Nursing care for patients with neurological disorders: an integrative review

Cuidados de enfermagem aos pacientes com afecções neurológicas: uma revisão integrativa

Cuidados de enfermería a pacientes con trastornos neurológicos: una revisión integradora

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RESUMO

Objetivo: mapear as evidências existentes sobre os cuidados de enfermagem aos pacientes com doenças neurológicas. **Método:** Trata-se de uma revisão integrativa, realizada em outubro de 2022, nas bases de dados BVS, MEDLINE, CAPES e Cochrane Library, foram incluídos estudos completos, disponíveis na íntegra, que abordassem sobre a temática, publicados nos idiomas inglês, português e espanhol, no período de 2012 a 2021. **Resultados:** a amostra foi composta por 10 artigos dos quais emergiram duas categorias: cuidados assistenciais apresentando o posicionamento e assistência ventilatória como as intervenções mais frequentes e os cuidados em reabilitação abrangendo em maior frequência as atividades motoras e funcionais. **Conclusão:** os resultados são relevantes para o planejamento do cuidado e auxiliam na prevenção de complicações e no processo de recuperação, devendo ser aplicados de forma individual, levando em consideração as sequelas ocasionadas pelas doenças e as necessidades apresentadas pelos pacientes.

DESCRITORES: Assistência ao paciente; Cuidados de enfermagem; Doenças neurológicas.

ABSTRACT

Objetive: map the existing evidence on the nursing care of patients with neurological diseases. **Method:** this is an integrative review, conducted in October 2022, in the BVS, MEDLINE, CAPES and Cochrane Library databases. Complete studies were included, available in full, addressing the topic, published in English, Portuguese and Spanish, from 2012 to 2021. **Results:** the sample consisted of 10 articles, from which two categories emerged: care assistance presenting positioning and ventilatory assistance as the most frequent interventions and rehabilitation care covering more frequently motor and functional activities. **Conclusion:** the results are relevant for care planning and help in the prevention of complications and in the recovery process, and should be applied on an individual basis, taking into consideration the sequelae caused by the diseases and the needs presented by the patients.

DESCRIPTORS: Patient care; Nursing care; Neurological diseases.

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RESUMEN

Objetivo: mapear la evidencia existente sobre los cuidados de enfermería a pacientes con enfermedades neurológicas. **Método:** se trata de una revisión integradora, realizada en octubre de 2022, en las bases de datos BVS, MEDLINE, CAPES y Cochrane Library, se incluyeron estudios completos, disponibles en su totalidad, que abordaran el tema, publicados en inglés, portugués y español, entre 2012 y 2021. **Resultados:** la muestra constaba de 10 artículos de los que surgieron dos categorías: la asistencia a los cuidados, que presentaba el posicionamiento y la asistencia ventilatoria como las intervenciones más frecuentes, y los cuidados de rehabilitación, que abarcaban con mayor frecuencia las actividades motoras y funcionales. **Conclusión:** los resultados son relevantes para la planificación de los cuidados y ayudan en la prevención de complicaciones y en el proceso de recuperación, y deben aplicarse individualmente, teniendo en cuenta las secuelas causadas por las enfermedades y las necesidades que presentan los pacientes.

DESCRIPTORES: Cuidados del paciente; Cuidados de enfermería; Enfermedades neurológicas.

INTRODUÇÃO

The nervous system is responsible for the identification, analysis, and conduction of information, the execution of which is grouped into sensory, integrative, and motor tasks. This system can be affected by a variety of diseases, which in general terms are among the most important causes of dysfunction and death. [1]

Neurological diseases can be of congenital or acquired origin, affecting the central and peripheral nervous systems through disorders in the brain, spinal cord, peripheral nerves, and neuromuscular junctions. These disorders occur abruptly, progressively, or intermittently, and their symptoms depend on the pathophysiological process.[2-3]

In some situations these diseases can cause symptoms such as general malaise, changes in the level of consciousness, focal deficits, or deep coma. Depending on the condition, treatments vary from clinical to surgical approaches. The sequelae resulting from these diseases negatively impact the functional independence of patients, causing coordination, cognition, motor, emotional, and psychological alterations. [4-5]

According to 2019 epidemiological data from the Global Burden of Diseases (GBD) group, the most prevalent neurological diseases are cerebrovascular diseases such as Stroke (CVA) being the second cause of death in the world, accounting for 12.2 million cases and 6.55 million deaths. Data from 2019 regarding prevalence in Brazil also highlights the disease as the second cause of death and disability. [6-7]

Epidemiological data from 2016 also evidenced in Brazil a higher prevalence of neurodegenerative diseases, with Alzheimer's disease having the highest occurrence, corresponding to 70% of cases. Another study conducted in 2018 showed that 13.7% of hospital admissions were related to the disease. Regarding worldwide estimates the Alzheimer's Disease International of 2020 evidenced that more than 55 million people are affected by this condition. [8-10]

Another prevalent condition is neurological diseases of the traumatic type, according to the 2017 estimates of the GBD non-fatal trauma generated short and long-term disabilities in 226.2 million people, while fatal injuries accounted for 8% of mortality in the world. According to data between 2008 and 2019 in Brazil hospitalizations for traumatic brain injury had an incidence of 65.54 per 100,000 inhabitants.[11-12]

The nursing action against these disorders aims to minimize the disease evolution process and rehabilitate the functions according to the affected segments, and it should be holistic, integral, and individualized, aiming to improve the quality of life of these individuals.[13]

Nurses are present throughout the patient's treatment and recovery process, but the care for this population still represents a challenge due to the complexity of care and the lack of knowledge and specific skills that help in the management of the cases. [4, 14]

Considering that these diseases are disabling and affect the quality of life of individuals and that nursing care is essential for a good prognosis, the guiding question is: what are the main nursing care applied to adult patients with neurological diseases that enable the reduction of complications and recovery?

Based on this, this study aimed to map the existing evidence on nursing care to patients with neurological diseases, in order to assist in professional knowledge and for a specialized approach to these conditions.

METHOD

This is an integrative review study with the purpose of identifying, analyzing and synthesizing relevant studies related to nursing care for neurological patients. The following steps were applied: 1) identification of the topic and selection of the research question; 2) sampling or literature search; 3) data extraction or categorization; 4) critical analysis of the included studies; 5) data interpretation; and 6) presentation of the integrative review.[15]

The research question was developed from the PICO strategy which considered Population - adult patients with neurological changes; Intervention - nursing care; Comparison: not applied to the research and Outcome - reduction of complications and recovery.[15]

Searches were performed in the following databases and electronic library: BDENF (Nursing Database) and LILACS (Latin American and Caribbean Literature on Health Sciences) via the Virtual Health Library (VHL), MEDLINE (Medical Literature Analysis and Retrieval System Online) via PubMed, Portal de Periódicos da CAPES and the Cochrane Library of John Wiley & Son.

The descriptors used were consulted in DeCS (Descriptors in Health Sciences) and MeSH (Medical Subject Headings), in Portuguese, English, and Spanish, as shown in Chart 1. The search for articles was carried out through an advanced search using the Boolean operator "AND" to combine the descriptors. The Zotero software was used to manage the references.

The review included complete studies, available in full, which addressed the care of adult patients with neurological disorders, published in English, Portuguese and Spanish, indexed in the databases mentioned, from 2012 to 2021 (10 years). We excluded studies such as dissertations, commentaries, theses, book chapters, case studies, editorials, congress abstracts, reflective articles, duplicate articles, and those that did not correspond to the theme and objective of the study.

Chart 1 - Descriptors according to the database. Manaus, Brazil, 2022

BE/BD	Language	Descriptors
VHL	Portuguese	Nursing care, neurology;
	Spanish	Intervenciones de enfermeira, enfermedades neurológicas.
MEDLINE	English	Nursing interventions, Neurological diseases.
CAPES	Portuguese	Cuidados de enfermagem, doenças neurológicas; Assistência ao paciente, enfermagem.
Cochrane Library	English	Nursing interventions, Neurological diseases; Patient Care, Nursing Care, neurological disorders.

Source: Elaborated by the author, 2022.

Data collection took place in October 2022, and the identified studies were screened by titles, abstracts, and complete reading of the texts. After the selection according to the eligibility criteria, they were analyzed as to the level of evidence according to what was proposed by Melnyk and Fineout-Overholt, which covers seven levels, as follows: level 1 - systematic review, meta-analysis, randomized controlled trials, clinical guidelines based on systematic reviews or randomized clinical trials; level 2 - at least one well-designed randomized controlled trial; level 3 - at least one well-designed non-randomized clinical trial; level 4 - case-control study and cohort study; level 5 - systematic review of descriptive and qualitative studies; level 6 - a single descriptive or qualitative study; level 7 - expert opinion or expert committee report. [15]

The articles that made up this study are identified by the letter "A" followed by a numbering from one to ten, presented in the summary table.

RESULTS

Through the searches performed, 498 articles were identified, of this total, 109 were found in the MEDLINE database via PUBMED, 271 in the BVS (87 belonging to BDENF and 184 to LILACS), 34 in the CAPES journals portal, and 84 in the Cochrane Library. Figure 1 presents the selection strategies according to the PRISMA flowchart adapted for this review.

Of the studies included in this review six were published in English, three in Portuguese and one in Spanish, the database with the most studies was MEDLINE via PUBMED and the years with the most publications were 2017 (3), 2021 (3) and 2019 (2). Regarding the design: six are randomized clinical trials, one methodological study, one quantitative descriptive cross-sectional, one retrospective cross-sectional documentary, and one integrative review.

Figure 1 - Flowchart of study selection. Manaus, Brazil,2022
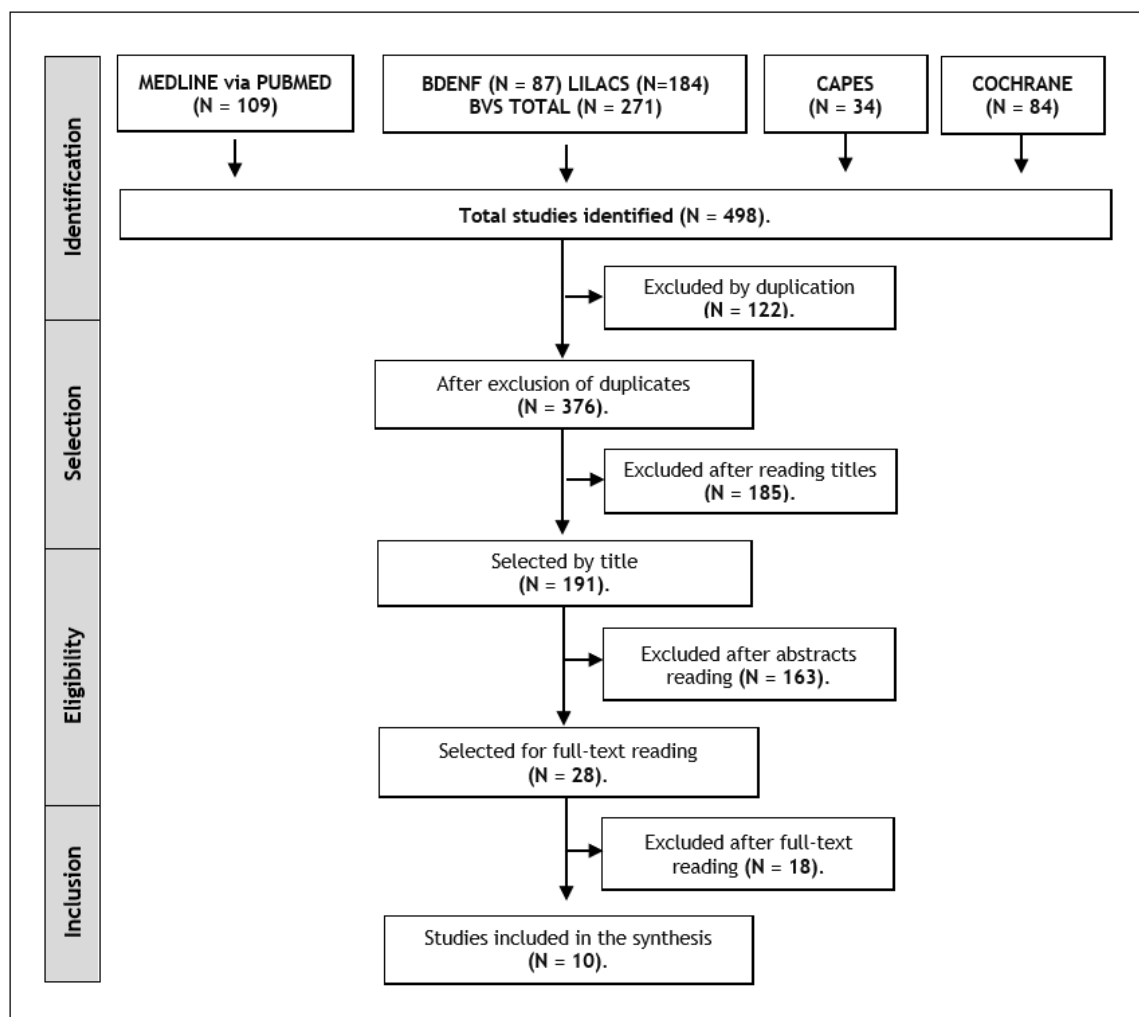
Source: Adapted from PAGE et al., 2021. [16]

The articles were organized in Chart 2, taking into consideration the following information: year, database, title, authors, objectives, study design, and level of evidence.

Quadro 2. Síntese dos artigos selecionados. Manaus, Brasil, 2022

	Year	BE/BD	Title	Authors	Goal	Study Type	NE
A1	2015	COCHRANE	Effects of therapeutic positioning on vital parameters in patients with central neurological disorders: a randomised controlled trial.	Pickenbrock HM, Zapf A, Dressler D. [17]	Investigate the effects of positioning on vital parameters in severely disabled patients with neurological disorders.	Randomized controlled trial.	N1
A2	2016	BVS: LILACS BDENF	Identification of diagnoses and nursing interventions for neurological patients hospitalized education.	Rosin J, Matos FGOA, Alves DCI, Carvalho ARS, Lahm JV.[18]	Identify the most frequent nursing diagnoses and interventions for neurological patients.	Documentary, cross-sectional, retrospective research.	N4
A3	2017	MEDLINE	Benefits of personalised nurse counselling in neurological patients.	Miranda VC, Flores LS, Rangel MGG, Hernández FM, Alvarenga JCL.[19]	To evaluate an educational counseling intervention based on personalized nursing advice in neurological patients.	Randomized controlled trial.	N1
A4	2017	BVS: LILACS	Diagnósticos, resultados e intervenciones de enfermería en pacientes con esclerosis múltiple.	Costa TMS, Neto VLS, Domingos MMC, Silva BCO, Negreiros RV, Silva RAR.[20]	To identify key nursing diagnoses, outcomes and interventions and validate a care proposal for patients with multiple sclerosis.	Methodological with a quantitative approach.	N6
A5	2017	CAPS	Cuidados de enfermagem ao paciente vítima de acidente vascular encefálico.	Nunes DLS, Fontes WS, Lima MA. [21]	Investigate nursing interventions for stroke patients in the hospital setting.	Integrative review.	N5
A6	2019	BVS: BDENF	Intervenções de enfermagem para pacientes neurocríticos.	Caciano KRPS, Saavedra JLI, Monteir EL, Volpáti NV, Amaral TLM, Sacramento DS, Prado PR. [22]	To identify nursing interventions for neurocritical patients in an intensive care unit.	Quantitative, descriptive, cross-sectional study.	N4
A7	2019	MEDLINE	Early path nursing on neurological function recovery of cerebral infarction.	Chen L, Han Z, Gu J.[23]	To study the application of early rehabilitation nursing in the care of patients with cerebral infarction and explore its impact on the recovery of neurological function.	Randomized controlled trial.	N1
A8	2021	MEDLINE	Role of comprehensive nursing care in improving the prognosis and mood of patients with secondary cerebral infarction after craniocerebral injury.	Cao D, Chu N, Yu H, Sun M.[24]	To test the value of applying the comprehensive nursing intervention in improving the prognosis of patients with cerebral infarction secondary to trauma.	Randomized controlled trial.	N1
A9	2021	COCHRANE	Effects of early rehabilitation nursing intervention on nerve function and daily living in patients with stroke hemiplegia.	Yang C, Zhao J, Xie H, Wang H, Liu X, Liu H, Liu L.[25]	To explore the effects of early rehabilitation nursing on the rehabilitation of stroke patients.	Randomized clinical trial.	N1
A10	2021	MEDLINE	Effects of Predictive Nursing Intervention among Patients with Acute Stroke.	GONG L, Ruan C, Yang X, Lin W.[26]	To explore the effects of predictive nursing intervention among acute stroke patients.	Randomized clinical trial.	N1

Source: Prepared by the author, 2022.
BE: Electronic Library; BD: Databases; NE: Level of Evidence.

According to the level of evidence, most studies are concentrated on level one. It was also observed a predominance of stroke as the main cause of neurological sequelae, with the highest rate of ischemic stroke, followed by traumatic and neurodegenerative conditions such as multiple sclerosis. A greater number of publications addressed care related to

Table 3. Nursing interventions/care. Manaus, Brazil, 2022

Assistential Care
1. Placement [17, 18, 22, 26]
2. Care plan/predictive nursing [19, 20, 21, 26]
3. Ventilatory assistance [18, 24, 26]
4. Neurological Assessment [22, 26]
5. Evaluation of hemodynamic parameters [22, 24]
6. Psychological care in nursing [24, 25]
Rehabilitation Care
1. Motor and functional rehabilitation [20, 21, 23, 24, 25]
2. Educational Interventions [19, 21, 25]
3. Self-care assistance [18]

Source: Elaborated by the author, 2022.

DISCUSSION

Category 1: Assistential Care

The positioning of the neurological patient is part of the nursing routine and contributes to the reduction of secondary risks. Regarding this intervention, study A1 evaluated the application of conventional and neutral positioning and its effects on vital signs of individuals with neurological diseases; its results showed that both positioning do not negatively influence parameters when applied at a clinically common interval of two hours. [17]

Conventional positioning uses cushions at certain points of the body with little regard for the patient's alignment, whereas neutral positioning considers the body's alignment to positioning and motor and functional rehabilitation of patients.

According to the analysis of the studies, nursing interventions were grouped into two categories, namely: assistive care (A1, A2, A3, A4, A5, A6, A8, A9 and A10) and rehabilitative care (A2, A3, A4, A5, A7, A8, A9). Table 3 shows the main nursing interventions/care according to the categories.

avoid muscle shortening and stretching. In severely disabled patients the neutral positioning was more beneficial due to the passive movements applied. Other factors that must be taken into consideration are the patient's preferred position, as well as any complications present that may interfere with the comfort and therapeutic results of the position. [17]

It was identified that in neurocritical patients the neurological positioning should encompass a headboard angle of 30° and the maintenance of the head in neutral position, this point allows the decrease of Intracranial Pressure (ICP) and helps venous return. According to the authors, other positioning of the headboard at 15° and 45° causes significant ICP variations. [22]

Neurological patients are at great risk for skin aggravations due to immobility and changes in the level of consciousness. In study A6, it was evidenced that 39.3% of the patients presented Pressure Lesions (PML) and most of them in the occipital and sacral region and 11.70% of the patients studied in A2 presented impaired mobility in bed. [22, 18, 26]

In order to prevent skin lesions in this population, besides positioning, simple cares should be applied, such as keeping sheets clean,

dry and stretched, application of the Braden scale for assessment of PPL risks, and continuous skin observation. [18, 22, 26]

Proper positioning is essential in the care process, contributing to the reduction of discomfort and prevention of complications. In both studies A1 and A6, the authors emphasize that this intervention should be carefully performed, observing the clinical conditions of each individual, and in cases where significant changes occur, a certain position should be avoided. [17-18,22]

It is recommended that nursing interventions be planned according to the needs of each individual through the development of a care plan; this proposal assists in clinical practice and favors decision making based on actual and potential risks. Accordingly, study A9 states that it is essential to establish a care routine with multiprofessional cooperation aiming at fully meeting these needs. [20-21,25]

The care plan can help in the application of the so-called predictive nursing, which contemplates the implementation of interventions focused on the prevention of secondary complications. This care modality improves the effect of treatment, reduces the length of hospital stay, and reflects positively on movement function and activities of daily living. [20, 26]

Ventilatory assistance was the third most frequent nursing care. About this, studies report that the lack of oxygen supply in neurological patients can trigger secondary brain damage, making it necessary to perform continuous respiratory monitoring. The priority in treating these patients is to obtain a patent airway, in some cases patients may require mechanical ventilation, and because of this, many are at high risk for lung infection. [18, 26]

In studies A2, A8 and A10 the interventions applied were related to airway maintenance and prevention of lung infection, which included ventilatory assistance, airway suctioning in patients with mechanical ventilation and tracheostomy, cough stimulation and breathing exercises, prophylactic inhalation four times a day, and changing the fixations in patients with tracheal intubation or tracheostomy. The approach to this care was effective in preventing complications and assists in the good prognosis of the patients. [18, 24, 26]

Another important intervention is neurological assessment used to identify changes that may indicate clinical worsening. The frequency of its application will depend on the patient's stability. The Glasgow Coma Scale used to assess the level of consciousness and the pupillary assessment considered standard in the assessment of critically ill patients are applied, being a relevant complement to the ICP monitoring. [5, 22]

The neurological assessment is related to the patient's clinical aspects and the disease presented, and in specific cases new scales can be used to help in the assessment. An example of this was described in study A6 where the use of the Richmond Agitation and Sedation Scale (RASS) was evidenced for the assessment of neurocritical patients under sedation and in study A10 where the NIHSS (National Institutes of Health Stroke Scale) was used to indicate the

severity of neurological deficits caused by the disease. [22, 26]

It is also recommended that in the care of these patients the hemodynamic parameters be observed and evaluated. The presence of metabolic or systemic insults can be deleterious, causing pathological alterations that induce cerebral infarction; therefore, early detection of these alterations contributes to rapid interventions and assists in the maintenance of adequate Cerebral Perfusion Pressure (CPP). [5, 22]

Most of the nursing care applied takes into consideration only the biological aspects, however, in studies A8 and A9 it was evidenced that neurological patients are more susceptible to feelings of anxiety, anguish, and despair, which can compromise the treatment and recovery process. Therefore, it is important that nurses use interventions based on the psychological aspects of these patients, offering directed measures based on individual conditions, and the use of coping strategies, adaptation, support, and encouragement. [24, 25]

Through the selected studies, it was possible to identify that the care provided is essential for the prevention of secondary complications, and nursing professionals should consider the individual response of each patient to the interventions applied, with no standardization of care. In addition, the approach to these individuals should be performed together with a multidisciplinary team aiming at a holistic care.

Category 2: Rehabilitation Care

Most neurological diseases cause functional and cognitive deficits that affect the quality of life of the affected individuals. The recovery process takes time, and requires daily evaluation by nurses and the application of personalized rehabilitative measures. [21, 23]

In study A5, motor and functional rehabilitation interventions were applied more frequently, focusing on early mobilization of patients. According to the authors, this care helps in the prevention of atrophies, promotes the restoration of movements, and contributes to the development of skills that help in the execution of activities of daily living. [21]

Early rehabilitation, when performed more frequently and intensely, provides functional strengthening and brain plasticity, which is favorable for the patient's recovery. These data were proven in study A7, which demonstrated an effective recovery rate of 96.67% in stroke patients. [23, 24, 25]

Five of the selected studies approached the application of interventions focused on physical and functional aspects, most of them involved the performance and teaching of active and passive movements, raising the headboard gradually every 20° for 20 to 30 minutes until reaching 90°, sitting and standing balance exercises, walking training, and stimulation of autonomous activities. [20, 23, 24]

Another relevant aspect in the recovery process of neurological patients is related to the preparation of the patient and family for hospital discharge; therefore, it is necessary to use educational interventions that help in understanding the disease and promoting care. A study conducted with neurological patients on educational counseling, which comprised

lectures and distribution of educational materials, showed greater adherence to treatment, independence, physical rehabilitation, and patients and family members were able to identify warning signs and symptoms. [18, 19, 21]

Considering the effectiveness of educational interventions, it is essential to approach self-care to these patients according to their capacity, because it cooperates to the patient's involvement in his care, making him more active and participatory in rehabilitation activities. The family also plays an important role so that there is continuity of activities and follow-up of orientations at home. [21, 23]

The findings showed that nursing care in rehabilitation is effective in the recovery of neurological patients, promoting the recovery of brain functions, motor function and ability to perform activities of daily living, which contributes to a better clinical outcome, independence and maintenance of care after hospital discharge.

CONCLUDING REMARKS

Through this study it was possible to highlight the main nursing care applied to neurological patients that help in the prevention of complications and in the recovery process. Among the results obtained, we highlight the assistance care, such as positioning and ventilatory assistance, and the rehabilitation care, such as the application of motor and functional exercises.

These interventions reflect positively in the whole recovery process, because they provide subsidies for care planning, however, they demand from professionals an individual assessment taking into consideration the sequelae caused by the diseases and the needs presented by the patients.

There was a limited number of studies that really approached the care of neurological patients, and most of the information was scarce about the characteristics and parameters that could standardize the evaluations. In addition, this study focused on neurological diseases in general and the period covered showed old studies on the subject. Thus, more current productions are needed on the subject, with emphasis on the specifications of each disease and that can cover detailed information about the parameters in order to assist in professional practice.

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