European Journal of Mental Health
https://doi.org/10.5708/EJMH.18.2023.0002

RESEARCH ARTICLE

The Impacts of Alexithymia and Sexual Distress on Sexual Functioning Among Portuguese Women

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History
Received: 13 December 2021
Accepted: 27 September 2022
Published: 24 February 2023

Citation
Ribeiro, C. & Pereira, H. (2023). The Impacts of Alexithymia and Sexual Distress on Sexual Functioning Among Portuguese Women.
European Journal of Mental Health, 18, e0002, 1–13.
https://doi.org/10.5708/EJMH.18.2023.0002

Introduction: Recognizing own's emotions seems to have an important role regarding not only our overall well-being, but also our sexual functioning.
Aims: The aim of this study is to analyze the association or impact of alexithymia on female sexual functioning.
Methods: 459 Portuguese women, with a mean age of 34.57 years (*SD* = 10.27), ranging from 18 to 65 years, completed the Toronto Alexithymia Scale (TAS-20), the Female Sexual Distress Scale – Revised (FSDS-R) and, additionally, completed the Female Sexual Function Index (FSFI), indicating if and when a sexual relationship occurred in the last month.
Results: The results showed that higher levels of alexithymia were associated with worse sexual functioning and higher levels of sexual distress. Higher levels of sexual distress were associated with worse sexual functioning. It was possible to establish a significant linear regression model between dimensions of alexithymia (difficulties in identifying feelings and difficulties in describing feelings) and sexual distress in sexual functioning; the variables together explained about 45.2% of sexual functioning in these women.
Conclusions: The results emphasize the relevance of alexithymia's dimensions in sexual functioning concerning women with or without sexual dysfunction, since they present themselves as significant predictors. Professionals working in women's sexual health should take this into account for more effective assessment and intervention in matters concerning sexual health.

Keywords: sexual functioning, sexual distress, alexithymia, emotions, women

Introduction

Sexual response is a complex and highly subjective phenomenon, influenced by biological, psychological, social, cultural, and relational factors, such as the quality of the relationship, the level of shared intimacy, the interest and the sexual function of the partner, as well as physical and mental health (Witting et al., 2008). A study carried out by Nobre, 2006, in Portugal, in an all-female sample, found that 15% of women indicated having a low sexual desire (most of the times or always), thus exhibiting negative sexual symptoms of a moderate to severe degree (Nobre, 2006). A Portuguese study by Ribeiro and collaborators revealed the presence of arousal disorders in 10-15% of the women studied (increasing to 25-30% after menopause) and a desire disorder in 25.7% of them (Ribeiro et al., 2011).

According to scientific literature, awareness of emotions, as well as internal bodily sensations, constitutes an important factor in sexual functioning (Ceunen et al., 2016). Wiens, Mezzacappa and Katkin (2000), argue that

ISSN 1788-7119 (online)

emotions are felt with greater intensity when individuals are more aware of the responses their body experiences. However, in order to become aware of the sensations that occur inside the body, it is necessary to know how to perceive these inner sensations (Price & Hooven, 2018). Well-adjusted and adequate emotional regulation remains essential for an individual's psychological and emotional well-being. Negative physiological emotions must be balanced by positive ones for a good quality of life (Wiens, Mezzacappa & Katkin, 2000).

Sifneos (1973) proposed the term "alexithymia" to refer to the difficulty in describing feelings. Alexithymia can also be characterized as a deficiency in the ability to recognize internal signals (Herbert & Pollatos, 2012; Trevisan et al., 2019). The ability to perceive internal bodily signals influences emotional regulation (Fustos et al., 2013; Grynberg & Pollatos, 2015). A greater ability to perceive bodily signals allows for more effective emotion regulation through the ability to discriminate between emotional states as they occur (Fustos et al., 2013). Alexithymia describes a cognitive-emotional disorder that refers to an individual's difficulties in experiencing and describing emotions. The term includes other characteristics, such as a difficulty in differentiating sensations (including physical ones) from emotions; limited symbolic thinking, including lack of imagination and fantasy; and a style of thinking distinguished by its literal and utilitarian character, thus being focused on external events (Taylor et al., 2016). Alexithymia is a multidimensional concept that describes several personality characteristics and is associated with a greater risk to mental health, as it is related to ongoing psychopathologies (Leweke et al., 2011). It can be a transitory state, occurring concomitantly with anxiety and depression (Montoro et al., 2016).

Literature reveals an association between alexithymia and sexual functioning, as occurs with interoception (Madioni & Mammana, 2001). Berengue and collaborators, in a Portuguese study, showed that better overall female sexual functioning was correlated with lower levels of alexithymia in its various dimensions (Berengue et al., 2019). In Brody's study (2003), the relationship between the frequency of penile-vaginal intercourse (using the FSFI) and alexithymia was evaluated; the results showed that women with higher levels of alexithymia reported having a lower frequency of intercourse. This association was not found in men. To explain these results, the author drew on evolutionary psychology and considered the hypothesis that female sexuality is more linked to the need for emotional integration than male sexuality (Brody, 2003). Scimeca and collaborators (2013) investigated the association between alexithymia and sexual behavior in a sample of individuals without sexual disorders and found that alexithymia was associated with low levels of sexual satisfaction, but not with sexual arousal. Only women with higher levels of alexithymia had reduced levels of sexual satisfaction. Higher levels of alexithymia were also associated with greater sexual distress (Scimeca et al., 2003). In a study by Costa and Collaborators (2018), the authors concluded that sexual desire was facilitated by a greater awareness of emotions and internal bodily sensations, as well as by better emotional regulation. It was also found that in women, less alexithymia was correlated with greater sexual desire.

Men and women are different in their sexual physiology and have differences in their sexual response; e.g., the process of sexual arousal (Chivers & Bailey, 2005). In this sense, we believe that female sexuality should be analyzed independently of male sexuality. Thus, our research aims to understand the relationship between sexual distress and sexual functioning among Portuguese women. First, it will compare levels of female sexual distress, sexual functioning and alexithymia by sociodemographic and health characteristics. Second, it will assess the relationship between female sexual distress, sexual functioning and alexithymia, and also assess the predictive influence of the different dimensions of alexithymia and sexual distress on sexual functioning.

Methods

Sample

The sample consisted of 459 heterosexual women, belonging to a convenience sample without sexual disturbances. Data was collected online from January 2018 to March 2019, and inclusion criteria were as follows: self-identifying as a heterosexual woman, being 18 or older, and being able to understand Portuguese. As this was not a clinical sample; snowball sampling techniques and mailing lists were used to collect the data. The sample size was calculated using a 95% confidence interval. The women in the sample ranged between 18 and 65 years, with an average age of 34.57(10.27) years. Table 1 describes the study participants. In the sample, 15.7% of the participants use antidepressants, reflecting the fact that Portugal registers one of the highest rates of antidepressants use in Europe (Estrela et al., 2020), 29% have other health problems, and 33.8% take other medications (including nutritional supplements). Some 338 (73.6%) of the participants have a regular partner, (a regular partner stands independent of their marital status – the participants may declare themselves single but have sex with

a regular partner, or not), while 241 (52.5%) cohabitate with their partner. On average, the duration of relationships endures 111.55 months (about 9.3 years).

Table 1. Sociodemographic characterization of the sample (N = 459)

Variable	*n*	%
Marital status		
Single	252	54.9
Cohabiting	55	11.9
Married	132	28.8
Divorced	20	4.4
Relationship		
Regular partner		
Yes	338	73.6
No	121	26.4
In cohabitation		
Yes	241	52.5
No	218	47.5
Educational attainment		
Up to 9 years of school	15	2.4
Up to 12 years of school	76	15.2
Undergraduate	164	34.4
Master's	182	37.7
Ph.D.	22	4.8
Professional status		
Unemployed	35	7.4
Student	48	10.2
Employed	376	81.7
Health		
Antidepressants		
Yes	72	15.7
No	387	84.3
Other health problems		
Yes	133	29
No	326	71
Other medication		
Yes	155	33.8
No	304	66.2

Procedures

The study was carried out in Portugal, with greater and better access to the Portuguese population. The sample was collected for convenience, since the questionnaires used were disseminated online through social networks such as LinkedIn and Facebook, as well as sent by email; others were delivered in paper format by hand. Participants were warned not to answer the questionnaire in the presence of others or give advance notice of questions occurring about sexual intimacy. They were also alerted to the importance of answering all questions honestly; however, it was said that they could opt to not answer any particular question were they not comfortable doing so. In addition, because it is a quantitative study, all questionnaires presented objective and closed-response questions. All participants were informed of the study objectives in writing, with confidentiality and anonymity guaranteed to all participants. As noted, the inclusion criteria included being 18 years old or older and understanding the Portuguese language fluently. The study guaranteed the anonymity and confidentiality of the data collected and obtained informed consent from the participants in accordance with the Declaration of Helsinki – Ethical Principles for Medical Research Involving Human Subjects.

In the DSM-5, Hypoactive Sexual Desire Disorder (HSDD) has been eliminated as a distinct psychological entity and replaced by a fusion of diagnoses from the DSM-IV. HSDD and Female Sexual Arousal Disorder (FSAD) have been merged into a single diagnosis called Female Sexual Interest/Arousal Disorder (FSI/AD). In the present investigation, however, the DSM-IV diagnoses were considered because the distinct nature of these diagnoses is deemed to be of greater scientific usefulness. Evidence exists for the specificity of HSDD and FSAD disorders in women (e.g., pre-menopausal) that argues against merging female desire and arousal disorders into a single category (DeRogatis et al., 2011).

The reliability of diagnostic criteria using online questionnaires instead of face-to-face settings can be an issue. We argue that the internet provides several advantages to support the evaluation of mental disorders, since internet-based questionnaires can include complex scoring rules, present items effortlessly, provide feedback whenever needed, are very cheap and allow accessibility across different samples at a greater convenience. Moreover, the anonymity of online assessment enables self-awareness and self-disclosure, thus creating more valid results. Given these advantages, numerous and diverse online diagnostic assessment tools have been made available (Nguyen et al., 2015).

Measurement Instruments

Sociodemographic questionnaire

Sociodemographic data about the participants were collected through a questionnaire that included information such as age, occupation, marital status (single, cohabiting, married, divorced – a multiple-choice question), educational qualifications and sexual orientation (multiple-choice question). Direct and independent questions were asked about whether the women cohabited with anyone (a yes-no question) and whether they had a regular part-

ner (a yes-uncertainty-no question), regardless of marital status. The questionnaire asked participants to characterize their mental and physical health, including whether there they are using antidepressants (yes-no question); if they have other health problems (yes-no question) and which ones, as well as whether they are consuming other medications (yes-no question), and which ones.

Sexual health

Sexual health was evaluated based on the definition and diagnostic criteria of the DSM-IV as to whether HSDD and FSAD were present. HSDD questions included: "Do you have a persistent and recurrent lack of motivation for sexual activity? That is, a reduction or absence of spontaneous desire, or in response to sexual/erotic stimuli, or inability to maintain desire or interest during sexual activity, or loss of desire to take the initiative or engage in sexual activities, including avoiding situations that lead to sexual activity" and "If YES, does it cause severe discomfort or interpersonal difficulties?" for answers: "Yes" or "No". FSAD questions included: "Currently exhibits a persistent or recurrent inability to maintain adequate vaginal lubrication until completion of sexual activity" and "If YES, does it cause severe discomfort or interpersonal difficulty?" for answers: "Yes" or "No". Other questions were asked to characterize sexual activity, such as: predominant sexual orientation (multiple choice question); whether the participant has a regular partner; and whether they are cohabitating with the partner (yes-no question), and for what duration.

The last month was specifically characterized, asking participants how many days they have been in a sexual relationship (with intercourse – penis in vagina – or without intercourse); how many days they wanted to have sex (with and without intercourse); how many days they masturbated alone; and how many days they wanted to masturbate alone.

Toronto Alexithymia Scale (TAS-20)

This scale, which has 20 items and is a self-assessment instrument, developed by Taylor and collaborators (Taylor et al., 1997), presents an adequately precise and valid evaluation of the alexithymia construct. The study used the version adapted for the Portuguese population, developed by Prazeres, Parker and Taylor (2000). In the TAS-20, participants must indicate their degree of agreement with each of the items presented on a Likert-type scale, where 1 means "totally disagree" and 5 means "totally agree". The TAS-20 consists of three factors/dimensions: (F1) difficulties identifying feelings, (F2) difficulties describing feelings, and (F3) externally oriented thinking (Prazeres et al., 2000). The determination of alexithymia is based on the sum of the values assigned to each item in the scale, with items 4, 5, 10, 18 and 19 being reverse scored. In the total score, the values can vary between 20 and 100. A sum less than or equal to 51 is considered low alexithymia, between 52 and 60 is considered moderate alexithymia, and equal to or greater than 61 is considered high alexithymia (Taylor et al., 1997). This scale showed good internal consistency when applied to our investigation sample. The scale has an alpha of .86 (Hill & Hill, 2012).

Female Sexual Function Index (FSFI)

The FSFI is a multidimensional instrument for assessing female sexual functioning in the four weeks prior to when it is filled out. The items that make up the FSFI have five answer options, of which the participant must check only one. The answer option, in each item, corresponds to a value from 0 (where 0 means that there was no sexual activity mentioned in that item) to 5 ("almost always or always"; "very high"; "not difficult"; or "very satisfied"), or from 1 to 5 (that is, 5 or 6 answer options, depending on whether the answer includes the option 0 = "no sexual activity"). When making the quotations, items 8, 10, 12, 17, 18 and 19 are reversed. The FSFI consists of 19 questions that assess aspects of female sexual function across six domains: sexual desire, arousal, lubrication, orgasm, satisfaction (including overall sexual satisfaction and satisfaction with the relationship) and pain (Rosen et al., 2000). This instrument was validated for the Portuguese population by Pechorro, Diniz, Almeida and Vieira (2009), having verified, at the time of its validation, an adequate internal consistency based on Cronbach's alpha (above .82 for each of its dimensions and .95 for the total scale). The individual domain scores and full scale score of the instrument are derived by the computational formula outlined. For each dimension, results are obtained by summing the individual item scores for that dimension and then multiplying that result by a specific weight value assigned to each dimension (sexual desire x0.6; arousal x0.3; lubrication x0.3; orgasm x0.4; satisfaction x0.4; pain x0.4). The total FSFI score is obtained by summing the scores for all dimensions. In each sub-dimension, the score stands between 1.2 and 6 or between 0 and 6, while the total FSFI score lies between 2

and 36. Higher scores means better sexual functioning (Pechorro et al., 2009). That is, higher values are indicative of better sexual function, including the various relevant domains of sexual functioning in women, and a score of 0 indicates no sexual activity in the last month. The score for each domain adds up to the total value of the questionnaire (Rosen et al., 2000). According to the authors, should this value be equal to or less than 26.55 (the cutoff point), it is considered female sexual dysfunction (Wiegel et al., 2005). In the study, the scale has excellent internal consistency when applied to the sample of women, with an alpha of .93 (Hill & Hill, 2012).

Female Sexual Distress Scale-Revised (FSDS-R)

This instrument is a 13-item scale designed to provide a standardized quantitative measure of personal suffering or anguish related to women's sexual life. The answers are based on a Likert-type scale from 0 (never) to 4 (always), referring to the last 30 days (DeRogatis et al., 2008). The total score of this instrument is calculated using the sum of all items, with higher values indicating a higher level of sexual maladjustment. The total scale score ranges from 0 (minimum) to 52 (maximum). A score above 11 indicates clinically significant sexual anguish (DeRogatis et al., 2008). The scale can distinguish between women who experience sexual distress and those who do not (DeRogatis et al., 2008). The scale was translated from the original English scale developed by DeRogatis and colleagues (DeRogatis et al., 2008). The psychometric sensitivity of the items was assessed using the asymmetry (*SK*) and kurtosis (*KU*) coefficients. Factor analysis was not performed, since the scale is not divided into factors. It was not necessary to eliminate any item from the original scale. In the study, the scale has excellent internal consistency when applied to the sample of women, with an alpha of 0.94. As in international validations of the instrument (e.g., Aydin et al., 2016) it was verified whether the total value of the scale (distress) correlated with sexual functioning and its dimensions, identified in the literature as being associated with sexual distress. The analysis of the correlations between the results of the FSDS-R full scale and the full scale and subscales that make up the IFSF showed a significant and negative correlation ($-.38 < r < -.66$) between all dimensions of sexual functioning, as can be seen in Table 6, showing convergent validity.

Statistical Analysis

All statistical procedures were performed using the Statistical Package for the Social Sciences (SPSS), version 27.

Before opting for parametric or non-parametric tests, the assumption of homoscedasticity was validated with the Levene test ($p > .050$), the normality assumption was validated with the Shapiro-Wilk test ($p < .050$ in some cases), or by evoking the Central Limit Theorem, as the sample tends to normal ($n > 30$) (Marôco, 2014). In addition, all asymmetry (SK) and kurtosis (KU) values were analyzed and in these cases they did not reveal serious asymmetry problems, being always below 3 and 7 respectively.

The analysis of the correlation between the variables of age and time of cohabitation and the variables of sexual functioning, distress and alexithymia was performed using Pearson correlations.

The significance of HSDD and FSAD's effects (i,e, diagnostic criteria, no symptoms, symptoms but no distress) on sexual functioning, distress and alexithymia levels was assessed using one-way ANOVA. The effect of antidepressant consumption (consuming or not consuming) on the average of sexual functioning, distress and alexithymia levels was analyzed with a Student's *t*-distribution test.

Finally, a hierarchical linear regression model was constructed to test the contribution of independent variables to the dependent variable (sexual functioning). To avoid Type I errors, Bonferroni correction tests were performed.

Results

From the total of 459 participants in the non-clinical sample, clinical sub-samples with HSDD and FSAD diagnostic criteria were taken. These diagnoses were performed based on the DSM-IV-TR criteria (APA, 2000), as explained in the Measurement instruments section. Table 2 shows the frequencies for these diagnoses as presented in the sample, as well as the cases in which symptoms are presented, but the distress criterion is missing.

Regarding effective and desired sexual activity in the last 30 days, 127 (27.7%) of the participants did not have a sexual relationship with intercourse in the last 30 days, 256 (55.8%) did not have a sexual relationship not involving intercourse, and 173 (37.7%) did not masturbate. As for the desire for sexual activity, in the last 30 days, 63 (13.7%) did not wish to have sex with intercourse, 203 (44.2%) did not wish to have sex that did not involve

Table 2. Characterization of the clinical subsample, taken from the normative sample

	n	%
HSDD	121	26.4
Low desire without distress	73	15.9
No symptoms	265	57.7
FSAD	83	18.1
Low arousal without distress	36	7.8
No symptoms	340	74.1

Table 3. Characterization of actual sexual relationships and sexual desire in the sample (average number of days per month)

	Realized activities *M(SD)*	Desired activities *M(SD)*
With intercourse	7.8 (51.86)	10.34 (25.4)
Without intercourse	2.33 (4.99)	4.5 (7.03)
Masturbation	3.4 (5.23)	4.13 (6.31)

intercourse, and 185 (40.3%) did not wish to masturbate. Other information regarding the average number of days per month including sexual activities can be seen in Table 3.

Regarding sexual functioning, the presence of HSDD had a statistically significant effect on the sexual functioning of women ($F(2, 321) = 94.93$; $p < .001$; $\eta^2_p = .372$; $\pi = 1$), with a high effect dimension. Women without symptoms had significantly better sexual functioning than women with HSDD diagnostic criteria and women without desire but without distress (and therefore without diagnostic criteria). A statistically significant effect of the presence of FSAD on women's sexual functioning was also observed ($F(2, 321) = 80.96$; $p < .001$; $\eta^2_p = .335$; $\pi = 1$). Women without symptoms had significantly better sexual functioning than women with FSAD diagnostic criteria and women without arousal but without distress. Women's sexual functioning showed statistically significant differences while consuming antidepressants; when women took these medications (M*(SD)* = 25.89(5.24); $n = 48$), sexual functioning registered inferior compared to women who did not consume them (M*(SD)* = 28.75(5.04); $n = 275$).

On women's sexual distress, HSDD bore a statistically significant effect: ($F(2, 439) = 145.52$; $p < .001$; $\eta^2_p = .399$; $\pi = 1$), with a high effect dimension. Women without symptoms had significantly less sexual distress than women exhibiting HSDD diagnostic criteria and women without desire but without distress (and therefore without diagnostic criteria). A statistically significant effect of the presence of FSAD on women's sexual distress was also observed ($F(2, 439) = 63.69$; $p < .001$; $\eta^2_p = .225$; $\pi = 1$). Women without symptoms had significantly better sexual functioning than women with FSAD diagnostic criteria and women without arousal, but without distress. Women's sexual anguish was influenced by the consumption of antidepressants; when women consumed these medications (M*(SD)* = 18.84(12.69); $n = 69$), sexual distress was higher in relation to women who did not consume them (M*(SD)* = 13.31(13.26); $n = 371$).

Regarding alexithymia levels, HSDD had a statistically significant effect on alexithymia ($F(2, 437) = 15$; $p < .001$; $\eta^2_p = .064$; $\pi = 1$). Women without symptoms had significantly lower levels of alexithymia than women with HSDD diagnostic criteria and women with no desire but no distress (and therefore no diagnosis). A statistically significant effect of the presence of FSAD on women's sexual distress was also observed ($F(2, 439) = 8.96$; $p < 0.001$; $\eta^2_p = .039$; $\pi = .97$). Women with FSAD diagnostic criteria had significantly higher levels of alexithymia than women without symptoms. Women who consumed antidepressants (M*(SD)* = 50.64(13.33); $n = 66$) had higher levels of alexithymia compared to women who did not consume them (M*(SD)* = 46(12.89); $n = 373$). This and other information can be seen in Table 4.

A weak negative correlation existed between age and alexithymia levels ($r = -.18$; $p > .001$; $n = 438$). Older women tended to have lower alexithymia levels (Table 5). Cohabitation time did not show any significant association with sexual functioning, alexithymia or sexual distress, as shown in Table 5.

Through the correlations of the variables under study, we found that alexithymia had a significant and positive association with sexual distress ($r = .35$; $p < .001$; $n = 426$) and a negative association with sexual functioning ($r = -.21$; $p < .001$; $n = 310$); that is, when women had higher levels of alexithymia, they tended to have worse sexual functioning. Sexual functioning also had a negative and strong association with sexual distress ($r = -.66$; $p < .001$; $n = 316$) and with all the subdimensions of alexithymia. Specifically, regarding the dimensions of alexithymia, it was found that the difficulty of identifying feelings was positively related to sexual distress ($r = .38$; $p < .001$; $n = 433$) and negatively with sexual functioning ($r = -.18$; $p < .001$; $n = 316$). Similar results were found for the other dimensions of alexithymia related to distress and women's sexual functioning, as shown in Table 6.

A hierarchical multiple regression was performed in order to assess the effects of alexithymia and its dimensions, as well as sexual distress, on women's sexual functioning. Model 2 describing the multiple linear regression of women's sexual functioning as a function of sexual anguish, general alexithymia, difficulties in identifying

Table 4. Differences in mean sexual functioning, sexual distress, and alexithymia levels, according to symptoms or diagnoses of HSDD and FSAD, and antidepressant consumption

		M *(SD)*	F	*p*
Sexual Functioning				
HSDD	No symptoms	30.63 (0.29)	94.93	<0.001**
	No desire/no distress	26.7 (0.58)		
	HSDD	23.08 (0.48)		
FSAD	No symptoms	29.94 (3.96)	80.96	<0.001**
	No arousal/no distress	25.95 (3.77)		
	FSAD	22 (5.54)		
Antidepressant	Yes	25.89 (5.24)	0.449	<0.001**
	No	28.75 (5.04)		
Sexual Distress				
HSDD	No symptoms	8.27 (9.41)	145.52	<0.001**
	No desire/no distress	13.01 (11.16)		
	HSDD	27.94 (11.68)		
FSAD	No symptoms	11.05 (11.42)	63.69	<0.001**
	No arousal/no distress	12.56 (9.60)		
	FSAD	27.42 (13.58)		
Antidepressant	Yes	18.84 (12.69)	0.096	0.001**
	No	13.31 (13.26)		
Alexithymia levels				
HSDD	No symptoms	44.24 (12.60)	15	<0.001**
	No desire/no distress	46.73 (12.99)		
	HSDD	51.95 (12.51)		
FSAD	No symptoms	45.53 (12.77)	8.96	<0.001**
	No arousal/no distress	44.5 (11.55)		
	FSAD	52.04 (13.42)		
Antidepressant	Yes	50.64 (13.33)		
	0.085	0.008**		
	No	46 (12.89)		

feelings, difficulties in describing feelings, and thoughts that were externally oriented, proved to be statistically significant ($F(4, 292) = 63.184$; $R^2 = 0.452$; $p < 0.001$). The model explained 45.2% of the variability of women's sexual functioning. However, the analysis of the regression coefficients and their statistical significance revealed that

Table 5. Association of age and time of cohabitation with sexual functioning, alexithymia and sexual distress

		Sexual Functioning (FSFI)	Alexithymia (TAS-20)	Sexual
Age	*r*	.02	−.18**	−.081
	p	.748	<.001	.092
	N	321	438	438
Cohabitation	*r*	− .04	−.78	.09
	p	.575	.293	.218
	N	160	182	186

Table 6. Matrix correlation

	1	2	3	4	5	6
1 - Alexithymia	1	.886**	.864**	.650**	.350**	–.211**
2 - Diff. identifying feelings	–	1	.690**	.313**	.383**	–.182**
3 – Diff. describing feelings	–	–	1	.408**	.283**	–.202**
4 – External Orientation	–	–	–	1	.142**	–.135*

Table 7. Hierarchical multiple linear regression of female sexual functioning

	Model 1			Model 2			Model 3		
	B	*SE B*	*ß*	*B*	*SE B*	*ß*	*B*	*SE B*	*ß*
Sexual distress	– .289	.020	–.670*	–.299	.020	–.695*	–.309	.027	–.723*
Alexithymia	.005	.019	.012						
Diff. identifying feelings				.124	.046	.161*	.077	.057	.103
Diff. describing feelings				–.131	.068	–.114*	–.036	.087	–.032
External Orientation				–.042	.056	–.035	–.046	.081	–.037
Age							.016	.039	.031
Cohabitation							–.002	.004	–.037
R^2	.444			.452			.505		
F for change in R^2	119.697*			63.184*			24.335*		

general alexithymia and externally oriented thoughts were not significant predictors; whereas difficulty in identifying feelings (ß = 0.161, $t(298) = 2.73$; $p = 0.007$) and sexual distress (ß = -0.299, $t(298) = -15.14$; $p < 0.001$), were significant predictors, while difficulty in describing feelings (ß = -131, $t(298) = -1.927$; $p = .055$) was a partially significant predictor, as shown in Table 9. When a multiple hierarchical regression was performed in order to assess the effects of age, time of cohabitation, the subdimensions of alexithymia and sexual distress on women's sexual functioning, it appears that, despite the model being significant ($F(6, 143) = 24.335$; $R^2 = 0.505$; $p < .001$), only sexual distress was a significant predictor of the model, as shown in Table 7.

Discussion

The study's aim was to assess the impact of alexithymia, as well as sexual distress, on the sexual functioning of women. The results showed that alexithymia has a relevant bearing on women's sexual functioning.

The results showed that age did not influence women's sexual functioning or anguish, contrary to several investigations that have concluded that sexual functioning is affected by aging (for example, Kleinstäuber, 2017 and Jenczura et al., 2018). In the case of men, sexual difficulties seem to be more related to age, bearing a greater association with health problems. In the case of women, menopause has a negative impact on women's sexual interest and desire; however, psychosocial factors seem to have an important role (Avis, 2000). In this study, age has a negative relationship with alexithymia, showing that with age, women tend to be more capable of identifying and recognizing their own emotions. These data are supported by another study arguing that older adults seem more emotionally adapted compared to young adults. Older adults seem to have fewer negative emotions, have greater emotional ability and prefer to use effective emotional regulation techniques (Birditt & Fingerman, 2005). Other studies argue that older people experience improvements in the social and emotional domains of life (Akiyama et al., 2003). This may explain the results presented in this investigation, as recognizing and identifying emotions is crucial to achieving adequate emotional regulation in the case of women.

Cohabitation time did not show a positive association with alexithymia, distress or sexual functioning, despite studies that support the idea that, in long-term relationships, daily attitudes facilitate sexual desire, especially when these attitudes instill the feeling that the partner is valuable and that the relationship is special. However,

intimacy and sexuality is influenced by several variables, making it a very complex process. Thus, sexual motives seem to vary according to circumstances (Birnbaum et al., 2016). Sexual functioning encompasses more than sexual desire, in addition to other psychological and emotional variables that may be at play.

The results show us that, in a non-clinical sample, there is actually a relatively high percentage of women exhibiting criteria compatible with a diagnosis of HSDD (26.4%) and FSAD (18.1%), according to the DSM-IV criteria (APA, 2000). These data confirm the fact that the lack of sexual desire is one of the most common sexual complaints in women throughout the life cycle, with representative studies carried out in several countries. For a diagnosis to occur, it is necessary to present clinically significant distress; thus, prevalence rates fall, with only 7-10% of women reporting sexual dysfunction (Mitchell et al., 2013).

In this study, women's sexual functioning showed a significant influence on the presence or absence of criteria for HSDD and FSAD. Women without symptoms have significantly better sexual functioning compared to women with HSDD diagnostic criteria and women without desire but without distress (and therefore without a diagnosis); the same is the case for FSAD. These data show that even if the criterion of sexual anguish is not present and there is no experience of severe discomfort or interpersonal difficulties, worse sexual functioning occurs compared to women who have no symptoms or do not have a low sexual desire or low arousal. That is, when there is a low desire or low arousal, even without sexual distress, sexual functioning is affected. Sexual functioning was significantly better in women who reported not taking antidepressants compared to those who reported taking antidepressants. Depression itself is associated with decreased libido and decreased sexual activity (Gitlin, 1997). Women taking antidepressants can have symptoms of mood swings. In addition, antidepressant medications often interfere with various stages of the sexual response (Ferguson, 2001).

Sexual distress was significantly affected by the presence or absence of criteria for HSDD, FSAD and the consumption of antidepressants in this study. The diagnostic criterion for these sexual disorders is anguish and is influenced by severe discomfort or interpersonal difficulties (APA, 2000). Additionally, the level of alexithymia was significantly affected by the presence of HSDD, FSAD and the consumption of antidepressants. Alexithymia, besides representing a failure to recognize and access emotions and feelings, can result from global deficits in the recognition of internal bodily sensations (Sowden et al., 2016). This justifies its important role in clinical treatment, with symptoms or even clinical diagnoses relating to sexual desire or sexual arousal. These results show that the ability to recognize, identify and express emotions is lower in the presence of sexual and other psychiatric disorders. These data are supported by Palser and collaborators, whose studies indicate that subjects with alexithymia are the most likely to report clinically significant levels of anxiety (Palser et al., 2018). As verified in this study, the consumption of antidepressants is related to the presence of psychiatric conditions. The results also showed that alexithymia is associated with more sexual distress and less sexual functioning. In this sense, the study results corroborate the argument that higher levels of alexithymia, in various sexual pathologies, may be due to low awareness or inadequate interpretation of the effects on the body, which is also supported by Brewer, Cook and Bird (2016). Likewise, Wise et al. (2002) verified that subjects with sexual disorders (arousal, orgasm and sexual pain) have higher levels of alexithymia. Specifically, in this study, regarding the dimensions of alexithymia, it was found that difficulty in identifying feelings is positively related to sexual distress and negatively to sexual functioning. Similar results were found regarding the other dimensions of alexithymia related to distress and women's sexual functioning. Sexual distress is linked to negative emotions, such as shame, guilt, frustration, anxiety, fear and anger in relation to one's sex life or sexual experience (DeRogatis et al., 2008).

The levels of distress in women show a significant and positive correlation with all dimensions of alexithymia, demonstrating the important role of this variable in women's sexual well-being. These data are in line with a study by Scimeca and collaborators (2013), where higher levels of alexithymia were also associated with more sexual distress. In an investigation carried out by Madioni and Mammana (2001), the results showed an association between alexithymia and some sexual symptoms, in a clinical sample of sexual disorders and one with normative subjects (similar to the present study); the scale values were significantly higher in the clinical sample in men and women diagnosed with HSDD. The significant association between alexithymia and psychological distress as verified in the present study is corroborated by previous studies (for example, Leising et al., 2009). Previous research concluded that a specific combination of alexithymic characteristics is more important as a risk factor for psychological distress; in the present study, the positive association between alexithymia and psychological distress was attributed to all subscales (including global ones). This is in line with previous results regarding positive associations between specific problems in identifying emotions and higher levels of psychological distress (Härtwig et al., 2014; Liang & West, 2011); in this case, we are referring to sexual anguish. More alexithymic subjects are more likely to report clinically significant levels of anxiety (Palser et al., 2018).

It was possible to build a multiple linear regression model of women's imparied sexual functioning due to sexual distress, difficulties in identifying feelings and difficulties in describing feelings. General alexithymia was not considered a significant predictor of the model, despite its significant association with worse sexual functioning and more sexual distress. However, difficulties in identifying feelings, as well as difficulties in describing feelings, proved to be essential dimensions of alexithymia regarding the production of an adequate female sexual response. The ability to perceive one's own sensations is essential to developing attitudes that lead to emotional regulation (Gross, 2015). The fact that alexithymia, in a global dimension, is not a predictor of the model, even if some of its subdimensions are, reinforces the complexity of this concept/phenomenon, and reveals that its various components play different roles in women's sexual functioning, in addition to the complexity of female sexual functioning. According to Baumeister (2000), women have greater intra-individual variation and less consistency in their sexual behavior than men throughout the life cycle; additionally, women's sexuality is more influenced by social and cultural factors (Baumeister, 2000). In terms of sexual functioning, these gender differences support the importance of developing studies focusing on the genders independently.

Strengths and Limitations

Some limitations of this study should be considered when analyzing and interpreting the results. All methods used were self-reported and we presented a convenience sample, which may have some influence on the answers. Since this type of sampling does not guarantee representativeness for the population, our findings are not generalizable. Sexual functioning remains quite complex and can be influenced by several biological, psychological and social factors, which may also interfere with the study results. Furthermore, the questions formulated with the DSM-5, HSDD, and FSAD diagnostic criteria, helped more objectively understand the percentage of women who can indicate the selected criteria for these diagnoses. However, we know that establishing a rigorous clinical diagnosis requires a more comprehensive clinical evaluation, adapted to each patient.

Future investigations suggest studies that include male samples, with gender-discriminatory and comparative analysis, in order to understand more objectively the influence that alexithymia can have on sexual functioning. It is also suggested that studies that specifically address the effect of alexithymia in women's sexual functioning in other countries be developed. Women who are taking antidepressants could be doing so to treat depression or another condition that is linked to sexual functioning, and these conditions were not controlled for in the present study, which could interfere with the results. The fact that the study sample was non-clinical may be a limitation, as the prevalence of other symptoms or sexual disturbances was not controlled for. Other physical pathologies could have interfered with the results, conditioning the results as well as the analysis.

Conclusion, Implications, and Future Directions

The results of this study have important implications for the recognition of relevant variables in women's sexual functioning. The ability to identify, recognize and express emotions is an important factor in the experience of female sexuality. These data reinforce the idea that sexual intervention programs or protocols based on increased awareness and emotional regulation can bring significant improvements to women's sexual functioning, regardless of whether they have sexual dysfunctions or not, and can help minimize sexual problems or even protect them from future sexual disorders. Although the sample collected was a normative, non-clinical sample, it was observed that there is a relatively high percentage of women who meet the diagnostic criteria for HSDD (26.4%) and for FSAD (18.1%).

It is clear that the perception of the body's state, or perceiving and being aware of what happens inside one's body, seems to facilitate adequate and full sexual functioning, while the difficulty experiencing and describing one1s emotions hinders appropriate sexual functioning.

In conclusion, a greater awareness of emotions and internal bodily sensations as well as better emotional regulation facilitates women's sexual functioning, and the results revealed that better sexual functioning correlates with less alexithymia.

Acknowledgement

We acknowledge the contribution of all those research participants and the reviewers whose efforts allowed the work to be more rigorous.

Funding
The authors received neither financial nor non-financial support for the research (including data acquisition) and/or authorship and/or publication of this article.

Author contributions
Celina Ribeiro: conceptualization, design, methodology, investigation, data management, formal analysis, interpretation, writing original draft, writing review and editing.
Henrique Pereira: design, project administration, formal analysis, supervision, writing review and editing.

All authors gave their final approval of the version to be published and agreed to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

Conflicts of Interest
The authors declare no conflicts of interest to disclose.

Ethical Statement
The research was approved by the university research ethics board on 3 July 2021.
This manuscript is the authors' original work.
All participants engaged in the research voluntarily and anonymously, and provided their written informed consent to participate in this study.
Data are stored in coded materials and databases without personal data, and the authors have policies in place to manage and keep data secure.

Data Availability Statement
The data presented in this study are available upon request. All information regarding datasets was kept safe in an encrypted file in our computers to preserve the anonymity of all participants. Still, we can make it available upon request, by sending the authors an email with a valid request.

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