

Genital self-image, sexual function and pelvic floor discomfort in COVID-19 pandemic scenario

Autoimagem genital, função sexual e desconforto do assoalho pélvico no cenário pandêmico de COVID-19

Paula Somavilla *

Adriane Schmidt Pasqualoto 

Melissa Medeiros Braz 

Universidade Federal de Santa Maria (UFSM), Santa Maria, RS, Brazil

Date of first submission: August 1, 2021

Last received: December 6, 2021

Accepted: February 24, 2022

Associate editor: Maria Augusta Heim

* **Correspondence:** paula_slla@hotmail.com

Abstract

Introduction: Sexual health is an important area of women's health, comprising aspects that can be affected by stressors, such as in the COVID-19 pandemic scenario.

Objective: To investigate genital self-image, sexual function and pelvic floor discomfort in young female university students during the COVID-19 pandemic, comparing these factors with their sexual activity.

Methods: This study is a quantitative and cross-sectional survey of young female university students during the COVID-19 pandemic period, carried out through an online form. To assess the variables, the Female Sexual Function Index, Pelvic Floor Distress Inventory, and Female Genital Self-Image Scale were used. **Results:** 182 women participated in the study, and the general mean age was 22.06 ± 2.75 years. Sexually active women ($n = 128$) had significantly better genital self-image compared to inactive women (22.87 ± 2.92 vs. 20.85 ± 4.41 ; $p = 0.004$). Likewise, better genital self-image was also observed in women without sexual dysfunction (23.36 ± 2.72 vs. 21.11 ± 2.96 ; $p < 0.001$) and in those who reported fewer symptoms of pelvic floor discomfort ($p = 0.014$). **Conclusion:** A positive genital self-image was associated with fewer sexual dysfunctions, better sexual function, and fewer symptoms of pelvic floor discomfort. Furthermore, sexual activity is associated with a better genital self-image.

Keywords: Body image. COVID-19. Pelvic floor disorders. Sexual health. Women's health.

Resumo

Introdução: A saúde sexual é uma área importante da saúde da mulher, compreendendo aspectos que podem ser afetados por estressores, como no cenário de pandemia da COVID-19.

Objetivo: Investigar a autoimagem genital, função sexual e desconforto do assoalho pélvico em jovens universitárias durante a pandemia de COVID-19, comparando esses fatores com sua atividade sexual. **Métodos:** Este estudo é uma pesquisa quantitativa e transversal com jovens universitárias durante o período da pandemia de COVID-19, realizada por meio de formulário online. Para avaliar as variáveis, foram utilizados o Índice de Função Sexual Feminina, Inventário de Desconforto do Assoalho Pélvico e Escala de Autoimagem Genital Feminina.

Resultados: Participaram do estudo 182 mulheres, com média de idade de $22,06 \pm 2,75$ anos. Mulheres sexualmente ativas ($n = 128$) apresentaram autoimagem genital significativamente melhor em comparação às mulheres inativas ($22,87 \pm 2,92$ vs. $20,85 \pm 4,41$; $p = 0,004$). Da mesma forma, melhor autoimagem genital também foi observada em mulheres sem disfunção sexual ($23,36 \pm 2,72$ vs. $21,11 \pm 2,96$; $p < 0,001$) e naquelas que relataram menos sintomas de desconforto do assoalho pélvico ($p = 0,014$). **Conclusão:** Uma autoimagem genital positiva foi associada a menos disfunções sexuais, melhor função sexual e menos sintomas de desconforto do assoalho pélvico. Além disso, a atividade sexual está associada a uma melhor autoimagem genital.

Palavras-chave: Imagem corporal. COVID-19. Distúrbios do assoalho pélvico. Saúde sexual. Saúde da mulher.

Introduction

Coronavirus disease 2019 (COVID-19) is a severe acute respiratory syndrome, which may initially show symptoms such as fever, cough, myalgia and fatigue. In March 2020, after spreading across continents with a high number of victims, the World Health Organization declared a pandemic situation.¹

In the same way as countries in other continents, Brazil has also adopted strategies to contain the pandemic, such as distance and social isolation, quarantine, masks wearing, reduction of agglomerations, and other strategies.² Several universities have modified their teaching methods to avoid agglomerations and reduce contagion, as was the case at the Universidade Federal

de Santa Maria, which instituted a special home exercise scheme through Resolution N. 24/2020.³

However, these strategies, along with the chaotic scenario of the pandemic, are aspects that can directly affect the individual's mental health. In the study by Pedrozo-Pupo et al.⁴ carried out in Colombia, 15% of the participants reported high levels of stress associated with the COVID-19 pandemic. Among students, the impact of the pandemic also seems to have consequences, and there are studies that already point to a negative impact on the mental health of university students, with worsening levels of stress, anxiety, sleep quality, loneliness and depression.^{5,6} In addition, some studies carried out among university students have observed that female participants had higher levels of stress, and which is associated with worse levels of mental health in this pandemic period.^{7,8}

Linked to mental health, sexual health is an important and delicate area that is also being affected and needs attention in this pandemic moment. As a complex area, sexual health seems to be affected by the psychosocial effects of the pandemic, especially female university students. Studies developed in this period already show a direct impact of the COVID-19 pandemic on sexual health and quality of life, with decreased desire and frequency of sexual intercourse.⁹⁻¹¹

However, even before the effects of the pandemic, sexual dysfunction already had negative impacts on sexual health. These conditions also interfere with the individual's quality of life, acting on physical, emotional and social aspects, which are associated with their well-being.^{12,13} Female sexual dysfunction is linked, among other causes, to dysfunctions of the pelvic floor muscles.¹⁴ Bezerra et al.¹⁵ observed that even young and female university students - with access to current information and notions about female anatomy and physiology - may have difficulty in fully and effectively performing their own sexuality, with a high prevalence of sexual dysfunction.

In addition, factors such as anxiety, stress and depression seem to be closely associated with the dysfunctions of this musculature, including conditions of hypertonia, urinary incontinence and painful symptoms of pelvic myofascial disorders.^{16,17} As already mentioned, these factors are symptoms that have become common and are part of the routine of many students in this pandemic period.

Discomfort in the pelvic floor can also be attributed to the dysfunctions of this musculature, and compromise sexual function. Due to discomfort, their domains - desire, arousal, lubrication, orgasm, satisfaction and pain - can become particularly vulnerable.¹⁸

Finally, genital self-image is also a factor that has relevance in sexual function. A study conducted by Handelzalts et al.¹⁹ showed that a low genital self-image was the main variable associated with a worse general sexual function, being even more relevant than depression and age.

Considering sexual health as an area with a certain sensitivity to the negative impacts of the pandemic, it is essential to investigate the changes that this scenario of social isolation, modification in the way of teaching for the online regime, significant increase in stress levels and worsening of mental health can trigger in this domain. Thus, this research aims to investigate the genital self-image, sexual function and discomfort in the pelvic floor of young female university students during the COVID-19 pandemic, comparing these factors with their sexual activity.

Methods

Characterized as observational research, with a quantitative approach and cross-sectional character, the present study evaluated genital self-image, sexual function and discomfort in the pelvic floor in young female university students during the COVID-19 pandemic, comparing these factors with their sexual activity through online questionnaires.

Female participants aged between 18 and 29 years, students from undergraduate and graduate courses at a public university in the interior of Rio Grande do Sul, Brazil, who were receiving classes through the special home exercise scheme, were included in the research. Replies on the form that were duplicated, as well as participants who had a baby less than two months ago, were excluded.

The sample calculation was estimated to obtain two-tailed significance level (α) of 5% and power ($1 - \beta$) of 90%. We assume an average effect size ($ES = 0.3$) for the correlation between the total FSFI and FGSIS scores. Thus, a total sample of 112 sexually active women was considered adequate for the correlation analysis. The sample calculation was performed using the GPower 3.1.9.2 software.²⁰

Data collection was carried out between the months of September and December 2020, a period in which the containment measures of COVID-19 were in effect. The research was carried out after approval by the institutional Research Ethics Committee under the No. 3,415,891. The questionnaire was applied through a form created on the Google Forms platform, which was shared among the participants through e-mails and a link to the form, generated by the website. The form contained the appropriate instructions for understanding and answering the questions.

The Free and Informed Consent Term was presented on the first page of the form, and only the participants who chose the "accept" option were able to answer the form. All instruments were self-answered. The identification form used was an adaptation by Herbenick and Reece,²¹ composed of specific questions, open and closed, about sociodemographic and gynecological data referring to personal data, anamnesis, complaints and sexual activity.

Then, the Female Sexual Function Index (FSFI) questionnaire was applied, which assesses sexual function and was translated into Portuguese in 2008.²² The FSFI consists of 19 questions that have five to six response options, two of which are related to desire, four to arousal and four to lubrication, three to orgasm, three to satisfaction and, finally, three questions about pain. The score for each dimension varies between 1.2 and 6 or between 0 and 6, and the total FSFI score varies between 2 and 36, indicating better sexual function at high scores. The cut-off point of the FSFI was adopted as a score of 26.55, in order to predict sexual dysfunction for scores below this value. The following cut-off points were used to analyse the domains: desire (4.28), excitation (5.08), lubrication (5.45), orgasm (5.05), satisfaction (5.04), and pain (5.51).²³ Values below this cut-off point indicate dysfunction in each domain.

Likewise, the Pelvic Floor Distress Inventory (PFDI-20) is a questionnaire that has also been validated and translated into Brazilian Portuguese. It consists of 20 questions divided into three domains (bladder, bowel, pelvis) in its subscales: Pelvic Organ Prolapse Disorder Inventory (POPDI-6), Colorectal-Anal Disorder Inventory (CRADI-8) and Urinary Distress Inventory (UDI-6). It begins by asking whether the patient has the symptom described in each item. If the answer is yes, there is a classification score in which the patient can choose the answer, with a subscale score from 0 to 100. The higher the score, the greater the discomfort of symptoms of pelvic floor dysfunction (PFD).²⁴

The Female Genital Self-Image Scale (FGSIS) offers an effective means of assessing genital self-image.^{19,25} FGSIS has seven items and assesses women's feelings and beliefs about their own genitals, using a 4-point response scale (strongly agree, agree, disagree, strongly disagree). The scores obtained in each of the seven items are added to the end, ranging from 7 to 28, with higher scores indicating a more positive genital self-image.²⁶

For statistical analysis, categorical variables were analysed descriptively by means of simple frequency, and percentages and numerical ones by means of measures of position and dispersion. The data were considered with non-parametric distribution through the Kolmogorov-Smirnov test. Thus, the Mann Whitney U Test was used to compare sexual function and the total FGSIS score and to compare FGSIS scores, PFDI-20 and its subscales between sexually active and inactive university students. The effect size (ES) of the significantly different comparisons was determined according to Cohen²⁷ by the formula z/\sqrt{N} : ≤ 0.10 - null effect; 0.11 to 0.29 - weak effect; 0.30 to 0.49 - moderate effect; and ≥ 0.50 - large effect. Spearman's correlation coefficient was used to correlate the total FGSIS score with the FSFI domains. The classification regarding the strength of the correlation followed the criteria of Malina:

$\rho < 0.30$ as low correlation; $0.30 \leq \rho \leq 0.60$ as a moderate correlation; and $\rho > 0.60$ as a high correlation.²⁸ To measure the effect of the correlation, the determination coefficient (R^2) was used. For all tests $p < 0.05$ was adopted. All statistical analyses were performed using the SPSS 22.0 program.

Results

At the end of the data collections, 202 responses were obtained from the participants, and 182 responses were analysed using the eligibility criteria. For data analysis, the participants were divided into two groups: the first was composed of sexually active women, defined as those who had sexual intercourse (penetrative or not) in the last four weeks, totalling 128 women with a mean age of 22.27 ± 2.87 ; the second group was composed of sexually inactive women, defined as those who did not have sexual intercourse in the last four weeks (penetrative or not), totalling 54 women with a mean age of 21.57 ± 2.39 years. The general mean age of the participants was 22.06 ± 2.75 years. Table 1 shows the characterization of the study participants.

Table 1 - Characteristics of the study participants

Characteristics	Sexually active women (n = 128) Mean \pm SD or (%)	Sexually inactive women (n = 54) Mean \pm SD or (%)	p	Effect size
Age (years)	22.27 \pm 2.87	21.57 \pm 2.39	0.099	-
Ethnicity				
White	107 (83.59)	39 (72.22)	0.064	-
Black	9 (7.04)	3 (5.56)		
Other	12 (9.37)	12 (22.22)		
Relationship status				
With a partner	90 (70.31)	10 (18.52)	< 0.001*	0.476
Without partner	38 (29.69)	44 (81.48)		
Education				
Undergraduate degree	111 (86.72)	50 (92.59)	0.317	-
Graduate degree	17 (13.28)	4 (7.41)		
Sexual orientation				
Heterosexual	100 (78.12)	37 (68.52)	0.164	-
Homosexual	4 (3.13)	2 (3.70)		
Other	24 (18.75)	15 (27.78)		
Contraceptive pill				
No	48 (37.50)	27 (50.00)	0.139	-
Yes	80 (62.50)	27 (50.00)		
Symptoms of SUI				
No	97 (75.78)	40 (74.07)	0.852	-
Yes	31 (24.22)	14 (25.93)		
Symptoms of UUI				
No	85 (66.41)	37 (68.52)	0.864	-
Yes	43 (33.59)	17 (31.48)		

Note: SD = standard deviation; SUI = stress urinary incontinence; UUI = urgent urinary incontinence; * $p < 0.05$.

There was a predominance of white women in both groups. Regarding the relationship status, there was statistical significance ($p < 0.001$) when compared to the sexual habits that divide the groups: 70.31% of the participants with a partner are sexually active. Among women without a partner, on the other hand, there was a predominance of those sexually inactive over active women, with 81.48% and 18.52%, respectively.

The groups were homogeneous in relation to the other sample characterization items. However, it is important to emphasize the presence of urinary incontinence symptoms observed through the urinary distress inventory subscale present in the PFDI-20 questionnaire (Table 1).

The values referring to the analysis of the FGSIS between the groups are shown in Table 2. When comparing the overall score of each group, sexually active women had a better genital self-image compared to the group of sexually inactive women ($p < 0,004$). The same occurred when analysing the items security ($p = 0,016$), appearance ($p = 0,021$), comfort ($p = 0,007$), smell ($p = 0,023$) and shame ($p = 0,003$), which showed significantly higher values in sexually active women.

Table 3 shows the comparisons of the total FGSIS score between sexually active women ($n = 128$) with and without sexual dysfunction, according to the FSFI domains.

Table 2 - Comparison of total scores and FGSIS items between sexually active and inactive women during the COVID-19 pandemic

Characteristics	Sexually active women	Sexually inactive women	p	Effect size
	(n = 128) Mean \pm SD or (%)	(n = 54) Mean \pm SD or (%)		
Security	3.36 \pm 0.66	2.96 \pm 0.99	0.016*	0.178
Appearance	3.32 \pm 0.67	2.96 \pm 0.95	0.021*	0.171
Comfort	3.21 \pm 0.75	2.81 \pm 0.93	0.007*	0.200
Smell	3.25 \pm 0.61	2.94 \pm 0.81	0.023*	0.168
Operation	3.38 \pm 0.66	3.24 \pm 0.75	0.292	-
Exam	3.02 \pm 0.18	3.00 \pm 0.19	0.598	-
Shame	3.34 \pm 0.71	2.93 \pm 0.89	0.003*	0.218
Total score	22.87 \pm 2.92	20.85 \pm 4.41	0.004*	0.214

Note: FGSIS = Female Genital Self-Image Scale; COVID-19 = Coronavirus disease 2019; SD = standard deviation; * $p < 0.05$.

Except for the sexual desire domain, in all other domains of sexual function, women without sexual dysfunction had the highest total FGSIS score. However, there was a significant difference only in the orgasm ($p = 0.023$) and pain ($p = 0.018$) domains and in the total FSFI score ($p < 0.001$). The ES of significant comparisons was considered weak for orgasm and pain, but moderate for the total FSFI score.

The Table 4 shows the values of the correlations between the total FGSIS score and the FSFI domains, the PFDI-20 subscales and the total PFDI-20 score of sexually active university students in the last four weeks.

The total FGSIS score showed a significant and positive correlation with orgasm ($\rho = 0.225$), pain (0.247) and with the total FSFI score (0.216). The variation in the total FGSIS score can be explained by,

respectively, 5.1%, 6.1% and 4.7% of the variation of the FSFI values in the orgasm and pain domains and of the total FSFI score. The total score of FGSIS also showed a significant and negative correlation with the score of CRADI-8 (-0.237), UDI-6 (-0.189) and PFDI-20 (-0.216). The variation in the total FGSIS score can be explained by, respectively, 5.6%, 3.6% and 4.7% of the variation in the values of CRADI-8, UDI-6 and PFDI-20. The strength of all correlations was considered low.

The PFDI-20, when comparing the values of the total score and of each domain between sexually active and inactive women, did not present a statistically significant difference. However, the average of the general score and of each domain were higher in the group of sexually inactive women, with 43.83 ± 37.29 and 48.51 ± 47.25 , respectively.

Table 3 - Comparison of the total FGSIS score between sexually active women (n = 128) with and without sexual dysfunction, according to the FSFI domains

Sexual dysfunction	n (%)	Total score of FGSIS Mean ± SD	p	Effect size
Desire				
No	42 (32.81)	22.57 ± 3.29	0.547	-
Yes	86 (67.19)	23.01 ± 2.73		
Arousal				
No	78 (60.94)	23.06 ± 2.81	0.345	-
Yes	50 (39.06)	22.56 ± 3.09		
Lubrication				
No	55 (42.97)	23.18 ± 2.84	0.292	-
Yes	73 (57.03)	22.63 ± 2.97		
Orgasm				
No	67 (52.34)	23.46 ± 2.61	0.023*	0.201
Yes	61 (47.66)	22.21 ± 3.11		
Satisfaction				
No	85 (66.41)	23.13 ± 2.72	0.192	-
Yes	43 (33.59)	22.35 ± 3.25		
Pain				
No	71 (55.47)	23.45 ± 2.69	0.018*	0.210
Yes	57 (44.53)	22.14 ± 3.06		
Total score FSFI				
No	100 (78.12)	23.36 ± 2.72	< 0.001*	0.317
Yes	28 (21.88)	21.11 ± 2.96		

Note: FGSIS = Female Genital Self-Image Scale; FSFI = Female Sexual Function Index; SD = standard deviation; *p < 0.05.

Table 4 - Relation between the total score of the FGSIS and the FSFI domains, the subscales of the PFDI-20 and the total score of the PFDI-20 in sexually active university students (n = 128)

FSFI Domains	Spearman's Rho	p	R ²
Desire	0.012	0.896	-
Arousal	0.169	0.057	-
Lubrication	0.120	0.176	-
Orgasm	0.225	0.011*	0.051
Satisfaction	0.107	0.229	-
Pain	0.247	0.005*	0.061
Total Score FSFI	0.216	0.014*	0.047
POPDI-6 (Pelvic Organ Prolapse Distress Inventory)	-0.129	0.146	-
CRADI-8 (Colorectal-Anal Distress Inventory)	-0.237	0.007*	0.056
UDI-6 (Inventory urinary distress)	-0.189	0.033*	0.036
PFDI-20 (Pelvic Floor Distress Inventory)	-0.216	0.014*	0.047

Note: FGSIS = Female Genital Self-Image Scale; FSFI = Female Sexual Function Index; R² = determination coefficient. *p < 0.05.

Discussion

In accordance with our objectives, the analysis of genital self-image and sexual function showed interesting results when compared. In each domain of sexual function, women without dysfunction had better genital self-image, except for the sexual desire domain. At this point, consequently, women with some sexual dysfunction have a worse self-image about their genitals. Furthermore, it is observed that the better women's genital self-image, the better their sexual function in the orgasm domain and less pain dysfunction. Good genital self-image was associated with better overall sexual function.

Sexual function is only analysed in sexually active women. We defined sexually active women as those who had some sexual activity (penetrative or not) with a partner in the last four weeks before participating in the survey. Thus, sexually inactive women are those who did not have sexual activity during the same period. In our study, sexually active women had better genital self-image, with a significantly higher mean total score than sexually inactive women.

Sexual activity, when compared to the relationship status, shows a significant number of sexually active women with a partner. However, a part of women with a partner were not sexually active, which may have been influenced by social distance for those who do not cohabit with their partner, which is culturally common for younger women. The presence of UI was also a relevant point, and, although without statistical significance between the groups, there was a predominance of UUI symptoms in both. Regarding genital self-image, sexually active women had a mean total score significantly higher than sexually inactive.

Improved genital self-image was associated with fewer symptoms related to colorectal and urinary disorders, as well as pelvic floor discomfort in general. The presence of UI symptoms had a higher prevalence than recently published studies. In the cross-sectional study by Ural et al.,²⁹ carried out in Turkey, 1,397 university students with an average age of 20.27 ± 1.69 years were evaluated. The prevalence of UI was 18.4% ($n = 258$), and there was no information regarding UI subtypes.

Despite this, the values observed both in our study and by Ural et al.²⁹ are in accordance with the systematic review carried out by Almousa and Bandin van Loon,³⁰

where 15 studies analysed showed a variation of 1% to 42.2% in the prevalence of UI symptoms. The prevalence of UI subtypes differed between the studies analysed, however, the reported average of UI was higher. It is suggested that the emotional factors triggered by the COVID-19 pandemic contributed to the predominance of UUI symptoms in our study, since symptoms of anxiety and depression may be related to this incontinence subtype.³¹

It is noteworthy that because we opted for the online survey format, women may have felt safer and less constrained to give honest answers to the questionnaire. In a survey of face-to-face interviews, we need to consider the discomfort a woman experiences when admitting to shedding urine in everyday situations, especially young women.

Findings about the relationship between genital self-image and sexual activity are in line with research already published. In 2018, Rowen et al.³² conducted a study in the United States with a sample of 3,143 women with an average age of 46 ± 13 years, and found that women dissatisfied with their genital appearance were less likely to be sexually active. Among sexually active women, sexual frequency was lower in women dissatisfied with their genital image.

In our study, the FGSIS security, appearance, comfort, smell and shame items scored significantly worse in sexually inactive women. Rowen et al.,³² pointing out that genital self-image is worse in sexually inactive women, emphasize that it can be influenced by sociocultural factors and the search for an idealized image, especially in young women, who can adopt practices of genital self-care and hair removal intimate in an attempt to change the appearance of their genitals.

Rowen et al.³² compared their findings with the study carried out in 2010 by Herbenick and Reece,²¹ which validated the current FGSIS, and found similar results. Herbenick and Reece²¹ compared FGSIS values with the sexual function of their sample, and even though they are not current, the results were similar to the findings of our study. The authors observed a positive correlation between genital self-image and FSFI domains ($p < 0.001$), with the exception of the desire domain ($p = 0.18$).

Regarding the effects of the COVID-19 pandemic on these variables, there are divergences in the literature. Fuchs et al.¹⁰ evaluated 764 women and compared the data before and during the pandemic, where a decline

in the quality of sexual life was found, worsening sexual function and a decrease in the frequency of sexual intercourse. When asked about the reasons for the latter, 41.5% of women reported that the cause was associated with their partner's isolation, 39.3% reported a lack of desire caused by stress, and 16% reported disagreements with their partners. Finally, 3.2% of women feared that COVID-19 could be transmitted through sexual contact.

In contrast, Yuksel and Ozgor,³³ in a study with 58 women who assessed sexual function during the COVID-19 pandemic, reported an increase in the frequency of sexual intercourse and sexual desire. Despite this, their FSFI values were significantly better before the pandemic. It is worth mentioning that Yuksel and Ozgor³³ evaluated only married women - who usually live with their partners - while Fuchs et al.,¹⁰ as well as our study, evaluated women in various states of relationship, including those who did not live with their partners.

We observed in our study that women with less symptoms of pelvic floor discomfort had better genital self-image, regardless of whether they were sexually active or not. Likewise, the study by Handelzalts et al.,¹⁹ carried out with 69 women who had pelvic floor dysfunctions, showed a negative correlation between the symptoms reported in PFDI and genital self-image, reflecting the decline that pelvic floor dysfunctions can cause in this variable.

Although not investigated in the survey, the way in which the pandemic affected access to healthcare may be reflected in the data obtained. Amidst the health crisis, non-emergency health care services were affected by virus containment strategies and many women had their treatment interrupted or even had the opportunity to access urogynecological services. To fill this gap, some health professionals invested in the teleservice model, a strategy of remote care via online that allowed the follow-up of health care in a safer way, following the rules in accordance with the legislation of each region of the country. This telephysiotherapy model was an important tool for physiotherapists working with urogynecology, as it allowed the maintenance of treatments already in progress and the proper orientation of patients who sought the service during the pandemic.³⁴

Regarding the pelvic floor, considering the domains of sexual function that are directly linked to the functions of this musculature - such as pain, orgasm, lubrication and satisfaction - it is important to remember that pelvic and sexual dysfunctions have an important

muscle component. Franco et al.,³⁵ analysing 113 postmenopausal women, observed that those with sexual dysfunctions had weaker pelvic floor muscles. From this point on - and considering the already discussed pandemic scenario - we suggest that further research should be carried out and/or updated to investigate the correlation between pelvic floor disorders, including types of UI, and sexual function in relation to the strength of the pelvic muscles. The comparison of these variables with the pre-pandemic period can provide important data to guide the management of current pelvic dysfunctions, in addition to helping to understand the health-disease process in this new configuration of study and work that the pandemic provided.

A possible limitation of our study was the home situation of the volunteers, since it was not investigated whether or not they were living with their partners. The COVID-19 pandemic and measures of social distance may have influenced the number of women with a partner and who are sexually inactive (n = 10). Data from the pre-pandemic period also represent a limitation, as they were not considered in this study. Another limitation is due to environmental factors and specific cultural differences in our sample, especially in a unique pandemic scenario, which impairs its external comparison and validation for other regions and countries.

Conclusion

Our study found that a positive genital self-image was associated with better sexual function and fewer symptoms of pelvic floor discomfort in young female university students. Except in the desire domain, in all other domains of sexual function, women without sexual dysfunction had a better genital self-image. In addition, sexually active women have better genital self-image than sexually inactive ones. Further researches are needed to verify these factors in the general female population.

Authors' contributions

PS: conceptualization, formal analysis, investigation, methodology, writing (original draft). ASP: formal analysis, methodology, writing (review and editing). MMB: conceptualization, formal analysis, methodology, writing (review and editing).

References

- World Health Organization (WHO). Director-General's statement on IHR Emergency Committee on Novel Coronavirus (2019-nCoV). 2020 [cited 2021 Jul 2]. Available from: <https://tinyurl.com/2p8zdk4b>
- Aquino EML, Silveira IH, Pescarini JM, Aquino R, Sousa-Filho JA, Rocha AS, et al. Social distancing measures to control the COVID-19 pandemic: potential impacts and challenges in Brazil. *Cien Saude Colet*. 2020;25(suppl 1):2423-46. DOI
- Universidade Federal de Santa Maria. Resolução N. 024, de 11 de agosto de 2020. Regula o Regime de Exercícios Domiciliares Especiais (REDE) e outras disposições afins, durante a Suspensão das Atividades Acadêmicas Presenciais em face da Pandemia da COVID-19. 2020 [cited 2021 Jul 2]. Available from: <https://tinyurl.com/424cm56a>
- Pedrozo-Pupo JC, Pedrozo-Cortés MJ, Campo-Arias A. Perceived stress associated with COVID-19 epidemic in Colombia: an online survey. *Cad Saude Publica*. 2020;36(5):e00090520. DOI
- Elmer T, Mepham K, Stadtfeld C. Students under lockdown : Comparisons of students' social networks and mental health before and during the COVID-19 crisis in Switzerland. *PLoS One*. 2020;15(7):e0236337. DOI
- Kecojevic A, Basch CH, Sullivan M, Davi NK. The impact of the COVID-19 epidemic on mental health of undergraduate students in New Jersey, cross-sectional study. *PLoS One*. 2020;15(9):e0239696. DOI
- Aslan I, Ochnik D, Çınar O. Exploring perceived stress among students in Turkey during the COVID-19 pandemic. *Int J Environ Res Public Health*. 2020;17(23):8961. DOI
- Smith L, Jacob L, Yakkundi A, McDermott D, Armstrong NC, Barnett Y, et al. Correlates of symptoms of anxiety and depression and mental wellbeing associated with COVID-19: a cross-sectional study of UK-based respondents. *Psychiatry Res*. 2020;291:113138. DOI
- Li G, Tang D, Song B, Wang C, Qunshan S, Xu C, et al. Impact of the COVID-19 pandemic on partner relationships and sexual and reproductive health: Cross-sectional, online survey study. *J Med Internet Res*. 2020;22(8):e20961. DOI
- Fuchs A, Matonóg A, Pilarska J, Sieradzka P, Szul M, Czuba B, et al. The Impact of COVID-19 on female sexual health. *Int J Environ Res Public Health*. 2020;17(19):7152. DOI
- Cito G, Micelli E, Cocci A, Polloni G, Russo GI, Coccia ME, et al. The impact of the COVID-19 quarantine on sexual life in Italy. *Urology*. 2021;147:37-42. DOI
- Barreto APP, Nogueira A, Teixeira B, Brasil C, Lemos A, Lôrdelo P. The impact of sexual dysfunction on the quality of life of women: an observational study. *J Phys Res*. 2018;8(4):511-7. DOI
- Correia LS, Brasil C, Silva MD, Silva DFC, Amorim HO, Lordêlo P. Função sexual e qualidade de vida de mulheres: um estudo observacional. *Rev Port Med Geral Fam*. 2016;32(6):405-9. DOI
- Wallace SL, Miller LD, Mishra K. Pelvic floor physical therapy in the treatment of pelvic floor dysfunction in women. *Curr Opin Obstet Gynecol*. 2019;31(6):485-93. DOI
- Bezerra KC, Feitoza SR, Vasconcelos CTM, Karbage SAL, Saboia DM, Oriá MOB. Sexual function of undergraduate women: a comparative study between Brazil and Italy. *Rev Bras Enferm*. 2018;71(Suppl 3):1428-34. DOI
- Reis AM, Brito LGO, Lunardi ALB, Pinto e Silva MP, Juliato CRT. Depression, anxiety, and stress in women with urinary incontinence with or without myofascial dysfunction in the pelvic floor muscles: A cross-sectional study. *Neurourol Urodyn*. 2020;40(1):334-9. DOI
- Cameron B, Sabourin J, Sanaee MS, Koenig NA, Lee T, Geoffrion R. Pelvic floor hypertonicity in women with pelvic floor disorders: A case control and risk prediction study. *Neurourol Urodyn*. 2019;38(2):696-702. DOI
- Gallach E, Juan A, García-Blanco AM, Izquierdo RM, Robledo R, Fenollosa P, et al. Sexo y dolor: la satisfacción sexual y la función sexual en una muestra de pacientes con dolor crónico benigno no pélvico. *Rev Soc Esp Dolor*. 2018;25(3):145-54. DOI
- Handelzalts JE, Yaakobi T, Levy S, Peled Y, Wiznitzer A, Krissi H. The impact of genital self-image on sexual function in women with pelvic floor disorders. *Eur J Obstet Gynecol Reprod Biol*. 2017;211:164-8. DOI

20. Faul F, Erdfelder E, Lang AG, Buchner A. G*Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behav Res Methods*. 2007;39(2):175-91. DOI
21. Herbenick D, Reece M. Development and validation of the Female Genital Self-Image Scale. *J Sex Med*. 2010;7(5):1822-30. DOI
22. Pacagnella RC, Vieira EM, Rodrigues Jr. OM, Souza C. Adaptação transcultural do Female Sexual Function Index. *Cad Saude Publica*. 2008;24(2):416-26. DOI
23. Pechorro P, Diniz A, Almeida S, Vieira R. Validação portuguesa do índice de Funcionamento Sexual Feminino (FSFI). *Lab Psicol*. 2009;7(1):33-44. DOI
24. Arouca MAF, Duarte TB, Lott DAM, Magnani PS, Nogueira AA, Rosa-e-Silva JC, et al. Validation and cultural translation for Brazilian Portuguese version of the Pelvic Floor Impact Questionnaire (PFIQ-7) and Pelvic Floor Distress Inventory (PFDI-20). *Int Urogynecol J*. 2016;27(7):1097-106. DOI
25. Berman L, Berman J, Miles M, Pollets D, Powell JA. Genital Self-Image as a component of sexual health: relationship between genital self-image, female sexual function, and quality of life measures. *J Sex Marital Ther*. 2003;29(Suppl 1):11-21. DOI
26. Herbenick D, Schick V, Reece M, Sanders S, Dodge B, Fortenberry JD. The Female Genital Self-Image Scale (FGSIS): results from a nationally representative probability sample of women in the United States. *J Sex Med*. 2011;8(1):158-66. DOI
27. Cohen JW. *Statistical Power Analysis for the Behavioral Sciences*. 2nd ed. New York: Erlbaum; 1988.
28. Malina RM. Tracking of physical activity and physical fitness across the lifespan. *Res Q Exerc Sport*. 1996;67(Suppl 3):S48-57. DOI
29. Ural ÜM, Gücük S, Ekici A, Topçuoğlu A. Urinary incontinence in female university students. *Int Urogynecol J*. 2021;32(2):367-73. DOI
30. Almousa S, Bandin van Loon A. 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
31. Vikström NH, Wasteson E, Lindam A, Samuelsson E. Anxiety and depression in women with urinary incontinence using E-health. *Int Urogynecol J*. 2021;32(1):103-9. DOI
32. Rowen TS, Gaither TW, Shindel AW, Breyer BN. Characteristics of genital dissatisfaction among a nationally representative sample of U.S. women. *J Sex Med*. 2018;15(5):698-704. DOI
33. Yuksel B, Ozgor F. Effect of the COVID-19 pandemic on female sexual behaviour. *Int J Gynecol Obstet*. 2020;150(1):98-102. DOI
34. Ferreira CHJ, Driusso P, Haddad JM, Pereira SB, Fernandes ACNL, Porto D, et al. A guide to physiotherapy in urogynecology for patient care during the COVID-19 pandemic. *Int Urogynecol J*. 2021;32(1):203-10. DOI
35. Franco MM, Driusso P, Bø K, Abreu DCC, Lara LAS, Rosa e Silva ACJS, et al. Relationship between pelvic floor muscle strength and sexual dysfunction in postmenopausal women: a cross-sectional study. *Int Urogynecol J*. 2017;28(6):931-6. DOI