

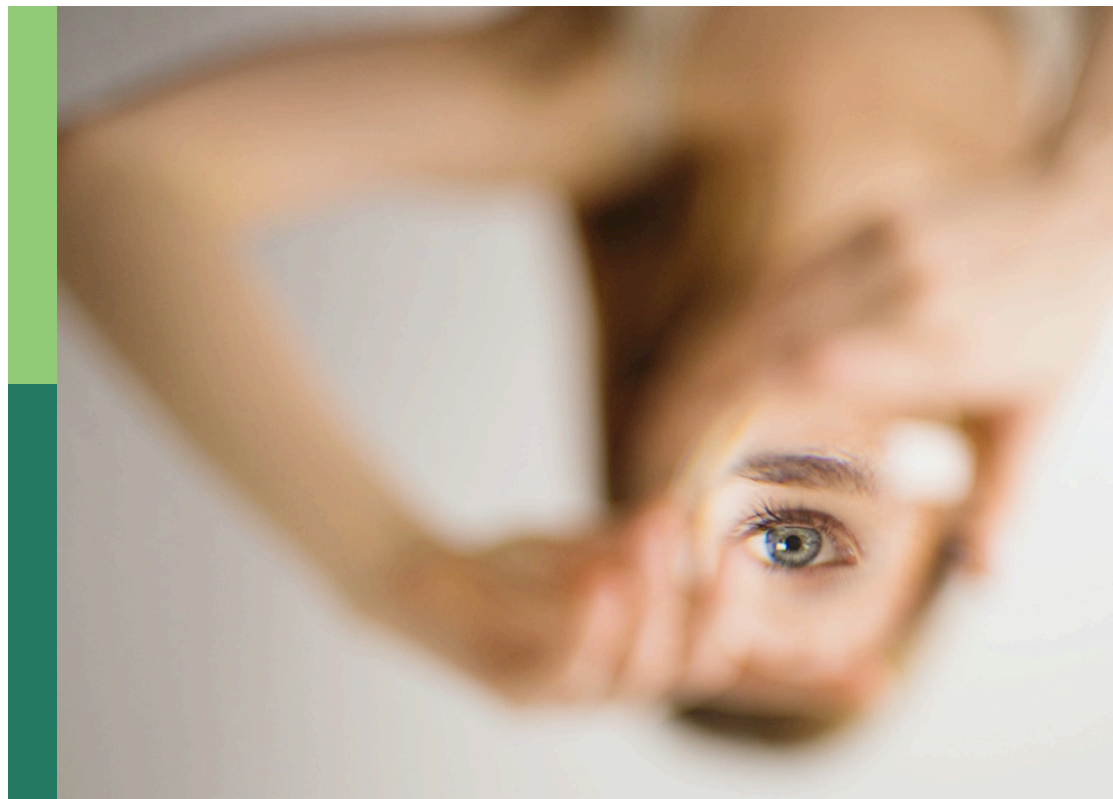
Sexuality and sexual dysfunctions

Edited by

F. Javier Del Río Olvera, María Del Mar Sánchez-Fuentes
and Samantha Banbury

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Sexuality and sexual dysfunctions

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Editorial: Sexuality and sexual dysfunctions

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Editorial on the Research Topic Sexuality and sexual dysfunctions

In an era in which access to information is greater than ever, the general population paradoxically holds increasing levels of misinformation about specific topics. This is particularly evident in the field of sexuality. Today, individuals often seek information on the internet that may originate from sources of questionable reliability, resulting in content that can be confusing or inaccurate. For this reason, scientifically grounded, evidence-based information becomes especially relevant. The aim of this Research Topic has been to provide accurate and useful information on this topic, both for the general population and for professionals, by presenting a diverse and compelling collection of articles that will equip professionals with practical tools and foster interest in sexological science among the public.

An essential aspect of science is the availability of reliable and valid measurement tools that allow for accurate assessment of sexological variables in individuals, and this Research Topic includes three articles on this topic. The article *Psychometric evaluation of the abbreviated Hungarian Faking Orgasm Scale for Women* (Csányi et al.) examines the factorial structure of a scale designed to explore the underlying motivation in cases of faked orgasm. The article *Development of a cross-cultural scale on attitudes toward gender and sexual diversity* (AGSD) (Oleas et al.) presents the development of a scale aimed at assessing attitudes toward gender and sexual diversity. This scale constitutes a valuable tool for both clinical and educational contexts, where attitudes toward gender and sexual diversity can be evaluated to promote changes toward healthier attitudes. The third article focused on instrument validation is entitled *Validation of the Brief Index of Sexual Functioning for women and men (BISF-W and BISF-M) in an Italian sample* (Panzeri et al.). This study validates an assessment instrument originally designed for women and develops a version for men, in its Italian adaptation, to evaluate sexual experiences in both clinical and experimental settings.

Additionally, this Research Topic features several articles with a clear clinical orientation, such as *Influence of personality disorders on sexual behaviors and response to treatment of psychogenic erectile dysfunction in phosphodiesterase 5 inhibitor non-responders* (Cabello-García et al.), which analyses the influence of personality disorders on erectile dysfunction. This Research Topic remains under-researched and is of considerable clinical interest in the treatment of patients who do not respond to pharmacological interventions.

The Research Topic also includes the article *Psychological and sociodemographic factors associated with hypoactive sexual desire in Ecuadorian women* (Pérez-Vega et al.), which examines hypoactive sexual desire in Ecuadorian women according to Kaplan's model. This article highlights the importance of maintaining a positive sexual attitude in fostering higher levels of sexual desire.

Another important contribution of this Research Topic lies in its focus on help-seeking for sexual difficulties and the barriers that may hinder access to professional support. Specifically, it includes the articles *Formal help-seeking among community-based czech individuals with sexual interest in minors is associated with the perceived urgency of self-identified concerns* (Martinec Nováková et al.), *Silent struggles: help-seeking barriers for sexual difficulties among adults aged 50 and older in Czechia* (Gore-Gorszewska et al.), and *Sexual distress with partnered face-to-face sexual activity: an exploratory qualitative study with heterosexual cisgender individuals who seek and do not seek professional help* (Pascoal et al.).

Finally, the Research Topic is further enriched by a set of articles addressing diverse and emerging topics within the field of sexuality. The article *Educational intervention on sexual satisfaction of iranian men: application of the information, motivation, and behavioral skills model* (Ghaderi et al.) provides evidence on an educational intervention delivered through an online platform. The article *Masturbation parameters: their relation to sexual arousal in young people who engage in same-sex relationships* (Sánchez-Pérez et al.) highlights gender differences in masturbation among young individuals engaged in same-sex relationships. The final article, *Sexual desire for non-normative sexual behaviors: differences between centennials and millennials considering sexual orientation* (Paramio et al.), addresses concerns related to sexual behaviors in young people within non-psychopathological contexts.

Overall, this Research Topic constitutes a highly informative and timely contribution for researchers and clinicians seeking to stay up to date in the field of sexuality and sexual dysfunctions.

Author contributions

FD: Writing – original draft, Writing – review & editing. MS-F: Writing – original draft, Writing – review & editing. SB: Writing – original draft, Writing – review & editing.

Conflict of interest

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Influence of personality disorders on sexual behaviours and response to treatment of psychogenic erectile dysfunction in phosphodiesterase 5 inhibitor non-responders

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Background: Personality disorders may influence sexual behaviours and sexual dysfunction.

Aim: Our main objective was to analyse the influence of personality disorders (PDs) in patients with erectile dysfunction (ED) of psychological origin that fail to respond to andrological treatment with Phosphodiesterase-5 inhibitors (IPDE5), assessing whether there are differences in sexual behaviours and response to psychosexual treatment.

Methods: The research is designed as an *ex post facto* retrospective study with two groups. A control group of 23 men with ED without personality disorders and a group of 51 men with both ED and PDs.

Results: In the case sample, 34.30% of the participants presented more than one personality disorder. No significant differences were found in sexual behaviours except for heteromasturbation (men without PDs masturbated their partners more to satisfy them than men with PDs), and men with PDs considered themselves less premature ejaculators than the control group. Finally, 82.14% of the control group did well with psychosexual therapy compared to 53.85% of the PDs group.

Conclusion: Psychosexual treatment of ED has a worse outcome if the men also have PDs. Strengths and Limitations: from a clinical standpoint, it is important to assess the presence of personality disorders in men with ED and to implement psychosexual strategies to improve the response to treatment in these cases. Confirmation of the results with a much larger sample becomes necessary.

KEYWORDS

erectile dysfunction, personality disorders, phosphodiesterase-5 inhibitors, psychosexual therapy, couple wellbeing, sexual behaviours

1 Introduction

Erectile dysfunction (ED) is defined as the persistent inability to achieve or maintain an erection sufficient for satisfactory sexual performance (NIH, 1993). According to the Diagnostic and Statistical Manual of Mental Disorders, 5th Edition (DSM-5), erectile disorder of psychogenic origin is diagnosed on the basis of several specific criteria (APA, 2024). These include marked difficulty in achieving or maintaining an erection during sexual activity, or a significant reduction in erectile rigidity, experienced in at least 75–100% of sexual encounters. The symptoms must have persisted for at least 6 months, causing significant distress in the individual, and must not be attributable to external factors such as substance use or medical conditions.

In addition, the DSM-5 describes personality disorders as patterns of behaviour and inner experience that deviate significantly from cultural expectations. These deviations are manifested in at least two of the following domains, including cognition, affect, interpersonal functioning and impulse control. In short, according to the American Psychiatric Association (APA), personality disorders (PDs) are inflexible and maladaptive personality traits that are exhibited in a wide range of personal and interpersonal contexts (APA, 2024).

From an aetiological standpoint, erectile dysfunction is classified as organic, psychological or mixed (NIH, 1993), in such a way that 34.5% of cases are estimated to be organic, 18.1% psychogenic and 47.5% mixed (organic/psychogenic) (Mirone et al., 2005). Despite the high incidence, the psychological factor has not been widely studied (Mirone et al., 2021). ED has been linked to altered intimacy, marital conflict, stress (Lizza and Rosen, 1999), performance anxiety and anxiety disorders (Barlow, 1986; Beck and Barlow, 1986; Cannarella et al., 2021; Lizza and Rosen, 1999; Velurajah et al., 2021), cognitive, affective and emotional aspects (Cranston-Cuevas and Barlow, 1990; Hu et al., 2024; Nobre, 2010; Wiegel et al., 2007), depressive symptoms, low frustration tolerance, guilt and sensitivity to rejection (Derogatis et al., 1981; Derogatis and Meyer, 1979; Yuan et al., 2023), increased hostility and self-esteem (Bancroft et al., 2005; DiMeo, 2006; Özkent et al., 2021). However, there are few studies linking personality disorders to ED. In a recent systematic review on personality disorders and sexual dysfunction (Cabello-García et al., 2020), personality disorders were shown to influence sexual response, but of the few 14 articles that met the review's inclusion criteria, only one related personality disorders to erectile dysfunction at the clinical level, showing a high level of neuroticism in erectile problems (Quinta Gomes and Nobre, 2011). Subsequent to that review, other research found that personality disorders influenced ED and that narcissistic individuals improved the most with andrological treatment (Ajo et al., 2021).

Despite these findings, the relationship between personality disorders and erectile dysfunction remains an important gap in the scientific literature. Most studies have focused on general emotional and psychological factors, leaving unexplored in depth how different types of personality disorders, beyond narcissism, affect erectile dysfunction. This lack of specific studies in this area underscores the need for further research to better understand the impact of personality disorders on ED.

This study has significant social and academic relevance. From a societal point of view, understanding how personality disorders influence erectile dysfunction may improve the accuracy of diagnoses and therapeutic interventions, allowing for more personalised and effective treatment for individuals with ED. Furthermore, given that

ED not only affects sexual health, but may also impact interpersonal relationships and overall quality of life, the findings of this study may contribute to the development of better clinical strategies to improve patients' psychological and relational well-being.

Academically, this study addresses a critical gap in the literature by exploring the connection between personality disorders and erectile dysfunction, an area that has been under-researched. By identifying specific patterns, this study will bring new insights to clinical psychology and sexology and may lay the groundwork for future research on the relationship between personality disorders and sexual dysfunction.

The present study aims to verify whether there are differences in sexual behaviours and response to psychosexual therapy between men with ED without PDs and men with ED who also have PD criteria and who have not progressed favourably with IPDE5 treatment, following Theodor Millon's personality assessment model through the Millon Clinical Multiaxial Inventory (MCMI-III) (Millon, 2011; Millon and Grossman, 2005), which differentiates personality disorders into clinical patterns (Schizoid, Phobic, Dependent, Histrionic, Narcissistic, Antisocial, Sadistic Aggressive, Compulsive, Passive-Aggressive, Self-Destructive), severe personality pathology (Schizotypal, Borderline and Paranoid), clinical syndromes (Anxiety, Hysteriform, Hypomania, Depressive Neurosis, Alcohol Abuse, Drug Abuse) and/or severe syndromes (Psychotic Thinking, Major Depression and Psychotic Delusions).

Ultimately, the aim is to find out whether there are differences in the response to treatment between men without PDs and those with PDs, based on the hypothesis that men with ED and PDs have lower adherence to sex therapy and therefore a higher rate of dropout and therefore therapeutic failures than men with ED without PDs.

2 Materials and methods

2.1 Study design

Following the methodological classification proposed by Montero and León (2007), the present research would fall into the category of a retrospective *ex post facto* study with two groups.

2.2 Population

Sampling was non-probability and convenience sampling. This sample consisted of patients who sought psychosexual therapy for erectile dysfunction that had not subsided with the use of phosphodiesterase 5 inhibitors. An interview was conducted to verify whether patients met the inclusion criteria, and did not meet the exclusion criteria. Treatment was carried out on an individual basis. Patients were informed of the therapy to be performed and were asked for their authorisation to take part in the present study, subsequently signing the consent form.

A sample of 51 people aged between 18 and 60 years with psychogenic erectile dysfunction, according to DSM-5 criteria, and with a Golombok Rust Inventory of Sexual Satisfaction (GRISS) (Rust and Golombok, 1986) dysfunctionality score higher than 4.5 (cut-off) on the A scale. This score was validated in Spanish in 2021 (Cabello-Santamaría et al., 2021) and correlates with the sexual function domain of the IIEF (Cabello-Santamaría, 2004). The GRISS

questionnaire likewise assesses scales of sensuality, frequency, communication, satisfaction and ejaculation. The sample was split into a case group of 28 people with ED and PDs diagnosed by a score higher than 75 on one of the scales of the Millon Clinical Multiaxial Inventory (MCMI-III) questionnaire and a control group of 23 people with ED without PDs. All participants had a partner of more than 6 months' standing and had been taking an IPDE5 for at least 4 months without satisfactory results. The groups were balanced by selecting participants with similar characteristics (see Table 1). The exclusion criteria were that they were taking any medication (although the current literature does not link these drugs to ED), that they had a sexual orientation other than heterosexual (the GRISS questionnaire is validated only in a heterosexual population), and that they had not completed the interview and questionnaires used in the sexual research. Briefly, two different groups were compared, one presenting ED with DSM-5 criteria and with a dysfunctional score on the GRISS (above 4.5 on scale A corresponding to ED) and the other with the same criteria for ED and also a score above 75 on one of the scales of the Millon Clinical Multiaxial Inventory (MCMI-III) questionnaire.

The following variables from the clinical history were also assessed (Cabello-Santamaría, 2004, 2010): age, time as a couple; lifetime or acquired sexual dysfunction (primary or secondary); oral sex practise; anal sex practise; use of erotic toys; masturbatory behaviours; individual masturbation and masturbation in a couple; presence of erotic fantasies during sexual intercourse; extra-partner sexual relations; consumption of illegal drugs for sexual activity; subjective quality of the couple's relationship (ruling out sexual aspects); dropout (therapy failure) or success of therapy.

2.3 Questionnaires

Golombok Rust Inventory of Sexual Satisfaction (GRISS) (Cabello-Santamaría, 2004; Cabello-Santamaría et al., 2021). This questionnaire assesses the presence of sexual dysfunctions. It consists of 28 items to be answered on a Likert-type scale with 5 response options. The questionnaire measures the following scales: non-sensuality, dissatisfaction, infrequency, non-communication, avoidance, anorgasmia (women), vaginismus (women), premature ejaculation (men) and erectile dysfunction (men). There is a version for men and another for women. Reliability is adequate in terms of internal consistency and test-retest, as well as adequate convergent/divergent

validity and ability to discriminate between patients and control group (Cabello-Santamaría, 2004; Cabello-Santamaría et al., 2021; Golombok et al., 1984). The authors report Cronbach's alpha reliability values of 0.94 for the male version and 0.87 for the female version.

Millon Clinical Multiaxial Inventory (MCMI-III) (Millon, 2011; Millon and Grossman, 2005). The questionnaire assesses 22 scales grouped into 4 blocks: 10 basic personality scales [Schizoid, Phobic (avoidant), Dependent (submissive), Histrionic, Narcissistic, Antisocial, Aggressive-sadistic, Compulsive, Passive-aggressive, Self-destructive], 3 Pathological Personality scales (Schizotypal, Borderline, Paranoid), 6 Clinical Syndromes of moderate severity (Anxiety, Hysteriform, Hypomania, Depressive Neurosis, Alcohol Abuse, Drug Abuse), and 3 Clinical Syndromes of severe severity (Psychotic Thinking, Major Depression, Psychotic Delusions). The pathological personality scales and clinical syndromes differ from the 10 basic scales on a number of criteria, most notably by their deficits in social competence and frequent psychotic episodes, as they are especially vulnerable to the everyday stresses of life, less integrated in terms of personality organisation and less effective in coping than the 10 milder types.

The Dyadic Adjustment Scale by Spanier, specifically the item that numerically assesses the degree of partner happiness (Spanier, 1976).

2.4 Psychosexual therapy

The people in the sample, after having failed treatment with IPDE5, participated in a sex therapy programme divided into five sections. The therapeutic strategy has been applied in the clinical centre attended by the patients since 2004, described in the literature (Cabello-Santamaría, 2004, 2010), and is a compendium of the classic Masters and Johnson therapy (Masters and Johnson, 1970), the therapeutic model of Kaplan (1978), the therapeutic model of Zwing (1985), and more specifically the strategies proposed by Hawton (1992) implemented with mindfulness techniques (Dascalu and Brotto, 2018). Likewise, as the literature points out, special emphasis is placed on the first consultation to facilitate the therapeutic alliance (del Río et al., 2022).

2.5 Statistical analysis

Descriptive statistics were used (mean, standard deviation, percentages, etc.). The Kolmogorov-Smirnov test was performed to

TABLE 1 Descriptive data.

	Case group		Control group		p
	Mean	Standard deviation	Mean	Standard deviation	
Age	37.86	2.63	37.97	1.56	0.760
Time as couple (months)	87.79	125.38	74.51	96.80	0.804
Number of sexual partners	13.21	21.68	16.23	16.23	0.740
Number of stable partners	8.14	1.78	7.17	1.73	0.172
Foreplay duration (minutes)	18.29	15.08	15.92	14.47	0.482

p = statistical significance using Mann-Whitney U test.

check the assumption of normality of the sample. The non-parametric Mann–Whitney U test was performed for hypothesis testing, as well as the Chi-Square test using the contingency table.

3 Results

First, the Kolmogorov–Smirnov test was performed to verify the normality of the sample, and thus decide the type of contrast test to perform. The results showed that the sample did not meet the normality criterion ($p=0.000$), so non-parametric contrasts were performed.

The results indicated that the case sample (ED + PDs) and the control sample (ED without PDs) were homogeneous, as shown in Table 1. They did not differ in terms of age, time spent with a partner, number of sexual partners, number of steady partners or time spent in erotic play. In the case group, 76.92% had a dysfunctional score in compulsive personality, 35.90% had a dysfunctional score in dependent personality, and 28.21% had a

dysfunctional score in schizoid personality (see Table 2). Moreover, 34.30% had more than one dysfunctional score on the personality variables.

No differences were found in sexual communication with the partner, in the time dedicated to erotic games and behaviours (“non-sensuality” variable of the GRISS), nor were there differences in sexual frequency or satisfaction, although there were differences in premature ejaculation, which was higher in the case group (see Table 3). Differences were also found in the practise of heteromasturbation (control case partners masturbated together, or to each other, more frequently than PD cases; see Table 4).

The case group’s scores on the avoidant, histrionic, narcissistic, antisocial, aggressive-sadistic, passive-aggressive, self-destructive, borderline, hypomanic, psychotic-delusional and major depression scales did not differ significantly from the control group in terms of improvement in psychosexual therapy. In contrast, there were significant differences in the scores recorded in the schizoid, dependent, schizotypal, paranoid, anxiety, somatoform, neuroticism, tendency to abuse alcohol and drugs, and compulsive scales, all of

TABLE 2 Personality scale percentages by groups.

Scales		Cases		Control	
		N	%	N	%
Schizoid	Functional	28	71.79%	28	100%
	Non-functional	11	28.21%	0	0%
Avoidant	Functional	32	82.05%	28	100%
	Non-functional	7	17.95%	0	0%
Dependent	Functional	25	64.10%	28	100%
	Non-functional	14	35.90%	0	0%
Histrionic	Functional	32	82.05%	28	100%
	Non-functional	7	17.95%	0	0%
Narcissist	Functional	31	79.49%	28	100%
	Non-functional	8	20.51%	0	0%
Antisocial	Functional	34	87.18%	28	100%
	Non-functional	5	12.82%	0	0%
Aggressive-Sadistic	Functional	35	89.74%	28	100%
	Non-functional	4	10.26%	0	0%
Compulsive	Functional	9	23.08%	28	100%
	Non-functional	30	76.92%	0	0%
Passive-aggressive	Functional	36	92.31%	28	100%
	Non-functional	3	7.69%	0	0%
Self-destructive	Functional	36	92.31%	28	100%
	Non-functional	3	7.69%	0	0%
Schizotypal	Functional	35	89.74%	28	100%
	Non-functional	4	10.26%	0	0%
Limit	Functional	37	94.87%	28	100%
	Non-functional	2	5.13%	0	0%
Paranoid	Functional	31	79.49%	28	100%
	Non-functional	8	20.51%	0	0%

TABLE 3 Mean score, standard deviation and contrast of the GRISS questionnaire scales by groups.

Variable	Cases		Control		p
	Mean	Standard deviation	Mean	Standard deviation	
Erectile dysfunction	6,90	1,17	7,14	1,48	0,447
Premature ejaculation	4,59	2,24	5,93	2,16	0,026*
Non-sensuality	1,67	1,15	2,04	1,43	0,231
Avoidance	5,00	2,29	4,21	2,25	0,112
Dissatisfaction	4,77	2,02	4,79	1,87	0,995
Non-communication	4,00	1,88	4,07	1,74	0,933
Infrequency	5,74	1,83	5,68	1,76	0,781

* = <0.05; p = statistical significance using Mann-Whitney U.

TABLE 4 Frequency, percentage and contrast of behaviours by groups.

		Cases		Control		p
		N	%	N	%	
Sexual dysfunction	Primary	10	25.64%	9	32.14%	0.560
	Secondary	29	74.36%	19	67.86%	
Oral sex	No	7	17.95%	3	10.71%	0.412
	Yes	32	82.05%	25	89.29%	
Anal sex	No	31	79.49%	21	75.00%	0.664
	Yes	8	20.51%	7	25.00%	
Use of sex toys	No	25	64.10%	18	64.29%	0.988
	Yes	14	35.90%	10	35.71%	
Self-stimulation	No	1	2.56%	3	10.71%	0.165
	Yes	38	97.44%	25	89.29%	
Heteromasturbation	No	26	66.67%	9	32.14%	0.005**
	Yes	13	33.33%	19	67.86%	
Erotic fantasies	No	16	41.03%	11	39.29%	0.886
	Yes	23	58.97%	17	60.71%	
Extra-partner sexual relations	No	30	76.92%	26	92.86%	0.082
	Yes	9	23.08%	2	7.14%	
Illegal drug consumption	No	36	92.31%	24	85.71%	0.384
	Yes	3	7.69%	4	14.29%	
Tobacco consumption	No	29	74.36%	19	67.86%	0.560
	Yes	10	25.64%	9	32.14%	
Alcohol consumption	No	11	28.21%	8	28.57%	0.974
	Yes	28	71.79%	20	71.43%	

** = <0.01; p = statistical significance using Chi-Square.

which responded worse to therapy, with a higher dropout rate (see Table 5).

As for the assessment of the quality of the couple's relationship, excluding sexuality, men with ED without PDs rated the relationship more positively, with statistical significance. Regarding treatment progress and completion, there was a higher percentage of people who completed the treatment in the control group compared to the case group (82.14% > 53.85%). It can be concluded that ED

comorbid with a PD has a worse therapeutic prognosis than ED without PDs.

4 Discussion

The results show that the case sample (ED and PDs) and the control sample (ED without PDs) were rather homogeneous. Differences were found in heteromasturbation, i.e., control cases were more concerned about masturbating their partners than ED + PDs cases, which can be explained by the fact that PDs are less empathic and more self-centred (Waldinger, 2015).

It can also be explained by the fact that control cases had higher scores on premature ejaculation, which may mean that people with PDs, who are characterised by being egosyntonic and not very empathic, could consider their intravaginal ejaculatory latency to be correct (Matesanz, 2006), despite having premature ejaculation, which does not occur in control cases more concerned with satisfying their partners.

Neuroticism has been associated with higher levels of sexual dissatisfaction and marital discomfort, suggesting a possible risk factor for the development and maintenance of male sexual problems (Gottman, 1994; Peixoto and Nobre, 2016), which corresponds with the data obtained in the research, as significant differences appear in the scales for anxiety and depressive neurosis, compulsivity and dependence PDs related to neuroticism. In the same sense, as mentioned, significant differences were found in the anxiety scale, as reflected in another study, Rosenheim and Neumann (1981), which demonstrated that men experiencing sexual difficulties presented more severe interpersonal anxiety, as found by other authors (Derogatis et al., 1981).

In the study, narcissistic individuals showed no significant differences compared to the control group, which is consistent with data from another study where it was found that narcissists improved better than other PDs on andrological treatment (Ajo et al., 2021). In the same way, histrionics also did better than other PDs in sexual therapy, which is possibly consistent with the findings of other authors (Bandini et al., 2009), who concluded that there is a positive relationship between sexual response and histrionic personality disorder in men. Finally, the data reflect a much better outcome with psychosexual therapy for the control group, which can be explained, in part, by the better couple relationship, which leads to greater

TABLE 5 Mean score, standard deviation and contrast of the MCMI-II questionnaire scales by groups.

	Cases		Control		<i>p</i>
	Mean	Standard deviation	Mean	Standard deviation	
Schizoid	60.26	27.48	40.71	20.04	0.003**
Avoidant	45.49	30.91	40.14	29.81	0.457
Dependent	64.72	27.00	44.64	24.71	0.002**
Histrionic	44.26	28.16	41.18	21.81	0.909
Narcissist	49.21	30.61	40.21	21.05	0.274
Antisocial	37.21	30.38	24.93	19.63	0.201
Aggressive-Sadistic	42.90	27.97	32.57	20.66	0.137
Compulsive	91.15	21.41	64.07	14.20	0.000**
Passive-aggressive	34.44	25.24	24.14	18.98	0.097
Self-destructive	37.56	27.01	29.43	22.69	0.285
Schizotypal	47.05	23.25	34.00	22.38	0.034*
Limit	38.54	21.70	30.32	18.47	0.143
Paranoid	56.51	26.90	40.79	21.28	0.018*
Anxiety	57.08	25.77	38.68	22.99	0.006**
Somatiform	57.13	26.55	33.64	18.05	0.000**
Hypomania	41.49	26.36	36.14	19.64	0.606
Dysthymia	52.77	26.57	38.75	21.57	0.041*
Alcohol abuse	36.05	24.77	24.64	15.87	0.048*
Drug abuse	34.23	24.49	20.29	14.36	0.017*
Psychotic thinking	38.62	23.61	32.96	23.99	0.279
Major depression	43.23	26.37	31.82	27.15	0.094
Psychotic delusions	53.10	25.41	41.43	18.41	0.073

* = <0.05; ** = <0.01; *p* = statistical significance using Mann-Whitney U test.

collaboration in the therapeutic process. The control group maintained a better couple relationship, with significant differences compared to the ED and PDs group, which is consistent with the postulates of other authors who stated that people with PDs have difficulty in romantic relationships (Corral and Calvete, 2014; Kernberg, 2011) and obviously disorders of human significant relationships. (APA, 2024; Collazzoni et al., 2017). This has been specifically demonstrated in other studies with paranoid (Fisher et al., 2017), schizotypal (Jahangir et al., 2024; Okuda et al., 2015) and schizoid subjects (Brotto et al., 2010) who also commonly present sexual dysfunctions, personalities which in our study have a worse prognosis with respect to the control group without PDs.

In short, as other authors have concluded, the presence of PDs will have a negative influence on sexual response (Ciocca et al., 2023).

5 Conclusion

A very high percentage of men with psychogenic ED, who did not progress with IPDE5 treatment, had some PDs, 34% of whom met the criteria for more than one personality disorder, with compulsive personality predominating (76.92%), followed by dependent personality (35.90%) and schizoid personality (28.21%). Regarding the evolution of psychosexual therapy and its successful completion, there was a higher percentage of people who completed treatment in the control group compared to those in the case group (82.14% > 53.85%). Therefore, it can be concluded that ED comorbid with a PD has a worse therapeutic prognosis than ED without PD. This may be due, amongst other reasons, to the intrinsic characteristics of PDs and to the fact that men without PDs rated the quality of the couple's relationship more positively than men with ED and PDs and, probably for this reason, the collaboration of the couple in the therapeutic process was greater. In fact, men without PDs masturbated their partners more to make them feel satisfied than men with PDs did.

In summary, men with psychogenic ED often have a personality disorder at the same time, with compulsive (rigid) personality predominating, and respond less well to psychosexual therapy than men with ED without a personality disorder.

The results of this study highlight the importance of systematically assessing the presence of personality disorders in men with psychogenic erectile dysfunction who do not respond to treatment with phosphodiesterase-5 inhibitors (PDE5). From a clinical perspective, this assessment may allow for more precise and personalised therapeutic interventions, which could significantly improve outcomes in these patients. In addition, the integration of therapeutic strategies targeting not only erectile dysfunction, but also the specific characteristics of the personality disorder, is suggested, with the aim of optimising the response to psychosexual treatment.

6 Strengths and limitations

The main strength of this work is that it was carried out with patients who came for consultation due to problems in their sexual function. This type of research allows us to adequately understand the needs of these patients and to improve the therapeutic system in order to offer quality, evidence-based care. In this sense it seems appropriate to point out the need to implement sexual psychotherapy with strategies to intervene, at the same time, on personality disorders.

However, one limitation is the need to confirm the results with a larger sample size.

7 Future research

Based on the results of this study, it would be of utmost relevance to investigate whether the application of strategies aimed at improving the most prevalent personalities comorbid with erectile dysfunction optimise erectile response to psychosexual treatment.

Data availability statement

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

Ethics statement

The studies involving humans were approved by Comité de ética de la investigación de la academia Internacional de sexología médica (AISM). The studies were conducted in accordance with the local legislation and institutional requirements. The participants provided their written informed consent to participate in this study. Written informed consent was obtained from the individual(s) for the publication of any potentially identifiable images or data included in this article.

Author contributions

MC-G: Writing – original draft. YS-S: Writing – review & editing. AG-R: Writing – review & editing.

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Validation of the Brief Index of Sexual Functioning for women and men (BISF-W and BISF-M) in an Italian sample

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Introduction: The Brief Index of Sexual Functioning for Women (BISF-W) is an international 4-factors tool assessing qualitative and quantitative aspects of sexual experiences in women, both in clinical and experimental settings. The present research aims at validating an Italian version of the BISF-W, to develop a BISF version for men (BISF-M) to fill the gap in the existing sexual function evaluation tools in Italy and to analyze gender and age groups differences in the BISF factors.

Methods: The research included 6,355 women, aged from 18 to 65 ($M = 34.94$, $SD = 10.52$) and 2,207 men, aged from 18 to 80 ($M = 38.25$, $SD = 13.67$), who completed the BISF-W and BISF-M. The Quality of Marriage Index (QMI) was administered to both samples for testing divergent validity, while Female Sexual Function Index (FSFI) and the International Index of Erectile Function (IIEF) were administered for testing convergent validity. Correlation analysis, MANOVA between gender and age and Confirmatory Factor Analysis were conducted.

Results: The CFAs confirmed that the proposed 4-factor model (Dyadic, Solitaire and Anal Sexuality, and Sexual Difficulties) is suitable both for the BISF-W and the BISF-M, demonstrated strong psychometric properties for assessing sexual functioning in both genders, with dyadic sexuality being the most important factor. MANOVA analysis showed significative differences in the factors' scores, according to gender and age.

Discussion: The BISF-W and the BISF-M are promising tools to address sexual functioning in individuals and couples, both in clinical and non-clinical settings. Gender and age differences are discussed regarding the potential use of BISF in the therapeutic context.

KEYWORDS

BISF, sexual functioning, dyadic sexuality, solitary sexuality, gender differences, age differences

1 Introduction

The Brief Index of Sexual Functioning for Women (BISF-W) is a self-report questionnaire developed in 1994 by Taylor and colleagues. It comprises 22 questions, totaling 64 items, that assesses female sexual functioning over the past 30 days. Two questions were posed in a binary format, 15 were constructed with a single item and offered four to eight options, and eight questions encompassed several items (ranging from five to eight) and employed a Likert scale

with five to seven points, such as “Not at all,” “Once,” “2 or 3 times,” “Once a week,” “2 or 3 times per week,” “Once a day,” and “More than once a day” (see S1.1 in Supporting Information). Responses are primarily measured on a Likert scale, which varies depending on the question. It covers a very wide spectrum of (female) sexuality, ranging from the frequency of different sexual activities such as desire, kissing, solitary masturbation, mutual masturbation, oral, vaginal and anal sex, to measuring the level of arousal provoked by the same activities, the frequency of orgasm provoked by them, sexual satisfaction, to sexual problems (this is the only section in which there is an item relating only to female sexuality). This feature leads us to choose this tool, since it seems more complete than others that can have a more linear structure, such as the Arizona Sexual Experience Scale (ASEX, [Gelenberg et al., 1997](#)) which is made up of only 5 elements, but in our opinion are not sufficient to study human sexuality in depth. The ASEX focuses on 5 domains as sexual drive, arousal, lubrication/erection, ability to reach orgasm and satisfaction, but it lacks depth in areas like sexual pain, emotional intimacy, and relational aspects of sexual function and is not gender-sensitive as it is not tailored to the complexity of the female sexual experience ([Wiegel et al., 2005](#); [Zemishlany and Weizman, 2008](#)).

The psychometric properties of the original version of the questionnaire ([Taylor et al., 1994](#)) were validated through an exploratory factor analysis (EFA) based on principal component analysis with varimax rotation, performed on all questions except the first two and the last two, which investigate, respectively, the presence/absence of a partner and the type of partners (permanent or casual) and sexual orientation (heterosexual, gay/lesbian or bisexual). For questions consisting of multiple items, the mean was presumably used. From this initial analysis, three factors were identified: Sexual Interest/Desire (for a total of 5 questions, 12 items, such as Question 8: “During the past month, who has usually initiated sexual activity?”), which measures interest or desire for sexual activity; Sexual Activity (for a total of 9 questions, 36 items, such as Question 4: “Using the scale to the right, indicate how frequently you have felt a desire to engage in the following activities during the past month? –Kissing; –Masturbation alone; –Mutual masturbation; –Petting and foreplay; –Oral sex; –Vaginal penetration or intercourse; –Anal sex”), which assesses sexual activity or frequency; and Sexual Satisfaction (for a total of 6 questions, 10 items, such as Question 18: “Overall, how satisfied have you been with your sexual relationship with your partner?”), which assesses pleasure, communication, and satisfaction with the sexual relationship. Five questions (5 items) were bifactorial (for example Question 6: “Overall, during the past month, how frequently have you become anxious or inhibited during sexual activity with a partner?”). Overall, these dimensions accounted for 51.2% of the total variance. The questionnaire’s reliability was satisfactory, except for the Sexual Interest/Desire factor, which had Cronbach’s alphas of 0.39, 0.83, and 0.74, respectively. The principal issue with this analysis are the five questions (5 items) that were bifactorial and the three saturated with no factor.

In a second step, [Mazer et al. \(2000\)](#) developed a quantitative scoring algorithm from a conceptual basis to provide an overall sexual function score (composite score or c-score) and 7 scores related to 7 dimensions representing the main parameters of female sexual function: Thoughts/Desire, Arousal, Receptivity/Initiation, Pleasure/Orgasm, Relationship Satisfaction, Problems affecting sexual function, and Frequency of sexual activity. The Cronbach’s alphas for the

Arousal ($\alpha=0.39$), Receptivity/Initiation ($\alpha=0.45$), and Frequency of sexual activity ($\alpha=0.08$) subscales appear unsatisfactory, while those for the Thoughts/Desire ($\alpha=0.72$), Pleasure/Orgasm ($\alpha=0.72$), and Problems affecting sexual functioning ($\alpha=0.61$) subscales were satisfactory. The alpha for the frequency of sexual activity dimension was not calculated. The dimensions of Thoughts/Desire, Arousal, and Pleasure/Orgasm align with Kaplan’s triphasic model of the sexual response cycle ([Derogatis, 1998](#)) which has been proposed as a framework for assessing female sexual dysfunction ([Derogatis, 1997](#)). The dimension Frequency of sexual activity serves as an index for the amount and diversity of sexual activity during the sexual response cycle. On the other hand, the dimension Receptivity/Initiation can be seen as a behavioral manifestation of sexual desire. The dimensions of Relationship satisfaction and Problems affecting sexual function are important indicators of the emotional context in which sexual activity occurs, as well as potential issues that can negatively impact sexual functioning. The primary issue with this algorithm is the absence of a confirmatory factor analysis (CFA) to validate the model. Additionally, the reliability of numerous dimensions is low.

In [Han et al. \(2014\)](#), based on the limitation of previous scores ([Mazer et al., 2000](#); [Taylor et al., 1994](#)) developed a Chinese version of the BISF-W. They administered it to 93 healthy women and 113 women with recurrent depression. Based on an EFA run with principal component analysis and varimax rotation, they identified four factors, different from those identified by [Taylor et al. \(1994\)](#) and [Mazer et al. \(2000\)](#). Factor 1 pertains to sexual interaction, including expectations, initiation, response, communication, and enjoyment. Factor 2 represents the physical aspects of sexual activity. Factor 3 illustrates the adverse effects of sexual activity, such as sexual dysfunctions and factors that impact sexual function. Factor 4 comprises solely of two components: sexual thought and sexual attitude, which demonstrate a subjective viewpoint on sex. The Cronbach’s alpha values were satisfactory for the first three factors, ranging from 0.86 to 0.74, but inadequate for the fourth factor, which had a value of 0.36. To our knowledge in other languages there are only a linguistic validation in French ([Baudelot-Berrogain et al., 2006](#)) that used Mazer’s 7 dimensions ([Mazer et al., 2000](#)) and assessed the influence of organic variables on female sexuality without any statistical analysis and a Czech translation ([Heřmánková et al., 2021](#)) that was used to assess sexuality in patients affected by rheumatic diseases.

For a preliminary validation of the Italian version of the BISF-W, it was first translated into Italian using the back translation technique ([Panzeri and Optale, 2006](#)). An exploratory factor analysis (EFA) was conducted on a sample of 1,051 Italian women.

Principal component analysis and Oblimin rotation were used to analyze all items, assuming that factors were not orthogonal to each other ([Panzeri et al., 2009](#)). The study found a four-factor structure that explained 48.67% of the variance, with satisfactory reliability values. This is in contrast to the original version ([Taylor et al., 1994](#)), which identified only three factors, and the new scoring algorithm version ([Mazer et al., 2000](#)), which identified seven dimensions. Questions 8 (“Who has usually initiated sexual activity?”), 15 [“Indicate the frequency with which the following factors have influenced your level of sexual activity: —My own health problems (for example, infection, illness); —My partner’s health problems; —Conflict in the relationship; —Lack of privacy; —Other (please specify):___”], and 16 (“How satisfied are you with the overall appearance of your body?”) were removed as they did not contribute

to any factors. The initial factor, labeled Dyadic Sexuality, encompasses desires, frequency, arousal, and orgasm achieved during shared activities (such as kissing, mutual foreplay and fondling, mutual stimulation, oral intercourse, and coitus). The second factor, named Solitary Sexuality, includes desires, frequency, arousal, and achieved orgasm in activities that are performed alone, such as masturbation, fantasies, or erotic dreams. The third factor, named Sexual Difficulties, refers to the level of satisfaction with one's sexual relationship with their partner and any issues that may impact sexual activity, such as physical or psychological problems. Additionally, the woman's perception of her partner's dissatisfaction with their sexual relationship is taken into account. The fourth factor, named Anal Sexuality, includes desires, frequency, arousal, and orgasm achieved during anal intercourse. Cronbach's alpha ranged from excellent (0.95) for Dyadic Sexuality to very good (0.85) for Solitary Sexuality and 0.80 for Anal Sexuality, to acceptable (0.73) for Sexual Difficulties. The test-retest reliability of the instrument was evaluated over a one-month period. The results demonstrated high reliability for all factors, with coefficients ranging from $r=0.99$ for Dyadic Sexuality, $r=0.98$ for Solitary Sexuality, $r=0.97$ for Sexual Difficulties, and $r=0.88$ for Anal Sexuality. The final version and factor composition are reported in [Supplementary material](#).

While acknowledging the significant differences between male and female sexual responses ([Herbenick et al., 2023](#); [Kok, 2004](#); [Bittoni and Kiesner, 2023](#)) it was deemed appropriate to create a male counterpart to the BISF-W, known as the BISF-M, to provide a comprehensive evaluation of normal male sexual function ([Panzeri and Raoli, 2010](#)). The rationale behind this choice was to have an instrument comparable to the BISF-W that would allow for the study of couple sexuality and the comparison of male and female sexuality using the same instrument. The BISF-M questionnaire comprises 22 questions, totaling 63 items. Modeled after the BISF-W, in this version includes specific items related to male sexuality, such as nocturnal pollution. Items related to sexual activity problems were modified by the authors according to the masculine gender. "Ejaculation occurred prematurely" has been added; "Vaginal tightness" has been deleted; "Lack of vaginal lubrication" has been substituted by "Difficulty achieving or maintaining an erection," "Difficulty reaching orgasm" by "Ejaculation not reached or reached with difficulty," and "Vaginal infection" by "Urogenital infection." Similar to the BISF-W, the BISF-M questions that consist of a single item (except for the first two, which examine the presence of any permanent or casual partners) provide multiple-choice responses, while those that consist of multiple items provide responses on a multipoint Likert scale (see [Taylor et al., 1994](#) for a complete view). Cronbach's alpha for the four factors identified by [Panzeri et al. \(2009\)](#) varied from excellent (0.95 for Dyadic Sexuality) to very good (0.89 for Solitary Sexuality and 0.83 for Anal Sexuality) to appropriate (0.75 for Sexual Difficulties) in the a sample of 190 Italian men. The [Supplementary material](#) includes the Italian version of BISF-M with factor composition (S1.3).

The use of the same measuring instrument, in both the female and male versions, aims to fulfill a dual purpose: on the one hand, that of providing important information on male sexual function at different moments in the life cycle (youth, adulthood, old age), thus allowing comparison in qualitative and quantitative terms between the sexuality of women and that of men; on the other hand, to study sexuality within the couple, to evaluate whether and how it changes in relation to the duration of the love relationship, during particular moments,

such as status of pregnancy, the menopause, as well as in difficult situations that many couples have to face (sterility, pathologies, etc.).

Sexological and medical literature show contrasting results regarding the overlap between the experience of physical and psycho-emotional sexual arousal in males and females ([Chivers and Bailey, 2005](#)). Therefore, an instrument that can compare different genders experiences, emphasizing both the physical and the psycho-emotional experience is essential in therapeutic assessment.

The research cited above provides ample evidence that sexual functioning over the years has been assessed primarily through self-report instruments from a medical perspective, including the International Index of Erectile Function (IIEF; [Rosen et al., 1997](#)) and the Female Sexual Function Index (FSFI; [Rosen et al., 2000](#)), along with the algorithm developed by [Mazer et al. \(2000\)](#) for scoring the BISF that is based on the linear model of sexual response ([American Psychiatric Association \(APA\), 2000](#); [Kaplan, 1974, 1979](#); [Masters and Johnson, 1966](#)). The aforementioned instruments have concentrated primarily on the physiological aspects of sexuality, while the psychological and relational aspects have been largely overlooked. The BISF is a useful instrument for filling this gap, particularly when considering the four factors analysis by Panzeri and colleagues. This analysis reflects a more psychological perspective, similar to that of other, more recent instruments used for assessing sexual functioning, including the Sexual Desire Inventory (SDI; [Spector et al., 1996](#)) and the Orgasm Rating Scale (ORS; [Mah and Binik, 2001](#)). Due to the absence of a concise self-evaluation index for male and female sexual function in Italian literature, the objective of this study is to fully validate the BISF-W and BISF-M in the Italian language. In previous studies, the Italian version of the BISF-W was only analyzed using exploratory factor analysis (EFA), whereas the BISF-M was only evaluated using the Cronbach alpha reliability coefficient. Also, in the other validation ([Han et al., 2014](#); [Taylor et al., 1994](#)) only EFA was performed. Therefore, we decided to perform different CFA to check which model fits the data better.

There has been an increasing focus on sexuality in the elderly population, as evidenced by recent studies ([Štulhofer et al., 2019](#); [Syme et al., 2018](#)). Research has also explored the relationship between age and sexual changes in both men and women ([Janssen et al., 2008](#); [Pappalardo and Panzeri, 2015](#); [Pinxten and Lievens, 2014](#)). It was expected that the 4-factor structure ([Panzeri et al., 2009](#)) would hold in Italian and that partial factor invariance between men and women would be supported by confirmatory factorial analyses (CFA). We expected to find evidence of partial factor invariance between different age ranges.

We anticipated gender-related differences in the BISF. While males should score higher on the Dyadic, Solitary, and Anal Sexuality BISF factors, females should score higher on the Sexual Dissatisfaction BISF factor. Evolutionary psychology theories propose that innate gender differences in sexual behavior account for this variability ([Bjorklund and Kipp, 1996](#); [Ferrucci et al., 2016](#); [Fontanesi and Renaud, 2014](#); [Shackelford and Goetz, 2007](#); [Symons, 1980](#)). Age differences in the BISF were expected due to the negative impact of age on sexuality ([Bancroft, 2009](#); [Janssen et al., 2002](#)). According to [Bancroft \(2009\)](#), younger participants are expected to have higher scores in the BISF factors Dyadic, Solitary, and Anal Sexuality, while older participants are expected to have higher scores in the BISF factor Sexual Dissatisfaction due to the decrease in testosterone in men and the adverse effects of menopause in women.

Study 1 presents three confirmatory factor analyses (CFA) of the BISF-W's scales, involving a sample of healthy women. The study analyzes the factorial structure proposed by Taylor et al. (1994) and Mazer et al. (2000), as well as the Italian 4-factor model (Panzeri et al., 2009). In Study 2, we conducted a confirmatory factor analysis on the same three models proposed for the BISF-W to test an adaptation of the BISF for the male population. The external validity will be examined using two instruments with appropriate psychometric properties to assess sexual function in men (IIEF; Rosen et al., 1997) and women (FSFI; Rosen et al., 2000), while the Quality of Marriage Index (QMI; Norton, 1983) will be used to assess divergent validity. Reliability will be assessed for both the BISF-W and the BISF-M. Study 3 aims to verify the structural invariance of the 4-factor model for both gender and age, as well as to investigate scores by gender.

This study aims to fully validate the Brief Index of Sexual Functioning (BISF), originally developed by Taylor et al. (1994) for a female population (BISF-W), while Panzeri and Raoli developed a male version of the instrument in 2010. So far, research on such a tool has only shown exploratory factor analysis at best (Han et al., 2014; Taylor et al., 1994), and reliability indices that are often not good enough (Han et al., 2014; Mazer et al., 2000; Taylor et al., 1994). We would like to test the different models presented in the literature with a confirmatory analysis, investigating their validity for both men and women. This would allow us to study couples with the same instrument and to compare male and female sexuality.

2 Study 1: the BISF-W

2.1 Materials and methods

2.1.1 Participants

The sample recruited for the CFA consisted of 6,355 women aged between 18 and 65 years old ($M = 34.94$, $SD = 10.52$). The inclusion criteria stipulated that applicants were required to be at least 18 years of age, demonstrate proficiency in reading and spoken Italian, and not present any intellectual disabilities. Of the initial questionnaires, 15.44% ($n = 981$) were eliminated due to incoherence ($n = 713$) or containing more than 10% of omissions ($n = 286$). Table 1 presents the demographic and personal characteristics of the final sample of 5,374 Italian women, along with the subsamples used for divergent ($n = 264$) and convergent validity ($n = 270$).

2.1.2 Measures

2.1.2.1 Sociodemographic questionnaire

The following information is provided: age, educational qualifications, marital status, sexual orientation, and the presence of a sexual partner.

2.1.2.2 BISF-W

The Brief Index of Sexual Functioning for Women (BISF-W) Italian translation, as illustrated by Panzeri et al. (2009), consists of 64 items with varying answer options, ranging from Likert scale to multiple choice. Please refer to the accompanying Supplementary material for more details. The Italian adaptation demonstrated an appropriate internal consistency, with Cronbach's alpha ranging from $\alpha = 0.95$ to $\alpha = 0.73$ (Panzeri et al., 2009). Two

algorithms were developed to calculate the number of inconsistent responses to questions related to various aspects of the same activities and the percentage of omissions, as reported in the Supplementary material S1.6. Inconsistent responses were considered omissions. Valid questionnaires were those with less than 10% omissions. It has been decided to allow for a 10% margin of error in the form of omissions or incoherent answers. This is because individuals who do not engage in certain activities, such as oral or anal sex, may choose not to answer those questions. However, this behavior is not consistent throughout the test. Only questionnaires with no missing items on the 46 items considered for the CFA were included.

2.1.2.3 FSFI

The Female Sexual Function Index [FSFI, Rosen et al., 2000; Italian adaptation by Filocamo et al. (2014)] is a multidimensional self-report measure used to assess female sexual functioning. The FSFI consists of 19 items that assess six domains: Sexual Desire, Sexual Arousal, Lubrication, Orgasm, Satisfaction, and Pain. The total score is the sum of all subscale scores. Each item is rated on a scale ranging from 0 to 5 or 1 to 5. The Italian adaptation demonstrates high internal consistency, with Cronbach's alpha ranging from $\alpha = 0.92$ to $\alpha = 0.97$ for the total sample (Norton, 1983). In this study, internal consistency was appropriate, with Cronbach's alpha ranging from $\alpha = 0.74$ to $\alpha = 0.94$.

2.1.2.4 QMI

The Quality of Marriage Index (QMI), developed by Norton (1983), is a six-item measure used to assess satisfaction levels. Higher scores on the QMI indicate higher levels of satisfaction. The items in this measure evaluate overall satisfaction and are rated on 6- or 10-point Likert scales. The QMI demonstrates high internal consistency, as evidenced by Cronbach's alpha of 0.96. Although there is no Italian validation of this instrument, it is often used in the literature (e.g., Bonechi and Tani, 2011). The present study found high internal consistency, with a Cronbach's alpha of 0.94.

2.1.3 Procedure

The data collection occurred from 24 April 2018 to 28 May 2022. Participants were recruited in person by psychology master's students from universities, wellness centers, sports facilities, and recreational centers. Participants were informed of the research's objectives and privacy policies. They did not receive any financial compensation for their participation in the study. Each participant gave their written consent for the study by responding to a specific item. The protocol was completely anonymous. All participants answered the sociodemographic questionnaire and the BISF in a paper and pencil format, which has been proved to be a reliable source of collecting information (Dillman et al., 2014). Different subsamples completed questionnaires to measure convergent or divergent validity. The time taken to complete the various questionnaires ranged from 15 to 30 min. The research protocol was approved by the Ethical Committee of Psychological Research of *blinded* University protocol 2,615.

2.1.4 Statistical analysis

LISREL was used to conduct overall confirmatory factor analysis (CFA) analyses, on all items except for questions 1, 2, 21, and 22, which are independent variables (as in Taylor et al., 1994). Several items showed slightly skewed distributions, with skew values ranging from

TABLE 1 Demographic characteristics of participants (women).

		CFA sample	Convergent validity sample	Divergent validity sample
		<i>n</i> = 5,374	<i>n</i> = 265	<i>n</i> = 260
		[<i>n</i> (%)]	[<i>n</i> (%)]	[<i>n</i> (%)]
Age	Mean (SD)	34.94 (10.52)	40.42 (15.03)	36.15 (11.91)
	Range	18–65	18–65	18–65
	Missing values	0 (0.0)	0 (0.0)	0 (0.0)
Marital status	Married/Cohabitant	1,617 (30.1)	57 (21.5)	53 (20.4)
	Separated/Divorced	266 (4.9)	95 (35.8)	96 (36.9)
	Widower	42 (0.8)	8 (3.0)	5 (1.9)
	Unmarried	956 (17.8)	85 (32.1)	65 (25.0)
	Missing values	2,493 (46.4)	20 (7.5)	41 (15.8)
Education	Primary School	191 (3.6)	10 (3.8)	25 (9.6)
	Middle School	619 (11.5)	31 (11.7)	15 (5.8)
	Professional School	737 (13.7)	51 (19.2)	50 (19.2)
	High School	1879 (35.0)	69 (26.0)	81 (31.2)
	Degree	1,142 (21.3)	90 (34.0)	78 (30.0)
	Postgraduate degree	124 (2.3)	8 (3.0)	7 (2.7)
	Missing values	682 (12.7)	6 (2.3)	4 (1.5)
Children	Yes	2,383 (44.3)	135 (50.9)	112 (43.1)
	No	2,928 (54.5)	130 (49.1)	115 (44.2)
	Missing values	63 (1.2)	0 (0.0)	33 (12.7)
Sexual experience	Etherosexual	5,225 (97.2)	252 (95.1)	248 (95.4)
	Bisexual	41 (0.8)	2 (0.8)	1 (0.4)
	Homosexual	64 (1.2)	3 (1.1)	3 (1.2)
	Missing values	44 (0.8)	8 (3.0)	8 (3.1)
Sexual activity	Yes	5,115 (95.2)	245 (92.5)	260 (100.0)
	No	250 (4.7)	20 (7.5)	0 (0.0)
	Missing values	9 (0.2)	0 (0.0)	0 (0.0)
Sexual partner	Yes	4,870 (90.6)	235 (88.7)	207 (79.6)
	No	455 (8.5)	28 (10.6)	7 (2.7)
	Missing values	49 (0.9)	2 (0.8)	46 (17.7)

–1.23 to 2.93 (median = 0.23). Furthermore, the kurtosis values ranged from –1.64 to 8.65 with a median of –0.55. Based on this evidence, we chose to use a maximum likelihood estimator that is robust and starts from the asymptotic variance and covariance matrix (Jöreskog and Sörbom, 1996). Three CFA models were tested to achieve the main study goals. The CFA that was primarily tested followed the structure obtained from an EFA in a previous study by Panzeri et al. (2009). A correlated factors model with four factors was tested using 47 raw variables was tested with correlated errors between the same item in different questions. In particular, the items “Erotic Kissing,” “Masturbation alone,” “Mutual masturbation,” “Petting and foreplay,” “Oral sex (giving or receiving)” and “Vaginal penetration or intercourse” reported in questions 4, 5, 7 and 11; the item “Sexual fantasy” reported in questions 5, and the item “Sexual anxiety” reported in questions 6 and 13. Additionally, we tested two alternative CFA models based on the literature: (a) a model with three factors from 15 subtotals as

suggested by Taylor et al. (1994); and (b) a model with seven factors from 17 subtotals as proposed by Mazer et al. (2000). The overall fit of these models was evaluated based on standard fit index criteria (Hu and Bentler, 1999). This included Satorra and Bentler scaled Chi-square (χ^2 , with a desired non-significance), Root Mean Square Error of Approximation (RMSEA, with desired values of ≤ 0.06), Standardized Root Mean Square Residual (SRMR, with desired values of ≤ 0.08), and Comparative Fit Index and Non-Normed Fit Index (CFI and NNFI, with desired values of ≥ 0.95). We evaluated the model’s fit to the data using RMSEA and SRMR values ranging from 0.05 to 0.08, and CFI and NNFI values ranging from 0.90 to 0.95. These values indicate a satisfactory fit. In calculating the sample size, we adhered to the established best practices for factor analyses and collected a sufficient number of samples to achieve a 20:1 ratio of participants to scale items (e.g., Carpenter, 2018; Kline, 2013). This sample size ensured reliable results for our newly developed Hero’s Journey Scale, which further

TABLE 2 Fit Index of 4 factor model (Panzeri et al., 2009), 3 factor model (Taylor et al., 1994) and 7 factor model (Mazer et al., 2000).

Model	χ^2	df	χ^2/df	RMSEA	GFI	NFI	NNFI	CFI	SRMR
4 factor	28869.34	979	29.49	0.073	0.80	0.95	0.95	0.95	0.068
3 factor	7477.87	81	92.32	0.130	0.83	0.90	0.87	0.90	0.110
7 factor	4881.43	99	49.31	0.095	0.90	0.93	0.93	0.95	0.076

χ^2 , chi square; df, degree of freedom; RMSEA, root mean square error of approximation; BIC, Bayesian information criterion; GFI, goodness of fit index; NFI, normed fit index; NNFI, non normed fit index; CFI, comparative fit index.

helped minimize measurement error, thereby reducing the potential for Type II errors (Asendorf et al., 2013).

The Statistical Package for the Social Sciences (SPSS) version 26 for Windows was used for all other statistics. Pearson's r was used to calculate correlations between the BISF subscales, the FSFI dimensions, and the QMI. McDonald's omega was used to assess internal consistency for all subscales and the total score. An alpha value greater than 0.90 is considered excellent, while values between 0.80 and 0.90 are very good. Values between 0.70 and 0.80 are appropriate, values between 0.60 and 0.70 are sufficient, and values less than 0.60 are insufficient indicators.

2.2 Results

2.2.1 Confirmatory factor analysis

Table 2 reports fit indices indicating that the four-factor model proposed by Panzeri et al. (2009) is the best overall model for women. Although the seven-factor model shows an adequate fit, it is lower than the four-factor model. On the other hand, the three-factor model shows poor fit. Factor loadings of the 4-factor model are reported in Supplementary Table S2.1.

2.2.2 Reliability

The internal consistency analysis revealed an overall McDonald's ω coefficient of 0.943 for BISF-W. The Cronbach α coefficient for the four subscales of BISF-W were as follows: 0.957 for Dyadic Sexuality, 0.866 for Solitary Sexuality, 0.731 for Sexual Difficulties, and 0.917 for Anal Sexuality.

2.2.3 Correlation among BISF-W scales and with age

A positive correlation was found between the four BISF-W factors. Each factor is correlated with other subscales. Dyadic Sexuality moderately positively correlated with Solitary Sexuality ($r=0.41$, $p<0.001$) and weakly correlated with Anal Sexuality ($r=0.31$, $p<0.001$). Solitary Sexuality weakly positively correlated with Anal Sexuality ($r=0.32$, $p<0.001$). There was a weak negative correlation between age and Dyadic and Solitary Sexuality, with respective correlation coefficients of $r=-0.25$ ($p<0.001$) and $r=-0.23$ ($p<0.001$).

2.2.4 Convergent and divergent validity

Table 3 displays the Pearson's correlation among the BISF-W factors, FSFI dimensions, and the QMI. The Pearson's correlation among the BISF-W factors, FSFI dimensions, and the QMI is presented in Table 3. The results demonstrated that dyadic sexuality exhibited robust correlations with the Orgasm and Pain dimensions of the FSFI, while moderate correlations were observed with the Sexual Arousal and Lubrication dimensions. In contrast, solitary sexuality demonstrated a moderate correlation with the Orgasm dimension and

weaker correlations with the Sexual Arousal and Pain dimensions. Sexual difficulties exhibited moderate correlations with all FSFI dimensions, with the exception of Sexual Desire, and a negative correlation with the QMI. Conversely, Anal Sexuality demonstrated no correlation with any FSFI dimensions or with the QMI.

2.3 Discussion

A confirmatory factor analysis (CFA) confirmed that a four-factor model (Dyadic Sexuality, Solitary Sexuality, Sexual Difficulties, and Anal Sexuality) fit the data best, outperforming three- and seven-factor models. Reliability was high across all the subscales. Age negatively correlated with Dyadic and Solitary Sexuality, indicating a decline in sexual functioning with age. Correlations were observed between BISF-W factors, with Dyadic Sexuality correlating moderately with Solitary Sexuality and Anal Sexuality. Anal Sexuality showed no significant correlations with FSFI or QMI. The moderate correlation between dyadic and solitary sexuality may be explained by the fact that, according to the literature, women that are in a romantic relationship may engage in more compensatory autoerotic behavior that those who are not (Dekker and Schmidt, 2013; Huang et al., 2022; Pinkerton et al., 2003) to make up for an unsatisfactory sex life with their partner. This might explain the positive correlation found. Finally, regarding Anal Sexuality, it appears to be a distinct category that is correlated with Dyadic Sexuality. Across different ages, anal sex seems to raise a lot of concerns regarding coercion and health risks (Pickles et al., 2023), cultural expectations and social norms (Fahs and Swank, 2021) and it perceived to be related to men's sexual entitlement (Fahs and Swank, 2021). For these reasons, anal sexuality can be a controversial and undiscussed topic for women, which seems to be performed mostly in meaningful and trustful relationship, in fact, as suggested by Reynolds et al. (2015), some women considered anal sex as more intimate than vaginal sex, and only engage in it with specific partners. In light of the aforementioned points, it would be beneficial to investigate the influence of sexual education derived from pornography culture and its correlation with anal sexuality. Furthermore, it would be beneficial to investigate the potential for homophobia related to this practice in men.

3 Study 2: the BISF-M

3.1 Materials and methods

3.1.1 Participants

A total of 2,585 Italian men were recruited for the study; 378 questionnaires were excluded from the analysis due to incoherence or

TABLE 3 Correlations between BISF-W, FSFI, and QMI factors.

		FSFI (<i>n</i> = 265)						QMI (<i>n</i> = 260)
		Desire	Arousal	Lubrication	Orgasm	Satisfaction	Pain	Total
BISF-W	Dyadic	-0.06	0.36*	0.31*	0.62*	-0.07	0.67*	-0.01
	Solitaire	-0.06	0.20*	0.14	0.37*	0.08	0.29*	-0.16
	Difficulties	0.07	0.39*	0.34*	0.31*	0.29*	0.31*	-0.24*
	Anal	-0.13	-.02	.07	.09	-0.14	0.16	-0.12

* $p < 0.001$, BISF-W, Brief Index of Sexual Functioning for Women (Panzeri et al., 2009); FSFI, Female Sexual Function Index (Rosen et al., 2000); QMI, Quality of Marriage Index (Norton, 1983).

omissions, leaving a total of 2,207 valid responses. In order to be eligible for inclusion in the study, participants were required to meet the following criteria: they had to be at least 18 years of age, possess the ability to read and speak Italian, and not have any intellectual disabilities. Table 4 presents the demographic and personal characteristics of the total sample of 2,207 Italian men, as well as the subsamples used for divergent ($n = 259$) and convergent validity ($n = 453$).

3.1.2 Measures

3.1.2.1 Sociodemographic questionnaire

The following information is collected: age, marital status, educational attainment, sexual orientation, and the presence of a sexual partner.

3.1.2.2 BISF-M

The Brief Index of Sexual Functioning for Men (BISF-M), illustrated above (Panzeri and Raoli, 2010), is composed of 66 items with different response options, varying from Likert-scale to multiple-choice. For more information, please refer to the supporting materials. The internal consistency of the data is appropriate, as evidenced by Cronbach's ranging from $\alpha = 0.95$ to $\alpha = 0.75$.

The same algorithms utilized in Study 1 were employed to quantify the number of inconsistent responses and omissions, as reported in the Supplementary material S1.7 and only questionnaires with no missing items on the 46 items considered for the CFA were included.

3.1.2.3 IIEF

The International Index of Erectile Function (IIEF), developed by Rosen and colleagues in 1997, is a self-report questionnaire consisting of 15 items. It is used to evaluate erectile dysfunction and related factors. It examines five interconnected domains: Erectile Function, Orgasmic Function, Sexual Desire, Intercourse Satisfaction, and Overall Satisfaction. The total score is calculated by summing the subscale scores. Each item is scored from 0 to 5. The test demonstrates strong internal consistency, with Cronbach's values of 0.73 or higher for the five main domains and 0.91 or higher for the total scale. The study used an Italian adaptation of the IIEF that was widely used throughout the country (e.g., Rosen et al., 1997). In this study, the internal

consistency was appropriate, with Cronbach's alpha ranging from $\alpha = 0.85$ to $\alpha = 0.95$.

3.1.2.4 QMI

The QMI (Norton, 1983) described above, had a high level of internal consistency for men, with Cronbach's alpha = 0.96, as was found in the current study.

3.1.3 Procedure

The data collection for this study occurred between 3 March 2019 and 25 May 2022 using a paper and pencil format. The procedure was identical to that of study 1. Pearson's r was used to calculate correlations between the BISF subscales, the IIEF dimensions, and the QMI.

3.1.4 Statistical analysis

The statistical analyses in this study were identical to those in Study 1.

3.2 Results

3.2.1 Confirmatory factor analysis

Table 5 reports fit indices indicating that the four-factor model proposed by Panzeri et al. (2009) is the best overall model for men. As in women the seven-factor model show a lower fit than the four-factor model even if both models show lower fit indices in men than in women. However, the three-factor model shows a poor fit in both men and women. Factor loadings of the 4 factor model are reported in table S2.2.

3.2.2 Reliability

The BISF-M exhibited excellent internal consistency, as indicated by an overall McDonald's ω coefficient of 0.940. The Cronbach α coefficient for the four subscales of BISF-M was excellent for both Dyadic Sexuality (0.947) and Anal sexuality (0.911), very good for Solitary Sexuality (0.892) and only sufficient for Sexual Difficulties (0.615).

3.2.3 Correlation among BISF-M scales and with age

A positive correlation was observed between the four BISF factors. Each factor correlates positively with the other factors, except for Sexual Difficulties: Dyadic Sexuality correlates positively with Solitary

Sexuality ($r=0.37, p<0.001$) and Anal Sexuality ($r=0.41, p<0.001$), and weakly with Sexual Difficulties ($r=0.17, p<0.001$); Solitary Sexuality correlates positively with Anal Sexuality ($r=0.36, p<0.001$). There is a weak negative correlation between age and Dyadic and Solitary Sexuality ($r=-0.29, p>0.001$ and $r=-0.38, p<0.001$ respectively). However, there is no consistent correlation between age and Sexual Difficulties or Anal Sexuality ($r=0.11, p<0.001$ and $r=-0.17, p<0.001$ respectively).

3.2.4 Convergent and divergent validity

Table 6 presents the Pearson’s correlation between the BISF-M factors, the IIEF dimensions, and the QMI. Although the BISF-M Sexual Difficulties factor did not correlate with any IIEF dimensions, the BISF-M Dyadic Sexuality factor did correlate with all IIEF dimensions. Similarly, the BISF-M Anal Sexuality factor correlated with all IIEF dimensions except for the Orgasmic Function dimension,

and the BISF-M Solitary Sexuality factor only correlated with the IIEF Sexual Desire dimension. The only factor that correlated with the QMI was the BISF-M Dyadic Sexuality factor.

3.3 Discussion

The study validated the Brief Index of Sexual Functioning for Men (BISF-M) in an Italian sample of 2,207 men, focusing on its reliability and factor structure. The BISF-M, composed of 66 items, was used alongside the International Index of Erectile Function (IIEF) and the Quality of Marriage Index (QMI). The confirmatory factor analysis revealed that the four-factor model (Dyadic, Solitary, Anal Sexuality, and Sexual Difficulties) provided the best fit. Reliability was high for Dyadic, Solitary and Anal Sexuality, though the Sexual Difficulties subscale was only moderately reliable. Age negatively correlated with

TABLE 4 Demographic characteristics of participants (men).

		CFA sample	Convergent validity sample	Divergent validity sample
		$n = 2,207$	$n = 445$	$n = 257$
		[n (%)]	[n (%)]	[n (%)]
Age	Mean (SD)	38.25 (13.67)	41.16 (16.92)	31.43 (9.08)
	Range	18–80	18–80	18–62
	Missing values	27 (1.2)	1 (0.2)	0 (0.0)
Marital status	Married/Cohabitant	1,125 (51.0)	195 (43.8)	76 (29.6)
	Separated/Divorced	122 (5.5)	31 (7.0)	13 (5.1)
	Widower	18 (0.8)	4 (0.9)	0 (0.0)
	Unmarried	922 (41.8)	214 (48.1)	167 (65.0)
	Missing values	20 (0.9)	1 (0.2)	1 (0.4)
Education	Primary School	44 (2.0)	16 (3.6)	0 (0.0)
	Middle School	288 (13.0)	34 (7.6)	9 (3.5)
	Professional School	320 (14.5)	80 (18.0)	54 (21.0)
	High School	975 (44.2)	163 (36.6)	101 (39.3)
	Degree	494 (22.4)	142 (31.9)	88 (34.2)
	Postgraduate degree	75 (3.4)	10 (2.2)	5 (1.9)
	Missing values	11 (0.5)	0 (0.0)	0 (0.0)
Children	Yes	934 (42.3)	192 (43.1)	69 (26.8)
	No	1,292 (57.2)	249 (56.0)	185 (72.0)
	Missing values	11 (0.5)	4 (0.9)	3 (1.2)
Sexual experience	Etherosexual	2,107 (95.5)	417 (93.7)	242 (94.2)
	Bisexual	41 (1.9)	18 (4.0)	8 (3.1)
	Gay/Lesbian	39 (1.8)	8 (1.8)	6 (2.3)
	Missing values	20 (0.9)	2 (0.4)	1 (0.4)
Sexual activity	Yes	2,169 (98.3)	431 (96.9)	256 (99.6)
	No	33 (1.5)	14 (3.1)	1 (0.4)
	Missing values	5 (0.2)	0 (0.0)	0 (0.0)
Sexual partner	Yes	1985 (89.9)	390 (87.6)	233 (90.7)
	No	221 (10.0)	55 (12.4)	24 (9.3)
	Missing values	1 (0.0)	0 (0.0)	0 (0.0)

Dyadic and Solitary Sexuality, indicating a decline in sexual activity over time. The BISF-M demonstrated good convergent validity with the IIEF, except for the Sexual Difficulties subscale, which did not correlate with IIEF dimensions in our sample.

Our findings demonstrate a statistically significant positive correlation between dyadic and solitary sexuality in men. This aligns with existing literature suggesting that sexual relationships can lead to an increase in overall sexual activity, including solitary activities such as masturbation. This pattern may be indicative of a broader phenomenon wherein individuals, regardless of gender, who are sexually active with a partner may also engage in solitary sexual behaviors with greater frequency. For men, this does not necessarily indicate compensatory behavior, as has been suggested for women (Dekker and Schmidt, 2013), but rather an overall heightened sexual desire or arousal, which may result in more frequent sexual activity in general. Some studies have indicated that men who are more sexually active in a dyadic context may also experience an increase in libido, which can extend to solitary behaviors (Pinkerton et al., 2003). The positive correlation between dyadic and solitary sexuality in the male sample indicates that men, like women, may experience reinforcement of their sexual drive through their sexual relationships, resulting in increased solitary sexual activities. In contrast, research has indicated that solitary sexuality in women may occasionally serve a compensatory function when dyadic sexual satisfaction is lower (Dekker and Schmidt, 2013; Huang et al., 2022). This is consistent with findings that male sexual desire is often maintained or enhanced through multiple forms of sexual expression, whether partnered or solitary (Herbenick et al., 2023).

4 Study 3: the BISF

4.1 Materials and methods

4.1.1 Participants

We have created a comprehensive database that includes data from both males and females. The study population was divided into three age groups: 18–29 ($n=1925$ women, $n=717$ men), 30–49 ($n=2,736$ women, $n=970$ men), and over 50 ($n=686$ women, $n=493$ men). The age groups were determined based on a review of the literature, which indicates that the average age of menopause is 50 years old, while the age at which women typically experience heightened sexual vigor is 30 years old (Harlow et al., 2023; Harris and Vitzthum, 2013; Masters and Johnson, 1966).

4.1.2 Procedure

To ensure accuracy, we have left blank responses to questions that are not applicable to certain genders. For example, questions such as “Vaginal tightness” are only applicable to women, while “Ejaculation occurred prematurely” is only applicable to men. We consider as the

same answer questions that, although slightly different, refer to the same sexual response phase, that is “Lack of vaginal lubrication” and “Difficulty achieving or maintaining an erection”; “Difficulty reaching orgasm” and “Ejaculation not reached or reached with difficulty”; “Vaginal infection” and “Urogenital infection.” “Ejaculation occurred prematurely” has been added, “Vaginal tightness” has been deleted.” For the CFA analysis we matched the item 14_0 “Ejaculation occurred prematurely” (only for men) with the items 14_5 “Vaginal tightness” (only for women).

4.1.3 Statistical analyses

LISREL was used to conduct multigroup CFA measurement invariance procedures.

After evaluating the four factors model as the best model, we test the measurement invariance of this model across the six groups generated by crossing age groups and gender. We followed the standard steps for testing measurement invariance, as outlined by Pendergast et al. (2017). This included testing a configural model (an overall model without constraints fit across groups), a metric model (constraining factor loadings to equality across groups), and finally a scalar model (constraining item intercepts and factor loadings to equality across groups). Measurement invariance constraints were evaluated by primarily considering the change in CFI values with a desired decrement in model fit of 0.01 or less, following the method proposed by Cheung and Rensvold (2002). We considered changes in Satorra and Bentler scaled Chi-square and RMSEA when evaluating more restrictive measurement invariance models. Specifically, we aimed for a non-significant Chi-square and a decrement in model fit of 0.01 or less for RMSEA (Chen, 2007).

SPSS version 26 for Windows was used for all other statistics. A Multivariate Analysis of Variance (MANOVA) was conducted to assess differences in BISF factors between age groups for both women and men separately, as well as to evaluate differences in gender and age groups in the total sample. The Bonferroni post-hoc analysis method was utilized to compare age groups.

4.2 Results

4.2.1 Invariance

We considered six groups: three age groups for women ($n=1925$ for the first age group; $n=2,763$ for the second age group; $n=686$ for the last age group) and three age groups for men ($n=717$ for the first age group; $n=970$ for the second age group; $n=493$ for the last age group). Table 7 shows that the configural model fits well, and imposing metric invariance constraints only slightly decreased the model fit ($\Delta CFI=0.01$ and $\Delta RMSEA=0.002$). Additionally, when scalar invariance constraints were applied, there were relevant reductions in

TABLE 5 Fit Index of 4 factor model, 3 factor model (Taylor et al., 1994) and 7 factor model (Mazer et al., 2000).

Model	χ^2	df	χ^2/df	RMSEA	GFI	NFI	NNFI	CFI	SRMR
4 factor	15262.89	981	15.56	0.081	0.75	0.93	0.92	0.93	0.092
3 factor	1633.98	81	20.17	0.093	0.89	0.94	0.92	0.94	0.080
7 factor	2275.36	99	22.98	0.100	0.87	0.92	0.89	0.92	0.093

χ^2 , chi square; df, degree of freedom; RMSEA, root mean square error of approximation; BIC, Bayesian information criterion; GFI, goodness of fit index; NFI, normed fit index; NNFI, non normed fit index; CFI, comparative fit index.

TABLE 6 Correlations between BISF-M, IIEF, and QMI factors.

		IIEF (N = 445)					QMI (N = 257)
		Erectile function	Orgasmic function	Sexual desire	Intercourse satisfaction	Overall satisfaction	Total
BISF-M	Dyadic	0.70*	0.60*	0.61*	0.76*	0.63*	0.39*
	Solitaire	0.25*	0.25*	0.42*	0.20*	0.09	-0.01
	Difficulties	0.09	0.11	0.02	0.14	-0.07	-0.08
	Anal	-0.31*	0.20*	0.27*	0.30*	0.26*	-0.04

* $p < 0.001$. BISF-W, Brief Index of Sexual Functioning for Women (Panzeri et al., 2009); IIEF, International Index of Erectile Function (Rosen et al., 1997); QMI, Quality of Marriage Index (Norton, 1983).

model fit ($\Delta CFI = 0.04$ and $\Delta RMSEA = 0.013$) indicating the presence of significant differences on factor scores among groups.

4.2.2 Manova

The MANOVA results for women indicated a significant effect of age groups on all factors [$F(2,5,371) = 194.04$, $p < 0.0001$, partial $\eta^2 = 0.07$ for Dyadic Sexuality, $F(2,5,371) = 154.21$, $p < 0.001$, partial $\eta^2 = 0.05$ for Solitary Sexuality and $F(2,5,371) = 13.72$, $p < 0.001$, partial $\eta^2 = 0.01$ for Anal Sexuality], except for Sexual Difficulties [$F(2,5,371) = 2.51$, $p = 0.081$, partial $\eta^2 < 0.01$]. *Post-hoc* analysis indicated a progressive and always significant decrease, from the first (18–29 years) to the last age group (50+ years). For men the MANOVA results showed a significant effect of age groups for all factors [$F(2,2,177) = 103.16$, $p < 0.001$, partial $\eta^2 = 0.09$ for Dyadic Sexuality, $F(2,2,177) = 154.51$, $p < 0.001$, partial $\eta^2 = 0.12$ for Solitary Sexuality, $F(2,2,177) = 43.36$, $p < 0.001$, partial $\eta^2 = 0.04$ for Anal Sexuality and $F(2,2,177) = 11.09$, $p < 0.001$, partial $\eta^2 = 0.01$ for Sexual Difficulties]. *Post-hoc* analysis showed no significant difference between the first age group (18–29 years) and the second age group (30–49 years) for all factors except the Solitary sexuality one. There was a significant decrease in all factors except Sexual Difficulties, which increased, from the second age group to the last age group (50+ years). Solitary sexuality decreased significantly with age (see Supplementary Table S1).

A MANOVA was conducted on both male and female participants, and the results showed a significant age effect for all factors [$F(2,7,548) = 249.17$, $p < 0.001$, partial $\eta^2 = 0.06$ for Dyadic Sexuality, $F(2,7,548) = 315.85$, $p < 0.001$, partial $\eta^2 = 0.08$ for Solitary Sexuality, $F(2,7,548) = 78.25$, $p < 0.001$, partial $\eta^2 = 0.02$ for Anal Sexuality and $F(2,7,548) = 2.54$, $p = 0.003$, partial $\eta^2 < 0.01$ for Sexual Difficulties]. *Post-hoc* analysis showed a significant and progressive decrease in all factors, except for Sexual Difficulties, from the first age group (18–29 years) to the last age group (50+ years). There was only a significant increase in sexual difficulties from the first age group (18–29 years) to the second age group (30–49 years). Additionally, a significant interaction between gender and age groups was found for all factors [$F(2,7,548) = 8.66$, $p < 0.001$, partial $\eta^2 < 0.01$ for Dyadic Sexuality, $F(2,7,548) = 12.75$, $p < 0.001$, partial $\eta^2 < 0.01$ for Solitary Sexuality, $F(2,7,548) = 35.34$, $p < 0.001$, partial $\eta^2 = 0.01$ for Anal Sexuality and $F(2,7,548) = 2.53$, $p = 0.003$, partial $\eta^2 < 0.01$ for Sexual Difficulties]. *Post-hoc* analysis showed no significant gender effect for Sexual Difficulties in the last age group (50+ years). There was no significant difference in Dyadic and Anal activity between the first (18–29 years) and the second age group (30–49 years) for men, as found in the MANOVA

for men. Similarly, there was no significant difference in Sexual Difficulties between age groups for women, as found in the MANOVA for women.

4.3 Discussion

The results of the invariance analysis showed that the configural model fit well across six age and gender groups, with only a slight reduction in fit when metric invariance constraints were applied. However, applying scalar invariance resulted in significant reductions in fit, indicating differences in factor scores across age groups. The MANOVA results for women revealed a significant age effect on all factors, with sexual functioning decreasing progressively with age, except for Sexual Difficulties, which remained constant. For men, similar age effects were observed, with sexual functioning decreasing with age, except for Sexual Difficulties, which increased from the second to the last age group. A combined MANOVA for both genders confirmed these trends and also highlighted an interaction between gender and age for all factors. No significant gender effect was found for Sexual Difficulties in the oldest age group, and both Dyadic and Anal Sexuality showed no significant differences between younger and middle-aged men.

5 General discussion

The study presents a fully psychometric validation of the Italian version of the BISF questionnaire. This measure was initially developed by Taylor et al. (1994) to assess women's sexuality. This study proposes a BISF version that enables for an evaluation of sexual functioning in both men and women.

The CFA indicated that the fit indexes for the four-factor model are superior to those of the three-factor or seven-dimension models for both BISF-W and BISF-M. The correlation between factors was in the desired direction, and the internal consistency was good, according to the literature (Taber, 2018). This makes them reliable tools for assessing sexual functioning in both women and men. Previous American studies have identified factors or dimensions related to a psychophysiological model of the sexual response cycle (Mazer et al., 2000; Taylor et al., 1994). The present study revealed four factors - Dyadic Sexuality, Solitary Sexuality, Sexual Difficulties, and Anal Sexuality—which appear to reflect a more psychological and comprehensive model that distinguishes solo auto-erotic activities from those performed as a couple. Indeed, other validated tools, such

TABLE 7 Age and Gender measurement invariance fit statistics.

Model	χ^2	df	p	RMSEA	SRMR	CFI	NNFI	Delta χ^2	Delta df	p	Delta RMSEA	Delta CFI
Configural (4 factors model)	59,431,97	5,904	<0.001	0,085	0,10	0,93	0,92					
Metric (4 factors model)	64,565,94	6,139	<0.001	0,087	0,12	0,92	0,92	5,133,97	235	<0.001	0,002	0,01
Scalar (4 factors model)	86,581,81	6,374	<0.001	0,100	0,11	0,89	0,89	22,015,87	235	<0.001	0,013	0,03

χ^2 , Satorra and Bentler scaled Chi-square; df, degree of freedom; RMSEA, Root Mean Square Error of Approximation; SRMR, Standardized Root Mean Square Residual; CFI, Comparative Fit Index; NNFI, Non Normed Fit Index; $\Delta\chi^2$ statistics are in reference to the preceding model in the table.

as the Sexual Desire Inventory (SDI, Spector et al., 1996) or the Orgasm Rating Scale (ORS, Mah and Binik, 2002), distinguish between dyadic sexual desire and solitary sexual desire, or the subjective experience of an orgasm in the context of sexual relationships and solitary masturbation, respectively. Dyadic Sexuality is emerging as the most important factor, explaining a higher percentage of the variance than the others. This finding is consistent with the literature, which suggests that relational intimacy plays a mediating role in sexual functioning (Basson, 2000; Janssen et al., 2008; McCabe et al., 2010; Witherow et al., 2017).

The factor structure of the BISF did not show full scalar invariance across age groups for both genders and the global sample (men + women), reaching only metric invariance according to our analyses. This result indicated that there were differences in both gender and age groups. These differences could be further analyzed using MANOVA. The MANOVA results confirm that there are different scores on the factors in each age group. Specifically, sexual functioning decreases with age while sexual problems increase only in men. This is in line with the literature that recognizes age as the primary risk factor for sexual function (Han et al., 2014; Hayes and Dennerstein, 2005). For example, a decrease in testosterone (which affects body image and increases the risk of sexual dysfunction) or cognitive decline has been seen to be related to sexual problems (Barone et al., 2022; Tavares et al., 2020). Moreover, the literature on the variation of female sexual functioning with age is contrasting. While it is certain that age influences the physiological aspects of sexuality, such as lubrication or pelvic floor health, with regard to psycho-emotional aspects there is a great deal of intra- and inter-individual variability that makes it difficult to generalize the findings concerning the relationship between age and female sexual function (Athey et al., 2021). Nevertheless, the BISF is able to measure the same constructs (Dyadic Sexuality, Solitary Sexuality, Sexual Difficulties, and Anal Sexuality) in the same way across different groups by achieving configural and metric invariance. This ensures that the relationships between items and their underlying factors are consistent, thereby allowing for valid comparisons of factor structures and associations between factors across groups. The absence of scalar invariance suggests that although the constructs are assessed in a comparable manner, the absolute levels of these constructs may vary due to group-specific biases or discrepancies in response styles. Nevertheless, the findings of our study on gender and age differences in sexual functioning offer valuable insights into the ways in which

these constructs manifest differently across groups. The comparisons made in the study have important practical implications for clinical and therapeutic settings. For instance, understanding that men score higher on Dyadic, Solitary, and Anal Sexuality while women score higher on Sexual Difficulties can inform tailored interventions and therapeutic approaches that address the specific needs and challenges faced by different groups.

Our analyses did not support the scalar invariance of the factor structure of the BISF across genders. The MANOVA results confirm that there are different factor scores for women and men. As expected, men scored higher in Dyadic, Solitary, and Anal sexuality, while women scored higher in Sexual difficulties. These results may be related to gender roles and the differences in the perception of sex and sexuality across genders. It is possible that since women continue to have some taboos related to expressing themselves about sex and sexuality (Farvid et al., 2017), particularly masturbation, respond to question about their sexual behavior with neutrality, without over-exposing themselves with respect to topics such as masturbation. In contrast, it may be easier for them to talk in terms of problems and health, since they are more aware of their bodies and any alterations in sexual experience. On the other hand, men are less willing to recognize, talk, and seek help for psychological issues, including sexual problems (Liddon et al., 2018), and that may be the explanation for the gender differences in the scores for sexual difficulties. Further qualitative studies are needed to deem these matters.

The reliability of the 4-factor model for both BISF-W and BISF-M appears to be excellent or adequate, surpassing that of the previous model (Mazer et al., 2000; Taylor et al., 1994), which was insufficient for many factors and dimensions. The convergent validity correlations appeared strong enough for most variables for both the BISF-W and the BISF-M. The correlation between the BISF-W Sexual Difficulties factor and FSFI Satisfaction is noteworthy. One possible explanation could be that for women, sexual satisfaction is more closely linked to dyadic factors such as intimacy and caring, which can help them face sexual physical problems such as poor lubrication or pain during intercourse, or even anxiety (Leavitt et al., 2021; Panzeri, 2023). Women can experience sexual satisfaction even under these conditions, whereas men seem to require sexual performance to feel sexually satisfied (Basson, 2001; Leavitt et al., 2021; Panzeri, 2023). Further studies are necessary to settle this issue. In terms of divergent validity, there was only a correlation found between the Dyadic factor of the BISF-M and the QMI, as opposed to any other factors between the two. This correlation may be explained by the fact that couple

sexual activity is very important for men in order to perceive a good quality of the relationship, while daily attentions and emotional intimacy play the same role for women (Johnson and Zuccarini, 2010). Nevertheless, both instruments share the same structure (Dyadic, Solitary, Sexual Difficulties, and Anal Sexuality), which allows for direct gender comparisons in clinical and non-clinical settings. The potential for comparing male and female sexuality using a single framework makes the BISF-W and BISF-M highly valuable for studying couple dynamics.

These initial findings are highly relevant, as they provide insight into how both men and women experience their sexuality beyond the physiological aspects considered by the sexual response cycle. Overall, the Brief Index for Sexual Functioning is a reliable measure that provides information on the sexual behavior and satisfaction of both men and women throughout different phases of life and stages of relationships. At the same time, it enables the comparison of male and female sexual functioning in specific moments of a couple's life, such as pregnancy, postpartum, menopause, widowhood, infertility, or other medical conditions. Moreover, for what concern the external validity of the instrument, the study included a large and diverse sample of 6,355 women and 2,207 men, aged 18–80, from various educational backgrounds and marital statuses. This broad demographic range enhances the generalizability of the results to the Italian population of the BISF. Also, the study found significant differences in sexual functioning across different age groups and between genders. These findings align with existing literature, suggesting that the BISF can reliably capture variations in sexual functioning across different demographic groups. The BISF appears to be a suitable measure to assess sexuality both in clinical and non-clinical populations and can be a valuable tool in the field of human sexuality, when used in conjunction with other tools. It can provide valid and reliable information for operators working in this field to establish appropriate prevention and intervention programs, both in longitudinal and cross-sectional research. In particular, for what pertain sexual therapy and couple therapy, the BISF can help patients to express their concerns or difficulties in the evaluation stage, thereby overcoming any embarrassments or taboos that one is not yet ready to talk about directly. Moreover, due to its reliability characteristic, it can use as a valuable measure to evaluate the course of treatment *in itinere*, highlighting any changes in patients. It could also be applicable to non-binary and transgender populations, referring to the version that pertains to current anatomy, but would require further validation in this specific population.

5.1 Limitations and future directions

This study has some limitations. This study was done only on the general population. It may be useful to administer the BISF to a sample of men and women with sexual dysfunction. Moreover, due to the small number of non-heterosexual participants, it was not possible to conduct adequate psychometric analyses regarding the validity of the instrument in sexually diverse samples. Future studies should verify our results in this type of population as well. The administration of paper and pencil tests suffers from many omissions. In future studies, however, we can avoid such problems by using an online administration where all answers are mandatory, and participants can stop the compilation at any time without negative consequences. The present study compared gender and age only from a quantitative point of view. Future research on sexual functioning should employ qualitative research methods, such

as focus groups, to assess sexual functioning across various age groups. Finally, while the BISF provides valuable insights into sexual functioning, the lack of scalar invariance necessitates careful consideration when applying and interpreting the instrument measurements in clinical setting. By contextualizing findings, using complementary measures, incorporating qualitative insights, and being aware of patients' response styles, clinicians can make more informed decisions based on BISF data.

6 Conclusion

The Brief Index of Sexual Functioning (BISF) is a questionnaire that can efficiently assess sexual functioning in the general population. Its good psychometric qualities make it a suitable tool for study and screening in Italy. The validation of the BISF-W in Italian and the adaptation of the BISF-M for a male sample demonstrated strong psychometric properties for assessing sexual functioning in both genders. To date, the Brief Sexual Functioning Inventory (BISF) is one of the few published and useful tools for assessing sexual functioning in both genders from a psychological perspective. It can be easily used in research protocols to assess sexual behavior, desire, and fantasies, as well as in a clinical setting. This validated tool will be useful for evaluating sexual functioning, providing valid and reliable information to operators in this field to set up appropriate prevention and intervention programs.

Data availability statement

The datasets presented in this study can be found in online repositories. The names of the repository/repositories and accession number(s) can be found at: Research Data Unipd <https://researchdata.cab.unipd.it/id/eprint/1183>, DOI: [10.25430/researchdata.cab.unipd.it.00001183](https://doi.org/10.25430/researchdata.cab.unipd.it.00001183).

Ethics statement

The studies involving humans were approved by Ethical Committee of Psychological Research of Padua University. The studies were conducted in accordance with the local legislation and institutional requirements. The participants provided their written informed consent to participate in this study.

Author contributions

MP: Conceptualization, Data curation, Investigation, Writing – original draft, Writing – review & editing. LR: Formal Analysis, Writing – original draft, Writing – review & editing. LF: Methodology, Writing – original draft, Writing – review & editing.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Supplementary material

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Psychological and sociodemographic factors associated with hypoactive sexual desire in Ecuadorian women

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Introduction: Human sexuality is a multifaceted process, and sexual desire plays a central role in the triphasic model of the sexual response cycle, as proposed by Helen Singer Kaplan.

Methods: In this cross-sectional correlational study, we examined the relationship between various sociodemographic factors, such as age and motherhood, and sexual variables, including erotophobia, erotophilia, homophobia, and unconventional sex, with hypoactive sexual desire in women from Quito, Ecuador. The study sample comprised 421 women between the ages of 18 and 50, who were administered the Revised Sexual Opinion Survey and the Inhibited Sexual Desire Scale to assess their sexual attitudes and levels of desire.

Results: The findings revealed that age ($F = 7.13, p < 0.001$) and motherhood ($F = 13.72, p < 0.001$) had a significant impact on inhibited sexual desire. Furthermore, significant correlations were observed between inhibited sexual desire and age ($r = 0.16, p < 0.001$), motherhood ($r = 0.18, p < 0.001$), erotophobia ($r = 0.19, p < 0.001$), erotophilia ($r = -0.21, p < 0.001$), and homophobia ($r = -0.18, p < 0.001$).

Discussion: These results suggest that women who are older, mothers, or have higher levels of erotophobia are more likely to experience hypoactive sexual desire. In contrast, higher levels of erotophilia and homophobia were inversely related to hypoactive sexual desire. This contributes to a deeper understanding of how different personal and sexual attitudes influence sexual desire in Ecuadorian women.

KEYWORDS

inhibited sexual desire, hypoactive sexual desire, erotophilia, erotophobia, women

1 Introduction

Hypoactive sexual desire in women is a disorder that occurs when the lack of sexual thoughts, fantasies, and sexual activity lasts for a long time (Kingsberg et al., 2019). This problem negatively impacts women's psychological well-being and quality of life since it prevents them from participating in sexual activities due to sadness, worry, frustration, and other feelings (O'Loughlin and Brotto, 2020). Hypoactive sexual desire disorder (HSDD) affects approximately 8.9% of women aged 18–44, 12.3% aged 45–64, and 7.4% over 65, with distress levels decreasing with age (Parish and Hahn, 2016). Women who suffer from it may feel unhappy and deprived of comfort due to their strong sexual desire and lack of satisfaction or decreased sexual desire (Gore-Gorszewska, 2021).

Hypoactive sexual desire has been incorporated into the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders within a new category, “female sexual interest and arousal disorder” (Kingsberg and Woodard, 2015), in which the disorders have been merged, hypoactive sexual desire and female sexual arousal. The definition of normal sexual desire in women is variable. It depends on various factors, such as previous sexual experiences, culture, biological drive, neuroendocrine changes, and stressors that can influence the perception of sexual desire in each woman (Arnoff et al., 2009; Leavitt et al., 2019).

Various hormonal and neurotransmitter factors influence sexual desire in women. Norepinephrine, melanocortin, oxytocin, testosterone, and dopamine play important roles in sexual desire (Kingsberg et al., 2015). Testosterone and estrogen levels are essential for sexual desire, along with high levels of dopamine and norepinephrine, while serotonin acts as a sexual inhibitor (Jayne et al., 2017). Dopamine has a significant role in the modulation of desire. It seems to increase the subjective feeling of arousal and the desire to continue sexual activity when stimulation has begun. On the other hand, androgens improve hypoactive sexual desire (Parish et al., 2021). Hypoactive sexual desire, the decrease or absence of sexual desire, is a prevalent issue in women with a multifactorial etiology, requiring both psychosocial and pharmacological interventions (Edinoff et al., 2022). Testosterone has been shown to be an effective treatment for hypoactive sexual desire in women with surgical menopause, improving sexual desire and the frequency of satisfying sexual episodes (Wheeler and Guntupalli, 2020; Uloko et al., 2022).

In addition to biological factors, various sociodemographic and psychological factors, such as age, motherhood, and sexual attitudes, influence inhibited sexual desire. Erotophilia and erotophobia represent two ends of a continuum reflecting individual attitudes toward sexual stimuli. Erotophilia involves a positive response to sexual topics, characterized by comfort, openness, and reduced anxiety. In contrast, erotophobia involves negative responses, manifesting as anxiety, discomfort, or avoidance of sexual situations (Milhausen et al., 2019; Balzarini et al., 2020). Rather than a simple dichotomy, this continuum captures the spectrum of how individuals interpret and respond to sexual stimuli. These differences have important implications for sexual health and the prevention of sexual dysfunctions, as both extremes can shape one's sexual well-being and behaviors.

Understanding the influence of these factors, along with others such as homophobia, will allow for the development of more targeted and effective treatments for hypoactive sexual desire in women (Malary et al., 2015; Parish et al., 2021). Furthermore, the neurochemical basis of sexual desire is influenced by neurotransmitters like dopamine and norepinephrine, which play excitatory roles in the female sexual response, while serotonin has an inhibitory effect. Recent studies suggest that flibanserin can restore sexual desire by modulating these brain components that regulate the sexual response (Pfaus et al., 2022).

Various biological and psychological factors can affect a woman's sexual desire. Oral contraceptives and anabolic androgens can cause a decrease in sexual desire because they reduce the activation of neurochemical systems in the brain that excite desire, which is stimulated by estrogens and androgens (Mernone et al., 2019). Likewise, the decrease in ovarian sex hormones and their production, as well as the consumption of medications, trauma to the pelvic

region, and mental illnesses such as depression, may be other factors that contribute to the appearance of hypoactive sexual desire disorders in women (Lara et al., 2017; Johansen et al., 2020).

Furthermore, vitamin D deficiency has been linked to hypoactive sexual desire disorders in men and women. Recent studies have demonstrated a role for vitamin D in regulating sexual function, and low vitamin D levels have been associated with the development of sexual disorders (Espitia De La Hoz, 2020). In the case of pregnancy, it is important to note that this may be an important biological factor contributing to reduced sexual desire in women. During pregnancy, there can be a lack of sexual desire that increases in the third trimester and a decrease in frequency and desire throughout the pregnancy. In addition, in the third trimester, the decrease in the frequency of coital interactions can be abrupt (Jawed-Wessel and Sevvick, 2017). In a study carried out in Brazil with 778 pregnant women, it was estimated that, for the most part, there was a 51% decrease in sexual desire. It has also been found that, during lactation, in the third and fourth postpartum months, there was a decrease in sexual desire due to hormonal changes (De Dios et al., 2016).

Hypoactive sexual desire disorder can be caused by sexual dysfunctions or etiological factors such as hypogonadism, hypothyroidism, functional hyperprolactinemia, pituitary tumors, autoimmune disorders, multiple sclerosis, pelvic floor dysfunction, and Klinefelter syndrome (Parish and Hahn, 2016). According to Kaplan, decreased sexual desire may be related to the inhibition of other sexual phases, although it is possible to experience arousal and orgasm without feeling full pleasure (Kaplan, 1977). In women, decreased sexual desire is more common during surgical menopause (Parish and Hahn, 2016).

Psychological difficulties, such as low self-esteem, anxiety, and depression, are important factors in the development of this disorder (De La Hoz, 2021; Figueira et al., 2021). Many women may experience a decrease in self-esteem, which could be linked to difficult experiences such as childhood sexual abuse, fear of sexuality, or marital problems (Figueira et al., 2021). Kaplan's triphasic model indicates that psychological preparation for sex occurs during the desire phase, and each positive sexual experience reinforces this desire (Jayne et al., 2017). However, many women remain undiagnosed and untreated due to the shame or stigma associated with seeking help (O'Loughlin and Brotto, 2020).

Couple relationships are important in sexual desire, as relationship issues can increase the risk of sexual dysfunctions, especially after negative sexual experiences (Montejo et al., 2018). Negative attitudes toward sexuality further contribute to decreased desire, while sexual fantasies may stimulate it (Mark et al., 2019). Emotional support within the relationship influences the maintenance of sexual desire over time (Jones et al., 2022). However, external factors such as modern life stress, financial problems, academic pressure, or a distorted body image can also trigger or exacerbate the disorder (Niolu et al., 2016).

Cognitive-behavioral therapy has been shown to be effective in treating HSDD (ter Kuile et al., 2010). This treatment not only addresses low sexual desire but may also resolve other related sexual dysfunctions (Weibel et al., 2020). Additionally, couple therapy can be beneficial, as this disorder often affects relationship dynamics, and improving communication and emotional connection can help in treatment (Niolu et al., 2016). Personality traits, such as inhibition or introversion, also play a role in women's sexual desire (Avasthi et al.,

2017). Erotophobia and erotophilia are important constructs that correlate with sexual desire, satisfaction, and activity. Women closer to the positive erotophilia pole tend to report greater sexual desire and satisfaction, while those with high levels of sexual inhibition often experience more difficulties (Blanc et al., 2017; van Lankveld et al., 2021).

A woman's sexual repertoire, moderate alcohol consumption, educational level, and age are some of the factors that influence the risk of presenting hypoactive sexual desire disorder (Tetik and Yaçinkaya Alkar, 2023). On the other hand, the lack of sufficient information on sexuality during childhood and adolescence, breast cancer or cardiovascular disease, and the limitation of the sexual repertoire increase the probability of presenting this sexual dysfunction. The lack of a stable partner and a low self-perception of quality of life are risk factors for female sexual dysfunction. Not practicing religion and having a job may act as protective factors in women aged 44 or older (Artiles Pérez et al., 2006). It is important to consider these factors to effectively identify and treat sexual dysfunctions in women.

Hypoactive sexual desire in women is a disorder characterized by a persistent lack of sexual thoughts, fantasies, and activity. This issue can significantly impact women's quality of life, affecting their psychological well-being and depriving them of pleasurable sexual experiences. Hypoactive sexual desire is a multifactorial condition, influenced by medical, hormonal, psychological, and interpersonal factors. The definition of normal sexual desire in women is variable and depends on several individual and contextual factors. Testosterone and estrogen are important hormones for sexual desire, while high levels of dopamine and norepinephrine enhance it; conversely, serotonin acts as a sexual inhibitor. Identifying the factors associated with a decrease in sexual desire is critical for addressing the issue effectively. This study explores the relationship between factors such as age, motherhood, erotophobia, erotophilia, homophobia, and other sociodemographic variables with inhibited sexual desire in women from Quito, Ecuador. The findings could inform of interventions aimed at improving women's sexual health and provide valuable insights for health professionals working in this field.

2 Materials and methods

2.1 Study design and participants

This study aimed to examine the relationship between various factors and hypoactive sexual desire in women from Quito, Ecuador. A cross-sectional correlational study was conducted, involving 421 female volunteers aged 18 to 50. Inclusion criteria required participants to be Ecuadorian, sexually active, and willing to provide informed consent.

Exclusion criteria included diagnoses of intellectual disability or severe neurological or psychiatric disorders, such as schizophrenia, acute bipolar disorder, autism spectrum disorders with significant cognitive impairments, and dementia. These conditions were excluded because they could interfere with the participants' ability to comprehend the self-report questionnaire or might directly affect sexual desire due to neurochemical imbalances or medication use. These criteria were established to ensure the sample could reliably report their experiences, thus allowing a valid analysis of factors associated with hypoactive sexual desire in this population.

2.2 Instruments

Two instruments were used to assess different aspects of sexual desire in women. The first was an adaptation of the Sexual Opinion Survey (also known as the Encuesta de Opinión Sexual Revisada (EROS) in Spanish) (Carpintero and Fuertes, 1994), which consists of 20 Likert-style statements with seven response options ranging from "totally agree" to "totally disagree." EROS measures a person's level of erotophilia-erotophobia, placing individuals on a continuum between these two attitudes. In this study, participants with higher scores were categorized as erotophilic, indicating a positive disposition toward sexual stimuli, while lower scores identified erotophobic individuals, who tend to respond negatively to sexual situations. In this study, EROS had an internal consistency index of 0.74.

The second instrument was the Inhibited Sexual Desire Scale, comprising 15 Likert-style statements with nine response options from 1 (totally false) to 9 (totally true) (Sierra et al., 2003). This scale evaluates a person's level of sexual desire. In this study, the Inhibited Sexual Desire Scale had an internal consistency index of 0.88. This instrument was used to assess the presence of HSDD in the participants. The application of these two instruments allowed for a comprehensive assessment, differentiating between general sexual attitudes (erotophilia-erotophobia) and the specific level of inhibited sexual desire.

2.3 Data collection and analysis

Data collection and analysis were conducted meticulously to ensure the validity and reliability of the results. Participants were contacted through an online Google form for convenience and accessibility, and the instruments were administered after adaptation for the present study.

Spearman's bivariate correlation analysis was used to examine the relationship between inhibited sexual desire and factors such as erotophilia-erotophobia level, age, childbearing, and age of sexual activity onset. The SPSS program was employed to guarantee the accuracy and reliability of the analysis.

2.4 Ethical considerations

Participants voluntarily agreed to participate in the study and provided informed consent in accordance with established ethical standards for psychological research. Data privacy and confidentiality were maintained in compliance with information protection and ethical principles. The study adhered to the 2017 ethical principles for human subject research established by the World Medical Association (AMM) and the principles of autonomy and respect for individuals as outlined in the Declaration of Helsinki. This approach safeguarded participants' integrity and well-being throughout the study.

3 Results

In the study, ANOVA (Analysis of Variance) analyses were conducted to explore the potential effects of demographic variables, such as age, on the inhibited sexual desire of the participants. Inhibited

TABLE 1 Comparison of inhibited sexual desire scores among women according to age ranges.

	18 to 30 years		31 to 40 years		41 to 50 years		F	p
	M	(SD)	M	(SD)	M	(SD)		
Inhibited sexual desire	54.24	22.29	54.95	24.00	67.19	29.06	7.13	< 0.001

Post hoc analysis identified that women aged 41 to 50 ($p < 0.001$) 95% CI [59.48, 74.90] had higher scores on the inhibited sexual desire scale compared to women in the age ranges of 18–30 ($p < 0.001$) 95% CI [51.49, 56.98] and 31–40 years ($p < 0.001$) 95% CI [50.39, 59.51].

TABLE 2 Comparison of inhibited sexual desire scores among women with and without children.

	Without children		With children		F	p
	M	(SD)	M	(SD)		
Inhibited sexual desire	51.15	23.46	59.83	23.93	13.72	< 0.001

Post hoc analysis revealed that women with children ($p < 0.01$) 95% CI [56.81, 62.85] had higher scores on the inhibited sexual desire scale than women without children ($p < 0.001$) 95% CI [47.67, 54.63].

sexual desire refers to a decrease or lack of sexual interest or desire. The results, as presented in Table 1, indicated that there was a significant relationship between the age of the women and their levels of inhibited sexual desire. The *F* statistics (7.13) and the associated *p*-value (< 0.001) demonstrate that this relationship was statistically significant. In other words, the findings suggest that as women get older, they are more likely to experience a decline in their sexual desire.

Table 2 illustrates the significant influence of having children on inhibited sexual desire, with an *F*-value of 13.72 and a *p*-value < 0.01 . It was observed that women with children reported lower levels of inhibited sexual desire than those without children. This difference could be due to the various ways motherhood impacts women’s sexuality, including hormonal changes, emotional factors, and alterations in family dynamics and responsibilities.

In the descriptive analysis of correlated variables (Table 3), the participants’ mean age was 30.31 years, with a standard deviation of 7.78. Concerning the variable “having children,” the mean was 0.58, with a standard deviation of 0.49. The average values for erotophobia, erotophilia, homophobia, and unconventional sex were 32.82, 21.28, 10.48, and 9.54, respectively, with standard deviations of 12.42, 7.29, 4.71, and 4.46. Finally, the mean value for inhibited sexual desire was 56.18, with a standard deviation of 24.09. These values were derived from a total sample of 421 participants.

The correlation analysis revealed significant associations between inhibited sexual desire and various factors. Participants’ age exhibited a positive correlation with inhibited sexual desire, with a correlation index (*r*) of 0.16 and a significance level (*p*) < 0.001 (Table 4). This indicates that older women tended to have higher levels of inhibited sexual desire than younger women. Having children also correlated significantly with inhibited sexual desire, with an *r* of 0.18 and a $p < 0.05$, suggesting that women with children generally experienced more inhibited sexual desire than those without children. Moreover, a significant positive correlation was observed between inhibited sexual desire and the erotophobia factor, with an *r* of 0.19 and a $p < 0.05$. While erotophobia and sexual desire are conceptually related, these results empirically confirm the role of negative attitudes toward sexuality in inhibited sexual desire, particularly in this population, where individual differences may influence the expression of desire.

Conversely, a significant negative correlation was found between inhibited sexual desire and the erotophilia factor, with an *r* of -0.21 and a $p < 0.05$. Although erotophilia and sexual desire share theoretical links, our findings empirically demonstrate that positive attitudes toward sexuality are associated with lower levels of inhibited sexual

TABLE 3 Central tendency measures of the variables: inhibited sexual desire, age, having children, age of onset of active sexual life, and level of erotophilia-erotophobia.

Variable	N	M	SD
Age	421	30.31	7.78
Have children	421	0.58	0.49
Erotophobia factor	421	32.82	12.42
Erotophilia factor	421	21.28	7.29
Homophobia factor	421	10.48	4.71
Unconventional sex factor	421	9.54	4.46

TABLE 4 Correlations among variables: age, having children, erotophobia factor, erotophilia factor, homophobia factor, unconventional sex, and inhibited sexual desire.

Variable	N	Pearson correlation	Sig. (bilateral)
Age	421	0.16**	< 0.001
Have children	421	0.18**	< 0.001
Erotophobia factor	421	0.19**	< 0.001
Erotophilia factor	421	-0.21 **	< 0.001
Homophobia factor	421	-0.18 **	< 0.001
Unconventional sex factor	421	-0.07	> 0.005

**Significant at the $p < 0.01$ level.

desire. This highlights the importance of attitudes in shaping sexual behavior, which may vary across individuals. Similarly, a significant negative correlation was observed between inhibited sexual desire and the homophobia factor, with an *r* of -0.18 and a $p < 0.05$. This suggests that women with higher levels of homophobia, or negative attitudes toward homosexuality, were less likely to experience inhibited sexual desire.

4 Discussion

Erotophobia and erotophilia are dynamic concepts that change over time and across various situations. Factors influencing attitudes toward sex and sexuality are diverse and complex, including previous experiences, cultural values, and sexual education. Our study found

significant correlations between inhibited sexual desire and both erotophobia and erotophilia factors. While erotophobia is expected to correlate with decreased sexual desire due to negative attitudes and discomfort around sexuality (Hangen and Rogge, 2022), the correlation with high erotophilia may indicate that, despite positive attitudes, other factors such as pressure to meet sexual expectations, or personal stress may impact sexual desire. Research has shown that despite their generally higher sexual interest and satisfaction, erotophilic individuals may still experience complexities in their sexual behavior, potentially engaging in risky sexual behaviors or feeling pressured by societal expectations (Lewis et al., 2006; Rye, 2023). This suggests that women with negative (high erotophobia) or very positive (high erotophilia) attitudes toward sexuality may be at a higher risk of experiencing decreased sexual desire. The importance of a balanced, healthy attitude toward sexuality is thus relevant, as erotophilia can predict sexual behaviors but is influenced by individual and relational factors such as assertiveness and relationship closeness (Hurlbert et al., 1993).

It is important to recognize that the situation of Ecuadorian women may influence their hypoactive sexual desire. In Ecuador, women face multiple challenges that can affect their sexual well-being. Sexual education in the country is limited and often focused on preventing sexually transmitted diseases and unplanned pregnancies, rather than fostering a positive attitude toward sexuality and pleasure (Castillo Nuñez et al., 2018; Ivanova et al., 2020). Additionally, cultural and religious norms can play a significant role in women's perception of their sexuality. For example, the influence of Catholicism in Ecuadorian culture can promote conservative values that affect women's attitudes toward sexuality, making them feel guilty or inhibited when expressing their sexual desire (Hidalgo and Dewitte, 2021).

Our study revealed that age had a significant effect on the sexual desire of Ecuadorian women, with an F value of 7.13 and a $p < 0.001$. This suggests that as women age, they experience a decrease in sexual desire, which aligns with previous findings. Mernone et al. (2019) documented that sexual functioning in aging women is highly dependent on psychosocial aspects related to well-being, such as optimism and relationship satisfaction, supporting the idea that emotional and psychological factors influence sexual desire.

Sexual assertiveness also impacts sexual desire, as effective communication about sexual needs and desires positively correlated with dyadic sexual desire. Couples who communicate openly about their sexuality may experience greater sexual satisfaction. In Ecuador, encouraging couples to communicate openly and honestly about their sexual needs and desires, as well as addressing any psychological or psychiatric problems, can help improve sexual satisfaction and desire in Ecuadorian women (De Meyer et al., 2014; Pozo et al., 2015).

Motherhood also emerged as a significant factor in our findings, where women with children exhibited lower levels of sexual desire, with an F value of 13.72 and $p < 0.01$. This supports studies that highlight how motherhood brings shifts in identity and priorities, potentially affecting sexual desire. Women often redirect their attention and energy toward their roles as mothers, and this shift can impact their sexuality, as Montemurro and Siefken (2012) found that many women feel disconnected from their sexuality for a period after having children. However, this does not necessarily equate to a total loss of desire, but rather a reorientation toward other forms of intimacy.

The analysis of variance (ANOVA) in this study revealed that other sociodemographic factors, such as age and having children, also influence women's inhibited sexual desire. Older women and those

with children are more likely to experience inhibited sexual desire. Moreover, motherhood can significantly impact a woman's sexual desire, a finding echoed in other studies. For example, Kaplan (1977) argued that strong sexual desire before or after marriage may decrease over time, especially with the responsibilities of raising children. This finding is further supported by research from Khajehei et al. (2015), which found that almost 64% of postpartum women experienced sexual dysfunction during the first year after childbirth, with sexual dissatisfaction being the most prevalent issue. In Ecuador, women often face gender discrimination, domestic violence, and a significant wage gap (Oduro et al., 2015). These factors can generate stress, affect self-esteem, and decrease sexual desire. Moreover, Ecuadorian women usually take on most of the domestic and childcare responsibilities, which can result in exhaustion and a decrease in sexual desire (Goicolea et al., 2015).

As explained in Fuchs et al. (2021), the likelihood of experiencing sexual dysfunction increases after childbirth, affecting up to 40% of the study population. The study examined the number of children heterosexual couples had and concluded that those with more children had fewer sexual encounters and reported lower sexual satisfaction than those with fewer children. Similar results were found in Twenge et al. (2016), suggesting that having children can negatively impact the frequency and quality of sexual relations. The impact of children on sexual desire has also been noted in the study by Twenge et al. (2017), which highlights how couples today are more likely to experience a decrease in sexual encounters compared to past generations. It is important to remember that each couple is unique, and individual circumstances can affect their sex lives. These results can, however, provide valuable information for couples considering having children and wanting to be prepared for possible changes in their relationship and sex life.

Gender dynamics in the home can also significantly influence the time and energy couples have for sexual activity. Generally, women assume most household and childcare responsibilities, leaving them with less time and energy for sexual activity. Men, however, often have fewer responsibilities at home and may be more predisposed to engage in sexual activity. This dynamic can affect the frequency and quality of sexual intercourse, especially after having children. Alomair et al. (2020) observed that cultural and religious barriers, particularly in certain communities, contribute to poor sexual and reproductive health knowledge, which can negatively impact sexual desire and access to services, especially for women in low-income contexts. To find time and energy for sexual activity, parents should prioritize their sexual relationship. They can set aside specific time for intimate moments or delegate household and childcare tasks to devote more time and energy to their sexual relationship.

A lack of sexual desire can be influenced by various psychological, psychosocial, and somatic factors. Age can affect sexual desire, as older people may experience libido decrease due to hormonal changes or age-related health issues. Stressful situations and psychiatric disorders like depression and anxiety can negatively impact libido. Other influencing factors include religiosity, relationship duration, socioeconomic status, concerns about sexual functioning, personality traits, self-esteem, fears of sexuality, childhood sexual trauma, and marital problems. Furthermore, menopause is a key factor, as McCabe and Goldhammer (2012) found that sexual desire is lower among older, postmenopausal women, particularly those in longer relationships or whose partners experienced sexual dysfunction. These findings highlight the significant role of age and menopause in sexual health, particularly among women.

Moreover, the relationship between erotophilia and sexual desire is important for understanding hypoactive sexual desire. Erotophilia, defined as a positive attitude toward sexuality, can mediate how women perceive their sexual desire. [van Lankveld et al. \(2020\)](#) suggest that attitudes toward sexuality can moderate the relationship between sexual experiences and desire, with women who exhibit higher levels of erotophilia reporting greater sexual desire. Conversely, women with negative attitudes toward sexuality tend to experience more inhibitions. This understanding could help in developing strategies to address inhibited sexual desire.

Understanding the specific conditions affecting the sexual lives of Ecuadorian women will allow for the generation of proposals. Addressing sociocultural challenges and improving sexual education in Ecuador can be key to enhancing women's sexual health and well-being. Moreover, by supporting open communication between partners about their sexual needs and desires, as well as addressing any psychological or psychiatric issues, we can contribute to improving sexual satisfaction and desire among Ecuadorian women.

5 Conclusion

This study underscores the importance of maintaining a balanced and healthy attitude toward sexuality to sustain sexual desire. The findings revealed significant correlations between inhibited sexual desire and both erotophobia and erotophilia, suggesting that women with extreme attitudes toward sexuality, whether negative or highly positive, may be more likely to experience decreased sexual desire. Furthermore, sexual assertiveness was positively associated with dyadic sexual desire, highlighting the role of open communication about sexual needs in enhancing couples' sexual satisfaction. However, other socio-demographic factors such as age, motherhood, and cultural context also play important roles in influencing women's sexual desire. Older women and mothers were more likely to experience inhibited sexual desire, pointing to the need for tailored interventions that address the specific challenges these groups face. In the Ecuadorian context, sociocultural factors and traditional gender roles may further compound these effects.

One limitation of this study is its focus on a specific population of women from a single city in Ecuador, which restricts the generalizability of the findings to the broader population. Ecuador is a pluricultural country, and sexual attitudes and factors influencing desire may vary significantly across regions. Additionally, the study did not include women aged 50 and older, a group that may face unique challenges related to sexual desire, particularly due to menopause and aging. Therefore, future research should include a broader demographic range, covering different regions and age groups, to offer a more comprehensive understanding of the factors influencing sexual desire in Ecuador. Longitudinal studies are needed to explore how attitudes toward sexuality evolve over time and how these changes impact sexual desire. Investigating gender dynamics, the division of labor at home, and the influence of sociocultural factors on sexual activity could also provide valuable insights. Future studies should aim to assess the sexual health of marginalized groups, including older women, to better understand the full scope of factors affecting sexual desire in diverse populations. Addressing these sociocultural barriers, promoting better sexual education, and fostering open communication within relationships could be key to improving sexual health and well-being in Ecuadorian women.

Data availability statement

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

Ethics statement

The studies involving humans were approved by Universidad Tecnológica Indoamérica under the code UTI-IIDI-020-2023. The studies were conducted in accordance with the local legislation and institutional requirements. The participants provided their written informed consent to participate in this study.

Author contributions

DP-V: Conceptualization, Data curation, Funding acquisition, Investigation, Methodology, Resources, Software, Supervision, Validation, Visualization, Writing – original draft. AS-A: Conceptualization, Methodology, Validation, Visualization, Data curation, Investigation, Resources, Software, Writing – original draft. JB: Conceptualization, Methodology, Validation, Visualization, Formal analysis, Project administration, Supervision, Writing – review & editing.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Psychometric evaluation of the abbreviated Hungarian Faking Orgasm Scale for Women

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Introduction: The Faking Orgasm Scale for Women (FOS) was developed to explore the motivations behind women's self-reported instances of faking orgasm during oral sex and sexual intercourse. In a recent study, a Hungarian version of the FOS was developed, confirming the same factor structure as the original American version, consisting of four factors across two subscales.

Methods: The current study aimed to develop and validate a brief Hungarian FOS. Factor analysis was conducted with data from 2220 women (mean age = 24.4, SD = 7.48 years). The Item Response Theory (IRT) analysis indicated that retaining four-factor scales, each comprising of three items was the optimal solution for the revised shorter version. Validation involved 768 women (mean age = 22.6, SD = 4.54 years) completing a questionnaire package, including the Hungarian Short Form of Reasons for Having Sex Questionnaire (YSEX?-HSF) and Women's Sexual Working Models Scale (WSWMS).

Results: The results suggest that the Hungarian 24-item FOS, with its four scales within each of the two sub-scales, provides a reliable and valid measurement of motives for faking orgasm in women. The different reasons behind faking orgasm are associated with different sexual working patterns and sexual motivations. Furthermore, women who reported faking orgasms reported significantly higher levels of sexual distancing and perceived lower care from their partners compared to women who reported not faking orgasms. Women who reported faking orgasm were also more likely to engage in sexual activities to attain personal goals and cope with emotional stress.

Discussion: The FOS-24 offers both practitioners and researchers a concise and useful instrument for the assessment of faking orgasms.

KEYWORDS

female faking orgasm, sexual working models, sexual motivation, scale abbreviation, relationship sexual dynamics

1 Introduction

The peak of sexual arousal, known as orgasm (Masters and Johnson, 1966), is marked by a range of behavioral responses and physiological processes triggered by the release of hormones (Meston et al., 2004). These processes include increased heart rate, respiratory rate, and blood pressure, as well as involuntary muscle contractions in the vagina, uterus, and fallopian tubes (Komisaruk et al., 2006). Additionally, there is a decrease in cortical activity and an increase in activity in the dopamine system, resulting in decreased cognitive functioning and intense pleasure (Georgiadis et al., 2009). Evidence suggests that the female orgasm, while not critical for fertilization

(Meston et al., 2004; Wallen and Lloyd, 2008), may occur more frequently around ovulation, potentially increasing the likelihood of conception (Puts et al., 2012). This pattern has been interpreted as consistent with an evolutionary adaptivity hypothesis, although alternative explanations remain plausible. Furthermore, the experience of orgasm encompasses both psychosomatic and psychosexual processes (Mah and Binik, 2002). Weitkamp and Wehrli (2023) compared clitoral and vaginal orgasms, with clitoral orgasms described as more controllable and vaginal orgasms as deeper and more pulsating. This suggests that women's orgasm experiences are diverse, including whole-body, cervical, and mental orgasms.

The orgasm gap refers to the disparity in orgasm frequency between men and women in heterosexual relationships, with women reporting fewer orgasms than their male partners (Frederick et al., 2017). This gap is influenced by several factors, including inadequate sexual education, limited orgasm literacy, and adherence to traditional sexual scripts that prioritize male pleasure. Sexual script theory suggests that cultural norms often shape expectations about sexual behavior, leading to unequal attention to female sexual pleasure (Gagnon and Simon, 1973). One of the major contributors to the orgasm gap is the lack of comprehensive sexual education, which often fails to address female pleasure and anatomy, leaving women less informed about their own bodies and sexual responses (Fine and McClelland, 2006). Similarly, "pleasure literacy"—the ability to understand and communicate one's sexual needs—can be underdeveloped, contributing to the gap (Fahs and Frank, 2014).

Research indicates that men, in addition to seeking their own satisfaction, often express a desire to please their partner (Mark et al., 2014; McKibbin et al., 2010). In the absence of female partner's orgasm (anorgasmia), men tend to evaluate themselves negatively (Salisbury and Fisher, 2014). Consequently, the impact of female orgasm extends beyond individual satisfaction to influence relationship dynamics. Female sexual satisfaction can contribute to maintaining and enhancing emotional bonds and intimacy between partners, increasing overall satisfaction, and subsequently elevating relationship satisfaction, potentially reducing the likelihood of long-term separation (Welling, 2014).

The variability of orgasmic experiences varies widely (Mah and Binik, 2001; Mangas et al., 2024a) due to individual differences in sensation, subjective evaluation, and the significance attached to one's own orgasm (Hoy et al., 2021; Mangas et al., 2024b), playing a significant role in the lives of some individuals while holding less significance for others (Bancroft, 2008). Furthermore, gender differences are evident: unlike men, for whom satisfaction and physical pleasure are often paramount, women may not necessarily prioritize orgasm during sexual intercourse, viewing it instead as a relational factor (Cormier and O'Sullivan, 2018; Fahs and Plante, 2016; Lentz and Zaikman, 2021; Meskó et al., 2022; Salisbury and Fisher, 2014).

1.1 Faking orgasm

Despite the personal and interpersonal significance, they hold, orgasms are attained less consistently by women compared to men (Wallen, 2006), possibly due to women encountering greater

challenges in reaching orgasm (Barnett et al., 2019). During sexual intercourse without direct clitoral stimulation, only about one-third of all women experience an orgasm (Dawood et al., 2005; Prause et al., 2016). Approximately 70% of women report using clitoral stimulation during penetration to enhance sexual pleasure (Hensel et al., 2021). Additionally, only around 32% can reach orgasm while receiving oral sex (Vannier and O'Sullivan, 2012), and 14% of women have never had an orgasm or are unsure if they have (Dunn et al., 1999; Prause et al., 2016).

Despite societal pressure that links orgasm with femininity and normalcy (Ejder Apay et al., 2013; Nicolson and Burr, 2003), which could arise from both internal and various external influences (Chadwick et al., 2019), including magazines, novels, and pornography (Cabrera and Ménard, 2013; Lavie-Ajayi and Joffe, 2009; Séguin et al., 2018), a substantial proportion of women (50–70%) choose to fake orgasms (Csányi et al., 2022; Csányi et al., 2024; Muehlenhard and Shippee, 2010). Faking the climax of sexual activity can be defined as "acting or pretending as if you have had orgasm when you have not, through vocal confirmation and/or muscular contraction, regardless of the reason" (Cooper et al., 2014, p. 426). Female participants in study Bryan's (2001) reported that they fake their orgasms most often during penetration without clitoral stimulation and least often when the intercourse is supplemented by clitoral stimulation.

As orgasm faking is a relational phenomenon, since faking has no meaning without the presence of another person, it is associated with various relational processes such as relationship and sexual satisfaction, love, commitment, and mate retention (Bode et al., 2024; Józefacka et al., 2023; Mostova et al., 2022). While 90% of men in relationships care if their female partner experiences orgasm (McKibbin et al., 2010), nearly 70% of participating women in study Muehlenhard and Shippee's (2010) reported faking orgasm to avoid hurting their partner's feelings, masculinity, and ego, or to please them.

Frith (2015) suggests that faking orgasm can be interpreted as a rational response to gender disparities inherent in heteronormative sexual culture. Within this framework, women are less entitled to sexual pleasure compared to men (Klein and Conley, 2022); their orgasm primarily serves to bolster their partner's masculinity and demonstrate their commitment to them (Lentz and Zaikman, 2021). In Western cultures, particularly through media representations, there is a strong emphasis on being a "good lover" (Dormandy, 2022). For men, this entails satisfying their female partner's needs, while for women, it involves being sexually available and enhancing the masculinity of their male partner by achieving orgasm (Potts, 2000). Consequently, women may resort to faking orgasm to prevent their partners from feeling inadequate.

In contrast, feminist perspectives argue that the unrealistic expectation for women to climax during sexual intercourse (Ejder Apay et al., 2013; Nicolson and Burr, 2003) may lead women to fake orgasm as a means of avoiding stigmatization and being perceived as abnormal (Cooper et al., 2014). Regarding oral sex, the frequency of orgasm is associated with less faking, suggesting that women are more expected to reach orgasm during intercourse than when receiving oral sex (Bryan, 2001).

1.2 Sexual motivation

Sexual motivation can be defined as an individual's intention for engaging in sexual intercourse (Meston and Buss, 2007), and this desire is one of the most fundamental motivational states for both men and women (Regan and Atkins, 2006). Meston and Buss (2007) observed that sexual motivations are more diverse and psychologically complex than previously thought. In contrary to earlier research that identified only a few motivations, they discovered 237 reasons, all capable of influencing participation in sexual intercourse. These reasons span a wide spectrum; for instance, sex might serve as a resource, incentive, reward, punishment, mate-guarding strategy, or as a means to intensify the relationship (Buss, 2003; Buss and Shackelford, 1997; Meskó et al., 2022; Meston and Buss, 2007).

While sexual satisfaction tends to decrease with the length of the relationship (McNulty et al., 2016), sexual motivations also decrease markedly among women (Klusmann, 2002). This decline may be associated with menopause, during which hormonal changes can directly cause sexual dysfunctions and decrease sexual desire. Additionally, hormonal changes may exert indirect effects through psychological mechanisms such as diminished self-esteem or negative body image due to weight gain and depression (Genazzani et al., 2007).

Research on sexual motivations has also revealed gender differences in attitudes toward sex and sexual behaviors (Meston and Buss, 2007). Generally, women's sexual motivation tends to be more emotional, while men are more motivated by purely physical reasons to engage in sexual activities that may not require a deep understanding of the partner (Basson, 2000). Men tend to masturbate, consume pornographic content, and have sexual thoughts more frequently than women (Petersen and Hyde, 2010). Meskó et al. (2022) highlighted gender-specific patterns in sexual motivations, noting that men are driven by personal goals, leading them to be more impulsive and seek novelty, potentially resulting in infidelity more often.

In contrast, women's sexual motivation is more characterized by coping with emotional difficulties, such as fear of abandonment, which may be interpreted as a form of subordination (Barbaro et al., 2015). Women are more likely to engage in sexual intercourse because they believe it will help maintain their partner, increase commitment to the relationship, and provide emotional closeness, bonding, and feelings of love (Impett et al., 2005).

Lehmiller (2023) suggests that sexual attitudes and behaviors are influenced not only by biological determinism but also by psychosocial factors, including societal expectations to conform to norms. Additionally, social pressures can also manifest in the perception of sexual availability as a commodity that can be exchanged for goods or resources (Meskó et al., 2022).

The Hungarian Short Form of Reasons for Having Sex Questionnaire (YSEX?-HSF; Meskó et al., 2022) was chosen for validating the Faking Orgasm Scale because it effectively captures a wide range of sexual motivations, including those focused on coping strategies. This focus on coping-driven sexual motivation is particularly relevant, as it likely relates to the reasons women may fake orgasms, providing deeper insight into the psychological factors influencing this behavior.

1.3 Women's sexual working models

Although sexuality is typically understood within a relational framework, it is essential to consider not only general characteristics but also individual differences that influence the psychological functioning of the sexual system including associated motivations, emotions, and cognition when examining sexual activities (Birnbau et al., 2014; Meskó and Öry, 2023). Birnbau et al. (2014) developed a multidimensional assessment to evaluate experiences of heterosexual intercourse in women, providing a multifaceted emotional, cognitive, and motivational profile of women's sexuality. These models of sexual functioning reveal individual patterns of attitudes, responses and behaviors within women's sexual activities, helping to define the role of sexuality in women's lives and enhancing comprehension of the complexities of female sexual behavior (Birnbau et al., 2001). Additionally, they may unveil dyadic relationship dynamics, such as the connection between sexual activity and relationship satisfaction (Hassebrauck and Aron, 2001).

However, sexual functioning can also involve contradictory elements, as highlighted by Birnbau and Reis (2006), where a woman may experience negative emotions during sexual activities despite believing in the importance of sex in maintaining her relationship. Women with such ambivalent sexual experiences may behave differently from those who have not encountered such experiences (Birnbau, 2003). Therefore, to fully comprehend the intricate functioning of sexuality, models of sexual functioning must encompass various positive and negative emotions, affective responses to the sexual cycle, as well as thoughts and goals related to the self, the partner, the dyadic relationship, and the sexual act (Birnbau et al., 2016).

The Women's Sexual Working Models Scale (WSWMS; Birnbau et al., 2014) was chosen for validating the Faking Orgasm Scale for Women (FOS) because it provides a comprehensive assessment of women's internalized beliefs and expectations about sexual relationships. Its relevance lies in its ability to capture the psychological and relational dynamics that influence sexual behavior, making it a valuable tool for understanding the underlying motivations and attitudes that may drive behaviors like faking orgasms.

Over the last decade, there has been relatively limited research employing the original Faking Orgasm Scale for Women (Cooper et al., 2014), probably due to its extensive length (56 items). Compared to longer scales, concise questionnaires may be preferable for several reasons. Although longer scales can offer more extensive data, they also tend to induce respondent fatigue, increase response error rates, and reduce completion rates (Rolstad et al., 2011; Saucier, 1994). Furthermore, it is believed that shortening scales may have less impact on psychometric quality due to the reduction of redundancy. As a result, more condensed self-report instruments may exhibit even stronger validity indices (Burisch, 1997). Therefore, the development of short and multidimensional questionnaires with high psychometric properties benefits both researchers and participants (Jonason and Webster, 2010).

2 Research aim

The aim of the present study was twofold. First, we sought to reduce the number of items in the Hungarian version of the Faking Orgasm Scale for Women (FOS; Csányi et al., 2024) to develop a shorter instrument while maintaining the ability to assess the four major dimensions of orgasm faking during oral sex and sexual intercourse, as captured by the original version. The secondary aim was to analyze the criterion validity of the FOS-24 to ensure the psychometric quality of the shorter scale and create a more concise measure of orgasm faking among women for studies requiring data on the fundamental patterns of faking orgasm. Additionally, we evaluated whether there is a correlation in motivation behind orgasm faking with questionnaires on sexual working models and motivation for participating in sexual activities, which are key factors in sexuality. We anticipated that the newly developed instrument would exhibit similar correlations with sexual motivations (YSEX?-HSF; Meskó et al., 2022) and the Women's Sexual Working Models Scale (WSWMS; Birnbaum et al., 2014) as observed by Csányi et al. (2024).

3 Materials and methods

3.1 Participants and procedure

Data from Csányi et al. (2024) were utilized for the abbreviation and validation procedure of the FOS-24.

Sample 1

The factor analysis was conducted using responses from a sample of 2,220 individuals, all identifying their birth sex as female and current gender identity as woman. The average age of the sample was 24.40 years ($SD = 7.48$, $min = 18$ years, $max = 80$ years). Of these participants, 1,726 (77.7%) reported being in some form of relationship at the time of the study; 849 were in a relationship, 677 were in a cohabitation relationship with a partner, and 200 stated that they were married. Among the respondents, 752 (33.9%) reported faking orgasm during receiving oral sex, while 1,051 (47.3%) reported faking orgasm during sexual intercourse at least once in their life. Specifically, 155 participants reported faking orgasm only during receiving oral sex, 454 reported faking orgasm only during sexual intercourse, and 597 reported faking it in both situations.

Sample 2

A total of 768 women completed the questionnaire package used for validation. In addition to demographic questions, they completed three questionnaires investigating faking orgasm in two scenarios, psychological motives associated with women's sexual working models, and motivations behind engaging in sexual intercourse. The age of participants ranged from 18 to 48 years ($M = 22.6$ years, $SD = 4.54$). Of these participants, 552 (71.9%) were in some form of relationship (dating, cohabitation, marriage). Among respondents, 278 (36.2%) reported faking orgasm while receiving oral sex, and 369 (52%) reported faking orgasm during sexual intercourse at least once in their life. 53 participants reported faking orgasm during oral sex only, 144 during sexual intercourse only, and 225 reported faking it in both situations. Information on sexual orientation was not collected in this survey. Therefore, it

can be assumed that, as in previous Western surveys (e.g., Bailey et al., 2016; Ganna et al., 2019), predominantly same-sex attracted respondents make up less than 5% of the respondents in this sample.

All respondents filled out the questionnaires online, using Qualtrics. The link to the survey was disseminated via social media sites (e.g., Facebook, Instagram) and university mailing lists. Our goal was to obtain a heterogeneous sample and so we intentionally ensured that the survey was accessible to various segments of the population. All participants gave informed consent, and none of them were rewarded for participation. The studies received ethical approval from the Hungarian United Ethical Review Committee for Research in Psychology (Ref. No. 2017/21, 2022/107). The studies were not preregistered. *A priori* sample size calculation was not performed. All source data are available at: https://osf.io/96emq/?view_only=8eca7faedc0d4f67848c029eac2a0070.

3.2 Measures

As one questionnaire was not yet available in Hungarian the authors initially translated the items and instructions of the Women's Sexual Working Models (WSWMS; Birnbaum et al., 2014) into Hungarian. The resulting Hungarian version underwent verification using the standard back-translation technique (Brislin, 1980). This involved retranslating the items and instructions back into English by an independent translator not associated with the study. Any discrepancies that arose during the back-translation process were resolved by the two translators. Following the validation process established by Csányi et al. (2024) for the 56-item version of the Hungarian FOS, we utilized the same measures, including the Short Form of Reasons for Having Sex Questionnaire (YSEX-HSF; Meskó et al., 2022) and Women's Sexual Working Models (WSWMS; Birnbaum et al., 2014). This approach aimed to improve comparability between the newly developed shorter version and the longer version of FOS.

3.2.1 Faking Orgasm Scale for Women, Hungarian form (FOS)

The FOS [Cooper et al., 2014; Hungarian version developed by Csányi et al. (2024)] is a comprehensive 56-item self-report tool designed to explore women's motivations for faking orgasm during sexual intercourse (33 items; sexual intercourse subscale) and while receiving oral sex (23 items; oral sex subscale). Participants provided responses to open-ended questions and indicated their level of agreement with each item on a 5-point scale ranging from Never to Always. Only participants who reported faking orgasm during sexual intercourse completed the Sexual Intercourse subscale. This subscale encompasses four dimensions: Altruistic Deceit (SIAD), which assesses the respondent's concern for their partner's feelings as a motivation for faking orgasm (e.g., "To make your partner happy"); Fear and Insecurity (SIFI), which measures whether women fake orgasm to avoid negative emotions (e.g., "Because you are ashamed you cannot reach orgasm"); Elevated Arousal (SIEA), which evaluates women's tendency to use faked orgasm to heighten their arousal during sexual intercourse (e.g., "To turn yourself on"); and Sexual Adjournment (SISA), referring to faking orgasm as a means to quickly end sexual intercourse

TABLE 1 The internal reliability indicators of the questionnaires.

Measures	Subscales	McDonald' ω
Faking Orgasm Scale for Women, Hungarian brief form (FOS-24)		
Oral sex		0.788
	Altruistic deceit	0.901
	Insecure avoidance	0.808
	Elevated arousal	0.821
	Fear of dysfunction	0.800
Sexual intercourse		0.757
	Altruistic deceit	0.851
	Fear and insecurity	0.845
	Elevated arousal	0.909
	Sexual adjournment	0.749
Women's Sexual Working Models Scale (WSWMS)		
	Guilt and shame	0.903
	Maintain the bond	0.883
	Distancing/distraction	0.889
	Caring partner	0.894
	Excitement	0.826
Reasons for Having Sex Questionnaire Hungarian Short Form (YSEX?-HSF)		
	Personal goal attainment	0.897
	Relational reasons	0.923
	Sex as coping	0.902

(e.g., "Because you simply are not enjoying yourself"). Likewise, only participants who reported faking orgasm during oral sex completed the Oral Sex subscale. This subscale also had four dimensions: Altruistic Deceit (OSAD), Insecure Avoidance (OSIA), Elevated Arousal (OSEA), and Fear of Dysfunction (OSFD). These dimensions assess various motivations for faking orgasm during oral sex, including concern for the partner's feelings, avoidance of negative emotions, arousal enhancement, and fear related to sexual health or inadequate response. Internal reliability indicators of the questionnaire are presented in [Table 1](#).

3.2.2 Women's Sexual Working Models Scale (WSWMS)

The WSWMS developed by [Birnbaum and Reis \(2006\)](#), is a self-report instrument designed to assess various dimensions of feelings, expectations, and beliefs regarding sexual activity. It provides a reliable measure of cognitive, behavioral, and affective aspects of individuals' sexual lives within romantic relationships. This scale outlines five key dimensions of sexual behavior that contribute uniquely to understanding sexuality in women's romantic relationships. (1) The Guilt and Shame factor relates to negative sexual self-perception and anxiety, and it is inversely correlated with sexual satisfaction (e.g., "Engaging in sexual activity makes me feel guilty"). (2) Maintain the Bond reflects the belief that sexual interactions foster intimacy between partners and strengthens their emotional connection (e.g., "Sexual activity serves to deepen the bond between two individuals"). (3) Distancing/Distractio

sexual experience and one's partner due to intrusive thoughts (e.g., "During sexual activity my mind is often preoccupied with distracting thoughts"). (4) Caring Partner assesses the perception of a sexual partner as attentive and responsive to one's needs during sexual encounters (e.g., "My partner demonstrates care and consideration for me during sexual activity"). (5) Excitement represents intense sexual desire, a powerful motivator of human behavior (e.g., "During sexual activity, I experience a strong sense of excitement"). Participants rated each statement on a 5-point scale (1 = Somewhat characteristic, 5 = Very characteristic) based on its relevance to their experiences. Internal reliability indicators for the questionnaire are detailed in [Table 1](#).

3.2.3 Reasons for having sex questionnaire, Hungarian form (YSEX?-HSF)

The YSEX?-HSF ([Meskó et al., 2022](#)) is a self-report instrument which includes three subscales for measuring sexual motivation. Based on the original American YSEX? questionnaire ([Meston and Buss, 2007](#)), [Meskó et al. \(2022\)](#) created the Hungarian version of the YSEX? questionnaire, which included three factors instead of the original four-factor structure. The YSEX?-HSF is comprised of three subscales with 73 items. The Personal Goal Attainment subscale includes reasons that lead an individual to engage in sexual intercourse to achieve personal sexual interests (e.g., "I wanted to seek experience"). The Relational Reasons subscale refers to reasons that lead an individual to have sexual intercourse because some aspect of the partner relationship is important (e.g., "I wanted to celebrate"). The Sex as Coping subscale refers to reasons that lead an individual to have sexual intercourse as a way of coping with internal (personal) or external (relational) conflicts (e.g., "I wanted to retain the relationship"). Participants were requested to indicate how frequently each of the listed reasons led them to have sexual intercourse in the past. If someone had not yet had sex, they were asked to use the scale to indicate what the likelihood that each of the listed reasons would lead them to have sex. Each item was rated on a 5-point scale: "None of my sexual experiences" (1), "A few of my sexual experiences" (2), "Some of my sexual experiences" (3), "Many of my sexual experiences" (3), "All of my sexual experiences" (5). Higher scores indicate higher sexual motivation. The internal reliability indicators of the questionnaire are presented in [Table 1](#).

3.3 Statistical analyses

We used a confirmatory factor analysis (CFA) first to confirm the unidimensionality of the latent variables, as that is a requirement of item response theory (IRT). We used the diagonally weighted least squares (DWLS) estimator. To evaluate model fit, we used the comparative fit index (CFI), Tucker-Lewis index (TLI), the root mean square error of approximation (RMSEA), and the standardized root mean squared residual index (SRMR). Cutoff values indicative of good model fit were CFI and TLI values of 0.95 or greater ([Hu and Bentler, 1998](#); [Babiyak and Green, 2010](#)), and RMSEA and SRMR values of 0.06 or lower ([Babiyak and Green, 2010](#)).

In our analysis of the psychometric properties of each item, we employed the graded response model (GRM) developed by

Samejima (1968). The GRM is particularly suited for ordinal variables such as Likert-type scales, as it accounts for varying levels of agreement across response categories. This model allows items to relate differently to a latent trait (i.e., the different dimensions of faking orgasms). Our focus was on discrimination parameter (a), which shows the slope of the scale at a given item location; a steeper slope indicates a better discrimination property of the item (Baker, 2001). A higher a value indicates that the item is more effective at distinguishing between individuals with similar levels of the latent trait. We retained the best items among the ones with very high discrimination ability ($a > 1.7$; Baker, 2001), as these items allow to discriminate between individuals precisely even in an abbreviated scale.

Next, we calculated McDonald's ω coefficients to check the internal consistency of each questionnaire we used. We chose the McDonald's omega over Cronbach's alpha because it allows a more accurate measure of internal consistency when the assumptions of the tau-equivalent model (i.e., violation of the equal-item variance) are not met (Dunn et al., 2014).

To evaluate the psychometric properties of the FOS-24, a confirmatory factor analysis (CFA) was performed for the two scales separately. The same model fit indicators as above described were used. The external validity of the FOS-24 was tested with Spearman's coefficients to examine the correlations between each subscale of the two scales and each subscale of the WSWMS, YSEX?-HSF and the original version of the Hungarian FOS. Due to violations of normal distribution, Spearman correlations were used. The Benjamini-Hochberg false discovery rate (FDR) procedure was applied to correct for multiple testing (Benjamini and Hochberg, 1995; Verhoeven et al., 2005) with p -values accepted at an FDR-corrected threshold of $q < 0.05$. This method offers a more balanced approach as opposed to traditional and conservative methods (like the Bonferroni correction) and controls the proportion of false positives among significant results. The Benjamini-Hochberg corrected p -values were calculated using the spreadsheet available at <http://www.biostathandbook.com/benjaminihochberg.xls>. In our manuscript we report the p -values that remained significant after correction.

Differences between faking and non-faking women were analyzed using Mann-Whitney U tests, as the variables were not normally distributed.

4 Results

4.1 Item response analysis

Confirmatory factor analyses were run to confirm unidimensionality. For both scales, the results indicated that the four-factor model provided an acceptable fit (Oral subscale: CFI = 0.985, TLI = 0.983, RMSEA = 0.084 [90% CI: 0.079–0.089], SRMR = 0.096; Intercourse subscale: CFI = 0.983, TLI = 0.982, RMSEA = 0.081 [90% CI: 0.079–0.084], SRMR = 0.091). As the CFAs confirmed that all scales had a single latent variable, the FOS-24 was analyzed using GRM IRT.

First, we examined the Oral subscales. For Altruistic Deceit subscale, eight out of nine items (6, 7, 8, 9, 10, 11, 12, 13) on the scale met the a priori threshold (1.7) for the parameter a . We

decided to retain the three items with the highest parameter a value, items 7, 8, and 9, respectively. On the Insecure Avoidance subscale, three out of four items (1, 2, 4) met the threshold of 1.7, so we retained all three items. On the Elevated Arousal subscale, three out of five items (16, 17, 18) met the threshold, all of which were retained. On the Fear of Dysfunction subscale, three out of four items (15, 21, 22) met the necessary a value, so we retained them all. Thus, the shortened Oral subscales consist of 12 items, three for each subscale.

Next, the Intercourse subscales were analyzed. For Altruistic Deceit, 11 out of 14 items (1, 2, 3, 4, 5, 8, 9, 11, 12, 14, 16) met the a priori threshold of 1.7 for parameter a , and we decided to retain the three items with the highest a value (items 3, 4, and 9). For the Fear and Insecurity subscale, eight out of ten items (7, 21, 22, 23, 24, 25, 26, 27) reached the threshold, of which we selected the three with the highest values (7, 22, 25). On the Elevated Arousal subscale, five out of seven items (29, 30, 32, 33, 34) had a parameter a value higher than 1.7, of which the retained items (32, 33, 34) had the highest. Finally, on the Sexual Adjourment subscale, all three items (15, 17, 19) reached the necessary threshold and were retained for the short version of the questionnaire. Thus, the shortened Intercourse subscales consist of 12 items, three for each subscale.

Details of parameter a values for all items are provided in **Supplementary Table 1**. The Supplementary Materials also include the final version of the FOS-24 with a short scoring guide in Hungarian.

4.2 Properties of the abbreviated scales

To assess the psychometric properties of the FOS-24, we conducted confirmatory factor analysis (CFA) for each scale separately. For both scales, the results indicated that the four-factor model provided an acceptable fit (Oral subscale: CFI = 0.991, TLI = 0.988, RMSEA = 0.029 [90% CI: 0.016–0.040], SRMR = 0.039; Intercourse subscale: CFI = 0.984, TLI = 0.978, RMSEA = 0.038 [90% CI: 0.0296–0.046], SRMR = 0.04; Factor loadings are provided in **Supplementary Table 2**).

Based on the McDonald's omega, both scales of the brief version showed adequate internal consistency, similar to the other used

TABLE 2 Spearman correlation between 24-item and 56-item versions of Hungarian Faking Orgasm Scale for Women.

FOS scales	Spearman r
Oral sex subscales	
Altruistic deceit (OSAD)	0.915***
Insecure avoidance (OSIA)	0.934***
Elevated arousal (OSEA)	0.977***
Fear of dysfunction (OSFD)	0.989***
Sexual intercourse subscales	
Altruistic deceit (SIAD)	0.898***
Fear and insecurity (SIFI)	0.922***
Elevated arousal (SIEA)	0.982***
Sexual adjourment (SISA)	1.000***

*** $p < 0.001$.

questionnaires (WSWMS, YSEX?-HSF; for further details, refer to [Table 1](#)). The values for the shortened version were comparable to those of the original scales.

4.3 External validity of the abbreviated scales

The external validity was analyzed by calculating the correlations between each subscale of the two main scales of FOS-24 with the original version of the Hungarian FOS (see [Table 2](#)), as well as each subscale of the WSWMS ([Table 3](#)) and YSEX?-HSF ([Table 4](#)). The results indicate that the correlations of FOS and FOS-24 were highly similar with the sexual working models and sexual motivations.

4.4 Comparison between women who reported faking orgasm and women who did not

Using Mann-Whitney tests, we investigated whether there are differences in sexual functioning models (see [Figure 1](#)) and sexual motivations (see [Figure 2](#)) between women who reported faking orgasm and those who did not, both when receiving oral sex and during sexual intercourse. Among the different sexual functioning models, there is a significant difference in the Distancing and Caring Partner dimensions both during receiving oral sex and sexual intercourse (See the results of the Mann Whitney U test and the average scores of the factors in [Supplementary Table 3](#)) The differences in the mean scores suggest that women who fake orgasm are more inclined to maintain distance in sexual situations due to experienced indifference and detachment from the sexual event and the partner. Moreover, they perceive their sexual partners as caring for their needs to a lesser extent. This factor can predict both sexual and relational satisfaction ([Birnbaum and Reis, 2006](#)), indicating that those who do not perceive their partner's care are less likely to experience satisfaction and may resort to faking orgasm.

Regarding the primary sexual motivations in both examined situations, based on mean scores, it is more characteristic of women who fake orgasm to engage in sexual activities to achieve personal goals and use sex as coping mechanism.

5 Discussion

5.1 Development of the brief version

The primary aim of the study was to develop a shortened form of the Hungarian version of the Faking Orgasm Scale for Women (FOS) ([Csányi et al., 2024](#)). We employed Item Response Theory (IRT) to identify items with optimal discrimination parameters. Crucially, this abbreviated Hungarian version of the FOS retains the informational integrity of the original questionnaire concerning its four factors across both scales (Sexual Intercourse and Oral Sex). The final three-item short forms of the Hungarian FOS-24 subscales exhibited excellent reliability and internal consistency.

Significantly, all subscales exhibited a positive shift on the latent trait, indicative of the instrument's validity and effectiveness in examining potential motives across diverse samples. In summary, the FOS-24 demonstrates robust psychometric properties, offering valid and reliable assessments of the twice-four motivations for faking orgasm while accommodating individual differences within our Hungarian sample.

5.2 External validity assessment

The secondary aim of the present study was to evaluate the external validity of the FOS-24 using self-report measures of motivations and models of sexuality.

5.2.1 Women's sexual working models scale

Consistent with the findings of the 56-item version of the FOS ([Csányi et al., 2024](#)), the strongest associations with faking orgasm were found with the Distancing factor of the Women's Sexual Working Models Scale ([Birnbaum and Reis, 2006](#)) in both sexual situations examined (during sexual intercourse and receiving oral sex). This suggests that orgasm faking, driven by negative emotions such as fear, uncertainty, and sexual postponement, leads to emotional indifference toward the partner and the sexual encounter, significantly contributing to a decreased relationship satisfaction among women who reported faking orgasm ([Csányi et al., 2022](#)). The strongest correlation is observed with orgasm faking for the purpose of Sexual Adjournment, which may serve two functions. It allows the individual to shorten the duration of unpleasant sexual activity, while also avoiding relationship tensions that might result from directly rejecting the partner's sexual advances ([Thomas et al., 2017](#)). Thus, overall, it can be viewed as a defense mechanism ([Frith, 2018](#)), contributing to increased relational and sexual detachment.

Perceiving the partner as caring and sensitive to one's needs showed a significant, moderately strong negative correlation only with orgasm faking for the purpose of delaying sexual intercourse. This finding is consistent with [Frith's \(2018\)](#) explanation, which suggests that due to a partner's emotional distance, lack of sympathy, and limited potential for honest communication, faking orgasm becomes one of the least risky ways to terminate sexual activity.

During receiving oral sex, behaviors associated with negative self-schema and sexual anxiety showed positive associations with faking orgasm as a means of avoiding one's own negative emotions. These behaviors often stem from feelings of shame and guilt arising from conflicts with body image and genital self-image ([Hoy et al., 2021](#)). The exposure of the vulva (external genitalia) during oral sex may exacerbate anxiety and shame related to dissatisfaction with them ([Fahs, 2014](#)), thus prompting individuals to fake orgasm.

Media influence may contribute to the association between faking and feelings of shame during sexual intercourse, as it frequently portrays reaching orgasm as the primary indicator of sexual satisfaction ([Lavie-Ajayi and Joffe, 2009](#)). Sociocultural norms also exert pressure, suggesting that experiencing orgasm is essential for feeling normal and feminine ([Nicolson and Burr, 2003](#)), thereby imposing both internal and external pressure to achieve orgasm ([Chadwick et al., 2019](#)). The absence of orgasm can

TABLE 3 Spearman correlation between reasons for faking orgasm (FOS-24, FOS-56) and sexual working models (WSWMS).

Women's Sexual Working Models Scale (WSWMS)	Hungarian Brief version of Faking Orgasm Scale for Women (FOS-24)				56-item version of the Hungarian Faking Orgasm Scale for Women (FOS; Csányi et al. 2024)			
	OSAD	OSIA	OSEA	OSFD	OSAD	OSIA	OSEA	OSFD
	Oral Sex subscales							
	OSAD	OSIA	OSEA	OSFD	OSAD	OSIA	OSEA	OSFD
Guilt and shame	0.079	0.211***	0.085	0.158**	0.089	0.232***	0.117	0.170**
Maintain the bond	0.106	0.003	0.192**	0.050	0.135*	0.040	0.187**	0.039
Distancing	0.176 **	0.268 ***	0.050	0.327 ***	0.188**	0.297***	0.057	0.341***
Caring partner	-0.044	-0.060	0.042	-0.164 **	-0.037	-0.059	0.014	-0.171**
Excitement	-0.103	-0.199 ***	0.247 ***	-0.121 *	-0.051	-0.189**	0.239***	-0.132*
	Sexual Intercourse subscales							
	SIAD	SIFI	SIEA	SISA	SIAD	SIFI	SIEA	SISA
Guilt and shame	0.060	0.134 **	0.104 *	0.206 ***	0.081	0.212***	0.092	0.206***
Maintain the bond	0.179 ***	0.019	0.155 **	-0.087	0.179***	0.022	0.137**	-0.087
Distancing	0.150 **	0.319 ***	0.070	0.385 ***	0.208***	0.353***	0.069	0.385***
Caring partner	-0.068	-0.166 **	-0.035	-0.268 ***	-0.093	-0.198***	-0.035	-0.268***
Excitement	-0.04	-0.098	0.159 **	-0.187 ***	-0.009	-0.111*	0.175***	-0.187***

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$; Oral Sex subscales: Altruistic Deceit (OSAD); Insecure Avoidance (OSIA); Elevated Arousal (OSEA); Fear of Dysfunction (OSFD); Sexual Intercourse subscales: Altruistic Deceit (SIAD); Fear and Insecurity (SIFI); Elevated Arousal (SIEA); Sexual Adjourment (SISA); WSWMS, Women's Sexual Working Models Scale.

TABLE 4 Spearman correlation between reasons for faking orgasm (FOS-24, FOS-56) and sexual motivations (YSEX?-HSF).

		Hungarian Brief version Faking Orgasm Scale for Women (FOS-24)				56-item version of the Hungarian Faking Orgasm Scale for Women (FOS; Csányi et al. 2024)			
		Oral Sex subscales							
		OSAD	OSIA	OSEA	OSFD	OSAD	OSIA	OSEA	OSFD
Reasons for Having Sex Questionnaire, Hungarian form (YSEX-HSF)	Personal Goal Attainment	0.08	0.037	0.192 **	0.123 *	0.108	0.044	0.206***	0.120*
	Seeking novelty	0.056	-0.033	0.078	0.074	0.048	-0.053	0.083	0.07
	Conformity	0.026	0.128 *	0.012	0.062	0.052	0.137*	0.006	0.067
	Infidelity	-0.01	-0.068	0.012	-0.009	-0.038	-0.074	0.021	-0.01
	Impulsiveness	-0.05	0.069	0.155 **	0.150 *	-0.027	0.073	0.187**	0.144*
	Revenge	0.004	0.016	0.034	-0.009	0.024	0.055	0.051	-0.001
	Seeking sensation	0.087	-0.091	0.098	-0.015	0.082	-0.086	0.108	-0.019
	Control and power	0.122 *	0.039	0.115	-0.017	0.108	0.038	0.131*	-0.027
	Boosting self-esteem	0.115	0.151 *	0.235 ***	0.239 ***	0.169**	0.175**	0.245***	0.245***
	Relational reasons	0.093	-0.023	0.158 **	0.043	0.123*	0.023	0.158**	0.038
	Sexual desire	0.058	-0.053	0.072	-0.004	0.061	-0.046	0.066	-0.014
	Commitment	0.093	0.008	0.095	0.038	0.129*	0.044	0.089	0.041
	Physical attraction	0.128 *	-0.041	0.049	0.013	0.103	-0.014	0.05	0.009
	Relaxation	0.045	-0.068	0.164 **	0.061	0.06	-0.021	0.194**	0.056
	Intimacy	0.053	0.039	0.123 *	-0.023	0.073	0.065	0.102	-0.02
	Excitement	0.05	-0.136 *	0.046	-0.045	0.04	-0.126*	0.063	-0.051
	Self-affirmation	0.058	0.03	0.152 *	0.039	0.101	0.056	0.151*	0.031
	Care	0.03	-0.016	0.063	0.101	0.068	0.026	0.059	0.098
	Happiness seeking	0.048	0.065	0.170 **	0.138 *	0.119*	0.1	0.153*	0.133*
	Sex as coping	0.161 **	0.114	0.228 ***	0.197 ***	0.173**	0.141*	0.236***	0.196***
	Mitigating emotional deficit	0.125 *	0.114	0.217 ***	0.150 *	0.145*	0.156**	0.237***	0.157**
	Compulsion and avoidance	0.189 **	0.123 *	0.137 *	0.188 **	0.146*	0.155**	0.125*	0.194**
	Utilitarianism	-0.009	0.003	0.129 *	0.002	0.022	-0.02	0.144*	-0.007
	Coping with relational conflicts	-0.057	0.079	0.130 *	0.107	-0.066	0.057	0.125*	0.099
Submissiveness	0.154 *	0.175 **	0.216 ***	0.194 **	0.205***	0.194**	0.239***	0.191**	
Coping with partner's emotional demands	0.137 *	-0.044	0.007	-0.058	0.101	-0.016	0.023	-0.061	
Mate retention	0.178 **	0.091	0.109	0.163 **	0.173**	0.111	0.117	0.162**	

(Continued)

TABLE 4 (Continued)

		<i>Faking Orgasm Scale for Women, Hungarian brief form (FOS-24)</i>				<i>Faking Orgasm Scale for Women, original version (FOS)</i>			
		<i>Sexual Intercourse subscales</i>							
		<i>SIAD</i>	<i>SIFI</i>	<i>SIEA</i>	<i>SISA</i>	<i>SIAD</i>	<i>SIFI</i>	<i>SIEA</i>	<i>SISA</i>
Reasons for Having Sex Questionnaire, Hungarian form (YSEX-HSF)	Personal Goal Attainment	0.116 *	0.07	0.186 ***	0.223 ***	0.155*	0.124*	0.185***	0.223***
	Seeking novelty	0.055	0.075	0.116 *	0.143 **	0.09	0.094	0.122*	0.143**
	Conformity	0.105 *	0.09	0.003	0.152 **	0.105*	0.103*	0.021	0.152**
	Infidelity	-0.017	-0.088	0.089	0.156 **	0.004	-0.026	0.076	0.156**
	Impulsiveness	0.02	0.054	0.145 **	0.109 *	0.036	0.063	0.144**	0.109*
	Revenge	0.019	-0.036	0.109 *	0.120 *	0.065	0.019	0.114*	0.120*
	Seeking sensation	0.083	-0.064	0.079	0.185 ***	0.061	-0.024	0.064	0.185***
	Control and power	0.029	-0.014	0.105 *	0.022	0.071	0.021	0.112*	0.022
	Boosting self-esteem	0.166 **	0.220 ***	0.258 ***	0.175 ***	0.232***	0.273***	0.258***	0.175***
	Relational Reasons	0.193 ***	0.143 **	0.259 ***	0.03	0.225***	0.162**	0.262***	0.03
	Sexual desire	0.126 *	-0.012	0.043	-0.017	0.124*	-0.019	0.038	-0.017
	Commitment	0.156 **	0.125 *	0.169 **	-0.014	0.179***	0.144**	0.165**	-0.014
	Physical attraction	0.126 *	0.06	0.135 **	0.035	0.106*	0.078	0.149**	0.035
	Relaxation	0.075	0.031	0.170 **	0.135 **	0.088	0.067	0.180***	0.135**
	Intimacy	0.1	0.058	0.07	-0.107 *	0.081	0.023	0.076	-0.107*
	Excitement	0.101	0.057	0.169 **	-0.008	0.111*	0.07	0.166**	-0.008
	Self-affirmation	0.157 **	0.169 **	0.303 ***	0	0.240***	0.175***	0.303***	0
	Care	0.185 ***	0.175 ***	0.204 ***	0.106 *	0.227***	0.201***	0.205***	0.106*
	Happiness seeking	0.188 ***	0.193 ***	0.249 ***	-0.014	0.228***	0.215***	0.242***	-0.014
	Sex As Coping	0.203 ***	0.222 ***	0.252 ***	0.351 ***	0.253***	0.302***	0.255***	0.351***
	Mitigating emotional deficit	0.134 **	0.220 ***	0.211 ***	0.261 ***	0.203***	0.278***	0.219***	0.261***
	Compulsion and avoidance	0.149 **	0.122 *	0.106 *	0.422 ***	0.155**	0.148**	0.099	0.422***
	Utilitarianism	0.012	-0.03	0.157 **	0.076	0.024	0.018	0.137**	0.076
	Coping with relational conflicts	0.05	0.081	0.141 **	0.125 *	0.079	0.131*	0.147**	0.125*
	Submissiveness	0.181 ***	0.231 ***	0.211 ***	0.250 ***	0.238***	0.298***	0.214***	0.250***
	Coping with partner's emotional demands	0.143 **	0.067	0.059	0.272 ***	0.159**	0.074	0.074	0.272***
	Mate retention	0.203 ***	0.190 ***	0.192 ***	0.291 ***	0.225***	0.269***	0.185 ***	0.291 ***

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$; Oral Sex subscales: Altruistic Deceit (OSAD); Insecure Avoidance (OSIA); Elevated Arousal (OSEA); Fear of Dysfunction (OSFD); Sexual Intercourse subscales: Altruistic Deceit (SIAD); Fear and Insecurity (SIFI); Elevated Arousal (SIEA); Sexual Adornment (SISA); YSEX?-HSF, Hungarian Short Form of Reasons for Having Sex Questionnaire.

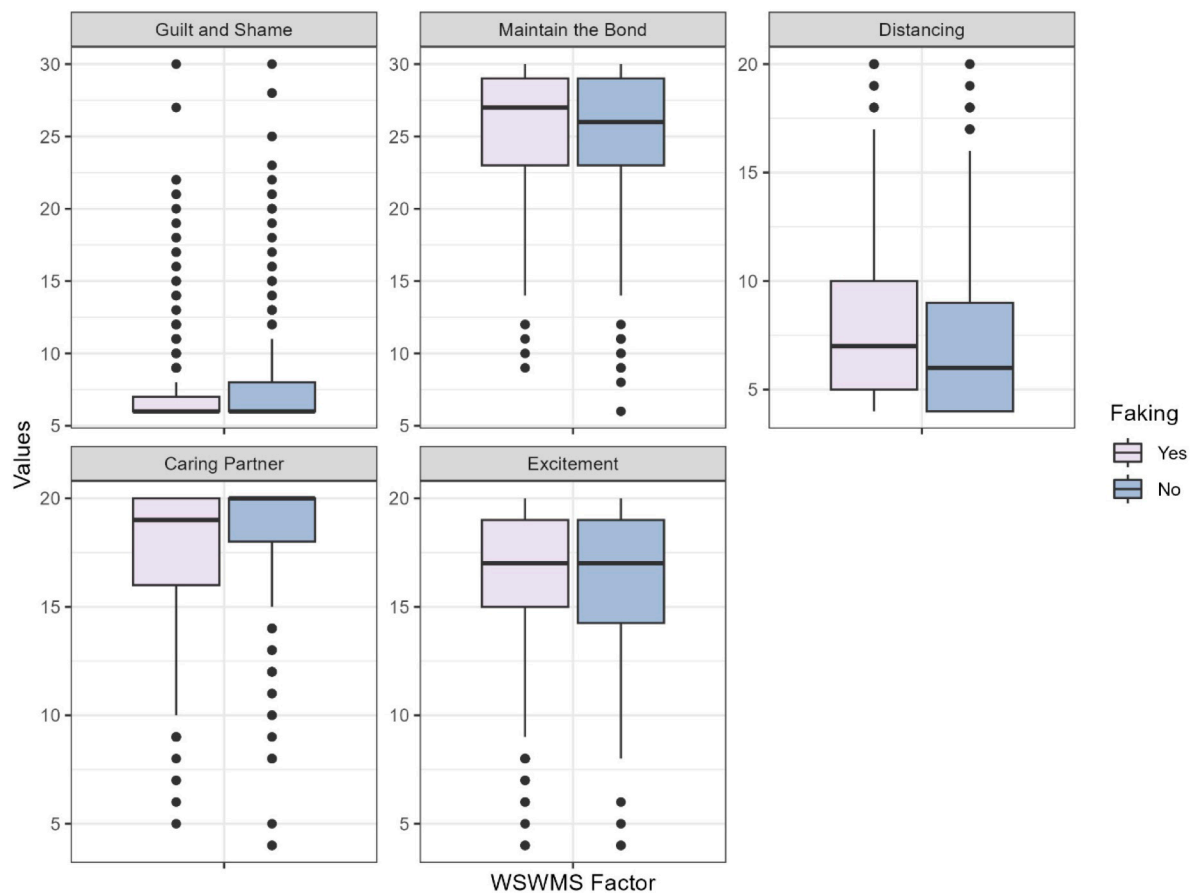


FIGURE 1

Sexual working models of women who reported having ever faked an orgasm compared to women who reported having never faked an orgasm ($N = 768$). WSWMS, Women's Sexual Working Models Scale.

lead to stigma and an increased experience of unpleasant, negatively valenced emotions (Fahs and Swank, 2016; Lavie-Ajayi and Joffe, 2009). Therefore, many individuals resort to faking orgasm to alleviate shame and swiftly conclude sexual activity.

By adopting a self-perception perspective during orgasm faking, women may observe their behavior as an external observer, potentially enhancing sexual arousal (Barnett et al., 2019). This pattern was evident in our sample, with a significant association found between the Excitement factor, indicative of intense sexual desire, and faking orgasm to elevate arousal levels, particularly during receiving oral sex.

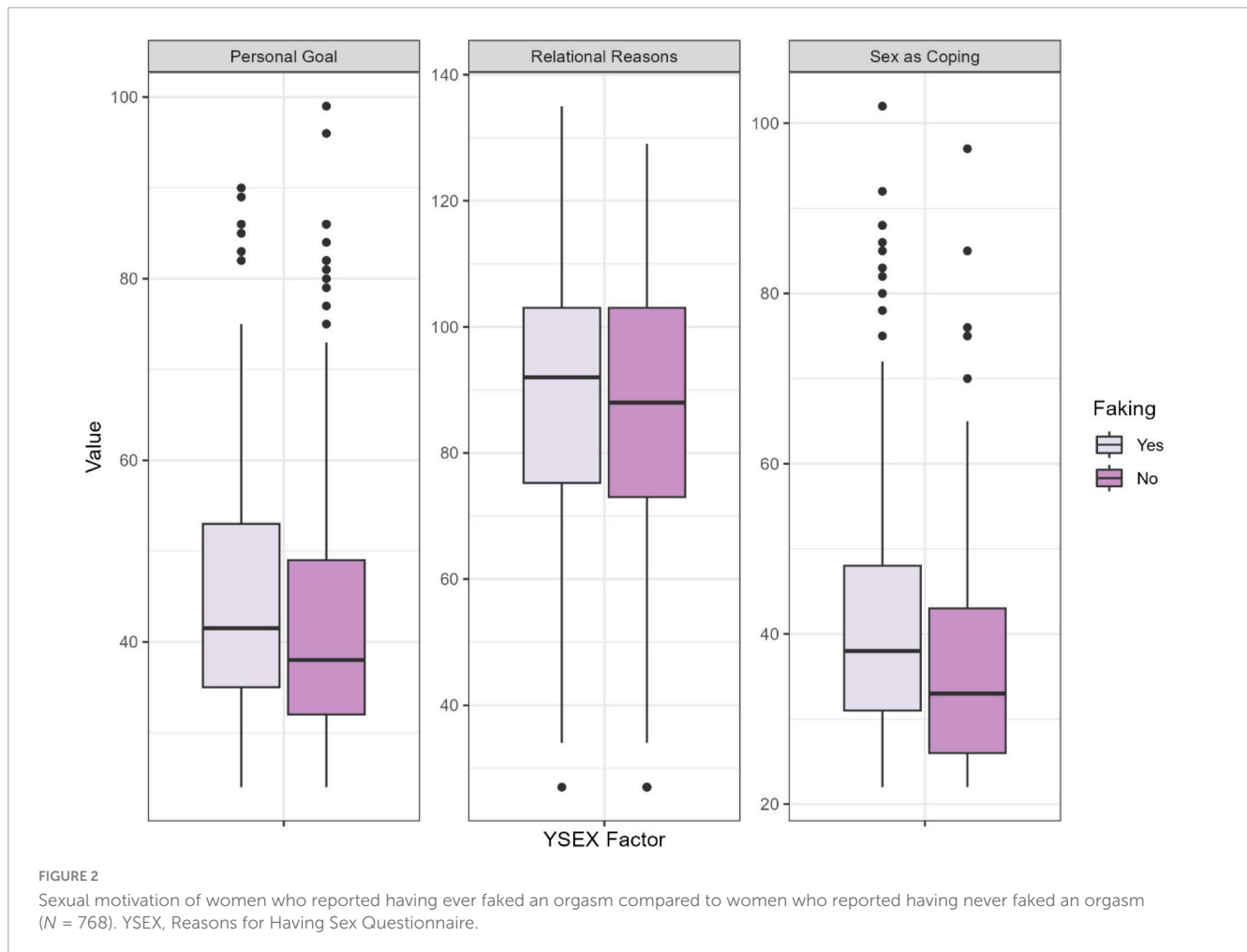
In the case of women who reported that sexual activity enhances the relationship between partners, our analysis revealed only negligible, albeit statistically significant, correlations with various motivations for faking orgasm (i.e., $r < |0.2|$; Ferguson, 2009). Although Séguin et al. (2018) suggests that faking orgasm for romantic reasons may benefit the relationship, our study does not support this. The lack of correlation is consistent with the premise that faking orgasm is inherently insincere communication (Frith, 2018) and that higher sexual satisfaction relies on honest and anxiety-free communication (Herbenick et al., 2018). These findings suggest that faking orgasm is unlikely to enhance relationship well-being (Csányi et al., 2022) or its long-term maintenance.

5.2.2 Reasons for having sex questionnaire

A complex and multi-faceted relational framework emerges regarding sexual motivations, allowing for a deeper exploration of the various reasons behind orgasm faking and their relationship with motivations for engaging in different sexual activities.

Within the YSEX?-HSF Personal Goal Attainment main scale, which represents egocentric sexual motivations, only the Boosting Self-esteem subscale correlates with certain forms of faking. It can be inferred that subscales such as Seeking Novelty, Infidelity, Impulsiveness, Control and Power, or Revenge are not related to women's orgasm faking. The weak correlation between self-centered sexual motivation and orgasm faking may be attributed to the prevalence of this type of motivation in sexual activities among men rather than women (Meskó et al., 2022). Our results indicate that women tend to fake orgasm during both receiving oral sex and sexual intercourse to elevate their arousal and avoid negative feelings, thereby potentially increasing their self-esteem. Many women experiencing orgasm difficulties encounter distress and anxiety during sex with their partners (Rowland et al., 2019), which not only negatively affects their quality of life but also their self-esteem, therefore, they may resort to faking orgasm as a coping mechanism (Erdős et al., 2023).

The YSEX?-HSF Relational Reasons main scale, including the Self-affirmation, Care, and Happiness seeking subscales,



demonstrates an association with orgasm faking for arousal-enhancing reasons during sexual intercourse. Despite there being no biological difference between clitoral and vaginal orgasm, societal norms often lead women to desire orgasms solely through vaginal penetration (Hoy et al., 2021). According to findings by Impett et al. (2005) and Meston and Buss (2007), participation in sexual activities can increase not only physical pleasure but also foster emotional closeness and commitment at a relational level for women. Although many women report satisfaction without achieving orgasm, there is normative pressure to experience orgasm to feel feminine and normal (Nicolson and Burr, 2003), motivating women to enhance their chances of reaching orgasm by elevating their sexual arousal through self-perception mechanisms (Barnett et al., 2019).

The sexual motivational characteristic of women (Meskó et al., 2022) is evident in the present sample, with the strongest associations related to orgasmic experience found in the Sex as Coping subscale in both oral and sexual intercourse scenarios. Individuals engaging in sexual intercourse to alleviate emotional deficits are more likely to fake orgasm to avoid their own negative feelings or to end the sexual activity. Sexual acts occurring within negative emotional contexts, such as feeling a lack of love or loneliness, play a crucial role in the development of sexual distress (Frith, 2018), enabling individuals to end sexual acts out of habit or obligation without relational tension (Thomas

et al., 2017). Our research also confirms that in the sexual domain, women tend to subordinate themselves to their partners and expected norms (Elmerstig et al., 2008; Meskó et al., 2022; Young, 2006), often engaging in sexual intercourse motivated by subordination—prioritizing their partners' needs. We observed the strongest associations with orgasm faking for sexual adjournment, especially in the case of faking during sexual intercourse.

5.2.3 Comparing women who reported faking orgasm to women who had not

The tertiary aim of current study was to assess the replicability of the original version of the Hungarian Faking Orgasm Scale (FOS) with 56 items. Comparing women who reported faking an orgasm with those who reported never faking an orgasm allows us to distinguish between the characteristics of these groups.

As predicted, significant differences were observed in the Distancing and Caring Partner dimensions of the Women's Sexual Working Models Scale in both oral and intercourse situations. Women who reported faking orgasm exhibited higher scores in the Distancing subscale, aligning with previous research indicating that faking contributes to indifference toward sexual activity and the partner, resulting in decreased relationship satisfaction over time (Csányi et al., 2022). Conversely, women who reported not

faking orgasm tend to report greater satisfaction with their sex lives and perceive their partners as more caring, valuing emotional connection over physical satisfaction (Fahs and Plante, 2016). However, contrary to our expectations, no significant differences were observed in behaviors related to negative self-schema and sexual anxiety between the two groups.

Regarding sexual motivations, as expected, significant differences were found between women who reported faking orgasm and those who did not in the YSEX?-HSF Sex as Coping and the Personal Goal Attainment main scales. Women who reported faking orgasm were less likely to engage in sexual activities for relational bonding but rather as a means to enforce their own sexual interests or cope with emotional difficulties. Although men tend to engage in sexual activities for self-centered reasons compared to women (Meskó et al., 2022), our results suggest that, in general, women who reported faking orgasm are more likely to participate in both oral sex and sexual intercourse for personal reasons, such as boosting self-esteem, compared to women who reported not faking orgasm.

Using sex as a coping mechanism is a motivation predominantly observed in women (Meskó et al., 2022), and our findings indicate this is significantly more characteristic of women who reported faking orgasm. This aligns with the mate-retaining elements of coping motivation (Meskó et al., 2022), with faking orgasm itself considered a mate retention strategy (Csányi et al., 2022), allowing women to increase their partner's commitment to the relationship (Impett et al., 2005; Meston and Buss, 2007).

6 Limitations and future directions

The instrument used in current study has several limitations. Firstly, the results and correlations should be interpreted within certain boundaries. While the instrument endeavors to uncover the reasons behind orgasm faking to the best of its ability, it cannot comprehensively address this multifaceted process. For instance, it does not delve into the socio-cultural conditions that may influence women's sexual behavior, nor does it consider potential health issues that could physically hinder reaching orgasm. Despite these limitations, when used in conjunction with other supplementary questionnaires, the Hungarian brief form of the Faking Orgasm Scale for Women (FOS-24) emerges as a highly reliable measurement tool.

Secondly, although the overall sample used in the study was large and relatively diverse, it did not undergo representativeness testing. For instance, the samples may have omitted asexual respondents who might lack interest in participating in a study on sexual behavior. Additionally, self-reported data, while valuable, are inherently susceptible to biases such as social desirability or recall inaccuracies, which could influence participants' responses.

Thirdly, the questionnaire was specifically designed to understand the motives behind orgasm faking among heterosexual women only. It is imperative to develop a measure suitable for studying the faking motives of women with sexual orientations other than heterosexual. This could be achieved by supplementing the instructions, thereby ensuring a broader and more comprehensive understanding of female sexuality.

Finally, future research should explore the scale's applicability across diverse populations and settings. Testing its validity and reliability in different cultural and socio-demographic contexts would provide further insights into its universal utility.

7 Conclusion

The current study significantly contributes to the understanding of faking orgasm, revealing the intersection of sexual behavior, motivation, and working models. The findings suggest key pathways for future research and offer valuable insights applicable in clinical practice with women and couples. Professionals, including psychologists, therapists, gynecologists, psychiatrists, can gain a deeper insight into how sexual working models and sexual motives influence decision-making processes within relationships. By understanding the impact of sexual working models and motivations on sexual decision-making, providers can pose clinically relevant questions and explore different implications for patients. Insights from the study may uncover patterns such as feeling obligated to engage in sexual activity despite a lack of desire or resorting to faking orgasm. Without a precise understanding of sexual decision-making processes, providers risk pathologizing common behaviors that may serve important psychological and relational functions.

Data availability statement

The datasets presented in this study can be found in online repositories. The names of the repository/repositories and accession number(s) can be found below: https://osf.io/96emq/?view_only=8eca7faedc0d4f67848c029eac2a0070.

Ethics statement

The studies involving humans were approved by Hungarian United Ethical Review Committee for Research in Psychology. The studies were conducted in accordance with the local legislation and institutional requirements. The participants provided their written informed consent to participate in this study.

Author contributions

EC: Writing – original draft, Resources, Project administration, Methodology, Investigation. JB: Writing – original draft, Visualization, Validation, Formal analysis, Data curation. TB: Writing – review and editing, Methodology, Funding acquisition. NM: Writing – review and editing, Supervision, Methodology, Funding acquisition, Conceptualization.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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The authors declare that no Generative AI was used in the creation of this manuscript.

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Sexual desire for non-normative sexual behaviors: differences between centennials and millennials considering sexual orientation

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Introduction: Non-normative sexual behaviors were traditionally studied from a psychopathological perspective, although nowadays a distinction is made between paraphilia (nonpathological) and paraphilic disorder (mental disorder).

Methods: The present study aims to examine the differences between a group of millennials ($n = 173$) and centennials ($n = 159$) in their appetite for these sexual behaviors without the preconception of these behaviors as harmful or pathological.

Results: Differences in appetite related to exhibitionism and foot fetishism were found in the first instance, with millennials showing a greater appetite for these. When including sexual orientation in the analysis, in addition to exhibitionism and foot fetishism, differences were found in behaviors related to asphyxiation, bestiality and urophilia. Millennials and homobisexual centennials showed the highest appetite for exhibitionism behaviors, homo-bisexual centennials for choking behaviors and bestiality and homo-bisexual millennials for foot fetishism and urophilia-related behaviors.

Discussion: Exploring nonnormative behaviors from a non-psychopathological perspective will help us to understand the evolution of sexual appetite as part of human sexual diversity and to prevent risky behaviors.

KEYWORDS

sexual behavior, sexual desire, non-normative, millennials, centennials

Introduction

The [World Health Organization \(2020\)](https://www.who.int/) indicates that sexuality includes sex, gender identity and role, sexual orientation, eroticism, pleasure, intimacy and reproduction, represented and expressed in thoughts, fantasies, desires, beliefs, attitudes, values, behaviors, practices, roles and relationships. In recent years there has been some uncertainty about the terms defining non-normative sexual behaviors, in other words, paraphilias and paraphilic disorders. Since the publication of DSM-III ([American Psychiatric Association \(APA\), 1980](https://www.psychiatry.org/american-association-of-psychiatrists/)), the focus on these behaviors has shifted from a psychoanalytic to an is atheoretical perspective. In the DSM-IV ([American Psychiatric Association \(APA\), 1994](https://www.psychiatry.org/american-association-of-psychiatrists/)) the distinction between paraphilia and paraphilic disorder was already present in the DSM-IV, as it established two sets of criteria. Criterion (A) defined paraphilia as “recurrent, intense sexually arousing

fantasies, sexual urges, or behaviors generally involving (1) nonhuman objects, (2) the suffering or humiliation of oneself or one's partner, or (3) children or other nonconsenting persons, that occur over a period of at least 6 months. For some individuals, paraphiliac fantasies or stimuli are essential for erotic arousal and are consistently integrated into sexual activity. In other cases, paraphiliac preferences manifest only episodically (e.g., during periods of stress), while at other times, the individual can function sexually without such fantasies or stimuli." Criterion (B) specified that "the behavior, sexual urges, or fantasies cause clinically significant distress or impairment in social, occupational, or other important areas of functioning," which, together with Criterion (A), constitutes the definition of a paraphilic disorder. The DSM-5 has not significantly altered these criteria, aside from the inclusion of "harm to others..." This perception was also influenced by the late conceptualization of sexology and sexuality research in the 19th century (Beccalossi et al., 2023) and, with it, the term paraphilia, which appeared in the 20th century to eliminate the concept of "sexual perversions." However, authors such as Moser (2019) discuss how the DSM-5 conceptualises paraphilias and the implications of considering certain sexual behaviors as deviant. Băjenescu (2022) refers to sexual orientation as an internal and stable tendency to have psychological reactions of a sexual nature and desire for sexual relations with persons of a different sex or of the same sex. Sexual orientation has traditionally been classified as heterosexual, homosexual and bisexual, and from a binary perspective. Bogaert and Skorska (2020) refer to relatively stable sexual attraction to persons of the other sex (heterosexuality), to persons of the same sex (homosexuality) or to persons of both sexes (bisexuality). Although there are behaviors that could be called homosexual, for example, an erotic kiss between two men, there are authors who consider that their sexual orientation does not have to be homosexual or bisexual. To understand this, reference is made to Alfred C. Kinsey and his collaborators who between 1948 and 1953 published what is known as the Kinsey Report, which from its results, a scale was elaborated where the minimum score, 0, represented complete heterosexuality and the maximum score, 6, was homosexuality without more; on the other hand, if they obtained between 1 and 5, it was considered bisexuality, with 3 being the degree of complete bisexuality (Kinsey, 1948; Kinsey et al., 1953). In this way, sexual orientation can be seen as a spectrum. That is, it does not only take into account sexual orientation. This allows the authors to consider a person's sexual behaviors and feelings, placing them on a continuum (Băjenescu, 2022). Over the years, the categories that encompass the term "sexual orientation" have become increasingly more complex and pragmatic (Watson et al., 2020; White et al., 2018), as the concept was previously limited due to various factors that influenced society, such as religion (Beltrán, 2012). Although in recent years there has been a trend towards a decrease in religiosity in Spain (Panadero et al., 2022), there are studies that still confirm that this religious influence is still present (Hone et al., 2020). Swaab (2007) states that sexual orientation can be influenced by a variety of factors, ranging from biological to social.

Besides sexual orientation, one of the other major factors determining sexual preferences and behavior is age (Browning et al., 2000; Herbenick et al., 2010). Most studies found significant changes in some individuals' sexual behaviors not only over the course of their lives (Caltabiano et al., 2020; Chandra et al., 2013), but also between different generations (Twenge et al., 2015, 2017). Recently there has been a huge discussion about how to classify generations by giving them a label or name

depending on the characteristics of the people who make them up. Studies such as those by Rainer and Rainer (2011) and Dimock (2019) state that the generation known as millennials is composed of people born between 1981 and 1996. Centennials, range from 1997 to 2005, considering only those over the age of majority (18 years). The classification of people according to age is done in order to be able to explain why we behave in a certain way from a general point of view.

Regarding the notion of 'sexual appetite,' which represents a relevant aspect of our work, it will be conceptualised in its meaning of sexual desire. Such desire is constituted as the sum of the forces that drive us towards sexual behavior or distance us from it, oscillating its intensity in a dimension whose poles fluctuate between aversion and passion, evolving notably throughout life (Levine, 2003). Moreover, there may be gender discrepancies in the manifestation of desire, which may affect sexual and partner satisfaction (Mark and Murray, 2012).

The present study focusses on the most common non-normative sexual behaviors such as sadomasochism, which is one of the most popular paraphilias in general population, but is not as frequent as exhibitionism and voyeurism, for example (Bártová et al., 2021; Seto et al., 2021). This would be the combination of sexual sadism and sexual masochism, which according to the DSM-5 (American Psychiatric Association (APA), 2014) would be defined as the feeling of pleasure or sexual arousal when the person is shamed, beaten, tied up or subjected to some kind of abuse; and/or sexual arousal when any kind of suffering is inflicted on another person. Also, another very well-known paraphilic behavior is exhibitionism, in which sufferers experience sexual desire and pleasure by exposing their genitals or having sex in public while being observed (Seeman, 2020). Foot fetishism, bestiality, coprophilia and urophilia, although less common practices have also been included in the study, as they are still relevant for the classification of these behaviors (Krueger et al., 2017; Di Lorenzo et al., 2018). While it is true that some of these practices are more harmful to people's health than others, they are all considered non-normative behaviors and have therefore been integrated into this study.

To explore the differences between millennials and centennials in appetite for non-normative sexual behaviors, the following hypotheses have been proposed.

H1: There will be differences in sexual orientation distribution between centennials and millennials.

In the DSM-I (American Psychiatric Association (APA), 1952), having a sexual orientation non-heterosexual was pathologised in the manual as "sexual deviations." However, for clinical psychology, this term was replaced by "Egodystonic Homosexuality" in the publication of the DSM-III (American Psychiatric Association (APA), 1980), but was eventually deleted six years later in the review of that edition within the manual.

Considering that it was not until the 20th century that all issues related to sexuality began to be studied (Beccalossi et al., 2023), there have been statistical research that correlate sexual orientation according to age or the generation to which they belong. Based on statistics from different regions, people aged approximately 18–25 years are more likely to have sexual orientations other than heterosexual in both males and females (Copen et al., 2016; Gilmour, 2019). Some studies carried out in the Spanish population, claim that centennials, compared to millennials (Rainer and Rainer, 2011), have a higher percentage of people who are

homosexual/bisexual or who are open to trying sex with someone of the same gender (Slebođnik, 2018). It is essential to highlight that in Spain there has been a legal evolution that protects gay, lesbian and bisexual people, for example, the approval of same-sex marriage. As a result, millennials and centenarians have lived through social, historical and political moments that have influenced their openness when it comes to communicating their non-normative sexual orientation. Despite this data, as the years go by, the figures are becoming more and more similar between the two generations.

In recent years, different research has been made into sexual orientation, in which it has been studied whether there are differences in sexual orientation according to different variables such as the role of hormones, evolutionary adaptation, genetics or cerebral and emotional differentiation (Soler, 2005). It has not been until more recently that the influence of age or the generation to which the subjects belong on their sexual orientation has been studied.

Following the same line, it has also been studied how age/generation would not only influence sexual orientation, in this case, on the opinions, attitudes and beliefs that people have towards homosexual and/or bisexual people (Costa et al., 2019; Ekstam, 2022).

H2: There will be differences in appetite for non-normative sexual behavior between centenarians and millennials.

According to Cabello (2006), our sexual patterns have changed throughout history according to the political moment in which we find ourselves, since here in Spain, depending on the time period, we have been both in situations of sexual counter-education and in times when we have been able to talk freely about our sexuality.

Along the same lines, the ideological influence of religion in Spain has influenced people's sex education and is therefore one of the justifications that show us the results of the studies to demonstrate that depending on the generation to which they belong, they will have certain preferences or others with respect to sexuality and thus to non-normative behaviors (Pérez, 2020).

This has led to greater sexual openness among young people over the years. One of the evidences is that in Spain, the average age of initiation of sexual relations with and without penetration has decreased to 16.5 years in 2018. In contrast, in 2010 a study was carried out which stated that the average age in Spain at that time was 17.9 years, which gives us an indication that the younger generation, centenarians, is more sexually open than millennials (Díaz, 2010; Moreno et al., 2018).

There is currently an increase in sexual openness in the new generations due to the fact that patterns of sexual behavior are disappearing. In the past, girls were mainly looking for an affective-relational relationship and boys for relationships directly related to sexual pleasure, and were more sexually open than girls (Ballester and Gil, 2006; Browning et al., 2000). This sexual openness has also led to a 149 higher prevalence of risky behaviors today than in previous generations (Dhanoa et al., 2020). A dual pattern was thus established which, although it is more clearly observed in the affective than in the sexual sphere, seems to be changing (López et al., 2011).

However, according to DSM-5 (American Psychiatric Association (APA), 2014), there are 8 types of paraphilias which are sexual sadism, sexual masochism, frotteurism, paedophilia, transvestism, fetishism and voyeurism. Exhibitionism, voyeurism and paedophilia are the most frequent paraphilias in men, while in women, masochism is the most common (Joyal and Carpentier, 2017). Sadism, sexual

masochism and exhibitionism have been shown to be more likely to be practised by centenarians than by millennials (Holvoet et al., 2017).

H3: There will be differences in preferences for non-normative sexual behaviors between millennials and centenarians according to their sexual orientation.

When we talk about centenarians, we are referring to one of the most recent/modern generations and that partly belongs to the 21st century. Thus, according to the study by Cañizo and Salinas (2010), it shows that there is a greater sexual permissiveness, in other words, being more open to having sexual relations or anything to do with sexuality, in young people than in adults.

It has also been shown that Spanish people belonging to this generation are more likely to have a homosexual or bisexual sexual orientation and there are researchers such as Cantillo (2013) who affirms, according to the results of their studies, that homosexual/bisexual people are more sexually open than heterosexuals.

Based on a study conducted among students at the Universidad del Atlántico, homosexual or bisexual individuals and/or couples have a less conventional and more sexually open sex life than heterosexual couples, therefore following the same line, they are more likely to practice non-normative behaviors (Cantillo, 2013).

Although it has been proven that homosexuals/Bisexuals are more likely to engage in this type of sexual behavior, this does not mean that heterosexuals follow a more traditional model, as some authors think, but rather that they are more likely to engage in other types of sexual behavior (Holvoet et al., 2017; Richters et al., 2008).

Materials and methods

Design and sampling

The study was conducted using a cross-sectional observational design with convenience sampling (Table 1).

Although this type of design has some limitations, its use is indicated for the exploration of concepts that have not been widely studied and do not have validated measurement tools (Lefever et al., 2007; Nayak and Narayan, 2019), as is the case with non-normative sexual behavior.

TABLE 1 Sampling procedure datasheet.

Collection	07/04/2023 to 23/05/2023
Population	Centennials (1997–2005) and millennials (1981–1996) residents in Spain.
Population size	8,000,000 centennials 10,000,000 millennials
Sampling method	Convenience sampling
Survey type	Online
Confidence level	99%
Margin of error	10%
Sample size*	160 centennials 170 millennials

* The values are approximated base on the confidence level and the margin of error.

Procedure

Participants were invited to participate in the study through email and social media. The researchers also shared the information to participate through the dissemination channels provided by the XXX university in southern Spain (Andalusia). All participants received informed consent and the questionnaire (Annex A). The questionnaire was drafted *ad-hoc* and included three demographic items to describe the sample and the 3-point desire measurement for non-normative sexual behavior. Responses were collected via a link to the SurveyMonkey platform.

Participants had to be born between 1981 and 2005, reside in Spain when the survey was sent out and have a good understanding of Spanish. The records of participants who did not meet these criteria were removed from the study.

These responses did not contain any data that could reveal the identity of the participants and were accessible only to the study researcher in charge of data analysis.

Measurement

Some previous studies have used validated scales for the assessment of paraphilic interest (Bártová et al., 2021; Joyal and Carpentier, 2017; Seto et al., 2021), but they are clinically oriented and determined by the

DSM-5 diagnostic criteria. As there were no scales for the assessment of sexual desire for normative and non-normative sexual behaviors, a 3-point set of items (1 = Not appetizing; 2 = Indifferent; 3 = Appetizing). Although, it's important to consider the limitations of a 3-point Likert scale, they can simplify responses and be effective positioning the participants in their response to indiscreet questions (Joshi et al., 2015). The scale used was drafted based on the behaviors most frequently referred to in the literature (Table 2).

Ethical considerations

This study was conducted in compliance with the Declaration of Helsinki of 2013 and the Organic Law 3/2018, 5th December, on the Protection of Personal Data and Guarantee of Digital Rights in Spain.

An informed consent text was sent to all participants together with the questionnaire. The participants were guaranteed confidentiality and anonymity.

Data analysis

The frequencies and basic descriptive statistics of the variables in the questionnaire were analysed. The normality of the quantitative

TABLE 2 Literature used as reference for the design, drafting and selection of items.

Items	Authors
1. Having sex in a public place	Wylie (2015) and Yule et al. (2017)
2. Masturbating in a public place	
3. Being pressured to have sex or engage in any sexual conduct	Knight (2010), Zinik and Padilla (2016), and Agalaryan and Rouleau (2014)
4. Forcing someone to have sexual intercourse or perform sexual conduct	
5. Spanking or hitting someone during or prior to sexual intercourse	Labrecque et al. (2021), Balon (2014), and Seto et al. (2012)
6. Being whipped or beaten during or as a pre-sexual intercourse conduct	
7. Being tied up during or prior to sexual intercourse	Labrecque et al. (2021), Friedrich and Gerber (1994), and Cardoso (2022)
8. Tying someone up during or prior to sexual intercourse	
9. Practising choking (being grabbed by the neck) during sexual intercourse	
10. Practising choking (grabbing my partner's neck) during sex sexual intercourse	
11. Watching someone naked	Normative sexual behaviors
12. Watching another person while masturbating or having sex	
13. Being watched while naked	
14. Being watched while masturbating or having sex	
15. The possibility or reality of having sex with an animal	Beetz (2004), Holoyda et al. (2018), and Joyal and Carpentier (2017)
16. Having sex with an inanimate object (food, dolls, etc.)	
17. Being aroused by fabrics or clothing	
18. Watching someone urinate or being urinated on	Milner et al. (2008) and Briken et al. (2016)
19. Urinating on your partner	
20. Defecating on your partner	
21. Watching someone defecate or being defecated on	
22. Wearing clothes of the opposite sex	Lawrence (2011), Agnew (2001), and Block (2015)
23. Seeing bare feet	
24. Being kissed on the feet	
25. Rubbing against someone without their consent in a public place	Di Lorenzo et al. (2018) and Balon (2016)

variables was verified using the Kolmogorov–Smirnov–Lilliefors test (Lilliefors, 1967). In addition, contingency tables were prepared and χ^2 tests were performed between the generation and the sexual orientation in order to verify the existence of relationships between the crossed variables.

To contrast the differences in non-normative sexual behaviors, the Mann–Whitney U and Kruskal–Wallis tests were performed to test for differences in the range of values of numerical variables that do not fit the normal distribution (McKnight and Najab, 2010).

Data analysis and processing was performed with the software IBM Statistical Package for the Social Sciences (SPSS) v29. The statistical significance threshold was set at $p < 0.05$.

Results

Participants and overall responses

A sample of 332 young people from Spain was used. Of these young people, 159 were centennials (1997–2005), and 173 were millennials (1981–1996). Most of them identified themselves as woman (84.6%) and only 51 participants identified as man (15.4%). The mean age of the first group was 22.1 years ($SD = 1.63$), and the second group was 29.7 years ($SD = 4.61$). Regarding sexual orientation, 84.4% of millennials reported themselves as heterosexual (146), while 15.6% reported themselves as homosexual or bisexual (27). Among participants belonging to centennials, 73.6% would define themselves as heterosexual (117) and another 26.4% as homosexual or bisexual (42). The overall responses to the 3-point sexual desire instrument for the non-normative sexual behaviors are shown in Table 3.

The frequency and the possible relationship between the two main classificatory variables, the sexual orientation and the generation to which each participant belonged were examined (Table 4).

The results showed that the relationship between the two variables was significant (Continuity Correction = 5.241, $p < 0.05$; McNemar < 0.001), so there were significant differences between them, and it was considered appropriate to explore these differences in the sexual appetite for non-normative behaviors.

As shown in Table 5, no differences were found between most non-normative sexual behaviors between generations. However, the hypothesis cannot be rejected entirely as there is a significant difference in non-normative behaviors related to the excitement of watching or being watched or to foot fetishism, with millennial participants being those with the highest mean rank in every significant comparison.

Considering sexual orientation in the differences between generations, a higher number of between-group differences for non-normative behaviors were found. These were added to those related to watching/being watched and seeing or kissing feet, choking behaviors, the possibility or unreality of having sex with an animal, and behaviors related to urinating or being urinated (Table 6).

Discussion

Sexuality and related behaviors are an essential subject of interest in order to understand and prevent possible risky behaviors and reduce misinformation and stigma, especially among young people

TABLE 3 Overall responses to the sexual desire for the non-normative sexual behaviors.

Items		<i>n</i>
1. Having sex in a public place:	Not appetizing (1)	47
	Indifferent (2)	85
	Appetizing (3)	200
2. Masturbating in a public place:	Not appetizing (1)	156
	Indifferent (2)	111
	Appetizing (3)	65
3. Being pressured to have sex or engage in any sexual conduct:	Not appetizing (1)	175
	Indifferent (2)	44
	Appetizing (3)	113
4. Forcing someone to have sexual intercourse or perform sexual conduct:	Not appetizing (1)	187
	Indifferent (2)	69
	Appetizing (3)	76
5. Spanking or hitting someone during or prior to sexual intercourse:	Not appetizing (1)	74
	Indifferent (2)	112
	Appetizing (3)	146
6. Being whipped or beaten during or as a pre-sexual intercourse conduct:	Not appetizing (1)	71
	Indifferent (2)	66
	Appetizing (3)	195
7. Being tied up during or prior to sexual intercourse:	Not appetizing (1)	38
	Indifferent (2)	50
	Appetizing (3)	244
8. Tying someone up during or prior to sexual intercourse:	Not appetizing (1)	24
	Indifferent (2)	76
	Appetizing (3)	232
9. Practising choking (being grabbed by the neck) during sexual intercourse:	Not appetizing (1)	215
	Indifferent (2)	32
	Appetizing (3)	85
10. Practising choking (grabbing my partner's neck) during sex sexual intercourse:	Not appetizing (1)	199
	Indifferent (2)	74
	Appetizing (3)	59
11. Watching someone naked:	Not appetizing (1)	13
	Indifferent (2)	87
	Appetizing (3)	232
12. Watching another person while masturbating or having sex:	Not appetizing (1)	26
	Indifferent (2)	69
	Appetizing (3)	237
13. Being watched while naked:	Not appetizing (1)	83
	Indifferent (2)	79
	Appetizing (3)	170
14. Being watched while masturbating or having sex:	Not appetizing (1)	88
	Indifferent (2)	68
	Appetizing (3)	176
15. The possibility or reality of having sex with an animal:	Not appetizing (1)	327
	Indifferent (2)	2
	Appetizing (3)	3

(Continued)

TABLE 3 (Continued)

Items		<i>n</i>
16. Having sex with an inanimate object (food, dolls, etc.):	Not appetizing (1)	168
	Indifferent (2)	103
	Appetizing (3)	61
17. Being aroused by fabrics or clothing:	Not appetizing (1)	68
	Indifferent (2)	206
	Appetizing (3)	58
18. Watching someone urinate or being urinated on:	Not appetizing (1)	286
	Indifferent (2)	29
	Appetizing (3)	17
19. Urinating on your partner:	Not appetizing (1)	289
	Indifferent (2)	28
	Appetizing (3)	15
20. Defecating on your partner:	Not appetizing (1)	332
	Indifferent (2)	0
	Appetizing (3)	0
21. Watching someone defecate or being defecated on:	Not appetizing (1)	329
	Indifferent (2)	1
	Appetizing (3)	2
22. Wearing clothes of the opposite sex:	Not appetizing (1)	28
	Indifferent (2)	210
	Appetizing (3)	94
23. Seeing bare feet:	Not appetizing (1)	97
	Indifferent (2)	212
	Appetizing (3)	23
24. Being kissed on the feet:	Not appetizing (1)	100
	Indifferent (2)	122
	Appetizing (3)	110
25. Rubbing against someone without their consent in a public place:	Not appetizing (1)	302
	Indifferent (2)	14
	Appetizing (3)	16

(Goldfarb and Lieberman, 2021). Prior studies have already addressed generational differences in appeal of sexual practices beyond the Western cultural hetero-normative framework (Ben Hagai et al., 2022; Campbell, 2022). However, the lack of studies approaching non-normative sexual behaviors in these aged groups, is partially due to the psychopathological conception which relates these behaviors directly to distress and the existence of a risk to the health of the person or their environment (Di Lorenzo et al., 2018), but also because of the disparity in categorising these behaviors (Joyal, 2021; Masiran, 2018). The current study considers an approach in this line, away from the psychopathological component of the behaviors and comparing the appetite for these behaviors without considering it necessary for there to be a negative assessment of sexual preference. We have focused on interest rather than behavior, as some studies have reported one can predict the other (Joyal et al., 2021). While it is true that some sexual behaviors have a psychopathological component, there are other behaviors and desires that could be part of healthy

sexual diversity and are widely prevalent in the general population (Joyal and Carpentier, 2021). In order to discuss the results found, this section will be divided in order to respond to the hypotheses suggested.

Despite of the small sample size ($n = 332$), a significant relationship was found between the sexual orientation of the participants and their generation. This is concordant with what is presented in a large number of studies with wider samples (Twenge et al., 2015, 2017), which help us to support the representativeness of the sample for the other hypotheses. The majority of millennials and centennials claim to be mainly attracted by people with the opposite sex (approximately 79 and 69% respectively), according to a survey performed in the UK (Ipsos MORI, 2020). This paper also reveals that 18% of millennials are attracted to the same sex or consider themselves bisexual, and in the case of centennials this percentage rises to 26%. The Spanish Youth Institute's annual youth survey, asked about the sexual orientation of young people between the ages of 15 and 29 years old. A total of 77.5% identified themselves as heterosexual and 16.6% identified either as homosexual or bisexual [Instituto de la Juventud (INJUVE), 2020]. Both studies mention the globalisation, the decrease in social stereotypes and equality policies as possible factors involved in the sexual liberation of centennials. These statistics are similar to those found in the study sample. In this case, the differences are also greater among millennials (73.6% heterosexual, 26.4% homosexual or bisexual) than among centennials (84.4% heterosexual, 15.6% homosexual or bisexual), with the overall result being somewhere in midpoint (79.2% heterosexual, 20.8% homosexual or bisexual). According to these results, the sample of the present study can be considered representative in relation to the sexual orientation of the participants, and the following hypotheses can be taken into account with this consideration in mind.

As can be seen in the results section, this study did not find a statistically significant difference, according to the results obtained, between the two generations in most of the non-normative sexual behaviors explored, which is not in line with the conclusions reached by López et al. (2011). Among the reasons which may argue these differences, there is the historical timing in which each study has been carried out. Even though the results of López et al. (2011) were found just over a decade ago, it is probable that the differences between generations at that moment in time were more accentuated than they are nowadays.

Nevertheless, there were significant differences between the appetite of both generations for behaviors related to voyeurism and exhibitionism (items 11, 12, 13 and 14) and behaviors related to foot fetishism (items 23 and 24). Within all of these behaviors, appetite marks were higher in the millennial group than in the centennials. There is no consistent evidence in the literature to justify these differences. However, it is probably due to the differences in digitisation between the two generations (Quincy and Manduza, 2021). Millennials dealt with the digitisation of society during adolescence and young adulthood, while centennials were born into a fully digitised world with access to the internet from an earlier age (Kaviani and Nelson, 2021). Premature exposure to stimuli that could be perceived as sexual may have affected centennials' capacity for excitation and appetite for images of nudity or sexual scenes (Carvalho, 2021). This added to the fact of living in a more open society for the exploration of sexuality and the decreasing age at which the first sexual relations took place (Neff, 2020) can also explain the reduced desire to be seen undressed or to be observed having sex.

TABLE 4 Frequency and percentage of participants by sexual orientation and generation.

		Generations				Total	
		Centennials		Millennials			
		<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Orientation	Heterosexual	117	73.6%	146	84.4%	263	79.2%
	Homosexual/Bisexual	42	26.4%	27	15.6%	69	20.8%
Total		159	100%	173	100%	332	100%

Early exposure to pornography may also explain differences in sexual appetite to images of nudity or having sex (Massey et al., 2021), particularly with centennials having greater exposure to pornography at a younger age than millennials, who may be more sensitive to such content due the lack of early exposure to it (Ningrum and Kusbaryanto, 2021). In addition to the consumption of pornography, the increased use of mobile devices among teenagers has facilitated the development of sexual behaviors aimed at sharing nude images or videos or engaging in behaviors related to erotic self-stimulation such as sexting, which could contribute to the desensitization of millennials to seeing other people naked or engaging in sexual acts (Crofts et al., 2016; Raine et al., 2020). Another possibility is that the appetite for these paraphilic interests/behaviors may appear later in life (Chandra et al., 2013). Regarding the millennials' increased appetite for foot fetish-related behavior (items 23 and 24), it could be explained by the rise of extreme and atypical content included in sexually explicit internet material (SEIM), especially content related to fetishism and other dominance/submission behaviors (The Economist, 2015). Such content can serve as models or scripts for sexual behavior among young people (Frith and Kitzinger, 2001). Thus, repeated exposure to pornography can give rise to sexual scripts where certain sexual behaviors, sexual roles, gender stereotypes, and attitudes are normalized and promoted (Ryan, 2011).

Regarding the third hypothesis, which concerns the differences in the appetite for more varied non-normative sexual behaviors in centennial participants compared to millennials, taking into account the variable of sexual orientation, the influence of sexual orientation on the appetite for different non-normative behaviors is confirmed. The non-normative behaviors that showed significant differences were the same as those in the second hypothesis (items 11, 12, 13, 14, 23, and 24), along with the appetite for practicing asphyxia (item 10), the desire or reality of having sex with animals (item 15), and seeing someone urinate on another person or urinating yourself on another person (items 18 and 19).

On the one hand, these results could be in line with those found by Cañizo and Salinas (2010), as there seems to be a greater appetite for non-normative sexual behaviors in younger people. Additionally, these findings support what Hunt et al. (2019) pointed out, who found a greater appetite for a wider variety of non-normative sexual behaviors in people with a homosexual or bisexual sexual orientation.

The appetite for engaging in asphyxia was found to be greater among homosexual/bisexual groups in both generations. This increased appetite may be due to the high prevalence of sexual aggression-related behaviors, including asphyxia, in gay pornography (Fritz and Bowling, 2022). Consumption of this type of content can lead to learning and an increased likelihood of replicating these behaviors in sexual practice. However, this type of content is more commonly found in pornography aimed at

heterosexual audiences, in which aggression is typically directed towards women (Carrotte et al., 2020). Consumption of this type of content has been shown to influence the sexual behaviors of young people (Herbenick et al., 2022), with women and transgender/non-binary individuals being more likely to have been strangled than men. Further research is needed to understand the relationship between sexual orientation and the appetite for engaging in asphyxia in order to draw more comprehensive conclusions regarding the results of the present study.

Regarding the desire to engage in behaviors related to bestiality, it is centennials with a homosexual/bisexual orientation scored higher compared to other groups. These results may be related to the furry phenomenon, known as the sexual and affective attraction to anthropomorphic animals, cartoon animals, or people dressed as animals. Hsu and Bailey (2019) surveyed 334 men identified as furies to ask them questions about their sexual orientation, sexual motivation, and sexual interests. A large majority of our sample identified as non-heterosexual (84%) and reported some degree of sexual motivation to be a furry (99%). Although this phenomenon appears to have non-sexual motivations that have a greater impact on identification with the group members of this phenomenon (Brooks et al., 2022).

Regarding behaviors traditionally conceptualized within urophilia, such as watching someone urinate or being urinated on or urinating on a partner, homosexual/bisexual millennials were the group that showed the greatest appetite for these behaviors. If access to extreme, abnormal, or domination/submission-based pornography is becoming more accessible (The Economist, 2015), this may explain a greater desensitization of young people to such practices. According to a study by Vandenbosch (2015), adolescents are more exposed to sexually explicit internet material (SEIM) related to affectionate themes, while young adults are more often exposed to SEIM related to domination themes. Consequently, millennials appear to be more likely to be exposed to pornography with themes of domination and violence than centennials. This greater exposure to domination content could explain the greater appetite of millennials for behaviors related to foot fetishism and urophilia, although the relationship of the latter to sexual orientation has not yet been thoroughly explored.

In summary, no differences were found in the inclination to engage in most of the non-normative sexual behaviors studied between generations. However, it seems that sexual orientation is a variable that can help better assess these differences. These results can be very revealing about contemporary Spanish society, where understanding these behaviors from a perspective that moves away from the psychopathological approach can help design better education programs on sexual diversity without the usual restrictions based on prejudices and taboos (Pomeroy, 2017). In any case, further research with larger samples is needed to confirm or refute the findings of the present study.

TABLE 5 Differences in appetite for non-normative sexual behavior between centennials and millennials.

		<i>n</i>	Mean rank	U Mann–Whitney	<i>p</i>
1. Having sex in a public place	Centennials (1997–2005)	159	160.70	12831.000	0.226
	Millennials (1981–1996)	173	171.83		
2. Masturbating in a public place	Centennials (1997–2005)	159	164.79	13482.000	0.736
	Millennials (1981–1996)	173	168.07		
3. Being pressured to have sex or engage in any sexual conduct	Centennials (1997–2005)	159	165.62	13614.000	0.859
	Millennials (1981–1996)	173	167.31		
4. Forcing someone to have sexual intercourse or perform sexual conduct	Centennials (1997–2005)	159	161.83	13011.000	0.342
	Millennials (1981–1996)	173	170.79		
5. Spanking or hitting someone during or prior to sexual intercourse	Centennials (1997–2005)	159	165.20	13546.500	0.799
	Millennials (1981–1996)	173	167.70		
6. Being whipped or beaten during or as a pre-sexual intercourse conduct	Centennials (1997–2005)	159	173.69	12610.000	0.138
	Millennials (1981–1996)	173	159.89		
7. Being tied up during or prior to sexual intercourse	Centennials (1997–2005)	159	169.37	13297.500	0.500
	Millennials (1981–1996)	173	163.86		
8. Tying someone up during or prior to sexual intercourse	Centennials (1997–2005)	159	165.27	13557.500	0.780
	Millennials (1981–1996)	173	167.63		
9. Practising choking (being grabbed by the neck) during sexual intercourse	Centennials (1997–2005)	159	175.33	12349.500	0.057
	Millennials (1981–1996)	173	158.38		
10. Practising choking (grabbing my partner's neck) during sex sexual intercourse	Centennials (1997–2005)	159	170.92	13050.000	0.358
	Millennials (1981–1996)	173	162.43		
11. Watching someone naked	Centennials (1997–2005)	159	144.20	10207.500	0.000
	Millennials (1981–1996)	173	187.00		
12. Watching another person while masturbating or having sex	Centennials (1997–2005)	159	150.59	11223.500	0.000
	Millennials (1981–1996)	173	181.12		
13. Being watched while naked	Centennials (1997–2005)	159	155.94	12075.000	0.036
	Millennials (1981–1996)	173	176.20		
14. Being watched while masturbating or having sex	Centennials (1997–2005)	159	152.94	11597.500	0.007
	Millennials (1981–1996)	173	178.96		
15. The possibility or reality of having sex with an animal	Centennials (1997–2005)	159	167.14	13652.500	0.584
	Millennials (1981–1996)	173	165.92		
16. Having sex with an inanimate object (food, dolls, etc.)	Centennials (1997–2005)	159	157.56	12332.500	0.075
	Millennials (1981–1996)	173	174.71		
17. Being aroused by fabrics or clothing	Centennials (1997–2005)	159	162.07	13048.500	0.351
	Millennials (1981–1996)	173	170.58		
18. Watching someone urinate or being urinated on	Centennials (1997–2005)	159	165.31	13565.000	0.719
	Millennials (1981–1996)	173	167.59		
19. Urinating on your partner	Centennials (1997–2005)	159	163.75	13317.000	0.391
	Millennials (1981–1996)	173	169.02		
20. Defecating on your partner	Centennials (1997–2005)	159	166.50	13753.500	1.000
	Millennials (1981–1996)	173	166.50		
21. Watching someone defecate or being defecated on	Centennials (1997–2005)	159	166.05	13681.500	0.615
	Millennials (1981–1996)	173	166.92		
22. Wearing clothes of the opposite sex	Centennials (1997–2005)	159	160.31	12768.500	0.185
	Millennials (1981–1996)	173	172.19		
23. Seeing bare feet	Centennials (1997–2005)	159	149.40	11034.500	0.000
	Millennials (1981–1996)	173	182.22		

(Continued)

TABLE 5 (Continued)

		<i>n</i>	Mean rank	U Mann–Whitney	<i>p</i>
24. Being kissed on the feet	Centennials (1997–2005)	159	150.95	11281.500	0.003
	Millennials (1981–1996)	173	180.79		
25. Rubbing against someone without their consent in a public place	Centennials (1997–2005)	159	166.26	13715.500	0.930
	Millennials (1981–1996)	173	166.72		

TABLE 6 Differences in appetite for non-normative sexual behavior between centennials and millennials among groups according to generation and sexual orientation.

		<i>n</i>	Mean rank	Kruskal-Wallis
1. Practising choking (being grabbed by the neck) during sexual intercourse	Centennials/Heterosexual	117	168.33	10.868
	Centennials/Bi-Homosexual	42	194.82	
	Millennial/Heterosexual	146	153.14	
	Millennial/Bi-Homosexual	27	186.72	
2. Watching someone naked	Centennials/Heterosexual	117	137.76	29.015
	Centennials/Bi-Homosexual	42	162.14	
	Millennial/Heterosexual	146	188.10	
	Millennial/Bi-Homosexual	27	181.06	
3. Watching another person while masturbating or having sex	Centennials/Heterosexual	117	137.79	27.355
	Centennials/Bi-Homosexual	42	186.24	
	Millennial/Heterosexual	146	184.08	
	Millennial/Bi-Homosexual	27	165.15	
4. Being watched while masturbating or having sex	Centennials/ Heterosexual	117	144.18	11.967
	Centennials/Bi-Homosexual	42	177.36	
	Millennial/Heterosexual	146	178.10	
	Millennial/Bi-Homosexual	27	183.61	
5. The possibility or reality of having sex with an animal	Centennials/Heterosexual	117	164.00	11.206
	Centennials/Bi-Homosexual	42	175.87	
	Millennial/Heterosexual	146	166.27	
	Millennial/Bi-Homosexual	27	164.00	
6. Watching someone urinate or being urinated on	Centennials/Heterosexual	117	160.05	9.929
	Centennials/Bi-Homosexual	42	179.99	
	Millennial/Heterosexual	146	162.94	
	Millennial/Bi-Homosexual	27	192.72	
7. Urinating on your partner	Centennials/Heterosexual	117	157.56	17.158
	Centennials/Bi-Homosexual	42	181.01	
	Millennial/Heterosexual	146	162.96	
	Millennial/Bi-Homosexual	27	201.81	
8. Seeing bare feet	Centennials/Heterosexual	117	141.49	17.810
	Centennials/ Bi-Homosexual	42	171.43	
	Millennial/Heterosexual	146	181.66	
	Millennial/Bi-Homosexual	27	185.20	
9. Being kissed on the feet	Centennials/Heterosexual	117	146.61	11.078
	Centennials/Bi-Homosexual	42	163.05	
	Millennial/Heterosexual	146	177.79	
	Millennial/Bi-Homosexual	27	196.98	

Only variables that showed significant differences ($p < 0.05$) and were significance with Monte Carlo resampling (with a confidence interval of 99% and based on 10,000 sampled tables with starting seed 2,000,000) are shown in this table.

However, we do conclude that there is a need for research that explores how to improve sexuality education programmes in Spain, from a holistic perspective with sexual and gender diversity, in order to increase the levels of physical, mental and sexual health of society as a whole.

Data availability statement

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

Ethics statement

Ethical review and approval was not required for the study on human participants in accordance with the local legislation and institutional requirements. The study was conducted in compliance with the Declaration of Helsinki of 1964 (Seventh revision, 64th Meeting, Fortaleza) and the Spanish Organic Law 3/2018, of December 5, Protection of Personal Data and Guarantee of Digital Rights in accordance with the Regulation (EU) 2016/679 of the European Parliament and of the Council, of 27 April 2016. An information letter was sent to all participants together with the questionnaire. The participants were guaranteed confidentiality and anonymity. All participants signed the informed consent. Participants did not receive any reward for participating in the study.

Author contributions

AP: Conceptualization, Data curation, Formal analysis, Funding acquisition, Investigation, Methodology, Project administration, Resources, Supervision, Validation, Visualization, Writing – original draft, Writing – review & editing. RT: Data curation, Methodology, Conceptualization, Validation, Investigation, Writing – original draft, Writing – review & editing. AR-M: Conceptualization, Funding acquisition, Investigation, Resources, Validation, Visualization, Writing – original draft, Writing – review & editing. MR-M: Conceptualization, Resources, Validation, Writing – original draft, Writing – review & editing. SC-M: Conceptualization, Data curation, Funding acquisition, Investigation, Methodology, Project

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Supplementary material

The Supplementary material for this article can be found online at: <https://www.frontiersin.org/articles/10.3389/fsoc.2024.1509111/full#supplementary-material>

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Development of a cross-cultural scale on attitudes toward gender and sexual diversity (AGSD)

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Background: Attitudes toward gender and sexual diversity can range from acceptance to rejection, influenced by various social, psychological, and cultural factors. In Latin America, instruments tailored to measure these attitudes within specific cultural contexts are limited. This study aimed to develop and validate a culturally relevant scale to assess attitudes toward gender and sexual diversity in Ecuador.

Methods: The research was conducted in two studies. In Study 1, an exploratory factor analysis (EFA) was performed on data collected from 225 psychology students to identify the scale's structure. In Study 2, a confirmatory factor analysis (CFA) was conducted with 362 students to confirm the factor structure and assess the scale's validity. The final scale comprised 18 items across three factors: social coexistence, moral and pathological views, and stereotypes.

Results: The scale demonstrated sound psychometric properties, with acceptable internal consistency (Cronbach's $\alpha = 0.74\text{--}0.77$). Factor loadings ranged from 0.56 to 0.87, confirming the robustness of the scale. Three distinct factors were identified, providing a comprehensive measure of attitudes toward gender and sexual diversity in social, psychological, and behavioral contexts.

Conclusion: This scale represents a valuable tool for assessing attitudes toward gender and sexual diversity in Latin American populations. Future research should test its applicability across broader populations and in different Latin American countries to further validate its use and generalizability.

KEYWORDS

gender and sexual diversity, scale validation, Ecuador, factor analysis, Latin America

Introduction

Attitudes toward gender and sexual diversity

Attitudes toward gender and sexual diversity encompass a broad range of beliefs, perceptions, and behaviors, that may be both positive and negative. These attitudes can significantly influence social and psychological dynamics, shaping how individuals who do not experience sexuality in a traditional manner are perceived and treated within various societal contexts. Studies in this field are relatively recent, with homosexuality being one of the first forms to be investigated. Initially, the concept of homophobia, coined by clinical psychologist George Weinberg in 1972, referred to the rejection or irrational fear

of homosexual individuals, leading to stigmatization and social exclusion. Such negative attitudes have profound effects, contributing to discrimination that limits opportunities and adversely impacts the psychological well-being of LGBT+ individuals (Weinberg, 1972; Junqueira, 2012).

In recent decades, there has been increasing recognition of non-normative gender identities and sexual orientations, such as those of bisexual, transgender, non-binary or gender fluid. Despite this progress, research on attitudes toward these identities remains insufficient. While there has been substantial research into homophobia, the attitudes directed at non-cisgender and non-heterosexual individuals, such as transphobia and biphobia, have not been explored as thoroughly in academic literature. This gap highlights the need to broaden research to more comprehensively examine attitudes toward the broader LGBT+ community, recognizing the diversity of identities and experiences within it.

Evaluating attitudes toward gender and sexual diversity

Evaluating these attitudes is essential for understanding and addressing discrimination. By assessing the prevalence and underlying factors of both positive and negative attitudes, researchers and practitioners can develop targeted interventions that promote inclusivity and reduce stigma in academic, professional, and social settings. Such evaluations offer valuable insights into how these attitudes are internalized and perpetuated, especially among key groups such as psychology students, who will become future mental health professionals. Given their ethical responsibility to promote equality and uphold human dignity, it is crucial to equip these students with the tools needed to challenge biases and foster an environment of acceptance and respect (Hailes et al., 2021; Korkut, 2020).

Despite the importance of assessing attitudes toward gender and sexual diversity, many of the existing measurement instruments present several limitations. Numerous scales primarily focus on homophobia, often neglecting the experiences and identities of non-cisgender and non-heterosexual individuals, such as transgender and non-binary people. As a result, these tools may fail to capture the full spectrum of attitudes toward the LGBT+ community. Moreover, most of these instruments have been developed in English-speaking countries and reflect the cultural contexts of those regions, which may not align with the social realities of other parts of the world, particularly Latin America (Maron and Rondini, 2013).

The limited availability of scales adapted for Latin American contexts is a significant gap in the literature. Research shows that among the instruments developed to assess attitudes toward gender and sexual diversity, only a small number have been validated for use in Latin America (see Table 1 for a description of these scales: Quiles del Castillo et al., 2003; Marinho et al., 2004; Costa et al., 2015; De Miranda Ramos and Cerqueira-Santos, 2020). Additionally, many of these scales focus on specific dimensions, such as homophobia, and are often designed for educational contexts aimed at reducing homophobic bullying. Few instruments

consider the broader spectrum of LGBT+ identities or the complex, intersectional forms of discrimination that people face.

This highlights the need for culturally relevant tools that can accurately measure these prejudices within the specific sociocultural dynamics of Latin American countries. Without such tools, efforts to reduce LGBT+ phobia and promote inclusivity may fall short of addressing the full range of discriminatory attitudes present in these societies.

The current study

In light of the gaps identified in the evaluation of attitudes toward gender and sexual diversity, particularly in Latin American contexts, this research aims to address the need for a culturally relevant instrument. The present article reports the results of two studies conducted to develop and validate a scale assessing attitudes toward this form of diversity. The first study focused on the creation of the scale by generating items based on theoretical dimensions of attitudes toward gender and sexual diversity and conducting an exploratory factor analysis (EFA) to explore its structure. The second study involved a confirmatory factor analysis (CFA) using a separate subsample to assess the scale's validity and reliability. Together, these studies ensured that the instrument accurately measures attitudes toward gender and sexual diversity within the target population.

Methods

Two studies were conducted to develop and validate a scale measuring attitudes toward gender and sexual diversity. In the first study, an EFA was performed to identify the underlying structure of the scale and to refine the item pool. The initial item pool, developed through expert review and theoretical considerations, was administered to a sample of psychology students. Based on these results, a set of 18 items was selected for further testing. In the second study, a CFA was conducted to evaluate the scale's validity and reliability. The CFA used a different sample of psychology students and evaluated the robustness of the three-factor model.

For more information on the methodology, database, and scale items, please refer to the Open Science Framework pre-registration at: <https://osf.io/2cj85/>.

Study 1

Participants

The first sample consisted of 225 psychology students from Ecotec University in Ecuador. Participants were categorized into the following age groups: 155 students (68.89%) were born between 2000 and 2005, 52 students (23.11%) between 1995 and 1999, 10 students (4.44%) between 1990 and 1994, 6 students (2.67%) between 1985 and 1989, and 2 students (0.89%) between 1980 and 1984.

Regarding gender identity, 68.44% ($n = 154$) identified as cisgender women, 26.22% ($n = 59$) as cisgender men, 4.89% ($n = 11$) preferred not to disclose, and 0.44% ($n = 1$) identified as

TABLE 1 Attitudes toward gender and sexual diversity scales in 2021.

Name	Authors	Dimensions	Sample	Internal consistency
Open and subtle homophobia scale	Quiles del Castillo et al., 2003	Open homophobia and subtle homophobia.	Psychology students	0.78 subtle homophobia. 0.84 open homophobia.
Adaptation of the Implicit and Explicit Homophobia Scale to the Brazilian context.	Marinho et al., 2004	Implicit homophobia and explicit homophobia.	University students	0.87 general
Gender and Transphobia Scale	Hill and Willoughby, 2005	Gender, Transphobia, and Gender Discrimination	University students	0.91 general; 0.83 gender; 0.94 transphobia; 0.79 gender discrimination
Validation of prejudice against sexual and gender diversity.	Costa et al., 2015	Genderism-transphobia and gender violence	University students, teachers, and staff	0.96 general
Scale of beliefs and attitudes about homosexuality	Yertutanol et al., 2019	Heterosexism, homophobia, homonegativity, and neutrality.	University students, teachers, and staff	0.85 heterosexism; 0.95 homophobia; 0.95 homonegativity; 0.086 neutrality
Scale of attitudes toward homosexuality	De Miranda Ramos and Cerqueira-Santos, 2020	Distal attitudes and proximal attitudes	Brazilian individuals over the age of 18	0.85 distal attitudes; 0.81 proximal attitudes
Adaptation of the Scale of Teachers' Attitudes and Beliefs about Homosexuality Scale (EACPH)	Rondini et al., 2021	Open homophobia and subtle homophobia.	Teachers	Adaptation shows content validation

non-binary. In terms of ethnicity, 91.11% self-identified as mestizo, 6.67% as white, 0.44% as indigenous, and 0.89% chose not to specify their ethnic background. The participants ranged from first-year to fifth-year students, with the largest proportion being first-year students (30.22%) and the smallest in their fifth year (8%).

Procedure and instruments

The conceptual dimensions of the scale were established using the model proposed by Yertutanol et al. (2019). The items were adapted to assess attitudes toward LGBT+ individuals, with additional items designed, resulting in a total of 47 statements. These statements were written in the first person and formulated in neutral language to ensure comprehension across different Latin American countries.

The item pool was reviewed by six expert judges from Brazil, Ecuador, and Mexico, all of whom had experience in scale development or gender theory. The number of judges followed the recommendations of Hyrkäs et al. (2010). Each judge received the initial draft of 47 items, along with an explanation of the scale's objective, the definitions of each theoretical dimension, and instructions to evaluate whether the items were appropriate for measuring attitudes and suitable for the target population (DeVellis, 2017). Following the review and corrections from the judges, four items were removed due to issues with neutral language. A four-point Likert scale, ranging from "strongly disagree" to "strongly agree," was used to assess participants' responses, promoting more decisive answers by eliminating a neutral option, simplifying interpretation, and potentially improving data reliability (Croasmun and Ostrom, 2011).

The final version of the scale, which also included sociodemographic information, was administered between January 2023 and January 2024. Data collection was conducted through an electronic Google Forms questionnaire distributed via email and WhatsApp. Before completing the survey, participants

provided electronic consent. Confidentiality and anonymity were maintained throughout the process.

The data were analyzed using Factor software (Lorenzo-Seva and Ferrando, 2023) for preliminary item reduction, descriptive analysis, and EFA.

Data analysis

A preliminary analysis of the items was conducted with the first sample using Gulliksen's pool (Ferrando et al., 2023), aiming to address potential challenges in assessing the dimensionality and structure of the scale. The goal of this pre-analysis was to identify and eliminate items based on their extremity and consistency, evaluated through the Relative Difficulty Index (RDI) and Item Consistency Index (ICI) (Lorenzo-Seva and Ferrando, 2021).

Descriptive statistics were calculated for each item, including the mean (M), standard deviation (SD), skewness, and kurtosis. The assumption of normality was tested using the skewness and kurtosis indices, with values between ± 1.5 considered within normal thresholds (Cuadras, 2016).

EFA was then performed on the first sample using the robust unweighted least squares (RULS) estimator due to the ordinal nature of the items (Muthen and Kaplan, 1992). It is also important to emphasize that the sample size used in the present study is sufficient for robust factor analysis, as it exceeds the recommended minimum threshold of 5–10 participants per item (Hogarty et al., 2005). This recommendation aligns with broader methodological guidelines that underscore the importance of sizable samples to ensure reliable and generalizable factor-analytic solutions. Otherwise model fit was evaluated using the chi-square test (χ^2) and the root mean square error of approximation (RMSEA), with values between 0.05 and 0.08 indicating an acceptable fit (Kline, 2016). Additionally, other fit indices, including the comparative fit index (CFI), goodness-of-fit index (GFI), and Tucker-Lewis index (TLI), were used to assess model fit, with values above 0.90 considered acceptable (Schumacker and Lomax, 2015).

TABLE 2 Descriptive statistics and exploratory factor analysis from Study 1.

Item	Mean(SD)	g1	g2	f1	f2	f3
1. Sexual perversions are more common in homosexual men than in heterosexual men [Las perversiones sexuales son más comunes en hombres homosexuales que en heterosexuales].	2.02 (0.98)	0.51	-0.85	0.12	0.02	0.70
2. I feel some distrust toward LGBT+ people [Me dan cierta desconfianza las personas LGBT+].	1.51 (0.79)	1.49	1.46	-0.19	0.27	0.41
3. Organizations that defend the rights of LGBT+ people are necessary [Las organizaciones que defienden los derechos de las personas LGBT+ son necesarias].	3.34 (0.84)	-1.17	0.69	0.67	-0.10	0.01
4. Homosexual men are less masculine than heterosexual men [Los hombres homosexuales son menos masculinos que los heterosexuales].	2.11 (0.99)	0.39	-0.98	0.01	0.34	0.24
5. I would hit an LGBT+ person if they flirt with me [Golpearía a una persona LGBT+ si intenta coquetearme/ligarme].	1.28 (0.65)	2.54	6.35	-0.26	0.19	0.34
6. LGBT+ people have more sexual desire than heterosexual people [Las personas LGBT+ tienen más deseo sexual que las personas heterosexuales].	1.54 (0.81)	1.32	0.75	0.07	-0.30	1.03
7. LGBT+ people talk about sex all the time [Las personas LGBT+ hablan todo el tiempo sobre sexo].	1.42 (0.72)	1.82	2.96	-0.04	-0.01	0.75
8. People should have the right to choose whether or not to have an LGBT+ neighbor [Las personas deberían de tener el derecho de escoger tener o no un vecino/a LGBT+].	1.35 (0.78)	2.29	4.36	0.03	0.40	0.42
9. Every police station should identify the LGBT+ individuals in their area [Cada estación de policía debería tener identificados a los LGBT+ de su área].	1.42 (0.76)	1.86	2.71	0.15	0.37	0.44
10. I don't care if I go to LGBT+ bars, clubs, or parties [Me da igual si voy a bares, clubes o fiestas LGBT+].	3.02 (1.10)	-0.70	-0.91	0.79	0.13	0.03
11. Children from dysfunctional families are more likely to be LGBT+ [Los niños y niñas de familias disfuncionales son más propensos a ser LGBT+].	1.54 (0.83)	1.45	1.19	0.18	0.76	0.14
12. I don't mind seeing an LGBT+ couple together in public [Me da igual ver una pareja LGBT+ junta en público].	3.46 (0.99)	-1.68	1.39	0.78	0.04	0.09
13. Lesbians have less sexual desire than heterosexual women [Las lesbianas tienen menos deseo sexual que las mujeres heterosexuales].	1.36 (0.67)	2.07	4.32	-0.07	-0.07	0.78
14. The media and social networks promote homosexuality [Los medios de comunicación y redes sociales difunden la homosexualidad].	2.28 (1.06)	0.13	-1.28	0.04	0.87	-0.26
15. The transgender condition should remain classified as a mental disorder [La condición transgénero debería de mantenerse como un trastorno mental].	1.61 (0.94)	1.38	0.69	-0.30	0.59	-0.07
16. An LGBT+ person should not be allowed to hold high-level government positions [Una persona LGBT+ no debería tener permiso para ocupar cargos de alto nivel en el gobierno].	1.45 (0.84)	1.86	2.51	-0.12	0.24	0.49
17. Despite their morals and job opportunities, LGBT+ people are more likely to engage in prostitution [A pesar de su moral y las oportunidades de trabajo, las personas LGBT+ son más propensas a prostituirse].	1.72 (0.90)	0.93	-0.33	-0.10	0.15	0.45
18. I don't care if my friends are LGBT+ or heterosexual [Me da igual si mis amigos/as son LGBT+ o heterosexuales].	3.40 (1.06)	-1.47	0.53	0.62	0.09	-0.12

In bold Significant factor loading; g1, skewness; g2, kurtosis.

Study 2

Participants

The second sample included 362 students from the same Psychology program. The average age was 21.41 (SD = 3.34). About 75.41% (n = 273) identified themselves as cisgender women, 18.23% (n = 66) as cisgender men, 2.76% (n = 10) preferred not to respond, 2.76% (n = 10) identified themselves as non-binary, and 0.83% (n = 3) as transgender. About 333 (91.99%) self-defined as mestizo, 16 as white, 5 preferred not to answer, 3 as black, 1 as mulatto, 1 as indigenous and 3 self-defined as montubio. Regarding sexual orientation, the data revealed that 76.52% (n = 277) of the participants identified as heterosexual. Other orientations included 14.09% (n = 51) identifying as bisexual, 3.31% (n = 12) as pansexual, 1.93% (n = 7) as homosexual, 2.49% (n = 9) as other,

1.38% (n = 5) who were unsure how to respond, and 0.28% (n = 1) identifying as asexual.

Procedure and instruments

In the second study, a refined set of 18 items, which emerged from the EFA in the initial study, was used. Participants were asked to rate on a four-point Likert scale ranging from 1 (completely disagree) to 4 (completely agree). This analysis aimed to confirm the robustness and validity of the scale's dimensionality and structure. The scale, which also included sociodemographic information, was distributed between February 2023 and October 2024 in two Ecuadorian universities. Data were collected through an electronic questionnaire hosted on Google Forms and shared via email and classroom visits promoting the

study. Participants provided electronic consent before completing the survey. Throughout the process, researchers ensured strict confidentiality and maintained participants' anonymity. For CFA and reliability testing, the JASP software (JASP Team, 2023) was used.

Data analysis

For the second sample, descriptive statistics for the items were first computed. Then, a CFA was conducted using the Diagonally Weighted Least Square (DWLS) estimator, appropriate for the ordinal nature of the data. The model fit was assessed using the same goodness-of-fit indices as in the EFA. Factor loadings (λ) > 0.40 were considered satisfactory. This estimation strategy, are strongly advised because they minimize biases that can occur with Maximum Likelihood (ML) when handling ordinal data without a strict assumption of multivariate normality. DWLS uses polychoric correlations instead of covariances, thereby improving parameter estimates and goodness-of-fit measures for Likert-type instruments, even when the variables are not normally distributed. Moreover, as long as a sufficiently large sample is available ($n > 200$), DWLS can secure more robust validity evidence, irrespective of how many response categories each item contains (Li, 2016).

Finally, the internal consistency of the scale was evaluated using both Cronbach's alpha (α ; Cronbach, 1951) and the omega coefficient (ω ; McDonald, 2013), with values between $\omega = 0.60$ and $\omega = 0.80$ considered acceptable (Raykov and Hancock, 2005).

Results

Study 1

Item reduction

The analysis using the RDI and ICI resulted in the removal of 23 items that did not meet the efficacy criteria. Additionally, the Measure of Sampling Adequacy (MSA) at the item level indicated the need to eliminate two more items. As a result, 18 items were retained for further analysis. Detailed information about the pre-factor analysis can be accessed online (<https://osf.io/q7hdk>).

Descriptive analysis of the items and exploratory factor analysis

Table 2 provides the descriptive statistics for each item and the results of the exploratory factor analysis. Items 3, 10, 12, and 18 had higher means compared to the others, while items 10, 14, and 18 showed the highest variability. Skewness (g1) and kurtosis (g2) values revealed significant deviations from normality in 7 out of the 18 items, specifically items 5, 7, 8, 9, 12, 13, and 16.

The factorial adequacy tests indicated that the polychoric correlation matrix was suitable for EFA, with a KMO value of 0.87. Bartlett's Test of Sphericity also confirmed the applicability of EFA, with a value of 2200.2 ($df = 153$; $p < 0.001$). Additionally, the chi-square test ($\chi^2 = 146.54$, $df = 102$; $p < 0.001$) and the root mean square error of approximation (RMSEA = 0.044) demonstrated a good model fit. The RULS extraction method identified three

TABLE 3 Descriptive analysis from Study 2.

Item	Mean	SD	g1	g2
Item 1	2.25	0.97	0.11	-1.08
Item 2	1.66	0.86	1.09	0.22
Item 3	3.23	0.91	-1.02	0.18
Item 4	2.20	0.99	0.29	-1.01
Item 5	1.37	0.75	2.18	4.12
Item 6	1.65	0.87	1.13	0.29
Item 7	1.47	0.74	1.49	1.43
Item 8	1.49	0.81	1.57	1.58
Item 9	1.46	0.80	1.61	1.54
Item 10	2.90	1.15	-0.62	-1.08
Item 11	1.74	0.94	0.94	-0.34
Item 12	3.38	0.93	-1.36	0.73
Item 13	1.54	0.75	1.34	1.31
Item 14	2.33	1.00	0.12	-1.09
Item 15	1.68	0.95	1.10	-0.04
Item 16	1.51	0.85	1.52	1.16
Item 17	1.85	0.92	0.68	-0.68
Item 18	3.61	0.79	-2.19	4.03

g1, skewness; g2, kurtosis.

factors that explained 58.72% of the variance, indicating that there was no need to eliminate any items. Furthermore, the model fit indices—CFI = 0.992, GFI = 0.984, and TLI = 0.987—suggest that the three-dimensional model provided an adequate fit for the total sample of participants.

Study 2

Descriptive analysis of the items

Table 3 presents the descriptive statistics for each item. Items 3 and 12 had the highest means, while items 10 and 14 showed the greatest variability. Skewness (g1) and kurtosis (g2) indicated clear deviations from normality in 5 out of the 18 items, specifically items 5, 8, 9, 16, and 18.

Confirmatory factor analysis (CFA)

In the second study, we proposed a different item structure from that identified by the EFA in Study 1. This new structure was based on the content of the items, as the previous grouping did not consider this aspect. We analyzed the new structure using CFA with DWLS estimation. Item 16 was dropped because it did not fit with any of the three groups, and items 2, 5, 8, and 9 were reverse scored. The results ($\chi^2_{(281)} = [p < 0.001]$) and other fit indices, including RMSEA, SRMR, CFI, and TLI, indicated a good model fit: RMSEA = 0.06, SRMR = 0.08, CFI = 0.99, and TLI = 0.98. Factor loadings for each item were high and significant, ranging from 0.56 to 0.87 (see Table 4).

TABLE 4 Confirmatory Factor Analysis: factor loading.

Factor	Item	Estimate	Std. error	z-value	p	95% Confidence interval	
						Lower	Upper
Social coexistence	3	0.62	0.02	29.35	<0.001	0.57	0.66
	10	0.56	0.02	25.16	<0.001	0.51	0.60
	12	0.61	0.02	28.88	<0.001	0.56	0.65
	18	0.61	0.02	28.28	<0.001	0.57	0.65
	2	0.84	0.02	42.81	<0.001	0.80	0.87
	5	0.73	0.02	31.57	<0.001	0.68	0.77
	8	0.81	0.02	39.56	<0.001	0.77	0.85
	9	0.79	0.02	36.44	<0.001	0.75	0.83
Moral and pathological views	1	0.62	0.02	30.11	<0.001	0.58	0.66
	11	0.70	0.02	34.18	<0.001	0.66	0.74
	14	0.62	0.02	28.83	<0.001	0.58	0.66
	15	0.86	0.02	40.10	<0.001	0.82	0.90
	17	0.66	0.02	31.40	<0.001	0.61	0.70
Stereotypes	4	0.61	0.02	26.78	<0.001	0.57	0.66
	6	0.79	0.02	39.88	<0.001	0.75	0.83
	7	0.87	0.02	39.41	<0.001	0.83	0.91
	13	0.79	0.02	38.41	<0.001	0.75	0.83

Internal consistency

Internal consistency of all factors was calculated using Cronbach’s alpha to facilitate comparison with other future studies and McDonald’s omega (ω), which is a less biased alternative (Trizano-Hermosilla and Alvarado, 2016).

As observed in Table 5, the three factors presented acceptable to excellent reliability, with alphas of 0.74 to 0.77, respectively.

Discussion

The primary aim of this study was to develop and validate a culturally relevant scale to measure attitudes toward gender and sexual diversity. This process involved the creation of items, expert review, and statistical analysis, and the results from both the EFA and CFA indicate that the scale is a reliable and valid tool. The three-factor structure—encompassing Social Coexistence, Moral and Pathological Views, and Stereotypes—demonstrates the complexity of attitudes that people hold toward LGBT+ individuals, highlighting the scale’s ability to capture a broad spectrum of beliefs and attitudes that can be either positive or negative.

The first factor, Social Coexistence, captures the degree to which individuals are comfortable interacting with LGBT+ people in everyday social situations. This factor includes items addressing comfort with LGBT+ visibility in public spaces, such as bars and social settings, and with LGBT+ friends or acquaintances. Low scores in this factor indicate discomfort or reluctance to engage with LGBT+ individuals in social contexts, while higher scores suggest more accepting and inclusive attitudes.

Factor 2, Moral and Pathological Views, evaluates beliefs that conceptualize LGBT+ identities as associated with certain psychological or behavioral characteristics. This factor includes items related to the idea that being transgender should be classified as a mental disorder (item 14) and the belief that homosexual men are more likely to engage in sexual perversions than heterosexual men (item 1). It also includes perceptions that LGBT+ individuals may have certain social disadvantages or negative behavioral tendencies, such as the belief that children from dysfunctional families are more likely to be LGBT+ (item 11), or that LGBT+ people are more likely to engage in prostitution (item 17). Additionally, this factor assesses views regarding the appropriateness of LGBT+ individuals holding positions of authority (item 15). Respondents scoring higher on this scale tend to view LGBT+ individuals as suffering from behavioral, emotional, and sexual disorders or deficiencies, and are more likely to perceive them as socially and morally unfit for positions of authority or leadership.

Factor 3, Stereotypes, focuses on commonly held views about the sexual and gender-related characteristics of LGBT+ individuals. Items in this factor assess beliefs related to masculinity, such as the perception that homosexual men are less masculine than heterosexual men (item 4). The factor also includes beliefs about sexual behavior, including the idea that LGBT+ individuals have higher sexual desire compared to heterosexual people (item 6), and that they frequently talk about sex (item 7). Higher scores in this scale reflect a more stereotyped view of LGBT+ individuals.

Each factor provides specific insights into the various attitudes being assessed by the scale. It is important to note that the

TABLE 5 Internal consistency.

Factor	McDonald's ω	Cronbach's α
1	0.75	0.77
2	0.75	0.75
3	0.74	0.74
Total	0.88	0.88

questionnaire should be used as separate scales, with each factor evaluated independently, that is, without an overall score.

One of the key strengths of this study is the development of a culturally relevant instrument for measuring attitudes toward gender and sexual diversity, which can be particularly useful in Latin American populations. The scale provides a tool for researchers and practitioners to assess specific dimensions of attitudes, either positive or negative. Additionally, the collaborative nature of this research, which involved experts from several Latin American countries—including Ecuador, Argentina, Mexico, and Brazil—ensures that the instrument is not only regionally relevant but also applicable across diverse cultural settings. This cross-country involvement enriches the validity and adaptability of the scale, making it a valuable resource for future research and intervention programs focused on gender and sexual diversity issues in Latin America.

In comparison to previously developed instruments that often focus primarily on homophobia or specific subsets of LGBT+ identities (e.g., Quiles del Castillo et al., 2003; Hill and Willoughby, 2005; Costa et al., 2015), our scale offers a more comprehensive assessment of attitudes toward gender and sexual diversity, incorporating multiple dimensions such as Social Coexistence, Moral and Pathological Views, and Stereotypes. Unlike single-dimension scales that capture only negative or narrowly defined attitudes, the three-factor structure of our instrument enables a more specific and detailed evaluation of beliefs and perceptions. Moreover, by grounding item content in explicit regional contexts—where cultural values, language patterns, and social realities may differ from those usually captured in English-speaking measures—this scale fills a critical gap. Thus, its uniqueness lies in addressing the intersectionality of diverse identities, accommodating country-specific social climates, and providing robust, evidence-based psychometric properties that enable researchers and practitioners in Latin America to detect a broader spectrum of attitudes toward gender and sexual diversity.

A notable limitation of this study is that the sample was restricted to psychology students, which may not fully represent the attitudes of the general population. Psychology students, given their exposure to discussions around mental health, inclusivity, and diversity, may be more open and accepting of LGBT+ individuals compared to other segments of society. This could result in a bias toward more positive attitudes in our findings, making it difficult to generalize the results to the wider population, where attitudes may be more varied and potentially less accepting. Future research should aim to extend the use of this scale to a broader range of participants, including individuals from different educational backgrounds, professions, and social environments, to gain a more

comprehensive understanding of attitudes toward gender and sexual diversity across society.

Conclusions

The development of this scale represents an important step forward in understanding the complexities of attitudes toward gender and sexual diversity in Latin America. The scale offers a reliable and valid tool for assessing these attitudes across multiple dimensions, providing valuable insights for researchers, educators, and policymakers. However, further testing of this instrument in broader populations and in different Latin American countries would allow to ensure its applicability and relevance across diverse cultural and social contexts. Expanding its use will not only enhance the generalizability of the findings but also contribute to a more comprehensive understanding of the factors influencing attitudes toward gender and sexual diversity throughout the region. By doing so, this scale can help inform more targeted interventions and policies aimed at promoting inclusivity and reducing prejudice.

Data availability statement

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

Ethics statement

Both studies were approved by Research Ethics Committee with Human Beings following CNS Resolution 466/12, Operational Standard n°001/2013, CNS Resolution 510/16 of Brazil. The studies were conducted in accordance with the local legislation and institutional requirements. All participants provided their written informed consent to participate in this study.

Author contributions

DO: Conceptualization, Data curation, Formal analysis, Methodology, Writing – original draft, Writing – review & editing. XG-O: Conceptualization, Investigation, Writing – original draft. FT-F: Conceptualization, Investigation, Writing – original draft. GM: Methodology, Writing – review & editing. JR: Formal analysis, Methodology, Writing – original draft, Writing – review & editing.

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Masturbation parameters: their relation to sexual arousal in young people who engage in same-sex relationships

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Background: Interest in masturbation in sexual orientation and gender diversity research are rather limited. Extending this research field to include this type of population by considering different masturbation parameters is necessary. In this respect, various masturbation parameters (i.e., negative attitudes toward masturbation, solitary sexual desire, current masturbation frequency, subjective orgasm experience) were validated in a laboratory study with different measures of sexual arousal in persons who engage in same-sex relationships.

Aim: Our main aim was to provide evidence to support the validity of the different masturbation parameters in young people who engage in same-sex relationships. The association between masturbation parameters and various sexual arousal measures (genital response, rating of sexual arousal and rating of genital sensations) was analyzed.

Methods: During a lab task, 72 young adults who engaged in same-sex relationships (36 women, 36 men; age range: 18–32 years) watched content-neutral and sexually explicit films. They included scenes of self-exploration and solitary masturbation behaviors performed by individuals of the same sex as the participants. Negative attitudes toward masturbation, solitary sexual desire, current masturbation frequency, dimensions of subjective orgasm experience in the solitary masturbation context (i.e., affective, sensory, intimacy, rewards), propensity for sexual excitation, genital response (i.e., penile circumference and vaginal pulse amplitude), rating of sexual arousal and rating of genital sensations were assessed. Regression models were conducted to explain the arousal measures with masturbation parameters.

Results: In women, the intimacy dimension of the subjective orgasm experience in masturbation ($\beta = 0.42$, $p = 0.007$) and solitary sexual desire ($\beta = 0.32$, $p = 0.040$) predicted the rating of sexual arousal by explaining 24.1% of its variance. Conversely for men, the rewards dimension of the subjective orgasm experience in masturbation ($\beta = 0.40$, $p = 0.016$) significantly predicted genital response and explained 13.4% of its variance.

Conclusion: Our findings validate some examined masturbation parameters (specifically solitary sexual desire and subjective orgasm experience) in young adults who engage in same-sex relationships. Gender differences in the masturbation parameters were observed for the relevance of these masturbation parameters for explaining sexual arousal. These findings support the relation between masturbation and sexual function.

KEYWORDS

masturbation parameters, same-sex relationships, sexual excitation, subjective sexual arousal, genital response

1 Introduction

The study of sexuality has predominantly focused on heterosexual populations (Serrano-Amaya and Ríos-González, 2019). Lack of research into sexual orientation and gender diversity (SOGD) has limited advances being made in sexual health in this population (Mijas et al., 2021). As masturbation is a behavior associated with different sexual health indicators (e.g., sexual satisfaction; Cervilla et al., 2024a), it is important to focus its study on SOGD. However, masturbation research is still limited and usually focuses only on analyzing its frequency (Cervilla et al., 2024a; Fischer et al., 2022). Recently, Cervilla and Sierra (2022) proposed different parameters to examine the study of this behavior in-depth: negative attitudes, solitary sexual desire, current frequency and intensity of subjective orgasm experience. However, these have been examined together only in heterosexual populations (Cervilla and Sierra, 2022; Sierra et al., 2023).

Sexual attitudes, which are understood as beliefs that play an important role in emitting favorable or unfavorable responses toward sexual stimuli, influence the modulation of sexual response (Sierra et al., 2021). It has been observed that negative attitudes toward masturbation are associated with negative sexual experiences (Hogarth and Ingham, 2009). In a way, negative attitudes toward masturbation are linked with lesser subjective sexual arousal in response to erotic visual stimuli (Mosher and Abramson, 1977), and with more difficulties with erection (Cervilla et al., 2021; Sierra et al., 2021) and vaginal lubrication (Cervilla et al., 2021). In contrast, positive attitudes toward masturbation are associated with greater pelvic vasocongestion in response to sexual stimuli (Abramson et al., 1981).

Solitary sexual desire refers to the interest in or willingness to engage in sexual activities with oneself, which may imply the desire to not share sexual experiences with others (Spector et al., 1996). Those who exhibit high solitary sexual desire levels report better sexual functioning (Arcos-Romero et al., 2022; Cervilla and Sierra, 2022; Sierra et al., 2023). Solitary sexual desire has been positively associated with sexual arousal (Santos-Iglesias et al., 2013), propensity for sexual excitation (Cervilla et al., 2023; Moyano and Sierra, 2014; Peixoto et al., 2018; Vallejo-Medina et al., 2020), and women's genital response toward sexual stimuli (Cervilla et al., 2023).

For masturbation frequency, higher frequency in women is associated with greater ease of sexual arousal (Carvalho and Leal, 2013). Moreover, in both men and women, higher masturbation frequency is linked with greater sexual arousal (Walton and Bhullar, 2018) and subjective arousal in response to sexual stimuli (Mosher and Abramson, 1977). Therefore, masturbation plays an important role in the awareness of the physiological changes that accompany sexual arousal (Hoon, 1983).

The subjective orgasm experience (i.e., its perception and evaluation; Arcos-Romero and Sierra, 2018) has been described in both the sexual relationships (Arcos-Romero et al., 2018, 2019) and solitary masturbation (Cervilla et al., 2022; Cervilla et al., 2024b) contexts from a multidimensional perspective. It comprises the

ffective (i.e., feelings experienced during orgasm; e.g., “exciting”), sensory (i.e., physiological sensations; e.g., “throbbing”), intimacy (i.e., the intimate aspect of orgasm; e.g., “tender”), and rewards (i.e., rewarding effects; e.g., “relaxing”) dimensions. Greater intensity of subjective orgasm experience in masturbation is associated with better sexual functioning (Cervilla et al., 2024b; Cervilla and Sierra, 2022). Cervilla et al. (2024b) observed more specifically: in men a positive association between the rewards dimension of orgasm in masturbation and propensity for sexual excitation, and between the intimacy dimension and the rating of sexual arousal; in women a positive association between the sensory dimension and the rating of sexual arousal. Furthermore, Cervilla et al. (2022) found positive correlations between all the orgasm dimensions in masturbation and sexual arousal.

Considering the relevance of including different masturbation parameters beyond its frequency, the importance of analyzing their relation with other sexual functioning measures (Cervilla et al., 2024a), and the need to focus research on SOGD (Pollit et al., 2022), in lesbians, gays and bisexuals (LGB), this study aims to provide evidence for the validity of the masturbation parameters (i.e., negative attitudes, solitary sexual desire, current frequency, intensity of the subjective orgasm experience) through their relation with psychophysiological measures (i.e., genital response) and self-reported sexual arousal (i.e., rating of sexual arousal and genital sensations). The recording of the psychophysiological responses related to sexual arousal in a laboratory context, and their subsequent relation with different sexuality dimensions, constitute a source of validity evidence for them (Álvarez-Muelas and Sierra, 2023).

Based on previous evidence, it is hypothesized that negative attitudes toward masturbation in a negative sense (Abramson et al., 1981; Mosher and Abramson, 1977), and solitary sexual desire (Cervilla et al., 2023), current masturbation frequency (Mosher and Abramson, 1977) and intensity of subjective orgasm experience in masturbation (Cervilla et al., 2024b) in a positive sense, will explain a significant percentage of sexual arousal, specifically genital response (i.e., penile circumference or vaginal pulse amplitude), and the rating of sexual arousal and genital sensations.

2 Method

2.1 Participants

Seventy-two young cisgender adults participated (36 women and 36 men) aged 18 to 32 years ($M_{\text{women}} = 22.08$, $SD = 2.92$; $M_{\text{men}} = 23.61$, $SD = 3.56$; $t = 1.99$, $p = 0.510$). The inclusion criteria were (a) aged 18 years or older (b) having same-sex sexual relationships exclusively or predominantly, and (c) having masturbated within the last 3 months before the assessment. The exclusion criteria were (a) having a medical condition that affects sexual responsiveness, (b) being treated for any sexual dysfunction, (c) having psychological disorders, (d) taking medication that could alter sexual responsiveness (e.g., antidepressants or anxiolytics), (e) drugs/alcohol abuse and (f) having

a history of sexual abuse and/or victimization. All the participants reported being at university.

Running a power analysis using G*Power (Faul et al., 2007), with an alpha level of 0.05, power = 0.80, mean effect size (Cohen's $d = 0.55$) and 8 predictors, indicated a sample size of at least 36 participants was required for the regression models.

2.2 Measures and materials

Sociodemographic and Sexual History Questionnaire. It includes questions on sex, gender, age, nationality, level of education, type of sexual relationships (with people of the same or different sex), masturbation behavior, medical/psychological/sexual problems, pharmacological treatment, drug/alcohol use, and sexual victimization history.

The Spanish version of the Negative Attitudes Toward Masturbation Inventory (Mosher, 2011b) by Cervilla et al. (2021). It assesses negative attitudes toward masturbation with 10 items (e.g., "I feel guilty about masturbating") answered on a 5-point Likert scale from 1 (*not at all true*) to 5 (*extremely true*). Higher scores indicate more negative attitudes. Consistency reliability was 0.95 and it provided adequate validity evidence (Cervilla et al., 2021). The Cronbach's alpha coefficient obtained in this study was 0.62.

The Solitary Sexual Desire Subscale of the Spanish version of the Sexual Desire Inventory (Spector et al., 1996) by Moyano et al. (2017). It assesses solitary sexual desire with four items (e.g., "Compared to other people of your age and sex, how would you rate your desire to behave sexually by yourself?") using different Likert-type scales (e.g., 0 = *not at all* to 7 = *more than once a day*). Higher scores indicate greater solitary sexual desire. Internal consistency reliability was above 0.90 and its measures provided adequate validity evidence (Moyano et al., 2017). Cronbach's alpha coefficient obtained in this study was 0.84.

The Spanish version of the Orgasm Rating Scale (Mah and Binik, 2011) validated in the masturbation context by Cervilla et al. (2022). The subjective orgasm experience obtained through masturbation is assessed with 25 adjectives distributed in four factors, namely Affective (i.e., feelings experienced during orgasm; e.g., "fulfilling"), Sensory (i.e., physiological sensations; e.g., "quivering"), Intimacy (i.e., intimate aspect of orgasm; e.g., "close") and Rewards (i.e., rewarding effects; e.g., "shooting"), on a 6-point Likert scale from 0 (*does not describe it at all*) to 5 (*describes it perfectly*). Higher scores indicate greater intensity in the subjective orgasm experience. Internal consistency reliability ranged from 0.71 (Intimacy) to 0.95 (Sensory), and its measures showed adequate validity evidence (Cervilla et al., 2022). In this study, Cronbach's alpha coefficients were 0.86 for Affective, 0.92 for Sensory, 0.73 for Intimacy and 0.73 for Rewards.

The Spanish version of the Sexual Inhibition/Excitation Scales-Short Form (Carpenter et al., 2011) by Moyano and Sierra (2014). It assesses propensity for sexual excitation/inhibition by means of 14 items distributed on three subscales: Sexual Excitation (SES; e.g., "When I start fantasizing about sex, I quickly become sexually aroused"), Sexual Inhibition due to Threat of Performance Failure (SIS1; "I cannot get aroused unless I focus exclusively on sexual stimulation") and Sexual Inhibition due to Threat of Performance Consequences (SIS2; e.g., "If I am having sex in a secluded, outdoor place and I think that someone is nearby, I am not likely to get very

aroused") on a 4-point Likert-type scale from 1 (*strongly agree*) to 4 (*strongly disagree*). Responses were reversed for better interpretation, with higher scores indicating more propensity for sexual excitation/inhibition. It presented adequate validity evidence (Sierra et al., 2019) and adequate internal consistency with coefficients ranging from 0.66 to 0.85 (Sierra et al., 2024). In this study, only the SES scale was considered, whose internal consistency reliability was 0.67.

The Spanish version of the Rating of Sexual Arousal (Mosher, 2011a) by Sierra et al. (2017). It assesses sexual arousal intensity in a given situation using five items (sexual arousal, genital sensations, sexual warmth, non-genital physical sensations and sexual absorption) answered on a Likert scale from 1 (*no arousal at all*) to 7 (*extremely sexually stimulated*). It had adequate internal consistency values ($\alpha = 0.90$) and good validity evidence (Sierra et al., 2019). In this study, a Cronbach's alpha coefficient of 0.91 was obtained.

The Spanish version of the Rating of Genital Sensations (Mosher, 2011a) adapted by Sierra et al. (2017). It assesses the level of genital sensations to a sexual stimulus using a single item with 11 response options in increasing order of sexual arousal from *No genital sensations* to *Multiple orgasms: repeated orgasmic release in a single sexual episode*. Its measures presented adequate validity evidence (Sierra et al., 2019; Sierra et al., 2017).

The Biopac Model MP150 Polygraph with 16 Channels (Biopac Systems Inc., Goleta, CA, USA) with the AcqKnowledge 5.0. software. It enabled genital response recording with a penile plethysmograph module (Biopac amplifier DA100C and indium/gallium sensors) and a vaginal photoplethysmography module (Biopac amplifier PPG100C and vaginal transducers). The measurements obtained by these devices are the change produced in penile circumference (millimeters) while erection occurs and the vaginal pulse amplitude (volts) due to vasocongestion produced during sexual arousal.

Visual stimuli. Three-minute videos with neutral and sexually explicit content showing men and women masturbating alone to reach orgasms. Visual stimuli with sexual content were previously validated in a pilot study with similar participants to ensure their ability to elicit sexual arousal.

2.3 Procedure

By means of posters, social media posts and mailing lists, young adults were invited to participate in the study, which consisted of two phases. In the first phase, interested volunteers accessed an online survey that assessed the variables related to the inclusion criteria. At this point, participants gave their informed consent and provided their email address and telephone number to be contacted for the second study phase. The participants who met the inclusion criteria were scheduled for an appointment in the Human Sexuality Laboratory. Prior to the appointment, participants were sent a new informed consent form and asked to abstain from alcohol, caffeine or any stimulant drinks and sexual activity for 24 h before the study. To avoid variations associated with the menstrual cycle, women were called to the laboratory between days 14 and 28 of their menstrual cycle (Suschinsky et al., 2014).

In the second study phase, in the sexuality laboratory participants signed another informed consent form that guaranteed the anonymity and confidentiality of their data. The researcher then explained the experimental procedure and showed them how to put on the genital

TABLE 1 Mean score, standard deviation and comparison of the study variables between men and women.

Variables	Women (<i>n</i> = 36)	Men (<i>n</i> = 36)	<i>t</i>	<i>p</i>	Cohen's <i>d</i>
	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)			
Negative attitudes toward masturbation	10.44 (1.05)	11.47 (2.30)	2.43	0.018	0.58
Solitary sexual desire	21.39 (5.60)	23.56 (3.56)	1.96	0.055	-
Current masturbation frequency	4.44 (0.99)	5.36 (0.96)	3.97	<0.001	0.94
Affective dimension of subjective orgasm experience	28.22 (5.21)	28.94 (4.96)	0.60	0.550	-
Sensory dimension of subjective orgasm experience	42.65 (14.30)	39.32 (12.19)	-1.07	0.291	-
Intimacy dimension of subjective orgasm experience	9.03 (3.66)	8.64 (3.42)	-0.47	0.643	-
Rewards dimension of subjective orgasm experience	12.75 (3.18)	14.17 (2.51)	2.10	0.040	0.50
Propensity for sexual excitation	16.08 (2.89)	16.94 (2.29)	1.40	0.166	-
Rating of sexual arousal	18.75 (5.24)	19.60 (5.79)	0.65	0.517	-
Rating of genital sensations	3.62 (1.26)	3.92 (1.48)	0.90	0.370	-

t, Student's *t*; *M*, mean; *SD*, standard deviation.

response sensors. After providing an explanation, the researcher went to the control room to monitor the stability of the genital response recordings. With the recording devices in place, participants waited 5 minutes for videos projection to get used to the room.

The experimental task consisted of watching two blocks of videos (neutral video 1 + sexual video 1, and neutral video 2 + sexual video 2) whose sexual content corresponded to participants' sexual orientation (i.e., men masturbating for the men participants and women masturbating for the women participants). Meanwhile, the genital response, which was calculated by the difference between the scores of the sexually explicit stimulus and the neutral stimulus, was recorded, following the indications of previous studies (Cervilla et al., 2024b; Mangas et al., 2024b). Video sequences were counterbalanced to control for order effects. Participants were randomly assigned to view one of two sequences: Sequence A (neutral video 1 + sexual video 1, and neutral video 2 + sexual video 2) or Sequence B (neutral video 2 + sexual video 2, and neutral video 1 + sexual video 1). At the end of each video, participants completed the Rating of Sexual Arousal and Rating of Genital Sensations scales.

All the self-reports, and the data collected from each participant in all the phases, were assigned an alphanumeric code as participant identifiers to always ensure participants' anonymity.

2.4 Data analysis

First by the *t*-test, differences by gender in the variables under study were examined. Next partial correlations were calculated by controlling for propensity for sexual excitation between the masturbation parameters (i.e., negative attitudes toward masturbation, solitary sexual desire, current frequency, subjective orgasm experience dimensions) and genital response, the rating of sexual arousal and the rating of genital sensations.

Finally, to determine the explanatory capacity of the masturbation parameters on the sexual arousal measures, regression models were conducted by following the stepwise method. The predictor variables were divided into two blocks: (1) propensity for sexual excitation and

(2) negative attitudes toward masturbation, solitary sexual desire, current masturbation frequency and subjective orgasm experience dimensions in masturbation.

3 Results

3.1 Comparisons between men and women

As a preliminary step to the study objective, we examined the differences between men and women in the study variables. Table 1 shows the significant differences in negative attitudes toward masturbation ($t = 2.43$, $p = 0.018$, Cohen's $d = 0.58$), current masturbation frequency ($t = 3.97$, $p < 0.001$, Cohen's $d = 0.94$) and the rewards dimension of subjective orgasm experience ($t = 2.10$, $p = 0.04$, Cohen's $d = 0.50$), with the first one having higher scores in all cases.

3.2 Partial correlations

As shown in Table 2, in women the affective ($r = 0.38$, $p < 0.05$), sensory ($r = 0.34$, $p < 0.05$), and intimacy ($r = 0.52$, $p < 0.01$) dimensions of subjective orgasm experience in masturbation were significantly related to the rating of sexual arousal. In men, the affective ($r = 0.34$, $p < 0.05$) and rewards ($r = 0.40$, $p < 0.05$) dimensions of subjective orgasm experience were significantly related to genital response.

3.3 Regression models

For women, the rating of sexual arousal was significantly related to the intimacy dimension of the subjective orgasm experience in masturbation ($\beta = 0.42$, $p < 0.01$) and solitary sexual desire ($\beta = 0.32$, $p < 0.05$). These variables explained 24.1% of the variance in the rating of sexual arousal ($F_{(2, 33)} = 6.56$, $p < 0.01$) (Table 3).

TABLE 2 Partial correlations controlling propensity for sexual excitation between study variables.

Variables	Women			Men		
	Genital response	Rating of sexual arousal	Rating of genital sensations	Genital response	Rating of sexual arousal	Rating of genital sensations
Negative attitudes toward masturbation	-0.09	0.32	0.30	-0.24	0.12	0.19
Solitary sexual desire	-0.22	0.31	0.15	0.08	-0.04	-0.07
Current masturbation frequency	-0.22	0.24	0.09	0.10	0.03	0.10
Affective dimension of subjective orgasm experience	-0.11	0.38*	0.22	0.34*	-0.09	-0.22
Sensory dimension of subjective orgasm experience	-0.10	0.34*	0.13	0.33	-0.11	-0.24
Intimacy dimension of subjective orgasm experience	-0.23	0.52**	0.05	0.10	-0.04	-0.17
Rewards dimension of subjective orgasm experience	-0.27	0.14	-0.13	0.40*	0.12	-0.19

** $p < 0.01$, * $p < 0.05$.

For men, a significant model ($F_{(1,34)} = 6.41, p < 0.05$) was obtained in which genital response was significantly related to the rewards dimension of the subjective orgasm experience in masturbation ($\beta = 0.40, p < 0.05$). This variable explained 13.4% of the variance in genital response.

4 Discussion

Providing validity evidence in people who engage in same-sex relationships was proposed for the masturbation parameters (i.e., negative attitudes, solitary sexual desire, current frequency and subjective orgasm experience) by relating them to elicited sexual arousal in a laboratory context (i.e., genital response, and ratings of both sexual arousal and genital sensations) and controlling for the effect of propensity for sexual excitation.

First, gender differences were observed in some masturbation parameters. Compared to women, men showed more negative attitudes toward masturbation, more frequently engaged in masturbation and experienced orgasm more intensely on its rewards dimension. Previous studies have indicated that men report more negative attitudes toward masturbation than women (Blanc, 2024; Sierra et al., 2023) but, in contrast, they report a higher frequency for this behavior (Driemeyer et al., 2017; Leistner et al., 2023; Sierra et al., 2023). The higher masturbation frequency in men could be attributed to the sexual double standard, which would grant men greater sexual freedom or permissiveness than women (Álvarez-Muelas et al., 2021). It is known that masturbation in men plays a compensatory role for low frequency or dissatisfaction in sexual relationships (Regnerus et al., 2017; Sierra et al., 2023), which could explain this binomial of negative attitudes toward masturbation and higher frequency observed in men because men consider it a “second-class” sexual behavior. For intensity of the subjective orgasm experience, the literature usually indicates that women report greater intensity in the masturbation context vs. in sexual relationships (Cervilla and Sierra, 2022; Sierra et al., 2023). However, in a similar laboratory context to

that in the present study, Cervilla et al. (2023) found that men scored higher on the same dimension of orgasm. Compared to women, men consume more pornography when masturbating (Sun et al., 2016), tend to instrumentalize orgasm in masturbation (Mangas et al., 2024a) and their orgasmic experience would be related more to physical aspects (Salisbury and Fisher, 2013). Together, they could explain the relation between the intensity of the genital response recorded in the laboratory to images of explicit sexual content and the rewards dimension of orgasm.

The results indicated for both women and men that the only parameter of masturbation associated with sexual arousal experienced in response to films of people of the same sex masturbating was the subjective orgasm experience.

In women, significant positive correlations were observed among the affective, sensory and intimacy dimensions of the subjective orgasm experience in masturbation and the rating of sexual arousal. The intensity of the subjective orgasm experience was the only masturbation parameter to be associated with sexual arousal experienced in response to explicit sexual stimuli (subjective sexual arousal in this case). In women, the fact that greater intensity in the affective, sensory, and intimacy experience of orgasm was related to more subjective sexual arousal was not at all strange because women are generally those who experience orgasm more intensely in masturbation (Cervilla and Sierra, 2022; Muñoz-García et al., 2023; Sierra et al., 2023). It should be noted that the affective aspects of subjective orgasm experience become important in women (Rowland et al., 2019; Sierra et al., 2021, 2023). This association suggests a transfer between solitary sexual activity and sexual relationships, a fact that has been recently noted by Pérez-Amorós et al. (2024). However, when all the masturbation parameters were introduced into the explanation of the rating of sexual arousal, only the intimacy dimension played a significant role, which left out the affective and sensory dimensions from the explanatory model, along with solitary sexual desire, which explained 24.1% of the variance of the rating of sexual arousal. The salience of the intimacy dimension could be related to women's greater need for sexual intimacy (Greeff and Malherbe, 2001; Shrier and Blood, 2015). Furthermore, women's solitary sexual desire has been associated with the

TABLE 3 Multiple regression models for sexual arousal measures.

	Predictors	B	SE	β	95% CI	t	p	R ²	VIF
Women									
Rating of sexual arousal									
1								0.161	
	Intimacy dimension of subjective orgasm experience	0.62	0.22	0.43	0.17, 1.07	2.78	0.009		1.000
2								0.241	
	Intimacy dimension of subjective orgasm experience	0.61	0.21	0.42	0.18, 1.04	2.87	0.007		1.001
	Solitary sexual desire	0.30	0.14	0.32	0.02, 0.58	2.14	0.040		1.001
Men									
Genital response									
1								0.134	
	Rewards dimension of subjective orgasm experience	1.44	0.57	0.40	0.28, 2.60	2.53	0.016		1.000

B, non-standardized beta; SE, standard error; β , standardized beta; 95% CI, 95% confidence interval; R², adjusted R-squared value; VIF, variance inflation factor.

pursuit of immediate rewards, such as sexual arousal (Cervilla et al., 2023; Dosch et al., 2016). This could explain why both the intimacy dimension and solitary sexual desire are relevant for explaining the rating of sexual arousal.

In men, the affective and rewards dimensions of subjective orgasm experience were positively associated with genital response (i.e., penile circumference). Moreover, the rewards dimension was the only variable with explanatory capacity for genital response and explained 13.4% of its variance. Previous studies have highlighted the relevance of the rewards dimension of subjective orgasm experience in the masturbation context (Cervilla et al., 2024b; Mangas et al., 2024a; Muñoz-García et al., 2023). In line with this, Cervilla et al. (2024b) observed this dimension's explanatory capacity on the propensity for sexual excitation in men. As previously mentioned, men's tendency to instrumentalize orgasm (Mangas et al., 2024b) could be one of the reasons that lie behind this greater salience of the rewards dimension, along with traditional sexual roles, i.e., with men seeking more physical pleasure (Masters et al., 2013). This result supports the finding observed in other studies showing that greater intensity of the subjective orgasm experience in masturbation is associated with better sexual functioning (Cervilla and Sierra, 2022; Cervilla et al., 2024b).

The results indicated that the examined masturbation parameters explained the objective sexual arousal measure (i.e., penile circumference) in men, whereas the explained sexual arousal was subjective in women. Previous laboratory studies have reported the more marked relevance of the psychophysiological measure of genital response in men (Arcos-Romero et al., 2019; Mangas et al., 2024b) and the rating of sexual arousal in women (Arcos-Romero et al., 2019; Cervilla et al., 2024b). These differences could be due to sexual arousal being linked more with physical aspects in men and with psychological aspects in women (Arcos-Romero et al., 2019; Basson, 2000; Granados et al., 2017). Thus, we can affirm that the role that the parameters of masturbation have in the understanding of sexual arousal presents different nuances between men and women. In

men, the rewards dimension of subjective orgasm experience in masturbation plays an important role in explaining genital response. In women, the intimacy dimension of orgasm experience in masturbation and solitary sexual desire become important for explaining the rating of sexual arousal. These data highlight not only the need for detailed assessment of masturbation behavior for use as a therapeutic tool, but also the need to consider gender differences in the development of sex education programs.

In both men and women, the only masturbation parameter associated with sexual arousal was subjective orgasm experience, to which solitary sexual desire was added only for women. That is, of the four examined parameters (i.e., negative attitudes toward masturbation, solitary sexual desire, current masturbation frequency, subjective orgasm experience), only two presented validity evidence in the present laboratory study. Sexual pleasure, feeling aroused and learning about one's own body are the main reasons for masturbation in both men and women (Herbenick et al., 2023; Regnerus et al., 2017). Masturbation is characterized by self-focus, autonomy and control (Foust et al., 2022; Goldey et al., 2016). Thus greater control and autonomy during masturbation, and exploring one's own body, could explain the ability to connect more profoundly with one's sensations, such as orgasm intensity. So they play an important role in explaining sexual arousal. Given the implications of masturbation behavior for sexual health (Cervilla et al., 2024a), these results highlight the importance of evaluating this behavior in detail. Particular attention should be paid to the intimacy dimension of orgasm and solitary sexual desire in women, and the rewards dimension in men. However, in women vs. men, the fact that more masturbation parameters were observed to be involved in explaining sexual arousal is consistent with previous studies, where the need for more variables to explain sexuality dimensions, such as orgasm, comes over (Arcos-Romero and Sierra, 2020; Cervilla and Sierra, 2022).

We should highlight the lack of relevance of the negative attitude toward masturbation in this study as it did not present any relationship

with sexual arousal. In general, attitudes toward sexuality have evolved toward more positive perspectives, especially in young people such as those in this study (Arcos-Romero et al., 2024; Vallejo-Medina et al., 2014), which may explain why negative attitudes toward masturbation have less weight in explaining variables such as sexual arousal. For example, although orgasm satisfaction has been shown to be related to negative attitudes toward masturbation, this relationship is weak compared to other variables (Sierra et al., 2021). Furthermore, this study examined only the direct association between negative attitude toward masturbation and sexual arousal. Future studies should consider this attitude as a potential mediating or moderating variable.

This study has some limitations. The sample consisted of young, healthy and cisgender university students, which limits the generalizability of its results to the general population. This is due to the artificial nature of laboratory studies, which prioritize internal validity and limit external validity. Future studies should include older people, men and women with sexual dysfunction, and other gender identities. Future studies could address this issue by including a more diverse and representative sample, including participants of different ages, socioeconomic backgrounds, individuals with different health conditions (e.g., diabetics), and individuals with a broader range of gender identities. To achieve this, we could use more inclusive sampling techniques, such as stratified random sampling, to ensure that different subgroups are adequately represented. Finally, we should bear in mind that volunteers in laboratory studies on sexuality may have different psychosexual characteristics from the general population (Arcos-Romero et al., 2024), which could bias the generalizability of the results.

5 Conclusion

The results of this study provide validity evidence for some solitary masturbation parameters in people who engage in same-sex relationships: solitary sexual desire and subjective orgasm experience. An association is observed between masturbation behavior and sexual arousal experienced in a specific situation, e.g., when exposed to explicit sexual stimuli. This highlights the importance of considering masturbation to be relevant behavior for sexual health while considering some gender-specific nuances. In men, the rewards dimension of subjective orgasm experience in masturbation plays an important role in explaining genital response. In women, the intimacy dimension of orgasm experience in masturbation and solitary sexual desire become important for explaining the rating of sexual arousal. Although a first impression might indicate that the percentage of sexual arousal variance explained by masturbation parameters is small (24.1% in women and 13.4% in men), if we consider that any dimension of sexuality is determined by the interaction of biological, psychological and social variables, we can conclude that this is an acceptable percentage. Future studies should consider other variables (e.g., hormone levels). This study provides a profounder understanding of solitary masturbation, sexual behavior that is often relegated to the background. This research also focuses on sexual diversity populations, for whom sexuality research is limited. The results emphasize the importance of considering solitary masturbation when assessing and treating sexual problems. Furthermore, these findings highlight the need for further research on masturbation, as it is a behavior that has historically been associated with stigma and guilt, especially among women (Carvalho and Leal, 2013). It is critical to deepen our

understanding of this behavior, as it can potentially serve as a valuable therapeutic tool for sexual wellness.

Data availability statement

The datasets presented in this study can be found in online repositories. The names of the repository/repositories and accession number(s) can be found at: Figshare: <https://doi.org/10.6084/m9.figshare.27682086.v1>.

Ethics statement

The studies involving humans were approved by Ethical Committee on Human Research of the University of Granada (reference 2984/CEIH/2022). The studies were conducted in accordance with the local legislation and institutional requirements. The participants provided their written informed consent to participate in this study.

Author contributions

GMS-P: Data curation, Formal analysis, Funding acquisition, Investigation, Methodology, Writing – original draft, Writing – review & editing. RG: Data curation, Methodology, Writing – original draft, Writing – review & editing. PM: Investigation, Methodology, Writing – review & editing. JCS: Conceptualization, Formal analysis, Funding acquisition, Investigation, Methodology, Project administration, Supervision, Writing – original draft, Writing – review & editing.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

The author(s) declared that they were an editorial board member of Frontiers, at the time of submission. This had no impact on the peer review process and the final decision.

Generative AI statement

The authors declare that no Gen AI was used in the creation of this manuscript.

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Educational intervention on sexual satisfaction of Iranian men: application of the information, motivation and behavioral skills model

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Background: Marital satisfaction plays a critical role in fostering healthy relationships between couples, with sexual satisfaction being a key determinant. This study aimed to evaluate the impact of an educational intervention based on the Information–Motivation–Behavioral Skills (IMB) model on the sexual satisfaction of Iranian married men.

Materials and methods: A quasi-experimental study was conducted among 100 married men in Sanandaj, Kurdistan, Iran. Participants were randomly assigned to either the intervention group, which received an online educational program, or the control group, which did not receive any structured education. The intervention utilized multimedia content, including videos, infographics, and interactive materials, to address three key domains: information, motivation, and behavioral skills related to sexual satisfaction. Data were collected through three validated instruments: the Sexual Health Questionnaire (based on the IMB model), the Male Sexual Function Scale, and Larson's Sexual Satisfaction Scale. Assessments were conducted at baseline (pre-test) and 16 weeks after the intervention (post-test).

Results: Significant improvements were observed in the intervention group compared to the control group across all (IMB) model constructs and sexual satisfaction measures ($p < 0.05$).

Conclusion: The educational intervention based on the (IMB) model, delivered through an online multimedia platform, was effective in enhancing sexual satisfaction among the participants. This highlights the value of theory-driven, digitally delivered health education programs in improving men's sexual health.

KEYWORDS

sexual satisfaction, marital relationship, sexuality education, Men's health, IMB model

1 Introduction

Sex is a fundamental aspect of intimate relationships, playing a crucial role in shaping marital satisfaction between couples (1, 2). A fulfilling and positive sexual relationship has been consistently linked to enhanced well-being and overall life satisfaction in both partners (3). Sexual satisfaction, broadly defined as the subjective evaluation of one's sexual experiences, encompasses various dimensions, including sexual communication skills, the ability to express

sexual needs, satisfaction with sexual activities, and emotional fulfillment (4, 5). Furthermore, sexual satisfaction has a significant association with physical and mental health, general well-being, social success, and professional achievement (5–7).

High-quality relationships marked by emotional empathy, physical attraction, love, and commitment are often accompanied by higher levels of sexual satisfaction (8). Sexual dissatisfaction can be considered as an important factor in the occurrence of marital disputes and instability of marital relationships (9–11).

1.1 Sexual satisfaction in Iranian couples

In Iran, marital conflicts, lack of intimacy, secret relationships, and betrayals, which may culminate in divorce, are often rooted in sexual dissatisfaction (12, 13). Cultural taboos and societal norms discourage open discussions about sexual issues, further compounding these challenges. As a result, many Iranian couples, especially those in traditional regions, remain silent on sexual matters, leading to misunderstandings and unresolved sexual problems (14–16). These issues are exacerbated by insufficient sexual education and misconceptions about sexuality. Social and cultural barriers, alongside the lack of adequate sexual health services, contribute to sexual dysfunction and dissatisfaction (15).

1.2 Conceptual framework

The effectiveness of sex education interventions has been confirmed by several Iranian studies (15, 17–19). Sex education typically addresses three core domains: cognition (information and knowledge), emotions (values and attitudes), and behavior (communication and sexual skills) (15, 20, 21). This study employs the Information–Motivation–Behavioral Skills (IMB) model as its theoretical framework to understand the factors influencing sexual satisfaction. The IMB model suggests that sexual health behaviors are shaped by three key components: information, motivation, and behavioral skills, all of which interact within the individual's social environment (21).

In this context, “information” refers to factual knowledge about sexuality, which can sometimes be simplistic or misguided, leading to automatic but incorrect decisions about sexual behavior. “Motivation” includes personal attitudes and social perceptions regarding sexual health-promoting behaviors, while “behavioral skills” emphasize the human capacity to implement these behaviors effectively, including self-efficacy and communication abilities. Figure 1 illustrates this conceptual model. Based on the IMB framework, we hypothesized that an educational intervention targeting married men could enhance their sexual satisfaction by improving their knowledge, motivation, and behavioral skills. Therefore, the objective of this study was to assess the impact of an IMB-based educational intervention on the sexual satisfaction of married Iranian men.

Abbreviations: IMB, information motivation behavioral skills; AVF, arteriovenous fistula; IVC, inferior vena cava; CRRT, continuous renal replacement therapy; CT, computed tomography; ICU, intensive care unit; ALT, alanine transaminase; AST, aspartate transaminase; TBIL, total bilirubin; DBIL, direct bilirubin.

2 Materials and methods

2.1 Study design and sampling

This quasi-experimental study was conducted among Iranian married men in Sanandaj City, Kurdistan, Iran. The sample size was calculated based on similar studies and statistical power calculations (80% power and 95% confidence interval). Each group (intervention and control) comprised 50 participants, accounting for a 10% attrition rate, with 100 individuals randomly selected from Marriage Consultant Centers. Participants were randomly assigned to groups using an interactive web response system during recruitment. The inclusion criteria included: being married, able to share experiences, of Iranian nationality, fluent in Kurdish, having been married for at least 5 years, over 18 years of age, with less than a 15-year age difference between spouses, no history of couple therapy, and at least elementary education. Participants with a history of sexual dysfunction or those unwilling to continue the study were excluded.

2.2 Data collection tools

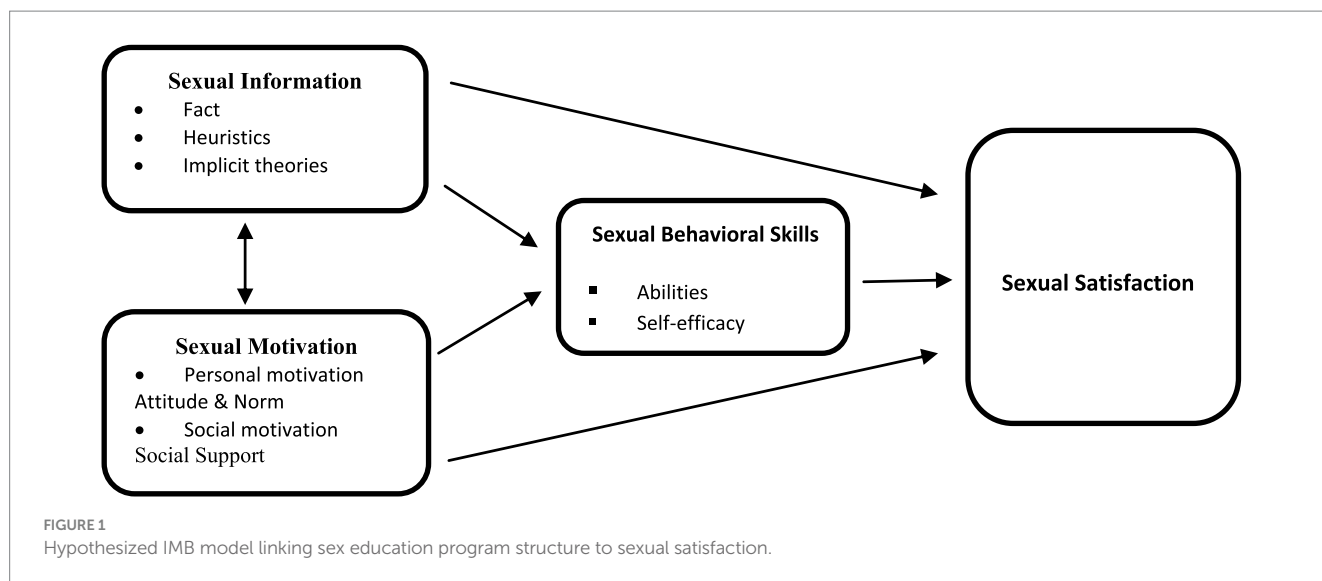
The core concepts assessed were knowledge, motivation, and behavioral skills concerning sexual relationships, with sexual function as a mediator. Data were collected using three validated questionnaires: (1) a Sexual Health Questionnaire based on the Information-Motivation-Behavioral Skills (IMB) model, (2) the Male Sexual Function Questionnaire, and (3) Larson's Sexual Satisfaction Scale.

2.3 Sexual health questionnaire based on (IMB) model constructs

This 51-item tool, structured into three scales and nine subscales, measures sexual health based on the IMB model. The sexual information scale (12 items) comprises three subscales: facts (7 items), exploratory discussion (2 items), and implicit theories (3 items). The sexual motivation scale (17 items) includes attitude toward sex (12 items), sexual trend (3 items), and social support (2 items). The behavioral skills scale (22 items) assesses sexual self-efficacy (11 items), behavioral skill (4 items), and behavior (7 items). The tool's reliability and validity were confirmed by Bagheri et al. (5), with content validity indices of 0.92 and 0.90 for subscales and reliability coefficients ranging from 0.78 to 0.95.

2.4 The male sexual function questionnaire

This standardized questionnaire, designed to screen sexual function in men, evaluates sexual function over the past 4 weeks (22). It consists of 11 items distributed across five domains: sexual desire, erection, ejaculation, problem assessment, and overall satisfaction. Responses are scored on a 5-point Likert scale (range: 11 to 55), with higher scores indicating better sexual function. The questionnaire's



content validity was assessed by a panel of experts, and its reliability was confirmed through test–retest methods (0.93–0.97) and intraclass correlation coefficients (0.95).

2.5 Larson’s sexual satisfaction scale

The Persian version of Larson’s Sexual Satisfaction Scale, localized and standardized for the Iranian population by Bahrami et al. (4), was used to measure sexual satisfaction. The 25-item scale utilizes a 5-point Likert scale ranging from ‘completely agree’ (5 points) to ‘completely disagree’ (1 point), with total scores ranging from 25 to 125. Higher scores indicate greater sexual satisfaction. The scale’s reliability was determined by Cronbach’s alpha, yielding a value of 0.7.

2.6 Development and evaluation of the educational content

The “Buzhan” educational program, named after a Kurdish term meaning “flourishing man,” was designed based on a literature review covering individual sexual health, sexual satisfaction, sexual function, and sexual health in couples. The educational content addressed the three IMB model constructs: information, motivation, and behavioral skills. A panel of experts (including sexologists, psychologists, health professionals, and health educators) reviewed the content for accuracy, clarity, purposefulness, and simplicity.

The intervention topics included: (1) basic sexual health information (anatomy and physiology of sexual organs, common sexual problems and disorders); (2) the importance of sexual education (marital communication skills and their significance); (3) motivational factors in sexual satisfaction; (4) myths and beliefs about sexual health; (5) sexual function (sexual response cycles and common disorders); and (6) guidelines for sexual relations during pregnancy.

The educational materials were delivered digitally through booklets, stickers, podcasts, short videos, and infographics. Due to the

COVID-19 pandemic, the content was shared via smartphones, incorporating multimedia messages and online discussions.

2.7 Procedure

2.7.1 Pre-test stage

Participants in both the intervention and control groups completed a pre-test, including the three questionnaires. Given the number of questions, participants had the option to save their responses and complete the survey later.

2.7.2 Training stage

The 16-week “Buzhan” program was delivered through weekly online classes and multimedia messages via smartphone in Kurdish. Online discussions, held every Wednesday for 30 min, were moderated by health professionals and psychologists using the BigBlueButton platform at Tarbiat Modares University. Multimedia messages were sent daily at 10:00 a.m., with reminders for online classes provided an hour before the session. All training was facilitated by a male sexologist. Participants received free internet access to promote adherence to the program.

2.7.3 Post-test stage

Sixteen weeks after the intervention, both groups completed a post-test. The control group received the educational content after the 16-week period.

This study was approved by the Tarbiat Modares University Ethics Committee (IR.MODARES.REC.2019.038). Consent was obtained online via participants’ agreement to the survey according to the Declaration of Helsinki. Participants were briefed about the study’s purpose over the phone, and written consent was submitted electronically.

2.8 Statistical analysis

Statistical analysis was performed using SPSS version 16. Homogeneity between the groups was tested with Chi-square, Fisher’s exact test, and independent t-tests. Data normality was

assessed using kurtosis and skewness tests. Repeated-measures ANOVA was used to analyze intergroup differences before and after the intervention. For non-normally distributed data, a nonparametric covariance test was applied.

3 Results

There were no significant differences between the experimental and control groups in terms of age (33.38 ± 4.43 vs. 32.73 ± 4.41 years; $p = 0.48$), spouse's age (29.09 ± 4.81 vs. 28.76 ± 5.71 years; $p = 0.53$), or duration of marriage (3.76 ± 1.41 vs. 3.54 ± 1.54 years; $p = 0.51$). Table 1 provides a summary of the sociodemographic characteristics of the participants.

There was no significant difference in the mean scores for all dimensions of the IMB model and sexual satisfaction between the experimental and control groups before the intervention ($p > 0.05$). However, a significant difference was observed in all dimensions of the IMB model and sexual satisfaction between the experimental and control groups after the intervention ($p < 0.05$). Additionally, the mean scores for all dimensions of the IMB model and sexual satisfaction in the experimental group were significantly higher after the intervention ($p < 0.05$), whereas no significant changes were observed in the control group ($p > 0.05$). No significant differences were found between the groups regarding sexual function before and after the intervention ($p > 0.05$; see Table 2).

The educational intervention was effective in improving sexual satisfaction, as indicated by the significant difference in post-intervention scores ($p = 0.001$). In the experimental group, 60% of the

variation in sexual satisfaction post-intervention could be attributed to the educational intervention (Table 3). The intervention group's significant improvement in sexual satisfaction confirms the effectiveness of the educational program.

4 Discussion

This study aimed to evaluate the effectiveness of sexual satisfaction training programs using the IMB model in married men in Sanandaj, Iran. The findings demonstrate that the intervention significantly impacted all model constructs and sexual satisfaction, except for sexual function.

The educational intervention program in this study effectively increased participants' sexual information. Specifically, 60, 31, and 40% of the mean differences in facts, exploration, and implicit theories in the control group were attributed to the educational intervention. This is consistent with Vural and Temel's and Suwarni et al. study, which found that educational programs based on the IMB model improved participants' sexual knowledge (7, 23). Sexual education can address ambiguous beliefs about sexuality, enhancing access to accurate information (22).

The intervention significantly enhanced sexual motivation, correcting traditional attitudes that hinder sexual satisfaction (e.g., performing duty, obedience, shame, dominance in the relationship, requesting a relationship by the spouse, violence and power-seeking behaviors), to experience satisfying sex with their spouse. The possible explanation is although sexual orientations are inherent and involuntary, sexual attitudes and behaviors are learnable. These

TABLE 1 Sociodemographic characteristics of the participants.

Variable	Intervention ($n = 42$)	Control ($n = 42$)	p -value
Education level			
High School	8 (19%)	13 (31%)	0.18*
Diploma	3 (7.1%)	6 (14.3%)	
Associate Degree	4 (9.5%)	1 (2.4%)	
Bachelor's Degree	9 (21.4%)	15 (35.7%)	
Master's Degree	14 (33.3%)	5 (11.9%)	
Doctorate	4 (9.5%)	2 (4.8%)	
Occupation			
Unemployed	3 (7.1%)	3 (7.1%)	0.06*
Worker	1 (2.4%)	7 (16.7%)	
Employee	28 (66.7%)	19 (45.2%)	
Student	1 (2.4%)	0 (0%)	
Free	7 (16.7%)	12 (28.6%)	
Other	2 (4.8%)	1 (2.4%)	
Spouse's job			
Housewife	27 (64.3%)	33 (78.6%)	0.137**
Part-time Job	1 (2.4%)	3 (7.1%)	
Employee	11 (26.2%)	2 (4.8%)	
Free	1 (2.4%)	3 (7.1%)	

*Fisher's exact test. **Chi-square test.

TABLE 2 Scores of the IMB model before and after the intervention.

Variable	Group	Before (Mean \pm SD)	After (Mean \pm SD)	p-value (within group)
Facts	Intervention	24.69 \pm 2.15	28.66 \pm 1.99	$p < 0.001$
	Control	24.92 \pm 2.37	25.00 \pm 2.29	0.08
Exploration	Intervention	7.66 \pm 1.22	8.54 \pm 0.96	$p < 0.001$
	Control	7.88 \pm 1.38	7.90 \pm 1.33	0.31
Implicit theories	Intervention	8.42 \pm 1.65	11.16 \pm 1.84	$p < 0.001$
	Control	8.61 \pm 1.62	8.66 \pm 1.60	0.15
Personal motivation	Intervention	46.73 \pm 3.47	49.42 \pm 3.28	$p < 0.001$
	Control	47.04 \pm 3.65	47.11 \pm 3.68	0.08
Social support	Intervention	3.19 \pm 0.80	4.19 \pm 0.91	$p < 0.001$
	Control	3.52 \pm 1.13	3.57 \pm 1.12	0.41
Sexual function	Intervention	41.26 \pm 5.56	41.28 \pm 5.15	$p = 0.09$
	Control	41.05 \pm 6.09	41.23 \pm 6.07	$p = 0.10$
Sexual satisfaction	Intervention	73.83 \pm 5.06	84.35 \pm 4.43	$p < 0.001$
	Control	74.04 \pm 6.23	74.26 \pm 5.72	$p = 0.53$

TABLE 3 Covariance analysis of sexual satisfaction scores.

Source	Total squares	Df	Mean squares	F	p-value	Effect size	Test power
Pre-test	718.23	1	718.23	40.64	$p = 0.53$	0.33	1.0
Group	2187.01	1	2187.01	123.74	$p < 0.001$	0.60	1.0
Error	1431.52	81	0.82				

findings align with Mallory et al. (24) and others, suggesting that informed sexual attitudes foster better sexual expression and experiences (25, 26). By addressing the modification of harmful beliefs and attitudes, the program helped men experience more fulfilling sexual relationships with their spouses.

Social support emerged as a critical factor in improving sexual satisfaction. Participants who received social support reported higher marital satisfaction, consistent with other studies (27, 28). This highlights the importance of active social and community support systems, especially in cultures where formal sexuality education services are lacking or stigmatized (15).

The intervention also positively influenced sexual skills, self-efficacy, and behavior. Participation in the sexual training program led to reduced incoherence and conflict in sexual relations, and increased couples' sexual knowledge and skills. The perception of sexual self-efficiency is associated with the ability of individuals to perform sexual behaviors correctly and satisfactorily (15). While the experimental group demonstrated significant improvements in these areas, the results for sexual function (desire, ejaculation, erection, and satisfaction) remained largely unchanged, with minimal improvement. This discrepancy may be due to the nature of the online/offline intervention during the COVID-19 pandemic and the limited follow-up period, which might not have been sufficient to observe changes in sexual function.

The increase in sexual satisfaction in the experimental group aligns with prior research (29, 30), confirming that educational interventions can significantly improve sexual satisfaction. From the

perspective of social exchange theory, marital satisfaction is linked to sexual satisfaction and vice versa (31). In this context, improving positive sexual behaviors while reducing negative ones enhances both sexual and marital satisfaction (32).

4.1 Limitations

The main limitation of this study was the in-person educational intervention sessions due to the COVID-19 pandemic. The inability to include women in the study was another limitation, as was the cultural sensitivity surrounding sexual discussions in Iran. This focus on male sexual satisfaction may have led to sensitivity bias in some participants, which should not be interpreted as an endorsement of male dominance in sexual relationships, but rather as a practical decision based on cultural constraints.

5 Conclusion

The educational program effectively improved sexual satisfaction and related constructs (information, motivation, and behavioral skills) in married men, except for sexual function. The program addressed critical gaps in sexual information, attitudes, and self-efficacy, empowering participants to improve their sexual well-being. Despite cultural barriers, the program succeeded in enhancing sexual knowledge and satisfaction, suggesting its potential for broader application of the IMB model.

Future interventions could consider simultaneously involving women and men (couples) with a focus on improving sexual function in longitudinal studies with longer follow-up periods that are more appropriate for assessing sustained effects.

Data availability statement

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author.

Ethics statement

Ethical approval for collecting this research data was obtained with the ethical code IR.MODARES.REC.1398.038 by the Tarbiat Modares University Research Deputy. The studies were conducted in accordance with the local legislation and institutional requirements. The participants provided their written informed consent to participate in this study.

Author contributions

NG: Conceptualization, Data curation, Investigation, Methodology, Project administration, Validation, Writing – original draft. FZ: Conceptualization, Formal analysis, Investigation, Methodology, Project administration, Resources, Software, Supervision, Validation, Visualization, Writing – original draft, Writing – review & editing. FG: Conceptualization, Methodology, Supervision, Validation, Visualization, Writing – review & editing.

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Silent struggles: help-seeking barriers for sexual difficulties among adults 50+ in Czechia

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Although sexual problems become more common with age, older adults rarely seek professional help. Understanding why is key to supporting sexual health in aging populations. This study assessed the prevalence of sexual difficulties, help-seeking behavior, and reasons for not seeking help among Czech adults aged 50–75, using nationally representative data from the 2023/2024 CzechSex survey ($n = 2,927$; 53% men). Logistic regression analyses examined the predictor role of sociodemographic factors, sexual activity frequency, sexual ageism, and distress over sexual problems on help-seeking. Lifetime sexual difficulties were reported by 59% of respondents, and 31% experienced them in the past 12 months. Among those with persistent issues, only 7.6% sought counseling or other professional help. Women were significantly more likely than men not to seek help (OR = 1.64, 95% CI [1.04, 2.61], $p < 0.05$); lower distress was also associated with non-help-seeking (OR = 0.68, 95% CI [0.54, 0.86], $p < 0.001$). The most common reasons for not seeking help were perceiving problems as not bothersome, followed by shame, embarrassment, and difficulty communicating (personal/emotional barriers). Systemic barriers (e.g., lack of services, long wait times) were rarely reported. Overall, help-seeking for sexual problems is uncommon in this age group, and personal barriers outweigh institutional ones, posing a challenge for effectively targeting no-help seekers and designing effective interventions.

KEYWORDS

sexual difficulties, help-seeking behavior, distress, older adults, adults 50+, barriers to help seeking, national survey data, CzechSex

Introduction

Sexual activity remains an important aspect of life well into midlife and older age, with abundant evidence that many individuals maintain interest and engage in partnered and solo sexual behaviors (Freak-Poli et al., 2017; Lee et al., 2016; Smith et al., 2019; Træen et al., 2019). For aging adults, sexual engagement and intimacy are linked to wellbeing and relationship satisfaction (Træen et al., 2019). However, sex-related difficulties become more common with age and can hinder sexual activity (Briken et al., 2020; Burghardt et al., 2020; Hendrickx et al., 2015; Richters et al., 2022). Despite this, most older adults do not seek help, and the reasons behind this reluctance remain poorly understood. Existing evidence is limited, drawn mainly from surveys in high-income Western countries or small-scale qualitative studies (Teo et al., 2022). To address this gap, we used a nationally representative sample of Czech adults aged 50–75 to assess the prevalence of sexual difficulties and examine the correlates of and reasons for not seeking help. Czechia provides a unique context as a highly secular, post-communist country

(Hamplová, 2013), potentially shaping societal attitudes toward sexuality and willingness to seek professional support.

While it is well established that both the frequency of sexual activity and sexual function decline with age (Lee et al., 2016; Mitchell et al., 2015; Schick et al., 2010), recent population-based studies consistently show that sexual difficulties increase with age, with a notable proportion of midlife and older adults reporting sexual problems (Mitchell et al., 2015; Graham et al., 2020; Hald et al., 2019; Hendrickx et al., 2015; Quinn-Nilas et al., 2018). In the UK Natsal-3 survey, 50.3% of sexually active individuals aged 45–74 reported at least one sexual difficulty in the past year (Mitchell et al., 2013). Similarly, 42.1% of Australians aged 50–69 (Richters et al., 2022) and around 24% of Germans aged 46–75 (Briken et al., 2020) reported such issues. Notably, distress levels are substantially lower most older adults experiencing sexual difficulties report minimal associated concern or distress (Briken et al., 2020; Fischer and Træen, 2021; Graham et al., 2020; Hald et al., 2019; Richters et al., 2022), suggesting a dissociation between dysfunction and perceived impairment. Some studies even suggest that late-midlife and older individuals may downplay these problems (Gore-Gorszewska, 2020; Ševčíková et al., 2023). Nevertheless, sexual difficulties remain an important public health concern requiring recognition and support.

Despite many sexual difficulties being amenable to medical or psychological treatment (Frühauf et al., 2013), help-seeking remains infrequent across all age groups, including among those reporting distress (Hobbs et al., 2019). In a cross-national study, only about 20% of adults aged 40–80 sought professional help for sexual problems (Moreira et al., 2005), and just 10.7% of Britons aged 55–74 sought advice in the past year (Mitchell et al., 2013). More recently, only 12% of men and 7% of women aged 60–75 in four European countries had sought help within five years (Hinchliff et al., 2020). In the U.S., only 17.3% of community-dwelling adults aged 65–80 discussed sexual health with a healthcare provider within two years (Agochukwu-Mmonu et al., 2021). Some surveys lack reporting of help-seeking behaviors alongside sexual problem prevalence, or do not disaggregate by age group, limiting insights into older adults' behaviors (Briken et al., 2020; Richters et al., 2022).

Qualitative studies suggest that barriers to help-seeking among older adults include not being bothered by the symptoms, normalization of symptoms with aging, expectations of symptom resolution without intervention, embarrassment, and concerns about healthcare providers' attitudes and expertise (Bauer et al., 2016; Fileborn et al., 2017; Gore-Gorszewska, 2020; Hinchliff et al., 2020; Schaller et al., 2020; Teo et al., 2022).

Unaddressed sexual problems in later life can negatively impact personal and relational satisfaction, and sexual and general wellbeing (Lodge and Umberson, 2012; Ševčíková et al., 2023). Understanding why aging individuals often do not seek help for these issues is therefore essential. This study aimed at examining the extent to which Czech adults aged 50–75 seek professional help for sexual difficulties, the characteristics of those who report sexual difficulties but do not seek support, and finally, the reasons behind the lack of help-seeking.

Materials and methods

Procedure

The study was part of CzechSex, a nationwide survey of sexual wellbeing and behavior conducted in Czechia from December 2023 to March 2024. The methodology followed best practices for sexual health surveys and employed a combination of methods that allow for cost-efficient balance by using face-to-face methods (Computer-Assisted Self-Interviewing [CASI], Computer-Assisted Personal Interviewing [CAPI]) for hard-to-reach populations and online methods (Computer-Assisted Web Interviewing [CAWI]) for broader outreach.

Sampling

Data were collected using quota sampling based on gender, age, education, region, and residence size, reflecting the Czech population structure from the 2021 census (Czech Statistical Office, 2023). Response rates were 46.98% for CAPI/CASI and 28.39% for CAWI.

Participants

Participants included 6,669 Czech adults aged 18–75, with 2,009 interviews conducted in person and 4,660 online. This study uses a sub-sample of 2,939 adults aged 50–75 (Mean age = 61.92, SD = 7.52); with 1521 women (51.8%). Most of the respondents self-identified as heterosexual (97.5%), were married or in a civil partnership (56.8%) and still work-active (55.3%) (see Table 1 for demographic details, weighted data).

Ethics

Responses were anonymous and confidential. The study was approved by the National Institute of Mental Health's Institutional Review Board (Approval No. 119/19) participants were informed about the study's purpose and data handling.

Measurements

Sexual problems

After the introductory sentences which normalized the existence of problems related to sexual function and varied levels of distress, a question with eight statements about experiencing listed sexual problems was provided: "Have you ever had any of these problems, for at least a few months?" (e.g., "My sex drive was greatly reduced, or I had none", "I have not been able to achieve or maintain an erection, or it was not firm enough to be sexually active", "I have experienced intense and persistent or recurrent difficulties during sexual intercourse, e.g., due to pelvic floor muscle spasms, pain or fear of pain."). These statements were adapted from the GeSiD survey (Briken et al., 2020).

The response options were Yes (=1), No (=0), and “It does not concern me,” coded as a missing value. Respondents were also asked whether they had experienced these sexual problems in the past 12 months, with response options Yes (=1) and No (=0).

Help-seeking behavior

Participants who reported experiencing at least one sexual problem in the past were asked “Have you sought counseling or other professional help for these sexual problems in the last 5 years?” The response options were Yes and No.

Reasons for not seeking help were assessed by the question “Why didn’t you seek counseling or professional help? Tick all that apply”, administered to all respondents who reported no help-seeking. The alternatives were “I was ashamed, I was embarrassed” (=1), “It was hard for me to talk about my problem” (=2), “I didn’t want anyone to know about my problem” (=3), “I didn’t know where to turn for help” (=4), “Waiting times were too long” (=5), “No such services were offered where I live” (=6), “The last time I sought help, I had negative experience or was disappointed” (=7), “I didn’t have time to deal with it” (=8), “I assumed it would work itself out” (=9), “The symptoms didn’t bother me much” (=10), “My partner didn’t agree with that” (=11), “Other reasons” (=12). Response options 1–4 were grouped into the category “Personal/Emotional barriers”, and response options 5–7 formed the category “Systemic/Institutional barriers”.

Self-assessed general health status was measured by the question “In general, how do you rate your physical health in the last 4 weeks?” where the response categories were 1 = very good, 2 = good, 3 = average, 4 = poor, and 5 = very poor.

Length of current relationship. Respondents were asked to estimate relationship duration in years or months (if shorter than 1 year).

The predictors of the outcome variables above were *Age* and *Sex* (1 = male, 2 = female). Although non-heterosexual individuals were included in the overall sample, their small number did not allow for reliable analysis, they were therefore excluded from the regression models. *Level of education* was assessed based on the highest level of formal education, with response options including primary or vocational (=1), secondary education with a diploma (=2), higher or tertiary education (=3). *Religiosity* was assessed with a single question on religious affiliation, with response options including Christianity, Islam, Judaism, Buddhism, Hinduism, Sikhism, Bahá’í, Other, and No religious affiliation. For analysis, the item was dichotomized as No religious affiliation (=0) and Religious affiliation (=1). *Relationship status* was assessed by a question “Are you currently in a stable/committed relationship? This could include romantic relationships, marriage, or partnerships, regardless of length, cohabitation, or sexual activity”. Response options (Yes, with a woman/a man/a trans, non-binary, or gender-diverse person/multiple partners of the same gender/multiple partners of different genders; No, I do not have a stable/committed/partnered relationship) were dichotomized as being (=1) and not being in a committed relationship (=0). *Frequency of sexual activity* was measured with a single item: “Approximately how often have you had sex in the last 12 months? By sex we mean any sexual contact between people, involving the genital area. This may include oral sex, vaginal sex, anal sex, fondling/touching, genital rubbing, etc.”. Respondents indicated

the frequency on a 6-point Likert scale ranging from not once (=1) to several times per day (=6). A higher score indicated more frequent sexual activity. *Sexual ageism* was measured by a single item: Respondents rated their attitudes toward older adults engaging in an active sexual life on a 5-point Likert scale, ranging from completely acceptable (1) to completely unacceptable (5), with higher scores indicating stronger sexual ageism. *Level of distress:* Items assessing how distressing a sexual problem was were shown only to participants who reported experiencing that specific problem. All displayed items, which used a 5-point Likert scale, ranging from not at all (=1) to very strongly (=5), were averaged. A higher score indicated the problems were perceived as more distressing.

Analyses

Apart from the descriptive data analysis, we conducted logistic regression to explore correlates of seeking professional help for sexual problems. Based on sensitivity analysis conducted in G*Power (Faul et al., 2009), by conducting a logistic regression analysis with a sample size of at least 844 people, the alpha level set to 0.05, and statistical power of 0.80, it was expected to detect the medium effects of R^2 increase = 0.05 (OR = 1.25) and higher. The outcome variable was seeking (=0) and not seeking counseling or other professional help for sexual problems (=1). Sex, age group (50–59/60+), education, religiosity, relationship status, frequency of sexual activity, sexual ageism, and the level of distress over experienced sexual problems were included as independent variables. The assumptions of the logistic regression were satisfied. There was no significant multicollinearity (VIF < 3) in any the tested model. The analysis was carried out using weighted data in the statistical package SPSS 24.

Results

Table 1 provides characteristics of the whole sample and the sample of those who indicated having any sexual problems in their life and in the past 12 months. About 59% of the sample had a past experience with sexual problems lasting at least several months. There were no sex differences [$\chi^2(1) = 2.817$], 52.28% of women and 47.72% of men reported experiencing at least one sexual problem. However, there were significant age differences [$\chi^2(1) = 18.992^{***}$], 38.72% of people aged 50–59 and 61% of people aged 60–75 reported experiencing at least one sexual problem. About 53% of those who had experienced at least one sexual problem had dealt with it in the past 12 months. Of these, 44.7% indicated that the sexual problems they experienced in the past 12 months were somewhat distressing, while 18.9% found their difficulties to be very distressing. Among those who were sexually active in the past 12 months ($n = 1,803$), 29.4% reported experiencing sexual difficulties during that time.

Frequency of professional help-seeking

Only a fraction of participants (7.6%, $n = 130$) had sought counseling or professional help for a sexual problem in the past

TABLE 1 Sociodemographic characteristic and descriptive statistics of the sample (weighted data).

Descriptives	Respondents aged 50+ (<i>n</i> = 2939)		Having sexual problems (<i>n</i> = 1733)		Having sexual problems in the past 12 months (<i>n</i> = 919)	
	rate/mean	SD	rate/mean	SD	rate/mean	SD
Sex						
Men	48.20		47.72		47.77	
Women	51.76		52.28		52.23	
Age						
50–59	41.88		38.72		38.30	
60+	58.12		61.28		61.70	
Sexual orientation						
Heterosexual	97.50%		97.21%		97.10%	
Non-heterosexual	2.50%		2.79%		2.90%	
Education						
Primary/Vocational	44.38%		44.20%		46.79%	
Secondary	35.88%		35.39%		33.08%	
Tertiary	19.74%		20.31%		20.13%	
Employment status						
Employed	55.30%		53.01%		51.25%	
Unemployed/Work inactive	4.54%		5.19%		5.01%	
Retired	40.16%		41.78%		43.74%	
Religiosity						
Religious affiliation	28.40%		29.62%		29.21%	
No religious affiliation	71.60%		70.38%		70.38%	
Marital status						
Single	7.14%		6.75%		6.86%	
Married/Civil partnership	56.77%		56.03%		57.19%	
Divorced/Dissolution	24.26%		25.68%		23.31%	
Widowed	11.83%		11.54%		12.64%	
Relationship status						
In a committed relationship	73.11%		72.73%		72.11%	
No relationship	26.89%		27.27%		27.89%	
Other descriptives						
Relationship length	20.67	18.16	20.67	18.34	21.41	18.74
Self-perceived health in past 4 weeks	2.55	0.89	2.68	0.91	2.83	0.91
Sexual frequency in past 12 months	2.93	1.10	2.21	1.10	2.09	1.06
Sexual ageism	1.60	0.97	1.50	0.86	1.48	0.84
Sexual problems in the past 12 months			59.29%			
Level of distress over sexual problems			2.71	0.94	2.84	0.97
Seeking help for sexual problems						
No help-seeking behavior			92.35%		89.26%	
Seeking help			7.64%		10.74%	

five years. More men than women reported seeking help [$\chi^2(1) = 10.763^{***}$]: 9.8% of men reporting at least one sexual problem ($n = 80$) and 5.6% of women reporting at least one sexual problem ($n = 50$). There were no significant age differences [$\chi^2(1) = 0.40$] in help-seeking behavior: 8.2% in the 50–59 group ($n = 54$) and 7.5% in the 60–75 group sought counseling or professional help in the past five years.

Characteristics of no-help seekers

We conducted logistic regression to predict who reported experiencing at least one sexual problem in the last 12 months but did not seek professional help (Table 2). The analysis showed that help seekers and no-help seekers did not differ in most sociodemographic characteristics such as age, education level, relationship status, religiosity. Additionally, neither frequency of sexual activity nor sexual ageism predicted seeking professional help. Only sex and level of distress over sexual problems were associated with help-seeking. Women were more likely to not seek counseling or professional help for sexual problems experienced in the past 12 months (OR = 1.64; $p < 0.05$; 95% CI [1.04; 2.61]). The perception of sexual problems as less distressing was also associated with not seeking professional help (OR = 0.68; $p < 0.001$; 95% CI [0.54; 0.86]).

Reasons for not seeking professional help

In total, 90.11% ($n = 729$) of men and 94.36% ($n = 836$) of women who had experienced a sexual problem lasting at least several months claimed they did not seek professional help. The most common reason for not seeking professional help, reported by around one third of women and men was not perceiving symptoms as bothersome. Around 1 in 4 individuals, irrespective of sex and age group, claimed they have not sought help due to feeling ashamed, embarrassed or not knowing how to talk about the issue (personal/emotional barriers). Men, especially those aged 50–59, tended to report more than women that they assumed symptoms would resolve on their own as a reason for not seeking professional help. Still, almost 1 in 5 women reported the assumption of self-resolution. The fourth barrier was a lack of time, indicated by <1 in 10 individuals, slightly more often in adults 50–59 than 60+. Systemic/Institutional barriers (i.e. lack of services, long waiting times, negative past experiences) were reported infrequently, along with partner disagreement and other, not specified reasons (Table 3).

Discussion

Using representative data, this study aimed at examining the extent to which Czech adults aged 50+ seek counseling or other professional help for sexual difficulties, the characteristics of those who report sexual difficulties but do not seek help, and the reasons behind the lack of help-seeking behavior.

The present study showed that nearly 59% of Czechs aged 50–75 have experienced sexual problems in their lifetime,

TABLE 2 Not seeking counseling or other professional help for sexual problems experienced in the past 12 months ($n = 844$, weighted data).

Factors	No help seekers	
	OR	OR 95% CFI
Sex		
Men	1	
Women	1.64*	(1.04, 2.61)
Age		
50–59	1	
60+	1.20	(0.76, 1.90)
Education		
Primary/Vocational	1	
Secondary	1.43	(0.85, 2.41)
Tertiary	1.20	(0.76, 1.90)
Religiosity		
No religious affiliation	1	
Religious affiliation	1.08	(0.65, 1.78)
Relationship status		
No relationship	1	
In a committed relationship	1.04	(0.59, 1.83)
Other factors		
Sexual frequency in the past 12 months	1.86	(0.68, 1.08)
Sexual ageism	1.10	(0.82, 1.48)
Level of distress over sexual problems	0.68***	(0.54, 0.86)
Model fit		
Hosmer-Lemeshow Test	$\chi^2(8) = 9.10$	
Nagelkerke's R^2	0.05	

* $p < 0.05$, *** $p < 0.001$.

while 31% reported such difficulties in the past 12 months. Among those who were sexually active, only 29.4% reported experiencing sexual difficulties in the past 12 months—considerably lower than in other population-based surveys (Mitchell et al., 2013; Richters et al., 2022). However, these rates appear to be more comparable to the GeSiD (24% of people aged 46–75 reported experiencing sexual problems in the previous 12 months; Briken et al., 2020), probably due to methodological similarities in measuring sexual difficulties used in both surveys.

The rates of help-seeking in Czechia confirm patterns observed in other population-based studies that provide age-specific data (Hinckliff et al., 2020; Mitchell et al., 2013; Moreira et al., 2005). Only a small proportion (7.6%) of Czech people aged 50–75 had sought counseling or professional help for a sexual problem in the past five years. This echoes recent results from a representative survey in four European countries, where 9.45% of individuals aged 60–75 had sought professional help for a sexual problem in the same time frame (Hinckliff et al., 2020), and is slightly

TABLE 3 Reasons for not seeking help in the past five years among respondents who had experienced one or more sexual problem, by gender and age group (weighted data).

Reasons	Men		Women	
	50–59 (%) (n = 284)	60+ (%) (n = 444)	50–59 (%) (n = 322)	60+ (%) (n = 515)
The symptoms didn't bother me so much	29.8 (85)	31.8 (141)	29.5 (95)	27.2 (140)
Personal/Emotional barriers ^a	25.4 (72)	21.9 (97)	25.8 (83)	24.1 (128)
I assumed it would work itself out	31.7 (90)	25.2 (112)	19.5 (82)	18.1 (93)
I didn't have time to deal with it	9.2 (26)	6.8 (30)	10.9 (35)	6.4 (33)
Systemic/Institutional barriers ^b	3.2 (9)	3.2 (14)	4.7 (15)	4.7 (24)
My partner didn't agree with that	0	1.8 (8)	1.9 (6)	1.9 (10)
Other reasons	7.0 (20)	8.1 (36)	6.8 (22)	6.8 (35)

Multiple answers allowed; thus, percentages do not sum up to 100.

^aPersonal/Emotional barriers: "I was a I was ashamed, I was embarrassed", "It was hard for me to talk about my problem", "I didn't want anyone to know about my problem", "I didn't know where to turn for help".

^bSystemic/Institutional barriers: "Waiting times were too long", "No such services were offered where I live", "The last time I sought help, I had negative experience or was disappointed".

lower than in the Natsal-3 project, where 10.7% of British people aged 55–74 reported seeking help or advice regarding their sex life from any source (e.g., a friend, the internet, or professional services) in the past year (Mitchell et al., 2013). It is worth noting that, unlike the Natsal-3 data, the CzechSex survey focused exclusively on counseling or professional help—a specific form of help-seeking that may be less common than seeking sexually related advice from informal sources or online. Overall, this indicates that Czechs, akin to their peers elsewhere, rarely seek professional help for sexual difficulties despite the relatively high rates of in-person consultations with medical doctors reported by Czechs (Eurostat, 2024). This poses a broader challenge for improving sexual health and wellbeing among aging populations in Czechia and beyond.

Correlates of help-seeking

Our logistic regression analysis confirmed that the level of distress over sexual problems was a key factor in seeking professional help in Czech adults 50+. This aligns with prior research identifying similar patterns (Hinchliff et al., 2020; Moreira et al., 2005; Štulhofer et al., 2020). Low prevalence of help-seeking due to absence of distress matches the widely observed trend that older individuals frequently report symptoms of sexual problems but rarely express being concerned about them (Briken et al., 2020; Fischer and Træen, 2021; Graham et al., 2020; Hald et al., 2019; Richters et al., 2022). Consistently, the main reason for not seeking help reported in this study was not being bothered by the symptoms. It is possible that the problems were transient and manageable without intervention. Alternatively, older people often prioritize emotional intimacy and tenderness over physical sexual activity (Gore-Gorszewska and Ševčíková, 2023; Sandberg, 2013; Stahl et al., 2019). Adapting their sexual practices to focus on non-penetrative or non-physical intimacy may lessen the impact of sexual functioning problems and reduce the perceived need for professional support.

Besides the clear effect of distress, women were found to be less likely to report help-seeking for their sexual problems—a pattern also observed in the already mentioned four-country European survey on older adults (Hinchliff et al., 2020), among individuals aged 45 or over in the Natsal-3 (Hobbs et al., 2019), as well as in an analysis of sex-related queries posted by older adults on Czech professional counseling websites (Ševčíková et al., 2023). This consistent finding across studies is intriguing, given that women are generally more likely than men to visit healthcare professionals and to take on caregiving roles in the context of illness (Blackwell et al., 2014; Czech Statistical Office, 2023; Revenson et al., 2016). This may be explained by the well-recognized invisibility of female sexual dysfunction in both public discourse and medicine (Kaschak and Tiefer, 2014; Kleinplatz et al., 2020). The persistent disparity in attention given to women's healthcare compared to men's may discourage them from seeking help for their sexual problems (Khan et al., 2024). It is also possible that maintaining an active sex life is more important to aging men than women. A study by Gore-Gorszewska and Ševčíková (2023) points to a generational emphasis in Czechia on penetrative sex as the sole legitimate sexual practice in later life that may clash with the more intimacy-oriented expectations of older women. In this vein, the onset of sexual difficulties might function as an exit strategy for some women to withdraw from perceived marital obligations, including unsatisfying partnered sexuality (Gore-Gorszewska, 2021). Moreover, age differences typical for heterosexual couples could also help explain sex differences in help-seeking behavior. Younger women may be less motivated to address their own sexual difficulties if their older male partners are at greater risk of experiencing health issues that prevent them from having partnered sex (Hinchliff and Gott, 2004; Ševčíková and Sedláková, 2020). Hence, they may be more willing to reassess the importance of partnered sex in order not to put additional burdens on the partner.

It is worth mentioning that the logistic regression analysis largely failed to identify clear characteristics of no-help seekers. This group was very similar to those who sought help, which poses a challenge for effectively targeting no-help seekers and designing

interventions. Other studies also struggle with considerable lack of association between selected—mainly demographic—characteristics and help-seeking behavior (Hinchliff et al., 2020; Hobbs et al., 2019), suggesting that more nuanced approach is necessary and future research should extend beyond the already considered sociodemographics and correlates of sexual life.

Reasons for not seeking help

Almost a quarter of participants indicated that personal barriers, such as embarrassment, shame, reluctance to share, and difficulty in talking about sexual problems, stopped them from seeking professional help or counseling. Although such barriers are not exceptional and they have been observed in qualitative literature, they are usually not that common and framed within a doctor-patient interaction during consultation, that is fear of doctor's judgement, disapproval or dismissal of "irrelevant" concerns (Fileborn et al., 2017; Gore-Gorszewska, 2020; Schaller et al., 2020). Notably, in comparison with older adults from Norway, Denmark, Belgium and Portugal (Hinchliff et al., 2020), Czech women and men reported shame or embarrassment much more often. Possibly, cultural differences play a role in this discrepancy. This finding is particularly concerning given that the younger group (i.e., adults 50–59) was equally likely to report these personal/emotional barriers in help-seeking, suggesting a lack of generational progress in normalizing open communication about sex problems in this population.

Interestingly, systemic and institutional barriers were among the least reported reasons for not seeking professional help in this study, despite the costs and accessibility issues being recognized in literature (Maasoumi et al., 2023; Sever and Vowels, 2023). One explanation may be that personal barriers such as embarrassment, lack of knowledge, along with fear of doctor's disapproval may prevent individuals from even attempting to navigate the healthcare system thereby limiting critical evaluation of its usability.

Limitations

The present study is limited by the sample size being insufficient to conduct separate analyses for late-midlife vs. older adults. These age cohorts are known to differ in how they approach and assess the severity of sexual difficulties (Lodge and Umberson, 2012). The tested model explained only 5% of the variance in seeking help. Future research should extend beyond the sociodemographic characteristics and correlates of sexual life and consider alternative explanatory factors (e.g., healthcare mistrust, health literacy). Moreover, several key constructs were measured using single items, following a widely adopted measurement approach (Briken et al., 2020; Mitchell et al., 2015). Although subjective health is considered one of the key factors influencing sexual functioning (Delamater, 2012) and help-seeking behavior in older women (Hinchliff et al., 2020), the logistic regression model did not take it into consideration due to respondents' health assessed only in the past four weeks. In order to ensure comparability with other population-based sex surveys—such as the GeSiD study—the

Czech survey's battery of items omitted certain issues, such as vaginal dryness. This omission is notable, as vaginal dryness is among the most reported sexual difficulties in older women (Graham et al., 2020; Mitchell et al., 2013; Quinn-Nilas et al., 2018). Its exclusion may have contributed to an underestimation of the prevalence of female sexual difficulties and women's help-seeking in this study.

Conclusion

This study found that nearly one in three Czechs aged 50–75 experienced a sexual problem in the past year, yet fewer than one in ten sought professional help. Women and those who perceived their problems as less distressing were especially unlikely to seek help. Importantly, help seekers and non-help seekers showed few differences in education, relationship status, sexual behavior, or attitudes toward sexual ageism, highlighting the challenge of identifying at-risk individuals through common demographic or attitudinal markers. While systemic barriers were infrequently reported, personal and emotional obstacles—such as shame, embarrassment, or minimizing the issue—were pervasive. These findings highlight the need for targeted, stigma-sensitive interventions even in secularized and atheistic Czechia that normalize help-seeking and improve communication around sexual health in later life. Such campaigns should specifically target the personal barriers that lead Czech individuals to downplay their sexual problems or avoid seeking professional help.

Data availability statement

The original contributions presented in the study are included in the article/Supplementary material, further inquiries can be directed to the corresponding author/s.

Ethics statement

The study was approved by the National Institute of Mental Health's Institutional Review Board (Approval No. 119/19). Participants were informed about the study's purpose and data handling; they provided informed consent prior to data collection.

Author contributions

GG-G: Writing – original draft, Conceptualization, Formal analysis. AŠ: Conceptualization, Formal analysis, Writing – original draft. KB: Funding acquisition, Writing – review & editing, Investigation, Project administration, Data curation, Methodology. LKr: Funding acquisition, Project administration, Writing – review & editing, Data curation, Methodology, Investigation. LKa: Funding acquisition, Writing – review & editing, Project administration, Methodology, Data curation, Investigation. RA: Funding acquisition, Investigation, Writing – review & editing, Methodology. PW: Funding acquisition, Writing

– review & editing, Methodology. KK: Project administration, Supervision, Funding acquisition, Writing – review & editing, Methodology, Investigation.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Supplementary material

The Supplementary Material for this article can be found online at: <https://www.frontiersin.org/articles/10.3389/fpsyg.2025.1622872/full#supplementary-material>

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Sexual distress with partnered face-to-face sexual activity: an exploratory qualitative study with heterosexual cis people who seek and do not seek professional help

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Introduction: Sexual distress is interrelated with mental health and relationship quality and is fundamental for establishing a diagnosis of sexual dysfunction, even though it also affects people who do not seek professional clinical help. Research on sexual distress related to partnered sexual activity is limited, and no comprehensive model exists to guide research or clinical interventions. We conducted an online cross-sectional qualitative study to: 1) explore the reasons why people experiencing sexual distress in partnered face-to-face sexual activity do not seek professional clinical help; 2) analyze the experiences of participants' of sexual distress in partnered sexual activity; 3) reflexively compare the experiences reported by participants who seek and do not seek professional help; and 4) reflexively compare experiences across genders.

Methods: We performed reflexive thematic analysis on 438 heterosexual people answers ($M_{\text{age}} = 41.06$, $SD = 12.19$), including 306 women (69.7%) and 132 men (30.1%).

Results: Most participants (54.1%) had not sought professional clinical help but wanted to do so. Some participants (13.2%) expressed a desire for clinical consultations but reported financial or time constraints. Using the reflexive thematic analysis on the qualitative data provided, we created three themes: (1) Sexual (dys)function (It's the function), which focuses on sexual function and lack of pleasure; (2) Intimacy dynamics (It's us!), which discusses relationship challenges; (3) Intrapersonal struggles (It's me!), which highlight individual

factors, some influenced by social messages. Comparison across groups revealed that people who sought professional clinical help emphasise genital function and negative emotions, and women highlighted experiencing sexual pain, while men emphasised desire discrepancies and erectile disorder.

Discussion: Our results demonstrate that difficulties related to sexual pleasure and with penetrative sex are important sources of distress in partnered sexual activity, which is in line with DSM and ICD frameworks of sexual dysfunction. Participants' accounts show that pre-existing psychological characteristics, partnered communication, cognitive, and emotional factors are key factors to shape the experience of sexual distress related to sexual dysfunctions. This has implications for clinical work as interventions should target transdiagnostic individual factors that may not be sexual specific (e.g., repetitive negative thinking) as well as couple-level factors (e.g., communication). Internet-based integrative therapies directed at these factors may be a promising venue for those who experience sexual distress with partnered sexual activity and are reluctant to seek in-person sexual healthcare.

KEYWORDS

sexual distress, sexual pleasure, sexual dysfunction, partnered sexual activity, help-seeking, clinical practice, qualitative approach, sexual problems

1 Introduction

According to DSM-5-TR (American Psychiatric Association, 2022) and ICD-11 (World Health Organization, 2019), the experience of some level of sexual distress is an essential condition to establish a diagnosis of sexual dysfunction, and different researchers and clinicians have advocated for its essential role in the experience of sexual dysfunction (Hendrickx et al., 2013). Distress related to face-to-face partnered sexual activity is essentially linked to problems with sexual function (Zheng et al., 2020) and, despite its crucial significance in clinical settings, can also be found in community samples (Zheng et al., 2020). In both contexts (i.e., clinical settings, community samples), the experience of sexual distress related to sexual function in the context of face-to-face partnered sexual activity is associated with poorer mental health (e.g., Ventus et al., 2017) and poorer relationship quality (e.g., Nickull et al., 2022), which establishes it as an important correlate of people's overall health. Understanding the nuances of sexual distress, namely distress related to face-to-face partnered sexual activity and why people do not seek health services contributes to the Sustainable Development Goals of the United Nations (United Nations, 2015), specifically to Goal 3: Good Health and Well-Being For All.

Research developed worldwide consistently demonstrates that not everyone experiencing distressing sexual problems actively seeks or receives clinical professional help. In a study developed in Europe, America, Africa, Asia, and Australia, data were collected in 31 countries (Moreira et al., 2005) and found that among those who experienced a sexual problem, only 18.0% of men and 18.8% of women had sought medical help. According to Moreira et al. (2005), the reasons for participants not seeking professional help were some beliefs, such as considering sexual problems a normal part of ageing, doubting a doctor's ability to help, or lacking the confidence to discuss these issues with healthcare providers. Other research, meanwhile, developed in France (Buvat et al., 2009), the United States (Laumann et al., 2009), Belgium (Hendrickx et al., 2016a, 2016b) and Canada (Lafortune et al., 2023) report similar data, confirming most of those

with sexual problems reported to be distressed. Still, most of them did not seek professional clinical help. While the reasons for avoiding professional help may vary (e.g., low level of distress, long waiting lists), many individuals experience distressing sexual problems without having clinical support. Considering this data, a comprehensive approach to sexual distress needs to include reports and knowledge derived from people in clinical settings (patients and professionals) but also from those who are not receiving professional help, receiving professional help and nonetheless experience distress and may be compatible with or at risk for a formal clinical diagnosis but remain understudied.

Sexual distress is an umbrella concept and has been defined in multiple ways. For example, Witting et al. (2008, p. 5288) state that sexual distress is "characterized by negative feelings and anxiety about one's sexuality or sexual activities" and Hendrickx et al. (2016a, 2016b, p. 1662) define it as "distress that is experienced due to a sexual impairment." Furthermore, sexual distress has been assessed using multiple measures that are aligned with different visions of the concept. For example, the *Sexual Satisfaction Scale for Women* (SSS-W, Meston and Trapnell, 2005) describes sexual distress as distress about sexual self-concerns, and the widely used *Sexual Distress Scale-Revised* (SDS-R, Derogatis et al., 2008; Santos-Iglesias and Walker, 2018) describes it as sexuality related personal distress (e.g., distress about sex life). Some other studies that measure sexual distress do not use a scale and instead ask questions such as "During the past 4 weeks, how much distress or worry has your own sexuality caused you?" (Bancroft et al., 2003) or "For each type of impairment reported, women can indicate whether impairment is causing them personal, perceived partner, and interpersonal distress" (Hendrickx et al., 2016a, 2016b). This diversity reveals the various perspectives that researchers can take and reveals the inherent difficulties with providing a basis for comparison across studies, as well as developing an empirical ground to sustain a comprehensive model of sexual distress, namely of sexual distress in partnered face-to-face sexual activity.

Recent research using the SDS-R has demonstrated that sexual distress and psychological distress are statistically significantly

associated, but not to the extent that may be considered equivalent dimensions (Raposo et al., 2023; Raposo et al., 2025). The proximity among these two concepts (psychological distress and sexual distress) may be the reason why sexual dysfunctions, characterized by the experience of sexual distress, can be included in the internalizing spectrum of psychopathology (Forbes and Schniering, 2013; Forbes et al., 2016) which is in line with a dimensional approach to psychopathology that looks at common explanatory processes across disorders (Kotov et al., 2017). This view is corroborated by recent research that has found that emotional problems (e.g., depression; Ventus et al., 2017), transdiagnostic cognitive processes (e.g., worry; Pascoal et al., 2020) and difficulties with emotion regulation (Raposo et al., 2023) are related to sexual distress. However, due to the widespread use of the SDS-R, which adopts a generalist approach to measuring sexual distress, it remains unclear whether the identified transdiagnostic factors are specifically linked to sexual activity or to other types of sexual problems that may be a source of distress, such as discomfort with one's sexual identity, which are not directly related to sexual activity.

The difficulties with describing with precision what sexual distress is have already been presented by diverse researchers (e.g., Hendrickx et al., 2013). Between 2008 and 2009, a project about how laypeople conceptualize distressing sexual problems developed in Portugal produced some preliminary data from different qualitative studies (Pascoal et al., 2008; Pascoal et al., 2009). These qualitative studies highlighted that people defined distressful sexual problems as problems with sexual function (e.g., “not having a good erection”), dissatisfaction with sexual life (e.g., “not having the type of sex I would like”), partner problems related to sexuality (e.g., “selfish partners that only want to reach orgasm and please themselves”), problems related to sexual orientation (e.g., “I find it difficult to find a place in the gay scene”) or gender identity (e.g., “I feel I live a lie, I wish I were a man”) or problems related to the preference for sexual practices (e.g., “my partner is not into kink, but I am”). Even though this exploratory preliminary set of studies was promising because they highlighted that sexual problems should be considered outside a focus on genital performance, their results were insufficient as they reflected a broad conception of sexual distress and did not address the specificity of sexual distress with partnered face-to-face sexual activity.

More recently, a study with clinical sexologists exploring how professionals approach sexual distress related to sexual function (SDRSF) (Raposo et al., 2024) showed that SDRSF is explained by problematic sexual function, as expected, but this is interrelated with individual emotional (e.g., emotional disorders) and cognitive (e.g., internalized sexual stigma) processes, as well as interpersonal (e.g., communication difficulties) and societal (e.g., media pressure) processes. This study focused specifically on distress related to sexual function and did not aim to address distress related to overall sexual activity. However, the results revealed though clinician's answers moved beyond a strict focus on sexual function, suggesting a broader perspective to be taken. It highlighted that when approaching SDRSF a comprehensive approach that looks at factors involved in sexual distress related to partnered face-to-face sexual activity as a whole moving beyond a strict genital focus.

Despite its clinical relevance, research about sexual distress with partnered face-to-face sexual activity has been scarce, and there is no comprehensive model to understand it and, subsequently, guide research or clinical intervention. Previous research has explored

sexual distress related to sexual activity in LGB+ (i.e., lesbian, gay, bisexual, or other minoritized sexual orientations) individuals (Manão et al., 2023) and identified that this population faces specific distressing sexual problems—stemming from contextual and interpersonal factors—that go beyond the current criteria for ICD-11 (World Health Organization, 2019) and DSM-5 (American Psychiatric Association, 2022). In our current study, we aim to broaden the understanding of this field and expand the current knowledge by taking an experience-based approach by thoroughly examining how cis heterosexual people who self-report having distressing sexual problems during partnered face-to-face sexual activity describe this experience. The main research question we seek to answer is: “How is distressful partnered face-to-face sexual activity described by those who experience it?”. Complementarily, we aim to compare the answers of those who had and do not have sought professional clinical help. We will outline the reasons why our participants did not seek professional help and expand the knowledge derived from existing studies worldwide. We also intend to explore how experiences of partnered sexual distress may differ across genders. We intend to utilize an online qualitative methodology to gather data from diverse experiences, in line with Epstein's (2023) argument that knowledge from non-experts may contribute to broadening and informing practices of citizenship, advocacy, and, in our view, healthcare practices. This approach is particularly valuable in fields such as sexology (Braun and Clarke, 2020), where qualitative studies can provide insights that enhance clinical practice and improve healthcare (e.g., Paulsen et al., 2023; Raposo et al., 2024) for individuals experiencing sexual distress in partnered face-to-face sexual activity.

2 Materials and methods

2.1 Participants

The study included 438 heterosexual participants ($M_{age} = 41.1$, $SD = 12.2$) who self-identified as having distressing sexual problems during partnered face-to-face sexual activity, of which 306 self-identified as ciswomen (69.9%) and 132 as cismen (30.1%). Regarding the relational configuration, 331 were in a monogamous relationship (75.6%), 56 stated that they did not have significant/s relationship/s (12.8%), 29 were having casual relationships (6.6%), 14 were in “Other not mentioned” (3.2%), and 8 were in a non-monogamous relationship (1.8%). Regarding nationality, 422 participants were Portuguese (95.13%) 12 were Brazilian (2.73%), 1 participant was Argentinian (0.23%), 1 was Cabo Verdian (0.23%), 1 was Finnish (0.23%), 1 was from EUA (0.23%), and 1 stated “I prefer not to say” (0.23%).

Of all participants, 157 identified as Catholic (37.7%), 135 declared themselves Atheist (32.5%), 28 indicated that they identified with “another option” (6.7%), 26 opted to state that they preferred not to answer, 63 identified as Agnostic (15.1%), 5 as Protestant (1.2%), 1 as Orthodox Christian (0.2%), and 1 as Hindu (0.2%).

Concerning the participants' educational level, our data indicates that 169 individuals have attained an university degree (40.6%), 130 have pursued postgraduate studies (31.3%), 75 have completed secondary education (18%), 32 have participated in technical or vocational training courses (7.7%), 8 have attained the ninth grade (1.9%), 1 has not reached the ninth grade (0.2%), and 1 participant did not respond to this question (0.2%).

2.2 Dataset generation

The current study is part of a larger cross-sectional, online, mixed-methods project on sexual distress. It employed participatory design techniques (Cornwall and Jewkes, 1995) and involved collaboration with MUSEX – the Pedagogical Museum for Sex, Associação Gerador, and sex therapists certified by the Portuguese Society of Clinical Sexology (SPSC). These sex therapists provided expertise by reviewing the project's content to ensure it was relevant, inclusive, and appropriately concise. Additionally, we sought feedback from laypeople, including LGBTQIA+ people, to review the inclusive language used in the project. We chose online recruitment by mutual agreement to expand our geographic reach and make participation more accessible and less time-consuming (Terry and Braun, 2017). After appreciation and approval by from all people involved, the study was disseminated online on different social media (e.g., Instagram, LinkedIn) through the research team's professional accounts, by different groups in social media and through a collaboration with (MUSEX - the Pedagogical Museum for Sex, Associação Gerador, the Master's Degree in Sexology at Universidade Lusófona, and SPSC), which also advertised the study on their social media. Following the advice of Braun et al. (2020), both the qualitative and quantitative content of the questionnaire were tested with individuals from the general population to confirm its clarity and comprehensibility before advertising the study. Using a snowball-like sampling technique, participants were also invited to share the questionnaire with others. Due to these recruitment strategies, we do not know how many people the study reached. We followed the qualitative research guidelines, recognising that it is problematic to determine *a priori* an ideal number of participants. Consequently, we did not prioritise a specific participant composition but focused on obtaining informative answers (Sim et al., 2018). Data was generated between March 9, 2023, and October 21, 2024.

In the larger cross-sectional, online, mixed-methods project, when accessing the study's URL, participants were asked to read the informed consent in the first part of the survey and then provide their agreement or disagreement regarding participation. The second part of the survey involved answering a sociodemographic questionnaire. The third and final part of the survey had quantitative and qualitative questions. For the current study, we selected people who met two inclusion criteria: (1) self-identification as a heterosexual cisgender person and (2) self-reporting as having one or more distressing sexual problems during face-to-face sexual activity. We defined sexual activity as "sexual activity refers to mutual stimulation of genitals, oral sex, anal sex, intercourse, and other forms of face-to-face sexual stimulation" (Dove and Wiederman, 2000). We asked people about their help-seeking behavior in the context of their distress related to face-to-face sexual activity. Our aim was to understand the context of distressing sexual problems related to partnered face-to-face sexual activity of heterosexual people, so we presented the following open question that we analyzed: "Can you please describe your distressful experience with partnered face-to-face sexual activity?"

The Ethical and Deontological Committee of the Ethical and Deontological Committee for Scientific Research of the School of Psychology and Life Sciences (CEDIC) of Lusófona University in Lisbon approved the study. All the ethical and deontological guidelines were followed, namely, the Helsinki Declaration and the European Textbook on Ethics in Research (European Commission:

Directorate-General for Research and Innovation, 2010). All IP and geolocation information was deleted, and only the research team has access to the database, which is password protected. The informed consent indicated that the data set would not be shared and provided additional details about the study (e.g., aim, duration, no financial compensation). At both the beginning and end of the questionnaire, the contact details of the principal researcher were provided, along with a list of contacts for clinical and sexual support, should participants feel it would be beneficial to access them.

2.3 Reflexive statement

The following reflexive statement follows Braun & Clarke's guidelines (Braun and Clarke, 2024) and refers to the people involved in the reflexive thematic analysis and the roles and activities they were performing during this analytical process.

Patrícia M. Pascoal is a cisgender Portuguese woman. She holds a European PhD in Clinical Psychology, teaches undergraduate students, and supervises postgraduate students pursuing master's and doctoral degrees in medicine, psychology and sexology using qualitative and quantitative research methods. She also has experience in clinical practice in psychology and sexology as a cognitive-behavioral therapist (CBT) and CBT supervisor. She is involved in the executive boards and committees of diverse national (e.g., Portuguese Association for Behavioral Therapy) and international scientific associations (e.g., European Federation of Sexology; International Society for Sexual Medicine).

Andreia A. Manão is a cisgender woman from Portugal. She is pursuing her PhD in Clinical Psychology (CBT), focusing on both quantitative and qualitative research methods, while also receiving clinical training to become a clinical psychologist and sex therapist. Additionally, she teaches courses in the Bachelor's program in Psychology and the Master's programme in Sexology.

Catarina F. Raposo is a cisgender woman and a PhD candidate in human sexuality. She has experience in clinical practice within psychology and sexology and is currently training to become a clinical CBT therapist. She is a non-tenured invited lecturer, teaching mental health and sexology-related topics. Her role also includes supervising students pursuing master's degrees in psychology and sexology during their internships.

2.4 Data analysis

We used SPSS 27 (IBM SPSS) for descriptive statistics (e.g., average age and standard deviation) and Microsoft Word for the reflexive thematic analysis.

The answers about having had/sought professional help were subjected to summative content analysis (Hsieh and Shannon, 2005) and were consolidated with the procedures for qualitative coding (Zhang and Wildmuth, 2009).

Regarding the qualitative answers to distressing sexual problems related to face-to-face sexual activity, we analyzed the data using reflexive thematic analysis to understand meaningful patterns in participants' responses (Braun and Clarke, 2021). We adopted a contextual perspective, acknowledging that experiences are subjective (Braun and Clarke, 2022), meaning

that the analysis occurs at the intersection of the researchers, the data and broader contexts. Our analysis was mainly inductive but also shaped by our knowledge and experience in psychology and/or sexual health content and related issues, making it, in this sense, also deductive. We followed the guidelines of reflexive thematic analysis (Braun and Clarke, 2021), which involved familiarizing ourselves with the data as it was submitted to the Qualtrics platform (Provo, UT, United States)—i.e., an online, secure survey platform. We then copied the data into a Word document and began to code it at both a surface and a deeper level, that is, in a semantic and latent way, respectively. This process was performed independently and simultaneously by three researchers, Patrícia M. Pascoal, Andreia A. Manão, and Catarina F. Raposo. Subsequently, the analysis was compared and refined collaboratively through reflexive discussion until we achieved a cohesive understanding of the data. Different opinions were encouraged to improve our data analysis and discussion rather than to achieve consensus. Comparisons across genders regarding experiences of sexual distress during partnered face-to-face sexual activity were conducted and discussed. Of the 438 participants, 22 offered unclear responses about the distressing partnered face-to-face sexual activity (e.g., *it's tough*). To ensure our analysis accurately represents participants' views, we excluded these 22 responses from our reflexive thematic analysis. Answers about self-reported excessive sexual interest were not analysed (e.g., *Every 16 seconds, I think about sex*; 58 years, man, without professional help) as they are not related to distress related to partnered face-to-face sexual activity. Thus, we excluded more 10 answers from our reflexive thematic analysis. Consequently, we analyzed 406 responses related to the question concerning distressing partnered face-to-face sexual activity. When reporting answers, in the “Results” section, minor adjustments have been made to some sentences to enhance their clarity. However, it is essential to emphasize that the meaning of these sentences has been totally preserved.

According to Braun and Clarke (2024), it is not recommended to split the “Results” and the “Discussion” sections in papers with reflexive thematic analysis (2024). However, considering the journal's template, the authors decided it was adequate to follow the journal's guidelines and therefore, we will separate the “Results” from the “Discussion” section, a possibility acknowledged by Braun and Clarke (2021).

In the upcoming sections, themes will be emphasized in **bold**, subthemes will be underlined, and quotes will be *italicized*. Every quote example includes concise sociodemographic details about the participants to protect their anonymity, such as age, gender, and the status of their experience with professional clinical help related to sexual problems (indicated as “with professional help” for those who have professional clinical help, “without professional help” for those who have not, and “did not indicate professional help status” for those who did not provide an answer about it).

3 Results

We will first present the results that describe the context and reasons for people who had and do not have sought professional

clinical help, and then we will proceed with the reflexive thematic analysis results.

3.1 Professional help

Considering whether the participants had sought professional clinical help, our analysis revealed that 237 participants (54.1%) had not yet attended but expressed a desire to do so. Meanwhile, 47 participants (10.7%) had already attended clinical sexology/sexual medicine sessions, 59 (13.5%) were attending at the moment of data collection, and 58 (13.2%) expressed a desire to attend but were unable to do so.

Table 1 describes the reasons for not seeking professional clinical help. Of the 58 participants who expressed a desire to attend but were unable to do so, 21 (36.2%) did not answer this question.

3.2 Reflexive thematic analysis

The length of the answers varied, from short answers (i.e., two or three words; e.g., *I have impotence*; 68 years, man, with professional help) to rich and descriptive answers (i.e., several sentences and rich content, for example, *I have a history of depression, and I go to therapy regularly. If I do not, the likelihood of having pain during sex again is significant. Therapy helps me to have emotional regulation tools so that this does not happen*; 29 years, woman, with professional help).

The themes are globally interrelated, as answers aggregate contents from several themes and subthemes (e.g., *My ex-boyfriend experienced premature ejaculation and erectile dysfunction. These issues contributed to the end of our relationship because he was unwilling to seek help and tell me about it. He even went as far as to take viagra without telling me. I only found out about this after we had not been sexually active for a while, and he began to feel unwell due to the increased heart rate caused by the stimulant*) (Age not disclosed, woman, did not indicate professional help status).

In terms of seeking professional clinical help, our analysis revealed a pattern of help-seeking behavior among people reporting experiences of pain during sexual activity, sexual dysfunctions (e.g., premature ejaculation), and physical medical conditions (e.g., haemorrhoids). Conversely, the answer of people experiencing sexual problems characterized by partner dynamics (e.g., poor communication, differences in sexual desire between partners) seems to be associated with lesser inclination to seek professional help.

We will now describe each theme, its corresponding subtheme/s, and provide detailed information with examples in the text and in Table 2.

The theme **Sexual (dys)function (It's the function)** centers on distressing problems related to face-to-face sexual activity involving the genitals. These problems are typically described in terms that align with diagnostic criteria for sexual dysfunction, including erectile difficulties, premature ejaculation, challenges or inability to reach orgasm, lack of pleasure during sexual activity, pain during penetration, vaginismus, vulvodynia, and bleeding during vaginal penetration. This theme represents a key conceptual thread in the data and does not include subthemes.

TABLE 1 Frequency of code regarding the reasons for being unable to attend clinical consultations.

Codes (n)	Excerpts examples
Financial constraints (15)	<i>I have financial difficulties</i> (32 years, woman, without professional help)
Sexual problems as secondary issues (5)	<i>When I invest in myself it is in my mind, through psychotherapy appointments to resolve my traumas or major obstacles in life, putting sexuality to the other side, trying not to give it that much importance</i> (21 years, woman, without professional help)
Distress as not serious enough (3)	<i>I do not know if these are clinical issues</i> (33 years, woman, without professional help)
Shame related to seeking for professional help (3)	<i>I do not feel comfortable talking about sexual problems with anyone</i> (44 years, woman, without professional help)
Partner not being interested in having clinical consultations (3)	<i>My wife does not want me to seek help</i> (43 years, man, without professional help)
Self-management (2)	<i>I will solve it myself with practice.</i> (29 years, woman, without professional help)
Lack of confidence in the effectiveness of clinical consultations (2)	<i>I do not think help would work</i> (53 years old, woman, without professional help)
Time constrains (2)	<i>Unavailability of time</i> (34 years, woman, without professional help)
Do not know where to seek help (2)	<i>I do not really know where to look for help</i> (38 years, woman, without professional help)
Not wanting to discuss the problems with their partner (1)	<i>I did not tell my partner about the problem</i> (49 years, woman, without professional help)
Health professionals downplaying their problems (1)	<i>Gynaecologists relativise my problem, they associate my complaints only with daily stress</i> (43 years, woman, without professional help)
Alternative therapies (1)	<i>I have recently started using natural therapies</i> (50 years, woman, without professional help)
Absence of a partner (1)	<i>I do not have a partner</i> (36 years old, man, without professional help)
Not having a specialist available (1)	<i>For logistical reasons, I still have not managed to find the best help. My specialist doctor retired during the COVID lockdown and I did not get a new appointment</i> (57 years old, woman)

The theme of **Intimacy dynamics (it's us!)** includes distressing experiences grounded in a relationship. Its subthemes are **Impaired Communication**, which pertains to difficulties in self-disclosing oneself to the partner, and **Discrepancies between partners**, which describe problems in managing discrepancies related to sexuality, for example, sexual preferences and levels of sexual desire.

Finally, the theme of **Intrapersonal struggles (it's me!)** aggregates descriptions of sexual distress with partnered face-to-face sexual activity that are related to individual characteristics, physical or psychological, of the respondent. A relationship may accentuate or diminish these characteristics, but they are not relationship-dependent. Its subthemes are: **Physical health constraints** that aggregates distress related to organic conditions that make sexual activity difficult (e.g., vaginal dryness, endometriosis, chronic pelvic pain, side effects of medications that affect sexual function); **Negative emotional response** a subtheme that pertains to negative emotional experiences during sexual activity (e.g., performance anxiety; fear); **Psychological risk factors** a subtheme that includes existing psychological traits that are risk factors for psychopathology and for psychological distress and that interfere with a complete experience of sexual activity (e.g., excessive anxiety/worry/fear, neuroticism, inhibition, feelings of inadequacy regarding one's body); and **Sociocognitive factors** a subtheme specifically about negative attitudes towards sex and rigid beliefs derived from one's education and socialization regarding what sexual activity should be (e.g., sex as dirty and immoral) that accentuate the distressful experience.

Concerning the participants' gender, our analysis revealed distinct patterns. Among women, the predominant pattern was characterised by a lack of sexual desire, experiences of sexual pain, difficulties in achieving orgasms, and inadequate lubrication. In contrast, men exhibited a pattern of answers that emphasised premature ejaculation, erectile dysfunction, and a lack of interest from their partners in being involved in sexual activity.

Concerning the patterns of the content of the answers between people who had sought or not sought professional clinical help, our study adds more layers to current formulations by emphasizing the professional clinical help present answers where relevance is placed on genital function together with a negative emotional experience, namely intense negative emotions related to sexual pain.

4 Discussion

This study analyzes self-reported experiences of people who self-identify as having sexual distress in partnered face-to-face sexual activity. It uses summative content analysis to describe and quantify their patterns of help-seeking. It has as a main goal to explore how people who self-report experiencing one or more sexual problems describe their sexual distress during face-to-face partnered sexual activities, utilizing reflexive thematic analysis to examine their responses. We will discuss the patterns of help-seeking behavior, the results of the reflexive thematic analysis, and the comparison across the answers across genders and between those who seek and do not seek professional.

A central theme that we developed, **Sexual (dys)function (It's the function)**, relates to the impairment of sexual distress response, a crucial aspect for the diagnosis of sexual dysfunction supporting current diagnosis manuals [ICD-11 (World Health Organization, 2019), DSM-5 (American Psychiatric Association, 2022)] and supporting that problems with sexual response are an essential precursor for sexual distress. However, our study adds more layers to current formulations by emphasizing the sexual distress related to the absence of pleasure. Sexual pleasure has gained attention due to its central role as a sexual right (World Association for Sexual Health, 2021), and its study has received immense attention in the last years, resulting in a comprehensive proposal for its understanding (Laan et al., 2021). Despite this interest, currently, sexual pleasure is modestly mentioned in category-based diagnosis manuals, and, except for its mention in sexual interest arousal problems, there is no solid and clear role for sexual pleasure as a central concept or a criterion that contributes to the diagnosis of a sexual dysfunction or problem. Taken together, the results of the current study and existing research on sexual pleasure (Laan et al., 2021; Manão et al., 2023; Pascoal et al., 2020) accentuate the need to integrate sexual pleasure as a fundamental factor in the assessment, intervention, and clinical research of distressful sexual problems related to partnered face-to-face sexual activity.

The theme named **Intimacy dynamics (It's us!)** is in line with previous research that reinforces that relationship factors are fundamental for the experience of sexual distress (Martins et al., 2024). Our results identify the relationship elements that operate during partnered face-to-face activity, namely sexual communication and the existence of discrepancies among sexual preferences. Depending on the type of relationship, it is well known that both expressive and instrumental communication (MacNeil and Byers, 2009) are fundamental for positive outcomes, for example, sexual satisfaction (Frederick et al., 2016). However, most research about communication during sexual activity focuses on the role that "sexual talk" or "dirty talk" has as a maximizer of sexual arousal and promoting orgasm (Frederick et al., 2018). Our results complement this data by highlighting that inhibition to speak and challenges with sexual self-disclosure during sexual activity are also characteristics of during partnered face-to-face sexual activity. This implies that communication during sexual activity follows a dual path: while certain types of communication may enhance arousal and satisfaction, inhibition and difficulties in communicating may intensify the experience of distress. The latest may be particularly detrimental when difficulties in communicating with a partner about sexual pain lead to painful, distressing partnered sexual activity (Oesterling et al., 2025). Furthermore, our results also support the notion that discrepancies in sexual preferences (e.g., levels of desire or arousal for certain emotions or practices) (Dewitte et al., 2020; Cardoso et al., 2023) are characteristic of sexual distress during sexual activity. There is an interrelation between these two subthemes, as the ability to express preferences and communicate about discrepancies is important to overcome the negative impact that these discrepancies may have. Logically, those whose communication is compromised due to relational factors may have a heightened experience of distressing partnered sexual activity. Additionally, recognizing this discrepancy and the challenges in sexual communication may lead individuals to

become cognitively distracted during sexual activity. This distraction arises from an increased focus on communication difficulties during sexual activity, which can undermine arousal and pleasure (Tavares et al., 2020). Our results highlight the role that communication behaviors and sexual self-disclosure skills (Döring and Byers, 2024) have in minimizing sexual distress with partnered sexual activity.

In the theme named **Intrapersonal struggles (it's me!)**, a puzzle of individual determinants is presented. If the experience of bodily-related difficulties, primarily due to illness or medication, is not a novelty as a determinant of distress (e.g., Zanolari et al., 2023), the participant's descriptions accentuate that this sexual distress is marked and defined by the intense experience of negative emotions, namely experiences of anxiety and anguish. These descriptions are in line with research that places sexual dysfunctions and problems with partnered sexual activity as clinically meaningful experiences that can be approached clinically from a dimensional perspective within the spectrum of internalised disorders (Forbes et al., 2016). It is possible that these negative emotional experiences may interfere with the standard processing of arousal cues, particularly in assessing them. The vulnerability psychological factors developed in subtheme **Psychologic risk factors** (e.g., body awareness) seem to be traits or steady psychological characteristics that may be triggered or maximised during sexual activity. They may compromise the total immersion in the erotic experience, namely, by promoting cognitive distraction (Barlow, 2016), for example, distraction with one's body appearance (Carvalho et al., 2017; Dove and Wiederman, 2000; Manão and Pascoal, 2023; Pascoal et al., 2019). These steady cognitive characteristics and psychological traits frame cognitive processing during sexual activity, which is consistent with cognitive models of sexual dysfunction that defend that cognitive processes define and shape the erotic experience and are explanatory processes that define the experience of sexual dysfunction. Our results highlight that these processes also shape the experience of distress, accentuating it and aligning it with cognitive models of sexual dysfunction. **Sociocognitive factors** is a subtheme that is linked to socialization, encompassing negative messages that have been internalised about sexuality, which further compromise the sexual experience. These factors, commonly referred to as sexual beliefs, are significant components of cognitive models of sexual response (Nobre, 2023). These sexual beliefs, shared by men and women, tend to be rigid (Pascoal et al., 2018) and compromise complete immersion and openness to experience (Peixoto and Nobre, 2017). They play a crucial role as predictors of negative sexual experiences as they disrupt attentional focus during sexual activity by promoting ongoing surveillance of the experience in accordance with these beliefs, potentially undermining the whole experience of satisfactory arousal. In the current study, it is emphasised that social norms and beliefs may also impact the experience of distress.

The current results refine the clinical meaning of sexual distress with partnered face-to-face sexual activity, differentiating it from sexual distress as a global concept and from psychological distress and describing its unique features. It has important implications for theory building, sex therapy/clinical intervention, and clinical research. The study highlights that sexual distress with partnered face-to-face sexual activity is a detrimental sexual outcome associated with strong negative emotions essentially related to sexual response, personal physical difficulties (e.g., illness) and psychological factors (e.g.,

TABLE 2 Results from the reflexive thematic analysis.

Themes	Subthemes	Example quotes
Sexual (dys)function (It's the function)		<i>I have a history of depression, and I attend counseling regularly. If I skip these sessions, the likelihood of experiencing pain during sexual intercourse increases significantly. Therapy provides me with tools for emotional regulation, which helps prevent this pain during sex from occurring</i> (29 years, woman, with professional help)
		<i>I have lack of pleasure, cannot achieve orgasm and sometimes ejaculate prematurely</i> (36 years, man, without professional help)
		<i>I have erectile dysfunction</i> (79 years, man, with professional help)
Intimacy dynamics (It's us!)	<u>Impaired communication</u>	<i>Difficulty communicating with partner</i> (24 years, woman, did not indicate professional help status)
	<u>Discrepancies between partners</u>	<i>My husband has a thing for erotic asphyxiation and I go along with it to give him pleasure. However, I must admit that I am finding it increasingly disagreeable</i> (32 years, woman, did not indicate professional help status).
		<i>My partner's unwillingness to have sex with me</i> (39 years, man, without professional help)
		<i>Compared to me, my wife has a low sex drive</i> (51 years old, man, without professional help)
Intrapersonal struggles (It's me!)	<u>Physical health constraints</u>	<i>Pain experienced in some situations, with and without penetration, related to endometriosis</i> (35 years, woman, with professional help)
		<i>I have gynaecological health problems</i> (41 years, woman, with professional help)
		<i>I develop vaginal/urinary infections very often, and that interferes with my sexual activity</i> (39 years, woman, with professional help)
		<i>I have hemorrhoids</i> (23 years, woman, did not indicate professional help status)
	<u>Negative emotional response</u>	<i>I need to shift my attention to my own performance. Because of that I find it challenging to let my body move in a more organic way that syncs with my emotions</i> (did not indicate age, man, did not indicate professional help status)
		<i>I'm afraid of having pain</i> (59 years, woman, did not indicate professional help status)
		<i>I have performance anxiety during sexual activity</i> (43 years, man, with professional help)
	<u>Psychologic risk factors</u>	<i>I usually do not feel aroused because I have negative feelings about my body</i> (50 years, woman, without professional help)
		<i>I have inhibitions during sexual activity, and I often fell shame</i> (33 years, woman, without professional help)
		<i>I experience excessive anxiety due to the fear of becoming pregnant</i> (22 years, woman, without professional help)
		<i>Shame causes me to overthink everything during sex</i> (45 years, woman, without professional help)
		<i>Some shame and discomfort because I am constantly too self-conscious about how my body might look in the eyes of any other person, whether it is attractive or not</i> (27 years, woman, did not indicate professional help status)
	<u>Sociocognitive factors</u>	<i>Growing up in the catholic religion influenced my views on sex, leading me to perceive it as something dirty. This also affected my thoughts on masturbation and pleasure</i> (45 years, woman, without professional help)
		<i>Inhibition, shame, [because] I have limiting beliefs about sexual activity</i> (33 years old, woman, without professional help)

shame, body dissatisfaction) that promote cognitive distraction during sexual activity, problems with partnered communication about sexual preferences and discrepancies and negative attitudes and rigid beliefs about sexual activity. These factors point to the direction of a comprehensive theoretical model of sexual distress related to sexual activity that includes SDRSF and conceals conceals both cognitive (Barlow, 2016; Nobre and Barlow, 2023) as well as relationship factors (Martins et al., 2024). We propose that, following a top-down approach, a flexible, integrative, and comprehensive theoretical model of distress with partnered face-to-face partnered sexual activity should integrate SDRSF features namely: the experience of some level of impairment and negative emotions related to sexual function and response, including difficulties in experiencing pleasure and satisfaction; discrepancies between partner desires and preferences as well as difficulties in expressing and communicating about sexuality with partners; and both non-sexual related (body dissatisfaction, inhibition, neuroticism) and sexual-related (rigid negative beliefs) personal characteristics, some of which are derived

from broader cultural contexts (e.g., family, religion). Integrating our findings and overcoming the limitations of this and previous research will contribute to establishing such an endeavour.

In terms of implications for sex therapy/clinical intervention, the current study calls for attention to the need to develop integrative approaches that address negative emotions (e.g., anxiety) that we found associated with sexual distress with partnered face-to-face sexual activity. These emotions are often maintained by latent psychological factors such as neuroticism and may benefit from transdiagnostic approaches to emotional problems (Sauer-Zavala et al., 2017). Interventions should include cognitive processes, such as CBT (Brotto et al., 2025), particularly those tailored to sexual dysfunction in the context of illness (Pieramico et al., 2024). Additionally, couple-focused and systemic interventions that target relationship dynamics, particularly fostering positive and respectful communication about sexual discrepancies, are also recommended (Davies et al., 2021). This raises important issues related to the education of

sexual health professionals, namely sex therapists, reinforcing that addressing sexual dysfunctions requires a solid training background that needs to be combined with deep knowledge of relevant, empirically based theoretical models of intervention to ground best standards for clinical practice. Furthermore, sex therapists should complement it with professional updates in relevant techniques. The current results therefore support that professional education in sex therapy should be grounded in pre-existing formal training in relevant psychotherapies and should include content related to mental health, psychopathology, CBT approaches, and integrative and systemic models of intervention. Regarding research, the most significant impact of the current study pertains to the development of randomized controlled trials (RCTs) to intervene in sexual dysfunction or partnered face-to-face sexual activity related problems, as these need to be integrative and focus on a “an adequate” outcome measure of sexual distress. This measure should address sexual response issues while also being sensitive to therapeutic change, such as the SFEQ (Mitchell et al., 2022), which aligns more with our current findings. However, it also needs to incorporate secondary outcome measures, including sexual pleasure (Manão et al., 2023; Martins et al., 2024) and assessments of negative emotional experiences, such as anxiety and depression (Soler et al., 2021). Furthermore, future interventions should target processes known to influence negative emotional states (e.g., repetitive negative thinking) and the features and maintaining processes of sexual distress with partnered sexual activity that can be altered through therapeutic means (e.g., cognitive distraction, communication skills, sexual beliefs/psychological flexibility). It is important to note that the existing RCTs are aimed at specific clinical conditions (e.g., Banbury et al., 2021; Brotto et al., 2021) and that the results of this study support the possibility of crossdiagnostic RCTs, i.e., RCTs aimed at people with different diagnoses of sexual dysfunctions. At the same time, it is also highlighted that gender differences may be considered in designing such RCTs as women and men participants in crossdiagnostic interventions may differ in their complaints.

As our results highlight, many reasons that prevent people from seeking professional clinical help are related to accessing professional sexual healthcare (such as shame about sexual issues, cost, and geographic distance), we propose that developing internet interventions (whether blended or not) may be a practical solution for delivering pilot studies that incorporate such integrative transdiagnostic-based approaches. Regarding the reasons for not seeking professional clinical help, our results are in line with research in the field, revealing that most people who experience a sexual problem related to partnered face-to-face sexual activity do not seek professional help (e.g., Lafortune et al., 2023; Moreira et al., 2005), namely due to time and financial constraints.

Furthermore, this research reveals that institutional and professional trust-related factors prevent people from seeking help. It would be important to better understand if these factors are related to reports of bad experiences or just a lack of knowledge about the ongoing education and certification that exists in the field of clinical sexology and sex therapy and/or about existing specialized services that exist in Portugal (Alarcão et al., 2017; Raposo et al., 2024). The lack of confidence in specialized services and the pursuit of alternative approaches render people who suffer from sexual problems vulnerable

to the practice of non-evidence-based practices, a problem that could only be overcome with higher levels of health literacy (Liu et al., 2020).

It is worth highlighting that partners' compliance is also a significant obstacle that may be linked to a dominant representation of sexual problems as an individual problem and not a systemic, relationship-embedded issue. This position may reflect a view based on healthism, which tends to overemphasize a person's role in determining their own health outcomes, ignoring the contexts in which these outcomes are shaped and embedded (Crawford, 1980).

Lastly, viewing sexual problems as a minor concern may explain why some people do not seek help, as they might not experience significant distress during partnered sexual activity. This has also been suggested by Hendrickx et al. (2016a, 2016b). Overall, the results reveal that there are people who are distressed by their sexual activity and are not accessing healthcare services due to different obstacles and that these should be approached through better education regarding the available services and professionals who are licensed and prepared to act on sexual problems. Moreover, these people, independent of the severity of the symptoms and compatibility with a formal diagnosis of sexual dysfunction, may benefit from internet-delivered treatment options. These solutions not only demonstrate positive results for their specific outcomes of interest (e.g., sexual function; Zarski et al., 2022) but also are a solution to barriers to treatment, such as improving time management, reducing stigma of asking help/having a sexual problem, reducing financial limitations and geographic barriers (Costa et al., 2023; Rodda and Luoto, 2023). Furthermore, these options likely address broader systemic problems, including social inequalities and deficiencies in health and sexual health follow-up care among minority groups, including people with physical disabilities, who do not have to face physical barriers to receiving treatment if the intervention is delivered online (Costa et al., 2023).

Finally, the comparison of content across genders is in line with research that demonstrates women experience more distressful sexual problems related to sexual function than men (Cobbs et al., 2022), which stresses that pursuing penetrative sex is more detrimental for women as they are more exposed to pain derived from penile-vaginal penetration. Because they prioritize their partners' sexual enjoyment they are subsequently exposed to more distress related to sexual activity. The findings may be influenced by the sample composition, which was predominantly female (72.5%) and there could be a response bias, as men may experience sexual distress but might be unable or unwilling to disclose it. It could also be because men give more relevance to their spouse's lack of sexual desire as a cause for their distress, and not to other problems their spouses may face, such as painful sex. It can be that men's pressure to diminish the discrepancy between sexual desire results in more frequent non-desired sexual activity because women do not disclose their difficulties and, subsequently, have more painful sex. This possibility has been explored (Oesterling et al., 2025) and reveals that even in the presence of function problems, sexual distress is inbound to relationship factors.

Overall, our results have similarities with both the DSM-5 and ICD-11, indicating that sexual dysfunctions arise from a complex interplay of biological, psychological, and sociocultural factors. This is particularly evident in the theme **Sexual (dys)function (It's the function)**, which highlights difficulties related to sexual function, and was the most prominent pattern of meaning developed. Our findings support the emphasis of these psychopathology manuals on considering a range of contributing factors when assessing sexual

dysfunctions, including relationship dynamics, such as poor communication and discrepancies in desire, as illustrated in the theme **Dynamics of Intimacy (It's us!)**. Interestingly, participants did not identify partner-related issues as significant sources of distress, possibly due to the self-referential nature of the online questionnaire used. Our results also emphasize individual vulnerability factors (e.g., negative body image), psychiatric comorbidities (e.g., depression and anxiety), and sociocultural influences (e.g., religious or moral beliefs about sexuality) that contribute to the theme **Intrapersonal Struggles (It's me!)**. Nonetheless, our findings expand the psychopathology framework of the DSM-5 and ICD-11. While manuals focus on problems that meet clinical thresholds, participants reported distress related to sexual experiences that may not fit these criteria, yet remain significant. Issues such as feelings of inadequacy and unmet expectations can lead or be components of sexual distress. Unmet expectations, for example, may account for lack of sexual pleasure, which can be a critical factor not adequately addressed by DSM-5 and ICD-11 criteria. In other words, manuals do not explicitly include the subjective absence of sexual pleasure as a standalone clinical concern, nor explore its relationship to the experience of distress. Additionally, both DSM-5 and ICD-11 tend to underrepresent the impact of socioculturally shaped meanings and internalized scripts, which were central to the experiences of our participants. Therefore, our findings support and extend the ICD-11 framework by advocating for a more comprehensive understanding of sexual problems.

The current study presents several limitations that need to be considered to frame the results and their interpretation, as well as to inform future studies. Firstly, it is not possible to determine whether the participants are eligible to have a diagnosis of sexual dysfunction, which could further inform our analysis. They do self-report distress and problems during partnered sexual activity, but these may be explained by factors that were not properly addressed and evaluated (e.g., organic cause, the existence of severe psychopathology). Furthermore, we did not evaluate the sexual distress with partnered face-to-face sexual activity levels, which could have facilitated the determination of whether seeking professional clinical help is associated with the sexual problem/s themselves or the distress concomitantly experienced. Future research should aim to measure sexual distress levels using targeted measures (e.g., SFEQ). The study design, i.e., relying on straightforward answers that were not discussed or explored in-depth, which can happen during interviews, did not allow us to gain a more nuanced understanding of the context in which the experience of distress emerged. It can be that some people report distress related to sexual activity that emerges after the sexual encounter and that derives from a lack of pleasure, satisfaction, or shame. Also, the fact that we gave a definition of sexual activity that focused on specific practices may have primed participants to focus more on distress related to sexual function or intercourse. It is also important to note that some participants, predominantly men, whose answers were not included in the reflexive thematic analysis, reported that experiencing high levels of sexual interest or drive was a distressing sexual problem for them. Although this problem did not appear to be directly related to sexual activity, it warrants further investigation in future studies. This suggests that sexual distress related to partnered face-to-face sexual activity may persist after the sexual encounter and be the focus of concerns. This finding that was not analyzed, should be taken into account

in future studies. Additionally, we could not determine whether the notable gender differences were related to the sexual double standard, which refers to the tendency to evaluate genders differently for identical sexual behaviors (Milhausen and Herold, 2008, Gómez-Berrocal et al., 2022), such as men enjoying greater sexual freedom while women's sexuality is more taboo (Raposo et al., 2024). Research suggests that sexual responses experienced by women are associated with this standard, which negatively impacts sexual response (Álvarez-Muelas et al., 2022). This should be examined in future studies. Finally, it is vital to consider the sociocultural context of our predominantly Portuguese participants and their influence on results. To our knowledge, there are no existing studies specifically examining help-seeking for sexual problems within the Portuguese population. However, available evidence suggests that sexology in Portugal has gradually gained visibility and recognition (Alarcão, 2017). Moreover, a recent study (Manão et al., 2024) found that Portuguese individuals' understanding of sexual health includes the notion of seeking support from healthcare services, suggesting a growing openness to professional help. However, this positive perception did not fully translate into behavior, as our findings showed that some of the participants reported experiencing sexual distress without seeking help, which is in accordance with other research about help-seeking behavior (e.g., Moreira et al., 2005; Moreira et al., 2008). Conducting similar studies in different cultural settings could help clarify whether these findings are context-dependent or reflect a more widespread phenomenon. Not only, but especially, we recommend that future studies on this topic be conducted outside of Western, Educated, Industrialized, Rich, and Democratic (WEIRD) populations, in order to fully capture the diversity of sexual distress with partnered face-to-face sexual activity. This recommendation aligns with the calls of scholars such as Klein et al. (2022a, 2022b) to decolonize science and promote greater contextual diversity in sex research.

5 Conclusion

The analysis of people's definitions of sexual distress with partnered face-to-face sexual activity reveals its strong interrelation and overlap with SDRSF (with a strong focus on genital response and penile-vaginal penetrative sex), relationship factors, and specific individual factors. This result aligns with the current approach to sexual dysfunctions by both DSM and ICD, which emphasises the contextual nature of sexual dysfunctions and recognises both individual and interpersonal features in diagnosing sexual dysfunction. However, the current study innovates by offering a nuanced perspective on how sexual distress with partnered face-to-face sexual activity should be assessed and approached, demonstrating that some of the associated features (e.g., anxiety/worry; inhibition; lack of communication skills) are crucial components of this distress that must be targeted in intervention. Our results support an integrative approach to clinical intervention and research that combines a transdiagnostic approach with CBT-derived and systemic theoretical models of intervention, considering sexual distress with partnered face-to-face sexual activity or SDRSF as

the primary outcome but that also includes sexual pleasure and psychopathology as necessary outcomes of clinical intervention.

Data availability statement

The datasets presented in this article are not readily available because the dataset can be shared upon reasonable request to the corresponding author. Only raw anonymized data will be shared. Requests to access the datasets should be directed to patricia.pascoal@ulusofona.pt.

Ethics statement

The studies involving humans were approved by Ethical and Deontological Committee for Scientific Research of the School of Psychology and Life Sciences (CEDIC) of Lusófona University in Lisbon. The studies were conducted in accordance with the local legislation and institutional requirements. The participants provided their informed consent to participate in this study.

Author contributions

PP: Conceptualization, Data curation, Formal analysis, Funding acquisition, Investigation, Methodology, Project administration, Resources, Software, Supervision, Validation, Visualization, Writing – original draft, Writing – review & editing. GA: Writing – review & editing. VF: Writing – review & editing. AM: Formal analysis, Methodology, Writing – original draft, Writing – review & editing. CO: Writing – review & editing. CR: Formal analysis, Writing – review & editing. PR: Writing – review & editing. MR: Writing – review & editing. GS: Writing – review & editing. NT: Writing – review & editing. AG: Supervision, Conceptualization, Writing – review & editing.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Generative AI statement

The author(s) declare that Gen AI was used in the creation of this manuscript because the authors used Grammarly to check for spelling mistakes, grammatical problems and punctuation inaccuracies. After using this tool, the authors reviewed and edited the content as needed. The authors take full responsibility and authorship for the publication's content.

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Formal help-seeking among community-based Czech individuals with sexual interest in minors is associated with the perceived urgency of self-identified concerns

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Background: In the community, there are non-forensic individuals who experience sexual interest in minors and have specific mental health needs and concerns. If left unaddressed, these issues may contribute to problematic sexual behaviors. Although supportive treatment programs are emerging in Czechia, self-motivated help-seeking remains generally low in this at-risk population.

Objective: To inform strategies for encouraging preventive service use, this study aimed to examine how past help-seeking experiences relate to factors that may influence the likelihood of seeking professional help, as identified in the literature.

Methods: An online survey was conducted with a purposive sample of 97 community-based, predominantly male, non-forensic adults whose responses to hypothetical scenarios suggested a sexual interest in minors. The study investigated the relationship between self-reported past formal help-seeking behavior (any vs. none) and two key variables: perceived urgency of self-identified concerns and dismissive attitudes toward professional assistance. Analyses controlled for other forms of support sought.

Results: Formal support sources were rarely approached. A significant association was found between low perceived urgency of self-identified concerns and the absence of formal help-seeking behavior ($\beta = 0.33$, $F(1) = 6.34$, $p = 0.014$).

Conclusion: To promote professional service uptake among this difficult-to-reach population, it is essential to enhance mental health literacy across the broader community and to educate individuals about the role of psychological well-being in preventing problematic behaviors.

KEYWORDS

barriers, children, mental health, paraphilia, prevention, therapy, pedophilia, sexual abuse

Introduction

In recent years, researchers have become increasingly aware of the high prevalence of sexual interests in the general population that “go beyond the norm” and were often overlooked as supposedly “less common” (Santtila et al., 2015; Noorishad et al., 2019; Bártová et al., 2021; Savoie et al., 2021; Baier, 2024; Barker et al., 2025; Spada et al., 2025). According to the text

revision of the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-V-TR) (APA, 2022), sexual interests may involve sexual fantasies, urges, or behaviors. If a person harbors “any intense and persistent sexual interest other than sexual interest in genital stimulation or preparatory fondling with phenotypically normal, physically mature, consenting human partners,” they are thought to exhibit paraphilia. In people who report not having any “intense and persistent” sexual interests, paraphilia would be defined as any sexual interest that is as strong as, or stronger than the above-mentioned normophilic interest. Moreover, some paraphilias are more accurately characterized by consistent patterns of sexual preference rather than by their intensity (APA, 2022, p. 780). Importantly, paraphilias are to be distinguished from paraphilic disorders. A paraphilic disorder refers to a paraphilia that either causes significant distress or functional impairment for the individual, or involves behaviors that have resulted in harm – or the potential for harm – to others. Thus, simply having a paraphilic interest does not automatically indicate a need for clinical attention or intervention (APA, 2022, p. 781).

Even though paraphilic interests as such may not necessarily be of concern in community-based non-forensic individuals (i.e., individuals who might or might not have offended and are not involved with the law enforcement and criminal justice system), they nevertheless tend to co-occur with specific psychological needs and problems. These include anxiety and depression, low self-esteem and self-acceptance, shame and stigma, suicidality, difficulties in romantic relationships, loneliness, maladaptive coping strategies, hypersexuality, diminished overall well-being, and a sense of hopelessness that discourages them from pursuing meaningful life goals (Cohen et al., 2020; Fox et al., 2022; Wibowo et al., 2022; Brown et al., 2023; Chronos et al., 2024; Lassche et al., 2024; Murphy, 2024; Barker et al., 2025; de Tribolet-Hardy et al., 2025; Konrad et al., 2025; Lievesley et al., 2025b; Yakeley et al., 2025; Zidenberg et al., 2025). Research shows that timely and sustained provision of adequate professional assistance improves clients'/patients' psychosocial and psychosexual functioning (Barros et al., 2022; Clayton et al., 2022; Lätth et al., 2022; Lievesley and Harper, 2022; Piwowar et al., 2022; Beier et al., 2024; Goerlich, 2024; Hales et al., 2024; Heindl et al., 2024; de Tribolet-Hardy et al., 2025; Navrátil et al., 2025). On the other hand, unrecognized and unaddressed concerns may be associated with a risk of mental health deterioration, and the major psychological distress may in turn increase the likelihood of losing self-control and engaging in problematic sexual behaviors (Cohen et al., 2018; Mokros and Banse, 2019; Wild et al., 2020; Lampalzer et al., 2021; Chan, 2023; Chan and Myers, 2023; Swaby and Lievesley, 2023).

Although severe psychological, psychiatric, and neurological conditions may predict problematic sexual behaviors irrespective of paraphilia (Van der Molen et al., 2023; Babchishin et al., 2025; Warkentin et al., 2025), paraphilic interest can mediate the relationship between certain mental health issues and sexual offending (Engel et al., 2025). Also, paraphilic interests can independently serve as predictors of corresponding paraphilic behaviors (Seto et al., 2021; Joyal and Carpentier, 2022; de Roos et al., 2025; Lehmann et al., 2025; Reichert et al., 2025). Since some paraphilic interests would constitute criminal behavior if acted upon, they are commonly perceived as more “socially dangerous” and “high-risk” (Chatterjee, 2023; Požarskis and Požarska, 2023; Agapoff et al., 2024). One of them is pedophilia, [i.e., sexual interest in minors aged approximately 13 years or younger (APA, 2022, p. 794)]. “Pedophile” has been replaced by some academic

researchers with the term “minor-attracted person” (MAP), which is intended to serve as a neutral and non-stigmatizing alternative (Farmer et al., 2024).

Nevertheless, the concordance between sexual interest and behaviors is rather weak for pedohebephilia [i.e., sexual interest in minors roughly under 15 years of age (Blanchard et al., 2009)]. For instance, in online samples, Seto et al. (2021) found a correlation of $r = 0.275$, and de Roos et al. (2025) in the full sample reported Kendall's Tau-b correlations of 0.09 and 0.03 for pedophilia and hebephilia, respectively (0.23 and 0.17, respectively, in the subset of individuals who found the given paraphilic theme arousing). Although pedophilia-related sexual offenses tend to be conflated with hands-on (contact) acts of sexual abuse in lay people's view (Glina et al., 2022), they far more often involve consumption of child sexual abuse material (CSAM) (Seto, 2019; Beier et al., 2024; Erkan et al., 2024). CSAM consumption is predicted by pedophilic interest (Lätth et al., 2025), and intensifies it even further (Paquette et al., 2022). Hence, there is a widespread public concern that it progresses to hands-on offending (Hunn et al., 2022; Langvik et al., 2024). According to Insoil et al. (2024), 42% of the participants admitted to seeking online contact with minors following their exposure to CSAM. Additionally, 58% expressed concern that their viewing of such material could escalate into real-world sexual encounters with either minors or adults. Still, the major concern in non-forensic individuals with pedophilic interest is the recidivism risk for viewing CSAM (von Franqué et al., 2023; Beier et al., 2024). The mental health issues (Kothari et al., 2021; Nurmi et al., 2024) and numerous repercussions associated with illegal expressions of this paraphilic interest (Jones et al., 2023; Kavanagh et al., 2023; Armitage et al., 2024; Kavanagh et al., 2024; Salter et al., 2024) are no less serious for CSAM-only offenders and their significant others. All of this suggests that early interventions, which could effectively promote mental well-being and encourage prevention and desistance in the non-forensic population, should be a public health priority (Price et al., 2024). The European Commission (2020) strategy for strengthening the response to sexual offending against minors recognizes a significant gap in secondary prevention initiatives across EU member states. It emphasizes the urgent need for tailored interventions targeting individuals at elevated risk (such as those with paraphilic disorders), alongside proactive strategies like digital outreach in collaboration with internet service providers.

In sum, there are many benefits to be gained from offering timely, targeted professional help to community-based individuals who may or may not consider themselves at risk of sexual offending and seek support in managing their sexual experiences and maintaining psychological well-being. These people frequently express a need for professional assistance yet encounter difficulties in accessing appropriate services through the “mainstream” healthcare and social work systems (Jimenez-Arista and Reid, 2023; Schaefer et al., 2023; Murphy, 2024; Lievesley et al., 2025b). In response to this recognized need for a public health approach (Cant et al., 2022), several European countries have implemented programs aimed at non-forensic individuals who are concerned about their sexuality (Beier et al., 2009; van Horn et al., 2015; Gibbels et al., 2019; Hallberg et al., 2019; Adebahr et al., 2021; Bellis et al., 2024). The Czech Republic has joined these efforts with the Parafilik (Paraphile) program relatively recently (Krejčová et al., 2021; Di Gioia and Beslay, 2023; Páv et al., 2024; Navrátil et al., 2025). The help-seeking environment in the Czech Republic represents a pioneering effort in establishing structured prevention strategies within the Central European region. Even though several

similar initiatives already exist in the European Union offering help to non-forensic individuals with sexual interest in minors, for review see Di Gioia and Beslay (2023), their experience offers limited guidance when it comes to scaling or implementing similar measures at the national level. This is because essential aspects of service provision, such as the legal requirements for mandatory reporting, healthcare, social support, and crime prevention infrastructures, differ from country to country (Mathews, 2015; Klapilová et al., 2019).

Therefore, to ensure that the service offered reaches the target clientele and stays relevant to *their* treatment needs, which is essential for ensuring meaningful and effective therapeutic outcomes (Lievesley et al., 2023; Woodward et al., 2024; Lievesley et al., 2025a; Lievesley et al., 2025b), it is necessary to map the potential clients' motivations, paths, and obstacles to formal help-seeking within the present national settings. To clarify, formal help-seeking is a problem-focused, planned behavior that involves interaction with a professional source that has a legitimate and specialized role in providing relevant support, counselling, and/or treatment (Cornally and McCarthy, 2011). It is frequently preceded by informal help-seeking (McCann and Lubman, 2018), which involves receiving support from social networks and community sources (e.g., significant others). Individuals from socially marginalized groups, such as those with stigmatized attractions, often find that it is safer to connect online with others who face similar challenges (Jones et al., 2021; Nielsen et al., 2022; Jimenez-Arista and Reid, 2023; Bekkers et al., 2024; Murphy, 2024).

In non-forensic contexts, help-seeking individuals are primarily guided by intrinsic motivations to address personal distress (Levenson and Grady, 2019b; Shields et al., 2020; Lievesley and Harper, 2022); hence, a major attitudinal barrier to formal help-seeking is a low perceived need for intervention. This is in agreement with treatment-seeking models such as the Behavioral Model of Health Services Use (Andersen, 1995; Andersen and Davidson, 2007) and Health Belief Model (Janz and Becker, 1984), which highlight the fact that people are generally unlikely to approach a health professional about a concern they themselves do not perceive as sufficiently pressing. This is particularly the case for people with pedophilic interest who often face a difficult dilemma: whether to reveal their concerns to trusted others and professionals in hopes of receiving support, while also confronting the real possibility of social rejection and exclusion (Fafejta, 2021; Lehmann et al., 2021; Combridge and Lastella, 2023; Chronos et al., 2024; Lawrence and Willis, 2024; Lehmann et al., 2024). There is a profound sense of stigma surrounding the public debate about pedophilia (Jara and Jeglic, 2021; Harper et al., 2022; McKillop and Price, 2023; Lehmann et al., 2024). Sexual interest in minors tends to be conflated with child sexual abuse in the public perception (Glina et al., 2022), media (Stelzmann et al., 2020, 2022; Ischebeck et al., 2024), and sometimes even in the literature (Zakaria, 2018; Kulik et al., 2021; Fernandez et al., 2023). The perceived “dangerousness” of people with pedophilia (Combridge and Lastella, 2023) makes the idea of them relieving their sexual desire (even in a noncriminal way) uncomfortable to many lay people (Lehmann et al., 2024) and professionals alike (Nematy et al., 2024). Although social stigma associated with pedophilic interests is relatively less frequent among professionals (Schmidt and Niehaus, 2022), some express discomfort or outright reluctance when it comes to treating even non-offending individuals (Levenson and Grady, 2019a; Bayram et al., 2021; Christophersen and Brotto, 2024). Hence, in non-mandated settings, concerns about professionals' stigmatizing attitudes, misconceptions about pedophilia, and knowledge inaccuracies about

mandatory reporting (Beggs Christofferson, 2019; Grady et al., 2019; Levenson and Grady, 2019a; Stephens et al., 2021; Walker et al., 2022) turn out to be major barriers to formal help-seeking (Grady et al., 2019; Jahnke et al., 2024). However, in countries where early intervention/primary prevention initiatives have been launched only recently, misgivings about service accessibility (which is an example of a structural barrier) may also be of relevance (Tenbergen et al., 2021; Jackson et al., 2022).

Self-referred help-seeking regarding paraphilia-related psychological needs in non-mandated settings is an under-researched topic in Central Europe. To understand specifically how Czech people with sexual interest in minors navigate the help-seeking context, we recruited a non-random, purposive sample of 97 community-based (predominantly male) non-forensic adults who reported high sexual arousal to hypothetical or imagined involvement with minors. In light of the existing evidence, we hypothesized that reports of past formal help-seeking would be positively predicted by disclosures to significant others and greater perceived urgency of self-identified concerns, and negatively by barriers reflecting dismissive attitudes towards professional assistance and perceptions of its poor accessibility.

Materials and methods

Sample and procedure

The target group of this study were male and female Czech-speaking community-based Czech citizens aged 18–80 years who expressed sexual interest in minors. They were recruited from two national pools of Czech respondents via the STEM/MARK sociodemographic agency¹ in January–February 2020. This agency sources its respondents from the European national panel,² which comprises 55,000 individuals, and the Dialog panel³ with 10,000 active members. Both the panels are run in compliance with the ethical codex of ICCP/ESOMAR.⁴ Only Czech nationals were targeted by the campaign. Deliberate quota sampling was employed, followed by purposive screening for selected paraphilic interests. The quotas involved region of residence, municipality size, gender, age, and education. Quotas were established on the basis of the most recent population census of the Czech Statistical Office at that time (CZSO, 2013). Responses were collected by means of a standardized online interview in the form of an online survey. This method was preferred due to the confidential nature of the survey, which helped preserve the respondents' privacy. The current study was part of an umbrella project “Love and Intimacy in the Czech Population”; for other outputs, see, e.g., Marečková et al. (2022) and Zakreski et al. (2024). The present sample was nonetheless recruited with a different sampling procedure than the nationally representative sample, and the two samples did not overlap. We aimed to obtain about 100 complete responses for this particular study. To estimate the initial sample size, we utilized the findings of the study conducted by Bártová et al. (2021) on the prevalence of various paraphilic interests in the Czech Republic. The link to the survey was e-mailed to 5,422 members of the two survey panels. Out of all individuals contacted, 1,062 did not access the provided link. A total

1 www.stemmark.cz

2 <https://www.nationalpanel.eu/>

3 <https://dialog.stemmark.cz/>

4 <https://www.esomar.org/>

of 753 individuals clicked the link but did not complete the survey, 2,175 people did not meet the screening criteria related to paraphilic interests (see below), and 1,255 individuals were not included in the survey due to reaching the required sample size based on statistical power calculations and financial limitations. A total of 178 people met the screening criteria indicating interest in hypothetical sexual violence and/or pedophilic themes, of which 81 met the criteria for violent paraphilic interest but did not meet the criteria for pedohebephilic interest, and hence were not included in the present study. The final sample reported in the present paper comprised 97 respondents (78 male) aged 47.2 ± 14.5 (21–80) years. Participants who did not qualify based on the paraphilic interest criteria were filtered out and did not answer any additional questions.

Similar to several previous studies (Grundmann et al., 2016; Seto et al., 2021), sexual interest was assessed using ratings of sexual arousal in the hypothetical event of exposure to selected themes. It is important to emphasize that a person may experience strong sexual arousal in response to a particular theme without having any desire to act on it in real life. Pedophilic and hebephilic interest, respectively, were assessed with one item each, which were introduced as follows: “In the next part of the survey you will be presented, besides common sexual activities and partners, with less usual sexual patterns that some people may find unpleasant. For others, however, they may represent a preference that they feel uncomfortable discussing. Please tell us how you feel about them. Provide candid answers using the following scale, where a rating of “1” stands for “definitely not” and a rating of “5” means “definitely.” The survey is anonymous, and the findings will only be used for scientific purposes. Does the idea of the following activities arouse you sexually?” The respondents were then presented with two items representing the pedophilic (“Sexual contact with a minor under 12 years of age”) and hebephilic (“Sexual contact with a minor under 15, but over 12 years of age”) theme. These specific age categories were established to maintain consistency with the majority of prior studies, which employed similar groupings when examining patterns of sexual interest (e.g., Santtila et al., 2015; McPhail et al., 2019; Martijn et al., 2020). Additionally, to explore potential concomitant paraphilic interests,

another four themes featured in the 10th revision of the *International Classification of Diseases* (World Health Organization, 2015) were presented, namely immobilization, biastophilia, humiliation/submission, and beating/torture; for definitions see Zakreski et al. (2024). A respondent was included in the final sample if they endorsed, i.e., rated with a “4” or “5”, the pedophilic and/or hebephilic theme. If these were the only themes endorsed, the participant was considered “minor-exclusive” (ME; $N = 51$, 52.6%). Those who endorsed any other paraphilic theme(s) in addition to the pedophilic/hebephilic one were labeled “minor non-exclusive” (MN; $N = 46$, 47.4%). The absolute frequencies of endorsements of the individual paraphilic patterns are shown in Figure 1.

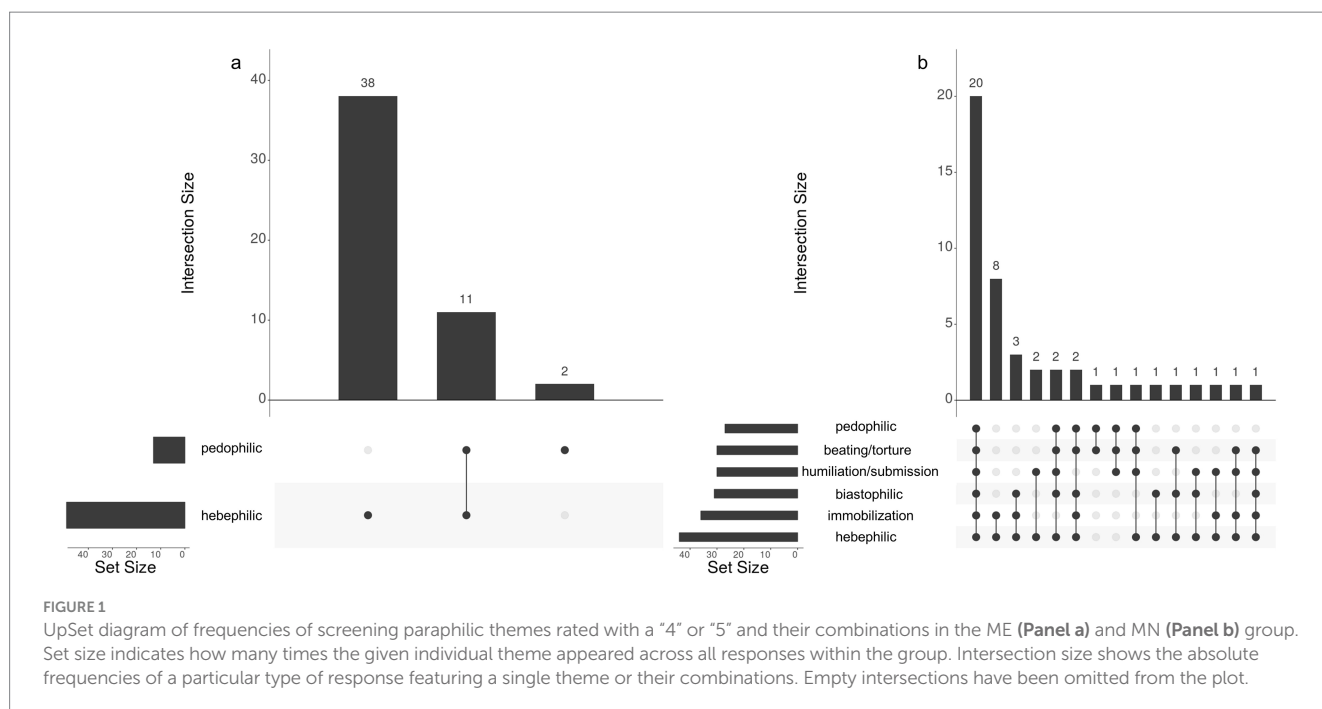
Before proceeding to complete the survey, participants were asked to provide informed electronic consent, agreeing to participate in the survey. The survey took, on average, 46 min to complete (median time = 42 min). The online survey was available only in the Czech language and included items covering basic sociodemographic data, formal and informal help-seeking experiences, self-identified treatment targets and their perceived urgency, and attitudinal and structural barriers to help-seeking. All participants received the items in an identical sequence.

The study was approved by the Institutional Review Board of the National Institute of Mental Health, Approval No. 119/19. The process of data storage and anonymity assurance complied with the ethical codex of ICCP/ESOMAR (see text footnote 4). STEM/MARK awards participants with credits for completing surveys, which can later be redeemed for various rewards.

Survey topics and measures

Sociodemographic data

The respondents were asked to provide information on their age, gender, sexual orientation, educational background, size of place of residence, and relationship status. Sexual orientation was assessed on



a 7-point Kinsey scale (ranging from 0 = “exclusively heterosexual” to 6 = “exclusively homosexual”) (Kinsey et al., 1948; Kinsey et al., 1953).

terms of “sexual interests” without any further specifications (such as “paraphilic” or “unusual”) to avoid use of language that might be perceived as presumptuous or judgmental.

Experiences with formal and informal help-seeking

The respondents were asked whether they had ever attempted to seek (1) formal help regarding their sexual interests (yes/no). Those who responded in the affirmative were consequently presented with a list of potential sources of formal help and support. The list was inspired by Levenson and Grady (2019b). The items that received non-zero endorsements are shown in Figure 2. Also, for each selected item, respondents were asked to indicate how helpful, in their view, the experience was (1 = “not at all helpful,” 2 = “somewhat helpful,” 3 = “very helpful”). Then they were instructed to indicate in the same manner whether they had ever sought (2) formal help about other psychosocial issues. To explore (3) disclosure and informal help-seeking with significant others, the respondents were asked whether their sexual interests were known to anyone (no one, romantic partner, parent, another relative, friend, other). All items were phrased in

Self-identified concerns and their perceived urgency

Urgency of self-identified concerns was operationalized as a median rating of potential treatment targets, which were presented in a list that was inspired by Levenson and Grady (2019b) (see Table 1 for details). Participants were asked to rate each item in terms of perceived urgency on a five-point Likert-type scale anchored with “not a concern at all” (0) to “a very urgent concern” (4).

Attitudinal barriers to formal help-seeking

Attitudinal barriers to formal help-seeking were operationalized in two ways: (i) as a low degree of motivation to seek professional assistance, which was assessed with the *Therapy Motivation Scale* (TMS; Jahnke et al., 2015c), and (ii) a strong sense of social stigma

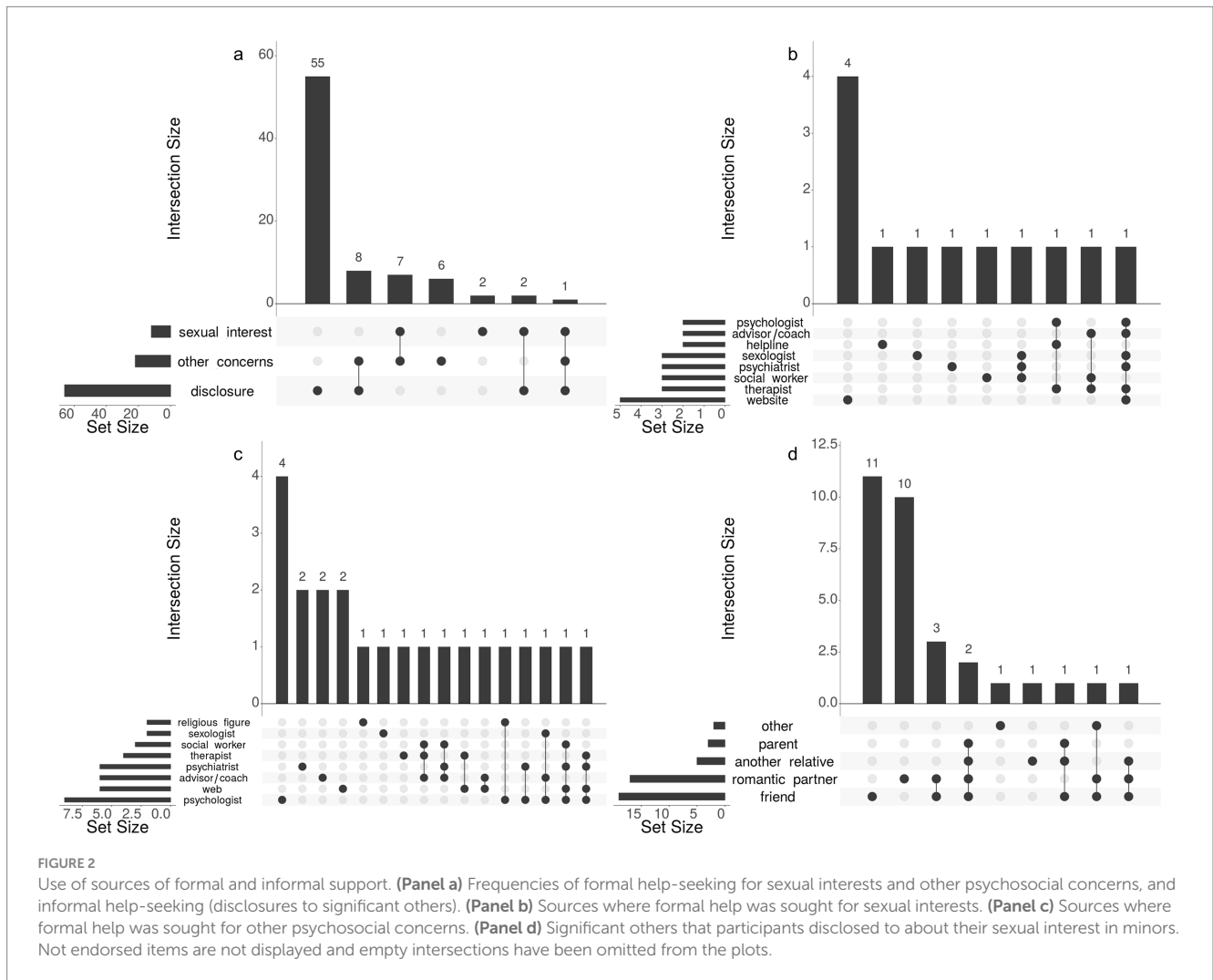


TABLE 1 Endorsements of items representing possible self-identified concerns and treatment targets in the minor-exclusive (ME) and non-exclusive (MN) groups.

	ME (N = 51)	MN (N = 46)	Total (N = 97)
Enhance quality of life	8	10	18
Anxiety and depression	8	9	17
Find a romantic/intimate partner	7	10	17
Get rid of unhealthy or unwanted ways of coping (e.g., watching porn)	5	8	13
Self-esteem	5	8	13
Concerns about future	6	5	11
Sexual frustration	4	7	11
Shame and stigma	3	6	9
Understand causes of sexual interests	4	5	9
Learn about one's diagnosis	5	3	8
Identity issues	3	5	8
Adopt socially acceptable, desirable ways of coping	1	6	7
Deal with loss of sexual self	2	5	7
Reduce sexual attraction to minors	2	5	7
Manage sexual feelings	2	5	7
Disclosure and confidentiality issues	1	3	4
Enhance sexual attraction to adults	0	3	3

The frequencies represent the number of people in either group who rated the given item as being of urgent ("3") or very urgent ("4") concern.

towards people with sexual interest in minors, which was evaluated with the *Perceived Social Distance Scale* (PSDS) (Jahnke et al., 2015c).

Therapy motivation scale

The original purpose of the four-item TMS was to gauge the willingness of minor-attracted men to approach a professional about their sexual interest in minors. Agreement with statements is indicated using a seven-category response format (0 = "do not agree at all" to 6 = "completely agree"). An alteration that we made to the original measure was inclusion of an extra item assessing the respondents' perceptions of professionals' readiness to address their concerns. This was motivated by previous findings suggesting that minor-attracted people did not find the professionals' input helpful and hence their experience with formal help-seeking was largely negative (Wagner et al., 2016; Levenson and Grady, 2019b). The extra item read as follows: "I believe that professionals are sufficiently trained to help me deal with my concerns." The degree of agreement with the five statements was indicated by placing a mark along a seven-point Likert-type scale anchored with "completely disagree" (0) and "completely agree" (6). Reverse items were recoded so that higher scores represented greater willingness to seek formal help, and the individual scores were then added together to produce the total score, which could range between 0 and 30. Psychometric properties of TMS are not known in community-based people with sexual interest in minors. The scale was translated to Czech by Anna Pilátová and a back-translation was produced by LMN, as were the other measures, unless stated otherwise.

Perceived social distance scale

The six-item PSDS was originally designed to help assess the perceptions of minor-attracted persons of the societal stigma associated

with sexual interest in minors. Participants are asked to indicate the degree of agreement with statements regarding the willingness of the general public in their country to be accepting towards non-offending minor-attracted persons in their workplace, neighborhood, circle of friends, or as random acquaintances, and the general public's beliefs that such persons should be incarcerated or dead. The statements are introduced as follows: "Please indicate how, in your belief, most people in [the country of the participant's residence] would respond to these statements concerning people who are dominantly sexually interested in children but have never committed a crime. I believe that most people in [the given country] think that..." A seven-category response format is used (0 = "do not agree at all" to 6 = "completely agree"). In the present study, we adapted the original measure to ask how, in the participant's belief, most people in the Czech Republic would respond to statements concerning people whose sexual fantasies involve sexual violence against adults but who have never committed sexual offense. This was to gauge the respondents' perceptions of the public sentiment regarding paraphilic fantasies without insinuating that the participant's own sexual interests could be problematic, as might have been the case had we used the instructions in their original wording. Responses were given on a seven-point Likert-type scale anchored with "completely disagree" (0) and "completely agree" (6). Reverse items were recoded so that higher scores represented greater perceived stigma. The individual responses were added together to obtain a total score (theoretical range: 0–36), as per the original use of the measure (Jahnke et al., 2015b; Jahnke et al., 2015c). Retest reliability of the German version was found to be high [$r = 0.89$ with a test–retest interval of 1 week among 34 university students Jahnke and Hoyer (2017), cit. Sec. Jahnke (2018)]. It exhibited high internal consistency ($\alpha = 0.82$) and convergent validity in a German general population online sample (Jahnke et al., 2015a).

TABLE 2 Endorsements of attitudinal and structural obstacles and barriers to seeking help about sexual interest-related concerns in the minor-exclusive (ME) and non-exclusive (MN) formal non-help-seekers and in total.

	ME (N = 45)	MN (N = 40)	Total (N = 85)
Do not need any help with sexual interest-related issues (A)	31	32	63
Can control oneself and will not harm or offend (A)	10	5	15
Concerned about being reported to law enforcement authorities (A)	3	2	5
Worried that the professional would react negatively (A)	3	2	5
Concerned about unethical breaches of confidentiality (A)	1	2	3
Not sure how to find a competent practitioner (S)	1	1	2
Financial issues (S)	1	1	2
Commuting or time constraints (S)	0	0	0

A, attitudinal, S, structural barrier.

Attitudinal and structural barriers to help-seeking

Additionally, to further explore the formal non-help-seekers' reasons for dismissing help, a list of attitudinal and structural barriers, inspired by Levenson and Grady (2019b), was presented to them. They were asked, "What are your reasons for not seeking help about your sexual interests?" and instructed to endorse all items that applied to them. The list is displayed in Table 2.

Statistical analysis

IBM SPSS 24.0 software was used to run all statistical tests. Cohen's *d* was computed with the ESCI software. The UpSet diagrams were produced with the UpSetR Shiny App⁵ developed by Lex et al. (2014). We checked the continuous variables for outliers, ascertained their normality, and mean-centered them. Associations between dichotomous variables were assessed with Chi square tests of independence and, to determine the effect size, the statistics were converted to Pearson's product-moment correlation coefficient (*r*) after Rosenberg (2010). For related samples, these associations were computed with McNemar's tests. 95% bias corrected and accelerated bootstrap confidence intervals (95% BCa CIs) are given in square brackets.

To investigate the factors contributing to formal help-seeking in the past, a categorical regression (CATREG) model was fitted. Past formal help-seeking for paraphilic interests (yes/no) was regressed on perceived urgency of self-identified concerns (that was operationalized as the median rating of potential treatment targets) and attitudinal barriers to formal help-seeking operationalized as the TMS and PSDS scores, respectively, controlling for disclosures to significant others (yes/no) and formal help-seeking for other psychosocial issues (yes/no). Scale variables were treated as numeric and were discretized by ranking, and nominal variables were treated as such. A random initial configuration was selected, as recommended when at least one variable is treated as nominal. PSDS and TMS scores were not significantly correlated in the practical or

statistical sense ($r = -0.01 [-0.24, 0.22]$, $p = 0.912$), meaning that multicollinearity was not an issue.

Results

Descriptive statistics

Table 3 shows the descriptive statistics in the ME and MN group. There were no significant differences between them in the sociodemographic variables. Furthermore, no within-group differences (gender or paraphilic pattern-related, i.e., hebephilic-only vs. pedohebephilic) or within-gender variation (i.e., ME vs. MN men and women) were found, either. The ME group nevertheless significantly differed from MN in that hebephilic-only endorsements prevailed, while the MN group was dominated by those who endorsed both the hebephilic and pedophilic patterns. ME respondents also found the two patterns significantly less sexually arousing.

Formal help-seeking for sexual interest-related concerns was only reported by 12 respondents (12.4%, 6 ME men, 3 MN men and women, respectively), as Figure 2, Panel a suggests. Almost half the help-seekers for sexual interest consulted some website(s) but approaching a professional was an exception rather than the rule (Panel b). There was almost a two-fold increase in the tendency to seek help for other reasons ($N = 22$) compared to help-seeking regarding sexual interest-related concerns (Panel c). As Panel d suggests, disclosures were mostly made to friends and romantic partners. Yet, a full 68% of respondents ($N = 66$) said their sexual interests were not known to anyone.

The list of suggested treatment targets (see Table 1) had limited relevance for over a half of the participants (57.7%, $N = 56$), who did not rate a single item from the list as urgent ("3") or very urgent ("4"). Of the 41 (42.3%) respondents with any (very) urgent needs, 25 identified up to three (very) urgent treatment targets, and another 16 people had anywhere between four and eleven (very) urgent concerns. Between 52 and 79% of the respondents deemed any given treatment target completely irrelevant (i.e., rated it with a "0"). See the Supplementary material for more details.

As Table 2 reveals, the lack of perceived need for treatment was also reflected in the high endorsement frequency of the chief attitudinal barrier to help-seeking, i.e., belief that professional attention was not needed ($N = 63$).

⁵ <https://gehlenborglab.shinyapps.io/>

TABLE 3 Descriptive statistics (mean \pm SD [range], median or count) of age, education category, municipality population, relationship status and length, and sexual orientation as indicated on the Kinsey Scale in the minor-exclusive (ME) and non-exclusive (MN) group split up by gender.

	ME			MN		
	Male	Female	Total	Male	Female	Total
N	48	3	51	30	16	46
Age	46.0 \pm 13.9 (22–80)	35.0 \pm 9.5 (25–44)	45.3 \pm 13.9 (22–80)	49.5 \pm 15.0 (21–75)	48.8 \pm 15.4 (25–72)	49.2 \pm 15.0 (21–75)
Education						
Secondary without A level exam	11	2	13	9	8	17
Secondary with A level exam	24	0	24	13	5	18
Tertiary	13	1	14	8	3	11
Municipality population						
< 1,000	4	0	4	3	1	4
1,000–4,999	11	1	12	7	3	10
5,000–19,999	9	0	9	2	4	6
20,000–99,999	11	0	11	6	3	9
> 100,000	13	2	15	12	5	17
In a long-term relationship	30	2	32	21	10	31
Relationship length in years	11.7 \pm 14.6 (0.2–51.8)	5.04 \pm 1.24 (4.2–5.9)	11.3 \pm 14.2 (0.2–51.8)	15.3 \pm 14.0 (0.2–39.7)	10.7 \pm 14.9 (0.2–39.3)	13.8 \pm 14.2 (0.2–39.7)
Sexual orientation						
Exclusively heterosexual	38	1	39	22	14	36
Predominantly heterosexual, only incidentally homosexual	5	1	6	3	1	4
Predominantly heterosexual, but more than incidentally homosexual	0	1	1	2	0	2
Equally heterosexual and homosexual	1	0	1	3	1	4
Predominantly homosexual, but more than incidentally heterosexual	1	0	1	0	0	0
Predominantly homosexual, only incidentally heterosexual	1	0	1	0	0	0
Exclusively homosexual	2	0	2	0	0	0

Further descriptive statistics and explorations are given in the [Supplementary material](#).

Factors contributing to formal help-seeking

As [Table 4](#) suggests, the only practically and statistically significant predictor was the median rating of potential treatment targets, with

help-seekers rating the items as more urgent than non-help-seekers. With $\beta < 0.5$, the effect was small ([Ferguson, 2009](#)). The model was significant ($F(5,91) = 8.27, p < 0.001$) and explained nearly 1/3 of variability in formal help-seeking for sexual interests ($R^2 = 0.31, R^2_{adj} = 0.275$). Alternative models, in which perceived need for treatment was operationalized as the mean item rating, number of items rated as (very) urgent (i.e., rated with a “3” or “4”), or dichotomously as presence/absence of any (very) urgent needs, yielded similar results.

TABLE 4 Mean \pm SD for the continuous and absolute (relative) frequencies for categorical predictors; and β s, F-statistics and p-values for the categorical regression (CATREG) of past help-seeking for sexual interest-related concerns on perceived urgency of self-identified concerns (operationalized as a median rating of treatment targets), Therapy Motivation Scale (TMS) and Perceived Social Distance Scale (PSDS) scores, and the binary variables of informal disclosures and formal help-seeking for other psychosocial issues.

	Mean \pm SD	N (%)	β	F	p
Median treatment target rating	0.5 \pm 1.0		0.33	6.34	0.014
TMS	13.1 \pm 5.7		0.16	3.68	0.058
PSDS	18.7 \pm 8.9		0.03	0.08	0.772
Disclosure		31 (32%)	0.16	3.22	0.076
Help-seeking for other mental health issues		22 (22.7%)	0.20	3.37	0.070

Discussion

The aim of the present study was to examine to what extent perceived urgency of self-identified concerns, informal disclosures, and attitudinal barriers relate to reports of past formal help-seeking behavior for sexual interest-related concerns, controlling for help-seeking for other psychosocial issues. We hypothesized that past formal help-seeking for sexual interests would be linked to greater perceived urgency of self-identified concerns, operationalized as higher rated urgency of a set of treatment targets, occurrence of informal disclosures, and a lower degree of attitudinal barriers.

We found that formal help-seeking in the past was significantly predicted by a greater degree of pressing self-identified psychosocial needs, as reported in the present. Conversely, among non-help-seekers, the most prominent reason formal help was not sought was the perception that professional assistance was not urgently needed. Our results underscore the significance of the “need factors” – particularly the subjectively perceived need—as outlined in the influential Behavioral Model of Health Services Use (Andersen, 1995; Andersen and Davidson, 2007). The model identifies three primary categories of influencing factors, namely predisposing, enabling, and need factors, and it is the interplay among these three that ultimately determines whether an individual seeks professional help or not. Predisposing factors encompass demographic characteristics, social determinants including education, occupation, and ethnicity, and psychological dimensions, particularly health-related beliefs and literacy. Enabling factors refer mainly to financial (e.g., available income, out-of-pocket expenses) and organizational aspects (e.g., having a regular healthcare provider, service quality, waiting times, and logistical considerations). Finally, the model states that healthcare utilization depends on an individual’s personal recognition of the need for care and their own interpretations of their health status (i.e., perceived need), which may stand in contrast to evaluated need, which is based on clinical judgments and objective assessments made by healthcare professionals regarding the necessity for medical intervention. Research involving community-based, non-forensic populations has consistently shown that the motivation to seek help often stems from unmet perceived needs that significantly impact the individual’s overall well-being, such as anxiety and depression, low self-esteem, suicidal ideation, and loneliness (Levenson and Grady, 2019b; Stevens and Wood, 2019; Shields et al., 2020; Lievesley et al., 2023; Chronos et al., 2024; Insoll et al., 2024; Lievesley et al., 2025b). Other models employed to explain healthcare utilization, such as the Health Belief Model (Janz and Becker, 1984), also acknowledge the

critical role of the individual’s subjective assessment of their situation. According to the Health Belief Model, a person’s decision to seek care is influenced by how vulnerable they believe they are to potential health complications if the condition is left untreated, as well as by their perception of how much the illness disrupts their daily life. Critically, an individual’s self-assessment of their condition may disregard factors that researchers and clinicians consider significant—such as sexual interests – unless those factors have a noticeable impact on their daily functioning (e.g., Lievesley et al., 2025b).

Consequently, there may be a considerable disconnect between the treatment goals prioritized by professionals – often centered on managing heightened risk of offending – and the objectives held by the client (Houtepen et al., 2016; Levenson et al., 2017). In non-mandated help-seeking settings, individuals who approach professionals for help are typically driven by internal motivations to alleviate their own psychological distress (Levenson and Grady, 2019b; Shields et al., 2020; Lievesley and Harper, 2022), not by the presence of “uncommon” sexual interests. Clients, both self-referred and court-ordered, may not readily accept or internalize risk reduction as a key objective of the treatment (Levenson, 2011; Mann et al., 2013; Barroso et al., 2019; Carrola, 2023). The lower levels of internalization may be reflected in the presence of stronger offense-supportive cognitions (Zakreski et al., 2024), with individuals less motivated to seek therapy tending to display higher levels of offense-supportive cognitions (Jahnke et al., 2015c). In fact, some of our respondents may not even have interpreted their endorsement of a hypothetical scenario involving minors as potentially indicative of a problematic sexual interest. Throughout the survey, participants were invited to share their views on various aspects of help-seeking, and six of them chose to elaborate on their reasons for not seeking formal help. One person misinterpreted the opportunity as an incentive to comment on their sexual orientation, saying, “There is no need to seek help for bisexuality.” Another participant stated that they did not perceive any issues related to their sexuality that would warrant seeking formal help: “I do not have any problems sexually, maybe I’m a bit shy, but I do not need professional help for that.” Yet another respondent’s reply suggested that they viewed their sexual interests as either insignificant or unlikely to affect their behavior in a concerning way: “I do not believe any of my preferences would compel me to engage in illegal behavior.” Nonetheless, two other respondents appeared to recognize that their endorsement of a theme involving minors might indicate a sexual interest that could be viewed as cause for concern. The defensive tone of their responses suggested a sense of discomfort or mistrust regarding what they anticipated from engaging with professionals. One of the respondents

raised the subject of the immutability of pedophilic/hebephilic preferences and indirectly voiced concern that their own, if disclosed, might be targeted by conversion therapy: “I do not think an expert would be able to figure it out. Sexual preference is something that is encoded in our brains. It is like someone liking red and being forced to like blue.” The other participant’s response suggested that they perceived intervention as a means of enforcing societal norms or exerting social control: “I reckon it’s only a matter of time before such people are compulsorily ‘supervised.’” Finally, one respondent simply mentioned that they were shy (presumably to seek help about sexual issues).

It is possible that the current findings are subject to bias, as some individuals in the original sample [i.e., before filtering out those with low sexual arousal ratings to pedo(hebe)philic theme(s)] may have felt that endorsing themes involving minors could carry some negative implications and therefore chose not to respond candidly. If that were the case, the proportion of *non*-help-seekers for sexual interests in the current sample might be an underestimation, as those individuals would also likely either deny having any needs related to their sexual preferences or downplay their significance. Even though the survey items were deliberately worded to avoid language that could be interpreted as presumptive or judgmental, the stigma of pedophilia is so deeply ingrained in the public consciousness that it often hinders open and honest dialogue (Lawrence and Willis, 2021; Lehmann et al., 2021; Glina et al., 2022). Moreover, as illustrated by the participant quotes above, there seems to be a degree of mistrust toward therapeutic goals as perceived to be defined by the therapists. Specifically, conversion therapy has gained considerable negative attention in the public eye over the decades (Davison and Walden, 2024), and even though most practitioners now denounce such methods as unethical, ineffective, and harmful (Cantor, 2018; Alempijevic et al., 2020; Andrade and Campo Redondo, 2022; Nematy et al., 2024), among non-experts, they still seem to linger in the spotlight. In consequence, people with paraphilic interests may be apprehensive about how a therapist might respond to their disclosure and so they choose to avoid the situation altogether (Levenson and Grady, 2019b). Conversely, positive attitudes towards formal help-seeking are linked to greater familiarity with intervention and reduced expectation of a negative response from the therapist (Jahnke et al., 2024). Therefore, intervention ought to be presented to clients as a supportive and empowering process, not simply a means of ‘prevention’. It is important for professionals as well as potential clients to embrace the idea that interventions should not seek to alter sexual interests but, rather, provide people with strategies to navigate their experiences in ways that align with their personal values and promote psychological well-being (Lievesley et al., 2023; Lievesley et al., 2025a; Lievesley et al., 2025b).

Despite dismissing formal help as unnecessary, a significant number of participants in our sample demonstrated a clear need for psychological support, as indicated by their endorsements of pressing mental health issues. Importantly, a full third of those who felt they did not need any help ($N = 21$) indicated having at least one urgent mental health-related concern. Even though it might appear that people with mental health challenges are managing without professional help, we must not be lulled into accepting this as an adequate or sustainable solution. Addressing the specific needs of these individuals aligns with the fundamental aim of health and social care interventions—to offer respectful and compassionate

support to all who seek it (Levenson et al., 2020). Moreover, it contributes to fostering protective factors that encourage healthy sexual behaviors that do not put oneself or others at risk (de Vries Robbé et al., 2015; Cohen et al., 2018; Lievesley and Harper, 2022). Emerging evidence suggests that supportive treatment programs tailored for non-forensic community-based individuals with paraphilic interests and psychological needs may serve as an effective strategy for preventing problematic sexual behaviors (Gibbels et al., 2019; Parks et al., 2020; Adebahr et al., 2021; Tenbergen et al., 2021; Beier et al., 2024; Heindl et al., 2024). However, as noted above, professional training initiatives aimed at supporting help-seeking individuals with paraphilic interests should emphasize a client-centered approach to risk assessment and treatment (Levenson et al., 2020; Lievesley et al., 2025a). Also, public discussions should shift toward highlighting therapeutic strategies that foster dignity, empowerment, and well-being, rather than concentrating predominantly on managing risks (Chronos et al., 2024). Client-centered interactions enhance service satisfaction, foster a strong therapeutic alliance, promote adherence to treatment, and ultimately contribute to better health outcomes (Robinson et al., 2008). Improving the quality of interventions for individuals with paraphilic interests can also help increase engagement with available services (Lasher and Stinson, 2017; Levenson et al., 2020; Lievesley et al., 2025a). This approach also aligns with the current EU strategy for a more effective fight against child sexual abuse proposed by the European Commission (2020).

In sum, the key to effective service provision to people with paraphilic interests in non-mandated settings is acknowledging that their motivations are as varied and personal as those of any other client seeking mental health support (Chronos et al., 2024). In terms of help-seeking for mental health issues, key obstacles include a low personal recognition of the need for support, unfavorable views toward treatment (Andrade et al., 2014), and limited mental health literacy, which hinders both the identification of problems and the acknowledgment of the need for care (Mojtabai et al., 2011; Jorm, 2012). Furthermore, stigma surrounding mental health concerns acts as a major obstacle to help-seeking, because a sense of shame and fear of being labeled discourage people from pursuing mental health support (Clement et al., 2015; Schnyder et al., 2017). Thus, successful approaches to increase formal help-seeking in people with self-driven incentives include population-wide mental health literacy campaigns and destigmatization (Xu et al., 2018). There is solid evidence that higher levels of mental health literacy are associated with more favorable attitudes toward seeking help and a greater willingness to pursue mental health support (Waldmann et al., 2020; Özparlak et al., 2023; Gündoğdu et al., 2024; Lien et al., 2024). Increasing perceived need for treatment through mental health literacy campaigns may thus encourage people who experience mental health issues to approach professionals more readily (e.g., Drane et al., 2023), which is how sexual interests may come to be co-addressed, although they may not be the original or primary reason for seeking formal help. Furthermore, destigmatization of mental health concerns is also needed, as even short-term interventions aimed at reducing stigma lead to more positive attitudes toward seeking formal help (Howard et al., 2018). Nevertheless, the positive effects tend to diminish over time, suggesting that follow-up sessions or continued engagement in mental health-related activities may be necessary to sustain improvements in help-seeking behavior (Shahwan et al., 2020). Community-wide destigmatization of sexual interest in minors, however, remains a highly contentious topic. On the one hand, the tendency to equate sexual

preference for minors with actual acts of abuse intensifies the stigma directed at individuals who experience such attractions but do not offend. This may negatively affect their mental health, discourage them from seeking professional support, and, eventually, may inadvertently heighten the risk of harmful behavior by isolating them from preventive resources (Lawrence and Willis, 2021; Jahnke et al., 2024; McPhail, 2024). Advocates of public anti-stigma interventions propose that transitioning from a societal mindset rooted in fear and suspicion to one grounded in empathy and informed understanding could meaningfully enhance the quality of life and psychological well-being of individuals who experience these attractions and eventually promote offense-free lifestyles (Lawrence and Willis, 2021; Harper et al., 2022; Lawrence and Willis, 2022, 2023; McKillop and Price, 2023). Yet, on the other, some researchers (e.g., Farmer et al., 2024) argue that it is feasible to offer compassionate and effective therapeutic support to individuals with pedophilic tendencies without aiming for a broader societal acceptance or “normalization” of pedophilia. While further research is necessary to fully resolve this debate, current findings indicate that fostering self-acceptance and reducing internalized stigma are critical components of effective therapy for non-offending individuals with sexual attractions to minors. Developing a sense of self-acceptance has been recognized as a key therapeutic objective in addressing internalized stigma and shame (Levenson et al., 2020). Moreover, many of these individuals view coming to terms with their sexual preferences as essential not only for maintaining their mental health but also for strengthening their commitment to self-regulation – often taking pride in their ability to manage their interests responsibly (Levenson and Grady, 2019b; Stevens and Wood, 2019; Jones et al., 2021).

The broader implication of our study is that improving mental health literacy across the broader community is essential to reaching this population for intervention. By raising awareness about the connection between psychological well-being and ongoing commitment to remaining offense-free, we can help create conditions that encourage these people to seek professional support. However, our findings should be interpreted with caution, as they are based on responses from an online sample and may not be fully generalizable to the broader population of community-dwelling individuals with sexual interests in minors. Yet it is equally important to highlight the distinctiveness of our study in successfully engaging a population that has been largely overlooked in prior research. Specifically, our current understanding of formal help-seeking for sexual interest-related concerns is predominantly informed by research with people involved with the criminal justice system, persons already receiving care within the established healthcare framework, and self-identified pedophiles, which may not accurately reflect the experiences or needs of people with paraphilic interests in the broader community. While the online mode of contact likely leads to the exclusion of individuals without easy internet access, it can, on the other hand, increase the feeling of anonymity and encourage individuals to reveal their preferences more freely.

Further, the study relied exclusively on self-report measures, which are inherently susceptible to social desirability bias, particularly in research involving stigmatized topics such as sexual interest in minors. While anonymity was preserved, we cannot rule out the possibility that participants underreported or misrepresented their experiences. Additionally, some of the instruments used (e.g., PSDS and TMS) have not been validated

for use with non-forensic individuals who do not self-identify as pedophilic. This raises questions about the construct validity of these measures in our sample and may partly explain the lack of significant associations between the attitudinal barriers and help-seeking behavior for sexual interests. The retrospective nature of the data further limits our ability to draw firm conclusions, as participants’ motivations and perceptions may have changed over time.

Conclusion

The present study explored help-seeking behaviors and treatment needs among individuals with sexual interest in minors, assessed by means of subjective arousal ratings to hypothetical scenarios. Despite the presence of mental health concerns, formal help-seeking for sexual interest-related issues was rare. Most participants had never disclosed their interests, and when they did, it was typically to close personal contacts rather than professionals. This reluctance was mirrored in the high prevalence of attitudinal barriers, particularly the belief that professional help was unnecessary. The perceived urgency of treatment needs emerged as the only significant predictor of formal help-seeking, though the effect size was modest. Notably, over half of the sample found the proposed treatment targets irrelevant. These findings underscore the role of self-assessed urgency in motivating help-seeking. Enhancing mental health literacy and reducing internalized stigma may be key to increasing engagement with professional support in community-based non-forensic individuals with paraphilic interests. Future research should explore how to better align therapeutic offerings with the lived experiences of this population and investigate strategies to foster earlier, voluntary engagement with preventive services.

Data availability statement

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

Ethics statement

This study was performed in line with the principles of the Declaration of Helsinki. Approval was granted by the Institutional Review Board of the National Institute of Mental Health (Approval No. 119/19). All participants provided written informed consent to participate.

Author contributions

LMN: Conceptualization, Data curation, Formal analysis, Funding acquisition, Investigation, Methodology, Project administration, Resources, Software, Supervision, Visualization, Writing – original draft, Writing – review & editing. LK: Conceptualization, Methodology, Supervision, Writing – review & editing. KB: Conceptualization, Methodology, Project administration,

Resources, Writing – review & editing. RA: Conceptualization, Methodology, Project administration, Resources, Writing – review & editing. KK: Conceptualization, Funding acquisition, Methodology, Resources, Supervision, Writing – review & editing.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Supplementary material

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