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Impact of the SARS-CoV-2 pandemic on urinary incontinence and quality of life of nulliparous women

Impacto da pandemia de SARS-CoV-2 na incontinência urinária e qualidade de vida de mulheres nulíparas

Impacto de la pandemia del SARS-CoV-2 en la incontinencia urinaria y la calidad de vida de mujeres nulíparas

Magdalena Muryelle Silva Brilhante[a]
Maria de Fátima Duarte Marinho[a]
Adriana Gomes Magalhães[a]
Grasiéla Nascimento Correia[a]

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ABSTRACT

Objectives: To evaluate the impact of social isolation due to SARS-CoV-2 on the prevalence and severity of urinary incontinence and how this correlates with the quality of life of the nulliparous women evaluated.

Method: Observational, longitudinal study, carried out from August/2019 to September/2020, at the *Faculdade de Ciências da Saúde do Trairi*/RN, with 37 nulliparous women from 18 to 35 years old, who answered the socio-anthropometric assessment, to the Incontinence Severity Index Questionnaire and King's Health Questionnaire, before and during isolation due to SARS-CoV-2. Statistical analysis: Wilcoxon test, and Spearman's correlation coefficient. Significance level $p \leq 0.05$.

Results: During social isolation, there was an improvement in urge incontinence ($p=0.01$) and in the frequency of urinary incontinence ($p=0.03$). The severity of urinary incontinence correlated with: general health perception ($p=0.02$; $r=0.65$); physical limitations ($p=0.03$; $r=0.60$); social ($p=0.001$; $r=0.82$).

Conclusion: The social isolation from SARS-CoV-2 improved urge incontinence and frequency of urinary incontinence. The more severe the urinary incontinence, the worse the general health perception, physical and social limitations during isolation.

Keywords: Coronavirus infections. Urinary incontinence. Prevalence. Women's health. Quality of life.

RESUMO

Objetivo: Avaliar o impacto do isolamento social devido a SARS-CoV-2 na prevalência e gravidade da incontinência urinária e como isso se correlaciona com a qualidade de vida das mulheres nulíparas avaliadas.

Métodos: Estudo observacional, longitudinal, realizado de agosto/2019 a setembro/2020, na Faculdade de Ciências da Saúde do Trairi/RN, com 37 nulíparas de 18 a 35 anos, que responderam a avaliação socioantropométrica, ao *Incontinence Severity Index Questionaire* e ao *King's Health Questionnaire*, antes e durante o isolamento devido a SARS-CoV-2. Análise estatística: Teste de Wilcoxon, e Coeficiente de Correlação de Spearman. Nível de significância $p \leq 0,05$.

Resultados: Durante o isolamento social houve melhora na urgeincontinência ($p=0,01$) e na frequência da incontinência urinária ($p=0,03$). A gravidade da incontinência urinária teve correlação com: percepção geral de saúde ($p=0,02$; $r=0,65$); limitações físicas ($p=0,03$; $r=0,60$); sociais ($p=0,001$; $r=0,82$).

Conclusão: O isolamento social da SARS-CoV-2 melhorou a urgeincontinência e frequência da incontinência urinária. Quanto mais grave a incontinência urinária pior a percepção geral de saúde, limitações físicas e sociais durante o isolamento.

Palavras-chave: Infecções por coronavírus. Incontinência Urinária. Prevalência. Saúde da mulher. Qualidade de vida.

RESUMEN

Objetivo: Evaluar el impacto del aislamiento social debido al SARS-CoV-2 sobre la prevalencia y severidad de la incontinencia urinaria y cómo esto se correlaciona con la calidad de vida de las mujeres nulíparas evaluadas.

Método: Estudio observacional, longitudinal, realizado de agosto/2019 a septiembre/2020, en la *Faculdade de Ciências da Saúde do Trairi*/RN, con 37 mujeres nulíparas de 18 a 35 años, que respondieron la evaluación socio-antropométrica, al *Incontinence Severity Index Questionaire* y *al King's Health Questionnaire*, antes y durante el aislamiento por SARS-CoV-2. Análisis estadístico: prueba de Wilcoxon y coeficiente de correlación de Spearman. Nivel de significancia $p \leq 0.05$.

Resultados: Durante el aislamiento social, hubo una mejora en la incontinencia de urgencia ($p=0,01$) y en la frecuencia de la incontinencia urinaria ($p=0,03$). La gravedad de la incontinencia urinaria se correlacionó con: percepción general de salud ($p=0,02$; $r=0,65$); limitaciones físicas ($p=0,03$; $r=0,60$); ($p=0,001$; $r=0,82$).

Conclusión: El aislamiento social del SARS-CoV-2 mejoró la incontinencia de urgencia y la frecuencia de la incontinencia urinaria. Cuanto más grave es la incontinencia urinaria, peor es la percepción general de las limitaciones de salud, físicas y sociales durante el aislamiento.

Palabras clave: Infecciones por coronavirus. Incontinencia urinaria. Prevalencia. Salud de la mujer. Calidad de vida.

[a] Universidade Federal do Rio Grande do Norte (UFRN), Faculdade de Ciências da Saúde do Trairi, Programa de Pós-Graduação em Ciências da Reabilitação. Santa Cruz, Rio Grande do Norte, Brasil.

INTRODUCTION

On March 11, 2020, the World Health Organization (WHO) defined Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) as a pandemic, due to its exponential growth, high transmissibility, and spread across all continents[1]. In Brazil, the first case of SARS-CoV-2 was registered in February 2020, and since then restrictions have been instituted on the population's daily life, including social distancing, isolation, and home confinement[2].

Social isolation interferes with several aspects of individuals' daily lives, it reduces the level of physical activity, and can increase food consumption[3], leading to body mass gain[4], which is currently considered a risk factor for urinary incontinence (UI)[5,6], which in turn can be classified into three types: urgency (UUI), when it occurs after voiding urgency, stress (SUI) when associated with coughing, sneezing or activities that increase intra-abdominal pressure, and mixed (MUI) when there is an association between UUI and SUI[7]. Studies show that for every 5 units of increase in BMI (Body Mass Index), there is a 20% to 70% increase in the risk of UI, in addition to increasing urination frequency by 53%, urinary urgency by 75% and nocturia in 14.5%[5,6].

The global pandemic can also cause anxiety and fear due to concern about personal health or that of the people around, these situations result in increased stress and loneliness, which may favor depressive symptoms or post-traumatic stress disorder[8].

Some scholars believe that chronic depression and anxiety are closely related to UI[9,10]. Therefore, women who have UI and mental disorders such as depression and anxiety have a worse quality of life (QoL) when compared to those who do not have these psychological symptoms[11]. This can be explained by the high levels of stress and embarrassment that UI causes, due to the smell and discomfort resulting from the loss of urine[12]. For these reasons, some women change their lifestyle, for example: reducing sexual contact, increasing their spending on medication, and renouncing their social life, impacting on the quality of social and professional life of these women[12,13], having great impact on their psychological health[13].

UI has a high prevalence among women[14], about 17% of women aged 20 years or older have symptoms of UI[15], in this way we believe that social isolation due to the SARS-CoV-2 pandemic can impact the prevalence and severity of UI in nulliparous women previously evaluated in another research project at FACISA/UFRN.

Commonly, the prevalence and severity of UI in young and nulliparous women is usually low, considering that risk factors associated with the onset of UI, such as the number of pregnancies, parity and menopause, will not be present in this population, and furthermore, the population chosen was young people between 18 and 35 years old, which also minimizes the risk factor associated with age, as all these factors mentioned directly or indirectly influenced the function of the PFM (Pelvic Floor Muscles), which in turn guarantee the urinary continence.

According to Othman et al (2017)[16], in their study conducted with 9,197 nulliparous women to assess the prevalence of UI, it was found that many aspects of urinary incontinence were present in nulliparous women of all ages and that prevalence increased with advancing age. Other studies showed a high prevalence of UI in young nulliparous women, especially during physical activities, despite the small amount of urinary loss, the participants reported that UI interfered a lot in their daily life, affecting the general health perception, negatively impacting in their lives, and leading them to change their routine[17].

In view of the facts addressed above, and given the scarce literature, which does not include one of the prevalence and severity of UI during social isolation experienced in a pandemic period, it is questioned whether isolation can somehow impact urinary complaints and it is assumed, as an alternative hypothesis, that social isolation interferes with women's perception of urinary loss.

Thus, the present study has as its primary objective to evaluate the impact on the prevalence and severity of UI in nulliparous women, during social isolation resulting from the SARSCoV-2 pandemic, and as a secondary objective aims to identify whether the QoL of women with UI was affected by the social isolation due to SARS-CoV-2, as well as comparing and correlating the severity of UI and its repercussions on QoL before and during the social isolation due to SARS-CoV-2 pandemic, to identify whether the pandemic and the isolation measures adopted for the contingency of the new coronavirus influence these aspects.

METHODS

The present study has a longitudinal observational analytical character and followed the methodological guidelines of STROBE. It was conducted from August 2019 to September 2020. The first evaluation took place in person, six months before the Sars-CoV-2 pandemic was declared by the WHO, with the intention of comparing the function of PFMs in women with different BMI, these women had not undergone any type of PFM treatment, the evaluation took place at the *Clínica Escola de Saúde da Faculdade de Ciências da Saúde do Trairi* (FACISA), located in the municipality of Santa Cruz in the State of Rio Grande do Norte. The second evaluation

took place three months after the suspension of academic activities and the beginning of social isolation in the State of Rio Grande do Norte. This evaluation was conducted through the application of electronic questionnaires prepared in the forms provided by Google.

The initial purpose of the first research was to evaluate the influence of different BMI levels of nulliparous women on urinary continence and sexual function, however, after beginning the pandemic period, it was observed in the literature that social isolation interferes in several aspects of the daily life of individuals, reduces the level of physical activity, and can increase food consumption[18], leading to body mass gain[4], which is currently considered a risk factor for urinary incontinence (UI), in addition the global pandemic can also cause anxiety and fear due to concern for personal health or those around, these situations result in increased stress and loneliness, favoring depressive symptoms or post-traumatic stress disorder[19], which can influence urinary continence[20].

Another important fact that we found in the literature to support the present work was that women who have UI and mental disorders such as depression and anxiety have a worse quality of life when compared to those who do not have these psychological symptoms[21], and social isolation due to the pandemic of the new coronavirus ended up being a trigger for some psychological and emotional changes. And social isolation during the pandemic can affect women's quality of life due to difficulty in accessing safe and comprehensive health care, including physical therapy[22].

Considering all the facts presented, and instigated by the problematization generated, we restructured the research project to be able to compare the same women who had been evaluated in the previous year and compare with the measures obtained during the period of social isolation.

The research was carried out in accordance with resolution 466/2012, being approved by the Research Ethics Committee of the Onofre Lopes University Hospital of the *Universidade Federal do Rio Grande do Norte*, under the opinion number:4,247,124, and CAAE: 10000019,6,0000,5292. The participants were informed about all procedure to be performed and all participants were asked to sign the Free and Informed Consent Form (FICF) before the pandemic, signed in person, and during isolation signed remotely.

The participants selection was carried out from August 2019, through another study that was being developed, using several means, among them, promotion in an interview on local radio, lecture in women's groups of the Rural Workers Union of Santa Cruz – RN, as well as through social media, and events related to women's health, developed in the surrounding municipalities, posters in gyms, stores and bulletin boards of the *Universidade Federal do Rio Grande do Norte/FACISA* and dissemination in the classrooms of the university, and in the waiting rooms of basic health units in the municipality of Santa Cruz – RN and in the surrounding municipalities. Each volunteer included in the study was evaluated in person in just one meeting, with an average duration of one hour and thirty minutes. In the second evaluation, participants who were evaluated before the SARS-CoV-2 pandemic were contacted and invited to participate in this research remotely. The evaluated participants had been isolated for approximately 6 months, and they were reevaluated after an average of 12 months since the first evaluation. Before social isolation, the evaluated participants normally performed their activities of daily living, worked, studied and some practiced physical exercises, as can be observed in the results section.

The inclusion criteria of the study were: being female, aged between 18 and 35 years, nulliparous, having at least completed high school, and having been previously evaluated in the previous study. Those who reported urogynecologic infection (urinary or vaginal infections), pelvic organ prolapses greater than grade II, cognitive and neurological disorders that compromised understanding and responses to evaluations to be performed, uncontrolled arterial hypertension, inability to perform the evaluation, who were using hormone replacement therapy and those who were not contacted during the SARS-CoV-2 pandemic were excluded.

Data collection was composed of an anamnesis, with personal information regarding age, sociodemographic data, gynecological, obstetric, and urological history, type of social isolation, practice of physical activity, height, body mass collected in a specific form, which contained questionnaires that evaluated UI and quality of life: Incontinence Severity Index Questionnaire (ISI-Q) and King's Health Questionnaire (KHQ).

The type of social isolation practiced by the volunteers was classified as: total social isolation: if the woman reported not leaving the house for any activity; partial social isolation: when they reported leaving home only for essential activities, such as shopping at the supermarket and drugstores; without social isolation: when they answered that they normally maintained their study routines, work, and visits to family members.

The ISI-Q, developed in 1993 to assess the severity of UI[23], is composed of two questions regarding the frequency and amount of urinary loss[23]. Validated in Portuguese in 2012, with the following questions: "How often do you have urine leakage?" and "How much urine do you lose each time?", their scores range from 1-4 and 1-3 respectively, and the final score is obtained by multiplying these scores, in this

way the severity of UI is classified according to the score obtained, with 1 to 2 considered mild, 3 to 6 moderate, 8 to 9 severe, and 10 to 12 very severe[24].

The KHQ assesses the QoL of women with urinary incontinence, through 30 questions distributed in nine domains: general health perception, impact of UI, limitation of daily, physical and social activities, personal relationship, emotions, sleep/mood and severity measure. This questionnaire was elaborated in English[25] but is currently validated and translated into Portuguese, and its score ranges from 0 to 100, and the higher the score obtained, the worse the quality of life[26,27].

The variables collected in the present study were classified into two types, quantitative and qualitative. Initially the data were tabulated in Microsoft Excel® software, and then all statistical analyses were performed with the GraphPad Prisma® software, version 6.0, measures of central tendency and dispersion were analyzed, and later the inferential ones. The Shapiro-Wilk test was used to analyze the data distribution, a non-normal distribution was identified, so the test of choice for the analysis of non-parametric variables was the Wilcoxon test for comparing the results obtained before and during social isolation due to SARS-CoV-2. To verify the degree of association between the variables, the Spearman Correlation Coefficient was used, the correlations were classified as strong (r>0.70), moderate (r>0.40 and <0.69), weak (r <0.3) or non-existent (r<0.1)[28]. The significance level adopted was p≤0.05.

RESULTS

In the first stage, 40 volunteers were evaluated, but in the second evaluation it was not possible to contact 3 volunteers, so they were excluded from both data collections. Then, 37 volunteers performed the two evaluations, as illustrated in Figure 1, with a sampling power of 68%.

Descriptive data and characteristics of the participants are shown in Table 1. The sociodemographic variables and BMI showed no difference between the evaluations. All numerical variables presented nonparametric distribution with p-Value obtained in the Shapiro-Wilk's Normality Test <0.0001 to 0.0009.

According to the urogynecologic data (Table 2) There was a decrease in the UI complaint (p=0.0412) in the evaluation performed during social isolation, and there was a significant reduction in women who reported UI during social isolation (p= 0.0107). Initially none of the evaluated were in social isolation, and during the SARS-CoV-2 pandemic, 97.30% were in partial or total isolation, which resulted in a significant difference (p<0.0001).

When analyzing only women who complained of UI, it is possible to verify a significant improvement in the UI frequency domain assessed by the ISI-Q (p=0.0272) during the pandemic. Regarding the quantity (p=0.2031) and severity of UI (p=0.1369) domains, there was no statistically significant difference (Table 3).

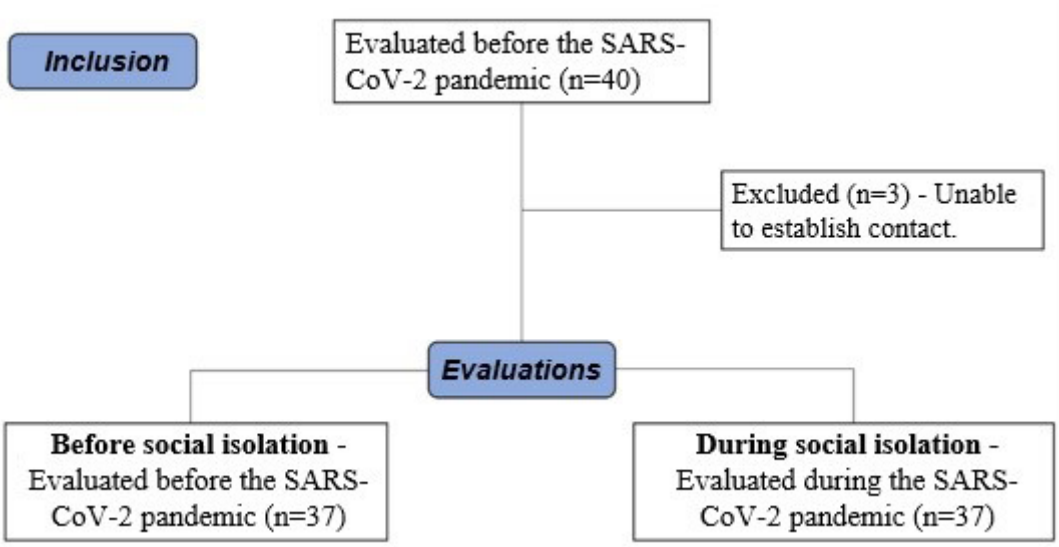

Figure 1 – Number of eligible individuals at each stage. Santa Cruz, Rio Grande do Norte, Brazil, 2020
Source: Elaborated by the authors, 2020.

Table 1 – Sociodemographic data and sample characterization (n=37), August 2019 to September 2020. Santa Cruz, Rio Grande do Norte, Brazil, 2020

	Before social isolation (n=37) Median [IQR] n (%)
Age (Years)	21.00 [20.00-22.00]
BMI (Kg/m²)	23.60 [21.35-25.25]
Income (BRL)	2090.00 [1045-2090]
Occupation	
Student	34 (91.8%)
Nurses	02 (05.4%)
Psychologists	01 (02.7%)
Education level	
Complete high school	3 (8.1%)
Incomplete higher education	30 (81.0%)
Complete higher education	4 (10.8%)
Marital status	
Single	36 (97.2%)
Married	1 (2.7%)

Source: Research data, 2019 to 2020.
n = sample; % = relative frequency; IQR = interquartile range; BMI = Body Mass Index; UI = Urinary Incontinence; UUI = Urgency Urinary Incontinence; SUI = Stress Urinary Incontinence; MUI = Mixed Urinary Incontinence.

Regarding the impact of UI on QoL, it can be seen in Table 4 that there was no difference in the KHQ domains during social isolation.

As can be observed in Table 5, when the type of social isolation was correlated with the ISI-Q questions, it was identified a moderate positive correlation in relation to the amount of urinary loss (p=0.039; r=0.575), thus, we can infer that the more restricted the social isolation, the greater the amount of urinary loss. And in the correlation between the severity of UI and the QoL of the volunteers, in the results of the first evaluation, no significant correlation was observed, since the results of the evaluation during social isolation show that there is a moderate and strong positive correlation, respectively, the greater the severity of the UI detected in the ISI-Q, the worse the QoL obtained in the KHQ domains of general health perception (p=0.016; r=0.646), physical limitations (p=0.030; r=0.598) and social limitations (p=0.001; r=0.824).

Table 2 – Urogynecologic data and characterization of the type of isolation of the sample (n=37), August 2019 to September 2020. Santa Cruz, Rio Grande do Norte, Brazil, 2020

	Before social isolation (n=37) n (%)	During social isolation (n=37) n (%)	p – Value
Reported UI			**0.0412***
Yes	22 (59.4%)	13 (35.1%)	
Type of UI	n = 22	n = 13	0.39
UUI	10 (45.4%)	3 (23.1%)	**0.01***
SUI	5 (22.7%)	4 (30.7%)	1.00
MUI	7 (31.8%)	6 (46.1%)	1.00
Social isolation			
Total	00 (00.0%)	06 (16.2%)	**< 0.01***
Partial	00 (0.00%)	30 (81.0%)	
Not in isolation	37 (100.0%)	01 (02.7%)	

Source: Research data, 2019 to 2020.
n = sample; % = relative frequency; UI = Urinary Incontinence; UUI = Urgency Urinary Incontinence; SUI = Stress Urinary Incontinence; MUI = Mixed Urinary Incontinence.
* p < 0.05 statistically significant difference.

Table 3 – Result of the Incontinence Severity Index Questionnaire, August 2019 to September 2020. Santa Cruz, Rio Grande do Norte, Brazil, 2020

Questionnaire	Domains	Options	Before social isolation(n=22) n (%)	During social isolation (n=13) n (%)	p – Value
ISI-Q	**Frequency**	Less than once a month	02 (09.0%)	04 (30.7%)	**0.02***
		A few times a month	05 (22.7%)	04 (30.7%)	
		A few times in week	09 (40.9%)	04 (30.7%)	
		Every day or night	06 (27.2%)	01 (07.7%)	
	Quantity	Drops	16 (72.7%)	12 (92.3%)	0.20
		Small jet	05 (22.7%)	1 (07.6%)	
		A lot of quantity	01 (04.5%)	0 (00.0%)	
	Total Score		3.00 [2.00-5.00]#	2.00 [1.00-3.00]#	0.13

Source: Research data, 2019 to 2020.
Categorical variables are presented in relative and absolute frequency. Shapiro-Wilk Normality Test and Comparison of non-parametric variables performed using the Wilcoxon Test. * p < 0.05 statistically significant difference. # Median and interquartile range.

Table 4 – Values of scores of the KHQ domains before and during social isolation by SARS-CoV-2, August 2019 to September 2020. Santa Cruz, Rio Grande do Norte, Brazil, 2020

Domains	Before social isolation (n=22) Median [IQR]	During social isolation (n=13) Median [IQR]	p – Value
General health perception	50.00 [25.00-56.00]	50.00 [12.50-50.00]	0.40
Impact of UI	33.33 [00.00-33.33]	00.00 [00.00-33.33]	0.50
Limitations on ADL	00.00 [00.00-16.67]	00.00 [00.00-25.00]	0.94
Physical limitations	16.67 [00.00-37.50]	16.67 [00.00-33.33]	0.79
Social limitations	00.00 [00.00-11.11]	00.00 [00.00-11.11]	0.77
Personal relationships	00.00 [00.00-20.84]	00.00 [00.00-00.00]	0.05
Emotions	00.00 [00.00-11.11]	00.00 [00.00-11.11]	0.93
Sleep / Mood	00.00 [00.00-16.67]	00.00 [00.00-16.67]	0.50
Severity measures	33.33 [22.92-52.08]	25.00 [04.16-37.50]	0.18

Source: Research data, 2019 to 2020.
IQR= interquartile range. UI = Urinary Incontinence; KHQ = King's Health Questionnaire; ADL = Activities of Daily Living.
The Shapiro-Wilk Normality Test and Comparison of non-parametric variables performed using the Wilcoxon Test were used.

Table 5 – Correlations between social isolation, ISI-Q and KHQ domains, August 2019 to September 2020. Santa Cruz, Rio Grande do Norte, Brazil, 2020

Correlated variables	Before social isolation (n=22)		During social isolation (n=13)	
	p	r	p	r
Social Isolation x ISI-Q				
Frequency	-	-	0.48	-0.21
Quantity	-	-	**0.03**	**0.57**
ISI-Q Total	-	-	0.77	0.08
ISI-Q x KHQ total score				
General health perception	0.83	-0.04	**0.01**	0.64
Impact of UI	0.43	-0.17	0.12	0.44
Limitations on ADL	0.14	0.31	0.13	0.43
Physical limitations	0.16	0.30	**0.03**	0.59
Social limitations	0.44	0.17	**0.01**	0.82
Personal relationships	0.53	0.13	0.13	0.43
Emotions	0.60	-0.11	0.18	0.39
Sleep / Mood	0.46	0.16	0.12	0.45
Severity measures	0.26	0.24	0.17	0.40

Source: Research data, 2019 a 2020.
ISI-Q = Incontinence Severity Index Questionnaire; KHQ = King's Health Questionnaire; UI = Urinary Incontinence; ADL: Activities of Daily Living; r = Spearman's Correlation Coefficient

DISCUSSION

In our investigation, we did not identify similar studies that had verified the impact on the prevalence, severity of UI and QOL caused by the social isolation of SARS-CoV-2, so this is a pioneer study. Physical distancing was necessary at this moment due to the transmissibility of the disease, since there is no vaccine or preventive treatment for SARS-CoV-2, social isolation is essential to control the spread and prevent more people from being infected[29].

Our findings show that social isolation had an impact on the reduction of the prevalence of UI in the women evaluated, mainly in the complaints of UUI. It did not influence QoL and UI severity, but the frequency of UI episodes improved. In addition, the more restricted the social isolation, the greater the amount of urinary leakage, and the more severe the UI, the greater the impact on the KHQ domains of general health perception, physical limitations, and social limitations.

According to Abrams et al (2017)[30] UI is defined as any reported involuntary loss of urine, thus valuing the patient's report. In the present study, 59.46% of the participants reported involuntary loss of urine before isolation due to SARS-CoV-2, after social isolation the prevalence of women who presented this complaint reduced to 35.14%.

The fact that 97.30% of the women evaluated were already in social isolation due to SARS-CoV-2 may have contributed to this reduction in the prevalence of UI reported by the participants, especially in the UUI complaint, in which there was a reduction of 45.46 % to 23.10% during social isolation, indicating that the perception of these women regarding urinary loss may have changed, as the bathroom is more accessible at home, corroborating the findings of Rosa et al (2017)[31], that identified a low influence of UI on domestic activities, as the women were in their own family environment, with access to bathroom and their personal hygiene, creating and maintaining an intimate environment in which they are protagonists of their own daily acts[31].

Even with a reduction in UI reports, there was a moderate and strong positive correlation, respectively, the greater the severity of UI detected in the ISI-Q, the worse the QoL obtained in the KHQ domains of general health perception (p=0.016; r=0.646), physical limitations (p=0.030; r=0.598) and social limitations (p=0.001; r=0.824). Further enhancing the restrictions that women who have UI in a situation outside the pandemic already have.

It is important to highlight that the sample of this study was of nulliparous women, with a maximum of 35 years, and that the prevalence of UI was 59% before and 35% during social isolation, with UUI being more prevalent before social isolation and SUI more prevalent during social isolation, indicating a high report of UI even in young nulliparous women. In the systematic review published by Almousa and Van Loon (2018)[32], it was observed that the prevalence of UI in nulliparous women ranged from 1% to 42.2%, and the prevalence of SUI ranged from 12.5% to 79%, UUI ranged from 15.6% to 41.6% and MUI from 8.3% to 50%[32]. Therefore, the findings of our study show a high prevalence of UI, in the evaluation before social isolation, in nulliparous women. However, in the epidemiological studies of Milsom et al (2012)[33] and Milsom and Gyhagen (2019)[34] urinary leakage on efforts tended to be the most prevalent among younger women, while UUI and mixed predominated with increasing age[33,34]. However, UI is not static, but dynamic and throughout life there are factors that can contribute to the incidence, progression, or remission[35].

Regarding the severity of UI assessed by the ISI-Q, it was observed an improvement in the frequency domain during social isolation. This finding can be explained because these women performed several activities outside their home, and according to Rosa et al (2017)[31] women show concern in living with incontinence and the work activity, resulting in greater attention, perception and control of frequency and urinary quantity, since the woman needs to be absent at moments at work, or leave the classroom to go to the bathroom[31]. Therefore, the frequency of urinary leakage becomes less noticeable during social isolation.

Our findings verified that the more restrictive the social isolation, the greater the amount of urinary loss assessed by the ISI-Q. According to the study by Wang et al (2015)[36], the greater the severity of UI, the greater the social isolation of these women. It is important to point out that in our study, social isolation was due to SARS-CoV-2, when women are isolated, they end up performing more domestic activities, which can favor urinary urgency due to frequent contact with water, when cleaning the house, washing dishes or clothes, or even situations that increase intra-abdominal pressure when cleaning and organizing the house, when squatting, carrying buckets or weights and climbing stairs. Situations that when combined can favor MUI, consequently the type of UI most reported in our study, during social isolation.

When correlated the severity of UI of the ISI-Q and the QoL of the volunteers evaluated by the KHQ, it is possible to verify that during social isolation, the greater the severity of the UI, the greater the negative impact in general health perception, physical limitations, and social limitations domains. Due to the limitation of studies on the effects of social isolation during SARS-CoV-2 on UI, we found support in previous literature. It is important to highlight that during social isolation there was a higher prevalence of MUI, and according to Knorst et al, (2011)[37] and Oliveira et al,

(2007)[38] women with MUI have a worse perception of health than those with other types of UI[37,38], which may justify the existence of this correlation between the severity of UI and QoL only during social isolation by SARS-CoV-2, thus corroborating the result of our study. Furthermore, there are physical and social limitations, which are possibly more related to social isolation due to SARS-CoV-2[2] than imposed by UI. The psychosocial impact generated by such damage can result in multiple and comprehensive effects that influence daily activities, social interaction, and self-perception of health status[37,38].

Although the results of this study provide some preliminary insights into generating hypotheses about the impact on prevalence and severity UI and QoL caused by social isolation due to SARS-CoV-2, caution is needed in the generalization of the results, as this was an observational study conducted during the pandemic and was limited by a small, intentional, and non-random sample that is not well representative of all women living in the community. Because, even in the face of several strategies adopted to contemplate the evaluation of a greater number of women, there is still a certain resistance, which according to Rosa et al[31] is due to cultural and family factors and, mainly, to fear, shame and to the lack of knowledge[31], which is quite prevalent in the countryside of the state where culturally the population remains surrounded by numerous taboos. Another limitation is that the present study did not provide unadjusted and adjusted estimates for confounding factors and their precision, that's why it is recommended to conduct future studies that consider these factors, and that include depression and anxiety questionnaires to favor a broader evaluation, considering the biopsychosocial factors that can favor these results or interfere with them, such as the habits of these women, nutrition, emotional state, and the integrity and functionality of the pelvic floor muscles, in general, the environment and the activities performed by they also interfere in the results found, but were not addressed in the present research.

CONCLUSION

According to the results from this work, it is observed that in young and nulliparous women, social isolation due to SARS-CoV-2 had an impact on the decrease in the prevalence of UI, especially in UUI complaints. There was no difference in QoL and UI severity, but there was an improvement in the frequency of UI episodes. It is possible to verify that the more restricted the social isolation, the greater the amount of urinary loss, and that the more severe the UI, the greater the impact on the domains of general health perception, physical limitations, and social limitations of the KHQ.

Despite these results, what drew attention was the high prevalence of UI among young women, and nulliparous women who did not present any associated risk factors, which leads us to question what is favoring the emergence of this complaint. Therefore, it is necessary to conduct studies that evaluate younger populations and without associated risk factors, with a larger sample size and a thorough evaluation to understand the cause of these complaints and why social isolation favored the reduction of UI complaints.

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Authorship contribution:
Conceptualization and Data curation: Magdalena Muryelle Silva Brilhante; Maria de Fátima Duarte Marinho.
Formal analysis: Magdalena; Adriana Gomes Magalhães; Grasiéla Nascimento Correia.
Funding acquisition: Grasiéla Nascimento Correia; Adriana Gomes Magalhães.
Methodology: Magdalena Muryelle Silva Brilhante; Grasiéla Nascimento Correia; Adriana Gomes Magalhães.
Project administration: Magdalena Muryelle Silva Brilhante; Maria de Fátima Duarte Marinho; Grasiéla Nascimento Correia.
Supervision: Grasiéla Nascimento Correia; Adriana Gomes Magalhães.
Writing-original draft: Magdalena Muryelle Silva Brilhante; Maria de Fátima Duarte Marinho; Adriana Gomes Magalhães; Grasiéla Nascimento Correia.
Writing-review & editing: Magdalena Muryelle Silva Brilhante; Maria de Fátima Duarte Marinho; Adriana Gomes Magalhães; Grasiéla Nascimento Correia.

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Corresponding author:
Magdalena Muryelle Silva Brilhante
E-mail: mury_brilhante@hotmail.com

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