Original Article

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Prevalence of urinary incontinence and associated factors in patients with post-COVID-19 syndrome after hospital discharge

Prevalência de incontinência urinária e fatores associados em pacientes com síndrome pós-COVID-19 pós alta hospitalar

Prevalencia de incontinencia urinaria y factores asociados en pacientes con síndrome post-COVID-19 después del alta hospitalaria

Jessica Roda Cardoso[a]
Laura Nochang Steffanello[a]
Luis Fernando Ferreira[a,b]
Gabriela Tomedi Leites[a]
Patricia Viana Da Rosa[a]
Luis Henrique Telles Da Rosa[a]

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ABSTRACT

Objectives: To assess the prevalence of urinary incontinence and the clinical and demographic factors associated with patients with Post-COVID-19 Syndrome.

Method: A cross-sectional study was conducted with 59 participants from Porto Alegre/RS. Data were collected via telephone interviews using a structured instrument, the Functional Status Scale, and the International Consultation on Incontinence Questionnaire – Short Form, between September 2021 and October 2022. Numerical data were analyzed for normality using the Shapiro-Wilk test. Student's t-test with Mann-Whitney's post-hoc was applied for comparison of continuous variables. Fisher's exact test was used for correlation of categorical data.

Results: The sample included 32 women (56.4 ± 11.3 years) and 27 men (49.5 ± 10.7 years). Only women reported post-COVID-19 urinary incontinence (28%), as well as emotional alterations (p=0.006). Urinary incontinence was associated with insomnia (p=0.005).

Conclusion: Urinary incontinence was prevalent only in women and was not affected by COVID-19. Women also exhibited greater emotional alterations. Insomnia was the variable associated with the outcome. Thus far, there is incipient evidence regarding the association of the SARS-CoV-2 infection with the prevalence of urinary incontinence in individuals with Post-COVID-19 Syndrome.

Descriptors: COVID-19. Acute post-COVID-19 syndrome. Urinary incontinence.

RESUMO

Objetivos: Verificar a prevalência de incontinência urinária e os fatores clínicos e demográficos associados entre pacientes com Síndrome Pós-COVID-19.

Método: Estudo transversal, com 59 participantes de Porto Alegre/RS. Dados coletados via ligação telefônica, utilizando instrumento estruturado, *Functional Status Scale e International Consultation on Incontinence Questionnaire – Short Form*, entre setembro de 2021 e outubro de 2022. Os dados numéricos foram analisados quanto à normalidade pelo teste de Shapiro-Wilk. Teste T de Student com post-hoc de Mann-Whitney foi aplicado para comparação de variáveis contínuas. Teste Qui-quadrado de Fisher foi utilizado para correlação dos dados categóricos.

Resultados: A amostra foi composta por 32 mulheres (56,4 ±11,3 anos) e 27 homens (49,5 ±10,7 anos). Apenas mulheres referiram incontinência urinária pós-COVID-19 (28%), bem como, alterações emocionais (p=0,006). Identificou-se associação da incontinência urinária com a variável insônia (p=0,005).

Conclusão: A incontinência urinária foi prevalente somente em mulheres e não foi afetada pela COVID-19. As mulheres também apresentaram maiores alterações emocionais. A insônia foi a variável associada com o resultado. Até o momento, parece haver incipiência de evidências robustas acerca da associação da infecção por SARS-CoV-2 com a prevalência de incontinência urinaria em indivíduos com Síndrome Pós-COVID-19.

Descritores: COVID-19. Síndrome pós-COVID-19 aguda. Incontinência urinária.

RESUMEN

Objetivos: Evaluar la prevalencia de incontinencia urinaria y los factores clínicos y demográficos asociados en pacientes con Síndrome Post-COVID-19.

Método: Se realizó un estudio transversal con 59 participantes de Porto Alegre/RS. Los datos se recolectaron mediante entrevistas telefónicas, utilizando un instrumento estructurado, la *Functional Status Scale y el International Consultation on Incontinence Questionnaire – Short Form*, entre septiembre de 2021 y octubre de 2022. La normalidad de los datos numéricos se analizó con la prueba de Shapiro-Wilk. Se aplicó la prueba t de Student con post-hoc de Mann-Whitney para la comparación de variables continuas y se utilizó la prueba exacta de Fisher para la correlación de datos categóricos.

Resultados: La muestra estuvo compuesta por 32 mujeres (56,4 ± 11,3 años) y 27 hombres (49,5 ± 10,7 años). Solo las mujeres informaron incontinencia urinaria pos-COVID-19 (28%), así como alteraciones emocionales (p=0,006). Se encontró asociación entre la incontinencia urinaria y la variable insomnio (p=0,005).

Conclusión: La incontinencia urinaria fue prevalente solo en mujeres y no se vio afectada por el COVID-19. Las mujeres también presentaron mayores alteraciones emocionales. El insomnio fue la variable asociada con el resultado. Hasta el momento, parece haber evidencia incipiente sobre la asociación entre la infección por SARS-CoV-2 y la prevalencia de incontinencia urinaria en individuos con Síndrome Post-COVID-19.

Descriptores: COVID-19. Síndrome agudo post-COVID-19. Incontinencia urinaria.

[a] Universidade Federal de Ciências da Saúde de Porto Alegre – UFCSPA, Porto Alegre, Rio Grande do Sul, Brasil;

[b] Queen's University of Belfast, Belfast, Irlanda do Norte, Reino Unido.

INTRODUCTION

The COVID-19 pandemic, in addition to being quite deadly, provoked several long-term health consequences[1,2]. Estimates suggest that symptoms from the SARS-CoV-2 affect up to 60% of patients, who show at least one symptom 30 days after hospitalization[3]. After one year, only 23% of patients will have recovered and be completely free of symptoms[4].

The National Institute for Health and Care Excellence (NICE) has defined stages of the COVID-19. The Post-COVID-19 Syndrome, or stage III, is a set of symptoms and debilitating dysfunctions that develop after three weeks and remain for more than twelve weeks after contagion[5]. This condition affects, at least, 10% of those infected, with daily increases in notifications. Estimates suggest that the incidence varies from 10 to 30% in patients who were not hospitalized; from 50 to 70% in critical cases; and from 10 to 12% in those who were vaccinated[4, 6].

Some research[3, 4, 6, 7] shows that COVID-19 can reach almost all systems, including respiratory, cardiovascular, gastrointestinal, neurological, psychiatric, and dermatological, generating a series of long term manifestations. The most common permanent symptoms are fatigue and asthenia, shortness of breath, myalgia, arthralgia, persistent cough, insomnia, anxiety and depression, headaches, and cognitive changes, such as "brain numbness", ageusia, and anosmia. Fatigue, anxiety, and sleep disorders are the most prevalent in the Post-COVID-19 Syndrome.

Another potential harm is the association between the infection by SARS-CoV-2 and the prevalence of Urinary Incontinence (UI). UI, defined by the *International Continence Society* (ICS) as any and all involuntary loss of urine, is a serious public health issue, affecting from 10 to 40% of the world's population[8]. The prevalence is higher among females, who present some form of UI from 14 to 57% of cases[8,9]. Individuals with UI experience consequences such as the loss of self-confidence and social isolation, in addition to other negative results, such as anxiety, depression, deterioration of sexual life, and less physical activity[10].

Regarding the UI associated with the SARS-CoV-2 infection, some hypotheses have been proposed. Many factors associated to the hospitalization can lead to UI in Post-COVID-19 cases, such as long periods in the Intensive Care Unit (ICU) in the critical cases, restricted excursion of the diaphragm muscle due to complications such as pulmonary fibrosis and extensive pulmonary damage, constant cough, shortness of breath and muscle weakness acquired during the period in the ICU[1, 11]. However, until now, there are few studies analysing the prevalence of UI in patients with Post-COVID-19 Syndrome.

Therefore, this study aims to verify the prevalence of urinary incontinence (UI) and the clinical and demographic factors associated to it among patients with Post-COVID-19 Syndrome, in an attempt to answer the following research question: What is the impact of hospitalization and Post-COVID-19 Syndrome in urinary incontinence? Our hypothesis is that, after discharge, the individuals with Post-COVID-19 Syndrome will have a higher prevalence of UI.

METHOD

Type of study

This is a descriptive, cross-sectional study, conducted from July 2021 to August 2022, in Porto Alegre, Rio Grande do Sul, Brazil.

The study was carried out according to directives from the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE).

Sampling

To calculate the sample size, we used a reference study[12], adopting a significance level of 85%, an acceptable error of 5%, and a prevalence of 7% for the presence of urinary symptoms in COVID-19 cases. This led to a sample size of 54 subjects. The calculation was carried out using the software WinPepi 4.0 for Windows.

Eligibility criteria

Were eligible all individuals with SARS-CoV-2 infections, clinical diagnoses of COVID-19, who had been discharged at least three months ago and at most one year ago, according to their own reports via telephone.

The individuals contacted, according with the guidelines of the National Institute for Health and CARE Excellence (NICE), presented Post COVID-19 Syndrome, with signs and symptoms having developed three weeks after discharge and remaining for more than twelve weeks[5].

Were excluded from the study pregnant women; men with a history of prostate cancer and previous radical prostatectomies; those with previous neurological diseases, such as strokes (HVAC), multiple sclerosis, or Parkinson's, as these conditions increase the likelihood of UI.

Data collection

Participants were recruited through an active search, using social media, pamphlets, and posters. We also contacted

health professionals from Primary Care Units who helped advertise the research. This strategy produced a diversified sample, involving people who had been hospitalized in several hospitals in Porto Alegre and in the metropolitan region of the city, who responded to the research after being discharged from the hospital.

Data collection was carried out from July 2021 to August 2022, via telephone. Participants responded to a structured questionnaire, elaborated to ascertain whether they were eligible for the research and register their answers to the variables analyzed. Furthermore, we applied the "International Consultation on Incontinence Questionnaire – Short Form" (ICIQ-SF) and the "Functional Status Scale (PCFS)".

When the participants did not answer a first contact, two other attempts were made, on different days and times. In case it was impossible to locate participants via phone, a text message or WhatsApp message was sent, expecting a reply.

For data collection, a researcher was trained to interact with the participants via phone, in a concise and uniform manner, to avoid potential interference in the responses, while facilitating the understanding of the language used. The questionnaires were read to the participants, one item at a time, including each possible response. Then, the information reported by the patient was recorded.

Variables

The presence of UI before and after SARS-CoV-2 infections was classified according to the symptoms of bladder storage, defined by the International Continence Society (ICS) as complaints about involuntary loss of urine, intermittent loss of urine during sleep, continuous involuntary loss of urine, loss of urine during sexual activities, or other situational types of UI[8,13,14]. Participants who mentioned some UI situation responded to the ICIQ-SF, which had been validated in the Portuguese language. This instrument can evaluate the impact of UI on quality of life and qualify the urine loss. It has four questions that evaluate the frequency, severity, and impact of UI, in addition to eight self-diagnostic items related to the causes or situations of UI experienced by the patients. The maximum score is 21 points, which would suggest a high impact of UI in the life of an individual[13].

The presence of previous diseases or pre-existing comorbidities (diabetes mellitus, systemic arterial hypertension, hypercholesterolemia, obesity, respiratory, intestinal, or cardiovascular dysfunctions, emotional changes, and others) was self-reported by the interviewees. The evaluator asked whether they had been diagnosed with some health condition in the last five years. The presence of sequelae after the infection (fatigue, shortness of breath, cough, pulmonary weakness and or pain, headache, emotional changes, insomnia, anxiety, and others) were evaluated in a similar manner.

Information regarding hospitalization, such as the need for ICU, sedation, mechanical ventilation (MV), and oxygen therapy were found through yes or no questions. Patients themselves indicated, in days, how long they had stayed in the hospital and in the ICU.

Post-COVID-19 functional limitations were evaluated using the PCFS, validated for the Portuguese language, in the form of an interview. This tool classifies the impact of the symptoms of SARS-CoV-2 infections on the functional state of individuals after COVID-19. They are classified from degree 0 (no functional limitations) up to degrees 4 (severe functional limitations) and 5 (death)[15].

Ethical aspects

This study was carried out in accordance with Resolution 466, from December 12, 2012, of the National Council of Health. It was approved by the Research Ethics Committee of the Municipal Health Secretariat of Porto Alegre, under opinion 4.858.291. All participants agreed with the Informed Consent, which was read out loud during the phone call. Participants agreed verbally, and their agreements was recorded. All data found from this research was treated by a blinded statistician. The names of the participants were not present in the database. The research was developed in accordance with the General Law of Personal Data Protection (Law 13.709/2018).

Data analysis

Qualitative variables were expressed in absolute and relative frequencies. Quantitative variables were presented in the form of means and standard deviations (SD). The normality of data was tested using Shapiro-Wilk's test. Student's T, with Mann-Whitney's post-hoc, was applied to compare continuous variables. Fisher's chi-squared was used for the correlation of descriptive data. A p-value < 0.05 was considered to be significant. The analysis was carried out using the statistical software SPSS (IBM SPSS Statistics for Windows, version 25.0, IBM Corp., Armonk, NY, EUA).

RESULTS

Table 1 shows the characteristics reported by the sample regarding the days before their hospitalization for SARS-CoV-2.

Table 2 shows the data of the hospital care carried out during the hospitalization for COVID-19.

Table 1 – Characteristics of the sample before hospitalization for COVID-19 (n=59, Porto Alegre, Rio Grande do Sul, Brazil, 2023.

	Total (n=2.492)		Female (n=32)		Male (n=27)		p-value
	n	%	n	%	n	%	
Sociodemographic characteristics							
Age	53.4±11.5	56.4±11.3	49.5±10.7	0.022*			
Ethnicity	49	83	26	81	23	85	0.741
Marital status – married	32	54	15	47	17	63	0.217
Pre-existing comorbidities							
Diabetes mellitus	10	17	7	22	3	11	0.319
SAH	30	51	18	56	12	44	0.366
Hypercholesterolemia	15	25	10	31	5	18	0.263
Obesity	19	32	12	37	7	26	0.343
Respirator disorders	19	32	11	34	8	30	0.698
Intestinal disorders	10	17	9	28	1	3	0.004*
Cardiovascular disorders	15	25	10	31	5	18	0.263
Emotional alterations	22	37	17	53	5	18	0.006*
Other	4	67	2	6	2	7	1.000

Source: the authors.
Caption: n: absolute sample; %: relative sample; SAH: systemic arterial hypertension; *: statistically significant difference according to Fisher's chi-squared; †: mean values+standard deviation.

Table 2 – Hospital care carried out during the hospitalization for SARS-CoV-2 (n=59), Porto Alegre, Rio Grande do Sul, Brazil, 2023.

	Total (n=59)		Female (n=32)		Male (n=27)		p-value
	n	%	n	%	n	%	
ICU	17	29	10	31	7	26	0.653
Sedation	13	22	7	22	6	22	0.974
IMV	14	24	8	25	6	22	0.803
NIMV	30	51	17	53	13	48	0.703
Oxygen therapy	55	93	29	91	26	96	0.617
Hospitalization time (days) †	26.4+40	23.6+29	29.4+49.8	0.835			
MV time (days) †	14.4±13	14.2±13.4	14.6±12.5	0.602			

Source: the authors.
Caption: n: absolute sample; %: relative sample; †: mean values;+standard deviation; ICU: Intensive Care Unit; IMV: invasive mechanical ventilation; NIMV: non-invasive mechanical ventilation; MV: mechanical ventilation.

Table 3 – Characteristics of the sample after hospitalization for COVID-19 (n=59, Porto Alegre, Rio Grande do Sul, Brazil, 2023.

	Total (n=59)		Female (n=32)		Male (n=27)		p-value
	n	%	n	%	n	%	
Post-COVID-19 Symptoms							
Fatigue	49	83	28	87	21	78	0.488
Shortness of breath	45	76	22	69	23	85	0.139
Coughing	18	30	13	40	5	18	0.066
Pulmonary	11	19	6	19	5	18	0.982
Weakness/pain	43	73	24	75	19	70	0.690
Headache	22	37	11	34	11	41	0.614
Emotional alterations	37	63	24	75	13	48	0.004*
Insomnia	32	54	15	47	17	63	0.217
Anxiety	42	71	22	69	20	74	0.653
Functional Status Scale (PCFS)							
Degree 0	19	32	6	19	13	48	0.084
Degree 1	3	5	3	9	0	0	
Degree 2	11	19	8	25	3	11	
Degree 3	22	37	13	41	9	33	
Degree 4	4	7	2	6	2	7	

Source: the authors.
Caption: n: absolute sample; %: relative sample; *: statistically significant difference according to Fisher's chi-squared; Degree 0: no functional limitation; Degree 1: very mild functional limitation; Degree 2: mild functional limitation; Degree 3: moderate functional limitation; Degree 4: severe functional limitation.

Table 3 shows the characteristics of the patients after discharge, considering the persistent symptoms associated with the infection and the evaluation pf their functional state using the PCFS.

Urinary losses after COVID-19 were mentioned by 28% of women. There was no report of UI among men. Considering the sample as a whole, its prevalence was 15.25%.

There were cases of women (n=3) who presented UI before the SARS-CoV-2 infection but reported no further urine loss after COVID-19. However, other cases (n=3) reported only having UI after the infection.

Table 4 shows the characteristics of the women with UI after COVID-19.

There was a significant association between the presence of insomnia and UI among women (p=0.005).

Regarding the results of the ICIQ-SF, among women who reported UI after COVID-19 (n=9) and responded to the instrument, more than half (55.5%) reported that the UI has

Table 4 – Characteristics of women with UI after COVID-19 (n=9), Porto Alegre, Rio Grande do Sul, Brazil, 2023.

Sociodemographic characteristics	**Mean±SD or n(%)**
Age	55.11±13.4
Ethnicity	9 (100)
Marital status – married	3 (33.33)
Hospital care received	**Mean±SD** or **n(%)**
ICU	2 (22.22)
Sedation	2 (22.22)
IMV	3 (33.33)
NIMV	4 (44.44)
Oxygen therapy	8 (88.88)
Hospitalization time (days)	15.22±15.05
MV time (days)	7.35±14.32
Functional Status Scale (PCFS)	**Mean±SD** or **n(%)**
Degree 0	2 (22.22)
Degree 1	0 (0)
Degree 2	1 (11.11)
Degree 3	4 (44.44)
Degree 4	2 (22.22)
Pre-existing comorbidities	**Mean±SD** or **n(%)**
Diabetes mellitus	3 (33.33)
SAH	5 (55.55)
Cholesterol	2 (22.22)
Obesity	3 (33.33)
Respiratory issues	4 (44.44)
Intestinal issues	3 (33.33)
Psychological issues	5 (55.55)
Post-COVID-19 Symptoms	**Mean±SD** or **n(%)**
Fatigue	9 (100)
Shortness of breath	6 (66.66)
Coughing	4 (44.44)
Pulmonary	1 (11.11)
Weakness/pain	7 (77.77)
Headache	5 (55.55)
Emotional alterations	8 (88.88)
Insomnia	8 (88.88)
Anxiety	6 (66.66)

Source: the authors.
Caption: Continuous data presented in means+standard deviation (mean+SD); categorical data presented in total and relative numbers (n (%)); ICU: Intensive Care Unit; IMV: invasive mechanical ventilation; NIMV: non-invasive mechanical ventilation; MV: mechanical ventilation; SAH: systemic arterial hypertension; Degree 0: no functional limitation; Degree 1: very mild functional limitation; Degree 2: mild functional limitation; Degree 3: moderate functional limitation; Degree 4: severe functional limitation.

a negative impact on their quality of life. As for the moment when the urine loss takes place, most (77.7%) reported that it happens "before getting to the bathroom" and more than half (55.5%) "when I cough or sneeze". One third of the sample (33.3%) reported losing urine "several times a day".

DISCUSSION

This study aimed to verify the prevalence of UI and the clinical and demographic factors associated with patients with Post-COVID-19 Syndrome. The prevalence of UI before and after SARS-CoV-2 infections was the same, and only women mentioned urine losses (28%). There was a significant association between insomnia and UI in women. Women who reported UI after the infection stated that this had a negative impact on their quality of life.

Corroborating our findings, a study from a hospital center in Madrid, Spain [2], analyzed a cohort of patients hospitalized for COVID-19 with genital-urinary symptoms, concluding that women presented significantly more UI diagnoses. UI is quite prevalent in the female population, despite being often underestimated. From 14% to 57% of women from 20 to 89 years old present some form of UI [9, 10, 16]. Among men, recent studies point at prevalence rates from 17% to 38%, depending on the population being studied [1].

In a prospective multicentric study[1] carried out in Spain and Iran with 238 patients hospitalized for COVID-19, there were no reports of symptoms in the lower urinary tract, including UI. On the other hand, a Brazilian research with 566 participants, which aimed, specifically, to analyze the occurrence of UI before, during, and after COVID-19 infections, found that 20.5% of its participants were incontinent before the COVID-19 infection, 24.7% stated that their UI began during their infection, and 17.3% stated it began after they had recovered[11].

Individuals who recovered from COVID-19 often presented changes to their respiratory system. This may have a negative impact on the functioning of their pelvic floor, since the function of the respiratory diaphragm influences the ability of contracting and relaxing the pelvic floor, thus affecting continence. Factors related to hospitalization, such as long periods in ICUs, complications such as pulmonary fibrosis and extensive damage to the lungs, shortness of breath, and muscle weakness acquired in the ICU, can contribute for the development of UI after COVID. The incidence of chronic coughing can also be related with the presence of UI. Theoretically, the repeated elevation of intra-abdominal pressure levels may overload the pelvic floor and cause microtraumas in it[17].

An issue that must be discussed is the omission or difficulties identifying urine loss due to sedentariness and inactivity caused by the pandemic and its damages[3]. Studies have shown that, even several months after the infection, patients with Post-COVID Syndrome still report continuous symptoms, impaired quality of life, and a greater dependence on others to carry out personal care and daily life activities (DLA)[3, 4, 6]. Moreover, the social isolation interferes in many aspects of daily life, including physical activity levels. These factors are directly related with the occurrence of UI[7]. Another point is related to women in their own family environment, with access to their own bathroom and personal hygiene.T This leads to the creation and maintenance of an intimate environment where they carry out their own daily activities[18].

Another aspect that directly influences their quality of life and was frequently reported by these women is insomnia. UI and insomnia are common in women[19]. Recent studies show an association between a lower quality of sleep and the presence of nocturia and enuresis[20,21]. A North-American research reported results found in a cohort of 350 patients with hyperactive bladder symptoms caused or aggravated by COVID-19 hospitalization, concluding that urinary urgency, urinary frequency, and nocturia can be persistent symptoms, significantly affecting the quality of life of a patient[20].

Women present more emotional alterations, insomnia, and intestinal disorders. The individuals analyzed presented multiple morbidities. After discharge, fatigue and shortness of breath were the most prevalent persisting symptoms. The PCFS showed that most interviewees had some degree of functional limitation.

A meta-analysis of eight studies, adding up to more than 46,000 Chinese patients, showed that hypertension (17%), diabetes mellitus (8%), cardiovascular diseases (5%), and chronic respiratory diseases (2%) were the most prevalent morbidities, and their presence increased the odds of a severe case of the illness. Hypertension, the most prevalent morbidity in the population studied, was strongly associated to worse outcomes and death by authors[21, 22].

There is a predominance of constipation and inflammatory intestinal disease in the female population[23-25]. Furthermore, a review with meta-analysis showed there is a high prevalence of symptoms of anxiety and depression in women with inflammatory intestinal diseases[26]. In addition, an Italian study carried out with 2.766 participants concluded that being female and needing social distancing were the factors associated to the highest levels of psychological stress during the pandemic[27].

As for the persisting symptoms, fatigue and shortness of breath were frequently reported in this study. A meta-analysis proposed following up on patients with COVID-19 after

hospital discharge in four different time frames. It found out that the most reported symptoms were fatigue, shortness of breath, and sleep disorders (32%, 25%, and 24%, respectively, when followed up from 3 to <6 months); intolerance to effort, fatigue, sleep disorders, and shortness of breath (45%, 36%, 29%, and 25% respectively, when followed up from 6 to <9 months); fatigue (37%) and shortness of breath (21%) from 9 to <12 meses; and fatigue, shortness of breath, sleep disorders, and myalgia (41%, 31%, 30%, and 22%, respectively, when followed up for more than 12 months). Other authors reported that up to 96% of cases presented one or more symptoms after 12 weeks. Fatigue and shortness of breath are frequently reported in literature[28, 29].

A Spanish research[30] analyzed the functional state of patients in a hospital center six months after their discharge using the PCFS, and reported that 63% of the interviewees still had some disability, in accordance with the data found here. Also, 38% of the participants had decreased two degrees in the PCFS when compared to their pre-infection state, and 45% described persisting functional limitations (degrees 2-4 in the PCFS)[30]. Another study using the PCFS also concluded that 63% of their sample presented some disability, and variables such as age, sex, smoking, hospitalization, and morbidities substantially affected these restrictions[23].

This study was conducted remotely, and data collection depended on the memory of participants, who reported information about pre- and post-COVID-19 symptoms, which may have led to recall bias. Furthermore, the information analyzed was gathered using self-reported questionnaires, which may lead to subjective and imprecise answers.

The data found should not be generalized, since this study was carried out during a highly specific moment and involved a number of participants which is not representative. This study provided information about the symptoms and urinary disorders in a specific time frame after COVID-19 hospitalizations, but did not evaluate the evolution of these symptoms in the long term.

CONCLUSION

The prevalence of UI in women was 28%, exactly the same before and after the COVID-19 infection, contradicting the initial hypothesis of this study. It was found that women presented more emotional changes and intestinal disorders. Insomnia was the variable associated to the outcome.

Up to now, there is no robust evidence regarding an association between SARS-CoV-2 infections and the prevalence of UI in individuals with Post-COVID-19 Syndrome after hospital discharge. Further research is needed to confirm the results found and further investigate the mechanisms that underlie urinary symptoms after COVID-19.

This study brings important and essential contributions for the clinical practice and the care provided by health workers to patients during and after COVID-19 infections. Nursing professionals can have an essential role in providing support by identifying, evaluating, and managing issues such as UI and COVID-19 infections by assisting patients and referring them to other health workers when necessary.

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Author contributions:

Conceptualization: Jessica Roda Cardoso, Patricia Viana da Rosa, Luis Henrique Telles da Rosa.
Supervision: Gabriela Tomedi Leites, Patricia Viana da Rosa, Luis Henrique Telles da Rosa.
Data curation: Jessica Roda Cardoso, Laura Nochang Steffanello, Luis Fernando Ferreira, Patricia Viana da Rosa, Luis Henrique Telles da Rosa.
Investigation: Jessica Roda Cardoso, Laura Nochang Steffanello, Patricia Viana da Rosa, Luis Henrique Telles da Rosa.
Formal analysis: Jessica Roda Cardoso, Luis Fernando Ferreira, Gabriela Tomedi Leites, Luis Henrique Telles da Rosa.
Methodology: Jessica Roda Cardoso, Laura Nochang Steffanello, Gabriela Tomedi Leites, Patricia Viana da Rosa, Luis Henrique Telles da Rosa.
Project administration: Jessica Roda Cardoso, Patricia Viana da Rosa, Luis Henrique Telles da Rosa.
Resources: Jessica Roda Cardoso, Laura Nochang Steffanello, Luis Fernando Ferreira, Patricia Viana da Rosa, Luis Henrique Telles da Rosa.
Validation: Jessica Roda Cardoso, Luis Fernando Ferreira, Gabriela Tomedi Leites, Patricia Viana da Rosa, Luis Henrique Telles da Rosa.
Writing – original draft: Jessica Roda Cardoso, Luis Fernando Ferreira, Patricia Viana da Rosa, Luis Henrique Telles da Rosa.
Writing – review & editing: Jessica Roda Cardoso, Luis Fernando Ferreira, Gabriela Tomedi Leites, Patricia Viana da Rosa.

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Corresponding author:

Jessica Roda Cardoso
E-mail: jessica.cardoso@ufcspa.edu.br

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