

Quality of life assessment before and after a physical therapy intervention for urinary incontinence

Avaliação da qualidade de vida antes e depois de tratamento fisioterapêutico para incontinência urinária

Evaluación de la calidad de vida antes y después de tratamiento fisioterapêutico para incontinencia

Mara Regina Knorst¹, Camila de Souza Royer¹, Daiane Marcelle da Silva Basso¹, Juliano dos Santos Russo¹, Roberta Giacobbo Guedes¹, Thais de Lima Resende¹

ABSTRACT | This quasi experimental study analyzed the influence of a physical therapy intervention on the quality of life (QoL) of women with urinary incontinence (UI) and its effectiveness for urinary loss. Took part in this study 55 women (35 to 87 years) with a clinical diagnosis of UI who underwent an anamnesis and had the function of their pelvic floor muscles (PFMF; bidigital test) and their QoL measured (King's Health Questionnaire – KHQ). Up to 15 weekly sessions were carried out with endovaginal electrical stimulation and perineal exercises. Once the participants reported not losing urine or expressed the desire to stop the treatment, it was terminated, regardless of the number of sessions undertaken. After treatment, the bidigital test and the KHQ were repeated and the participants were asked if they considered themselves to be continent, satisfied with the treatment or not improved. Most participants were aged between 51 and 60 years, underwent vaginal delivery with episiotomy and had prolapse. Most had mixed UI, followed by stress UI. The situations when the urinary loss most commonly occurred were coughing and sneezing, which happened mostly in jets. There was a significant improvement in all of the KHQ domains, except the general health perception. After the intervention, 90.9% of the women said that they were continent or satisfied with the treatment. The physical therapy intervention resulted in improved QoL and it was effective for containing the urinary loss.

Keywords | urinary incontinence; quality of life; women's health.

RESUMO | Esse estudo quase experimental analisou a influência de tratamento fisioterapêutico na qualidade de vida (QV) de mulheres com incontinência urinária (IU), bem como a sua eficácia na perda urinária. Participaram 55 mulheres (35 a 87 anos) com o diagnóstico médico de IU, as quais, antes da intervenção, se submeteram a uma anamnese e tiveram avaliadas a função da musculatura do assoalho pélvico (FMAP; teste bidigital) e a QV (*King's Health Questionnaire* – KHQ). Foram realizadas até 15 sessões (uma por semana) com eletroestimulação endovaginal e treino da musculatura do assoalho pélvico. Assim que as participantes relatavam não mais perder urina ou manifestavam o desejo de interromper o tratamento, o mesmo era terminado, independente do número de sessões. Após o tratamento, além de reaplicar o teste bidigital e o KHQ, foi também perguntado às participantes se consideravam-se continentas, satisfeitas com o tratamento ou não perceberam melhora. Predominaram mulheres com idades entre 51 e 60 anos que realizaram parto normal com episiotomia e apresentaram prolapso. A maioria apresentou IU mista, seguida da de esforço. Tossir e espirrar foram as situações em que mais comumente ocorreu perda urinária, a qual se deu mais em jatos. Houve melhora significativa em todos os domínios da QV, exceto na percepção geral da saúde. Após a intervenção, 90,9% delas se declaram continentas ou satisfeitas. O tratamento fisioterapêutico resultou em melhora da QV e foi eficaz para contenção da perda urinária.

Descritores | incontinência urinária; qualidade de vida; saúde da mulher.

Study conducted at the Nursing, Nutrition and Physical Therapy School at Pontifícia Universidade Católica in Rio Grande do Sul (PUCRS) – Porto Alegre (RS), Brazil.

¹PUCRS – Porto Alegre (RS), Brazil.

Correspondence to: Mara Regina Knorst – Avenida Ipiranga, 6681, Prédio 12, sala 803 – CEP: 90619-900 – Porto Alegre (RS), Brasil – E-mail: mknorst@pucrs.br
Presentation: jul. 2012 – Accepted for publication: jul. 2013 – Financing source: none – Conflict of interests: nothing to declare – Approval at the Ethics Committee n. 06/03194.

RESUMEN | Este estudio casi experimental analizó la influencia de tratamiento fisioterapéutico en la calidad de vida (CV) de mujeres con incontinencia urinaria (IU), así como su eficacia en la pérdida urinaria. Participaron 55 mujeres (35 a 87 años) con diagnóstico médico de IU, las cuales, antes de la intervención, fueron sometidas a una anamnesis y se les evaluó la función de la musculatura del piso pélvico (FMAP; test bidigital) y la CV (*King's Health Questionnaire* – KHQ). Fueron realizadas hasta 15 sesiones (una por semana) con electroestimulación endovaginal y entrenamiento de la musculatura del piso pélvico. Cuando las participantes relataban que no perdían más perder orina o manifestaban el deseo de interrumpir el tratamiento, el mismo era terminado, independientemente del número de sesiones. Después del tratamiento, además de re aplicar el test

bidigital y el KHQ, se les preguntó a las participantes si se consideraban continentas, satisfechas con el tratamiento o no notaron mejoría. Predominaron mujeres con edades entre 51 y 60 años que realizaron parto normal con episiotomía y presentaron prolapso. La mayoría presentó IU mixta, seguida de la de esfuerzo. Toser y estornudar fueron las situaciones en que más comúnmente ocurría pérdida urinaria, la cual sucedió más en chorros. Hubo mejora significativa en todos los dominios de la CV, excepto en la percepción general de la salud. Después de la intervención, 90,9% de ellas se declaran continentas o satisfechas. El tratamiento fisioterapéutico resultó en mejora de la CV y fue eficaz para contención de la pérdida urinaria.

Palabras clave | incontinencia urinaria; calidad de vida; salud de la mujer.

INTRODUCTION

Urinary incontinence (UI) is a health problem that affects millions of people all over the world¹ concerning physical, psychological, social, sexual and occupational aspects². Considered to be a public health problem, its average prevalence in women is 27.6 and in men 10.5%³. It is higher among females due to anatomic variations. Despite its increasing prevalence with age, this condition should not be treated as a natural or even exclusive consequence of aging⁴.

UI has been defined as the involuntary urine loss, which is objectively demonstrable, being a social or hygienic problem⁵. However, besides the considerable individual variation as to what each person classifies as a “problem”, there are many people with UI who are embarrassed to talk to their doctors about the subject, or who consider their condition to be inevitable⁵. UI has many effects on daily activities, social interactions and perception of health status. Major problems are related to social and mental well-being, significantly affecting quality of life (QoL), leading to psychological, physical, professional, sexual and social consequences⁶.

On the other hand, QoL is related to the individual's perception concerning family, love, social, environmental life and health conditions^{7,8}. The level of impact of UI on QoL ranges according to its type and severity, or depending on the individual perception of the problem⁸. Regarding women, they feel uncomfortable and dissatisfied with the different impacts caused by UI, such as difficulty to attend public places, sleeping out or visiting friends, leading them to giving up social experiences or even a stable sexual life^{4,9}.

Given the impact of UI on QoL, its measurement is one of the useful parameters to assess the result of the chosen treatment. The tools to verify QoL usually include general

aspects concerning health and specific details regarding the effects that a specific disease or dysfunction can have on a person's lifestyle. This second aspect would be more sensitive to identify changes after the treatment, being valuable for the assessment process, as well as to compare the types of treatment¹⁰. Considering how important the specificity of the used instrument is, the International Continence Society recommended the inclusion of a QoL questionnaire as a complement to the clinical measures, and the King's Health Questionnaire (KHQ) is one of them^{8,9}, already translated and validated in Brazil¹⁰.

It has been long known that the physical therapy treatment by means of pelvic floor muscle training (PFMT), vaginal electrical stimulation and vaginal weight cones presents expressive outcomes in the improvement of UI symptoms in up to 85% of the cases⁵. The need to perform a broader assessment as to how and by how much a specific disease/dysfunction or intervention affects the QoL is essential to health services. Therefore, the objective of this study was to analyze the influence of a physical therapy treatment on the QoL of women with UI and its efficacy to contain urinary loss.

METHODOLOGY

In this quasi-experimental study, 55 women with medical (clinical) diagnosis of UI were included. Those who fitted the selection criteria were consecutively referred to physical therapy care conducted by doctors in the Urogynecology outpatient clinic of *Hospital São Lucas* (HSL), at *Pontifícia Universidade Católica* in Rio Grande do Sul (PUCRS), from September 2006 to May 2010.

Exclusion criteria were: participation in additional physical therapy treatment or any type of structured and planned physical activity during the period of the study, in addition to those offered in the research protocol; diseases that are more impairing than UI (severe pneumopathies and cardiopathies, neurological and/or oncologic diseases) or previous UI correction surgery. After being included in the study, no woman was excluded.

Evaluations and intervention were conducted at the Physical Therapy Service of HSL. The same person performed all of the assessments and, with rare exceptions, this also happened with treatment sessions. Data were collected after the approval by the Research Ethics Committee of PUCRS (Register 06/03/03194) and the signature of the informed consent form.

The study was divided into three phases: initial assessment (anamnesis and measurements); intervention; and final assessment, and in the latter, the initial measurements were repeated (assessment of pelvic floor muscle function – PFMF – and application of KHQ) when the participants reported being continent, satisfied with the treatment and/or expressed the desire to stop it, which, in some cases, happened before the total of 15 sessions predicted in the research protocol.

The PFMF assessment was performed by the bigital maneuver with the participant in dorsal decubitus position and flexed lower limbs. With a lubricated glove, the examiner introduced the second and third fingers 3 to 4 cm inside the vaginal canal and asked the patient to contract and keep the muscles contracted around the fingers. PFMF was assessed based on the scale by Ortiz¹¹, with grades from 0 (no objective perineal function, not even to palpation) to 5 (objective perineal function with opposing resistance for more than five seconds to palpation).

QoL was assessed by the self-filled KHQ, which is composed of 21 questions divided into eight domains: general health perception, incontinence impact, role limitations, physical limitations, social limitations, personal relationships, emotions, sleep/energy. There are still two independent scales — in this study, we only used the one that assesses the presence and intensity of urinary symptoms. The KHQ's score is based on each of its domains, ranging from 0 to 100, considering that the higher the score, the worse the QoL¹⁰.

The intervention consisted of a single weekly session, for a maximum of 15 weeks. The sessions were divided

into two parts, electrical stimulation (ten minutes) and PFMT. The electrical stimulation was performed with Dualpex 961 Uro device (QUARK, Piracicaba, São Paulo – Brazil) and the parameters of the current ranged according to the type of UI: 2 K/10 Hz heterodyne for urge UI (UUI); 2 K/50 Hz Kots, sustaining time of 6 seconds, resting time of 12 seconds for stress UI (SUI). For mixed UI (MUI), 10 and 50 Hz were intercalated, that is, the 10 Hz current was applied in one week (UUI), and the 50 Hz current was applied in the other week (SUI). Intensity was adjusted according to the patients' tolerance until the maximum of 60 mA.

The PFMT took place with abduction (elastic bands) and adduction (ball) exercises in the sitting position and in dorsal decubitus, with contraction of pelvic floor muscles (PFM). Afterwards, the bridge exercise was performed with PFM activation. All of the exercises involved isotonic and isometric contractions (sustained for six seconds), with a series of ten repetitions for each type of exercise.

The total number of sessions and care protocol were based on the patient casuistic from the Physical Therapy Service of HSL, where the study was conducted, corroborated by the findings of Lorenzo Gómez et al.¹², which reported an 80% improvement in their patients after a 12-week treatment.

Sample size and statistical analysis

The sample size calculation (45 women) was performed with the Programs for Epidemiologists (PEPI), based on the responses observed in a previous study¹³, with 95% significance and maximum error of 20%.

Data were analyzed with the software SPSS 17.0, and the adopted significance level (α) was 5%. Data symmetry was investigated with the Kolmogorov-Smirnov test, and proportions of a single variable were compared by the χ^2 test. Before and after intervention the continuous variables were compared by the Wilcoxon test.

RESULTS

The sample consisted of 55 women with mean age of 53.9 ± 11.5 years, and the prevalent age group was that between 51 and 60 years. Most of them had low education, was married and lived outside Porto Alegre (Table 1).

Most of them had exclusively natural deliveries (63.5%), underwent episiotomy (65.9%) and presented prolapse (70.9%). In average, they had 2.6 ± 1.6 deliveries, and 11 women registered both types, natural deliveries and cesarean sections. Out of the total of 122 deliveries, 101 were natural and 21 were cesarean.

Thirty nine women presented with prolapse: 30, 1st degree; seven, 2nd degree; and two, 3rd degree. Out of the total, only two did not report improving with the treatment.

Concerning the other clinical characteristics (Table 2), 36.4% of the women presented with SUI; 12.7%, UUI; and 50.9%, MUI, being the latter significantly higher ($p < 0.001$).

The women had had UI for 7 years (median) before seeking treatment, and 75% of them had presented UI for 4 to 10 years. Most of them lost urine by jets or drops, especially when coughing or sneezing (Table 2).

It took an average of 13 treatment sessions for 91% of the women to declared themselves continent or satisfied with the treatment (Table 2). Ten of them underwent from 5 to 10 sessions, and all of them reported being continent after treatment. Other 10 patients underwent from 11 to 13 sessions; 11 had 14 sessions; and the 24 remaining patients completed the 15 sessions predicted in the research protocol.

After intervention, a significant improvement in PFMF was detected ($p < 0.001$) (Table 2).

Only three women did not report improvement concerning urinary loss after intervention. They were married, had low schooling, lived outside Porto Alegre ($\cong 140$ km) and only had natural deliveries. Two of them had prolapse (1st and 2nd degrees). One of them underwent 13 treatment sessions (UI for 21 years; 68 years old), the other one underwent 14 sessions (UI for 18 years; 51 years old), and another one underwent 15 sessions

(UI for 5 years; 42 years old). For the youngest one, the impact of UI remained the same, while the other two reported a decrease of more than 50%. The oldest one presented improved general health perception, while the other two did not notice any difference. The two oldest ones reported a decrease in severity of urine loss and presented increased PFMF. The youngest one reported increase in the severity of urine loss, as well as increased physical limitations and negative impact of UI in her personal and social relationships, while her PFMF presented no change.

A significant improvement was detected in almost all of KHQ domains (Table 3): incontinence impact, role limitations, physical limitations, social limitations, personal relationships, emotions, sleep/energy and severity measures. Only the general health perception did not present a significant statistical difference.

Table 2. Clinical characteristics of the sample

Variables	Total (n=55)
	n (%)
Medical diagnosis	
Stress urinary incontinence	20 (36.4)
Urge urinary incontinence	7 (12.7)
Mixed urinary incontinence	28 (50.9)
Time of incontinence (years)	
Median (Q ₁ -Q ₃)	7.0 (4.0-10.0)
Minimum-maximum	1-31
Quantity of lost urine	
Drops	15 (27.3)
Jets	28 (50.9)
Complete micturition	12 (21.8)
Urine loss situations	
Cough	47 (85.5)
Sneeze	47 (85.5)
Laughter	30 (54.5)
Jump	30 (54.5)
Orgasm	16 (29.1)
Walking	30 (54.5)
Full bladder (cannot hold)	3 (5.4)
Weight lifting/ strength	7 (12.7)
During physical activity	2 (3.6)
Others	4 (5.4)
Number of treatment sessions	
Mean \pm SD	13.04 \pm 2.7
Minimum-maximum	5-15
Final situation	
Continent/satisfied	50 (90.9)
Improved	2 (3.6)
No improvement	3 (5.4)
Bidigital test - Median (Q1-Q3)	
Before treatment	4 (3-4)
After treatment	5 (4-5)

Q1-Q3: interquartile range; SD: standard deviation

Table 1. Sociodemographic characteristics of the sample

Variables	Total (n=55)
	n (%)
Age (years)	
Mean \pm standard deviation	53.9 \pm 11.5
Minimum-maximum	35-87
Education	
Illiterate	6 (10.9)
Incomplete/complete elementary school	32 (58.2)
Incomplete/complete high school	17 (30.9)
Marital status	
Married	35 (63.6)
Single/divorced/widow	20 (36.4)
Origin	
Porto Alegre	21 (38.2)
Outside Porto Alegre	34 (61.8)

Table 3. King's Health Questionnaire scores, before and after physical therapy treatment for urinary incontinence

Domains	Assessments Median (Q1-Q3)		p-value*
	Before	After	
General health perception	50.0 (25.0-50.0)	25.0 (25.0-50.0)	0.234
Incontinence impact	66.7 (33.3-100.0)	33.3 (33.3-66.7)	0.002
Role limitations	33.3 (33.3-66.7)	33.3 (0.0-50.0)	<0.001
Physical limitations	50.0 (16.7-66.7)	16.7 (0.0-50.0)	<0.001
Social limitations	33.3 (0.0-55.6)	11.1 (0.0-22.2)	<0.001
Personal relationships	33.3 (0.0-45.8)	0.0 (0.0-33.3)	0.005
Emotions	44.4 (22.2-77.8)	22.2 (0.0-33.3)	<0.001
Sleep/energy	33.3 (16.7-50.0)	33.3 (16.7-33.3)	0.001
Severity measures	66.7 (46.7-73.0)	46.7 (26.7-73.3)	0.001

*Wilcoxon test; Q₁-Q₃: interquartile range

DISCUSSION

After the intervention, except for the health perception, there was significant improvement in all of the QoL domains, including the impact of UI on the role and physical limitations of participants, and these findings are in accordance with those of other studies^{10,14}. They probably reflect the fact that, as soon as the women begin to have more urinary control, they feel less concerned about occasional episodes of incontinence and less restricted to perform daily, occupational and physical activities, especially those with a more active lifestyle^{10,14}.

However, no significant statistical improvement was observed in the general health perception, which confirms the findings by Capelini et al.¹⁵ and suggests that, probably, these women do not consider UI to be a disease², since they had it for a long time before seeking treatment.

Most of the women were between 51 and 60 years, stage of life in which the symptoms exacerbate⁴, which probably led them to seek treatment after years of UI, corroborating with the time of onset of 7 years.

In this study, conservative assessment and treatment methods were chosen, with low cost and without the side effects of medicines or interurrences caused by surgeries⁹, in which most of the patients reported urinary loss improvement and/or cessation, and this confirms the success of the intervention and corroborates findings

from other studies^{7,16}. These data are particularly relevant when it is taken into consideration the difficulty in gaining access to the physical therapy treatment for UI in the public health service. If such access is restricted in a state capital, it is much worse in smaller cities, as demonstrated in this sample, in which almost 62% of the participants had to travel in order to get a short treatment session (\cong 25 minutes), which could be easily offered in the public system where they lived if physical therapists were hired.

Another important factor for planning health initiatives aimed at women with UI is the low education of those who depend on the public health, as verified in this study and in another also developed with public service users¹⁷. The potential understanding difficulties among the users with low education should be taken into consideration.

The presence of prolapse could not have prevented the three women who did not improve with the treatment from getting better, since one of them did not have prolapse, and, among those with prolapse (39/55), only two did not report an improvement. These findings agree with others, which showed that different degrees of prolapse did not affect the efficacy of the physical therapy treatment for UI^{18,19}. It is possible that, for these women, a more intense and/or prolonged treatment was necessary, something impossible in a research study. However, the possibility that the results were influenced by characteristics other than those investigated cannot be ruled out.

Despite the relevant findings and in keeping with the literature^{1,2,7,12,13,15,16}, this study presents limitations: absence of a control group and a non-homogeneous sequential sampling of women with three types of UI and of different age groups. However, it would have been difficult to complete a controlled study, as both the casuistic of the department where this research was developed and the results from the pilot study carried out beforehand, alerted us to the possible difficulty in recruiting the necessary sample size (45 women/group; total of 90). This was the right decision, given that only 55 women satisfied the selection criteria in almost four years of data collection.

Nonetheless, we reached our goal by using simple, practical and low cost measurement and treatment methods, which means that the protocol herein proposed can be easily implemented in the public health service.

CONCLUSION

Based on this study's results it can be concluded that the physical therapy treatment is effective not only for the improvement or cessation of the urinary loss, but also for improving the QoL.

REFERENCES

- Zanetti MR, Castro R de A, Rotta AL, Santos PD, Sartori M, Girão MJ. Impact of supervised physiotherapeutic pelvic floor exercises for treating female stress urinary incontinence. *Sao Paulo Med J*. 2007;125(5):265-9.
- Beuttenmüller L, Cader SA, Macena RHM, Araujo NS, Nunes EFC, Dantas EHM. Contração muscular do assoalho pélvico de mulheres com incontinência urinária de esforço submetidas a exercícios e eletroterapia: um estudo randomizado. *Fisioter Pesqui*. 2011;18(3):210-6.
- Silva L, Lopes MHBM. Incontinência urinária em mulheres: razões da não procura por tratamento. *Rev Esc Enferm USP*. 2009;43(1):72-8.
- Lopes MHBM, Higa R. Restrições causadas pela incontinência urinária à vida da mulher. *Rev Esc Enferm USP*. 2006;40(1):34-41.
- NICE Clinical Guidelines. Urinary incontinence: the management of urinary incontinence in women. RCOG Press. 2006;40:1-14.
- Pedro AF, Ribeiro J, Soler ZASG, Bugdan AP. Qualidade de vida de mulheres com incontinência urinária. *SMAD*. 2011;7(2):63-70.
- Honório GJS, Parucker NBB, Virtuoso JF, Krüger AP, Tonon SC, Ferreira R. Análise da qualidade de vida em mulheres com incontinência urinária antes e após tratamento fisioterapêutico. *ACM Arq Catarin Med*. 2009;38(4):43-9.
- Dedicação AC, Haddad M, Saldanha MES, Driusso P. Comparação da qualidade de vida nos diferentes tipos de incontinência urinária feminina. *Rev Bras Fisioter*. 2009;13(2):116-22.
- Tamanini JTN, D'Ancona CAL, Botega NJ, Rodrigues Netto Jr N. Validação do "King's Health Questionnaire" para o português em mulheres com incontinência urinária. *Rev Saúde Pública*. 2003;37(2):203-11.
- Fonseca ESM, Camargo ALM, Castro RA, Sartori MGF, Fonseca MCM, Lima GR, et al. Validação do questionário de qualidade de vida (*King's Health Questionnaire*) em mulheres brasileiras com incontinência urinária. *Rev Bras Ginecol Obstet*. 2005;27(5):235-42.
- Ortiz OC, Nunez FC. Valoración dinámica de la disfunción perineal de clasificación. *Boletim Sociedad Latino Americana Uroginecologia y Cirurgia Vaginal*. 1994;1:7-9.
- Lorenzo Gómez MF, Silva Abuín JM, García Criado FJ, Geanini Yagüez A, Urrutia Avisror M. Tratamiento de la incontinencia urinaria de esfuerzo con Biofeedback perineal con electrodos de superficie. *Actas Urol Esp*. 2008;32(6):629-36.
- Goode PS, Burgio KL, Locher JL, Roth DL, Umlauf MG, Richter HE, et al. Effect of behavioral training with or without pelvic floor electrical stimulation on stress incontinence in women: a randomized controlled trial. *JAMA*. 2003;290(3):345-52.
- Kelleher CJ, Cardozo LD, Khullar V, Salvatore S. A new questionnaire to assess the quality of life of urinary incontinent women. *Br J Obstet Gynaecol*. 1997;104(12):1374-9.
- Capelini MV, Riccetto CL, Dambros M, Tamanini JT, Herrmann V, Muller V. Pelvic floor exercises with biofeedback for stress urinary incontinence. *Int Braz J Urol*. 2006;32(4):462-9.
- Carneiro EF, Araujo NS, Beuttenmüller L, Vieira PC, Cader SA, Rett M, et al. Las características anatomofuncionales del suelo pélvico y la calidad de vida de mujeres con incontinencia urinaria de esfuerzo sometidas a ejercicios perineales. *Actas Urol Esp*. 2010;34(9):788-93.
- Figueiredo EM, Lara JO, Cruz MC, Quintão DMG, Monteiro MVC. Perfil sociodemográfico e clínico de usuárias de serviço de Fisioterapia Uroginecológica da rede pública. *Rev Bras Fisioter*. 2008;12(2):136-42.
- Knorst MR, Cavazzotto K, Henrique M, Resende TL. Physical therapy intervention in women with urinary incontinence associated with pelvic organ prolapse. *Rev Bras Fisioter*. 2012;16(2):102-7.
- Ghroubi S, Kharrat O, Chaari M, Ayed BB, Guerzazi M, Elleuch MH. Apport du traitement conservateur dans la prise en charge du prolapsus urogénital de bas grade. *Le devenir après deux ans. Physique*. 2008;51(2):96-102.