

# Prevalence, knowledge, and factors associated with urinary incontinence in female students of a physical therapy undergraduate course

*Prevalência, conhecimento e fatores associados à incontinência urinária em mulheres estudantes de um curso de Fisioterapia*

*Prevalencia, conocimientos y factores asociados a la incontinencia urinaria en mujeres estudiantes de Fisioterapia*

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**ABSTRACT** | This study aimed to evaluate the prevalence, knowledge, factors associated with urinary incontinence (UI), and quality of life in female students enrolled in a physical therapy undergraduate course. Students had to answer a form we developed, the International Questionnaire on Incontinence Consultation – Short Form (ICIQ-SF), and a knowledge questionnaire on pelvic floor musculature (PFM) and the occurrence of UI, based on a previous knowledge, attitude, and practice (KAP) study. Out of 248 students, 170 (69%) participated in our study. According to our evaluation form, 111 women (65%) reported urinary loss at some point in their lives. According to ICIQ-SF criteria, 63 (37%) women were incontinent, 41 (65%) suffered from strain urinary incontinence, showing small urinary losses once per week or less, which slightly impacted their quality of life. Most women who have pain during sexual intercourse (59%) and some urogynecological and intestinal symptom, such as straining (92%), intermittent urination (75%), nausea (73%), constipation (53%), excessive effort (53%), and incomplete outlet (70%) also suffered from UI. All women who used pads (100%) and sought medical care (100%) were incontinent. The use of contraceptive was higher among women without UI (84%). Participants built their knowledge on PFM and UI as the course progressed. These results suggest that women who attend undergraduate courses outside physical therapy have

limited knowledge about the subject. We find it necessary to spread knowledge about UI and the importance of physical therapy to prevent and treat UI.

**Keywords** | Pelvic Floor; Pelvis; Female Urogenital Diseases; Urinary Bladder; Quality of Life.

**RESUMO** | O objetivo deste estudo foi avaliar a prevalência, o conhecimento e os fatores associados à incontinência urinária (IU) em mulheres estudantes de um curso de fisioterapia, bem como sua qualidade de vida. Foi aplicada uma ficha de avaliação, o *International Consultation on Incontinence Questionnaire – Short Form* (ICIQ-SF) e um questionário de conhecimento sobre a musculatura do assoalho pélvico (MAP) e a ocorrência de IU, baseado em estudo tipo conhecimento, atitude e prática (CAP). Das 248 estudantes do curso, 170 (69%) participaram do estudo. Pela ficha de avaliação, 111 (65%) relataram perda urinária. De acordo com o ICIQ-SF, 63 participantes (37%) são incontinentes, sendo que 41 (65%) dessas apresentam IU de esforço, apresentando pequena perda e com frequência de uma vez na semana ou menos, com baixo impacto na sua qualidade de vida. A maioria das participantes que relataram ter dor na relação sexual (59%) e alguns sintomas uroginecológicos e intestinais, como esforço ao urinar (92%), jato interrompido (75%), incômodo na região vaginal (73%),

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constipação (53%), esforço ao defecar (53%) e esvaziamento intestinal incompleto (70%), apresentou queixa de IU. Todas as que usam protetor (100%) e procuraram atendimento médico (100%) eram incontinentes. O uso de anticoncepcional foi maior em mulheres sem perda urinária (84%). O conhecimento sobre a MAP e a IU foi adquirido gradualmente com o avançar do curso. Esse resultado sugere que as mulheres que não cursam Fisioterapia não têm domínio do assunto, sendo necessário disseminar o conhecimento sobre a IU e a atuação da fisioterapia.

**Descritores** | Diafragma da Pelve; Pelve; Doenças Urogenitais Femininas; Bexiga Urinária; Qualidade de Vida.

**RESUMEN** | El objetivo de este estudio fue evaluar la prevalencia, el conocimiento y los factores asociados a la incontinencia urinaria (IU) en mujeres estudiantes de Fisioterapia, así como su calidad de vida. Se aplicó un formulario de evaluación, el *International Consultation on Incontinence Questionnaire – Short Form* (ICIQ-SF) y un cuestionario de conocimiento sobre la musculatura del suelo pélvico (MSP) y la ocurrencia de IU, basado en un estudio de conocimiento, actitud y práctica (CAP). De las 248 estudiantes del

curso, 170 (69%) participaron en el estudio. Según el formulario de evaluación, 111 (65%) reportaron pérdida urinaria. Conforme el ICIQ-SF, 63 participantes (37%) son incontinentes, y 41 (65%) de ellas tienen IU de esfuerzo, presentando una pequeña pérdida y con frecuencia de una vez a la semana o menos, con bajo impacto en su calidad de vida. La mayoría de las participantes que informaron sentir dolor en las relaciones sexuales (59%) y algunos síntomas uroginecológicos e intestinales, como esfuerzo al orinar (92%), chorro interrumpido (75%), molestias en la región vaginal (73%), estreñimiento (53%), esfuerzo al defecar (53%) y vaciamiento intestinal incompleto (70%), se quejó de IU. Las participantes que usan protectores (100%) y buscan atención médica (100%) eran incontinentes. El uso de anticonceptivos fue mayor en las mujeres sin pérdida urinaria (84%). El conocimiento sobre la MSP e IU se adquirió de manera gradual a medida que avanzaba el curso. Este resultado apunta que las mujeres que no estudian Fisioterapia no tienen dominio del tema y es necesario difundir conocimientos sobre la IU y la actuación de la fisioterapia.

**Palabras clave** | Diafragma Pélvico; Pelvis; Enfermedades Urogenitales Femeninas; Vejiga Urinaria; Calidad de Vida.

## INTRODUCTION

Estimates suggest that almost half of women complain of urinary loss, including young and nulliparous individuals<sup>1,2</sup>, which we can attribute to excessive or high-impact physical exercises and constipation and associate it with lack of knowledge of their anatomy and urinary incontinence (UI)<sup>3,4</sup>.

Urinary loss negatively affects women's quality of life; many stop exercising to avoid embarrassments and refrain from seeking medical follow-up due to such feelings or ignorance. Depression, anxiety, and stress may also be associated with UI, influencing women's self-esteem and social life<sup>5,6</sup>.

Women-centered physical therapy prevents and treats UI by re-education exercises which voluntarily contract and strengthen pelvic floor muscles<sup>7</sup>, which are fundamental to monitor and educate women with multidisciplinary teams<sup>8</sup>.

Healthcare providers are also susceptible to urinary dysfunctions, either due to pelvic floor overload from strain during their daily activities or the habits of a busy routine, such as decreased water intake and longer intervals between urination episodes<sup>9</sup>. Thus, anatomical knowledge and the correct contraction of pelvic floor muscles (PFM) are paramount to preventing UI during daily activities<sup>7</sup>.

Thus, this study aimed to evaluate the prevalence, knowledge, and factors associated with UI in female physical therapy undergraduates and to analyze how this condition interferes in their quality of life.

## METHODOLOGY

A quantitative cross-sectional and evaluative study of the knowledge of female students from the first to the tenth period of the physical therapy undergraduate course at Universidade Federal de Pernambuco (UFPE), delineated under Resolution No. 466/2012 of the National Health Council (linked to the Brazilian Ministry of Health), was conducted.

Data were collected between July and December 2018. In this study, 18-year-old nulliparous women were included. Those who underwent physical or surgical treatment for UI, received a diagnosis of neuromuscular or postpartum disorders, who smoked or were pregnant were excluded. Students in classrooms were invited to participate via instant messaging app invitations, with the head of department, the coordination of the course, and their teachers' consent.

After signing informed consent forms, two questionnaires and an evaluation form we developed—referring to personal information, gynecological background, and UI complaints—were given to participants. Forms and questionnaires were printed and given to participants, who filled them out and returned them, avoiding greater embarrassment on the addressed subject.

The International Consultation on Incontinence Questionnaire – Short Form (ICIQ-SF), validated for Brazilian Portuguese<sup>10</sup>, was the first questionnaire used. It evaluates incontinent women’s quality of life in the four weeks prior to application, considers urinary loss frequency and amount, and contains a list of situations in which losses occur. ICIQ-SF also evaluates how losses influence daily life via a visual analog scale (VAS), ranked into none (0 points), mild (1–3 points), moderate (4–6 points), severe (7–9 points), and very severe (10 points)<sup>11</sup>. Quality of life can also be assessed by a score from 0 to 21 points, in which the higher the score in its first three questions, the greater the impact of urinary loss<sup>12</sup>.

Another previously developed and used<sup>11</sup> questionnaire assessed participants’ knowledge of UI occurrences, based on knowledge, attitude, and practice (KAP) studies<sup>13,14</sup>. Only women’s knowledge of pelvic floor and its dysfunctions were evaluated, considered appropriate if they knew the location and function of PFM, the existence of exercises to strengthen them, and the benefits of strong PFM to prevent UI.

The questionnaire contained 10 statements to be answered as “true,” “false,” and “I do not know” (Chart 1). Knowledge was considered appropriate for those who answered “true” for correct statements and “false” to incorrect ones; and inappropriate if they answered “false” or “I do not know” for correct statements and “true” or “I do not know” to incorrect ones. The number of correct answers was calculated with a minimum of 70% of correct answers as a cutoff point, i.e., women who correctly answered seven or more questions were considered as having adequate knowledge, whereas those who did less than that, inadequate<sup>11</sup>.

Chart 1. Questions in the knowledge questionnaire about urinary incontinence in high-impact sports, based on knowledge, attitude, and practice (KAP) studies

Knowledge questionnaire (KAP)
1. The pelvic floor is a structure at the base of the pelvis and is formed by muscles, fascias, and ligaments.
2. Urinary incontinence is defined as any involuntary loss of urine.
3. Urinary incontinence affects only older women and is considered a physiological alteration due to aging.
4. All urinary loss happens due to pelvic floor muscle weakness.

(continues)

Chart 1. Continuation

Knowledge questionnaire (KAP)
5. Strong pelvic floor muscles can prevent urinary incontinence.
6. There are specific strengthening exercises for this musculature.
7. High-impact sports such as basketball, volleyball, athletics, handball, among others, show a higher risk for the development of urinary incontinence.
8. The activities which most provide urine loss in high-impact sports are those which include jumps, landings, and running.
9. Urinary incontinence is not associated with training time, duration, and frequency.
10. High-impact sports can cause urinary incontinence due to increased force overload transmitted to the pelvic floor muscles.

Statistical analysis was performed via the Statistical Package for Social Sciences, version 18.0, from an Excel 2013 database. Descriptive analysis was performed by means, medians, and standard deviations for quantitative variables and via absolute (n) and relative frequencies (%) for qualitative ones.

The association between UI and sociodemographic variables, gynecological antecedents, and urogynecological and intestinal symptoms was analyzed; and between knowledge of urinary loss, course period, and quality of life, via the likelihood-ratio chi-square test, Fisher’s exact test, and Spearman’s correlations.

## RESULTS

Of the 248 female students at the physical therapy undergraduate course, 178 volunteered (72%), and we excluded eight of them for failing to meet our eligibility criteria. Thus, 170 (69%) participated in this study (Figure 1).

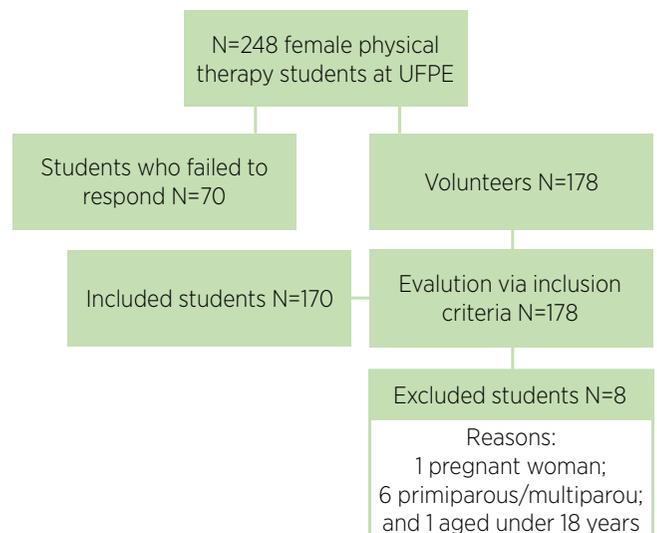


Figure 1. Sample flowchart

According to our evaluation form, 111 women (65%) reported urinary loss at some point in their lives, 52 (31%) had no loss, and 7 (4%) failed to respond. According to the ICIQ-SF questionnaire, 63 (37%) were incontinent.

Association analyses of sociodemographic variables, gynecological antecedents, and urogynecological and intestinal symptoms used the ICIQ-SF questionnaire, as it is a validated research instrument (Table 1). Students' mean age was  $21.7 \pm 2.52$  (mean  $\pm$  standard deviation).

In our analysis, most women who had pain during intercourse (59%) and some urogynecological and intestinal symptoms, such as strained urination (92%), interrupted flow (75%), vaginal discomfort (73%), constipation (53%), strained defecation (53%), and incomplete intestinal outlet (70%) complained of urinary loss. All women who wore protectors and sought medical attention were incontinent. Contraceptive use was higher in women without complaints of urinary loss. Most students neither practiced physical activities nor showed UI.

Table 1. Analysis of the association between urinary incontinence and sociodemographic variables, gynecological antecedents, and urogynecological and intestinal symptoms

Characteristic	Students n (%)	Continent n (%)	Incontinent n (%)	p-value
ICIQ-SF	170 (100)	107-63	63 (37)	
Age (years)	21.7 $\pm$ 2.52*			0.17
Household income (R\$)	2,800			0.21
BMI				0.56
Underweight	18 (11)	11-61	7 (39)	
Ideal weight	113-68	75-66	38 (34)	
Overweight	23 (14)	12-52	11 (48)	
Obesity	11 (7)	8 (73)	3 (27)	
Marital status				0.35
Single	155 (95)	98 (63)	57 (37)	
Married	7 (4)	4 (57)	3 (43)	
Divorced	1 (1)	0 (0)	1 (100)	
Sexually active				0.82
Yes	91 (54)	58 (64)	33 (36)	
No	79 (46)	49 (62)	30 (38)	
Dyspareunia				0.01
Yes	27 (26)	11 (41)	16 (59)	
No	77 (74)	54 (70)	23 (30)	
Contraceptive use				0.00
Yes	38 (24)	32 (84)	6 (16)	
No	122 (76)	68 (56)	54 (44)	
Age at menarche	12.2 $\pm$ 1.27*			0.53
Symptoms of urination				
Urinary hesitancy				0.71
Yes	42 (25)	25 (60)	17 (40)	
No	128 (75)	82 (64)	46 (36)	
Small amount				0.79
Yes	15 (9)	9 (60)	6 (40)	
No	155 (91)	98 (63)	57 (37)	
Strain				0.00
Yes	13 (8)	1 (8)	12 (92)	
No	157 (92)	106 (68)	51 (32)	
Pain/burning				1.00
Yes	13 (8)	8 (62)	5 (38)	
No	157 (92)	99 (63)	58 (37)	
Interrupted flow				0.05
Yes	8 (5)	2 (25)	6 (75)	
No	162 (95)	105 (65)	57 (35)	

(continues)

Table 1. Continuation

Characteristic	Students n (%)	Continent n (%)	Incontinent n (%)	p-value
Bleeding	0 (0)			
Urinary infection				0.07
Yes	13 (8)	5 (38)	8 (62)	
No	157 (92)	102 (65)	55 (35)	
Urinary urgency				
Yes	27 (16)	16 (59)	11 (41)	
No	143 (84)	91 (64)	52 (36)	
Prolapse symptoms				
Vaginal pain				0.06
Yes	5 (3)	1 (20)	4 (80)	
No	165 (97)	106 (64)	59 (36)	
Protuberance	0 (0)			
Dragging sensation				0.37
Yes	1 (1)	0 (0)	1 (100)	
No	169 (99)	107 (63)	62 (37)	
Vaginal discomfort				0.02
Yes	11 (6)	3 (27)	8 (73)	
No	159 (94)	104 (65)	55 (35)	
Intestinal symptoms				
Constipation				0.00
Yes	57 (34)	27 (47)	30 (53)	
No	113 (66)	80 (71)	33 (29)	
Strain to defecate				0.00
Yes	59 (35)	28 (47)	31 (53)	
No	111 (65)	79 (71)	32 (29)	
Incomplete outlet				0.00
Yes	27 (16)	8 (30)	19 (70)	
No	143 (84)	99 (69)	44 (31)	
Hemorrhoids				0.50
Yes	10 (6)	5 (50)	5 (50)	
No	160 (94)	102 (64)	58 (36)	
Pain				0.61
Yes	18 (11)	10 (56)	8 (44)	
No	152 (89)	97 (64)	55 (36)	
Bowel incontinence				0.06
Yes	5 (3)	1 (20)	4 (80)	
No	165 (97)	106 (64)	59 (36)	
Involuntary loss				0.06
Yes	5 (3)	1 (20)	4 (80)	
No	165 (97)	106 (64)	59 (36)	
Urgency				0.47
Yes	8 (5)	4 (50)	4 (50)	
No	162 (95)	103 (64)	59 (36)	
Nocturia				0.42
Yes	66 (39)	39 (59)	27 (41)	
No	104 (61)	68 (65)	36 (35)	
Physical activity practice				0.04
Yes	51 (30)	26 (51)	25 (49)	
No	116 (70)	79 (68)	37 (32)	
Protector use				0.00
Yes	10 (7)	0 (0)	10 (100)	
No	141 (93)	93 (66)	48 (34)	

(continues)

Table 1. Continuation

Characteristic	Students n (%)	Continent n (%)	Incontinent n (%)	p-value
Water retention				0.22
Yes	20 (12)	10 (50)	10 (50)	
No	145 (88)	95 (66)	50 (34)	
Medical care				0.01
Yes	5 (3)	0 (0)	5 (100)	
No	151 (97)	96 (64)	55 (36)	

\*mean±standard deviation; \*\*family income in medians; ICIQ-SF: International Consultation on Incontinence Questionnaire – Short Form, quality of life questionnaire; BMI: body mass index. In total, five women failed to report their weight and/or height for BMI calculation; seven, their marital status; 66, pain during sexual intercourse; 10, contraceptive use; three, physical activity; 19, protector use; 5, water retention; and 14, medical care. P-value calculated via Fisher’s exact test and Spearman’s correlation (for age, family income, and age at menarche).

Via the ICIQ-SF questionnaire, most women who have urinary incontinence reported loss small losses (95%) once a week or less (79%) during exertion (65%), which slightly impacted their quality of life (Table 2).

Table 2. International Consultation on Incontinence Questionnaire (Short Form)

Characteristic	Students n (%)
Incontinent	63 (100)
Urinary loss frequency	
Once a week or less	50 (79)
Two to three times a week	5 (8)
Once a day	5 (8)
Several times a day	3 (5)
Urinary loss amount	
Small	60 (95)
Moderate	2 (3)
Large	1 (2)
VAS	
None	16 (25)
Mild	29 (46)
Moderate	13 (21)
Severe	5 (8)
Score	
Mild	41 (65)
Moderate	22 (35)
Urinary loss situations	
Before getting to the bathroom	
Yes	21 (33)
No	42 (67)
Cough/sneeze	
Yes	41 (65)
No	22 (35)
Asleep	
Yes	2 (3)
No	61 (97)
Physical activity	
Yes	15 (24)
No	48 (76)
Getting dressed after urinating	
Yes	12 (19)
No	51 (81)

(continues)

Table 2. Continuation

Characteristic	Students n (%)
For no obvious reason	
Yes	5 (8)
No	58 (92)

Impact of urinary loss on quality of life, classified by the visual analog scale (VAS) into none (0 points), mild (1-3 points), moderate (4-6 points), severe (7-9 points), and very severe (10 points). Impact of urinary loss on quality of life, classified by score into none (0 points), mild (1-3 points), moderate (4-6 points), severe (7-9 points), and very severe (10 points).

According to the knowledge questionnaire, 122 students (72%) showed adequate knowledge about the pelvic floor and UI, most of which were in later stages of their undergraduate courses. Table 3 shows the association between course period, UI, and quality of life, which was significant only for school period.

Table 3. Knowledge of urinary incontinence and associations

Characteristic	Knowledge n (%)	Adequate n (%)	Inadequate n (%)	p-value
	167 (100)	122 (73)	45 (27)	
Period				0.00
First to fourth	65 (39)	30 (46)	35 (54)	
Fifth to seventh	41 (25)	32 (78)	9 (22)	
Eighth to tenth	61 (36)	60 (98)	1 (2)	
UI				0.86
Continent	105 (63)	76 (72)	29 (28)	
Incontinent	62 (37)	46 (74)	16 (26)	
Quality of life – VAS				0.31
None	105 (70)	76 (72)	29 (28)	
Mild	28 (18)	19 (68)	9 (32)	
Moderate	13 (9)	12 (92)	1 (8)	
Severe	5 (3)	4 (80)	1 (20)	
Quality of life – Score (ICIQ-SF)				0.29
None	102 (61)	74 (73)	28 (27)	
Mild	44 (26)	30 (68)	14 (32)	
Moderate	21 (13)	18 (86)	3 (14)	

UI: urinary incontinence; VAS: visual analog scale; ICIQ-SF: International Consultation on Incontinence Questionnaire – Short Form. In total, three women failed to answer the questionnaire and 17, to report VAS. P-value calculated via chi-square and Fisher’s exact tests.

## DISCUSSION

We found a difference in UI prevalence, according to both questionnaires. ICIQ-SF, which considers the occurrence of urinary loss in the four weeks prior to evaluation, showed a 37% prevalence of young and nulliparous women with UI. However, according to our evaluation form, which considers loss without a time limit, 65% of women declared themselves incontinent since they lost urine at some point in their lives.

According to the definition from the International Continence Society, an isolated report of urinary loss is insufficient to diagnose dysfunction<sup>15</sup>. Our results suggest that women's perception and judgment of their bodies are more rigorous than what is actually the case and may stem from their lack of anatomical knowledge and of the dysfunctions which can occur.

Nevertheless, our form showed a prevalence which resembled that in Dias and Rodrigues<sup>4</sup>, who assessed physical therapy students in another Brazilian institution and evaluated UI via ICIQ-SF; and that in Cardoso, Lima, and Ferreira<sup>11</sup>, who also evaluated UI via ICIQ-SF in young athletes.

Urinary loss due to strain was the most frequent symptom in our sample (65%), as observed in other studies with young and nulliparous women<sup>4,11</sup>. This occurs when the pelvic floor is unable to maintain the adequate contraction of the urethral sphincter during the sudden increase of intra-abdominal pressure<sup>16</sup> or by hypermobility of the urinary bladder due to inadequate support of the vaginal wall<sup>17</sup>.

Most women who reported constipation, strained defecation, and a feeling of incomplete outlet<sup>18</sup> were incontinent. Evacuation requires the puborectalis muscle to relax and the anorectal angle to open. If this fails, women need to contract their abdominal muscles<sup>17</sup>. These conditions can stretch the PFM<sup>19</sup>, impairing the support of the pelvic organs and interfering in the proper functioning of the urethral and anal sphincters<sup>17</sup>.

Most women who showed interrupted flow and strain to urinate were incontinent. These symptoms indicate urethral narrowing, which may stem from inflammatory process (urinary infection), constipation, prolapse of one or more pelvic organs or altered contraction of sphincter muscles<sup>20,21</sup>. These women also reported vaginal discomfort, a symptom of prolapse due to muscle injury and endopelvic fascia failure<sup>15</sup>.

Most students who reported dyspareunia complained of urinary loss. Pain is a symptom of sexual dysfunction which can stem from urinary incontinence<sup>22</sup>. This result

resembles that in Latorre et al.<sup>23</sup>, who evaluated the prevalence of sexual dysfunctions in students of a physical therapy course.

Contraceptive use was associated with urinary continence, which we may explain by hormones which can neutralize muscular degenerative changes and positively influence muscle strength and recovery, depending on the period of the menstrual cycle. However, the mechanism behind this remains unclear<sup>24-27</sup>.

Physical activity constitutes a predisposing factor of UI strain in nulliparous women<sup>28</sup>. However, most women we evaluated failed to practice physical activities.

Adequate knowledge was higher among students from the eighth to the tenth period, which we can explain by the undergraduate course offering the discipline "Physical Therapy Applied to Women's Health" in its eighth period, which teaches students about pelvic floor structures, urogynecological dysfunctions, and physical therapy resources to treat and prevent them, such as kinesiotherapy (Kegel exercises) with or without biofeedback, electrical stimulation, vaginal cones, and virtual reality<sup>29</sup>.

The first and second periods of the undergraduate course offer two anatomy courses, in which students learn about pelvic floor structures; whereas the fifth, a discipline on gynecology and obstetrics. The course further develops knowledge of urogynecological dysfunctions and physiotherapeutic treatment only in its eighth period<sup>30</sup>. Thus, volunteers gradually receive knowledge, justifying their greater familiarity with the subject only in the later stages of the course, evincing that students attending physical therapy undergraduate courses ignore that PFM voluntary contraction prevents and treats UI symptoms<sup>5,6</sup>.

A previous study applied the same knowledge questionnaire we used to female, young, and nulliparous athletes, confirming subjects' lack of understanding outside academia and healthcare<sup>11</sup>. Santos and Vaz<sup>31</sup> also found other healthcare providers' poor knowledge of how physical therapy can treat UI and proposed a greater interaction between specialties, which would optimize patient care.

Most women also reported a slight influence of UI on their quality of life, as did those in Cardoso, Lima, and Ferreira<sup>11</sup>. Our participants also reported small losses (95%) once a week or less (79%), consistent with that in a study which assessed undergraduate students in physical therapy<sup>4</sup> via ICIQ-SF. We believe this explains the low demand for adequate treatment, embarrassment of women in this situation or their lack of knowledge about the problem and treatment<sup>32</sup>.

Another study showed improved quality of life for women with UI strain, comparing their results before and after a six-week physical therapy intervention<sup>33</sup>. A psychological study evaluated the relevance of physical therapy for the quality of life of women with UI via a global self-esteem scale, finding that physical therapeutic treatment also benefits volunteers' psychosocial sphere<sup>34</sup>, improving their quality of life.

We showed that students who attend physical therapy undergraduate courses have little knowledge of UI and of the relevance of physical therapy to treat and prevent it, reflecting the lack of knowledge of society, which can cause future problems or worsen existing conditions. Thus, public policies must be implemented to encourage and guide self-knowledge, as must strategies to improve physical therapists' performance with multidisciplinary teams.

## CONCLUSION

This study showed urinary loss in young and nulliparous women, occurring more often during exertion and associated with constipation, strained urination, and interrupted flow, which interfered in the proper functioning of continence mechanisms. Women also reported a slight influence of incontinence on their quality of life.

We also showed that students at the end of physical therapy undergraduate courses have adequate knowledge of the subject, which they gradually acquired during their studies. This suggests that women who attend courses other than in physical therapy would know little of the pelvic floor and its importance to preventing urinary incontinence.

Thus, research must overcome taboos and disseminate knowledge of urinary incontinence and physical therapy to both other health specialties and society, ensuring the better care for patients.

## REFERENCES

- Bardino M, Di Martino M, Ricci E, Parazzini F. Frequency and determinants of urinary incontinence in adolescent and young nulliparous women. *J Pediatr Adolesc Gynecol*. 2015;28(6):462-70. doi: 10.1016/j.jpag.2015.01.003.
- Buckley BS, Lapitan MCM. Prevalence of urinary incontinence in men, women, and children—current evidence: findings of the Fourth International Consultation on Incontinence. *Urology*. 2010;76(2):265-70. doi: 10.1016/j.urology.2009.11.078.
- Almoussa S, van Loon AB. The prevalence of urinary incontinence in nulliparous adolescent and middle-aged women and the associated risk factors: a systematic review. *Maturitas*. 2018;107:78-83. doi: 10.1016/j.maturitas.2017.10.003.
- Dias SFL, Rodrigues AMS. A prevalência de incontinência urinária em mulheres nulíparas. *J Health Sci Inst*. 2016;34(1):49-52.
- Alves JO, Luz STD, Brandão S, Luz CM, Jorge RN, Roza T. Urinary incontinence in physically active young women: prevalence and related factors. *Int J Sports Med*. 2017;38(12):937-41. doi: 10.1055/s-0043-115736.
- Thomaz RP, Colla C, Darski C, Paiva LL. Influence of pelvic floor muscle fatigue on stress urinary incontinence: a systematic review. *Int Urogynecol J*. 2018;29(2):197-204. doi: 10.1007/s00192-017-3538-6.
- Ramos AL, Oliveira AAC. Incontinência urinária em mulheres no climatério: efeitos dos exercícios de Kegel. *Revista Hórus*. 2010;5(2):264-75.
- Rocha ACP, Feliciano AB, Carbol M, Candolo C, Callegari FVR. Conhecimentos, atitudes e prática de médicos e enfermeiros da Estratégia Saúde da Família em relação à incontinência urinária feminina. *Rev Bras Med Fam Comunidade*. 2016;11(38):1-13. doi: 10.5712/rbmf11(38)1146.
- Figueiredo EM, Baracho SM, Vaz CT, Sampaio RF. Educação de funcionárias de unidade básica de saúde acerca da atenção fisioterapêutica na incontinência urinária: relato de experiência. *Fisioter Pesqui*. 2012;19(2):103-8. doi: 10.1590/S1809-29502012000200003.
- Tamanini JTN, Dambros M, D'Ancona CAL, Palma PCR, Netto NR Jr. Validation of the "International Consultation on Incontinence Questionnaire – Short Form" (ICIQ-SF) for Portuguese. *Rev Saude Publica*. 2004;38(3):438-44. doi: 10.1590/S0034-89102004000300015.
- Cardoso AMB, Lima CROP, Ferreira CWS. Prevalence of urinary incontinence in high-impact sports athletes and their association with knowledge, attitude and practice about this dysfunction. *Eur J Sport Sci*. 2018;18(10):1405-12. doi: 10.1080/17461391.2018.1496146.
- Nyström E, Sjöström M, Stenlund H, Samuelsson E. ICIQ symptom and quality of life instruments measure clinically relevant improvements in women with stress urinary incontinence. *Neurourol Urodyn*. 2015;34(8):747-51. doi: 10.1002/nau.22657.
- Ribeiro KFC, Moura MSS, Brandão RGC, Nicolau AIO, Aquino PPS, Pinheiro AKB. Student nurses' knowledge, attitude and practice regarding the Papanicolaou examination. *Texto Contexto Enferm*. 2013;22(2):460-7. doi: 10.1590/S0104-07072013000200023.
- Rosa ARR, Silva TSL, Carvalho ICS, Sousa ASJ, Rodrigues AB, Penha JC. Cervical cytology examination: inquiry into the knowledge, attitude and practice of pregnant women. *Cogitare Enferm*. 2018;23(2):e52589. doi: 10.5380/ce.v23i2.52589.
- Abrams P, Andersson KE, Birder L, Brubaker L, Cardozo L, Chapple C, et al. Fourth international consultation on incontinence recommendations of the international scientific committee: evaluation and treatment of urinary incontinence, pelvic organ prolapse, and fecal incontinence. *Neurourol Urodyn*. 2010;29(1):213-40. doi: 10.1002/nau.20870.
- Korelo RIG, Kosiba CR, Grecco L, Matos RA. Influência do fortalecimento abdominal na função perineal, associado

- ou não à orientação de contração do assoalho pélvico, em nulíparas. *Fisioter Mov.* 2011;24(1):75-85. doi: 10.1590/S0103-51502011000100009.
17. Baracho E. *Fisioterapia aplicada à saúde da mulher*. 6th ed. Rio de Janeiro: Guanabara Koogan; 2018.
  18. Firmino RCB, Carvalho VCP. Conscientização do assoalho pélvico em acadêmicas de fisioterapia com constipação intestinal de uma unidade de ensino superior – Recife/PE. *Revista Inspirar.* 2015;7(1):18-22.
  19. Higa R, Lopes MHB, Reis MJ. Fatores de risco para incontinência urinária na mulher. *Rev Esc Enferm USP.* 2008;42(1):187-92. doi: 10.1590/S0080-62342008000100025.
  20. Silva AGT, Santos JVQV, Bortolini T, Batezini NSS, Rosito TE. Estenose de uretra feminina – conceitos atuais e revisão da literatura. *Urominas.* 2019;6(14):19-23.
  21. Dougherty JM, Rawla P. *Female urinary retention*. Treasure Island: StatPearls Publishing; 2021.
  22. Antonioli RS, Simões D. Abordagem fisioterapêutica nas disfunções sexuais femininas. *Rev Neurocienc.* 2010;18(2):267-74.
  23. Latorre GFS, Bilck PA, Pelegrini A, Santos JM, Sperandio FF. Disfunção sexual em jovens universitárias: prevalência e fatores associados. *Fisioter Bras.* 2016;17(5):442-9.
  24. Wikström-Frisén L, Boraxbekk CJ, Henriksson-Larsén K. Effects on power, strength and lean body mass of menstrual/oral contraceptive cycle based resistance training. *J Sports Med Phys Fitness.* 2017;57(1-2):43-52. doi: 10.23736/S0022-4707.16.05848-5.
  25. Hansen M. Female hormones: do they influence muscle and tendon protein metabolism? *Proc Nutr Soc.* 2018;77(1):32-41. doi: 10.1017/s0029665117001951.
  26. Sousa MV. Respostas de dano muscular em praticantes de treinamento de força: efeito do uso de anticoncepcional [master's thesis]. Florianópolis: Universidade Federal de Santa Catarina; 2018.
  27. Konopka JA, Hsue LJ, Dragoo JL. Effect of oral contraceptives on soft tissue injury risk, soft tissue laxity, and muscle strength: a systematic review of the literature. *Orthop J Sports Med.* 2019;7(3):2325967119831061. doi: 10.1177/2325967119831061.
  28. Hagovska M, Svihra J, Bukova A, Horbacz A, Svihrova V. The impact of physical activity measured by the International Physical Activity questionnaire on the prevalence of stress urinary incontinence in young women. *Eur J Obstet Gynecol Reprod Biol.* 2018;228:308-12. doi: 10.1016/j.ejogrb.2018.07.011.
  29. Peixinho TAM, Saraiva A, Trippo KV. Effects of virtual reality exposure therapy in muscle function in women with urinary incontinence: case series. *Rev Pesqui Fisioter.* 2018;8(3):387-96. doi: 10.17267/2238-2704rpf.v8i3.1938.
  30. Universidade Federal de Pernambuco. Curso: Fisioterapia. Relatório perfil curricular [Internet]. Recife: UFPE; 2013 [cited 2019 May 7]. Available from: [https://www.ufpe.br/documents/38970/411209/fisioterapia\\_perfil\\_6804.pdf/4fe442f3-a141-48a2-a7ab-06059bfbfd069](https://www.ufpe.br/documents/38970/411209/fisioterapia_perfil_6804.pdf/4fe442f3-a141-48a2-a7ab-06059bfbfd069)
  31. Santos RER, Vaz CT. Conhecimento de profissionais da atenção primária à saúde sobre a abordagem terapêutica na incontinência urinária feminina. *HU Rev.* 2017;43(3):239-45. doi: 10.34019/1982-8047.2017.v43.2837.
  32. Silva L, Lopes MHB. Urinary incontinence in women: reasons for not seeking treatment. *Rev Esc Enferm USP.* 2009;43(1):68-74. doi: 10.1590/S0080-62342009000100009.
  33. Cardoso LCJ. Efeitos de seis semanas de treinamento dos músculos do assoalho pélvico na incontinência urinária de esforço em mulheres. Uberlândia: UFU; 2018.
  34. Viana R, Viana S, Andrade R, Festas C, Neto F. Fisioterapia na autoestima de mulheres com incontinência urinária: estudo longitudinal. *Psicol Saude Doenças.* 2014;15(1):170-9. doi: 10.15309/14psd150114.