Original Article

TEXTO & CONTEXTO ENFERMAGEM
TEXT & CONTEXT NURSING TEXTO & CONTEXTO ENFERMERÍA

IMPACT OF A REHABILITATION PROGRAM ON THE URINARY MANAGEMENT OF PATIENTS AFFECTED BY CEREBROVASCULAR ACCIDENT

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ABSTRACT

Objective: to assess the effect of a Nursing Rehabilitation program on the urinary incontinence management of women after a CVA.
Method: quantitative, quasi-experimental, and longitudinal study conducted in a convalescence unit in the Viana do Castelo district, Portugal, between September 2018 and March 2019. The sample included women (n=30) aged between 45 and 90, experiencing urinary incontinence after a CVA, assigned to two groups: experimental group (n=15) and control group (n=15). The functional rehabilitation program was applied to the experimental group for 4 weeks. The program comprises behavioral changes and an exercise plan to strengthen pelvic floor muscles, and the impact of urinary incontinence was assessed before and after the intervention.
Results: a statistically significant correlation was found between the level of functional disability and the impact of urinary incontinence (r=-0.499; p=0.005). Hence, the level of functional disability influences the impact of urinary incontinence on quality of life. The functional rehabilitation program implemented in the experimental group obtained positive results and decreased the frequency (t=6.985, p=0.000) and amount (Z=-2.762, p=0.006) of urine loss.
Conclusion: the functional rehabilitation program positively impacted and decreased the frequency and amount of urine loss.

DESCRIPTORS: Urinary incontinence. Stroke. Rehabilitation nursing. Pelvic floor. Female. Urination.

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IMPACTO DE UM PROGRAMA DE REABILITAÇÃO NA GESTÃO URINÁRIA DO DOENTE ACOMETIDO POR ACIDENTE VASCULAR CEREBRAL

RESUMO

Objetivo: avaliar o efeito de um programa de Enfermagem de Reabilitação na gestão da incontinência urinária na mulher após acidente vascular cerebral.
Método: estudo quantitativo, quási-experimental, longitudinal, realizado numa unidade de convalescença do distrito de Viana do Castelo, Portugal, entre o período de Setembro de 2018 a Março de 2019. A amostra, constituída por mulheres (n=30) entre os 45 e 90 anos, com incontinência urinária após AVC, divididas em dois grupos: grupo experimental (n=15) e grupo de controle (n=15). Apenas ao grupo experimental foi aplicado um programa de reabilitação funcional durante 4 semanas, composto por mudanças comportamentais e um plano de exercícios de reforço dos músculos do pavimento pélvico, tendo-se avaliado, antes e depois da intervenção, o impacto da incontinência urinária na sua vida.
Resultados: verificamos correlação estaticamente significativa entre o grau de incapacidade funcional e o impacto da incontinência urinária (r=-0,499; p=0,005), concluindo que o grau de incapacidade funcional global influencia o impacto da incontinência urinária na qualidade de vida. O programa de reabilitação funcional realizado no grupo experimental obteve resultados positivos ao nível da diminuição da frequência urinária (t=6,985, p=0,000) e da quantidade de perdas de urina (Z=-2,762, p=0,006).
Conclusão: o programa de reabilitação funcional teve um impacto positivo na diminuição da frequência e quantidade de perdas de urina.

DESCRITORES: Incontinência urinária. Acidente vascular cerebral. Enfermagem de reabilitação. Assoalho pélvico. Feminino. Micção.

IMPACTO DE UN PROGRAMA DE REHABILITACIÓN EN LA GESTIÓN URINARIA DE PACIENTE AFECTADO POR ACCIDENTE CEREBROVASCULAR

RESUMEN

Objetivo: evaluar el efecto de un programa de Enfermería de Rehabilitación en la gestión de la incontinencia urinaria en la mujer después de accidente vascular cerebral.
Método: estudio cuantitativo, casi experimental y longitudinal, realizado en una unidad de convalecencia del distrito de Viana do Castelo, Portugal, en el período de Septiembre de 2018 y Marzo de 2019. La muestra, constituida por mujeres (n=30) entre los 45 y 90 años, con incontinencia urinaria después de un accidente cerebrovascular (ACV); ellas fueron divididas en dos grupos: grupo experimental (n=15) y grupo de control (n=15). A penas en el grupo experimental fue aplicado un programa de rehabilitación funcional durante 4 semanas que estuvo compuesto por cambios comportamentales y un plan de ejercicios de refuerzo de los músculos del suelo pélvico. Se realizó la evaluación - antes y después de la intervención - del impacto de la incontinencia urinaria en su vida.
Resultados: se verificó correlación estadísticamente significativa entre el grado de incapacidad funcional y el impacto de la incontinencia urinaria (r=-0,499; p=0,005). Se concluyó que el grado de incapacidad funcional global influencia el impacto de la incontinencia urinaria en la calidad de vida. El programa de rehabilitación funcional realizado en el grupo experimental obtuvo resultados positivos en los aspectos de disminución de la frecuencia urinaria (t=6,985, p=0,000) y de la cantidad de pérdidas de orina (Z=-2,762, p=0,006).
Conclusión: el programa de rehabilitación funcional tuvo un impacto positivo en la disminución de la frecuencia y cantidad de pérdidas de orina.

DESCRITORES: Incontinencia urinaria. Accidente cerebrovascular. Enfermería de rehabilitación. Diafragma pélvico. Femenino. Micción.

INTRODUCTION

Cerebrovascular accident (CVA) is one of the leading causes of mortality, morbidity, hospitalization, and permanent disability in developed societies.[1] Urinary incontinence is a prevalent condition among stroke victims, as approximately 40% to 60% of these individuals experience this complication in the acute phase; 15% still experience the condition one year after the event.[2] This condition results from a combination of motor and sensory deficits and neurophysiological changes in bladder function. Its persistence may significantly affect the overall rehabilitation process and negatively influence physical and mental health recovery, intervening in hospital discharge and mortality rates.

In this context, Rehabilitation Nursing is essential for minimizing the impact of a stroke on urinary incontinence, grouping intervention strategies based on behavioral changes, pelvic floor muscle training (PFMT), and bladder reeducation, and structuring a multifactorial and behavioral plan.[3] It is based on these foundations that Rehabilitation Nurses must assess, plan and implement, in the light of their knowledge, rehabilitation programs for people with urinary continence disorders, cooperating with family and/or informal caregivers to promote this self-care.

Behavioral changes are the intervention with the best results for the rehabilitation and treatment of urinary incontinence among stroke victims. It is less invasive and risky, with no known side effects. According to the International Consultation Society (ICS), behavioral therapy comprises a voiding diary, patient education regarding urinary habits, bladder reeducation, pelvic floor exercises, strategies to control voiding, and guidelines regarding diet and water intake.[4] Additionally, PFMT consists of contracting the pelvic muscles to strengthen the supporting muscle structures, increasing muscle strength, and, consequently, mastering urinary continence by stimulating the activity of the urethral sphincter.[5]

The rehabilitation program for people who had a stroke is intended to reduce the effects of urinary incontinence and, in case of failure, re-educate patients by proposing new ways to deal with this condition, enabling these individuals to regain the highest possible degree of functional independence. In addition to the evidence concerning decreased urinary incontinence, the rehabilitation nursing intervention is also critical in influencing the individuals' self-esteem and quality of life, self-efficacy, and well-being.[6]

Based on these assumptions, this study addresses a rehabilitation program, considering all the particularities mentioned above, to assess the program's effect on managing urinary incontinence among women after a stroke, improving these women's quality of life, and maximizing their autonomy.

METHOD

This is a quantitative, quasi-experimental, longitudinal study. The population consists of women experiencing urinary incontinence after their first stroke, aged between 45 and 90, admitted to the Convalescence Unit in the facility where the study was conducted. Exclusion criteria were: women with significant cognitive alterations, Functional Independence Measure (FIM) scores below 40, history of urinary alterations, recurrent urinary infections or urinary incontinence prior to the stroke, or having total hip prosthesis (as it impedes some exercises included in the rehabilitation program).

The first contact with the participants occurred within 48 hours after admission to the hospital. Two groups were gathered considering the type of study and criteria: intervention group and control group. Depending on their admission to the unit, the participants were alternately assigned to one of the groups.

The first assessment was conducted at the first contact with patients by applying the following instruments: socio-demographic and clinical questionnaire and the ICIQ-SF, to identify the patients' initial condition regarding functionality and incontinence at the time of admission.

After the first assessment, the functional rehabilitation program was implemented for the experimental group. The program lasted four weeks and consisted of behavioral changes and an exercise plan to strengthen PFM. Behavioral changes took into account the following aspects: reducing water intake from snack time (at 5 pm); training of voiding habits with a 2/2 hour urination schedule during the day and 4/4 hours during the night; sphincter training with suppression of urge and simultaneous contraction of the pelvic floor muscles. The exercise plan, consisting of relaxation exercises and dissociation of breathing times, also included nine exercises to strengthen PFM in sets of 10 repetitions, divided between supine, sitting, and orthostatic positions. The rehabilitation nurse implemented the exercises once a day, and patients were encouraged to repeat them during the day. According to the individual's overall motor development, the program became more complex during hospitalization. At the end of this four-week rehabilitation program, ICIQ-SF was applied again to understand the results of the rehabilitation program.

Data were collected between September 2018 and March 2019, 37 women were assessed, and seven were excluded for not meeting the inclusion criteria; hence, the final sample remained with 30 participants. The sample was divided into two groups of 15 individuals.

Data were analyzed using descriptive and inferential analysis through parametric and non-parametric tests, adopting a significance level of $p \leq 0.05$, using SPSS 24.0. Ethical aspects were complied with by collecting free and informed consent from the participants and asking the institutional review board at the convalescent unit where the study was implemented for authorization. In addition, confidentiality was ensured, and data were used only for research purposes.

RESULTS

Thirty women (n=30) participated in the study; 15 were assigned to the intervention group and 15 to the control group. The participants were 75.87 years on average; most were widowed (43.3%) and presented a low educational level; 66.7% presented primary education.

Ischemic stroke was the dominant type of stroke (76.7%), with no predominance of a specific brain location. The sample presented a high and concomitant existence of several personal antecedents (arterial hypertension, dyslipidemia, diabetes mellitus, etc.) and the involvement of more than one deficit (hemiplegia/hemiparesis, dysarthria, aphasia, or alterations in gait/balance), after the stroke.

The degree of functional disability (FIM) and urinary incontinence were significantly correlated ($r=-0.499$; $p=0.005$); hence, the degree of overall functional disability influences the impact of urinary incontinence on quality of life. This correlation shows that the higher the level of functional capacity, the lower the individual's perception of the impact of urinary incontinence in daily life.

The analysis using the t-Student test for independent samples of the differences between the two groups (intervention and control) shows statistically significant differences between the means concerning urine leakage frequency between the intervention group and the control group for time 2 (after the rehabilitation program). Table 1 shows that the average frequency of urine leakage after the rehabilitation program is statistically lower among women in the intervention group than the average frequency of leakage among women in the control group.

The effectiveness of the rehabilitation program in reducing the urinary frequency in the intervention group was verified using the Student's t-test, which revealed statistically significant differences (t=6.985, p=0.000). Thus, women in the intervention group experienced a decrease in the frequency of urine leakage after the functional rehabilitation program compared to their first assessment (before the RP).

The women in the intervention group also presented a lower mean of urine leakage than those in the control group (Table 2).

Table 1 – Differences between the groups before and after the intervention in terms of urine leakage frequency (n=30).

Frequency of urine leakage	Intervention Group (n=15)		Control Group (n=15)		t	P
	Mean	SD	Mean	SD		
Time 1 (before PR)	3.07	1.03	3.07	0.96	0.000	1.000
Time 2 (after PR)	1.33	1.05	2.80	1.15	-3.659	0.001

Student's t-test, p≤0.05

Table 2 – Differences between, before and after the intervention in terms of the amount of urine lost (n=30).

Amount of urine loss	Intervention Group (n=15)		Control group (n=15)		U	P
	Mean	SD	Mean	SD		
Time 1 (before PR)	3.20	1.48	3.60	1.55	96.000	0.512
Time 2 (after PR)	1.60	1.12	2.93	1.28	56.500	0.019

Mann Whitney test, p≤0.05

The conclusion after assessing the effect of the functional rehabilitation program on the amount of urine lost in the intervention group is that this group presented a statistically significant decrease in the amount of urine leakage in Time 2 (after PR) compared to Time 1 (before PR) (Z=-2.762, p=0.006).

Comparing the intervention group results with the control group shows that the rehabilitation program decreased the participants' perception of the frequency and amount of lost urine.

DISCUSSION

There were no significant differences between the groups regarding the location of the most dominant stroke. Several studies report that the frontal lobe is responsible for the voiding area and, consequently, for urinary dysfunction at the time of the event.[2] Neuronal fibers in this region project over the thalamus, limbic system, and basal ganglia, responsible for stimulating the full bladder sensation, awakening the brain to the need to urinate, and the ability to assess whether the environment and time are suitable for initiating urination.[7] No significant differences were found between the groups regarding this variable.

In the case of alterations resulting from a stroke, an individual may experience reduced functional capacity, having more difficulty moving, undressing, or sitting on the toilet. Likewise, when there are alterations in the neurological field, specifically regarding language or perception, the urinary act may also be affected, as the individual cannot ask for help or perceive the need to urinate. It may lead to urinary incontinence, not because of the neurophysiological component but the individual's entire functional process. Although no statistically significant differences were found in this study between deficits resulting from the stroke and the impact of urinary incontinence on daily life, there is a concomitant emergence of other deficits, such as hemiparesis/hemiplegia (80% of cases) or gait/balance alterations (76.7% of the total sample). Despite these high percentages, this variable did not influence the rehabilitation program results, considering the groups were homogeneous in terms of the presence of deficits. In contrast, other studies[8–9] correlating these variables found an association between bladder alterations and poor walking ability or changes in cognition.

We also concluded in this study that the degree of functional disability influences the results of the impact of urinary incontinence on daily life; that is, the individual's degree of overall functionality influenced the results of the rehabilitation program and, consequently, the impact of urinary incontinence on daily life the participants perceived. These results corroborate other studies arguing that urinary incontinence worsens functional results compared to continent patients.[8,10]

This study's results confirm that the functional rehabilitation program decreased urinary frequency and the amount of urine lost among women. Furthermore, considering the results reported by other studies, we confirm that after performing pelvic muscle exercises, there is a significant improvement in the frequency and amount of urination and consequent sphincter control during the day.[7,11–12]

The literature[2–3,13] shows that several studies support the notion that urinary incontinence improves with a complete rehabilitation program (composed of multiple interventions that include behavioral changes, such as urination programming or bladder training, and pelvic floor exercises) implemented after the occurrence of a stroke, leading to significant improvement in women's quality of life.

CONCLUSION

Nurses are care providers who assess patients in their wholeness and intervene, based on technical and scientific knowledge, assisting patients and their families, providing care that meets their needs and, in the case of urinary incontinence, nursing care may have consequences both in terms of individual health and in terms of social and affective relationships.

Recognizing the importance attributed to the intervention of rehabilitation nurses in the assistance provided to individuals with urinary incontinence and their families, we propose a reflection upon ways to provide quality health/nursing care and, simultaneously, encourage women to solve problems, even if it is an aspect of the intimate sphere.

This study's results enabled assessing the effect of a rehabilitation program in managing urinary incontinence and show that the care provided by Rehabilitation Nurses can be translated into health gains, decreasing the impact of this condition on daily life and, consequently, improving self-esteem and quality of life.

Some of this study's limitations concern the sample size and its characteristics (e.g., advanced age and poor education), the period of hospitalization and the four-week intervention, the few literature reviews on the subject, and, most of all, relating it to rehabilitation nurse interventions.

There are few studies in this field, which makes it difficult for health workers to appreciate this topic. Therefore, further studies are needed to produce scientific knowledge and seek answers to understand the need for the practice of Rehabilitation Nursing. Despite its limitations, this study represents an effort to include instruments adaptable to the hospitalization context and neurological diseases, in this case, stroke, also representing an "awakening" for the importance of providing this nursing care on an ongoing basis.

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NOTES

ORIGIN OF THE ARTICLE

Extracted from the Master's thesis - *Incontinência urinária após AVC: Contributos da Enfermagem de Reabilitação*, defended in the Master's in Rehabilitation Nursing Program at *Escola Superior de Saúde do Instituto Politécnico de Viana do Castelo,* in 2019.

CONTRIBUTION OF AUTHORITY

Study's conception: Chiado A, Ferreira S.
Data collection: Chiado A, Ferreira S.
Data analysis and interpretation: Chiado A, Ferreira S.
Discussion of results: Chiado A, Ferreira S.
Redaction and/or critical review of content: Chiado A,Ferreira S.
Review and approval of the final version: Chiado A, Ferreira S, Ribeiro O, Gomes B, Martins M.

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APPROVAL OF ETHICS COMMITTEE IN RESEARCH

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CONFLICT OF INTEREST

There were no conflicts of interest

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