one or more extremities[2].

Generally, impaired mobility is seen under a functional perspective by the individual's inability to move freely. Such inability can vary among individuals under similar conditions, and in the same individual, throughout different stages. Although physical limitation can manifest itself suddenly or slowly, according to its extension and duration, it can be a contributing factor for health problems, varying from lack of self-care to damaged social interaction.

The presence of Impaired physical mobility diagnosis implies in changes in the gait speed, which can generate an increased risk of falls, in addition to higher dependency regarding daily activities, restraining individuals from returning to their working activities, causing difficulties in moving around their own home and to other locations[3].

Under this context, one of the diseases that generally interfere in patients' mobility is the stroke. It is considered as one of the most severe public health problems due to its magnitude, transcendence and contribution to mortality in adults, generating severe disabilites and dependencies[4].

Specifically, the stroke is a disease in the superior motor nerve cells and can result in the loss of voluntary control regarding motor movements. Since superior motor nerve cells cross, disturb in the voluntary motor control in one side of the body can reflect a lesion in the superior motor nerve cells in the opposite side of the brain. In this case, the most common motor disorder is hemiplegia resulting from the lesion in the opposite side of the brain. Another sign is paresis or weakness in one side of the body[5].

Studying nursing diagnosis, more specifically Impaired physical mobility in survivors [of stroke] is unfold as important for evidence-based nursing practice.

METHOD

This is a cross-sectional study with quantitative analysis, performed in eight Beneficent Rehabilitation Associations in the State of Ceará (ABCR in Brazilian Acronyms), located in the city of Fortaleza and presenting data collected between November of 2007 and March of 2008.

Participants' selection followed the following criteria: having at least one stroke episode, with confirmed medical diagnosis; not under hospitalization; over 18 years old; having accepted to participate in this study at their own free will, and after being cleared about the study's objectives, signed the free and informed consent form. All patients who followed the proposed criteria were included in this study.

Data were collected through a primary source, directly with patients always when they were able to provide all the information, or when otherwise, with the companion.

A form, previously submitted to two nursing experts about the care for patients with strokes in order to verify the appearance and content was used, incorporating the suggestions presented by them. Patients were evaluated by an interview and a physical exam. The interview provided sociodemographic data and the investigation of risk indicators.

In the physical exam, muscle strength, deep tendon reflexes and the ability to perform fine motor activities were

investigated, such as drawing, cutting, assembling and holding objects. Moreover, the Barthel index was used for calculating body mass.

Regarding data analysis, muscle strength was tested by evaluating the patients' capacity to bend or stretch limbs against some type of resistance. In order to classify that strength, a five stage scale was used: No contraction (0); minimum contraction strength (1); ability to move, but not to overcome the power of gravity (2); enough strength to overcome the power of gravity (3); suitable strength, but not total (4); full contraction strength (5)[6].

In order to evaluate deep tendon reflexes, a sudden stimulus with a Buck reflex hammer that causes the muscle to stretch was used. The classification for response according to the following scale was, therefore, set as follows: Absent impulses (0); decreased impulses (+1); normal impulses (+2); increased impulses that can be normal (+3); hyperactive impulses (+4)[7].

The Barthel Index, specifically the going up stairs item, classified as: incapable (0); needs verbal, physical help or support (5); independent (10), was also used to evaluate patients' mobility. This index was validated and measured the functional independence and the mobility in patients with chronic pathologies, as in a stroke[8].

In order to calculate body mass, the Body Mass Index was adopted, classifying values as follows: Low weight < 18.5; Normal – 18.5 to 24.9; Overweight - 25 to 29.9; Degree I obesity – 30 to 34.9; Degree II obesity – 35 to 39.9; Degree III obesity (extreme obesity)≥ 40[9].

Data collected in the interviews and physical exams enable the elaboration of Impaired physical mobility nursing diagnosis, which presents the following defining features: Limited amplitude of movements; Limited capacity to perform fine motor abilities; Limited capacity to perform gross motor abilities; Difficulties in turning sides; Effort dyspnea; Commitment in substituting movements; Postural instability; Uncontrolled movements; Slow movements; Non-coordinated movements; Changes in gait speed; Decreased reaction time; and Tremble induced by movement[2].

In addition to those defining features, NANDA proposes the following related factors for this diagnosis: Anxiety; Development delay; Deficient knowledge regarding physical activities; Contractures; Decreased muscle control; Cultural beliefs regarding suitable physical activity for the age; Lack of physical conditioning; Discomfort; Malnutrition; Disuse; Decrease in muscle mass; pain; Hardening of articulations; Depressive state; Sedentary life style; Lack of socio-environmental support (for example: physical or social); Body mass index higher than the suitable 75% for the age; Intolerance to activities; Medications; Altered cellular metabolism; Loss of bone structure integrity; Cognitive loss; Muscle-skeleton losses; Neuromuscular losses; Sensorial-perceptive losses; Reluctance in initiating movements; Limited cardio-vascular resistance; Decreased resistance; and Restriction prescribed by movements[2].

In the inherence diagnosis process, data were collected in the interview and in the physical exam, they were individually evaluated and discussed by researchers with a view to a consensus. Afterwards, two instruments were filled out; one regarding the defining features and the presence or absence of a nursing diagnosis, and another regarding the related factors. Data were, therefore, compiled in Excel software spreadsheets, presented in tables and descriptively analyzed based in the pertinent literature.

In face of ethical and administrative aspects of the scientific research, the work was initiated after the approval by the Research and Ethics Committee of the Federal University of Ceará Complex (COMEPE in Brazilian acronyms), following the recommendation in Resolution 196/96 regarding researches with human beings[10], under protocol number 211/7.

All participants were informed about the objectives and commitments of these researchers regarding secrecy, justice, beneficence and non-malfeasance, and they all signed a free and informed consent form, agreeing to voluntarily participate in this study.

RESULTS

This present study evaluated 121 patients who survived a stroke and went through rehabilitation activities. Among them, 109 (90%) presented the nursing diagnosis of Impaired physical mobility and their data were analyzed in this study, as shown in Table 1.

Table 1 - Impaired physical mobility ND Patients' distribution according to socio-demographic data, amount of strokes, time of the last stroke and attendance time in the ABCR - Fortaleza - 2008

Variables	N	%
Sex		
Male	57	52.3
Female	52	47.7
Marital Status		
With a companion	58	53.2
Without a companion	51	46.8
Occupational status		
Retired/Pension	75	68.8%
Unemployed	10	9.1%
Self-employed	2	1.8%
	Averages	**SD[1]**
Age	62.1	11.9
Education level	5.6	4.4
Family income	1017	889
Number of strokes	1.5	1.1
Time from last stroke	41.2	88.8
Tempo que freqüenta a ABCR[2]	27.7	61.2

[1]SD – Standard Deviation. [2]ABCR - Beneficent Rehabilitation Association

According to data, most patients were male (52.3%), with average age of 62.1 years (±11.9), with a companion (53.2%), with no occupation (77.9%) or did not provide that information (20.1%). Moreover, 86.2% referred to the presence of some type of caretaker.

Table 2 shows the distribution of defining features of such diagnosis present in patients with stroke.

Table 2 - Distribution of defining features found in patients with Impaired physical mobility ND - Fortaleza - 2008

Defining Features	N	%
Difficulty in turning sides	97	88.9
Decreased reaction time	95	87.1
Non-coordinated movements	91	83.5
Limited capacity to perform fine motor abilities	71	65.1
		P 75[1]
Tremble induced by movement	62	56.9
Limited capacity to perform gross motor abilities	54	49.5
Effort dyspnea	52	47.7
		P 50[2]
Uncontrolled movements	32	29.3
Changes in walking speed	31	28.4
Limited amplitude of movements	27	24.8
		P25[3]
Committed to movements substitutions	16	14.7
Slow movements	4	3.7

[1]P75 - Percentage 75. [2]P50 - Percentage 50. [3]P25 - Percentage 25.

According to the table, the average of 5.8 was observed in defining features per patient. Among those, the following stand out: Difficulty in turning sides (88.9%), Decreased reaction time (87.1%), non-coordinated movements (83.5%), and limited capacity to perform fine motor activities (65.1%). The postural instability feature was not identified in any of the patients. Table 3 shows the distribution of factors related to Impaired physical mobility ND in patients with stroke is shown.

Table 3 - distribution of factors related to Impaired physical mobility ND identified in patients with stroke - Fortaleza - 2008

Related Factors	N	%
Decreased muscle strength	109	100
Neuromuscular losses	109	100
		P 75[1]
Perceptive-sensorial losses	52	47,7
Contractures	21	19,3
		P 50[2]
Hardening of articulations	18	16,5
Cognitive loss	16	14,7
Disuse	13	11,9
Decreased muscle control	12	11
Decreased muscle mass	8	7,3
		P 25[3]
Sedentary life style	3	2,7
Anxiety	2	1,8
Decreased resistance	2	1,8
Lack of physical conditioning	1	0,9
Muscle-skeleton losses	1	0,9
Pain	1	0,9
Body Mass Index above 75% for the age	1	0,9

[1]P75 - Percentage 75. [2]P50 - Percentage 50. [3]P25 - Percentage 25.

Among all thirty factors related that compose the diagnosis in this study, sixteen were found in an average of 3.4 per patient. Most of those factors were identified in less than 40% of patients. Decreased muscle strength (100%), Neuromuscular losses (100%) and Perceptive-sensorial losses (47.7%) were the most present related factors in the population with Impaired physical mobility nursing diagnosis.

DISCUSSION

This high percentage found in this study was supported by another study carried out in Goiânia about the presence of nursing diagnosis in the Moving Pattern in 75 elderly who were in the Family Health Program. In this study, some individuals presented the stroke. The average of nursing diagnosis was of 7.43 and Impaired physical mobility was the most frequent diagnosis (92.2%)[11].

In a study about the clinical validation of Impaired physical mobility ND in ten hospitalized elderly people, the significant decrease of the ability to move in the environment was demonstrated. The fact could be explained by considering physiologic changes in the skeleton-muscle system resulting from aging and tending to be increased in the presence of pathologies that affected the motor area or disuse[12].

As for the most observed defining features, some authors approached the fact that patients with stroke can demonstrate hyperactive deep tendon reflexes, decrease or absence of superficial reflexes and the presence of pathologic reflexes, which lead the individual to perform non-coordinated and uncontrolled movements. Such decrease in superficial reflexes in those patients also caused a decrease in the reaction time when stimulated. Therefore, reactions are delayed [5].

The presence of non-coordinated, slow or uncontrolled movements, can cause balance alterations to the individual. Such alterations in balance were demonstrated in a study as relatively common problems in the elderly population. Those alterations lead to important limitations in performing daily life activities and are the main cause for patients' falls[13].

Moreover, it is important to point out that, due to a physiologic process, physical mobility is found impaired even in healthy elderly. However, the event of a stroke can intensify motor deficit.

In face of the neurologic alterations mentioned here, patients can also fell difficulties to perform fine motor activities, as drawing, cutting, assembling, holding objects, in addition to perform gross motor activities, since raising their head (head control) and moving demand efforts. Moreover, their movements are slower[5].

Due to those motor disorders as hemiplegia and paresis, those individuals can present progressive weakness and develop atrophy due to disuse, which increases difficulties resulting from motor deficit, and generating additional disabilities even to turn sides in bed. Other disorders are pro-

pitiated as pressure ulcers, when the change of bed positions is not carried out in the appropriate way[6].

Motor coordination results in neuromuscular integrity. Consequently, lack of integrity in the nervous and/or muscle system decrease the capacity to perform voluntary and productive movements[5]. Hence, neuromuscular losses related to stroke can lead to limited capacity to perform fine and/or gross motor abilities in an individual, defining features that compose the investigated diagnosis.

Decreased muscle strength was a related factor observed in 100% of the population in this study. That factor can make performing tasks as rising from a chair, sitting in the toilet, getting out of bed, carrying groceries and even opening a bottle a hard or even impossible task[14].

For that reason, patients might depend on other people to perform basic activities, making them susceptible to the loss of their autonomy and quality of life. In this case, in order to avoid muscle atrophy, exercises are required.

Muscle properties depend on the intact neurologic function. When a lesion in the superior motor nervous cells occurs, muscle training is needed to improve both efficiency and capacity of weak muscles strength generation and motor function. Increasing strength through training programs for the lower limbs are associated to improvements in walking speed, functional tasks as sitting and rising, going up stairs, walking, and manual activities. In addition, they also affect psychological functions, always with a view to patients' recovery[15-16].

Complete recovery of stoke sequels is associated to various factors, as the affected brain area, age, time between the signs of stoke and attendance, and, after the acute phase, the time for initiating rehabilitation activities. There is an inter-relation among various factors, some difficult to control, to determine what leads some cases to full recovery and others to severe dependency.

Therefore, the nurse should act and provide care guided to the needs of those patients, with actions as guiding and teaching, considering limitations resulting from the pathology, as well as those related to possible changes in life habits. Professionals must also pay attention to establishing accurate nursing diagnoses, corresponding to real problems presented by patients, with a view to making preventive, maintenance and rehabilitation actions possible for promoting health.

CONCLUSION

This study demonstrated that Impaired physical mobility diagnosis was found in 109 (90%) participants, where 52.3% were male, with average age of 62.1 years (±11.9), most with a companion(a), with no occupation at the moment, and with a caregiver.

The defining features that were mostly observed were: Difficulty in turning sides, Decreased reaction time, Non-coordinated movements, and Limited capacity to perform fine motor abilities. Postural instability was not found in any of the patients

Regarding related factors, Decreased muscle strength and Neuromuscular losses were found in 100% of the population in this study.

As this article is concluded, we suggest carrying out studies that will prioritize the needs of those individuals, guided, above all, to an individualized care with focused appointments that will result in more effective rehabilitation-centered actions.

Therefore, the importance of the nursing diagnostic process stands out with a view to identify the main defining features and develop an efficient and individualized action plan.

In order to establish interventions that will produce suitable results, partnerships must be constructed that will include from family to professional scopes, in addition to the political scope, with the objective to search for conditions that will benefit those individuals, maximizing their functional capacities and ensuring their dignity and self-esteem.

REFERENCE

1. Lira ALBC. Diagnósticos de enfermagem em pacientes transplantados renais de um hospital universitário de Fortaleza-Ceará. 2005 [dissertação]. Fortaleza: Departamento de Enfermagem, Universidade Federal do Ceará; 2005.

2. North American Nursing Diagnosis Association (NANDA). Diagnósticos de enfermagem da Nanda: definições e classificação 2007-2008. Porto Alegre: Artmed; 2008.

3. Falcão IV, Carvalho EMF, Barreto KML, Lessa FJD, Leite VMM. Acidente vascular cerebral precoce: implicações para adultos em idade produtiva atendidos pelo Sistema Único de Saúde. Rev Bras Saúde Matern Infant. 2004;4(1):95-102.

4. Ramírez MH. Condições de vida e saúde de idosos com acidente vascular cerebral. [dissertação]. Ribeirão Preto: Escola de Enfermagem de Ribeirão Preto, Universidade de São Paulo; 2004.

5. Smeltzer SC, Bare BG. Brunner & Suddarth: tratado de enfermagem médico-cirúrgica. 10ª ed. Rio de Janeiro: Guanabara Koogan; 2005.Tratamento de pacientes com distúrbios vasculares cerebrais; v. 2, p.1996-2020.

6. Smeltzer SC, Bare BG. Brunner & Suddarth: tratado de enfermagem médico-cirúrgica. 10ª ed. Rio de Janeiro: Guanabara Koogan; 2005. Princípios e práticas da reabilitação; v. 1, p. 166-98.

7. Andris DA. Semiologia: bases para a prática assistencial. Rio de Janeiro: Guanabara Koogan; 2006.

8. Azeredo Z, Matos E. Grau de dependência em doentes que sofreram AVC. Rev Fac Med Lisboa. 2003;8(4):199-204.

9. Burke LE. Hipertensão arterial. In: Woods SL, Froelicher ESS, Motzer SU. Enfermagem em cardiologia. 4ª ed. São Paulo: Manole; 2005. p. 1007-18.

10. Conselho Nacional de Saúde. Resolução n.196, de 10 de outubro de 1996. Dispõe sobre diretrizes e normas regulametadoras de pesquisas envolvendo seres humanos. Bioética. 1996;4(2 Supl):15-25.

11. Araújo LAO, Bachion MM. Diagnósticos de enfermagem do padrão mover em idosos de uma comunidade atendida pelo Programa Saúde da Família. Rev Esc Enferm USP. 39(1):53-61.

12. Bachion MM, Araújo LAO, Almeida AAMC, Santana RF. Estudo preliminar de validação clínica do diagnóstico de enfermagem "mobilidade física prejudicada" em idosos institucionalizados. Rev Eletr Enferm [periódico na Internet]. 2001 [citado 2009 jul. 7]; 3(2). Disponível em: http://www.fen.ufg.br/revista/revista3_2/preliminar.html.

13. Maciel ACC, Guerra RO. Prevalência e fatores associados ao déficit de equilíbrio em idosos. Rev Bras Cienc Mov. 2005; 13(1):37-44.

14. Bachion MM, Araújo LAO, Santana RF. Validação de conteúdo do diagnóstico de enfermagem "Mobilidade Física Prejudicada" em idosos: uma contribuição. Acta Paul Enferm. 2002;15(4):66-72.

15. Morris SL, Dodd KJ, Morris ME. Outcomes of progressive resistance strength training following stroke: a systematic review. Clin Rehabil. 2004;18(1):27-39.

16. Guimarães RM, Pereira JS, Batista LA. Fortalecimento do músculo solear: impacto na cinemática da marcha de indivíduos hemiparéticos. Fisiot Mov. 2007;20(3):11-6.

Correspondence addressed to: Alice Gabrielle de Souza Costa
Rua Rosinha Sampaio, 930 - Quintino Cunha
CEP 60345-660 - Fortaleza, CE, Brazil