



# REVISTA PORTUGUESA DE ENFERMAGEM DE REABILITAÇÃO

VOL. 6, Nº 1

*Original article reporting clinical or basic investigation*

DOI – 10.33194/rper.2023.288 | Electronic identifier – e288

Submission date: 23-10-2022; Acceptance date: 06-02-2023; Publishing date: 15-03-2023

## INTERVENÇÃO DO ENFERMEIRO ESPECIALISTA EM REABILITAÇÃO EM MULHERES COM INCONTINÊNCIA URINÁRIA, APÓS O AVC

*INTERVENTION OF THE REHABILITATION NURSE IN WOMEN WITH URINARY INCONTINENCE  
AFTER STROKE*

*CINTERVENCIÓN DE LA ENFERMERA REHABILITADORA EN MUJERES CON INCONTINENCIA  
URINARIA TRAS ICTUS*

Marta Braga<sup>1</sup> ; Salomé Ferreira<sup>1</sup> ; Carminda Morais<sup>1</sup>   
Andreia Chiado<sup>1</sup> ; Andreia Lima<sup>2</sup> 

<sup>1</sup> Instituto Politécnico de Viana do Castelo, Portugal

<sup>2</sup> Universidade Fernando Pessoa – Porto, Portugal

Corresponding author: Marta Soraia da Silva Braga, [soraiabraga12@gmail.com](mailto:soraiabraga12@gmail.com)

**How to cite this article:** Braga M, Ferreira S, Morais C, Chiado A, Lima A. Intervention of the Rehabilitation Nurse in Women with Urinary Incontinence after stroke. Rev Port Enf Reab [Internet]. 2023 Mar. 15 [cited 2023 Jun. 14];6(1):e288. Available from: <https://rper.aper.pt/index.php/rper/article/view/288>

### TECHNICAL FILE

eISSN: 2184-3023 pISSN: 2184-965X

[www.rper.pt](http://www.rper.pt)

### INTELLECTUAL PROPERTY

Associação Portuguesa dos Enfermeiros de Reabilitação

[www.aper.pt](http://www.aper.pt)

The journal's editorial team can be consulted on <https://rper.aper.pt/index.php/rper/about/editorialTeam>

The journal's review team can be consulted on <https://rper.aper.pt/index.php/rper/revisores>



This work is licensed under a Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License. Copyright (c) 2023 Portuguese Rehabilitation Nursing Journal

## RESUMO

**Introdução:** A incontinência urinária tem uma grande prevalência em utentes com AVC. O tratamento conservador é o mais recomendado, pois envolve menor custo financeiro e menos efeitos colaterais. Este estudo objetiva: Avaliar o efeito de um Programa de Reabilitação na Gestão da Incontinência Urinária na mulher após a ocorrência do AVC.

**Metodologia:** Trata-se de um Estudo de Casos Múltiplos, de método quantitativo. A amostra foi constituída por (n=5) mulheres com idade entre 53 e 87 anos. Foi aplicado um programa de reabilitação desde a deteção da incontinência urinária, até ao momento da alta. Os instrumentos utilizados foram: Escala de Autoeficácia de Broome e Diário Miccional.

**Resultados:** Este estudo permitiu concluir que as utentes que inicialmente apresentavam urgência e perdas de urina, deixaram de ter. Nos scores da escala de autoeficácia de Broome: na 1ª avaliação, na parte A e B todas apresentaram baixa autoeficácia, exceto o Caso 8 que na parte B obteve autoeficácia moderada. Na 2ª avaliação todas obtiveram elevada autoeficácia.

**Discussão:** Quando se compara o pré e pós do programa, verifica-se que todas obtiveram resultados positivos em relação à urgência urinária, perdas de urina, assim como ao nível de confiança na realização das contrações dos músculos pélvicos, sem que ocorram perdas de urina.

**Conclusão:** O programa de reabilitação para a gestão da incontinência urinária, teve um efeito positivo em todas as utentes do estudo.

**Descritores:** Acidente Vascular Cerebral; Enfermagem em Reabilitação; Incontinência Urinária.

## ABSTRACT

**Introduction:** Urinary incontinence has a high prevalence in patients with stroke. Conservative treatment is the most recommended, as it involves lower financial costs and side effects. This study aims to: Evaluate the effect of a Rehabilitation Program in the Management of Urinary Incontinence in women after the occurrence of a stroke.

**Methodology:** This is a Multiple Case Study, with a quantitative method. The sample consisted of (n=5) women aged between 53 and 87 years. A rehabilitation program was applied from the detection of urinary incontinence to the time of discharge. The instruments used were: Broome Self-Efficacy Scale and Voiding Diary.

**Results:** This study allowed us to conclude that the users who initially had urgency and loss of urine, no longer did. In the scores of the Broome self-efficacy scale: in the 1st assessment, in part A and B all had low self-efficacy, except for Case 8 which in part B had moderate self-efficacy. In the 2nd evaluation, all had high self-efficacy.

**Discussion:** When comparing before and after the program, all had positive results in relation to urinary urgency, urine leakage, in the level of confidence in performing pelvic muscle contractions, without urine leakage.

**Conclusion:** The rehabilitation program for the management of urinary incontinence had a positive effect on all study users.

**DESCRIPTORS:** Stroke; Rehabilitation Nursing; Urinary incontinence.

## RESUMEN

**Introducción:** La incontinencia urinaria tiene una alta prevalencia en pacientes con ictus. El tratamiento conservador es el más recomendado, ya que implica menores costos económicos y efectos secundarios. Este estudio tiene como objetivos: Evaluar el efecto de un Programa de Rehabilitación en el Manejo de la Incontinencia Urinaria en mujeres después de la ocurrencia de un ictus.

**Metodología:** Se trata de un Estudio de Caso Múltiple, con método cuantitativo. La muestra estuvo compuesta por (n=5) mujeres con edades entre 53 y 87 años. Se aplicó un programa de rehabilitación desde la detección de la incontinencia urinaria hasta el momento del alta. Los instrumentos utilizados fueron: Escala de Autoeficacia de Broome y Diario Miccional.

**Resultados:** Este estudio nos permitió concluir que las usuarias que inicialmente tenían urgencia y pérdida de orina, ya no la tenían. En las puntuaciones de la escala de autoeficacia de Broome: en la 1ª evaluación, en la parte A y B todos tuvieron autoeficacia baja, excepto el Caso 8 que en la parte B tuvo autoeficacia moderada. En la 2ª evaluación, todos presentaron autoeficacia alta.

**Discusión:** Al comparar el antes y el después del programa, todos tuvieron resultados positivos en relación a la urgencia urinaria, escape de orina, en el nivel de confianza para realizar las contracciones de los músculos pélvicos, sin escape de orina.

**Conclusión:** El programa de rehabilitación para el manejo de la incontinencia urinaria tuvo un efecto positivo en todos los usuarios del estudio.

**DESCRIPTORES:** Ictus; Enfermería de Rehabilitación; Incontinencia urinaria.

## INTRODUCTION

Cerebral Vascular Accident (CVA) has proved to be a serious public health problem<sup>(1)</sup>. In 2018, it was the main cause of mortality in Portugal, accounting for 9.9%, which corresponds to 11,235 deaths, according to the National Institute of Statistics<sup>(2)</sup>.

Stroke occurs more frequently in adulthood and is characterized by an interruption or blockage of blood supply, which destroys or damages part of the brain, resulting in a set of symptoms of neurological deficiency<sup>(3)</sup>.

When a stroke occurs, clinical signs related to changes in brain function develop quickly, with symptoms that last for more than 24 hours, or that lead to death, with no other cause of apparent vascular origin. In cases in which the neurological signs progressively worsen or new focal signs are triggered, it is understood as a stroke in progress<sup>(4)</sup>.

The most common signs are labial commissure deviation, paraesthesias, upper and lower hemiplegia or hemiparesis, mental confusion, cognitive impairment, aphasia and dysarthria, dysphagia, deficits and imbalances in gait, changes in coordination, severe headaches, changes in consciousness and in severe cases to death<sup>(3)</sup>.

Therefore, stroke is grouped into two major classes: hemorrhagic and ischemic<sup>(5)</sup>.

Most people who survive the acute phase of the stroke have neurological disability, requiring rehabilitation<sup>(6)</sup>.

The average life expectancy of the elderly population has been increasing worldwide by around 3% per year, with a greater development of chronic diseases and geriatric syndromes, such as urinary incontinence (UI). This disorder is associated with different causes, including stroke, which has a direct impact on independence and quality of life<sup>(7,8)</sup>.

The female gender is more at risk of developing voiding disorders, about 25-45% of this population develops complaints of urine loss throughout life<sup>(8)</sup>. This is due to intrinsic risk factors such as the anatomy of the pelvic floor, pregnancy, childbirth and decreased estrogen after menopause. Factors such as anxiety, depression and constipation are also considered risk factors and are more prevalent in women<sup>(9)</sup>.

UI is not associated with increased mortality, but it has a profound impact on well-being, self-esteem and quality of life. People diagnosed with UI are likely to develop, in association, depression, anxiety, work difficulties, often leading to social isolation<sup>(10)</sup>.

Comorbidities associated with UI range from prolonged hospital stays, urinary tract infections, complications related to the prolonged use of urethral catheters and contact dermatitis. UI is still an important reason for admitting elderly people to nursing homes<sup>(11)</sup>.

This condition entails huge economic costs, both for the national health system and for each individual. These costs are directly associated with expenses with diagnosis, hygiene products, treatments and expenses associated with comorbidities. In terms of indirect costs, lost wages, loss of productivity and inestimable costs caused by pain and suffering are described, due to their continued difficulty in socialization<sup>(10,12)</sup>.

Awareness of bladder filling and initiation of urination are dependent on synchronization of the nervous system, detrusor, sphincters, and pelvic floor. When there is any change in these organs, UI may occur. Controlling a full bladder depends on neuronal activity and healthy pelvic organs<sup>(13)</sup>.

In fact, during the bladder filling period, continence is ensured by the internal and external urethral sphincter and by the pelvic floor muscles. The internal sphincter is under involuntary (autonomic) control and the external sphincter is under voluntary and involuntary control. The levator ani muscles are a support network, exhibiting both reflex and voluntary activity. When the urination reflex appears, these sphincters relax and the smooth muscle of the bladder contracts, allowing urination<sup>(13)</sup>. Thus, whenever there is a change in the normal functioning of an organ that integrates this systemic complexity, UI can occur.

UI, described as one of the consequences of stroke, can happen because it can cause structural changes in the brain, responsible for controlling urination, compromising the urinary system<sup>(14)</sup>.

Some users after the stroke may notice involuntary contraction of the detrusor and a sensation of urinary urgency, many of them losing the ability to voluntarily contract the external sphincter, presenting losses if they do not urinate quickly; others completely lose the ability of the sphincter to contract. It is known that detrusor overactivity is one of the sequelae of cortical injury. There are several theories that try to explain detrusor hyperactivity, that is, the cause of involuntary vesical contractions during the vesical filling

phase, such as the decrease in the inhibitory response of the central nervous system, which occurs in neurological diseases such as stroke, reducing the suprapontine inhibitory control and low-intensity afferent impulses, generating involuntary bladder contractions, which lead to urinary incontinence<sup>(15)</sup>.

In the treatment of UI, the conservative approach is recommended as the first line, including physical, behavioral and psychological means, often used in combination. It has the advantage of not having side effects, low cost and low complexity<sup>(12)</sup>. This treatment involves lifestyle modifications, programmed urination, control techniques, muscle training, biofeedback and can be conducted by nurses<sup>(9)</sup>.

During the treatment of UI, it is essential that there is a detailed record, and the voiding diary can be used, which is an instrument used to assess the severity of UI and provides a record of urine elimination patterns, which can indicate the frequency, urinary losses, the volume eliminated, the amount and type of fluid consumed and the person's assessment of the reasons for the loss of urine (which is sometimes related to activity or urgency)<sup>(12,13,16)</sup>. This allows for a record of urine output patterns, also constituting a self-learning object that allows greater insight into bladder function and the behavioral antecedents of UI<sup>(12,13,16)</sup>.

In terms of behavioral interventions, these are incorporated into the daily routine, with the aim of improving or alleviating the symptoms caused by UI. The most common interventions are fluid and diet adjustment, smoking cessation, weight loss, correction of bowel habits, adjustment of urination frequency and rehabilitation of pelvic floor muscles<sup>(13)</sup>.

With regard to bladder training, programmed and suggested bladder emptying, this is performed through a technique in which the time between urinations is gradually increased through a pre-defined daily schedule<sup>(13)</sup>. This training is based on 3 components: patient education, programmed voiding and positive reinforcement. It is important that trips to the bathroom are generally every 2 to 3 hours<sup>(13)</sup>.

Fluid restriction is a widely used strategy to relieve symptoms. Users with abnormally high fluid intake produce excess urine<sup>(17,18)</sup>. When there is an abnormally low fluid intake, this results in small amounts of concentrated urine that can irritate the bladder<sup>(17,18)</sup>. Therefore, users should be advised to plan their fluid intake accordingly. Therefore, an intake of at least 1.5 to 2L of liquid per day is recommended, which should be stopped 3 hours before the user goes to bed<sup>(17,18)</sup>.

With regard to pelvic floor rehabilitation, this is an essential behavioral treatment to eliminate UI, which has been shown to be effective in users with stress, urgency or mixed UI<sup>(12,13)</sup>. It has been demonstrated that the benefits of this intervention can last for up to 5 years<sup>(12,13)</sup>. Initially, the user must learn to identify, isolate, contract and relax the pelvic floor, and subsequently, an exercise program is started in order to improve the function of the pelvic floor, including strength and resistance<sup>(12,13)</sup>. Strength is achieved through small contractions (1 to 2 seconds) and resistance is achieved through contractions maintained for longer periods (10 seconds), followed by a relaxation period twice as long<sup>(12,13)</sup>. The exercise program should gradually increase the capacity and strength of the MPP, so the user should start the program with fewer repetitions and increase progressively. These should be performed in standing, sitting and lying positions<sup>(12,13)</sup>.

This is possible through the intervention of the rehabilitation nurse (RN), whose function



is to promote early diagnosis and preventive actions, in order to ensure the maintenance of the person's functional capacities, prevent complications and avoid disabilities, provide therapeutic interventions that aim to improve residual functions, maintain or regain independence in life activities, and minimize the impact of already established disabilities, namely in terms of motor, sensory, cognitive, respiratory, cardiac, orthopedic, feeding, elimination and of sexuality<sup>(19,21)</sup>.

The RN has a set of knowledge that leads to specific procedures, aiming to help people with acute, chronic or sequelae diseases, in order to maximize their potential and promote their independence, in order to enhance the person's satisfaction and preserve your self-esteem. In this way, it is expected that the RN will develop an evidence-based practice, incorporate new research findings into its practice, and participate in research projects aimed at increasing knowledge and developing its skills<sup>(21)</sup>.

The RN's role is fundamental in identifying self-care needs and as a facilitator of the transition process. Thus, this has the role of guiding, teaching, providing physical and psychological support and maintaining an environment conducive to personal development. According to Orem, the RN still has an essential role in initiating and maintaining the relationship with the user and family until they no longer need nursing care; determine how the user can be helped through nursing care; respond to their needs through contact and assistance; to prescribe and provide help to the user and his family, coordinating and integrating nursing care in his daily life<sup>(22)</sup>.

The Nursing Order presents elimination processes as being within the scope of intervention of the RN<sup>(23)</sup>.

Caring for people with changes in the pattern of bladder elimination is a priority in rehabilitation nursing interventions, with very positive results. The RN has at its disposal several intervention strategies; however, this should focus on the less invasive and safer procedures, considering the user's incapacity, the cost/effectiveness ratio, the technical complexity and the possible complications<sup>(12, 24)</sup>.

In this way, it is understood that behavioral techniques are part of independent rehabilitation nursing interventions and are part of the first line of treatments for people with urinary incontinence. These aim to reduce the number of occurrences of urine leakage, normalize urinary frequency, improve control over urgency, increase bladder capacity and restore confidence in bladder control. They include behavioral therapy, pelvic floor exercises with or without biofeedback, retention of the vaginal cone, electrical stimulation and education of the person and caregivers, with positive reinforcement for the efforts and progress achieved<sup>(12,24)</sup>.

Therefore, through the present study, we seek to contribute to the visibility of the intervention of the nurse specialist in rehabilitation, in the management of urinary incontinence and, in this way, we intend to: Evaluate the effect of a Rehabilitation Program in the Management of Urinary Incontinence in women after the occurrence of stroke.

## METHODOLOGY

It is a study of multiple cases, with the application of quantitative methods in the treatment and analysis of data. These studies are classified as single or multiple case studies, that is, a study may contain only a single case or more than one case (multiple cases). The last classification has been increasingly used, since the evidence of multiple cases is considered more vigorous, and the study in general, for this reason, turns out to be seen as more robust<sup>(25)</sup>.

The sample consisted of (n=5) women aged between 53 and 87 years old, with a diagnosis of urinary incontinence after the occurrence of a stroke, in the acute phase, admitted to a stroke unit in the North during the period of blood collection. data, shown in Table 1.

Table 1 - Schedule of users' participation in the study

Units of analysis	Dates	December 2021		January 2022		February 2022	
		1 to 15	16 to 31	1 to 15	16 to 31	1 to 15	16 to 28
<b>Case 1</b> 30 sessions		Start- 6	End – 20				
<b>Case 5</b> 32 sessions			Start – 20	End – 9			
<b>Case 7</b> 14 sessions				Start - 3 End – 9			
<b>Case 8</b> 22 sessions				Start - 3 End - 13			
<b>Case 9</b> 20 sessions					Start – 27	End – 5	

The participants signed an informed consent form and the researchers complied with the ethical and legal principles resulting from the investigation, respecting all the ethical aspects present in the Declaration of Helsinki<sup>(26)</sup>. The study ran from December 2021 to February 2022, having been approved by the Ethics Committee of the Local Health Unit where it was developed.

Cases were selected non-probabilistically, for convenience, as investigators can select individuals who meet the entry criteria and are easily accessible, in a given location and at a precise time<sup>(27,28)</sup>.

Therefore, the following inclusion criteria were created: being a woman; be 50 years of age or older; being admitted to the Stroke Unit during the period of data collection; presenting urinary incontinence after the diagnosis of stroke; obey simple orders; understand what you are told; being able to stick to the hydration plan; be able to perform pelvic muscle strengthening exercises.

On the first day of data collection, before starting the Rehabilitation Program for Urinary Incontinence Management (PREGIU), the instruments for this purpose were applied, namely the socio-demographic and clinical questionnaire and the Broome Self-Efficacy Scale. The questionnaire was divided into two parts: one with sociodemographic data (age, marital status, educational qualifications) and a second part related to clinical data (BMI, personal history, location, type of stroke and the presence of deficits); and the Broome Self-Efficacy Scale, this instrument is divided into two parts and consists of 23 items<sup>(29)</sup>. In each item from 1 to 14 of part A, users convey the level of confidence they feel when performing a certain activity without the occurrence of urine leakage. In part B, consisting of 9 items, users indicate the level of confidence they feel when contracting the PFM in a given task, in order to prevent urine leakage<sup>(29)</sup>. The scale varies, in both parts, between 0 (not at all confident) and 100 (very confident). Therefore, the final score is obtained by adding all items from both parts and dividing by the total number of items. The higher the number obtained, the higher the level of self-efficacy of individuals. Therefore, an average below 33 points indicates low self-efficacy; from 33 to 66 points indicates moderate self-efficacy and above 66 points indicates high self-efficacy<sup>(29)</sup>.

From the first to the last day of collection, a voiding diary was used, which allowed recording hydration, urine volume, urinary frequency, amount of urine loss and urinary urgency, from the first day, for 24 hours, to at the time of discharge. When the users were discharged, the Broome Self-Efficacy Scale was again applied in order to compare the results.

The rehabilitation program for the management of urinary incontinence had a number of different sessions, according to the length of stay of each user and consisted of an exercise plan to strengthen the pelvic floor muscles and behavioral changes such as: increasing intake water during the day and reduction after dinner time (7 pm); voiding training by scheduling trips to the bathroom 2/2 hours during the day and 4/4 hours during the night.

The exercise plan for strengthening the pelvic floor muscles (Table 2) lasted approximately 20 minutes, and were performed by the rehabilitation nurses, twice a day, once in the morning and another in the afternoon, as can be seen appear in the following table:

Table 2 - Pelvic floor muscle strengthening exercise plan

Number of repetitions	Interventions	Justification
<b>Dorsal Decubitus</b>		
-	Teaching, instructing and training the dissociation of breathing times	Awareness and ability to control breathing, reducing energy expenditure.
-	Teaching and encouraging the adoption of the relaxation position	Decrease of muscular and psychic tension, providing relaxation, in order to facilitate the user's ability to control breathing, reducing muscle overload.
10 x 2" and 10"	In extension, contracting the muscles of the pelvic floor, abdomen and buttocks, pressing on the surface	Strengthening of pelvic floor muscles, adductors, hamstrings and glutes.



10 x 2" and 10"	Performing the bridge exercise at the time of exhalation	Strengthening of the transverse abdominis, hamstrings and gluteal muscles.
10 x 2" and 10"	Performing the bridge exercise with contraction of the pelvic floor muscles at the time of expiration	Strengthening of the transverse abdominis, hamstrings and gluteal muscles.
10 x 2" and 10"	With hip and knee flexion, adduct the lower limbs by pressing the pad while exhaling, simultaneously contracting the abdomen and buttocks.	Strengthening of pelvic floor muscles, adductors, hamstrings and glutes.
10 x 2" and 10"	With a Pilates ball, under the calves and knees in flexion at 90°. At the moment of inspiration, the user must contract the gluteus and raise the hip region.	Strengthening the transverse abdominis, hamstrings, glutes, hip adductors and pelvic floor muscles.
<b>Sitting</b>		
10 x 2" and 10"	Crossing the lower limbs and contracting the pelvic floor when exhaling.	Strengthening the pelvic floor, adductors and glutes.
10 x 2" and 10"	Sitting on a Pilates ball and contracting the pelvic floor (if you are able to do so)	Strengthening the pelvic floor, adductors and glutes.
<b>Orthostatic Position</b>		
10 x 2" and 10"	Contraction of pelvic floor muscles in standing position	Strengthening of the pelvic floor and transverse abdominus.
10 x 2" and 10"	Contraction of the pelvic floor muscle in hip anteversion during expiration	Strengthening of the pelvic floor and transverse abdominus.
10 x 2" and 10"	Contraction of the pelvic floor muscle in retroversion of the hip during expiration	Strengthening of the pelvic floor and transverse abdominus.

## RESULTS

Table 3 shows the sociodemographic data that characterize the sample.

To obtain results throughout the study, the SPSS version 27 software was used.

Table 3 – Sociodemographic data

Variables \ Unit of analysis	Case 1	Case 5	Case 7	Case 8	Case 9
Age	62	87	54	53	77
Marital Status	Widow	Widow	Married	Married	Single
Educational Qualifications	1 <sup>st</sup> cycle	1 <sup>st</sup> cycle	2 <sup>nd</sup> cycle	1 <sup>st</sup> cycle	1 <sup>st</sup> cycle

The sample consists of 5 female participants. Regarding marital status, 1 is single, 2 are married and the other 2 are widows. With regard to schooling, 4 completed the 1<sup>st</sup> cycle and 1 finished the second cycle. Regarding age, all participants are aged over 53 years old.

Table 4 - Relation between clinical variables and program results

CASES	Clinical variables		Results of PREGIU					
			Urinary Urgency		Urinary Frequency		Urine Losses	
			Before PREGIU	After PREGIU	Before PREGIU	After PREGIU	Before PREGIU	After PREGIU
Case 1	Type of CVA	Ischemic	Much	No one	4	10	Open tap	Without Losses
	Stroke location	No imaging translation						
	Presence of deficits	HMP, ALME, DS						
	Personal background	DM, HTA, PC, HE, PN						
	BMI	Normal						
Case 5	Type of CVA	Ischemic	Much	No one	6	6	A drop	Without losses
	Stroke location	No imaging translation						
	Presence of deficits	HMP, ALME						
	Personal background	DM, HTA, DL, PN						
	BMI	Grade I obesity						
Case 7	Type of CVA	Ischemic	Much	No one	4	6	Open tap	Without losses
	Stroke location	No imaging translation						
	Presence of deficits	HMP, ALME, Aphasia						
	Personal background	HTA, PN						
	BMI	Normal						
Case 8	Type of CVA	Hemorrágico	No one	No one	6	8	A lot of drops	Without losses
	Stroke location	Brainstem						
	Presence of deficits	HMP, ALME						
	Personal background	HTA						
	BMI	Grade III obesity						
Case 9	Type of CVA	Ischemic	A little	No one	7	8	A drop	Without losses
	Stroke location	No imaging translation						
	Presence of deficits	Aphasia						
	Personal background	HTA, DL						
	BMI	Grade I obesity						

ALME – Changes in gait and balance DL – Dyslipidemia DM – Type II Diabetes Mellitus	DS – Dysarthria HE – Alcoholic habits HMP – Hemiplegia/Hemiparesis	CP – Cardiac Pathology PN – Normal births PREGIU – Rehabilitation Program in the Management of Urinary Incontinence
---	--	---

The results of the study indicate that of the 5 participants, 4 had ischemic stroke without imaging translation and 1 had a hemorrhagic stroke of the brainstem.

Regarding the presence of deficits, 1 had dysarthria, 2 had aphasia, 4 had changes in gait and balance and 4 had hemiparesis/hemiplegia.

Regarding personal history, only 1 participant had alcoholic habits, 1 had heart problems, 2 had dyslipidemia, 2 had type II DM, 3 had normal deliveries and all had arterial hypertension.

With regard to BMI, 2 participants were normal, 2 had grade I obesity and 1 had grade III obesity.

Regarding urinary urgency, before PREGIU, 3 participants had a lot (M), 1 had little (P) and 1 had none (N). After completing the PREGIU, none of the participants had urinary urgency. In order to be able to calculate averages, these evaluations were coded as follows: (N/0), (P/1) and (M/2).

The mean evolution of urinary urgency during the experiment was calculated for each case: case 1 has a mean of  $(0.73 \pm 0.82)$  case 5 has a mean of  $(0.18 \pm 0.50)$ ; case 7 presents an average of  $(0.14 \pm 0.37)$ ; case 8 has a mean of  $(0.06 \pm 0.35)$  and case 9 has a mean of  $(0.03 \pm 0.18)$ .

With regard to urinary frequency, it was concluded that it increased in all cases, 4 users, except in Case 5, which remained the same, which can be explained due to behavioral therapy, which assumes that users are encouraged to urinate programmed in order to avoid urine leakage.

In terms of the number of micturitions in each case, it can be seen that during the entire period of data collection: case 1 has an average of  $(7.53 \pm 2.00)$  micturitions; case 5 presents an average of  $(6.41 \pm 1.10)$ ; case 7 presents an average of  $(6.29 \pm 1.25)$ ; case 8 presents an average of  $(7.09 \pm 1.30)$ ; case 9 presents an average of  $(7.5 \pm 0.71)$  urinations per day.

Regarding urine loss, before PREGIU, 2 participants had leaked urine like an open tap (TA), 1 had leaked many drops of urine (MG) and 2 had leaked one drop of urine (UG). After completing the PREGIU, none of the users had urine leakage. Urine losses were coded as: without urine leakage (SP/0), (UG/1), (MG/2) and (TA/3), in order to be able to calculate averages. Thus, throughout the data collection period, case 1 presented an average of  $(1.91 \pm 1.15)$ ; case 5 presents an average of  $(0.48 \pm 0.85)$ ; case 7 presents an average of  $(1 \pm 1.12)$ ; case 8 presents an average  $(0.55 \pm 0.82)$  and case 9 presents an average of  $(0.45 \pm 0.69)$ .

In Part A of the Broome Self-Efficacy Scale, in the 1st assessment, all participants scored  $0 \pm 0$  (<33 means low self-efficacy). However, in the final evaluation, the scores oscillate between  $(82.50 \pm 10.55)$  and  $(96.67 \pm 4.92)$  (>66 means high self-efficacy), with case 1 presenting an average of  $(92.50 \pm 17.65)$ ; case 5 an average of  $(90.83 \pm 11.65)$ , case 7 an average of  $(90.83 \pm 7.93)$ ; case 8 an average of  $(96.67 \pm 4.92)$  and case 9 an average of  $(82.50 \pm 10.55)$ . In the 2nd assessment, all users had a score of  $(90.67 \pm 5.15)$ , that is, high self-efficacy.

In Part B of the Broome Self-Efficacy Scale, in the 1st assessment the score was mostly ( $0.00 \pm 0.00$ ) (>33 means lower self-efficacy); except for case 8, it had a mean of ( $42.86 \pm 18.90$ ) (33-66 means moderate self-efficacy). With regard to the 2nd assessment, all participants have high self-efficacy (>66 which means high self-efficacy), with case 1 having an average value of ( $74.29 \pm 35.52$ ); case 5 an average of ( $97.14 \pm 4.88$ ); case 7 an average ( $87.14 \pm 9.51$ ); case 8 an average of ( $98.57 \pm 3.78$ ) and case 9 an average of ( $81.43 \pm 6.90$ ).

## DISCUSSION

After completing the PREGIU, none of the participants had urinary urgency. In view of these results, it appears that the 4 elements of the sample that presented urinary urgency evolved positively, not presenting urinary urgency at the end of PREGIU. Case 1 had the highest mean urinary urgency values and case 9 was the one that expressed the lowest mean urinary urgency values throughout the PREGIU application.

The results of our study demonstrate the added value of an intervention in this area, which are also corroborated by other authors, namely in a cross-sectional study, on the nursing diagnosis of UI in patients with stroke, carried out in a neurology outpatient clinic of a public hospital, in the period from September to November 2013, with a sample of 156 patients with a medical diagnosis of stroke, consecutively selected for convenience, in which reports of urinary urgency were also identified in 90.6% of the participants<sup>(14)</sup>.

Also in a quantitative study on the prevalence of urinary incontinence and associated factors, it was found that 33.3% of the participants had urinary urgency, in line with the present study, thus reinforcing the added value of the intervention of the rehabilitation nursing program<sup>(30)</sup>.

The present study also intended to evaluate the changes in urinary frequency in women after the occurrence of a stroke, throughout the sessions of the rehabilitation program, and it is expected that this will decrease. However, it was found that in most cases the urinary frequency increased. These results can be explained by the procedures mentioned above, in the procedure, because, in fact, it was part of the program to educate users to go to the bathroom and try to establish urination through their programming, which happened every 2/2 hours during the day and 4/4 hours at night, counting the incentive of 10 micturitions per day. In this way, it is understood that the main concern during the implementation of PREGIU was to prevent users from presenting urinary urgency and urine leakage.

The average urinary frequency along the PREGIU is in line with the quasi-experimental study with MPP exercises, carried out in two groups of users with UI after the stroke, revealing that the daily urinary frequency of the participants in the experimental group was ( $7.39 \pm 4.29$ ) and the control group ( $8.23 \pm 3.81$ ) urinations per day<sup>(31)</sup>.

In a randomized study of 44 women, dividing them into two groups and performing MPP exercises for the treatment of women with UI, it is understood that in the experimental group the urinary frequency was 7.00 before the program and 1.00 urination after the program; while in the control group the urinary frequency before the program was 11 and after the program it was 10 micturitions per day<sup>(32)</sup>. The present study is not in line with the previously mentioned study, where there was a decrease in urinary frequency, since, in the present

study, urinary frequency increased and this may have been due to behavioral therapy, in which users were encouraged to establish programmed urinations every 2 -2 hours during the day and 4-4 hours during the night<sup>(32)</sup>.

With regard to urine loss, it is understandable that case 1 was the one that presented a higher average of urine losses, and case 9 was the one that presented a lower average of urine legs, however, both the cases finished PREGIU without urine loss, meaning that the program achieved its proposed purpose, urinary continence.

Before PREGIU, 2 participants had TA urine leakage, 1 had MG leakage, and 2 had UG leakage. The results obtained are in line with a study where it was identified that 41.5% of the participants had involuntary loss of small volumes of urine<sup>(14)</sup>. Also in a study carried out with an incontinent female population, the results indicated that 74.3% of the women had small amounts of urine loss; the remaining 22.5% had moderate urine loss and 3.2% reported large amounts of urine loss<sup>(33)</sup>.

Analyzing the values in Table 4, referring to the variation in the behavior of the variables manipulated by PREGIU (urinary urgency, urinary frequency and urine loss), relating the first and last day of the program, it is verified that: After performing a correlation Spearman to establish relations between the different T-test variables for paired samples, in order to compare the values before and after the intervention, it was possible to verify that there are statistically significant differences before and after the program regarding urinary urgency [ $t(4) = 3.50$ ;  $p = 0.025$ ;  $d = 1.57$ ] and urine loss [ $t(4) = 4.47$ ;  $p = 0.011$ ;  $d = 2.00$ ], understanding that in both cases there are improvements: the mean urinary urgency before the program was  $1.40 \pm 0.89$ , after PREGIU it was  $(0.00 \pm 0.00)$ ; in relation to urine losses before PREGIU the mean was  $(2.00 \pm 1.00)$  and after PREGIU the mean was  $(0.00 \pm 0.00)$ .

It is also verified that case 1 is the one that presents a higher urinary urgency, as well as a higher urinary frequency and greater urine leakage, which seems to suggest an association between these three variables. Case 9 is the one with the lowest urinary urgency, as well as the lowest urinary losses; however, this does not translate into the urinary frequency, which is one of the highest.

In Part A of the Broome Self-Efficacy Scale: In an item-by-item analysis, it was found that the item with the highest overall average is item 1 (contracting the pelvic muscles). On the contrary, item 10 (contracting pelvic muscles quickly), item 9 (contracting pelvic muscles when standing up and brushing teeth) and item 11 (contracting pelvic muscles when sad) are the items that show the lowest average.

Regarding the assessment of the level of confidence in carrying out pelvic muscle contractions, without urine leakage, in the final assessment case 9 is the one with the lowest value.

The average of the 5 participants in the 2nd evaluation, that is, after the implementation of PREGIU, is  $(90.67 \pm 5.15)$ , which means high self-efficacy, demonstrating the achievement of positive results.

In the present study, all users had a score greater than 66, the average of the 5 participants in the second evaluation, that is, after the implementation of PREGIU, is  $(90.67 \pm 5.15)$ . A score greater than 66 on the Broome self-efficacy scale means high self-efficacy<sup>(29)</sup>. In a study, where



Broome's self-efficacy scale was also used, the studied sample had only a score of 61.42, which translates to moderate self-efficacy, it is understandable that both studies showed positive results in terms of muscle contraction confidence. MPP without urine loss<sup>(34)</sup>.

In Part B of the Broome Self-Efficacy Scale, in an item-by-item analysis, it is understood that the item in which the average is higher was item 1 (when you feel a very strong urge to urinate). The items with the lowest average were item 2 (when you sneeze) and item 8 (when you cough).

The aforementioned is in line with a study, which found that in its sample there were reports of small amounts of urine when sneezing (64.4%) and coughing (61.0%)<sup>(14)</sup>.

In the present study, it is understood through the averages obtained in the second part of the scale, in the evaluation carried out after the application of PREGIU, that all users had a score greater than 66, which indicates that all of them had high self-efficacy. Thus, the average score of the 5 participants in the present study is  $(87.71 \pm 10.33)$ , which is in line with the results of another study that also used the Broome self-efficacy scale, in which the average score of the second part of the scale, in the studied sample it was 66.19 points, also presenting a high self-efficacy<sup>(34)</sup>.

Some authors understand that self-efficacy is defined as the beliefs that each person has in relation to the ability to exercise control over their own functioning<sup>(35)</sup>. Thus, people's expectations of efficacy ultimately affect their behavior.

That said, it is important to create pelvic floor rehabilitation programs, in order to treat dysfunctions, rehabilitating the PFM through specific exercises, in order to strengthen it so that it recovers its functionality, returning to normality. tonus and the reflex response, improving the person's quality of life, self-esteem and personal life<sup>(36)</sup>.

It is concluded, therefore, that the increase in the self-efficacy of the PFM contraction translates into the enhancement of exercise performance, which in turn allows you to carry out your daily life with more confidence<sup>(29)</sup>.

## CONCLUSION

With the present study, it is concluded that comparing the first day of the program and the last, it is observed that positive results are obtained in terms of: a decrease in urinary urgency and the amount of urine lost, an increase in confidence in performing muscle contractions pelvic organs, without the occurrence of urine leakage and to prevent involuntary leakage of urine.

In terms of urinary frequency, it was expected that this would decrease over the time of implementation of the rehabilitation program in the management of urinary incontinence. Due to behavioral therapy, by planning urination every 2 hours during the day and every 4 hours during the night, the users ended up emptying the bladder more constantly in order to avoid urine leakage.

Based on the general results of the study, it is understood that the intervention of the nurse specialist in rehabilitation nursing in users with urinary incontinence after stroke, translates into health gains, which in turn improve the quality of life of users through increased self-

confidence in pelvic floor muscle contraction.

One of the existing limitations in the study was the temporal limitation because it is a study developed in an academic context, since it is considered that the extension of data collection would allow a more consistent and robust sample. For an effective treatment of PPM, it would also be important to increase the PREGIU application time in order to restore their functionality. The age of some of the participants and comorbidities made it difficult to perform some of the exercises.

With regard to the bibliographical research, which supported the entire investigation process, it is easily understood that there is a very serious lack of studies in the area of incontinence in patients with stroke, both generally and in particular in rehabilitation nursing.

Another limitation is that most of the studies found on the subject describe the impact that UI has in different situations, but rarely describe and correlate the evolution of a rehabilitation program. At the level of the Portuguese population, no study was found that evaluated the intervention of the RN through a PREGIU in women with UI after the stroke, which made it difficult to discuss the results.

In this way, it is suggested and emphasized the importance of producing research in this area that is still so little studied.

## REFERENCES

1. MELO AMC DE. INTERVENÇÃO DE ENFERMAGEM JUNTO DA PESSOA COM AVC E SUA FAMÍLIA. *Sinais Vitais: A Enfermagem em Revista*. 2016;123:46–55.
2. Instituto Nacional de Estatística. *Causas de Morte em 2018. Destaque informação à Comun Soc*. 2020;1–10.
3. Ministério da Saúde. *Diretrizes de Atenção à Reabilitação da Pessoa com Acidente Vascular Cerebral* [Internet]. Brasília: Editora MS; 2013. 72 p. Disponível em: [www.saude.gov.br/bvs](http://www.saude.gov.br/bvs)
4. Menoita EC, Sousa LM de, Alvo IBP, Vieira CM. *Reabilitar a Pessoa Idosa com AVC: Contributos para um envelhecer resiliente*. Lusodidata, editor. Loures; 2014.
5. Greenberg DA, Aminoff MJ, Simon RP. *Neurologia Clínica*. 8ª. Porto Alegre: Artmed; 2014. 221 p.
6. Moraes M de A, Mussi FC, Muniz LS, Sampaio E e S, Leitão T de S, Santos CA de ST, et al. Caracterização clínica, incapacidade e mortalidade de pessoas com acidente vascular cerebral isquêmico em 90 dias. 2022;75(2):1–9.
7. Freitas CV, Capela ILB, Caldas SACS de, Almeida TMG. Abordagem fisioterapêutica da incontinência urinária em idosos na atenção primária em saúde. *Fisioter e Pesqui*. 2020;27(3):264–70.
8. Guedes TSR, Guedes MBOG, de Oliveira HKM, Soares RL, da Cunha VL, Lopes JM, et al. Urinary incontinence in physically active older women of Northeast Brazil. *Int J Environ Res Public Health*. 2021;18(11):1–12.
9. Assis GM, Cristaldi CP, Silva, Martins G. Proposta de protocolo de avaliação e treinamento da musculatura do assoalho pélvico para atendimento à mulher com incontinência urinária. 2021;1–9.
10. Sociedade Portuguesa de Uroginecologia. *Consenso Nacional sobre Uroginecologia 2021. Secção Port Uroginecologia* [Internet]. 2021;1–331. Disponível em: <https://spginecologia.pt/consenso/11324/>
11. Botelho F, Silva C, Cruz F, Complementar I, Hospitalar A. Incontinência Urinária Feminina Definição e Epidemiologia Tipos de incontinência. *Acta Urológica*. 2007;24:79–82.
12. Ribeiro O, Néné M, Sequeira C. *Enfermagem de Reabilitação: Conceções e Práticas*. 1ª. Lisboa: Lidel; 2021.
13. Gray M, N.Moore K. *Cuidados de Enfermagem em Urologia: No adulto e na criança*. Loures: Lusociência; 2009.

14. Leandro TA, de Araujo TL, Cavalcante TF, Lopes MV de O, de Oliveira TMF, Lopes ACM. Urinary incontinence nursing diagnoses in patients with stroke. *Rev da Esc Enferm*. 2015;49(6):923–30.
15. Júnior AN, Filho MZ, Reis RB dos. *Urologia Fundamental*. São Paulo: Planmark; 2010.
16. Freire AB, Froemming C, Pozzebon NM, Meereis ECW, Braz MM, Pivetta HMF. Efeitos da bandagem funcional sobre a perda urinária e qualidade de vida de mulheres incontinentes. *Fisioter Bras [Internet]*. 2017;17(6):526–33. Disponível em: <https://portalatlanticaeditora.com.br/index.php/fisioterapiabrasil/article/view/693/1528>
17. Reis RB dos, Cologna AJ, Martins ACP, Paschoalin EL, Tucci Jr S, Suaid HJ. Incontinência urinária no idoso. *Acta Cir Bras*. 2003;18(suppl 5):47–51.
18. Elaine Cestári C, Henrique Cestári Souza T, Saboia da Silva A. Impact of urinary incontinence in the quality of living of elderly. *Rev Ciência e Estud Acadêmicos Med*. 2017;7:27–37.
19. Ordem dos Enfermeiros. Regulamento das Competências Comuns do Enfermeiro Especialista- Reg. nº 140/2019. *Diário da República*, 2.ª série Lisboa: Diário da Republica; 2019 p. 4744–50.
20. OMS. Rehabilitation [Internet]. 2021 [citado 11 de Junho de 2022]. Disponível em: <https://www.who.int/news-room/fact-sheets/detail/rehabilitation>
21. Ordem dos Enfermeiros. Regulamento n.º 392/2019 - Regulamento das Competências específicas do enfermeiro especialista em Enfermagem de Reabilitação. *Diário da República*, 2ª série - nº 85 - 3 maio 2019 [Internet]. 2019;13565–8. Disponível em: <https://dre.pt/home/-/dre/122216893/details/maximized>
22. Santos B, Ramos A. Da formação à prática: Importância das Teorias do Autocuidado no Processo de Enfermagem para a melhoria dos cuidados. *J aging Innov*. 2017;6:51–4.
23. Ordem dos Enfermeiros. Ordem dos Enfermeiros. (2010). Regulamento das Competências Especificas do EEER. Ordem Dos Enfermeiros, 5. <https://doi.org/10.1007/s00192-015-2783-9> Regulamento das Competências Especificas do EEER. Ordem dos Enfermeiros [Internet]. 2010;5. Disponível em: [http://www.ordemenfermeiros.pt/legislacao/Documents/LegislacaoOE/RegulamentoCompetenciasReabilitacao\\_aprovadoAG20Nov2010.pdf](http://www.ordemenfermeiros.pt/legislacao/Documents/LegislacaoOE/RegulamentoCompetenciasReabilitacao_aprovadoAG20Nov2010.pdf)
24. Marques-Vieira C, Sousa L. *Cuidados de Enfermagem de Reabilitação à Pessoa ao Longo da Vida*. 1ª Edição. Loures: Lusodidacta; 2016.
25. Yin RK. *Case Study Research and Applications: Design and Methods*. 6ª. India: SAGE; 2018.
26. Associação Médica Mundial. Declaração de Helsinque da Associação Médica Mundial- Princípios Éticos para Pesquisa Médica Envolvendo Seres Humanos [Internet]. Fortaleza, Brasil; 2013. p. 6. Disponível em: [http://www.amb.org.br/\\_arquivos/\\_downloads/491535001395167888\\_DoHBrazilianPortugueseVersionRev.pdf](http://www.amb.org.br/_arquivos/_downloads/491535001395167888_DoHBrazilianPortugueseVersionRev.pdf)
27. Hulley SB, Cummings SR, Browner WS, Grady DG, Newman TB. *Delineando a Pesquisa Clínica*. 3ª. Porto Alegre: Artmed; 2008.
28. Fortin MF. *Fundamentos e Etapas do Processo de Investigação*. Montreal: Lusodidacta; 2009.
29. Branquinho N, Marques A, Robalo L. Contributo para a Adaptação e Validação do Instrumento de Medida “Escala de Auto-Eficácia de Broome para Exercícios da Musculatura do Pavimento Pélvico”. *EssFisionline*. Outubro de 2007;
30. Oliveira TM de, Valdez FML, Lima KE dos S, Magalhães MS, Abdon APV, Bezerra IN. Prevalência de incontinência urinária e fatores associados em mulheres no climatério em uma unidade de atenção primária à saúde. *Rev Bras em Promoção da Saúde*. 2015;28(4):606–12.
31. Arkan G, Beser A, Ozturk V, Bozkurt O, Gulbahar S. Effects on urinary outcome of patients and caregivers’ burden of pelvic floor muscle exercises based on the health belief model done at home by post-stroke patients. *Top Stroke Rehabil [Internet]*. 2019;26(2):128–35. Disponível em: <https://doi.org/10.1080/10749357.2018.1552741>
32. ZanettiMRD, Castro R de A, Rotta AL, dos Santos PD, Sartori M, Girão MJBC. Impact of supervised physiotherapeutic pelvic floor exercises for treating female stress urinary incontinence. *Sao Paulo Med J*. 2007;125(5):265–9.
33. Xu D, Wang X, Li J, Wang K. The mediating effect of «bothersome» urinary incontinence on help-seeking intentions among community-dwelling women. *J Adv Nurs*. 2015;71(2):315–25.

34. Sánchez EMM, Serrano CMS, Almeida MD la C, Mohedo ED, Martínez RC. Spanish version of the Broome pelvic muscle self-efficacy scale: Validity and reliability. *Phys Ther.* 2013;93(12):1696–706.
35. Sacomori C, Cardoso FL, Porto IP, Negri NB. The development and psychometric evaluation of a self-efficacy scale for practicing pelvic floor exercises. *Brazilian J Phys Ther.* 2013;17(4):336–42.
36. Squinello L, Nogueira V, Jardim A. Disfunções do assoalho pélvico : o caso específico dos problemas urinários Pelvic floor dysfunctions : the specific case of urinary problems. 2022;44679–90.

## ETHICAL DISCLOSURES

**Financing:** This work did not receive any financial contribution or scholarship.

**Ethics Committee:** Study authorized by the Ethics Committee of ULSAM

**Statement of Informed Consent:** Written informed consent to publish this work was obtained from participants.

**Conflicts of interest:** The authors declare that there are no conflicts of interest.

**Provenance and Peer Review:** Not commissioned; externally peer reviewed.

**Contribution of the author(s):** Conceptualization: M.B.,S.F.,C.M,A.C,A.L; Data treatment: M.B.,S.F.,C.M,A.C,A.L; Formal analysis: M.B.,S.F.,C.M,A.C,A.L.; Acquisition of financing: M.B.,S.F.,C.M,A.C,A.L. ; Investigation: M.B.,S.F.,C.M,A.C,A.L; Methodology: M.B.,S.F.,C.M,A.C,A.L.; Project administration: M.B.,S.F.,C.M,A.C,A.L; Resources: M.B.,S.F.,C.M,A.C,A.L; Software: M.B.,S.F.,C.M,A.C,A.L; Supervision: M.B.,S.F.,C.M,A.C,A.L; Validation: M.B.,S.F.,C.M,A.C,A.L; Visualization: M.B.,S.F.,C.M,A.C,A.L; Original draft writing: M.B.,S.F.,C.M,A.C,A.L.; Writing - proofreading and editing: M.B.,S.F.,C.M,A.C,A.L

All authors read and agreed with the published version of the manuscript.