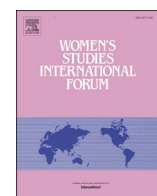


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Sexual life of Spanish women during the lockdown by COVID-19: Differences according to sexual orientation?

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ABSTRACT

The COVID-19 pandemic may have exacerbated the sexual health differences that already existed among women based on their sexual orientation. Therefore, a total of 971 Spanish women aged 18–60 years (84 % heterosexual and 16 % with a minority sexual orientation) answered an ad hoc online questionnaire about sexual behavior during April 2020. Compared to heterosexual women, sexual minority women showed a greater increase in sexual frequency, masturbated more, had more sex with a housemate, and engaged in more online sexual activities during lockdown. The emotional impact of the pandemic, having privacy, and age showed a relationship with the quality of sexual life, but not sexual orientation. Based on these results, women's sexual lives are not as closely related to their sexual orientation as they are to other variables. Therefore, it seems more necessary to address issues affecting women in general during lockdown than to focus on their specific sexual orientation.

Introduction

Gender is a key social determinant of health that must be considered in response to the COVID-19 pandemic. However, gender is omitted from many official reports and sex-disaggregated statistics data are only available in half of the worldwide countries (Ruiz Cantero, 2020). In Spain, one of the countries most affected by COVID-19 during first months (Ballester-Arnal & Gil-Llario, 2020; Spanish Ministry of Health, 2020a), the analysis by gender appeared for the last time on May 18, 2020, in 109th report of the Spanish Ministry of Health (2020b). The epidemiological data showed that women had the highest percentage of diagnosis of COVID-19. Almost 60 % of the total number of cases diagnosed with COVID-19 as dated May 18, 2020, were women, of which 8240 died as a cause of COVID-19 in Spain.

In addition to the direct effects that this new disease has in the short and medium term, it is worth emphasizing the indirect impacts that a health emergency such as this one has on a social, family, economic, or employment spheres of life (Lee et al., 2021). Moreover, traditional gender roles that associate caregiver responsibilities to women are strengthened during public health emergencies. On the other hand, many studies have demonstrated that women have suffered more

posttraumatic stress symptoms, higher mental health impact, and physical load during COVID-19 outbreak than men (Liu et al., 2020; Sharma & Vaish, 2020). In the study by Sandín et al. (2020) among the Spanish population, women obtained a significantly greater percentage of fears or concerns than men, mainly fear of contagion, disease, or death.

The psychological problems, the risk to health, the changes in lifestyle and daily routines, and the new relationship approach based under strong preventive measures influence the women's sexual experiences (Ballester-Arnal et al., 2021; Lopes et al., 2020). However, the impact of the COVID-19 on sexuality in women is not sufficiently explored. Generally, some studies indicated a decrease in women's sexual function measured through the Female Sexual Function Index compared to the period prior to lockdown (Fuchs et al., 2020; Schiavi et al., 2020; Yuksel & Ozgor, 2020). Specifically, arousal and sexual frequency decreased during confinement (Fuchs et al., 2020; Schiavi et al., 2020; Yuksel & Ozgor, 2020). The frequency of sexual intercourse and sexual desire decreased in the Polish and Italian women sample (Fuchs et al., 2020; Schiavi et al., 2020) but it increased in the Turkish women sample (Yuksel & Ozgor, 2020), mainly due to isolation, stress, or bad relationship with the partner. A 40.47 % of the Italian women in the study

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by Cito et al. (2020) reduced autoerotism practices during the quarantine. Moreover, distress associated with sexual functioning increased (Schiavi et al., 2020). Finally, 20.6 % of the women in the study by Lehmillier et al. (2021) made a new addition in their sex lives such as sexting, pornography, or cybersex behaviors associated with sexual desire, stress, and loneliness.

All of these issues experienced by women are often exacerbated among those women who belong to vulnerable groups such as sexual minority women, i.e. those with a minority sexual orientation (Banerjee & Nair, 2020; Connor et al., 2020; Gibb et al., 2020; Phillips et al., 2020; Suen et al., 2020). Several studies have highlighted the high levels of anxiety, stress, and depression experienced by sexual minorities during COVID-19 (Barrimentos et al., 2021; Gato et al., 2021; Gonzales et al., 2020). Similarly, the scientific literature has also echoed the need to delve deeper into the impact that COVID-19 has had on the sexuality of sexual minorities. Several studies have analyzed the sexuality of sexual minority men during the pandemic (Hammoud et al., 2020; Harkness et al., 2021; McKay et al., 2021; Mumm et al., 2021; Nebot-Garcia et al., in press; Sanchez et al., 2020; Shilo & Mor, 2020; Stephenson et al., 2021), however, only one study has explored the impact of COVID-19 on women's sexuality, taking into account their sexual orientation (Batz et al., 2022). The study by Batz et al. (2022) was conducted in Germany with cis heterosexual, lesbian and bisexual women. These authors observed a general decrease in the frequency of sexual activity during the pandemic. In addition, they also observed that being young, in a relationship, and heterosexual was associated with greater satisfaction with sexual life. Although Batz et al. (2022) took into account couple status and the presence of children during lockdown, they did not assess whether there was privacy in the home or other variables that have been shown to be relevant to the experience of sexuality during the pandemic, such as emotional impact (Ko et al., 2020) or the fact of not only having a partner, but living with a partner during the lockdown (Griffin et al., 2022).

In order to continue contributing knowledge following the trail begun by Batz et al. (2022), the aim of this study is to broadly analyze the sexual life of Spanish women during COVID-19 lockdown, considering sexual orientation, emotional impact and other relevant variables in the context of lockdown.

To guide our analysis, on the one hand, we posed a research question: whether there have been differences in the sexual lives of heterosexual (HW) and sexual minority women (SMW) during the lockdown by COVID-19. On the other hand, the study posed two hypotheses. First, since the study by Batz et al. (2022) found that, during the pandemic, having a minority sexual orientation predicted lower satisfaction with sexual life in women, we hypothesize that sexual minority women will have suffered a greater worsening of their sex lives during the lockdown by COVID-19. Second, we hypothesize that variables related to lockdown context (such as emotional impact, living with a partner or having privacy) will negatively have affected women's sex lives.

Materials and methods

Participants

The final sample consisted of 971 Spanish women aged between 18 and 60, with the average age being 31.4 ($SD = 9.6$). Regarding sexual orientation, 84 % self-identified as heterosexual, 10.6 % as bisexual, 2.7 % as homosexual, and 2.7 % as pansexual. Concerning their relationship status, 49 % had a regular partner, 27.1 % were single, 20.6 % were married or in a de facto relationship, and 3.3 % were separated or divorced.

The 971 participants were divided into two groups: heterosexual women (HW) and sexual minority women (SMW). There were no significant differences between HW and SMW in the percentage of women who have had privacy in the house where they lived during the lockdown ($\chi^2 = 0.01$, $p = 0.981$, $V = 0.01$). However, statistically significant

differences were observed in variables such as age ($t = 9.38$, $p < 0.001$, $d = 0.61$) and the percentage of women who had been living with their partner during the lockdown ($\chi^2 = 19.41$, $p < 0.001$, $V = 0.14$). Specifically, HW have a mean age of 32.3 years ($SD = 9.7$), compared to 26.4 years ($SD = 6.6$) for SMW, and more HW lived with their partner compared to SMW.

Measures

An ad hoc questionnaire with 59 items was used. This questionnaire, created through the Qualtrics platform, assessed the sexual life of the participants and the different changes in sexual behavior during the COVID-19 lockdown. For this research, only a total of 17 items based on a varied format were included. The evaluated topics were as follows:

Physical and social context during lockdown. We evaluated whether the participants were alone or accompanied during the lockdown and, in this case, they were asked about the number of people they were living with and whether they were the people with whom they usually cohabitated. Another question evaluated whether they had privacy in the home, with safe areas where they could engage in sexual activity without being disturbed.

Sexual desire. The intensity of the participants' sex drive or desire during the lockdown was evaluated using a Likert-type item with seven response options. The answers ranged from "Much less intense than before" to "Much more intense than before."

Overall sexual frequency. A Likert-type item assessed the general frequency of the participants' sexual activity during the lockdown, compared to their previous situation, using a scale of seven response options ranging from "Much less frequently than before" to "Much more frequently than before."

Overall impact of lockdown on sexual life. One item explored the overall perceived impact that lockdown had on the participants' sex lives and the three options it provided were: "It has improved my sex life," "It has not altered my sex life," or "It has made my sex life worse."

Type of sexual activity, satisfaction, and time invested. A multiple-choice question evaluated the type of sexual behaviors that people engaged in during the lockdown. The options were: "traditional masturbation," "masturbation using sex toys," "sex with a partner," "sex with a male housemate," "sex with a female housemate," "sex with another person skipping the lockdown," "online sexual activity," and "other".

If participants reported having masturbated, they were asked how satisfactory their masturbation was during the lockdown, using a scale of seven ordinal responses that ranged from "Much less satisfactory than before" to "Much more satisfactory than before."

If the participants had had sexual relationships with another person, then a seven-choice ordinal response scale (from "Much less satisfactory than before" to "Much more satisfactory than before") was used to discover how satisfactory their sexual encounters were during the lockdown.

If the participants reported engaging in online sexual activities during the lockdown, two more items evaluated how many minutes they dedicated to each sexual activity before and during the lockdown.

Mood and emotional impact. Five Likert-type items evaluated the average level of the participants' anxiety, depression, boredom, and stress during the lockdown and to what extent they felt that the lockdown situation was becoming unbearable. The response options were: "Not at all," "Somewhat," "Mostly," and "A lot."

Procedure

In order to collect the responses for this descriptive research, a message was published on social networks (Facebook, Twitter, Instagram, WhatsApp, and Telegram) requesting participation in a research that implied an evaluation of sexual behavior during the COVID-19 lockdown. The collection of responses was open from April 3, 2020

until the end of the highest level of lockdown in Spain, on May 2, 2020. Before answering the online questionnaire, participants were shown a screen informing them of the anonymity, voluntary, and confidential nature of the research. Their informed consent was then requested and attained. The research was authorized by the Deontological Commission of the Universitat Jaume I (Castellón, Spain), with the code CD/35/2020. Furthermore, the ethical principles of the Declaration of Helsinki were followed at all times.

Through convenience sampling, a total of 2562 people answered the questionnaire. However, 930 people only partially answered the questionnaire and were therefore eliminated from the final sample. Of the 1632 people who answered the questionnaire in full, we selected 984 people who met the inclusion criteria of being a woman ($n = 1073$), being over 18 years old ($n = 1069$), and living in Spain ($n = 984$). It was observed that there was a great age disparity in participants over 60 years old, so we limited the participation age to 60 and did not take into account the responses from people over this age ($n = 7$). In addition, six women who did not indicate their sexual orientation were eliminated.

Statistical analyses

Statistical analyses were performed using the SPSS statistical package (version 25.0). Percentages for categorical variables were calculated for both the total sample and separately for each sexual orientation group. Sexual orientation-based differences were analyzed using the Chi-Square Test and the Cramer's V was used to calculate the effect size. The Wilcoxon test was used to evaluate those percentages that had been compared in related samples (before and after lockdown).

Since HW and SMW showed statistically significant differences in age and percentage of women living with a partner during lockdown, several ANCOVAs were performed to determine if these differences could be explaining the differences by sexual orientation.

Regarding the variables on mood, a sum of total emotional impact was calculated. Each of the five variables on mood ranged from "0 - Not at all" to "3 - A lot", so the total emotional impact ranged between 0 and 15. Student's *t*-test was used to calculate means and differences by sexual orientation. The effect size was calculated with Cohen's *d* obtained through the G*Power program (Faul et al., 2007, 2009). In this case, an ANCOVA was also performed to determine whether differences in age and in the percentage of women living with a partner during lockdown could be relevant to differences by sexual orientation.

Finally, to predict the variables that caused an improvement or deterioration in participants' sex lives during the COVID-19 lockdown, a multinomial logistic regression was carried out, using the enter method. The dependent variable was the impact on participants' sex life, i.e. whether it had improved, deteriorated, or not changed at all. The independent variables included two sociodemographic variables (age and sexual orientation), two variables related to the context of lockdown (living with a partner during the lockdown and privacy at home), one variable about emotional impact, and two interactions. Due to the differences by sexual orientation in terms of age and percentage of women living with their partner, the interactions "Being heterosexual*Age" and "Being heterosexual*Living with a partner" were included.

Results

Differences between heterosexual and sexual minority women

Physical and social context during lockdown

As can be seen in Table 1, 90.3 % of the women evaluated were accompanied during the months of lockdown. However, 79.4 % indicated that, in the house where they were confined, there were places where they could have privacy. In both variables there were no significant differences by sexual orientation.

Most of the women (85.2 %) were confined with the same people they used to live with, with HW showing statistically less change than

Table 1

Differences between HW and SMW in the variables associated with the lockdown context.

	Total ($n =$ 971)	HW ($n =$ 816)	SMW ($n =$ 155)	χ^2	<i>p</i>	<i>V</i>
	%	%	%			
Social context in which the lockdown occurred						
Alone	9.7	9.7	9.7	0.01	0.999	0.01
Accompanied	90.3	90.3	90.3			
If accompanied, with whom?						
Father/mother	38.4	36.1	50.7	10.63	0.001	0.11
Brother/sister	21	19.1	30.7	9.52	0.002	0.10
Grandfather/Grandmother	3.6	3.3	5.7	2.02	0.155	0.04
Uncle/aunt	1.5	1.5	1.4	0.01	0.954	0.01
Partner	54.4	57.8	36.4	21.66	<0.001	0.16
Son/daughter	23	26.1	7.1	23.73	<0.001	0.16
Father/mother-in-law	2.2	2	2.9	0.37	0.540	0.02
Female/male friend	2.3	2.2	2.9	0.25	0.618	0.02
Female/male housemate	4.6	3.4	10.7	14.49	<0.001	0.13
Another person	4.9	4.1	9.3	6.86	0.009	0.09
Lockdown with people who usually cohabit	85.2	87.1	75	13.66	<0.001	0.13
Private places at home	79.4	79.4	79.3	0.01	0.981	0.01

SMW. The people they lived with were mainly their partner (54.4 %), followed by their parents (38.4 %), their children (23 %), and their siblings (21 %). Compared with HW, SMW were statistically more likely to live with their parents, their siblings, or a housemate. In contrast, HW were statistically more likely to live with their partner or children. There were no statistically significant differences in the other variables.

Sexual desire

A total of 27.7 % of the women indicated that they had practically the same sexual desire as before lockdown. Among the women who showed changes, 34.5 % indicated higher sexual desire during the lockdown and 37.8 % indicated lower desire, with significant differences according to sexual orientation. SMW showed a statistically higher increase in sexual desire than HW (see Table 2). However, when controlling for the effect of age and living with a partner on sexual desire, this difference by sexual orientation is no longer significant (see Table 3).

Overall sexual frequency

The vast majority of women have seen their general frequency of sexual activity altered during the lockdown since only 24.7 % indicate having maintained the same frequency as before lockdown. Among those women who had experienced changes, it was lower for 41.3 % and higher for 34 %. These sexual orientation-based differences were statistically significant, with SMW showing a statistically greater increase in sexual frequency than HW (see Table 2). This difference by sexual orientation remained statistically significant when controlling for the effect on sexual frequency of age and living with a partner during the lockdown (see Table 3).

Overall impact of lockdown on sexual life

An overall assessment of the impact of the lockdown on the participants' sex lives was also explored (see Table 2). First, 44.9 % of women stated that their sex life had not changed. Second, 16.3 % of women stated that their sex life had improved and 38.8 % that it had worsened.

Table 2

Differences between HW and SMW in sexual desire, the global sexual frequency, and the general evaluation of the lockdown impact on sexual life.

	Total (n = 971)	HW (n = 816)	SMW (n = 155)	χ^2	p	V
	%	%	%			
Intensity of sex drive during lockdown						
Much less	11.2	11.6	9	12.78	0.047	0.12
Considerably less	10.8	11.6	6.5			
Slightly less	15.8	15.9	14.8			
About the same	27.7	28.3	24.5			
Slightly more	20	18.3	29			
Considerably more	10.2	10	11			
Much more	4.3	4.2	5.2			
Frequency of global sexual activity						
Much less	16.2	17.6	8.4	16.53	0.011	0.13
Considerably less	9.7	9.4	11			
Slightly less	15.4	15.1	17.4			
About the same	24.7	25.9	18.7			
Slightly more	23.4	22.1	30.3			
Considerably more	8.4	8	11			
Much more	2.2	2	3.2			
Overall impact of the lockdown						
Sexual life has improved	16.3	16.2	16.8	0.16	0.925	0.01
Sexual life has not altered	44.9	44.7	45.8			
Sexual life has worsened	38.8	39.1	37.4			

This variable showed no statistically significant differences by sexual orientation. When controlling for the effect of age and living with a partner during the lockdown on overall impact, differences by sexual orientation remained non-significant (see Table 3).

Type of sexual activity, satisfaction, and time invested

The most frequent sexual behaviors during lockdown were manual masturbation (52.1 %), followed by sexual intercourse with their partner (44.6 %), masturbation with sex toys (24.8 %), and online sexual activities (21 %). It is also important to highlight that 4.2 % of women did not comply with the lockdown to have sex with another person with whom they did not cohabit. SMW reported statistically significant higher percentages of masturbation (both manual and with sex toys), more sexual intercourse with their housemates (both male and female), as well as more online sexual activity. In contrast, HW showed statistically significant higher percentages of sexual intercourse with their partner than SMW (see Table 4). When controlling for the effect of age and living with a partner on the different sexual activities, these significant differences by sexual orientation remained statistically significant for all variables except sexual intercourse with their partner. Finally, non-significant differences by sexual orientation in sexual relationships with another person who skipped lockdown remained statistically non-significant when controlling for differences by age and living with a partner (see Table 5).

In terms of satisfaction with masturbation (see Table 4), slightly more than half of the women evaluated (59.9 %) considered masturbation as satisfactory as before, while 24.1 % said it was less satisfactory and 16 % indicated that it was more satisfactory. However, no statistically significant differences were obtained according to sexual orientation, and remained so after controlling for differences in age and living with a partner.

Regarding satisfaction with sexual relations (see Table 4), more than half of the women (60.5 %) expressed the same level of satisfaction with sexual intercourses during the lockdown, while 19.3 % showed an increase in satisfaction and 20.3 %, a decrease. No statistically significant differences were found according to sexual orientation, even when

Table 3

Univariate analysis of covariance (ANCOVA) comparing the sex drive, sexual frequency and overall impact by sexual orientation, controlling for age and living with their partner.

	Type III sum of squares	df	Mean square	F	p
Sex drive^a					
Corrected model	162.96	3	54.32	22.56	<0.001
Intercept	657.79	1	657.79	273.17	<0.001
Age	97.39	1	97.39	40.44	<0.001
Living with partner	12.06	1	12.06	5.01	0.025
Sexual orientation	1.01	1	1.01	0.42	0.517
Error	2328.57	967	2.41		
Total	16,682.00	971			
Corrected total	2491.53	970			
Sexual frequency^b					
Corrected model	71.61	3	23.87	9.30	<0.001
Intercept	717.15	1	717.15	279.45	<0.001
Age	50.08	1	50.08	19.51	<0.001
Living with partner	7.60	1	7.60	2.96	0.086
Sexual orientation	10.24	1	10.24	3.99	0.046
Error	2481.60	967	2.57		
Total	15,379.00	971			
Corrected total	2553.21	970			
Overall impact^c					
Corrected model	14.67	3	4.90	10.04	<0.001
Intercept	87.05	1	87.05	178.74	<0.001
Age	1.35	1	1.35	2.76	0.097
Living with partner	14.60	1	14.60	29.98	<0.001
Sexual orientation	0.29	1	0.29	0.59	0.443
Error	470.94	967	0.49		
Total	5295.00	971			
Corrected total	485.61	970			

^a Adjusted R² = 0.06.

^b Adjusted R² = 0.03.

^c Adjusted R² = 0.03.

controlling for the effects of age and living with a partner.

Finally, in terms of intragroup differences, both HW and SMW reported spending more time on each session of online sexual activities. Thus, in the HW group, the mean before the lockdown was 21 min (*SD* = 25.2) and during the lockdown it was 32.9 min (*SD* = 38.9) (*t* = -3.68, *p* < 0.001, *d* = 0.31). On the other hand, in the SMW group, the mean increased from 16.8 min (*SD* = 14.7) to 32.3 min (*SD* = 41.1) (*t* = -4.08, *p* < 0.001, *d* = 0.37).

Mood and emotional impact

As can be seen in Table 6, 85.5 % of the evaluated women had felt some level of anxiety during the lockdown, 68.9 % had felt depression, 73.7 % boredom, 84.2 % stress, and 78.8 % had felt that the lockdown had been unbearable. In these variables, no significant differences were observed due to sexual orientation. In the total emotional impact, HW obtained punctuation of 5.8 (*SD* = 3.1) and SMW, 6.3 (*SD* = 3.3), without significant differences between them, even when controlling for differences in age and living with a partner (see Table 7).

Predictive variables of better or worse sex life as a consequence of COVID-19

To predict the variables that affect the improvement or the deterioration of women's sexual life during the COVID-19 lockdown, a multinomial logistic regression was carried out. Our dependent variable had 3

Table 4
Differences between HW and SMW in sexual practices and related satisfaction.

	Total (n = 971) %	HW (n = 816) %	SMW (n = 155) %	χ^2	p	V
Behaviors developed during the lockdown						
Traditional masturbation	52.1	48.3	72.3	29.99	<0.001	0.18
Masturbation using sex toys	24.8	21.9	40	22.78	<0.001	0.15
Sex with a partner	44.6	47.3	30.3	15.20	<0.001	0.13
Sex with a male housemate	0.3	0.1	1.3	5.77	0.02	0.08
Sex with a female housemate	0.2	0	1.3	10.55	<0.001	0.10
Sex with another person skipping the lockdown	4.2	4.3	3.9	0.06	0.812	0.01
Online sexual activity	21	17.3	40.6	42.85	<0.001	0.21
Other	1.2	1.3	0.6	0.53	0.468	0.02
None	9.7	10.7	4.5	5.63	0.018	0.08
Satisfaction with masturbation						
Much less	4	4.5	2.3	4.06	0.669	0.08
Considerably less	7.8	7.8	7.7			
Slightly less	12.3	12.5	11.5			
About the same	59.9	58.7	63.8			
Slightly more	11.8	11.7	12.3			
Considerably more	3	3.2	2.3			
Much more	1.2	1.5	0			
Satisfaction with sexual relationships						
Much less	3.8	4	1.9	9.31	0.157	0.14
Considerably less	4.9	5	3.8			
Slightly less	10.6	10.7	9.4			
About the same	60.5	61.4	52.8			
Slightly more	12.7	11.4	22.6			
Considerably more	4	4.3	1.9			
Much more	3.6	3.1	7.5			

levels, where the sample had to respond if their sexual life had improved, had deteriorated, or had not changed at all. The option “lockdown has not altered my sex life” was used as the reference category. In this analyze, seven independent variables were included: sexual orientation, age, living with a partner during the lockdown, privacy at home, emotional impact, and two interactions (“Being heterosexual*Living with a partner” and “Being heterosexual*Age”).

In the first place, the goodness-of-fit of the model was checked. The model was statistically significant ($\chi^2 = 1596.48$; $df = 14$; $p < 0.001$). As can be seen in Table 8, we found that having a low level of emotional impact predicts improvement in women's sex lives. In the case of the worsening sex life, having no privacy, being older and having higher levels of emotional impact predicted worsening sex life.

Discussion

The experience of previous epidemics has shown that health crises have important and specific effects according to gender and that, therefore, it is necessary integrating a gender perspective in the public health policies (Smith, 2019; United Nations, 2016). As indicated by Lee et al. (2021), women have faced historically gender disadvantages during times of health emergencies. Additional barriers to economic, employment or social inequalities have been exacerbated during the COVID-19 pandemic for women population (Connor et al., 2020). But the situation does not improve when we focus on women's sexuality, traditionally silenced. This sphere of life takes on special relevance at a time when love, social relationships, and life are at stake. In this paper,

Table 5
Univariate analysis of covariance (ANCOVA) comparing, by sexual orientation, the practice of sexual activities, satisfaction with masturbation and sexual relationships, controlling for age and living with their partner.

	Type III Sum of Squares	df	Mean Square	F	p
Traditional masturbation^a					
Corrected model	38.49	3	12.83	60.88	<0.001
Intercept	2.97	1	2.97	14.10	<0.001
Age	3.05	1	3.05	14.47	<0.001
Living with partner	19.68	1	19.68	93.38	<0.001
Sexual orientation	2.53	1	2.53	12.01	0.001
Error	203.82	967	0.21		
Total	506.00	971			
Corrected total	242.32	970			
Masturbation using sex toys^b					
Corrected model	11.28	3	3.76	21.41	<0.001
Intercept	0.10	1	0.10	0.59	0.442
Age	0.02	1	0.02	0.10	0.751
Living with partner	6.07	1	6.07	34.52	<0.001
Sexual orientation	2.59	1	2.59	14.76	<0.001
Error	169.90	967	0.18		
Total	241.00	971			
Corrected total	181.18	970			
Sex with a partner^c					
Corrected model	153.29	3	51.10	570.47	<0.001
Intercept	96.11	1	96.11	1072.99	<0.001
Age	0.89	1	0.89	9.94	0.002
Living with partner	140.19	1	140.19	1565.11	<0.001
Sexual orientation	0.14	1	0.14	1.54	0.215
Error	86.62	967	0.09		
Total	433.00	971			
Corrected total	239.91	970			
Sex with a male housemate^d					
Corrected model	0.02	3	0.01	2.66	0.047
Intercept	0.01	1	0.01	0.24	0.622
Age	0.01	1	0.01	0.28	0.596
Living with partner	0.01	1	0.01	2.19	0.139
Sexual orientation	0.02	1	0.02	5.05	0.025
Error	2.97	967	0.01		
Total	3.00	971			
Corrected total	2.99	970			
Sex with a female housemate^e					
Corrected model	0.02	3	0.01	3.87	0.009
Intercept	0.01	1	0.01	0.25	0.618
Age	< 0.01	1	< 0.01	0.09	0.759
Living with partner	0.01	1	0.01	0.63	0.427
Sexual orientation	0.02	1	0.02	8.87	0.003
Error	1.97	967	0.01		
Total	2.00	971			
Corrected total	1.99	970			
Sex with another person skipping the lockdown^f					
Corrected model	0.37	3	0.12	3.06	0.028
Intercept	0.01	1	0.01	0.06	0.815
Age	0.01	1	0.01	0.18	0.675
Living with partner	0.29	1	0.29	7.25	0.007
Sexual orientation	0.02	1	0.02	0.53	0.468
Error	38.90	967	0.04		
Total	41.00	971			
Corrected total	39.27	970			
Online sexual activity^g					
Corrected model	25.45	3	8.48	60.45	<0.001
Intercept	<0.01	1	< 0.01	< 0.01	0.994
Age	0.93	1	0.93	6.62	0.010
Living with partner	13.21	1	13.21	94.14	<0.001
Sexual orientation	3.34	1	3.34	23.81	<0.001
Error	135.69	967	0.14		
Total	204.00	971			
Corrected total	161.14	970			
Satisfaction with masturbation^h					

(continued on next page)

Table 5 (continued)

	Type III Sum of Squares	df	Mean Square	F	p
Corrected model	2.13	3	0.71	0.64	0.590
Intercept	255.12	1	255.12	229.25	<0.001
Age	1.40	1	1.40	1.26	0.262
Living with partner	0.19	1	0.19	0.17	0.683
Sexual orientation	0.01	1	0.01	0.01	0.947
Error	655.46	589	1.11		
Total	9286.00	593			
Corrected total	657.60	592			
Satisfaction with sexual relationships ^a					
Corrected model	14.28	3	4.76	3.86	0.010
Intercept	318.48	1	318.48	258.10	<0.001
Age	7.45	1	7.45	6.04	0.014
Living with partner	1.75	1	1.75	1.42	0.235
Sexual orientation	1.76	1	1.76	1.43	0.233
Error	578.72	469	1.23		
Total	8153.00	473			
Corrected total	592.00	472			

- ^a Adjusted R² = 0.16.
- ^b Adjusted R² = 0.06.
- ^c Adjusted R² = 0.64.
- ^d Adjusted R² = 0.01.
- ^e Adjusted R² = 0.01.
- ^f Adjusted R² = 0.01.
- ^g Adjusted R² = 0.16.
- ^h Adjusted R² = 0.01.
- ⁱ Adjusted R² = 0.02.

Table 6
Differences between HW and SMW in emotional impact during the lockdown.

	Total (n = 971)	HW (n = 816)	SMW (n = 155)	χ ²	p	V
	%	%	%			
Anxiety						
Not at all	14.5	15.3	9.7	6.28	0.098	0.08
Somewhat	49.1	49.6	46.5			
Mostly	28	26.7	34.8			
A lot	8.4	8.3	9			
Depression						
Not at all	31.1	32.2	25.2	5.31	0.150	0.07
Somewhat	46.7	46.7	46.5			
Mostly	18	17.2	22.6			
A lot	4.2	3.9	5.8			
Boredom						
Not at all	26.3	26.1	27.7	1.99	0.573	0.04
Somewhat	40.7	41.3	37.4			
Mostly	22.8	22.9	21.9			
A lot	10.2	9.7	12.9			
Stress						
Not at all	15.8	16.2	13.5	5.03	0.170	0.08
Somewhat	42.7	43.4	39.4			
Mostly	30.8	30.6	31.6			
A lot	10.7	9.8	15.5			
Unbearable						
Not at all	21.2	20.5	25.2	2.66	0.448	0.05
Somewhat	50.9	51.5	47.7			
Mostly	22.1	22.5	20			
A lot	5.8	5.5	7.1			
	M (SD)	M (SD)	M (SD)	t	p	d
Total emotional impact (0–15)	5.9 (3.2)	5.8 (3.1)	6.3 (3.3)	-1.66	0.096	0.15

we have wondered how Spanish women have experienced sexuality during lockdown by COVID-19, focusing on their sexual orientation, and with the aim of giving the social and scientific value that the women's voice deserves.

There is very little research on sexual orientation differences in women's sex lives during lockdown (Batz et al., 2022). However, none have taken into account the influence of emotional impact. Therefore,

Table 7

Univariate analysis of covariance (ANCOVA) comparing the emotional impact by sexual orientation, controlling for age and living with their partner.

	Type III Sum of Squares	df	Mean Square	F	p
Emotional impact ^a					
Corrected model	272.23	3	90.74	9.31	< 0.001
Intercept	1526.58	1	1526.58	156.56	< 0.001
Age	170.00	1	170.00	17.44	< 0.001
Living with partner	15.54	1	15.54	1.59	0.207
Sexual orientation	2.03	1	2.03	0.21	0.648
Error	9428.84	967	9.75		
Total	43,680.00	971			
Corrected total	9701.08	970			

^a Adjusted R² = 0.03.

our study is the first to investigate women's sexuality, taking into account their sexual orientation, as well as the emotional impact of lockdown, and the characteristics of both the sample and the lockdown situation.

In this study, statistically significant differences were observed between HW and SMW in the people they lived with during lockdown. More HW have lived with their new family, i.e., with their partner or their children. In contrast, more SMW have spent lockdown with their family of origin (parents and siblings) or with a housemate. These results could be due to the fact that HW are statistically older than SMW.

Although statistically significant differences were observed between HW and SMW in sexual desire and sexual frequency, when differences in age and the percentage of people living with a partner were taken into account, only differences in sexual orientation remained significant in sexual frequency. SMW showed more changes in sexual frequency during the pandemic, especially an increase has been observed. This trend was also observed in the study by Batz et al. (2022) in Germany. In their study, the weekly frequency of masturbation decreased for all women during COVID-19, with the exception of lesbians, which remained the same. Similarly, for sexual intercourse, only heterosexual women reported a decrease in frequency. A qualitative study conducted with Indian men and women adults suggested that the higher practice of masturbation among sexual minorities could be due to an impairment in LGBTIQ+ resources during the COVID-19 pandemic (Sharma & Subramanyam, 2020).

Overall, our results show that slightly more than half of the women evaluated experienced a change in the quality of their sexual life, especially a worsening trend. However, contrary to what was expected in hypothesis 1, these results did not show significant differences according to sexual orientation.

Regarding the type of sexual activities performed during lockdown, more HW had sex with their partner, compared to SMW. On the other hand, compared to HW, more SMW had masturbated (with or without toys), had sex with a housemate, and engaged in more online sexual activities. However, when age and having lived with a partner were taken into account, differences by sexual orientation were no longer significant in sexual relations with a partner. For all other variables, the differences remained statistically significant. Other studies prior to the pandemic had already found that lesbian and bisexual women, compared with heterosexual women, consumed more pornography (Böthe et al., 2018; Giménez-García et al., 2022; Træen & Daneback, 2013) and masturbated more (Böthe et al., 2018), including with sex toys (Wood et al., 2017).

Other studies had already found that women, in general, had spent more time on online sexual activities during lockdown (Ballester-Arnal et al., 2021). In our study, moreover, it is observed that both HW and SMW showed a statistically significant increase in the time they spent on

Table 8

Parameter estimates of the impact on sex life of women.

	B	SE	Wald	df	p	OR	95 % CI OR	
							Lower CI	Upper CI
Improvement of the sex life								
Intercept	-0.90	1.12	0.65	1	0.420			
Being heterosexual	0.30	1.13	0.07	1	0.792	1.348	0.147	12.372
Living with a partner	0.83	0.49	2.92	1	0.088	2.288	0.885	5.916
Having privacy	0.37	0.30	1.55	1	0.213	1.454	0.806	2.622
Age	-0.01	0.04	0.05	1	0.817	0.991	0.915	1.073
Emotional impact	-0.09	0.03	7.24	1	0.007	0.914	0.856	0.976
Being heterosexual*Living with a partner	-0.16	0.54	0.09	1	0.768	0.854	0.299	2.440
Being heterosexual*Age	-0.01	0.04	0.08	1	0.774	0.988	0.909	1.073
Worsening of the sex life								
Intercept	-2.21	0.80	7.57	1	0.006			
Being heterosexual	1.51	0.81	3.52	1	0.061	4.524	0.934	21.915
Living with a partner	-0.36	0.41	0.74	1	0.390	0.701	0.312	1.576
Having privacy	-0.55	0.19	8.91	1	0.003	0.576	0.401	0.827
Age	0.06	0.03	4.60	1	0.032	1.064	1.005	1.125
Emotional impact	0.14	0.02	33.37	1	< 0.001	1.150	1.097	1.206
Being heterosexual * Living with a partner	-0.02	0.45	0.01	1	0.963	0.980	0.408	2.351
Being heterosexual * Age	-0.05	0.03	2.96	1	0.085	0.950	0.896	1.007

Note. Pseudo R-square: Cox and Snell = 0.11; Nagelkerke = 0.13; McFadden = 0.06.

online sexual activities.

Some previous studies observed that sexual minorities, in general, presented worse mental health than the heterosexual population during lockdown (Duarte & Pereira, 2021; Liu et al., 2022). In our study, we focused only on women and it seems that the differences are less clear, since no statistically significant differences were observed.

Finally, as expected in hypothesis 2, some variables related to the context of lockdown affected the quality of women's sexual life. It has been observed that different levels of emotional impact have predicted an improvement or worsening of women's sexual life. This reaffirms the need to include this variable when studying the impact of lockdown on women's sex lives. In addition, being older and having less privacy also predicted a worsening sex life. Both emotional impact and lack of privacy had already shown a relationship with worsening sex life (Panzeri et al., 2020). Regarding age, previous studies had already observed that sexual activities among women decreased with advancing age (DeLamater & Koepsel, 2015; Thomas et al., 2015), perhaps influenced by stereotypes that older women are considered sexually uninterested (McHugh & Interligi, 2015) or by a change in their sexual needs, where they begin to value other types of intimacy, such as cuddling, more than sexual intercourse (Fileborn et al., 2015). On the other hand, although the study by Batz et al. (2022) had observed that being heterosexual and having a partner predicted greater satisfaction with sexual life during the pandemic, in our study we only observed a slight trend in the same direction, but it is not statistically significant. Spain was the fourth country to legalize same-sex marriage and adoption in the world (International Lesbian, Gay, Bisexual, Trans and Intersex Association, 2020) and is one of the countries with the highest acceptance of homosexuality (Pew Research Center, 2020). This may be the justification why sexual minority women do not show more impact on their sexuality than heterosexual women. Germany also has very tolerant attitudes toward homosexuality (Pew Research Center, 2020), however, the study by Batz et al. (2022) did not address the emotional impact or privacy, which may explain the differences with our study.

Despite all the contributions made by this study, it also has some limitations. First, given the descriptive nature of the study, causal relationships cannot be established. However, the results are useful to understand the perceived changes in the sexuality of Spanish women during the lockdown by COVID-19 and to establish new research questions. Although the type of sampling used does not allow to generalize, our results can be considered novel because it addresses women as a poorly studied group and analyzes the situation of sexual minorities at an unprecedented historical moment. Second, in order to obtain more

specific data, it would be advisable to analyze separately the experiences of lesbian women, bisexual women and pansexual women, instead of grouping them all under "sexual minority women."

On the other hand, self-reports are not without disadvantages such as memory bias or social desirability, though they are the most used assessment tests in behavioral sciences because they allow a deep approach to the individual experience of the subject evaluated. Moreover, we collected the data during lockdown, so recall biases will be less than if the population had been asked months later (Harkness et al., 2021). Finally, we are aware that there are many other variables such as days of lockdown that could have directly or indirectly influenced the results found. Thus, it should be noted that the observed changes may not be explained only by the lockdown; the global situation lived in those months characterized by intense stress, fear of infection, and uncertainty regarding the future maybe have also modulated the experience of the participants.

Conclusions

Based on our findings, sexual orientation has not proved to be a really relevant variable for the quality of women's sexual life during lockdown. Only emotional impact, age and having privacy have been relevant in explaining the perception of improvement or worsening of sexual life. It seems, therefore, that sex life is not as affected by sexual minority membership as by other variables. Taking these results into account, it seems that, in order to try to improve women's experience of sexuality, it would be necessary to attend to women in general, rather than focusing on their specific sexual orientation.

Declaration of competing interest

The authors have no conflicts of interest to declare that are relevant to the content of this article.

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