

# Prevalence of urinary incontinence and impact on quality of life in women from Seia, Portugal

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**ABSTRACT: Introduction** – Urinary incontinence (UI) or involuntary loss of urine is a frequent and concerning health condition, which can be subdivided into three common types: stress, urge, or mixed UI. **Objectives** – To identify the prevalence of UI in women in the municipality of Seia and evaluate the impact of UI on quality of life (QoL). **Methods** – A descriptive observational study with analytical characteristics was conducted, using a convenience sample of women in the municipality of Seia ( $n=416$ ), with a subsample of incontinent women ( $n=117$ ). A sample characterization questionnaire and the Contilife® measurement instrument were used. Inferential analysis was performed using the Chi-Square test, Student's t-test, and Likelihood Ratio (LR) measure. Internal consistency was assessed using Cronbach's Alpha. **Results** – The prevalence for the population of Seia was 28.1%, with a significant association between parity and the presence of UI, with a large LR value. UI has an impact on women's QoL (59%), as measured by Contilife® (mean 7.59 in overall QoL), with mixed UI causing the most pronounced effect (73.3%). **Conclusion** – Female UI impacts on QoL with statistically significant values in all Contilife® dimensions, although classified as low impact. Physiotherapists can be first-contact professionals, allowing the quantification of women with UI and acting in the prevention and treatment of this condition, leading to physiotherapy being a guideline for improving quality of life.

*Keywords: Urinary incontinence; Prevalence; Quality of life; Impact; Physiotherapy.*

## Prevalência da incontinência urinária e impacto na qualidade de vida nas mulheres do concelho de Seia, Portugal

**RESUMO: Introdução** – A incontinência urinária (IU) ou perda involuntária de urina é uma condição de saúde frequente e preocupante, que pode ser subdividida em três tipos comuns: IU de esforço, de urgência ou mista. **Objetivos** – Identificar a prevalência de IU em mulheres no concelho de Seia e avaliar o impacto da IU na qualidade de vida (QdV) dessas mulheres. **Métodos** – Estudo do tipo observacional descritivo e de características analíticas, com uma amostra de conveniência de entre a população feminina do concelho de Seia ( $n=416$ ), com uma subamostra das mulheres incontinentes ( $n=117$ ). Foram utilizados um questionário de caracterização da amostra e o instrumento de medida Contilife®. A análise inferencial foi realizada pelo teste Qui-Quadrado, teste *t* de Student e medida de *Likelihood Ratio* (LR). A consistência interna foi avaliada pelo Alfa de Cronbach. **Resultados** – A prevalência de IU para a população de Seia foi de 28,1%, com uma associação significativa entre a paridade e a presença de IU tendo o valor de LR grande. A IU tem impacto na QdV das mulheres (59%), medida pelo Contilife® (média 7,59 na QdV global), sendo que a IU mista foi o tipo que causou mais impacto (73,3%). **Conclusão** – A IU feminina tem impacto na QdV com valores estatisticamente significativos em todas as dimensões do Contilife®, embora classificado como impacto baixo. Os fisioterapeutas podem ser profissionais de primeiro contacto, permitindo a quantificação das mulheres com IU e atuando na prevenção e tratamento desta condição, levando a que a fisioterapia seja um fio condutor para a melhoria da qualidade de vida.

*Palavras-chave: Incontinência urinária; Prevalência; Qualidade de vida; Impacto; Fisioterapia.*

## Introduction

Urinary incontinence (UI) or involuntary loss of urine is a frequent and concerning health condition, which can be subdivided into three common types: stress, urge, or mixed UI<sup>1</sup>. In Portugal, data is scarce. An epidemiological study conducted in the Portuguese population, in adults over 40 years old, in 2008, by the Faculty of Medicine of the University of Porto in collaboration with the Portuguese Association of Urology and the Portuguese Association of Neuro-urogynecology, revealed a UI prevalence of 15.1% in the general population, with a rate of 21.4% in women<sup>2</sup>.

The World Health Organization has identified UI as a health priority that has an impact on people's quality of life because it affects different aspects of life and leads to a series of psychological, social and physical consequences<sup>3</sup>.

Despite urinary losses negatively influencing women's health and quality of life, there is a high percentage of women who are unaware of available treatments and believe that UI is a natural part of the aging process. In light of this, it is imperative to identify and quantify these women so they can be properly referred to a specialist<sup>4</sup>.

As a specialist in women's health, the physiotherapist can choose different treatment programs for different conditions, following the particularities of this population, with interventions aimed at preventing disabilities, improving functional limitations, and promoting and maintaining health, quality of life, and physical fitness, through use of the best available scientific evidence<sup>5</sup>.

The municipality of Seia is characterized by its strong rurality and pronounced isolation, posing challenges to healthcare access. Physiotherapy services are already limited in this area, exacerbating the issue. Consequently, this study holds significant relevance as it can provide crucial epidemiological insights into women's health, specifically regarding UI, and shed light on their quality of life. Thus, the intention is to identify the reality of women with UI, contributing to an improvement in access to specialized physiotherapy care, and making physiotherapy the first line of conservative treatment and health promotion for these women.

The main objectives of this study are to identify the prevalence of UI in women in the municipality of Seia and to evaluate the impact of UI on the quality of life of these women in different dimensions: daily activities, effort activities, self-image, emotional impact, sexuality, and well-being.

## Methods

The study was conducted in the municipality of Seia, located in the District of Guarda, Portugal. According to data from the National Institute of Statistics in 2021, the resident population totaled 21,755 individuals, with 11,459 being women. Data collection took place between November 29, 2022, and January 31, 2023.

A convenience sampling method was employed, selecting women who met the following inclusion criteria: being 18 years of age or older, residing in the municipality of Seia, and possessing the intellectual capacity to complete the questionnaire. Women with neurological conditions such

as stroke, multiple sclerosis, spinal cord pathology, bladder neurological pathology, Parkinson's disease, and those undergoing chronic catheterization were excluded from the study sample as per the research team's criteria.

For this study, a questionnaire was devised to gather subjective information from each eligible woman and to collect sociodemographic data. Before the administration of the measuring instrument, the method for accessing the sample was prepared, and authorization was obtained from eight public and private institutions in the municipality. Additionally, social networks and the researcher's personal and familial connections were utilized to reach potential participants.

The self-administered instrument was applied through a customized form created using the Google Forms application – an online form. In paper format, along with a sealed box, it was made available to patients at the Hospital of Seia and distributed within the researcher's social and familial circles.

The sociodemographic data were included in Section I, with 13 questions about age, weight, height, education, professional situation, daily effort and posture, parity, and current pregnancy, bowel movements, menopause, and UI. Section II was specifically directed at participants experiencing UI, containing five questions related to abdominal and/or pelvic surgeries or treatments, duration and type of urinary losses, and whether they had sought professional assistance. Section III focused on the Contilife® Questionnaire<sup>6</sup>. This questionnaire has been validated for the Portuguese population, through a study conducted in 2010<sup>7</sup>. It assesses the impact of UI on QoL through 28 questions distributed across six distinct dimensions: daily activities, effort activities, self-image, emotional impact, sexuality, and well-being. Scores ranged from 0 (low QoL) to 10 (high QoL).

The score of the range classification, for statistical purposes, was as follows: very high impact (0-1.99), high impact (2-3.99), medium impact (4-5.99), low impact (6-7.99) and without impact (8-10). Additionally, the research team chose to interpret the results using the following classification: with impact (0-7.99) and without impact (8-10).

Data analysis was conducted using computer software, specifically Microsoft Excel® and the Statistical Package for the Social Sciences (SPSS), v. 26.0 for Windows. These tools facilitated the optimization and correlation of variables. The research team developed a dedicated database in Microsoft Excel® for the study and implemented a coding system for the applied instrument.

The variables considered for correlation analysis in the study included: age, body mass index (BMI) (underweight, normal weight, overweight, obesity), daily effort level (low, moderate, high), daily postures (sitting, standing mostly still, moving), current pregnancy status, parity (nulliparous, primiparous, multiparous), bowel movements (tendency towards loose stools, regular tendency, tendency towards constipation), menopause, and presence of UI.

The statistical analysis involved descriptive statistics (absolute and relative frequencies, means, and respective standard deviations) and inferential statistics. To assess the internal consistency of the questionnaire used, i.e., the degree of

interrelatedness among items, Cronbach's Alpha was used<sup>8</sup>. In inferential statistics, the Chi-Square Test of Adherence was used, which allows for comparing sample data with data from known populations, verifying that the observed frequency differs significantly from the expected frequency; the Chi-Square Test of Independence applied when the data were categorical, assessing the contingency between variables; Student's t-test for one sample. The Likelihood Ratio (LR) measure determines the magnitude and direction of variation of the probability change and its values are classified as large (LR greater than 10), moderate (LR between 5 and 10), minimum (LR between 2 and 5), and none (LR equal to 1)<sup>9</sup>.

The significance level for rejecting the null hypothesis was set at  $\alpha \leq 0.05$ .

This study began after approval by the Board of Directors of the ULS Guarda and approval by the Ethics Committee of ESTeSL (CE-ESTeSL) with internal reference to the project CE-ESTeSL no. 74-2022, in an email dated November 29, 2022.

Before participation, all participants were provided with and read the informed consent form, and they provided

their consent for involvement in this study. All procedures conducted in this study adhered to ethical standards and complied with the principles outlined in the Declaration of Helsinki.

## Results

Of the 416 women in the sample, with a mean age of  $47.85 \pm 13.84$  years, 28.1% ( $n=117$ ) reported UI, indicating a significant prevalence of this condition.

To assess the representativeness of the sample across different age groups, we compared our data with that from the National Institute of Statistics. We examined the distribution of age groups through observed values using the Chi-square test of adherence.

Considering that for the sample to be representative, the Chi-Square test of adherence value must be less than 3.84 for 1 degree of freedom and 5% margin of error, we concluded that the sample was quantitatively representative in the age groups between 20-29 years and 50-69 years (*cf.* Table 1).

**Table 1.** Sample distribution ( $n=416$ ) compared to INE data

Age groups	INE_2021		----		X <sup>2</sup> of adherence	Critical Value (5%) for $g=1$	p-value
	n	%	n	%	Observed value		
<19	1423	12%	two	0%	a)		
<b>20-29</b>	<b>860</b>	<b>8%</b>	<b>35</b>	<b>8%</b>	<b>0.000</b>	<b>3.84</b>	<b>&gt;0.05</b>
30-39	978	9%	95	23%	6.125	3.84	<0.05
40-49	1392	12%	102	25%	4.568	3.84	<0.05
<b>50-59</b>	<b>1636</b>	<b>14%</b>	<b>88</b>	<b>21%</b>	<b>1.4</b>	<b>3.84</b>	<b>&gt;0.05</b>
<b>60-69</b>	<b>1960</b>	<b>17%</b>	<b>70</b>	<b>17%</b>	<b>0.000</b>	<b>3.84</b>	<b>&gt;0.05</b>
70-79	1715	15%	20	5%	5	3.84	<0.05
80-89	1183	10%	4	1%	7.364	3.84	<0.05
90-99	299	3%	0	0%	a)		
$\geq 100$	13	0%	0	0%	a)		
Total	11459	100%	416	100%			

a) excluded from the sample; INE = Instituto Nacional de Estatística (Portuguese acronym);  $g$  = Degree of freedom distribution of the sample in Seia, by age groups, compared with INE data and the respective adherence Chi-Square test.

Analysis of correlations was conducted on the overall sample ( $n=416$ ) to examine relationships between variables (age, BMI, posture, daily effort, pregnancy, parity, bowel movements, menopause) and the presence/absence of UI. The first hypothesis under study was defined as  $H_1$ : The presence of UI is related to anthropometric, daily, and clinical vari-

ables such as...:  $H_{1A}$ : ...age;  $H_{1B}$ : ...BMI;  $H_{1C}$ : ...posture;  $H_{1D}$ : ...daily effort;  $H_{1E}$ : ...pregnancy;  $H_{1F}$ : ...parity;  $H_{1G}$ : ...bowel movements;  $H_{1H}$ : ...menopause. The LR test value was examined to assess the probability of a factor being present in a woman with UI compared to a woman without UI. Significant associations were found for the variables BMI ( $LR_{(3)}=9.928$ ,  $p=0.019$ ), parity

( $LR_{(3)}=19.280$ ,  $p=0.000$ ), and bowel movements ( $LR_{(2)}=5.704$ ,  $p=0.058$ ), indicating a higher likelihood of UI in overweight or obese women, multiparous women, and women with a tendency towards regular bowel movements. Therefore, hypotheses  $H_{1B}$ ,  $H_{1F}$ , and  $H_{1G}$  were confirmed.

Among women with UI ( $n=117$ ), the mean age was 51.1 years, ranging from a minimum of 20 to a maximum of 88 years. The most common types of incontinence were stress urinary incontinence (SUI) (56.4%,  $n=66$ ), followed by mixed urinary incontinence (MUI) (25.6%,  $n=30$ ), and urge urinary incontinence (UUI) (17.9%,  $n=21$ ). Only 31.6% ( $n=37$ ) of these women sought professional help for their condition. Among those who sought help, the most frequently consulted professionals were gynecologists/obstetricians, mentioned by 32.4% ( $n=12$ ) of participants, followed by general prac-

tioners at 27% ( $n=10$ ). Notably, only six women reported seeking assistance from a physiotherapist.

The internal consistency of the Contilife® dimensions, analyzed using Cronbach's Alpha, ranged from a minimum of 0.591 in the self-image dimension to a maximum of 0.880 in the sexuality dimension.

Regarding the overall quality of life, the mean score was  $7.59 \pm 1.56$ , indicating a low impact ( $p=0.000$ ). Specifically, in the dimensions of daily activities and sexuality, the mean scores suggested no impact on quality of life, while in the remaining dimensions, the impact was low based on the mean scores ( $p=0.000$ ) (cf. Table 2). Additionally, when considering the cutoff point for with impact/without impact, it was observed that 59% of women experienced an impact on their overall quality of life (cf. Table 3).

**Table 2.** Descriptive statistics of Contilife® and Student's t-test

	Minimum	Maximum	Mean	Standard deviation	t (116)	P-value
Daily activities	1.43	10.00	8.21	1.76	50.375	0.000
Effort activities	0.00	10.00	7.05	2.11	36.077	0.000
Self image	0.71	10.00	6.73	2.35	31.007	0.000
Emotional impact	0.00	10.00	6.97	2.23	33.832	0.000
Sexuality	1.67	10.00	8.97	1.91	50.786	0.000
Well-being	0.00	10.00	6.32	2.29	29.903	0.000
Overall QoL	2.54	9.93	7.59	1.56	52.633	0.000

t = Student's t-test; QoL = Quality of Life.

**Table 3.** Impact on overall quality of life

	Overall Quality of Life			N	%
	N	%			
Very high impact	0	0%			
High impact	4	3.4%			
Medium impact	12	10.3%			
Low impact	53	45.3%	With Impact	69	59.0%
Without impact	48	41.0%	Without impact	48	41.0%
Total	117	100%	Total	117	100%

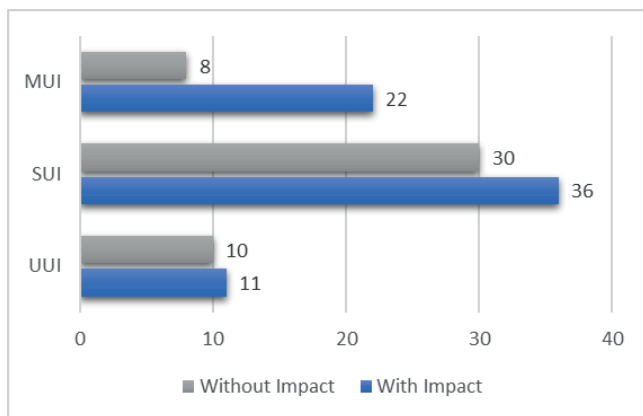
The second hypothesis under study was defined as  $H_2$ : UI has an impact on the quality of life of women, measured by the Contilife® instrument. Based on the results obtained, particularly in the overall quality of life dimension, we can confirm this hypothesis.

To explore whether there was an association between anthropometric, daily, and clinical variables and the overall quality of life of women with UI, the third hypothesis was defined as  $H_3$ : The overall quality of life of women with UI differs depending on anthropometric, daily, and clinical vari-

ables such as...: H<sub>3A</sub>: ...age; H<sub>3B</sub>: ...BMI; H<sub>3C</sub>: ...posture; H<sub>3D</sub>: ...daily effort; H<sub>3E</sub>: ...parity; H<sub>3F</sub>: ...bowel movements; H<sub>3G</sub>: ...menopause.

These hypotheses were examined to understand the potential impact of various factors on the overall quality of life among women experiencing UI. Parity demonstrated significant associations across various dimensions, including effort activities, self-image, and well-being, as well as overall quality of life confirming hypothesis H<sub>3E</sub>. The relationship was particularly pronounced in the well-being dimension, with a  $p=0.001$ .

Furthermore, when examining the association between types of UI and overall quality of life, as measured by the global score of Contilife®, it was evident that the majority of women experienced an impact on their QoL, accounting for 59% ( $n=69$ ) of participants. Upon analyzing the types of UI, it was observed that the majority of women experiencing an impact on QoL had MUI in this dimension (*cf.* Figure 1).



**Figure 1.** Relationship between types of UI and overall quality of life ( $n=117$ ).

## Discussion

Among the female participants in our study conducted in Seia, we found a prevalence of UI of 28.1%. Both in international and national studies, the prevalence in the study samples is in line with our results<sup>10-12</sup>.

The risk factors most commonly associated with UI in women were identified as being overweight or obese, as well as multiparity. Contrary to expectations, we found that regular bowel movements were a risk factor for UI. According to *Pedersen et al.*, women with higher BMI report a higher prevalence of UI<sup>13</sup>. Additionally, according to *Wuytack et al.*, despite the studies carried out presenting some risks of bias, healthcare professionals should consider that nulliparous women have a lower likelihood of having UI compared to primiparous and multiparous women<sup>14</sup>. The relationship between bowel movements and UI is one of the factors where our findings contradict the literature, which typically associates a tendency toward constipation as a risk factor for UI<sup>15-16</sup>.

Female UI has a significant impact on quality of life and we observed statistically significant values in all dimensions of

Contilife®. The instrument used allowed us to obtain results regarding the impact on QoL in different dimensions, with statistically significant values compared to the average obtained in each dimension (with a greater impact in the well-being dimension) and compared to the average obtained in overall quality of life. In another Portuguese study, UI moderately affected the QoL of women, with an average score of 6.7/10 in the overall quality of life measured by Contilife®<sup>17</sup>. In the present study, regarding overall quality of life, the average is 7.59/10, while in the previously mentioned study, the average is 6.7/10. Both results fall within the interval between 6 and 7.99, indicating a low impact on quality of life.

While investigating the potential influence of different types of UI on QoL, our findings indicated that, although many results were not statistically significant, MUI was the type associated with the greatest impact. Studies have suggested that MUI may lead to lower QoL compared to other types of UI due to its complex pathophysiological mechanisms. The pathophysiology of MUI involves a combination of mechanisms seen in SUI and UUI, including intrinsic urethral sphincter deficiency, urethral hypermobility, detrusor overactivity, or a combination of these factors<sup>18</sup>.

Regarding the cutoff point used (with impact/without impact) and considering the overall quality of life measured by the Contilife® instrument, we concluded that most women experienced an impact on their quality of life.

Reflecting on all the results, we can take a more concerted action as physiotherapists within the population. Furthermore, according to the literature, pelvic physiotherapy can increase the physical, psychological, and social well-being of women with UI, leading to a better quality of life<sup>19</sup> being an effective treatment option for UI, reducing the personal and socioeconomic impact of the condition on affected women, their families and caregivers, and society as a whole.

While the sample size exceeded the recommended value ( $n=372$ , based on power analysis) to ensure an acceptable margin of error with a 95% confidence level, the sample was only representative of certain age groups, a crucial aspect to consider when interpreting the study results. Although the overall sample size was larger than the calculated ideal size, the lack of representativeness in specific age groups may limit the generalizability of the findings to the entire target population. Nevertheless, the sample size allowed for some statistically significant results regarding the association of variables with the presence of UI and the analysis of UI's impact on quality of life.

While the Contilife® instrument may appear extensive, it offers the advantage of being less restrictive compared to other evaluation tools when assessing specific situations related to UI.

In future studies, in addition to being important to extend to the entire population of the municipality, it would be interesting to conduct a similar study throughout the district of Guarda since in all health centers of this district, a physiotherapist is present, which would be advantageous for them to be a first line of contact.

Moreover, future studies should prioritize specific physiotherapy interventions and evaluate their impact on the



quality of life of women with UI. Prospective assessments of physiotherapy interventions and experimental studies evaluating their efficacy before and after intervention are essential for advancing our understanding and optimizing treatment approaches in this area. By focusing on these key areas, we can further enhance the effectiveness of physiotherapy interventions and ultimately improve the quality of life for women affected by UI.

**Authors' contribution.** Data collection, data analysis, manuscript writing, SRV; validation and supervision of the manuscript, critical review, PS; data analysis, and critical review, MP; validation and supervision of the manuscript, critical review, PR. All authors have read and agreed with the manuscript version.

### Data availability statement

Data supporting the conclusions of this study are available upon request to the main author.

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The authors declare that there are no conflicts of interest.

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