THE JOURNAL OF
SEXUAL MEDICINE

BRIEF COMMUNICATION

Psychometric Properties of a Self-Report Version of the Sexual Interest and Desire Inventory-Female (SIDI-F-SR)

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ABSTRACT

Background: The Sexual Interest and Desire Inventory-Female (SIDI-F) is a clinician-administered scale that allows for a comprehensive assessment of symptoms related to Hypoactive Sexual Desire Dysfunction (HSDD). As self-report questionnaires may facilitate less socially desirable responding and as time and resources are scarce in many clinical and research settings, a self-report version was developed (Sexual Interest and Desire Inventory-Female Self-Report; SIDI-F-SR).

Aim: To assess the psychometric properties of the SIDI-F-SR and to investigate the agreement between the SIDI-F and SIDI-F-SR.

Methods: A total of 170 women (*M*age = 37, *SD* = 11, range = 20−69) with HSDD answered the SIDI-F, administered by a clinical psychologist via telephone, first, followed by the SIDI-F-SR, delivered as an Internet-based questionnaire. A subset of 19 women answered the SIDI-F-SR twice over a period of 14 weeks.

Outcomes: Convergent validity of the SIDI-F-SR was assessed via correlations with the desire subscale of the Female Sexual Function Index and the Female Sexual Distress Scale Revised. Internal consistency and test-retest reliability as well as intraclass correlation and predictors of absolute agreement between SIDI-F and SIDI-F-SR were examined.

Results: Test-retest-reliability was good (r = 0.74). Convergent validity was low but comparable between SIDI-F and SIDI-F-SR. Internal consistency of the SIDI-F-SR was acceptable (α = 0.76) and comparable to the SIDI-F (α = 0.74). When corrections for the restriction of range were applied, internal consistency of the SIDI-F-SR increased to 0.91. There was high agreement between SIDI-F and SIDI-F-SR (ICC = 0.86). On average, women scored about one point higher (indicated more desire) in the self-report vs the clinician-administered scale.

Clinical Implications: The SIDI-F-SR can be used in settings where time and resources are limited. Whether the clinical cutoff point for the SIDI-F is adequate for the SIDI-F-SR has yet to be determined.

Strengths and limitations: Large sample of diverse women with HSDD. Lack of control groups (ie, healthy controls, women with other sexual dysfunctions).

Conclusion: The SIDI-F-SR showed promising psychometric properties in a sample of women with HSDD. **Velten J, Hirschfeld G, Meyers M, et al. Psychometric Properties of a Self-Report Version of the Sexual Interest and Desire Inventory-Female (SIDI-F-SR). J Sex Med 2021;XX:XXX−XXX.**

Key Words: Sexual Desire; Hypoactive Sexual Desire Dysfunction; Women's Sexual Health; Psychometric Properties

INTRODUCTION

A common sexual dysfunction among women is a lack of desire for sexual activity which can manifest as a lack of sexual thoughts or fantasies, reduced or absent responsive desire to erotic cues and stimulation, or an inability to sustain desire in sexual activity once initiated.[1] A Hypoactive Sexual Desire Dysfunction (HSDD) can be diagnosed if low sexual desire is present over a period of at least several months and is associated with clinically significant distress.[1]

Received September 14, 2020. Accepted March 1, 2021.

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https://doi.org/10.1016/j.jsxm.2021.03.001

To validly and reliably assess the severity of symptoms related to HSDD, the use of comprehensive assessment tools whose psychometric properties are known and whose results can be compared across settings is recommended.[2] A commonly used measure for low sexual desire in women is the Sexual Interest and Desire Inventory Female (SIDI-F).[3] The SIDI-F was developed as a clinician-administered assessment tool to quantify the severity of low desire symptoms as well as a range of other sexual difficulties such as problems reaching orgasm or difficulties getting aroused in women with HSDD. A 13-item version of the scale discriminated between differences in HSDD severity.[4] It was found a highly selective measure and differentiated between women with HSDD and those with Female Orgasmic Disorder as well as healthy controls. In samples of women with varying levels of sexual functioning, it has demonstrated good convergent validity as shown by correlations with similar measures assessing women's sexual functioning and sexual desire such as the Female Sexual Function Index.[5] Internal consistency of the scale in the original study was also excellent.[3]

The SIDI-F is intended to be administered by "trained, experienced raters"[3] and the authors list the risk of subjects being unfamiliar with the scales' concepts and the high complexity of some items as a reason for not using it as a self-report measure. There is, however, long-standing evidence that respondents are more willing to disclose sensitive or personal information such as income, drug use, or sexual behavior when the questions are self-administered and not asked by an interviewer. This effect is not caused by the physical presence of an interviewer but rather dependent on whether the interviewer is aware of the participants' answers.[6,7] Comparing different data assessment methods, Tourangeau and Smith[8] found that participants were 4.2 times more likely to report anal sex and female participants reported 1.7 times more lifetime sexual partners in self-administered vs personal interviewing. In addition to the potential for more honest admission of less socially desirable behaviors or feelings, the advantages of self-report measures are manifold: Questionnaires can be disseminated easily both on paper and via the Internet, are cost-effective and convenient for participants. The written form of self-report measures increases standardization. On the other hand, negative aspects of self-administered surveys include a lack of control over the testing situation and a higher cognitive burden (eg, reading capability, focused attention) which may lead to less accurate responding.

The main goal of this study was to investigate the psychometric properties of a self-report version of the SIDI-F (SIDI-F-SR) and to assess agreement between SIDI-F and SIDI-F-SR. Towards this goal, both the SIDI-F and the SIDI-F-SR were administered to a sample of women with HSDD.[9]

METHOD

Participants

Participants were women with HSDD who took part in a randomized-controlled trial investigating the efficacy of cognitive-behavioral and mindfulness-based Internet-treatments for low sexual desire vs a waitlist. A complete list of inclusion and exclusion criteria as well as recruitment strategies can be found elsewhere.[9]

Procedure

During a telephone-based screening-interview with a clinical psychologist, the SIDI-F was conducted. After that, eligible women received an invitation to an online questionnaire which included the SIDI-F-SR. About twelve weeks after inclusion, participants were invited to answer the SIDI-F-SR a second time. As most participants did not answer this survey right away, the actual retest interval was approx. 14 weeks (see Results section). As the treatment was expected to affect sexual desire, only data of waitlist participants is presented here. This study included data from women who were enrolled in the trial from January 2019 to September 2020. Informed consent was provided both verbally and in written form as part of the clinical interview and online questionnaire. The study was approved by the ethics review board of the Faculty of Psychology of the Ruhr University Bochum.

Measures

The SIDI-F is a 13-item scale assessing the intensity and frequency of sexual desire and other aspects of sexual functioning (eg, orgasmic capacity) in women.[3] Five out of 13 items are grid items combining frequency and intensity of certain aspects of sexual functioning. Item scores range from 0 to 3, 4, or 5 and can be summed for a total score ranging from 0 to 51 with higher scores indicating higher levels of sexual desire. A score below 34 was found to appropriately identify presence of HSDD in women.[10] In this study, wording of the SIDI-F was minimally changed to be more inclusive to unmarried women and women in same sex relationships (i.e., husband/partner was changed to male or female partner). To be applicable to women without a steady relationship, explanations were added to the introductory statement as well as to Items 1, 2, and 3 (see Supplementary Document 1 for exact wording). The SIDI-F-SR used in this study was highly similar to the SIDI-F. The only difference was that the five grid items were presented separately resulting in a total of 18 items. An SPSS syntax was developed (see Supplementary Document 2) to allow for a calculation of combination scores for the separated frequency/intensity grid items.

Although data on the validity and reliability of the SIDI-F-SR is lacking, it has been used in clinical studies and was found to have good internal consistency.[11,12]

To assess convergent validity, the desire subscale of the Female Sexual Function Index (FSFI)[5] and the Female Sexual Distress Scale Revised (FSDS-R)[13] were used. The 2-item desire subscale of the FSFI (FSFI-D) assesses frequency and intensity of sexual desire over the past four weeks. Items are rated on 5-point Likert scales with a total score ranging from 2 to 10. Higher

scores indicate more sexual desire. The FSDS-R is a 13-item measure assessing sexuality-related personal distress. Items are rated on a 5-point Likert-scale with a total score ranging from 0 to 52. Higher scores indicate more distress. The FSDS-R has shown good discriminant validity, high test-retest reliability, and high internal consistency.[13]

Statistical Analyses

Psychometric properties were scrutinized using item-analysis, internal consistency (Cronbach's Alpha and McDonald's Omega), test-retest reliability, and convergent validity using the FSDS-R and FSFI-D. Since the sample was highly selective, unrestricted internal consistency was estimated using the Kelley-Otis formula (alpha_unrest = 1-[u^2*(1-alpha_rest)];). The factor u for the range-restriction was based on previously reported standard-deviations for patients (SD = 7.1) and unrestricted samples (SD = 11.6) .[10] Intraclass correlation coefficients[14] were used to quantify the level of agreement between SIDI-F and SIDI-F-SR assuming that clinicians and patients should arrive at equivalent ratings. Specifically, ICC-1 was used to quantify this agreement since it is sensitive to mean-differences between raters, with scores > 0.75 indicating good and scores > 0.90 indicating excellent agreement.[15] Differences between the versions in scale scores were tested using a paired *t*-test and expressed as Cohen's *d (mean(diff) / sd (diff))*[16] *and 95% CI*. We also inspected the individual differences using an Bland Altman plot[17]). This type of plot shows the individual differences against the mean of the two versions, alongside the mean difference and the standard deviation. Furthermore, the individual item differences were scrutinized. The absolute amount of over and underestimation was predicted by three variables (ie, mean of interview and self-report score, age, and relationship-status). These analyses were conducted exploratory in order to explore if specific sub samples, eg, older women or those with low levels of desire show larger differences. Resulting unstandardized (b) as well as standardized coefficients (β) are reported. Data management and cleaning was performed in SPSS (v27) and analysis were performed in R (4.0.3) with the packages cocor[18] and psych.[19]

Table 1. Sample characteristics

	Complete sample (N = 170) *M (SD)*	Retest sample (n = 19) *M (SD)*
Age (Range: 20–69)	37 (11)	37 (12)
	n (valid %)	*n* (valid %)
Number of children		
0	100 (58)	10 (53)
1	30 (17)	4 (21)
2 or more	40 (23)	5 (26)
Relationship status		
Monogamous relationship	146 (86)	16 (84)
Currently no sexual partner	12 (7.1)	1 (5.3)
Other (e.g., consensual nonmonogamy)	12 (7.1)	2 (11)
Sexual orientation		
Exclusively heterosexual	130 (77)	15 (79)
Mostly heterosexual	26 (15)	4 (21)
Bisexual	9 (5.3)	0
Mostly/exclusively homosexual	2 (1.2)	0
Menopause status		
Premenopausal	137 (81)	14 (74)
Perimenopausal	21 (12)	2 (11)
Postmenopausal	12 (7.1)	3 (16)
Education (highest degree)		
Vocational training	48 (28)	9 (47)
Undergraduate degree	37 (22)	4 (21)
Graduate or postgraduate degree	54 (32)	5 (26)
Other (e.g., student, no degree)	31 (18)	1 (5.3)
Occupation		
Full-time occupation	81 (48)	12 (63)
Part-time occupation	46 (27)	3 (16)
Student	23 (14)	3 (16)
Other (e.g., retired, parental leave)	20 (12)	1 (5.3)

Table 2. Descriptive statistics of individual items (N=170)

Item		SIDI-F (clinician-administered)			SIDI-F-SR (self-report)			Difference	Effect size
		M	*SD*	*r.corr*	*M*	*SD*	*r.corr*	*p*	*d*
1	Relationship – Sexual	1.10	0.89	0.28	1.24	1.06	0.42	.032	0.16
2	Receptivity	0.86	0.98	0.42	0.80	0.93	0.52	.328	-0.08
3	Initiation	0.41	0.58	0.44	0.36	0.54	0.42	.103	-0.13
4	Desire – Frequency	0.88	0.95	0.60	0.41	0.73	0.57	<.001	-0.61
5	Affection	3.83	1.18	0.20	3.60	1.36	0.24	<.001	-0.33
6	Desire – Satisfaction	0.58	0.73	0.37	0.65	0.73	0.45	.191	0.10
7	Desire – Distress	1.10	0.83	0.37	1.09	0.97	0.32	.868	-0.01
8	Thoughts – Positive	1.42	1.01	0.40	1.18	1.07	0.48	.001	-0.25
9	Erotica	1.28	0.83	0.17	1.15	0.85	0.34	.018	-0.18
10	Arousal – Frequency	1.45	1.03	0.74	1.46	1.04	0.75	.899	0.01
11	Arousal – Ease	1.18	0.84	0.73	1.19	0.86	0.70	.903	0.01
12	Arousal – Continuation	1.29	1.02	0.59	1.14	0.91	0.59	.040	-0.16
13	Orgasm	1.64	1.52	0.52	1.55	1.45	0.44	.163	-0.11

Note. r.corr = corrected item-total correlation

RESULTS

Sample Description

Complete data of 170 women (*M*age = 37, *SD* = 11, range = 20−69) were available. The majority answered the SIDI-F-SR on the same day or one day after the SIDI-F (*Median* = 1, *M* = 3.31, *SD* = 4.80, *range* = 0-26; see Table 1 for sample description).

Psychometric Properties

Descriptive statistics of the individual items showed very low scores for all items except Item 5 "Affection" (Table 2). Item-total correlations were relatively weak for all items, especially Items 5, 7, and 9. The internal consistency for both versions was acceptable (SIDI-F: α = 0.74; CI = 0.68-0.79; ω = 0.76; SIDI-F-SR: α = 0.76; CI = 0.70-0.81; ω = 0.79). Correcting the Cronbach's α for restriction of range yielded estimates of 0.90 for SIDI-R and 0.91 for SIFI-F-SR.

Convergent validity was similar for the SIDI-F and SIDI-F-SR. Both versions correlated negatively with the FSDS-R (SIDI-F-SR: r = -0.32, P < .001, SIDI-F: r = -0.29, P < .001), and positively with the FSFI-D (SIDI-F-SR: r = 0.53, P < .001, SIDI-F: r = 0.48, P < .001). A relative high test-retest reliability (r = 0.74, P < .001) of the SIDI-F-SR over a 14-week period (*M* = 95.84 days, *SD* = 10.40, *range* = 83−116) was found using subset of women (n = 19). As to be expected, the confidence interval was very large [0.41, 0.90].

Agreement of Interview and Self-Report

The ICC (ICC1 = 0.86; CI = 0.82−0.89) indicated a good agreement between the SIDI-F and SIDI-F-SR. Participants reported a lower total score in the SIDI-F-SR (*M* = 15.82; *SD* = 6.52) compared to the SIDI-F (*M* = 16.98; *SD* = 6.23; P < .001, d = 0.36, CI = 0.20−0.51) (see Bland-Altman plot; Supplementary Figure 1). The largest difference between versions was found for the frequency of sexual desire (Item 4, Table 1). Predicting the absolute difference between scores we found an overall significant regression explaining about 6.3% of the variance in absolute differences (P = .013). Importantly, we found higher agreement (ie, lower absolute difference between scores) in women with lower desire (b = 0.07; β = 0.20; P = .008). Relationship status (b =-0.4; β=-0.07; P = .387) and age were (b = 0.03; β = 0.14; P = .064) not related to the absolute level of agreement between versions.

DISCUSSION

The main goal of this study was to evaluate the psychometric properties of the SIDI-F-SR. Convergent validity was relatively low but similar to that of the SIDI-F found in earlier studies in women with HSDD.[3] As the SIDI-F-SR assesses multiple facets of sexual functioning (eg, partner affection, arousal) low to medium associations with the FSFI-D and the FSDS-R were expected. Internal consistency was acceptable and also comparable to the SIDI-F. Both findings were likely to be affected by the relative restriction of range in this sample of low desire women. When using corrections for restriction of range, internal consistency reached levels comparable to those in studies of women with varying levels of sexual functioning.[3] The high test-retest reliability found in this study has to be interpreted with caution because of the small sample size yielding a very large confidence interval.

In this sample of women with HSDD, differences in total scores between the SIDI-F and SIDI-F-SR were small albeit significant, with the SIDI-F-SR yielding a total score about one point lower than the SIDI-F on the group level (16 vs 17). Given the large sample size (n = 170) even small effects (Cohens'd = 0.22) can be detected with a power of 80% and an alpha-error rate of 5%. This suggests that women may be slightly more willing to disclose symptoms of low sexual desire in a self-

report questionnaire. On the other hand, differences might be caused by regression to the mean as the interview was conducted before the self-report in all cases. Absolute agreement between versions was higher in participants with symptoms of low sexual desire in which such an agreement is critical.

Limitations and Future Directions

A strength of this study was the inclusion of a large sample of women with HSDD representative of the intended population for which the SIDI-F was created (eg, concerning age, partnership status). The lack of control groups, however, limited our ability to investigate sensitivity, specificity, and to determine a clinical cut-off of the SIDI-F-SR. Participation in the initial clinician-administered SIDI-F may have facilitated understanding of questions answering the self-report scale. Thus, we cannot ascertain whether women unfamiliar with the questions may have encountered difficulties understanding the questions or may have answered them differently. Owing to logistical reasons, the test-retest interval was relatively long (14 weeks). This long interval and the fact that a sample of women waiting to receive a psychological treatment for HSDD were used to assess retest-reliability, might have led to lower levels of stability.

The following steps are recommended to provide further information on the psychometric properties of the SIDI-F-SR: (i) To include control groups of healthy women as well as women with arousal and orgasmic difficulties, (ii) to utilize cognitive interviews to assess how well women understand the questions, (iii) to oversample for bisexual and homosexual women as well as women without a steady partner in order to assess measurement invariance across these groups, (iv) and to investigate the SIDI-F-SR's responsiveness to clinical change.

CONCLUSION

This study provided first evidence for the convergent validity, internal consistency, and retest-stability of the SIDI-F-SR in a sample of women with HSDD. The scale yielded high agreement with the original SIDI-F, a clinician-administered tool. Preliminary evidence suggests that the SIDI-F-SR can be used in settings where no trained clinician is available, or the use of self-report measures is more convenient.

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Conflict of Interest: The authors report no conflicts of interest.

Funding: German Research Fundation, (Grant/Award Number: 'VE 1083/2-1').

STATEMENT OF AUTHORSHIP

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SUPPLEMENTARY MATERIALS

Supplementary material associated with this article can be found, in the online version, at doi:10.1016/j.jsxm.2021.03.001.