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REVIEW ARTICLE

NURSING INTERVENTIONS IN THE REHABILITATION OF PEOPLE WITH NEUROGENIC BOWEL: INTEGRATIVE REVIEW

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ABSTRACT

Objective: to identify which nursing interventions are most effective for the rehabilitation of people with neurogenic bowel. **Method:** integrative literature review, from March 2016 to December 2021, in English, Portuguese and Spanish, in the electronic databases CINAHL, Cochrane Library, Embase (Elsevier) and MEDLINE, with the descriptors “Neurogenic bowel” and “Nursing”. Inclusion criteria: studies in full, with contents on nursing interventions for adult patients with neurogenic bowel. **Results:** eight studies were included. The most cited interventions were dietary adequacy and water intake (62.5%); appropriate use of medications (50%); abdominal massage, manual removal of feces and recto-digital stimulation (50%); positioning for elimination of feces, physical exercise and electrical stimulation (25%). **Final considerations:** the integrative synthesis of the studies showed that the most effective results are those that associate more than one intervention and that result from the individualized and systematic assessment carried out by the nurses.

Keywords: Neurogenic bowel; Nursing; Rehabilitation Nursing.

INTRODUCTION

Neurogenic bowel dysfunction results from nerve injury, neurological disease or congenital defect of the nervous system[1] and encompasses dysfunctional bowel manifestations resulting from sensory and/or motor disorders. For people with spinal cord injury, about 95% use some intervention to evacuate, about 70% of patients with multiple sclerosis suffer from bowel problems; bowel incontinence affects 56% of people with cerebral palsy and 68% of people with spina bifida, about 24% of patients with Parkinson's disease have incontinence and 20 to 91% have constipation and about 25% of people diagnosed with stroke have incontinence or constipation[2].

The main symptoms of neurogenic bowel dysfunction are fecal incontinence and constipation, with prevalence between 23 and 80%, respectively, depending on the underlying neurological disorder that the person has. The tendency is that these symptoms worsen over time, and it is possible to have alternating phases of constipation and fecal incontinence [3-4].

People with spinal cord injury who have the neurogenic bowel present worsening of quality of life and social discomfort[1,5-6], feeling of shame, embarrassment, social isolation, anxiety, depression and difficulties in sexual relations[5-6].

Neurogenic bowel dysfunction usually results from an injury that alters or interrupts the communication between the bowel and the brain. When the lesion is above the medullary cone, it results in upper motor neuron syndrome, and when it occurs in the medullary

[1]Extracted from the Residency Completion Work, entitled: “CONSERVATIVE INTERVENTIONS IN THE REHABILITATION OF THE NEUROGENIC INTESTINE: INTEGRATIVE REVIEW”, presented to the Multiprofessional Residency Program of Neurology and Neurosurgery (UNIFESP), in the year 2021.

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cone and cauda equina,it results in lower motor neuron syndrome [6-7].

In upper motor neuron injury there may be both incontinence and constipation. In this lesion, the spinal defecation center, located in the sacral region, is preserved and the spinal cord continues to coordinate the bowel reflexes below the lesion[6-7]. The patient, in this condition, does not perceive the need to evacuate, there is a loss of voluntary control of the external anal sphincter, which remains involuntarily hyperactive (reflex peristalsis), promoting fecal retention and fecal transit time in the colon becomes prolonged[5-6].

Bowel incontinence may occur concomitantly due to changes in anorectal sensitivity and lack of voluntary control of the external anal sphincter. Since nerve connections between the spinal cord and colon are intact in bowel incontinence, evacuation occurs in response to stimulation of reflex activity by the presence of feces in the rectum, suppository or enema[5-6].

Lower motor neuron injury usually results from lesions in the sacral region, affecting the bowel nervous segments, and is characterized by loss of spinal cord-mediated peristalsis and loss of reflex activity, resulting in slow propulsion of feces and impaired reflex evacuation[2,6].

Increased transit time through the distal colon and rectum generates more dry and rounded feces, associated with constipation, but there is also a substantial risk of fecal incontinence due to the atonic external anal sphincter and the lack of sensitivity and voluntary control of the external anal sphincter muscle [6].

In the context of the clinical evaluation of the person by nurses, data collection should include a survey of the previous and current history of neurological and gastrointestinal disease, previous and post-injury bowel habits, associated comorbidities, such as urinary tract infections, presence of hemorrhoids, abdominal pain, rectal bleeding, prolapse, anal fissure and the occurrence of autonomic dysreflexia[5]. On physical examination, it is necessary to perform a rectal examination, as it allows the verification of rectal filling, anal tone at rest, voluntary contraction capacity, perianal sensitivity and integrity of sacral dermatomes [5]. The use of a stool consistency scale is recommended, such as the Bristol Stool Consistency Scale[8].

People-centered care, with a multidimensional approach, considering their perceptions, objectives, routines, life habits, social commitments, in addition to biological and emotional demands that result in interventions in an individualized routine, including consultations scheduled always on the same day of the week and time, composes a scenario that favors quality of life[2,6].

Thus, this research is justified by the importance of gathering scientific evidence on the most effective interventions for the multidimensional care of people with neurogenic bowel disease, constituting the objective of identifying the most effective nursing interventions for the rehabilitation of people with neurogenic bowel.

METHOD

This is an integrative literature review, a research method that follows standards of methodological rigor, synthesizes several studies for a general conclusion of a specific subject and contributes to the improvement of nursing care[9]. The study was structured in six stages: identification of the theme and selection of the hypothesis or guiding question; establishment of criteria for inclusion and exclusion of studies or search in the literature; definition of the information to be extracted from the selected studies/categorization of the studies; assessment of the studies included in the integrative review; interpretation of the results; and presentation of the review/synthesis of knowledge[9].

The research question of the review was: which nursing interventions are effective in the rehabilitation of people with neurogenic bowel? The most appropriate strategy for the study was PICo, with P – population, I – interest and Co-context. According to the object of study: "P" – people with neurogenic bowel; "I"- interventions employed/dispensed by nurses; "Co"- health rehabilitation.

The searches were performed in the electronic databases Cumulative Index to Nursing and Allied Health Literature (CINAHL), Cochrane Library, Embase

(Elsevier) and MEDLINE via PubMed. The controlled descriptors "Neurogenic bowel" AND "Nursing" were used to cross-reference the databases. The inclusion criteria were articles that answered the guiding question, with people over 18 years old, from March 2016 to December 2021, in English, Portuguese and Spanish, available in full in the adopted databases. Exclusion criteria were editorials, letters, abstracts of proceedings, theses, dissertations, and final papers, official documents of national and international programs, books and studies duplicated or in progress.

Initially, in the search for articles, 48 studies were found from the databases, 12 from Embase, 3 from CINAHL, 10 from COCHRANE and 23 from PubMed.

Data from the 48 articles were inserted in a Microsoft® Excel 2010 spreadsheet according to the following items: title, author, database and journal. The articles were organized in alphabetical order and the repeated ones were excluded. Two researchers read the titles and abstracts to identify which articles answered the guiding question. Of this amount, eleven articles were excluded for being repeated, seven for having children as target audience, six for unavailability in full, six for incompatibility with the objective of this research, five for presenting partial results, four for not having open access and one for being editorial. The sample ended with eight studies.

The research followed the recommendations of the Preferred Reporting Items for Systematic Review and Meta-Analyses-PRISMA[10], according to the stages of identification, selection, eligibility and inclusion, and the checklist for the preparation of review studies. The selection of the review studies is illustrated in Figure 1.

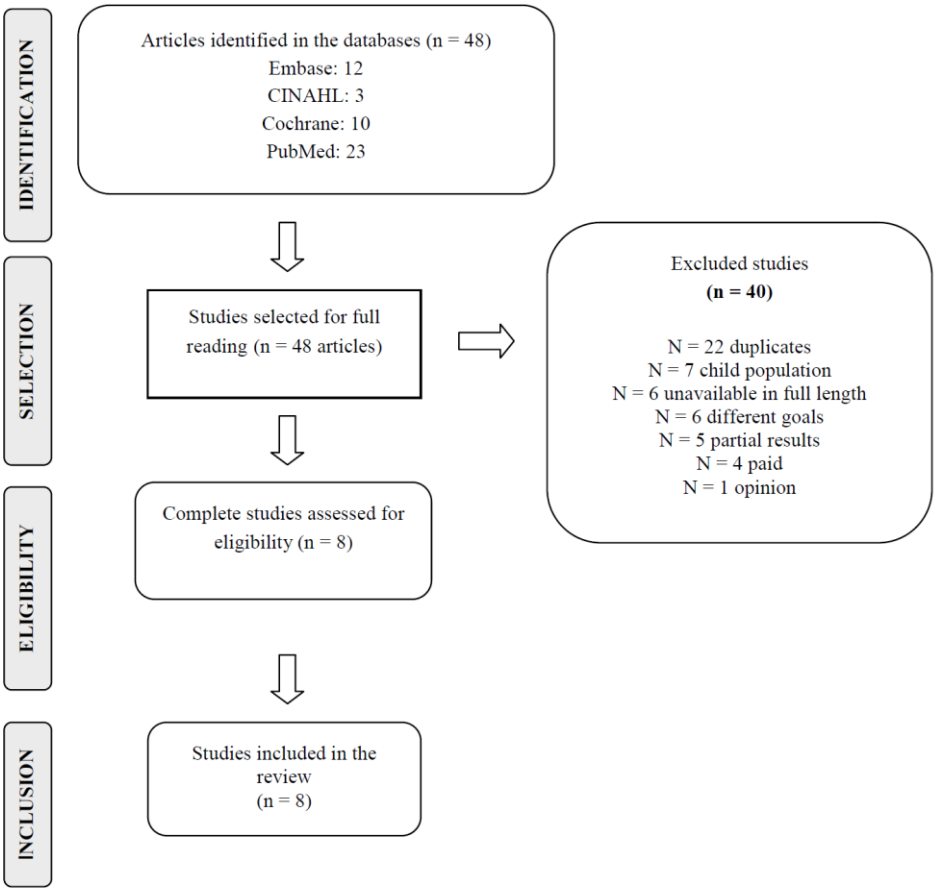

Figure 1. Stages of the selection of studies included in the integrative review. São Paulo, SP, Brazil
Source: The authors.

After selection, the articles were read in full. These were included in a new data sheet, with the following variables: title, journal, authors, country, language, year of publication, type of study, objectives, population, interventions, results and level of evidence. The levels of scientific evidence were used for the classification[11]: level I - the evidence comes from systematic review and meta-analysis of randomized clinical trials; level II for randomized clinical trials; level III for non-randomized controlled trial; level IV for case-control or cohort studies; level V for systematic reviews of qualitative or descriptive studies; level VI for qualitative or descriptive studies; and level VII for opinion of authorities and/or reports of expert committees.

RESULTS

Eight studies were selected, all (100%) in English, four (50%) from the United Kingdom, two (25%) from the United States of America and the others from China and Australia. Two studies (25%) were published in 2020, two (25%) in 2019, two (25%) in 2018, one (12.5%) in 2016 and one (12.5%) in 2021. In five studies (62.5%), the population was diagnosed with spinal cord injury. In the assessment of the levels of evidence, there was a wide variety, and the classifications in levels VI and II were the most frequent, 37.5% and 25%, respectively.

The main interventions and results of the studies analyzed are described in Box 1.

Box 1. Characterization of the studies analyzed, regarding the title, country, year, level of evidence, nursing interventions and results, São Paulo, 2021

Title	Country and year	Level of Evidence/ Population	Nursing interventions	Results
Current state of knowledge on digital rectal stimulation in individuals with traumatic and nontraumatic spinal cord injury: a scoping review[12]	USA 2021	Level VI Spinal Cord Injury	Rectal-digital stimulation, associated with manual extraction, suppositories and laxatives.	In experimental or quasi-experimental studies, rectal digital stimulation was commonly studied and associated with other methods, such as suppositories or enemas.
Safety and efficacy of intermittent colonic exoperistalsis device to treat chronic constipation: a prospective multicentric clinical trial[13]	The United Kingdom	Level IV Multiple Sclerosis and Parkinson's Disease	Abdominal massage was performed using electronic equipment daily for 4 weeks, associated with the routine use of laxatives, enemas, suppositories, irrigation and digitalization.	There was an increase in the number of complete bowel movements, a reduction in the use of medications, stools of softer consistency and good adherence.
A primary care provider's guide to neurogenic bowel dysfunction in spinal cord injury[14]	USA, 2020	Level VI Spinal Cord Injury	Dietary modifications (<15gr of fibers and water intake), sitting in a toilet or hygienic chair, digital withdrawal, laxatives, suppository and rectal-digital stimulation in upper motor neuron injury, electrical stimulation and educational program.	Dietary modification, prescribed medications and stimulation should be optimized to help improve symptoms.
Abdominal massage plus advice, compared with advice only, for neurogenic bowel dysfunction in MS: a RCT[15]	The United Kingdom	Level II Multiple Sclerosis	In the control group, there was discussion of interventions, dietary and water intake advice; positioning to evacuate; encouragement to physical activities. In the intervention group, daily abdominal massage was added to previous interventions for 10 minutes.	Abdominal massage was associated with minor improvements, but without clinical and statistical significance. It was emphasized that some people may benefit from a self-care and low-cost intervention.
Digital rectal stimulation as an intervention in people with spinal cord injury and upper motor neuron neurogenic bowel. An evidenced-based systematic review of the literature[16]	The United Kingdom	Level I Spinal Cord Injury in Upper Motor Neuron	Rectal-digital stimulation for 1 minute, with continuous contractions of 3-5 minutes. In addition to transanal irrigation, electrical stimulation and use of oral and rectal medications.	Rectal-digital stimulation was used in only one study as a primary intervention, presenting moderate evidence in people with spinal cord injury. The study showed the physiological effect of the use of rectal digital stimulation and the association with more than one intervention, such as electrical stimulation and use of oral and rectal medications.

Effect of quantitative assessment-based nursing intervention on the bowel function and life quality of patients with neurogenic bowel dysfunction after spinal cord injury[17]	China, 2018	Level II Spinal Cord Injury	Intervention group with quantitative assessment based on signs, symptoms and exams and personalized nursing interventions to reduce the intake of foods rich in fat and protein, daily water intake of at least 2 liters; abdominal massage up to 2 times/day, for 10 to 15 minutes; exercises (sitting in a toilet or on a slope in bed, deep and abdominal breathing, bridging movement, lifting the buttocks contracting the anus for 5 seconds with 3 relaxation and consecutive contractions of 10 to 20 times); daily rectus-digital stimulation and manual extraction (if severe constipation and prolonged evacuation). Control group: health education, psychological care, dietary guidance (consumption of more vegetables, fruits and foods with high fiber content, more water and less sweets and milk). And if severe constipation, catharsis by senna, fruits and medications.	In the group that received the nursing interventions, the scores for abdominal distension, prolonged defecation, drug-dependent defecation and fecal incontinence were significantly lower than those in the control group ($p<0.05$).Nursing interventions promoted the recovery of bowel function and improved quality of life and patient satisfaction.
Dietary management of neurogenic bowel in adults with spinal cord injury: an integrative review of literature[18]	Australia, 2019	Level VI Spinal Cord Injury	Consumption of fiber, liquids and other foods, such as *Poncirus fructus* and *cranberries*.	Fibers and liquids were common interventions, but not very well specified in the studies analyzed, and associated with methodological failures, the results were inconclusive.
What is the best way to manage neurogenic bowel dysfunction[19]	The United Kingdom	Grade VII Neurogenic bowel	Dietary guidance (fiber intake and minimum water intake of 1.5 liters/day, stimulate evacuation after meals, assess access to the bathroom, medications review, use of oral laxatives or rectal suppositories alone or combined, abdominal massage, manual evacuation or transanal irrigation.	It encouraged frank dialogue with the patient and the initial use of simple and combined interventions. And in the absence of improvement, the search for specialized services for exams and other interventions, such as surgery.

As for the interventions found, five studies (62.5%) indicated adequacy of diet and fiber consumption [14-15,17-19]; reduction of fat, sugar, milk and protein consumption; and increase of fruits and vegetables[16]. Another study indicated the use of fruits such as "*Cranberrys and Poncirusfructus*"[17]. Some studies analyzed indicated water intake[14-15,17-19], but only two studies specified the amount of consumption, being at least 1.5 liters per day[19], and another study emphasized at least two liters per day[17].

The use of medications was indicated in six studies[12-14,16-17,19] (75%). The use of suppositories was indicated in five studies[12-14,16,19]. Another study evidenced the use of natural substances to obtain laxative effect, such as *Senna*[17].

Abdominal massage was cited in four studies (50%)[13,15,17,19], with daily frequency and duration of 10 minutes[13,15], once to twice a day and duration of 10 to 15 minutes[16], and the other study did not specify[19].

The manual removal of feces was mentioned in four studies (50%)[12,14,17,19], as well as the rectal-digital stimulation[12,14,16-17], and the intervention was guided for one minute with continuous contractions of three to five minutes[16]. The positioning for evacuation was addressed in three studies (37.5%)[12,14-15], being indicated the sitting position in a toilet or hygienic chair[14].

Electrical stimulation was mentioned in two studies (25%)[14,16] in combination with recto-digital stimulation and/or educational action.

The practice of physical activities was assessed in two studies (25%)[15,17], with the following recommendations: sitting on the toilet or on a slope in bed; performing movements with deep and abdominal breathing; bridging movement, with lifting of the glutes and anal contraction for five seconds; and relaxation of three seconds, with repeated contractions of 10 to 20 times[17].

DISCUSSION

The studies analyzed presented different interventions for the rehabilitation of the neurogenic bowel. The majority emphasized the benefits of the association of more than one intervention, which can be grouped into care procedures, such as electrostimulation and rectal-digital stimulation and educational practices in health, such as the adoption of new eating habits and hydration, and rational use of medations.

According to the guideline for the management of the neurogenic bowel, this is a process that includes assessment, individual planning and implementation of interventions, considering factors of individual influence, assessment of results and assessment. Successful bowel function management requires multiprofessionalcooperation[20].

Among the different interventions for the management of the neurogenic bowel, there are many activities that need skills to be undertaken in practice, such as abdominal massage, digital stimulation, manual removal of feces, anal irrigation, that is, they require an educational process in health[7, 12, 14, 17, 19].

The term bowel management is used repeatedly in literary production on the topic of neurogenic bowel and is fully adequate for what is intended in the care of people with chronic non-communicable diseases. The model of care centered on the person with chronic disease provides that the health system is able to involve and enable the persons to participate actively in their illness process, ensuring quality of life and well-being[21].

In addition to interventions that require procedural skills, there are those that involve the acquisition of knowledge and the adoption of new attitudes, such as changes in habits, made possible through a health education plan.

For the effectiveness of the educational action, it is essential that the professionals make a comprehensive anamnesis, including with a view to the safety of the persons, since they can report habits and attitudes, such as self-medication, with potential negative influence on the clinical picture they present. The literature shows that some medications, such as anticholinergics, opioids, non-steroidal anti-inflammatory drugs and antibiotics, may aggravate bowel dysfunction.

However, there are recommended medications, such as rectal medications, which can treat constipation and fecal incontinence, with the help of controlling the time and predictability of evacuation, being essential in the care of the bowel of patients with spinal cord injury with a reflex bowel, for example, suppositories and minienemas, which are easy to apply and considered as first line[5]. Thus, it will be up to the professionals to direct the dialogue to obtain as much information as possible to, in a shared way, accurately delineate the problems and possible interventions that favor a satisfactory daily routine.

Continuing the analysis of interventions, the effects of abdominal massage in the control of constipation were assessed in different randomized clinical trials in patients with cancer, Parkinson, multiple sclerosis, orthopedic and traumatic injuries, showing efficacy in reducing symptoms related to constipation, increasing the frequency of evacuations, reducing the use of laxatives and improving quality of life[22].

A multicenter study[13] indicated the use of an electric massager device presented positive results for better consistency of the evacuation and at shorter intervals, in addition to good adherence to treatment, as it brought more comfort and convenience to patients. Another study suggested that a tennis ball be used for abdominal massage and that it should start from right to left and from bottom to top with slight compression for about 20 or 30 minutes after meals[23].

Rectal-digital stimulation is the most common form of mechanical stimulation used in the reflex neurogenic bowel (or upper motor neuron lesion) and may be associated with hemorrhoids, abdominal distension and anal fissures, in addition to autonomic dysreflexia, in spinal cord injury in the thoracic six or above; it is one of the most used interventions and commonly associated with manual removal of feces, being often even confused[12].

In a systematic review study, rectal-digital stimulation should be applied for one minute, with continuous anal contractions of three to five minutes[16]. In patients with spinal cord injury of upper motor neuron, a moderate

intervention was considered[16]. Another study showed that the stimulation should be performed about 30 minutes after the meal, with a finger, gloved and lubricated, inserted in the rectum and performing a slow rotation to relax the anal sphincter, for no more than 10 to 20 seconds and repeated every five to ten minutes until stool evacuation is achieved[23]. The study points out that the use of additional fingers has no benefit and may contribute to complications, such as bleeding[23].

In four studies analyzed, the intervention of manual removal of feces was only mentioned, without its description[12,14,17,19]. The manual removal of feces resembles stimulation with the use of the gloved and lubricated hand, in which the finger is inserted into the rectum and makes a movement similar to a "hook" for the removal of the fecaloma, being indicated in cases of severe constipation or prolonged evacuation [17].

Electrical stimulation was cited as a viable intervention[14,16], being generally indicated for patients who were unsuccessful with conservative therapy[5]. A crossover Brazilian randomized pilot study [24]assessed the effect of abdominal electrostimulation in people with constipation, who presented spinal cord injury, and showed that associated with conventional treatment, electrostimulation helped to increase the frequency and amount of feces expelled in people with constipation.

What the studies above have in common, in addition to bringing evidence of good practices for the assistance of neurogenic bowel dysfunction, is the need to prepare the professionals for the use of competent and satisfactory educational and care activities, which can be a nurses, physical therapists, nutritionists, physicians, etc.

A qualitative study conducted with British nurses revealed that, in practice, the care of patients with bowel dysfunctions tends to be unpleasant and sometimes stigmatized. However, the professional scenario is promising, since the standardization of training in bowel care and the increase in the number of nurses trained in bowel care have valued this specialty[25].

There are many challenges in caring for the quality and efficiency of patients with neurogenic bowel dysfunction. However, this review highlighted from the scientific literature good practices that can be undertaken today.

Limitations include the limited number of articles published, the lack of detailing of procedures related to interventions in experimental studies, and the lack of information on the characteristics of neurogenic dysfunctions, such as the location, time, and/or type of lesion, which may lead to doubts about the recommendations in terms of reproducibility and scientific validity.

The results of this study are important for the practice of health professionals and for people with neurogenic bowel dysfunction in their bowel rehabilitation. We emphasize the need for more studies with better delimitations regarding the characteristics of the disease and interventions.

FINAL CONSIDERATIONS

It can be concluded that the most indicated interventions for neurogenic bowel dysfunction are dual nature, care and educational in health. Among the care interventions, pharmacological interventions and those related to maneuvers, such as abdominal massage, manual removal of feces, electrostimulation and rectal digital stimulation stand out.

Educational interventions are based on the construction of knowledge, skills and attitudes for the adoption of new habits, especially dietary habits, practice of exercises and for the safe and judicious management of drugs, oral or rectal, in the home environment, in addition to the ability to self-perceive and make decisions regarding the problems presented.

INTERVENÇÕES DE ENFERMAGEM NA REABILITAÇÃO DE PESSOAS COM INTESTINO NEUROGÊNICO: REVISÃO INTEGRATIVA

RESUMO

Objetivo: identificar quais intervenções de enfermagem são mais eficazes para a reabilitação de pessoas com intestino neurogênico. **Método:** revisão integrativa da literatura, no período de março de 2016 a dezembro de 2021, nos idiomas inglês, português e espanhol, nas bases de dados eletrônicas*CINAHL*, *Cochrane Library,*

Embase (Elsevier) e *MEDLINE*, com os descritores "*Neurogenicbowel*" *and*"*Nursing*". Critérios de inclusão: estudos na íntegra, com conteúdos sobre intervenções de enfermagem para pacientes adultos com intestino neurogênico. **Resultados:** oito estudos incluídos. As intervenções mais citadas foram adequação dietética e ingestão hídrica(62,5%); uso apropriado de medicamentos (50%); massagem abdominal, retirada manual das fezes e estimulação reto-digital (50%); posicionamento para evacuação, prática de exercícios físicos e estimulação elétrica (25%). **Considerações finais:** a síntese integrativa dos estudos evidenciou que os resultados mais efetivos são os que associam mais de uma intervenção e que decorrem da avaliação individualizada e sistemática realizada pelo enfermeiro.

Palavras-chave: Intestino Neurogênico. Enfermagem. Enfermagem em Reabilitação.

INTERVENCIONES DE ENFERMERÍA EN LA REHABILITACIÓN DE PERSONAS CON INTESTINO NEUROGÉNICO: REVISIÓN INTEGRADORA

RESUMEN

Objetivo: identificar qué intervenciones de enfermería son más eficaces para la rehabilitación de personas con intestino neurogénico. **Método**: revisión integradora de la literatura, en el período de marzo de 2016 a diciembre de 2021, en los idiomas inglés, portugués y español, en las bases de datos electrónicas *CINAHL, Cochrane Library, Embase (Elsevier)* y *MEDLINE*, con los descriptores "*Neurogenicbowel*" *and* "*Nursing*". Criterios de inclusión: estudios completos, con contenidos sobre intervenciones de enfermería para pacientes adultos con intestino neurogénico. **Resultados**: ocho estudios incluidos. Las intervenciones más mencionadas fueron adecuación dietética e ingesta hídrica (62,5%); uso apropiado de medicamentos (50%); masaje abdominal, extracción manual de las heces y estimulación recto-digital (50%); posicionamiento para evacuación, práctica de ejercicios físicos y estimulación eléctrica (25%). **Consideraciones finales**: la síntesis integradora de los estudios evidenció que los resultados más efectivos son los que asocian más de una intervención y que derivan de la evaluación individualizada y sistemática realizada por el enfermero.

Palabras clave: Intestino Neurogénico. Enfermería. Enfermería en Rehabilitación.

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