

# Behavioral therapy in the treatment of urinary incontinence: quality of life and severity

*Terapia comportamental no tratamento da incontinência urinária: qualidade de vida e gravidade*

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## Abstract

**Introduction:** Behavioral therapy (BT) is an association of techniques that aim to minimize or abolish urinary symptoms, including urinary incontinence (UI), through education about the health condition, changes in lifestyle and nutritional habits, and bladder training. **Objective:** To analyze whether there is a change in the quality of life and severity of UI after group behavioral therapy in women with UI. **Methods:** Prospective observational study conducted in a pelvic physical therapy public service. Women with UI of any etiology, over 18 years of age, who completed a protocol of four weekly group BT meetings as the first treatment option for UI were included. Outcomes (impact of UI on QoL and classification of UI severity) were assessed before, immediately after, and one month after BT using the King's Health Questionnaire (KHQ) and the Incontinence Severity Index (ISI). **Results:** Sample of 146 participants. A reduction in the impact of UI on QoL was observed in the KHQ domains: impact of UI, physical limitations, personal relationships, emotions, general health perception ( $p < 0.05$ ) immediately after BT. After one month, there was a reduction in the UI impact domains, daily activity limitations, physical limitations, general health perception, emotions, and sleep ( $p < 0.05$ ). In addition, there was a reduction in the classification of UI severity assessed by the ISI ( $p < 0.001$ ). **Conclusion:** There was an improvement in QoL and a decrease in UI severity in women with UI who completed a BT group as the first treatment option.

**Keywords:** Behavior therapy. Physical therapy modalities. Urinary incontinence.

## Resumo

**Introdução:** A terapia comportamental (TC) é uma associação de técnicas que visam minimizar ou abolir sintomas urinários, incluindo a incontinência urinária (IU), por meio da educação sobre a condição de saúde, mudanças em hábitos de vida e alimentares e treinamento vesical. **Objetivo:** Analisar se existe alteração da qualidade de vida e da gravidade da IU após terapia comportamental em grupo de mulheres com IU. **Métodos:** Estudo observacional prospectivo realizado em um serviço público de fisioterapia pélvica. Mulheres com IU de qualquer etiologia e maiores de 18 anos foram submetidas a um protocolo de quatro encontros de TC em grupo, semanalmente, como primeira opção de tratamento para IU. Os desfechos, impacto da IU na qualidade de vida (QV) e classificação da gravidade da IU foram avaliados antes, imediatamente após e um mês depois da TC pelos questionários King's Health Questionnaire (KHQ) e Incontinence Severity Index (ISI). **Resultados:** Amostra de 146 participantes. Observou-se redução do impacto da IU na QV nos domínios do KHQ: impacto da IU, limitações físicas, relações pessoais, emoções, percepção geral de saúde ( $p < 0,05$ ) imediatamente após a TC. Após um mês, observou-se redução nos domínios de impacto da IU nas limitações de atividades diárias, limitações físicas, percepção geral de saúde, emoções e sono ( $p < 0,05$ ), além da redução na classificação de gravidade da IU avaliada pelo ISI ( $p < 0,001$ ). **Conclusão:** Houve melhora da QV e diminuição da gravidade da IU em mulheres com IU submetidas à TC em grupo como primeira opção de tratamento.

**Palavras-chave:** Terapia comportamental. Fisioterapia. Incontinência urinária.

## Introduction

The International Continence Society (ICS) defines urinary incontinence (UI) as any involuntary urine loss, classified into three main categories according to symptoms. Stress urinary incontinence (SUI) is involuntary urine loss during exercise, or other types of effort, such as coughing or sneezing; urge urinary incontinence (UUI) is characterized by the urgency symptom that appears simultaneously with or just before incontinence; mixed urinary incontinence (MUI) occurs when involuntary urine loss is associated with urgency and effort.<sup>1,2</sup>

Urinary incontinence harms people that suffer from it, impacting them psychologically, physically, socially, domestically, occupationally, and sexually. It negatively

affects the quality of life (QoL) in these individuals.<sup>3,4</sup> In some cases, the dysfunction generates lifestyle, habitual, and daily activity changes because of the disturbing situations that it causes, which lead high levels of stress and feelings of vulnerability, that can cause social isolation.<sup>5</sup> Therefore, the ICS affirms that QoL evaluation should be included alongside clinical assessment.<sup>6</sup>

Behavioral therapy (BT) consists of an association of techniques that aim to reduce or even eliminate urinary symptoms, including UI, through education about health conditions, changes in lifestyle and nutritional habits, and also through bladder training. As an UI treatment, BT can be applied alone or associated with other conservative approaches, such as training of the pelvic region muscles, drug treatment, or even surgery.<sup>7</sup>

Behavioral therapy is developed based on health education, which involves the patient's perception of her own body and health condition, requiring adjustments related to habits and behaviors.<sup>8,9</sup> The changes include weight loss, avoiding some foods or beverages that are harmful to the bladder, regulation of intestinal function, drinking water correctly, and also a scheduled voiding regimen can reduce urinary symptoms. Usually, these instructions are individualized according to the type of UI, urinary symptoms, and each patient's life habits.<sup>10</sup>

Behavioral therapy is an intervention that can be easily reproduced by professionals in a multidisciplinary team who work in primary health services and have the possibility of working with a group of patients.<sup>11</sup> This study assumes that BT implementation as the first therapy option could improve the urinary symptoms and the QoL of women with UI, which would allow a reduction of the number of people directed to a secondary level of attention. Because of the promising BT effects, its low cost, noninvasive approach, and fewer collateral effects, this study has the objective to analyze if an alteration exists in QoL and the incontinence severity in women with UI after receiving group BT.

## Methods

### Type and location of the study

Observational, quantitative, and prospective study that took place at the Pelvic Physiotherapy Service of the Urogynecology Ambulatory of the Maternity Ward School Assis Chateaubriand (MEAC)/Federal University of Ceará, CE, Brazil. The data collection period was June of 2015 to August of 2018.

## Subjects and sample selection

The patient's flow starts with medical referral from the Basic Unit of Health (UBS) to a specialized clinic (Urogynecology ambulatory). At the ambulatory clinic, the women go through a medical evaluation, examinations if necessary, and then, from this evaluation, they are directed to surgery or pelvic physiotherapy.

When the women enter the pelvic physiotherapy service, they are minutely examined about their complaints and clinical symptoms, in addition to functional evaluation of the pelvic floor muscles; therefore, they have conscious control of how to contract the pelvic floor muscles correctly. After individual evaluation in pelvic physiotherapy, the women with UI are directed to start BT treatment. Those who do not have conscious control of the pelvic muscle region are immediately directed for individual treatment. During BT women do not train the pelvic floor muscles, this occurs in a later portion of their treatment.

The nonprobabilistic convenience sample of the study was composed of patients who started BT through the pelvic physiotherapy ambulatory service of MEAC between June of 2015 and August of 2018. The sample was considered according to the number of patients who entered the services consecutively, during the previously mentioned data collection period. Women were included

who were at least 18 years of age, diagnosed with UI (any etiology), and entered the pelvic physiotherapy service.

Patients who did not adhere to BT treatment were excluded from data analysis (attendance at a minimum number of meetings was required), as well as those who did not respond to the research questionnaires.

## Group behavioral therapy

Behavioral therapy is the first stage of a physiotherapist treatment in the ambulatory clinic. The BT group is composed of up to ten patients, and occurs once a week for four consecutive weeks.

Each meeting has three stages: 1) 25 minutes for exhibition of themes; 2) ten minutes for dialogue between professionals and patients to respond to possible questions and share experiences; 3) ten final minutes to review the most important topics, accounting for a total of 45 minutes of activity. These meetings are interactive, fun, expositive, and address the following themes: female anatomy, pelvic floor function, UI types, risk factors and treatment for UI, life habits that contribute to or prevent UI, bladder training, and techniques to delay urination (urge-inhibition and pre-contraction) and avoid urine loss. Chart 1 represents BT protocols used in the research during the first four weeks and one month after conclusion of the BT.

**Chart 1** - Synopsis of behavioral therapy (BT) protocols and data collection flow

1st week	2nd week	3rd week	4th week	1 month after BT conclusion
BT 1 protocol	BT 2 protocol	BT 3 protocol	BT 4 protocol	
Q1* administration	UI types and risk factors	Appropriate frequency and urinary habits	PFM pre-contraction techniques and urge-inhibition	Q3* administration
Female reproductive and urinary system anatomy	Bladder irritating food	Position to urinate and expel	UI treatments	-
PFM anatomy and functions	-	-	Q2* administration	-

Note: UI = urinary incontinence; PFM = pelvic floor muscles. \* Administration of King's General Questionnaire (KGQ) and Incontinence Severity Index (ISI), first days (Q1), in the end (Q2) and one month after BT.

## Data collection and instruments

Data collection started after receiving approval from the Research Ethics Committee of the Assis Chateaubriand Maternity School, with opinion number

45415815.3.3001.5050. At the first BT meeting, patients were invited to participate in the research, and received explanation about its goals. The women who accepted signed the Terms of Free and Informed Consent form. Data collection occurred using medical records and

evaluation files from the pelvic health physiotherapy service, containing clinical (UI types and bladder storage and voiding symptoms), and sociodemographic data (age, skin color, job, marital status, level of education). Afterward, the instruments were used during an interview by researchers capable of administering the King's Health Questionnaire (KHQ) and the Incontinence Severity Index (ISI), who were not involved in conducting the intervention. The questionnaire was administered at three times: 1) BT's first day (KHQ1, ISI-Q1); 2) BT's end (KHQ2, ISI-Q2); 3) one month after BT (KHQ3, ISI-Q3), as seen in Chart 1.

#### *King's Health Questionnaire (KHQ)*

The impact of UI on QoL and urinary symptoms were evaluated using the KHQ. The questionnaire is composed of 31 questions, divided into eight categories: general health perception, UI impact, daily activity limitations, social limitations, personal relations, emotions, and sleep/mood. Each KHQ category has its own score; therefore there is not a general score. The scores vary from 0 to 100; the higher the score, the lower the QoL in that respective category. The internal consistency of the Portuguese version of the KHQ was satisfactory (Standardized Cronbach  $\alpha$  coefficient = 0.87).<sup>12</sup>

#### *Incontinence Severity Index (ISI)*

To classify the severity of UI the ISI scale was used, which is a short instrument, composed of two questions about frequency and quantity of urinary loss. The final score, obtained from the multiplication of frequency and quantity scores, generates the UI severity classification: 1 to 2 = light, 3 to 6 = moderate, 8 to 9 = severe, 10 to 12 points = very severe.<sup>13</sup> Currently, this instrument is utilized in clinical and epidemiological studies; recommended by the ICS, with a great level of reliability (Cronbach  $\alpha$  coefficient = 0.93, and intraclass correlation coefficient = 0.96), and satisfactory construct validation ( $r = 0.72$ ,  $p < 0.01$ ).

#### **Protocol adherence**

Participant adherence was considered sufficient when they attended more than half of the total treatment, or at least three meetings. The attendance was weekly, verified by the researchers.

#### **Data analysis**

The collected data was entered into MS Excel® and the statistical analysis was conducted using SPSS, 20.0 version (USA). Categorical data description was provided using absolute numbers and percentage; description of continuous variables, using means and standard deviations. The comparison before and after the BT was made using the paired student t-test for continuous variables, such as KHQ questionnaire domains, and chi-square for categorical variables, such as the UI severity classification, which was evaluated by the ISI. The comparisons happened between moments 1 (before BT) and 2 (end of BT), and also between moments 1 and 3 (a month after BT). A five percent significance level was considered for all the tests.

#### **Results**

In total, 160 women were eligible to participate in the group BT, but 13 did not adhere to BT, and one of them did not respond to the questionnaires; the final sample was composed of 146 participants.

Mixed urinary incontinence was the most prevalent type (58%) (Table 1). The participants' average age was  $55.95 \pm 11.33$  years old. The mean body mass index (BMI) value was  $29.47 \pm 4.99$ , with a prevalence of overweight (31.5%). In relation to ethnicity, the majority were brown or black (70.9%), 69 completed primary school (48.9%), more than half of the sample had some paid occupation (53.1%) and were in a relationship (51.7%) (Table 1). The urinary symptoms reported in the bladder storage stage were: nocturia (84.9%), urgency (83.6%), urge incontinence (80.8%), and pre-urination loss (84.5%). The most prevalent voiding symptoms were stress urinary incontinence (84.2%), feeling of incomplete (bladder) emptying (73.8%), and postmicturition leakage (61.5%).

In the KHQ application, 135 women responded to KHQ1, 131 to KHQ2, and 62 to KHQ3. During the three questionnaire administration points, the highest QoL scores were seen in the UI impact domain, and the lowest scores were those related to social limitations (Table 2). In the results of KHQ1 compared to KHQ2, UI impact domain scores, physical limitation, personal relations, emotions, and general perception of health domains showed a significant statistical reduction ( $p < 0.05$ ) (Table 2).

Comparing KHQ1 to KHQ3, a significant statistical reduction was noticed ( $p < 0.05$ ) in the general health perception, incontinence impact, daily activity limitations, physical limitations, emotions, and sleep, which shows a lower UI impact on the QoL in those domains at the end of BT (Table 3).

Administration of the ISI scale identified a reduction in these women's UI severity, in the comparison between ISI-Q1 and ISI-Q2 ( $p < 0.001$ ), also when comparing ISI-Q1 to ISI-Q3 ( $p < 0.001$ ). Figure 1 shows a gradual "severe" and "very severe" categories decrease, and the growth of "moderate" and "light" categories, which are a consequence of the three questionnaire administration points (ISI-Q1, ISI-Q2- ISI-Q3), showing urinary symptom improvement.

**Table 1** - Urinary incontinence type (UI) and participants' sociodemographic characteristics (n = 146)

Characteristics	n	%
<b>Categories of UI*</b>		
Stress UI	36	25.2
Urge UI	24	16.8
Mixed UI	83	58.0
<b>Age Groups</b>		
< 60 years	84	57.5
≥ 60 years	62	42.5
<b>Skin color*</b>		
White or yellow	38	28.9
Brown or black	95	70.9
Indigenous	1	0.7
<b>Level of education*</b>		
Illiterate	3	2.1
Primary school	69	48.9
High school	59	41.8
Higher education or more	10	7.1
<b>Paid occupation*</b>		
Yes	77	53.1
No	68	46.9
<b>Domestic partnership*</b>		
Yes	75	51.7
No	70	48.3

Note: \*Lost data.

**Table 2** - King's Health Questionnaire (KHQ) measures comparison in the beginning (Q1) and immediately after (Q2) the behavioral therapy's finish (n = 131)

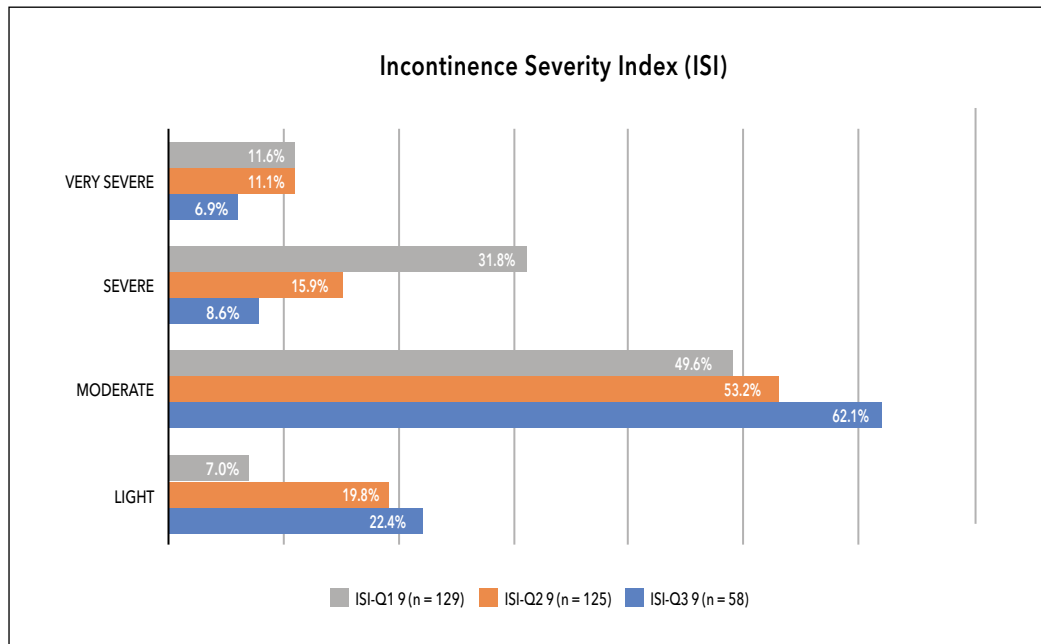
Domains KHQ	Q1 mean ± SD	Q2 mean ± SD	p-value Q1 vs Q2
General health perception	48.52 ± 27.98	38.14 ± 23.27	<b>&lt; 0.001</b>
Incontinence impact	57.77 ± 33.95	40.83 ± 31.00	<b>&lt; 0.001</b>
Role limitations	39.44 ± 29.54	28.61 ± 27.26	<b>&lt; 0.001</b>
Physical limitations	42.83 ± 33.04	35.39 ± 31.29	<b>0.006</b>
Social limitations	22.85 ± 24.69	19.04 ± 24.25	<b>0.057</b>
Personal relationships	33.99 ± 35.84	26.75 ± 30.19	<b>0.028</b>
Emotions	37.28 ± 30.24	30.13 ± 28.09	<b>0.001</b>
Sleep/Energy	38.09 ± 30.54	34.45 ± 30.43	0.107
Severity measures	32.80 ± 23.06	31.16 ± 22.48	0.348

Note: Values in bold indicate significant statistic difference ( $p < 0.05$ ). SD = standard deviation

**Table 3** - King's Health Questionnaire (KHQ) measures comparison before the start (Q1) and one month after (Q3) behavioral therapy (n = 62)

Domains KHQ	Q1 mean ± SD	Q3 mean ± SD	p-value Q1 vs Q3
General health perception	45.54 ± 29.04	34.82 ± 20.04	<b>0.003</b>
Incontinence impact	57.73 ± 33.32	34.67 ± 24.40	<b>&lt; 0.001</b>
Role limitations	38.18 ± 26.38	24.24 ± 25.62	<b>&lt; 0.001</b>
Physical limitations	39.25 ± 29.33	25.92 ± 23.71	<b>0.001</b>
Social limitations	19.19 ± 21.85	15.35 ± 21.32	0.136
Personal relationships	24.20 ± 32.13	16.26 ± 27.91	0.101
Emotions	30.23 ± 20.04	22.48 ± 21.88	<b>0.011</b>
Sleep/Energy	34.07 ± 25.61	23.33 ± 24.46	<b>0.003</b>
Severity measures	36.29 ± 20.42	30.49 ± 20.74	<b>0.031</b>

Note: Values in bold indicate significant statistic difference ( $p < 0.05$ ). SD = standard deviation.



**Figure 1** - ISI category percentage related to incontinence severity before the beginning (ISI-Q1), immediately after (ISI-Q2), and one month after (ISI-Q3) behavioral therapy.

## Discussion

This study showed that women participating in BT obtained lower UI impact scores on QoL, and presented a urinary incontinence severity reduction. Many QoL domains got significantly better immediately after BT. The results are even clearer one month after the intervention, with a score decrease in all KHQ's domains. The ISI scale results about UI severity follow the reduction, reaffirming improvements in the participants' health, who used BT as a primary conservative treatment. It is necessary to understand that the participants need some time to incorporate information and make changes in their routine habits.

Urinary incontinence is a health problem that can advance with age, and which is more prevalent in women. It not only causes social and hygiene problems, but also affects occupational activities and sexual life, decreasing the QoL.<sup>14</sup> Today's resources to fight UI are information campaigns to identify early symptoms, conservative BT programs, pelvic floor muscle training (PFMT), pharmacotherapy, and surgical interventions.<sup>15,16</sup> According to the European Urology Association, the UI treatment should start with BT and

PFMT, and pharmacotherapy or surgical interventions should be used only if the conservative alternatives do not show satisfactory results.<sup>16</sup>

The BT is indicated as a primary intervention for patients that suffer from UI, due to the growing pursuit for lower cost, and less invasive methods to face the problem,<sup>15</sup> as happens in BT with behavior adjustments, bladder training, and diet changes.<sup>17,18</sup> This may or may not be associated with PFMT. This group intervention study chose not to associate BT with a PFMT protocol, because it requires an individualized approach initially, in order to respect individual characteristics and each woman's PFM functions.<sup>19</sup> This way, the study effects were isolated only by behavioral orientations, which facilitates the future use of the approach by multidisciplinary teams in public health services.

The impact of UI on women's QoL as measured by the KHQ is highly recommended by the ICS. Observational studies executed in Brazil demonstrated a lower prevalence of MUI and nocturia in elderly women, impacting QoL in all KHQ domains.<sup>20-22</sup> This study reaffirms these statements, also observing a higher MUI and nocturia prevalence, and higher score in the "urinary incontinence impact" domain. Caldas et al.<sup>23</sup>

indicate that elderly women who suffer from UI report that BT treatment brings self-esteem improvements, UI reduction, and facilitates addressing of their health conditions.

Thus, the study confirms that correctly implemented behavioral approaches directly impact QoL improvement, and also promote education related to self-care, treatment adherence, and correct management related to incontinence problems.<sup>23</sup>

A randomized clinical trial conducted with women with UI investigated the impact of behavior changes on urinary symptoms, concluding that the group intervention was effective in UI severity reduction, increasing the pelvic floor muscle power and improving urination frequency.<sup>24</sup> Another study with 232 women affirmed the effectiveness and financial viability of BT for reducing UI severity, urination frequency, and QoL improvement.<sup>25</sup>

In addition, a study that investigated unsupervised PFMT and BT concluded that two months after treatment, there was a significant UI improvement, with a reduction in the number of incontinence episodes, and also with better scores after questionnaire administrations.<sup>26</sup> This present study evidence that the changes proposed by BT could reduce the negative impact of UI. It is important to state that even if the protocol in use did not include a PFMT regimen, women went through a PFM assessment, therefore, they had conscious contraction control. This conscious control allows for a pre-contraction technique training orientation (the knack), which is the ability to contract PFM during activities that cause a rise in intraabdominal pressure, and urge suppression technique, where fast PFM contractions are made during the urgency peak, in order to inhibit bladder detrusor muscle contraction.<sup>27</sup>

In addition to the present study, So et al.<sup>28</sup> also implemented a self-care educative program for women with UI, once a week, for five consecutive weeks, without using PFMT, leading to a significant improvement related to UI severity and also the inferior urinary symptoms.

The promising BT results in groups predict improvement in function and a reduction in the negative effects of incontinence on QoL, from the learning improvement acquired during BT, in daily routine, and by self-care development. Despite the easy application, behavioral interventions depend on the patient's adherence to achieve positive results.<sup>29</sup>

In the present study, some factors could have interfered and made it harder to complete the questionnaires, such as the low educational level of the participants. Furthermore, as it is a reference service, many women live far from the health unit, which makes it harder for them to participate in all BT sessions. However, this study reflects the public service reality with good results using the chosen approach.

The present study naturally has its limitations for being observational in nature, without being able to compare BT effectiveness to a control group. The strengths are the sample size and the innovative BT approach in a group as a primary treatment option, before individualized physiotherapy.

The obtained results reaffirm the literature reports with people from different countries,<sup>18,23,25,28</sup> showing that BT can be implemented in a Brazilian health system context for women with UI. To enable the integration of group BT in a conservative UI treatment, we must face the challenge of encouraging people to join meetings in person, and also promoting healthy habit changes, making the participants more independent with their own treatment. However, after BT, it is necessary to identify those women who continue to require a multidisciplinary and individualized physiotherapy approach.

## Conclusion

The reduction in the impact of UI on QoL was noticed in many KGH domains, as well as UI severity reduction on women participating in group BT, used as single intervention, as a first-line treatment option. The mentioned results were noticeable especially from a longer-term perspective, because the process includes changes in habits that naturally take time to be established.

## Authors' contributions

The study was developed by RMC and SLN. ACRM and RMC were responsible for data collection, and ACRM and SLN for its analysis. All the authors contributed to the writing process and the article review, and also to final version approval.

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