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INTERVENÇÃO DO ENFERMEIRO DE REABILITAÇÃO NA PESSOA COM NEGLIGÊNCIA HEMIESPACIAL – ESTUDO DE CASO

INTERVENTION OF THE REHABILITATION NURSE ON THE PERSON WITH NEGLECT – CASE STUDY

*INTERVENCIÓN DE LA ENFERMERA REHABILITADORA EN LA PERSONA COM NEGLIGENCIA
HEMIESPACIAL – ESTUDIO DE CASO*

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RESUMO

Introdução: A Negligência Hemiespacial pode ocorrer em 25% das pessoas com Acidente Vascular Cerebral (AVC). O esquecimento do Hemiespaço Afetado compromete a funcionalidade da pessoa. O Enfermeiro Especialista em Enfermagem de Reabilitação (EEER) atua na consciencialização do Hemiespaço Afetado. A finalidade deste estudo é compreender os ganhos sensíveis à prática do EEER na consciencialização do Hemiespaço Afetado na pessoa após AVC. Definiu-se os objetivos específicos: identificar os fatores que influenciam a consciencialização do Hemiespaço Afetado; identificar as atividades terapêuticas de Enfermagem de Reabilitação que facilitam a consciencialização do Hemiespaço Afetado da pessoa com Negligência Hemiespacial; identificar o impacto da consciencialização do Hemiespaço Afetado na funcionalidade da pessoa.

Metodologia: Trata-se de um estudo de caso único com abordagem qualitativa, seguindo as *guidelines* da CAsE REport. Implementou-se um programa de estimulação do Hemiespaço Afetado com ênfase na facilitação cruzada, a uma pessoa em internamento de agudos com Negligência Hemiespacial após AVC.

Resultados: A Negligência Hemiespacial passou de severa para moderada (avaliação com *Catherine Bergego Scale*), favorecendo a consciencialização do Hemiespaço Afetado. A pessoa apresentou evolução positiva de 20 pontos na funcionalidade (avaliação com a Medida de Independência Funcional) e, também, melhoria da força muscular.

Discussão: A intervenção do EEER permite a recuperação da Negligência Hemiespacial através de relação de parceria, atribuição de sentido às transições, implementação de facilitação cruzada e estratégias para manter a atenção e motivação da pessoa.

Conclusão: A consciencialização do Hemiespaço Afetado permitiu melhorar a funcionalidade da pessoa, com ganhos a nível sensitivo e motor.

Descritores: Acidente Vascular Cerebral, Enfermagem de Reabilitação, Negligência Hemiespacial.

ABSTRACT

Introduction: Hemispatial Neglect can occur in 25% of people with stroke. Forgetting the Affected Hemisphere compromises the person's functionality. The Specialist Nurse in Rehabilitation Nursing (SNRN) works to raise awareness of the Affected Hemisphere. The purpose of this study is to understand the significant gains from the practice of SNRN in raising awareness of Affected Hemisphere in people post-stroke. The specific aims were defined: to identify the factors that influence Affected Hemisphere awareness; to identify therapeutic activities of Rehabilitation Nursing activities that facilitate the awareness of Affected Hemisphere in people with neglect; to identify the impact of Affected Hemisphere awareness on the person's functionality.

Methodology: This is a single case study with a qualitative approach, following the CAsE REport guidelines. An Affected Hemisphere stimulation program with an emphasis on cross-facilitation was implemented for a person in an acute inpatient setting with neglect after a stroke.

Results: The Affected Hemispace decreased from severe to moderate (assessed with Catherine Bergego Scale), with improved awareness of Affected Hemispace. The person showed a positive evolution of 20 points in functionality (assessment with Functional Independence Measure) and showed improvement in muscle strength.

Discussion: The SNRN intervention has an impact on the recovery of the neglect because it plays a close role, through a partnership relationship with attribution of meaning of the transitions, implementation of cross-facilitation, and strategies to maintain the person's attention and motivation.

Conclusion: Awareness of the Affected Hemispace allowed to improve the person's functionality, insofar as there are gains at a sensory and motor level.

Descriptors: Stroke, Rehabilitation Nursing, Hemispatial Neglect.

RESUMEN

Introducción: La Negligencia Hemiespacial ocurre en 25% de las personas con Accidente Cerebrovascular (ACV). El olvido del Hemiespacio Afectado compromete la funcionalidad de la persona. La Enfermera Especialista en Enfermería de Rehabilitación (EEER) ayuda a las personas a tomar conciencia de su Hemiespacio Afectado. El propósito del estudio es comprender los beneficios de practicar EEER para crear conciencia sobre la Hemiespacio Afectado en personas después de ACV. Se definieron objetivos específicos: identificar los factores que influyen en la concienciación sobre Hemiespacio Afectado; identificar intervenciones de enfermería de rehabilitación que faciliten la concientización del Hemiespacio Afectado; identificar el impacto de la conciencia de Hemiespacio Afectado en la funcionalidad de la persona.

Metodología: Es un estudio de caso único con enfoque cualitativo, siguiendo las directrices del Case REport. Se implementó un programa de estimulación del Hemiespacio Afectado con énfasis en facilitación cruzada en una persona en un hospital de agudos con Negligencia Hemiespacial después de ACV.

Resultados: La Negligencia Hemiespacial pasó de grave a moderada (evaluada con *Catherine Bergego Scale*), con mejor conciencia del Hemiespacio Afectado. La persona mostró evolución positiva de 20 puntos en funcionalidad (evaluada con Medida de Independencia Funcional) y, también, mejoró la fuerza muscular.

Discusión: La intervención de EEER incide en la recuperación de la Negligencia Hemiespacial a través de asociación, atribución de significado a las transiciones, facilitación cruzada y estrategias para mantener la atención y motivación.

Conclusión: El conocimiento del Hemiespacio Afectado permitió mejorar la funcionalidad de la persona, con ganancias sensoriales y motores.

Palabras clave: Accidente Cerebrovascular, Enfermería de Rehabilitación, Negligencia Hemiespacial

INTRODUCTION

The main cause of death and disability in Portugal is stroke (CVA)⁽¹⁾. The most common stroke symptoms are decreased muscle strength contralateral to the injury and aphasia and/or dysarthria⁽²⁾. In 25% of cases, there may also be Hemispatial Neglect contralateral to the lesion, occurring in 70% of right hemisphere lesions⁽³⁾. Hemispatial Neglect can affect perception, attention, and movement contralateral to the injury^(4,5).

Hemispatial Neglect compromises the functionality of the person suffering from a stroke, that is, the performance of Activities of Daily Living (ADL)⁽³⁻⁶⁾. Furthermore, it also increases the length of hospital stay, and the greater its severity, the longer the rehabilitation time⁽⁷⁾. Recovery from Hemispatial Neglect can occur in the first 3 months after the stroke, but to achieve this, the rehabilitation program must be started early and intensively to enhance the person's recovery^(1,5).

The Nurse Specialist in Rehabilitation Nursing (SNRN) is a member of the multidisciplinary team whose function is to enable the person to carry out ADLs and maximize their potential, and to do so, the person must be aware of the Affected Hemisphere⁽⁷⁻⁹⁾. The SNRN intervention is individualized, using universal techniques and methods suited to the specificities of each Person and their participation in the preparation of their Care Plan^(8,9). Awareness of the Affected Hemisphere is the expected result of the Rehabilitation Nursing Diagnosis "Unilateral Forgetfulness"⁽¹⁰⁾.

There is no universal approach with standard interventions to improve Hemispatial Neglect⁽¹¹⁾. However, it was identified in a Systematic Literature Review, presented by Klinker et al. in 2015, groups of validated interventions that should be considered and adapted to each person's needs: contralesional stimuli of the neck, positive emotional stimuli (e.g. showing family photographs), family participation and intensive training, electrical stimulation of the limbs, mental image of the affected limbs, mirror therapy, music therapy, "eye patch" on the healthy side (intervention with inconsistent results), gentle eye pursuit training, virtual reality and computer training, and finally, visual scanning training (for example, transporting objects from the healthy hemisphere to the Affected Hemisphere)⁽¹²⁾.

Recent studies on this topic do not clearly demonstrate the specific gains of the SNRN intervention in raising awareness of the Affected Hemisphere in people with Hemisphere Neglect after a stroke, so it was decided to carry out a case study with the research question "What are the sensitive gains to the intervention of the SNRN in raising awareness of the Affected Hemisphere in people with Hemispatial Neglect after a stroke?"

The purpose of the case study is to understand the significant gains from the practice of SNRN in raising awareness of the Affected Hemisphere in people with Hemispatial Neglect after a stroke. The specific aims are:

- To identify the factors that influence and are influenced by awareness of the Affected Hemisphere;
- To identify therapeutic Rehabilitation Nursing activities that facilitate awareness of the Affected Hemisphere in people with Hemisphere Neglect after a Stroke;
- To identify the impact of awareness of the Affected Hemisphere on the person's functionality.

METHODOLOGY

According to Yin (cited by Andrade, et al. 2017), the case study is a type of empirical research that aims to explore, describe, and explain the event based on a research problem to clearly understand the phenomenon, using multiple sources of evidence⁽¹³⁾. To this purpose, a structured method is used to understand individual or group phenomena in a real context which, in the case of nursing research, allows the study of complex life phenomena. The structure of a case study consists of six steps: defining the problem; case definition; theoretical foundation; preparation of the study protocol; data collection; analysis and discussion of results⁽¹³⁾.

This case study is unique in nature with a description of a real case and an understanding of the data, with a convenience sample (opportunity). The preparation of the case study follows the Case REport guidelines to guarantee methodological quality⁽¹⁴⁾. The person could not make decisions, and informed consent was obtained from the Care Provider. We sought to comply with ethical principles, with an emphasis on autonomy, beneficence, non-maleficence, quality of life, veracity, and confidentiality⁽⁹⁾, obtaining a Favorable Opinion (nº106/2022) from the Health Ethics Committee of Hospital Professor Doutor Fernando Fonseca.

This case study reports on a person with Hemispatial Neglect after a stroke, in an acute inpatient setting. The selection of the person for this case study was intentional, by identifying health gains potentially associated with the SNRN intervention. A stimulation program for the Affected Hemisphere (in this case the left side) was instituted and lasted for 24 days, with 11 sessions carried out by the SNRN. The Affected Hemisphere stimulation program ended because the person was discharged from the hospital to the Medium-Term Continuing Care and Rehabilitation Unit. The person also underwent physiotherapy and speech therapy sessions at the same time.

Initially, sensitive data for the practice of Rehabilitation Nursing were identified through an interview with the person and the care provider, consultation of the clinical file and analytical and imaging exams, and the performance of a physical examination with an emphasis on the assessment of neurological function. Assessment instruments validated by the Order of Nurses were used to assess the person⁽¹⁵⁾, namely the Glasgow Coma Scale (GCS)⁽¹⁶⁾ to assess the level of consciousness, Catherine Bergego Scale (CBS)^(4,17,18) to assess unilateral forgetfulness, the Modified Medical Research Council Muscle Scale (mMRC)⁽¹⁹⁾ to assess muscle strength and the Functional Independence Measure (FIM)^(15,20) to assess the person's performance in the motor and cognitive domains/social in aspects of self-care. The Documentary Standard of Nursing Care for the Rehabilitation Nursing Specialty (DSNCRNS)⁽¹⁰⁾ and the ICNP Browser of the International Council of Nursing were consulted to identify Rehabilitation Nursing Diagnoses. Rehabilitation Nursing Interventions were identified with the help of DSNCRNS⁽¹⁰⁾ and the literature review presented by Klinke et al.⁽¹²⁾, being constantly adapted to the person's specificity. The care plan developed was based on Dorothea Orem's Self-Care Deficit Theory and Afaf Meleis's Theory of Transitions, to guide the provision of care within the scope of Rehabilitation Nursing^(21,22).

Exclusion criteria were defined to start the sessions: person's lack of interest, nausea and/or vomiting, dyspnea, temperature $\geq 38^{\circ}\text{C}$, heart rate $\leq 50\text{bpm}$ or $\geq 120\text{bpm}$, systolic blood pressure $\leq 90\text{mmHg}$ or $\geq 180\text{mmHg}$ and diastolic blood pressure $\leq 50\text{mmHg}$ or $\geq 90\text{mmHg}$.

Criteria for interrupting the sessions were also defined: the person's lack of interest, nausea and/or vomiting, and dyspnea.

The sessions lasted 40 to 50 minutes, increasing the complexity of the exercises throughout the Affected Hemisphere stimulation program. The definition of the number of sets and repetitions for each exercise was initially planned but it was adjusted to the person's wishes in each session. The activities that the person was able to carry out in all sessions were documented.

CASE PRESENTATION

Anamnesis

This is a 77-year-old person, female, Caucasian, Portuguese nationality, married, and lives with her husband and one daughter. She was a market seller, currently retired, and has a 1st cycle of education. Her height is 160cm and her weight is 70kg, with a Body Mass Index of 27.3kg/m². The clinical history is ischemic heart disease, hypertension, and dyslipidemia.

The Person presented expression aphasia, paralysis in the left upper limb, paresis in the left lower limb, and Hemispatial Neglect on 03/22/2022. Computed tomography and cranioencephalic angiotomography were performed, identifying occlusion of the right internal carotid artery and the right middle cerebral artery. She underwent intravenous thrombectomy but occlusion of the distal segments of the right middle cerebral artery persisted. Previously, the Person was independent in carrying out ADLs.

Assessment by SNRN

In the first session, the initial and global assessment of the situation and the person was carried out, focused on the interview and physical examination. An assessment was made of mental state, communication, cranial nerve function, hemispatial neglect, muscle tone, muscle strength, body balance, and functionality. It was not possible to assess joint range of motion because the person had impaired muscle strength, or motor coordination because the person did not understand the tests. Subsequently, the Nursing Diagnoses and specific SNRN Interventions were identified, to respond to the needs for rehabilitation care in this case specifically.

Mental State Assessment

The person had difficulty providing an adequate report that would allow an assessment of the mental state, so the assessment of the mental state resulted from observation. It was found that the person appeared drowsy, arousable to touch and simple verbal stimulation, with self-psycho orientation, but disorientation about time and space. She showed difficulty in following simple orders, slowed motor response, oral communication through groans, and attention difficult to capture and dispersed after 5 seconds. She had an inexpressive complexion, forgot her limitations, was unable to manage problems, and had no initiative for social interaction. Sometimes, she made an escape movement when touched by others.

The evaluation score in the GCS⁽¹⁶⁾ is 10 out of 15 (eye-opening after ordering in a normal tone of voice – score 3, verbal response by moaning – score 2, and motor response with pain location – score 5), which allows the assessment of that the person had an altered state of consciousness.

Communication Assessment

For this assessment, the Aphasia Rapid Test (ART) was used, which allows the assessment of changes in communication in terms of fluency, comprehension, naming, and repetition⁽²³⁾. Non-fluent speech and inability to repeat words/sentences were identified. The person presented anomia pauses and paraphasia. She understood the third party's message but was slow to respond. She had no ability to read.

Assessment of Cranial Pair Functions

The person had intact eye movements, left homonymous hemianopsia, and left central facial paresis. Identification of compromised swallowing for foods with a liquid consistency. It was not possible to evaluate smell, chewing, facial sensitivity, taste, and movements of the sternocleidomastoid and trapezius muscles, tongue, uvula, and soft palate due to language changes identified and because it is difficult to capture and maintain the person's attention.

Assessment of Hemispatial Neglect

The person presented Hemispatial Neglect on the left with anosognosia, assuming compromised sensitivity in the affected hemibody.

For the formal assessment of Hemispatial Neglect, the CBS was used, which allows classifying Hemispatial Neglect as mild (final score 1-10), moderate (final score 11-20), or severe (final score 21-30) by assigning a score to specific activities carried out by the person in the Affected Hemisphere^(4,17,18). The final score varies between 0 and 30^(17,18).

The CBS was applied in the 1st, 4th, 7th, and 11th sessions to evaluate the person's progress throughout the sessions. In the first session, the final CBS score was 24, which, according to its interpretation, corresponds to severe Hemispatial Neglect.

Muscle Tone Assessment

The person exhibited hypotonia in the left upper limb, and left lower limb. It was not possible to assess muscle tone in the right upper limb and right lower limb because the person was executing an escape movement.

Muscle Strength Assessment

Muscle strength was assessed using the mMRC, as it is a complete assessment instrument that assesses muscle strength in rolling movements, against gravity, and against resistance, as well as this version offers more detailed information than its original version⁽¹⁹⁾. The mMRC

was applied in the 1st, 4th, 7th, and 11th sessions to assess the person's progress throughout the sessions.

The person demonstrated no muscle contraction or movement (0/5) in the segments of the left upper limb and the toes of the left foot. The left ankle joint showed muscle contraction, but no movement (1/5). The left hip joint and left knee showed muscle contraction and movement, but not against gravity (2/5). Muscle strength in the left lower limb and right lower limb was not assessed because the person was executing an escape movement.

Body Balance Assessment

The person presented changes in body posture in the sitting position: depression of the left shoulder, cervical tilt to the left, and cervical rotation to the right, with the trunk in lateral flexion to the left. In the standing position, he also exhibited forward flexion of the trunk. These postural changes led to unstable body balance in sitting (static and dynamic) and standing (static and dynamic) positions.

It was decided not to use a validated assessment instrument to assess body balance, since the person did not understand the instructions, had difficulty maintaining attention, and also did not assume an upright position. Therefore, the assessment was carried out by direct observation.

Functionality Assessment

MIF was used to measure functionality, that is, the person's ability to perform ADLs without help from others, as it allows the assessment of basic ADLs and instrumental ADLs. The higher the final score, the greater the independence^(15,20).

The MIF was applied in the 1st and last session (11th), since changes in the person's functionality occur slowly. In the first session, the person presented ideomotor apraxia and an inability to control urinary and intestinal sphincters. Through the application of the MIF, 12 points were obtained in the motor subtotal and 16 points in the cognitive subtotal, with a final score of 28 points, which corresponds to modified dependence with assistance in up to 50% of the tasks. The person was impaired in all ADLs, and it was not possible to assess mobility on stairs because the person was unable to assume a standing position.

Nursing Diagnosis

Within the scope of the Affected Hemisphere stimulation program, nursing diagnoses were identified, using the International Classification for Nursing Practice (ICNP):

- Unilateral forgetfulness [Affected Hemisphere: left];
- Compromised communication;
- Impaired muscle movement
- Potential to improve the ability to perform muscle and joint exercise techniques;
- Potential to improve the ability to perform body balance technique.

Awareness of the Affected Hemispace will be the expected result of Rehabilitation Nursing interventions. Thus, specific Rehabilitation Nursing interventions were prescribed in the 1st session, sensitive to each of the diagnoses initially identified, which resulted in the Care Plan explained in Table 1.

TABLE 1 – REHABILITATION NURSING DIAGNOSES AND INTERVENTIONS

Nursing diagnoses	Nursing interventions
<p>Unilateral forgetfulness [Affected Hemispace: left]</p>	<ul style="list-style-type: none"> • To stimulate sensory perception [arrangement of the support table on the left side; approach from the affected side and inform the care provider, involving him/her; encourage looking at the Affected Hemispace, the affected upper limb and the affected lower limb; place the person in front of the mirror to perform the ADL; sensory stimulation of affected limbs with different textures (skin, cotton, cloth sponge, rough surface and smooth wood) and with objects of different shapes (pen, cup, spoon, comb, toothbrush, shampoo, shower, clothing); massage technique on affected limbs with scented cream; cross facilitation (taking the affected hand to the contralateral face, touching the segments of the affected limbs with the healthy hand, playing a tree with rings to pass the rings from the branch on the healthy side to the branch on the affected side and gradually arranging the objects on the healthy side to the affected side during ADL)]. • To encourage the execution of muscle and joint exercises [affected limbs].
<p>Compromised communication</p>	<ul style="list-style-type: none"> • To assess the ability to communicate [fluency, comprehension, naming, repetition, and articulation of words]. • To manage the environment [reduction of external stimuli (visual and sound), direct line of communication, and use of simple speech]. • To encourage people to communicate [through simple expressions, repetition, gestures, and varied intonation, as well as validation of message reception and positive reinforcement].
<p>Impaired muscle movement</p>	<ul style="list-style-type: none"> • To monitor muscle strength using the scale [mMRC]. • To perform passive muscle and joint exercise techniques [1 series of 10 repetitions of each movement of the affected limbs, subject to tolerance, in each session]. • To monitor muscle movement [of the affected hip, knee, and ankle joint].
<p>Potential to improve ability to perform muscle and joint exercise techniques</p>	<ul style="list-style-type: none"> • To assess the ability to perform muscle and joint exercise techniques. • To instruct on muscle and joint exercise techniques [active isotonic exercises of the segments and movements of both lower limbs, as well as flexion and rotation of the cervical spine towards the affected side and the healthy side; self-mobilization of the affected upper limb; rolling to the healthy side with trunk stretching; rolling to the affected side with a sensitive load on the trunk; pelvic oscillation; bridge]. • To train muscle and joint exercise techniques [1 set of 10 repetitions in each session, except rolling (1 repetition in each session, with 1 set of 10 repetitions of trunk stretching and sensory load on the trunk)].
<p>Potential to improve ability to perform body balance technique</p>	<ul style="list-style-type: none"> • To assess the ability to perform body balance technique. • To instruct on body balance techniques [postural correction]. • To train body balance technique [once per session in front of the mirror and whenever there is a defect in body posture].

RESULTS

Hemispatial neglect, communication, muscle strength of the left upper and lower limbs, as well as body balance, were assessed throughout the sessions. The aim, through periodic assessments, was to identify and record the Person's progress throughout the Affected Hemisphere stimulation program to understand the gains made by the practice of SNRN in the person with Hemisphere Neglect after a Stroke.

From the second session onwards, the person was awake, with self-psychic orientation and in relation to space. He exhibited euthymic mood and imperceptible speech. He demonstrated a desire to carry out the activities, but attention was difficult to capture and maintain. The GCS score improved, reaching a score of 13 out of 15 by the penultimate session: spontaneous eye opening – score 4, verbal response using intelligible isolated words – score 3, and motor response following simple orders – score 6.

From the 4th session onwards he was able to remember recent events, attention was easier to capture and difficult to maintain. The Person progressed from severe Hemispatial Neglect to moderate Hemispatial Neglect from the 7th session onwards. Table 2 presents the evolution in 4 sessions of awareness of the Affected Hemisphere according to CBS.

TABLE 2 – EVOLUTION OF SPATIAL AWARENESS THROUGHOUT THE AFFECTED HEMISPHERE STIMULATION PROGRAM, ACCORDING TO CBS

Item	Session Scoring			
	Session 1	Session 4	Session 7	Session 11
She forgets to comb or wash the left part of her face	3	3	2	2
She has difficulty adjusting the left sleeve	3	3	3	3
She forgets to eat food from the left side of the plate	3	3	2	1
She forgets to clean the left side of your mouth	3	2	2	1
She has difficulty looking to the left	3	2	2	1
She forgets the left part of the body	3	3	2	2
She has difficulty paying attention to noise or people approaching her from the left	3	2	2	1
She collides with people or objects on the left side while walking or driving a wheelchair	*	*	*	*
She has difficulty finding the way to the left	*	*	*	*
She has difficulty finding your belongings when they are on the left side	3	3	2	2
Total	24	21	19	13

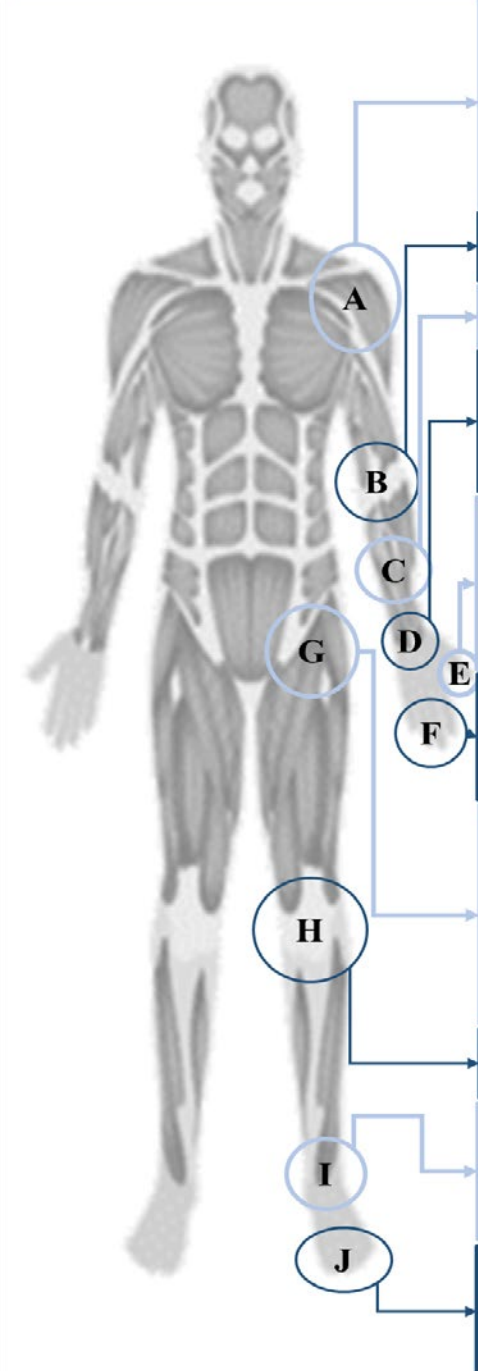
SUBTITLE: 0 – NO HEMISPATIAL NEGLECT; 1 – MILD HEMISPATIAL NEGLECT; 2 – MODERATE HEMISPATIAL NEGLECT; 3 – SEVERE HEMISPATIAL NEGLECT; * NOT EVALUATED, PERSON UNABLE TO CARRY OUT ACTIVITIES

The person became more communicative verbally and with gestures with perceptible meaning. In the last session, the person was able to repeat simple phrases. She still had non-fluent speech and anomia, but she showed some ability to manage problems, had initiative for interaction, and requested assistance to carry out some activities. Presenting emission of words and phrases, but with globally incoherent speech.

It was not possible to carry out all the activities planned for each session because the person remained inattentive, reported a desire to complete the activities before the predefined duration, and, in session 4, reported nausea after getting up.

The person did not perform active isotonic exercises for the cervical spine and lower limbs in all sessions because she did not understand the activity and could not resist it. She tolerated passive exercises on the left upper and lower limb, becoming active-assisted from the 7th session, in flexion and extension of the left hip joint, in flexion and extension of the left knee, and in dorsiflexion of the left ankle joint. Figure 1 shows the assessment of muscle strength according to mMRC of the left upper and lower limbs throughout the four sessions.

FIGURE 1 – ASSESSMENT OF MUSCLE STRENGTH IN SEGMENTS AND MOVEMENTS OF THE LEFT UPPER AND LOWER LIMBS THROUGHOUT THE AFFECTED HEMISPHERE STIMULATION PROGRAM



Segment	Movement	Session Classification			
		Session 1	Session 4	Session 7	Session 11
A	Flexion	0/5	1/5	1/5	1/5
	Extension				
	Abduction				
	Adduction				
	Internal rotation				
	External rotation				
B	Flexion	0/5	1/5	1/5	1/5
	Extension				
	Supination				
	Pronation				
	Flexion				
	Extension				
C	Radial deviation	0/5	1/5	1/5	1/5
	Cubital deviation				
	Opposed				
	Flexion				
	Extension				
	Abduction				
D	Adduction	0/5	1/5	1/5	1/5
	Flexion				
	Extension				
E	Flexion	0/5	1/5	1/5	1/5
	Extension				
	Abduction				
	Adduction				
	Adduction				
F	Flexion	2/5	2/5	3/5	3/5
	Extension				
	Abduction				
	Adduction				
	Internal rotation				
	External rotation				
G	Flexion	2/5	2/5	3/5	3/5
	Extension				
	Abduction				
	Adduction				
	Internal rotation				
	External rotation				
H	Flexion	2/5	2/5	3/5	3/5
	Extension				
	Abduction				
	Adduction				
	Adduction				
I	Flexion	1/5	2/5	2/5	2/5
	Extension				
	Abduction				
	Adduction				
J	Flexion	0/5	1/5	1/5	1/5
	Extension				
	Abduction				
	Adduction				
	Adduction				

SUBTITLE: A – LEFT SHOULDER; B – LEFT ELBOW; C – LEFT FOREARM; D – LEFT WRIST; E – LEFT THUMB; F – FINGERS LEFT HAND; G – LEFT HIP JOINT; H – LEFT KNEE; I – LEFT ANKLE JOINT; J – LEFT TOES. mMRC RATING: 5/5 – NORMAL STRENGTH; 4+/5 – PERFORMS MOVEMENT AGAINST GRAVITY AND MODERATE TO MAXIMUM RESISTANCE; 4/5 – PERFORMS MOVEMENT AGAINST GRAVITY AND MODERATE RESISTANCE; 4-/5 – PERFORMS MOVEMENT AGAINST GRAVITY AND MINIMAL RESISTANCE; 3+/5 – PERFORMS MOVEMENT AGAINST GRAVITY AND RESISTANCE, BUT FALLS ABRUPTLY; 3/5 – THE MUSCLE MOVES THE JOINT COMPLETELY AGAINST GRAVITY; 3-/5 – MOVES, BUT NOT COMPLETELY AGAINST GRAVITY; 2/5 – MOVES, BUT NOT AGAINST GRAVITY; 1/5 – THE MUSCLE CONTRACTS, BUT WITHOUT MOVEMENT; 0/5 – THE MUSCLE DOES NOT CONTRACT OR GENERATE MOVEMENT

Emphasis was placed on cross-facilitation during the execution of ADL, to raise awareness of the Affected Hemisphere in the person's reality. For example, during self-care: eating, the soup bowl was placed in your field of vision and gradually moved to the Affected Hemisphere. When the person's attention dispersed, the activity was restarted. In the last session, the person maintained attention, gaze, and movement in the Affected Hemisphere for around 30 seconds.

Between the 7th and 8th sessions, the Person demonstrated the ability to perform most therapeutic activities with SNRN assistance, with concomitant improvement in awareness of the Affected Hemisphere. From the 10th session onwards, the person was able to perform all activities but only performed postural correction in the sitting position without SNRN assistance. Table 3 shows the evolution of the Person's ability to carry out the activities in each session.

TABELA 3 – EVOLUTION OF THE PERSON'S ABILITY TO CARRY OUT THE ACTIVITIES IN EACH SESSION

Activity	Session										
	1	2	3	4	5	6	7	8	9	10	11
Tree game with rings	×	×	✓	×	×	✓	✓	✓	✓	✓	✓
Look into the Affected Hemisphere	×	×	✓	✓	✓	✓	✓	✓	✓	✓	✓
Touch the upper left limb	×	×	×	×	✓	✓	✓	✓	✓	✓	✓
Touch the left lower limb	×	×	×	×	×	×	×	✓	✓	✓	✓
Automobilization of the left upper limb	×	×	×	×	×	×	×	✓	✓	✓	✓
Bearing to the side are	×	×	×	×	×	×	✓	✓	✓	✓	✓
Rolling to the affected side	×	×	×	×	×	×	✓	✓	✓	✓	✓
Pelvic sway	×	×	✓	✓	*	*	*	*	*	*	*
Bridge	*	*	×	✓	✓	✓	✓	✓	✓	✓	✓
Active isotonic exercises (cervical spine, lower limbs)	×	×	×	✓	×	×	✓	✓	×	✓	✓
Postural correction	×	×	×	✓	✓	✓	✓	✓	✓	✓	✓
Movement coordination exercises	×	×	×	✓	✓	✓	✓	✓	✓	✓	✓
Load alternation in MS	×	×	×	×	×	×	×	✓	✓	✓	✓

SUBTITLE: ✓ - SHE CAN DO IT; ✗ - SHE CANNOT DO IT; * - IT WAS NOT TESTED

In the last session, a functionality assessment was carried out to analyze the gains sensitive to the SNRN interventions. There was a positive evolution of 20 points (according to MIF), with equivalent distribution in the motor subtotal and cognitive subtotal. Despite the positive evolution, the classifications of the first and last evaluation fall into the modified dependence category, with assistance of up to 50% of the task. Table 4 presents the evaluation of functionality according to MIF in the first and last sessions.

TABLE 4 – EVALUATION OF FUNCTIONALITY USING MIF

Items	Classification	
	Session 1	Session 11
Self-care		
Food	1	4
Get ready	1	3
Bath	1	3
Dress upper half	1	2
Dress lower half	1	2
Using the toilet	1	1
Sphincter control		
Bladder	1	1
Intestinal	1	1
Mobility (transfers)		
Bed, chair, wheelchair	1	3
Restroom	1	1
Bathtub, shower	1	1
Locomotion		
Walking/wheelchair	1	1
Steps	Not evaluated	Not evaluated
Communication		
Listening comprehension	3	4
Visual understanding	3	4
Vocal expression	2	4
Non-vocal expression	2	4
Social cognition		
Social interaction	4	4
Problem-solving	1	2
Memory	1	3
TOTAL	28 points	48 points

SUBTITLE: 1 – TOTAL ASSISTANCE; 2 – MAXIMUM ASSISTANCE; 3 – MODERATE ASSISTANCE; 4 – MINIMUM ASSISTANCE; 5 – SUPERVISION; 6 – INDEPENDENCE MODIFIES; 7 – TOTAL INDEPENDENCE

By the above, it was possible to implement and continuously evaluate the results of the Rehabilitation Nursing Interventions initially defined in each Rehabilitation Nursing Diagnosis. The rehabilitation plan was transferred to the Medium-Term Continuing Care and Rehabilitation Unit because it was not considered that the Diagnoses had been resolved.

DISCUSSION

The rehabilitation of people with Hemispatial Neglect was especially difficult due to the deficit in perception, attention, and mobility, proven in recent literature on the subject⁽⁵⁾. To overcome this difficulty, the rehabilitation program was established early and intensively, focusing on perception, attention, and mobility.

The following stimulation strategies for the Affected Hemisphere were adopted: approach, interaction, bedroom door, placing a side table and objects on the person's left side, cross facilitation, and confrontation in a mirror. These strategies are in line with what was proposed by Klinke et al.⁽¹²⁾ and were subsequently proven in two studies^(2,5).

It was decided to carry out cross-facilitation with training focused on ADL to improve the perception of the Affected Hemisphere with activities useful to the person and, started in the person's healthy hemisphere, gradually surpassing the midline with the person looking at the Affected Hemisphere. When the person revealed awareness of the Affected Hemisphere, activities began on that side. There are two recent studies with identical interventions and results^(4,24).

The tree game with rings was also used to facilitate the reduction of Hemispatial Neglect, through cognitive, motor, and visual stimulation beyond the midline. The use of virtual reality, video games, and traditional games is useful for cognitive, proprioceptive, and motor stimulation⁽¹²⁾.

From the second session onwards, the person was encouraged to perform self-mobilization of the affected upper limb, rolling, pelvic oscillations, and bridge, to integrate the body scheme as a whole. The literature is unanimous regarding the usefulness of these therapeutic activities for training muscle strength, training body balance, postural correction, and integration of the affected side into the body scheme⁽²⁴⁾. In addition, strategies to stimulate tactile and proprioceptive sensitivity were used^(4,6), with effectiveness in identifying the affected upper and lower limbs, in the 5th and 8th sessions respectively, but with no response from the Person to tactile sensitivity.

In this case, there was an evolution of Hemispatial Neglect from "severe" to "moderate", with a difference of 11 points according to the CBS assessment. This data reveals faster health gains when compared to an Icelandic study, in which there was a difference of 6 points between assessments over a period of 6 weeks⁽²⁵⁾.

The person's inability to focus on activities constituted an obstacle. We tried to overcome it through cognitive stimulation, counting repetitions of each exercise, direct instructions, facilitation of objects, spatial-motor tips, reduction of external stimuli, assertive communication, and positive reinforcement to direct the person's attention. Several reference literature on Rehabilitation Nursing validates the use of these strategies, as well as their results for recovery from Hemispatial Neglect^(4,5,9,24).

The recommended time for rehabilitation sessions after a stroke is 30 minutes per day⁽²⁾, which was exceeded in all sessions. This decision was made because the person presented Hemispatial Neglect with a need for stimulation of attention and motivation. This therapeutic attitude is validated in other studies^(6,9).

During this period of intervention, a reduced recovery of muscle strength in the affected limbs was identified, the same finding being found in other studies^(5,6). However, there is evidence of greater recovery of muscle strength in some segments and movements of the affected lower limb, which coincides with the results of another study recently carried out in Portugal⁽²⁴⁾.

Muscle strengthening of healthy limbs was essential to improve the ability to perform ADLs with these limbs, thus allowing motor function on the affected side to be improved when carrying out therapeutic activities with the upper limbs. The person was unable to perform active isotonic muscle and joint exercise in all sessions because they did not understand the activity, but tolerated it in the active-assisted modality, constituting an added value for maximizing functionality. These results are also evident in the study by Coutinho⁽²⁴⁾.

Body balance was another focus of the intervention. Body balance training was carried out, with a preference for carrying out activities in front of the mirror. Manual resistance was applied to generate postural compensation movement, postural correction was performed and, when the person became aware of the Affected Hemisphere, postural correction was taught and stimulated, achieving the adoption of a correct posture. The therapeutic activities instituted for balance training were insufficient when compared to other studies^(4,19).

Brainstorming was carried out from session to session to activate recent memory, as well as encouragement to speak slowly, with short sentences, and to express oneself to improve social interaction and maximize communication. The stimulation of communication allowed direct knowledge of the Person's thoughts, emotions, and will, with constant adaptation of the Care Plan to their real needs, an attitude recommended by the Order of Nurses in Portugal⁽⁸⁾.

The person went through several transitions, namely health-illness and state of dependence, which made it easier to attribute meaning to these transitions. The SNRN intervention had a greater impact on teaching, ensuring environmental conditions, and providing physical and psychological support for self-care. There was an evolution from a functional state of total dependence to carrying out some small tasks with guidance and/or facilitation. The method of assistance has progressively changed from substitution to guidance. These types of assistance were verified in two recent studies^(21,22).

Awareness of the Affected Hemisphere allowed the person to be able to carry out therapeutic activities with gains in terms of muscular strength and body balance, as well as enabling and maximizing the person's potential to carry out ADLs. Different studies report that the person becomes more independent in carrying out ADLs when there is an early and intensive intervention of the SNRN in terms of cognitive and sensory stimulation, as well as motor training^(2,4,24), which can be verified through the evolution of the person's state of dependence in the assessments, carried out with the MIF.

Understanding the role of the SNRN facilitated the implementation of the Affected Hemisphere stimulation program. The planning of the sessions was carried out in conjunction with the Physiotherapist to avoid the Person's fatigue, redundancy, and intervention simultaneously.

The intervention of a Speech Therapist was also crucial, as throughout the sessions the person improved the effectiveness of communication, facilitating the execution of the stimulation program for the Affected Hemisphere.

The results obtained are related to the interdisciplinary approach and specific communication of the SNRN, with the development of a partnership relationship with the person⁽⁸⁾. At all times, we tried to respect the person's wishes and identify their needs by establishing limits for the SNRN's intervention, with constant gratitude from the person for the assistance, teaching, and stimulation provided.

Some difficulties were identified in carrying out this case study. The volatility of the person's will to carry out the proposed activities and their cognitive capacity to understand these activities made it impossible to carry out a complete neurological assessment, the use of a quality-of-life questionnaire, and the institution of more complex therapeutic activities. It also prevented the complete assessment of Hemispatial Neglect through the CBS and the carrying out of self-assessment, which had already been verified in another study that the CBS is not the best instrument for assessing Hemispatial Neglect in the acute phase⁽¹⁸⁾. The following were also considered: the impossibility of carrying out the sessions according to the defined frequency due to various external constraints (for example, appointments for treatments and exams outside the service); and the duration and intervention in each of the sessions are different, depending on the volition and self-determination of the person manifested at the time of its execution.

CONCLUSION

This case study highlights the importance of Rehabilitation Nursing in raising awareness of the Affected Hemisphere in people with Hemisphere Neglect after a stroke. Particularly noteworthy is the decrease in Hemi-Spatial Neglect after the end of the Affected Hemisphere stimulation program. It appears that the Affected Hemisphere stimulation program was appropriate for the person, with the implementation of a systematic and dynamic Care Plan.

Some factors that influence awareness of the Affected Hemisphere were identified, highlighting, negatively, the severity of the stroke, the deficit of attention and perception, the decrease in muscular strength, and the instability in body balance. As positive factors, we refer to cognitive stimulation, cross-facilitation, and respect for the person's desire and tolerance. On the other hand, awareness of the Affected Hemisphere allowed improving muscle strength in the affected limbs, improving body balance, enabling the person to carry out therapeutic activities, and maximizing the person's participation in ADL.

The therapeutic activities used in people with Hemispatial Neglect were carried out with a greater focus on approaching the affected side. Cross-facilitation is an excellent therapeutic activity that can be fused with other therapeutic activities and ADL.

Awareness of the Affected Hemisphere allowed for improving functionality, as there are gains at a sensory and motor level. Cognitive stimulation facilitated the proprioception of the affected hemibody and improved the cognitive disposition to carry out therapeutic activities, allowing an overall improvement in motor function and the performance of ADL.

This case study represents an important approach to research in clinical practice, but has some limitations, namely:

- The involvement of just one person, which limits the ability to detect patterns or effects that may be evident in a larger sample, makes it impossible to generalize the results to a wider population and makes it difficult to replicate these results;
- The limited time period, which may not be sufficient to fully capture the evolution of Hemispatial Neglect;
- The existence of few research studies in the area of Rehabilitation Nursing that corroborate the importance of exercises to raise awareness of the Affected Hemispace, prescribed by SNRN, in recovering proprioception of the affected hemibody.

The evolution observed in this case study is a clear indicator of the work carried out by SNRN and demonstrates its effectiveness in prescribing exercises that improve awareness of the Affected Hemispace. It is suggested, in subsequent studies, to carry out more regular sessions (daily, if possible) and continued over time (on an outpatient basis), to contribute to an effective gain and proprioception of the affected hemibody.

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