

BIOPSYCHOSOCIAL PROFILE AND THE IMPACT OF URINARY INCONTINENCE ON WOMEN'S QUALITY OF LIFE

PERFIL BIOPSISSOCIAL E O IMPACTO DA INCONTINÊNCIA URINÁRIA SOBRE A QUALIDADE DE VIDA DAS MULHERES

Izabela Lopes Mendes¹
Marcela Cristina Levino da Silva²
Ana Carolina Dias Oliveira³
Marcele Florêncio Neves⁴

Abstract: To assess the biopsychosocial profile and the impact of urinary incontinence on women's quality of life. Methods: A blind cross-sectional clinical study was conducted, involving 31 women with urinary incontinence and a mean age of 51.5 ± 13.9 years. Sociodemographic data and questionnaire responses were collected, including the King's Health Questionnaire (KHQ), Incontinence Severity Index (ISI-Q), and the Urogenital Distress Inventory (UDI). Statistical analysis included the Kolmogorov-Smirnov normality test (one-sided $p \leq 0.001$) and Pearson correlation. Results: Sociodemographic data revealed a prevalence of stress urinary incontinence ($n=18$), followed by mixed urinary incontinence ($n=11$) and urgency urinary incontinence ($n=2$). King's Health Questionnaire data showed significant values with moderate correlation in the domains of function limitations and severity measures ($r=0.616$); physical limitations and social limitations ($r=0.604$); physical limitations and personal relationships ($r=0.504$); physical limitations and the symptom severity scale ($r=0.538$). Incontinence Severity Index scores indicated 9 women with mild severity, 15 with moderate severity, 4 with severe, and 3 with very severe cases. Concerning the impact of urinary symptoms mediated by the Urogenital Distress Inventory related to urinary urgency, urge incontinence, stress incontinence, and/or emptying symptoms, the average value was 26.7 ± 17.1 . Conclusion: Women with urinary incontinence exhibit various changes affecting their physical, functional, psychological, and social well-being, negatively impacting their quality of life.

Key words: Urinary incontinence; Quality of life; Women's health.

Resumo: Para avaliar o perfil biopsicossocial e o impacto da incontinência urinária na qualidade de vida das mulheres. Métodos: Foi realizado um estudo clínico transversal e cego, envolvendo 31 mulheres com incontinência urinária e idade média de $51,5 \pm 13,9$ anos. Foram coletados dados sociodemográficos e respostas a questionários, incluindo o King's Health Questionnaire (KHQ), o Incontinence Severity Index (ISI-Q) e o Urogenital Distress Inventory (UDI). A análise estatística incluiu o teste de normalidade de Kolmogorov-Smirnov (p unilateral $\leq 0,001$) e a correlação de Pearson. Resultados: Os dados sociodemográficos revelaram uma prevalência de incontinência urinária de esforço ($n=18$), seguida por incontinência urinária mista ($n=11$) e incontinência urinária de urgência ($n=2$). Os dados do King's Health Questionnaire mostraram valores significativos com correlação moderada nos

¹ Universidade do Vale do Paraíba - Univap. E-mail: izasmendes@hotmail.com.

² Universidade do Vale do Paraíba - Univap. E-mail: marcelalevino@hotmail.com.

³ Universidade do Vale do Paraíba - Univap. E-mail: diasanaca2@gmail.com.

⁴ Universidade do Vale do Paraíba - Univap. E-mail: mneves@univap.br.

domínios de limitações funcionais e medidas de gravidade ($r=0,616$); limitações físicas e limitações sociais ($r=0,604$); limitações físicas e relacionamentos pessoais ($r=0,504$); limitações físicas e escala de gravidade dos sintomas ($r=0,538$). Os escores do Incontinence Severity Index indicaram 9 mulheres com gravidade leve, 15 com gravidade moderada, 4 com gravidade grave e 3 com casos muito graves. Quanto ao impacto dos sintomas urinários medido pelo Urogenital Distress Inventory, relacionados à urgência urinária, incontinência de urgência, incontinência de esforço e/ou sintomas de esvaziamento, o valor médio foi de $26,7 \pm 17,1$. Conclusão: Mulheres com incontinência urinária apresentam diversas alterações que afetam o bem-estar físico, funcional, psicológico e social, impactando negativamente sua qualidade de vida.

Palavras-chave: incontinência urinária, qualidade de vida, saúde da mulher.

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1 INTRODUCTION

Urinary incontinence (UI) is defined by the International Continence Society as the involuntary loss of urine, and it can be reported by individuals. It has a global prevalence ranging from 5% to 69% among women at various stages of life, with a higher prevalence observed in older age groups (Milsom & Gyhagen, 2019; Sheng et al., 2022).

It is currently recognized as a public health, social, and hygienic concern, categorizable into three subtypes: stress urinary incontinence (SUI), urgency urinary incontinence (UUI), and mixed urinary incontinence (MUI) based on their respective signs and symptoms. SUI manifests as the loss of urine during activities that exert pressure on the abdomen, such as coughing, sneezing, or physical exertion. This is often due to a weakening of the pelvic floor muscles, connective tissue, and fascia, leading to an inability to counter the rise in intra-abdominal pressure. On the other hand, UUI is characterized by a sudden and intense urge to urinate. When both SUI and UUI are present in an individual, it is classified as MUI (Alouini et al., 2022).

The fundamental mechanisms underlying incontinence primarily stem from the weakened support of the urethra by pelvic floor muscles and intrinsic sphincter deficiency. These issues can be linked to predisposing factors, including the number of childbirths, prior surgeries, generalized weakening of connective tissue, aging, and hormonal deficiencies (Radzimińska et al., 2018).

Urinary incontinence has taken on a significant role in women's healthcare due to its adverse impact on personal and social well-being. This influence is often associated with feelings of shame and fear among women regarding urine loss, prompting lifestyle changes such as discontinuing physical activities. These experiences may contribute to increased levels of anxiety and depression (Pizzol et al., 2021).

According to Radzimińska et al. (2018) problems associated with urinary incontinence have a negative psychological impact, resulting in a subsequent decline in women's quality of life. These issues are often linked to low self-esteem, discomfort, a sense of helplessness, and mood changes, all of which contribute to a reduction in personal, social, and professional aspects of life. The condition is further associated with the fear and insecurity of others discovering one's urinary loss, leading to challenges in socialization, social isolation, and decreased sexual activity.

In recent decades, there has been a notable increase in the number of women diagnosed with urinary incontinence, underscoring the importance of prevention and treatment to enhance the physical, mental, and social well-being of women facing urinary incontinence. Therefore, the objective of this study was to evaluate the biopsychosocial profile and the impact of urinary incontinence on women's quality of life.

2 METHODOLOGY

This is an observational, descriptive, cross-sectional study. The study was executed in the Urogynecology Sector of the Faculty of Health Sciences at the University of Vale do Paraíba and at Clínica Spazio Saúde after obtaining approval from the Ethics and Research Committee involving human subjects' opinion number 4.218.752. Participants who agreed to take part in the study signed the Free and Informed Consent Form.

The eligibility criteria were women aged 30 to 75 years, who had a medical diagnosis of urinary incontinence. The following exclusion criteria were considered: women who did not have a defined medical diagnosis, had undergone previous urogynecological surgeries, had cognitive deficits or neurological conditions, or did not sign the informed consent form.

2.1 ASSESSMENT QUESTIONNAIRES

The King's Health Questionnaire (KHQ) is a Portuguese-validated questionnaire consisting of questions grouped into eight domains aiming to evaluate the impact of urinary incontinence. These domains include general perception of health, impact of urinary incontinence, limitations of daily activities, physical limitations, social limitations, personal relationships, emotions, and sleep/disposition. In addition to these domains, there are two independent scales: the severity measure and the symptom severity scale. These scales are classified according to the Likert type, with four response options ("not at all, a little, moderately, very much" or "never, sometimes, often, all the time"), except for the general health perception domain, which has five response options ("very good, good, fair, bad, very bad"), and the personal relationships domain ("not applicable, not at all, a little, moderately, and very"). The KHQ is individually scored for its domains, and there is no overall score. Scores range from 0 to 100, with higher scores indicating a worse quality of life (Tamanini et al., 2003; Hebbbar et al., 2015).

The Incontinence Severity Index (ISI-Q) comprises two questions related to the frequency and amount of urinary loss. The final score is obtained by multiplying the frequency scores by the amount of loss, allowing classification as mild (1 to 2 points), moderate (3 to 6 points), severe (7 to 9 points), or very severe (10 to 12 points) (Pereira et al., 2011).

The Urogenital Distress Inventory is a short version of a questionnaire divided into three subscales, evaluating symptoms of irritation (urgency, frequency, and pain), symptoms of stress, and obstruction and/or discomfort or difficulty urinating. The score is converted into a scale ranging from 0 to 100, with higher values indicating a greater impact of urinary symptoms on the quality of life (Stievano et al., 2014).

Statistical analysis

Following the completion of the questionnaires, the data were tabulated in Microsoft Excel®, organized, and analyzed to characterize the sample. The Jamovi® software version 2.4.8 was used for statistical analysis, incorporating the Kolmogorov-Smirnov (KS) normality test with a one-sided $p \leq 0.001$ value. For the descriptive analysis, mean, median, standard deviation, maximum, minimum, and percentile values for each domain were obtained. Subsequently, the Pearson correlation matrix was used for statistical analysis. Pearson correlation values were categorized as follows: strong correlation ($0.75 \leq r \leq 1$), moderate ($0.50 \leq r < 0.75$), weak ($0.25 \leq r < 0.50$), and non-existent correlation ($0 < r < 0.25$), considering both positive and negative values.

3 RESULTS

The study recruited a total of 35 women; however, 4 were excluded due to exclusion criteria, such as difficulty understanding when answering the quality-of-life questionnaires. Therefore, the present study was carried out with a total of 31 women with a medical diagnosis of urinary incontinence.

The sociodemographic and uro-gynecological characteristics of the study participants are described in Table 1. Analysis of the women's sociodemographic profile revealed an age range of 31 to 78 years, with a mean age of 51.5 ± 13.9 years.

Regarding the marital status of women, 25 (80.5%) were married, 2 (6.5%) were widows, 2 (6.5%) were divorced, and 2 (6.5%) were single.

Regarding the types of urinary incontinence, it was possible to observe a higher prevalence of symptoms of stress urinary incontinence ($n=18$), followed by mixed urinary incontinence ($n=11$) and urgency urinary incontinence ($n=2$). When asked about their family history of urinary incontinence, 12 reported having family members such as mothers, sisters, or aunts with reports of urinary loss, and 19 women reported not knowing or not having family members with urinary incontinence.

Smoking and alcohol consumption rates among study participants were low, respectively 8 (25.8%) and 10 (32.3%), as well as the diagnosis of diabetes mellitus, with only 6 (19.5%) participants reporting.

When asked about their obstetric history, it was possible to observe that only 1 (3.1%) reported that they had not had any pregnancy, with 11 (35.5%) having only one pregnancy, 11 (35.5%) reporting two pregnancies, 6 (19.5%) having between three and/or four pregnancies, and 2 (6.5%) having more than six pregnancies. Regarding the mode of delivery, 10 (32.3%) reported a normal birth, and 20 (64.5%) reported a cesarean section.

It was possible to observe that 17 (54.9%) were practicing some type of physical activity, such as Pilates, weight training, swimming, or aerobic exercises. However, 14 (45.1%) reported being sedentary because they did not practice any type of physical activity.

Table 1 - Sample of sociodemographic and urogynecological variables of study participants (n=31).

Variables		N (%)
Age		51.5±13.9 years
Marital status	Married	25 (80.5%)
	Single	2 (6.5%)
	Widow	2 (6.5%)
	Divorced	2 (6.5%)
Diagnosis	IUU	2 (6.5%)
	SUI	18 (58.0%)
	IUM	11 (35.5%)
Family history of UI	Yes	12 (38.8%)
	No	19 (61.2%)
Smoking history	Yes	8 (25.8%)
	No	21 (67.7%)
	Former smoker	2 (6.5%)
History of alcoholism	Yes	10 (32.3%)
	No	21 (67.7%)
Diabetes	Yes	6 (19.5%)
	No	25 (80.5%)
Obstetric history	No birth	1 (3.1%)
	1 birth	11 (35.5%)
	2 births	11 (35.5%)
	3 – 4 births	6 (19.5%)
	> 5 births	2 (6.5%)
	Normal birth	10 (32.3%)
	Cesarean section	20 (64.5%)
Physical activity	Yes	17 (54.9%)
	No	14 (45.1%)

Caption: N, number of participants.

Source: authors.

The questionnaires and their domains can be summarized according to the biopsychosocial categories, namely: biological, psychological, and social, which were related based on data obtained from the study participants. Quality of life was measured using the King's Health Questionnaire quality of life questionnaire (KHQ), with descriptive statistics represented by the mean, median, standard deviation, maximum value, minimum value, and percentiles described in Table 2.

Table 2 - Descriptive statistics of the scores obtained in the different domains of the KHQ.

	P	UII	FL	PL	SL	PR	E	GM	SSS
N	31	31	31	31	31	31	31	31	31
A	31.6	43.0	34.4	33.3	12.2	16.1	29.7	43.0	10.0
Median	25.0	33.3	33.3	16.6	0.00	0.00	22.2	41.6	10.0
SD	19.7	24.6	26.5	29.2	24.3	29.6	29.6	22.9	4.14
Min	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.00
Max	100	100	83.3	100	100	100	100	83.3	21.0
25th pct.	25.0	33.3	8.30	16.6	0.00	0.00	0.00	29.0	7.00
75th pct.	25.0	66.7	58.3	50.0	16.6	16.6	44.4	58.1	13.0

Caption: P: Perception, UII: UI Impact, FL: Function limitations, PL: Physical limitations, SL: Social limitations, PR: Personal relationships, E: Emotions, GM: Gravity measurements, SSS: Symptom Severity Scale, N: number of participants, A: average, SD: standard deviation, Min: minimum, Max: maximum, pct: percentile. Source: authors.

Table 3 presents the data obtained from the correlation matrix between the domains, in which statistically significant values were obtained with moderate correlation in the domains of functional limitations and severity measures ($r= 0.616$); physical limitations and social limitations ($r= 0.604$); physical limitations and personal relationships ($r= 0.504$); physical limitations and the symptom severity scale ($r= 0.538$). However, weak correlation was observed when comparing the impact domains of UI and physical limitations ($r= 0.414$); impact of UI and social limitations ($r= 0.383$); impact of UI and emotions ($r= 0.423$); impact of UI and symptom severity scale ($r= 0.412$); social limitations and emotions ($r= 0.431$); emotions and severity measures ($r= 0.454$); severity measures and the symptom severity scale ($r= 0.377$).

Table 3: Correlation matrix of scores obtained in the different domains of the KHQ.

	General perception of health	UI Impact	Function limitations	Physical limitations	Social limitations	Personal relationships	Emotions	Severity Measures	Symptom Severity Scale
General perception of health	—								
UI Impact	0.150	—							
Function limitations	0.183	0.295	—						
Physical limitations	-0.218	0.414 *	0.120	—					
Social limitations	-0.203	0.383 *	0.184	0.604 ***	—				
Personal relationships	-0.003	0.059	0.048	0.504 **	0.321	—			
Emotions	0.274	0.423 *	0.343	0.229	0.431 *	0.266	—		
Severity Measures	0.137	0.256	0.616 ***	0.151	0.168	-0.027	0.454 *	—	
Symptom Severity Scale	0.038	0.412 *	0.338	0.538 **	0.151	0.195	0.225	0.377 *	—

Note. * $p < .05$, ** $p < .01$, *** $p < .001$.

Source: authors.

The scores referring to the severity obtained from the ISI-Q Incontinence Severity Index questionnaire were described in Table 4. Regarding the classification of urinary incontinence severity, it was noted that 9 women were classified as mild severity, 15 women as moderate severity, 4 women as severe, and 3 women as very severe.

Table 4 - Severity score of the scores obtained from the ISI-Q.

ISI-Q standard score	Gravity	N (%)
01 – 02	Light	9 (29.1%)
03 – 06	Moderate	15 (48.4%)
07 – 09	Serious	4 (12.9%)
10 – 12	Very serious	3 (9.6%)

Caption: ISI-Q: Incontinence Severity Index, N: number of participants, Source: authors.

Regarding the impact of urinary symptoms related to urinary urgency, urge incontinence, stress incontinence and/or emptying symptoms, they were mediated by the Urogenital Distress Inventory – UDI questionnaire, in which the average value was 26.7 ± 17.1 .

4 DISCUSSION

Scientific evidence indicates that certain sociodemographic factors are associated with the exacerbation of UI, including obesity, smoking, constipation, recurrent urinary infections, family history, chronic diseases, chronic cough, and genital prolapse, all influencing the development and severity of urinary incontinence (Batmani et al., 2021).

In the present study, it was possible to observe the high prevalence of stress urinary incontinence among women, which may be influenced by family history, which shows a strong hereditary condition of urinary symptoms, as well as diabetes, smoking which ends up influencing chronic cough and types of delivery.

Corroborating this, Wei and collaborators (2022) asserted that factors such as natural birth, genetics, chronic cough, and smoking can highly contribute to the occurrence of stress urinary incontinence.

Yang et al. (2023) stated that the pathogenesis of stress urinary incontinence is associated with risk factors such as age, childbirth, obesity, and constipation, leading to anatomical changes in continence, including alterations in the urethra, periurethral, and pelvic floor nerves. These factors influence the contraction of the levator ani muscles and external urethral sphincter, resulting in the formation of the urethral curvature angle and forced closure of the urethra, playing a fundamental role in the mechanism of urinary continence.

Milsom and Gyhagen (2019) mentioned evidence suggesting an age-related increase in the prevalence of UI. However, conflicting opinions exist in other studies, indicating that women may experience complaints of urinary loss irrespective of age.

Batmani et al. (2021) proposed that aging-related changes in the urinary tract, including decreased bladder capacity, sensation of fullness, and detrusor contraction rate, along with reduced pelvic floor muscle resistance and increased residual urine volume, contribute to symptoms. Menopause exacerbates these symptoms due to decreased estrogen and collagen levels, reducing the elasticity of the detrusor muscle and inducing atrophic changes in pelvic floor muscles, ultimately increasing reports of urinary incontinence.

Diabetes, through hyperglycemia, contributes to urinary incontinence by increasing urinary volume and detrusor muscle activity, along with complications

arising from diabetic cytopathic lesions. Respiratory pathologies are another contributing factor, influencing exacerbated urinary loss due to pressure differences between abdominal and pelvic pressure (Batmani et al., 2021).

Urinary incontinence arises not only from aging or hormonal/metabolic changes but also from vaginal births, causing damage to fascia, ligaments, and nerves. More than three vaginal births significantly contribute to pelvic floor muscle insufficiency, leading to stress urinary incontinence in the perimenopausal period. Studies suggest that women who undergo vaginal birth have an 8% to 12% higher risk of developing urinary incontinence and pelvic organ prolapse compared to cesarean section (Ptak et al., 2019).

Scientific evidence demonstrates that urinary incontinence profoundly affects quality of life in various ways. Women with UI often have associated chronic diseases, reduced fluid intake, and limited mobility, exacerbating the condition and negatively impacting physical, psychological, and social dimensions (Najafi et al., 2022).

The results from the King's Health Questionnaire (KHQ), Incontinence Severity Index (ISI-Q), and Urogenital Distress Inventory (UDI) indicated significant changes in domains related to emotional aspects, mental health, physical limitations, social aspects, and pain. Most of these changes were classified as of moderate severity.

According to Carroll et al. (2023) the biopsychosocial profile of women with urinary incontinence can be categorized into three groups: biological (including body pain in the abdominal, pelvic, or vaginal area, along with sleep/energy), psychological (encompassing emotions and general perception of health), and social (related to social functioning, relationships, and sexual functioning).

The connection between incontinence and sleep and energy can be explained by severe or very severe cases leading to social isolation or mental health issues, resulting in poor sleep quality, concerns about nocturnal enuresis, and awakening due to wet clothes (Li et al., 2022).

According to the study by Luz et al. (2022) nocturia explains the link between urinary incontinence and poor sleep quality due to the need to interrupt sleep during the night to urinate.

Recent studies indicate that urinary incontinence negatively affects sexual desire and/or satisfaction, leading to less frequent sexual activity and increased sexual avoidance compared to women without urinary complaints. These factors may be attributed to insufficient vaginal lubrication, unsatisfactory relationships with partners, difficulty reaching orgasm, and concerns about urinary loss during sexual intercourse (Frigerio et al., 2022).

According to the study by Åström and collaborators (2021) stress urinary incontinence has a more considerable impact on quality of life domains related to emotional aspects and physical limitations, including domestic tasks and daily activities. Women with urgency urinary incontinence (UUI) and mixed urinary incontinence (MUI) experienced more severe conditions and a more substantial impact on domains such as social limitations, emotions, and sleep. Frigerio et al. (2022) stated that the evidence related to comparisons between types of urinary incontinence is conflicting.

The measurement of UI severity indicates a greater impact on women's lives. This finding is considered a crucial predictor of quality of life, influencing anxiety, stress, and depression (Siddiqui et al., 2018; Åström et al., 2021).

Curillo-Aguirre and Gea-Izquierdo (2023) emphasized that with the increasing age of the population, health systems must focus more on medical and social assistance to individuals with urinary incontinence. This patient profile presents higher

hospitalization rates, urinary infections, pressure ulcers, social isolation, depression, and lower productivity, resulting in a significant deterioration of quality of life.

Our findings corroborate the findings of other studies that emphasize the multifactorial influence on the severity of urinary incontinence and the consequent worsening of women's quality of life. Therefore, it is important to track the sociodemographic and biopsychosocial factors, which negatively influence the quality of life of women with urinary incontinence.

This study has limitations, primarily the low sample number, associated with the group considered at risk and vulnerable during the remission of the Covid-19 pandemic.

5 CONCLUSION

It is concluded that there is strong evidence that stress urinary incontinence is the most common type of incontinence, which can increase in severity due to multifactorial influences, such as smoking, diabetes, family history and obstetric history. This condition influences biopsychosocial aspects and negatively affects women's quality of life, with a series of changes related to their physical, functional, psychological and social well-being, which generate a negative impact on quality of life. Therefore, it is important to understand the factors that contribute to the emergence and worsening of urinary incontinence to maximize the efficiency of screening and early intervention, with the aim of promoting improvement in biopsychosocial aspects with a consequent improvement in women's quality of life.

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