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A Qualitative Study of Women's Experiences with Cognitive-Behavioral and Mindfulness-Based Online Interventions for Low Sexual Desire

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ABSTRACT

Cognitive-behavioral (CBT) and mindfulness-based therapy (MBT) are among the most researched types of psychological interventions for low sexual desire in women. While both have been found effective in improving women's sexual desire, little is known about how women personally experience these treatments. To closely examine both approaches from a participant's perspective, semi-structured telephone-based interviews were conducted with 51 cis-women (M_{age} = 39, *SD* = 11, range = 22 to 69) who participated in a randomized controlled study comparing internet-based CBT and MBT for low sexual desire with a waitlist. Interview data were analyzed using thematic and content analysis. Most women (*n* = 44, 86.3%) evaluated their respective treatment (i.e., CBT or MBT) as helpful in improving their sexual desire. CBT-techniques, such as cognitive restructuring, were mentioned as being helpful for challenging maladaptive thinking patterns, while formal mindfulness-exercises allowed women to disengage from negative sexuality-related thoughts. Elements of sex therapy, including self-stimulation exercises and sensate focus, were perceived as crucial for getting women in touch with their sexual desires and preferences. Strengths of the online format included anonymity, flexibility, and convenient access. Overall, women's personal accounts supported feasibility, acceptability, and clinical usefulness of CBT- and MBT-based internet interventions targeting low sexual desire.

Introduction

Low desire is one of the most common sexual problems among women (Briken et al., 2020; Mitchell et al., 2013). A lack of sexual desire that is characterized by reduced or absent spontaneous desire (sexual thoughts or fantasies), reduced or absent responsive desire to erotic cues and stimulation, or an inability to sustain desire once sexual activity is initiated, which is present for at least several months, and is associated with clinically significant distress, can be diagnosed as hypoactive sexual desire dysfunction (International Classification of Diseases, ICD-11, HSDD, formerly hypoactive sexual desire disorder; World Health Organization [WHO], 2018). As women's sexual health is closely related to their overall health, partnership satisfaction (Mitchell et al., 2013), as well as mental health (Laurent & Simons, 2009), developing and providing effective treatments for low sexual desire is expected to be beneficial to women's general well-being (Biddle et al., 2009; Davison et al., 2009).

Psychological Treatments for Low Sexual Desire

Meta-analytic findings have shown psychological treatments to be effective for improving women's low sexual desire (Frühauf et al., 2013). They commonly include a variety of methods or techniques based on sexual skills training, sexual and psychological education, cognitive-behavioral therapy (CBT), mindfulness-based therapy (MBT), or couples therapy (Frühauf et al., 2013).

CBT is a change-oriented treatment approach effective for a variety of mental disorders such as depression, anxiety disorders, and posttraumatic stress disorder (Butler et al., 2006; Hofmann et al., 2012) as well as sexual dysfunctions (Frühauf et al., 2013). MBT is acceptance based and uses mindfulness, an ancient Eastern practice with origins in Buddhist meditation, defined as present-moment, nonjudgmental awareness (Hanh, 1976). A number of uncontrolled studies (Brotto & Basson, 2014; Brotto et al., 2016) as well as one RCT (Brotto et al., 2021) support MBT's efficacy in improving sexual desire in women with HSDD. In the treatment of low sexual desire, CBT and MBT are commonly supplemented by elements of sexual education (e.g., information on genital anatomy, or psychological and physiological aspects of sexual arousal) and sex therapy such as sensate focus exercises (Masters & Johnson, 1970).

Personal Experiences with Psychological Treatments for Low Sexual Desire

Most studies investigating the efficacy of psychological treatments for low sexual desire in women have limited their analyses to quantitative changes in measures of interest (e.g., symptom severity). Thus, little is known about participants' personal experiences with these treatments, and it remains unclear which treatment components are perceived as crucial for success. The specific mechanisms of change for psychological interventions targeting low desire have not been

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determined yet. While repeated data assessments over the course of treatment can be used to identify mediators of treatment success (e.g., homework compliance; Paterson et al., 2017), quantitative data might provide few insights into the individual pathways through which improvements in desire are attained. As personal characteristics of participants contribute to treatment effects (e.g., Levitt et al., 2016) detailed knowledge of their experiences is crucial to improve treatment processes, content, and outcomes. In order to enable future clinical decision-making, especially in the context of tailored treatment, it is important to identify as many mechanisms contributing to efficacy as possible (Bührmann et al., 2020). Further, participants' perspectives play an important role in identifying criteria based on which different treatment approaches can be recommended (Levitt et al., 2017).

While some data on women's experiences concerning the development of their sexual problems and their manifestation in the context of relationships exist (Mitchell et al., 2011; Sims & Meana, 2010), to our knowledge only one face-to-face treatment study on women's sexual dysfunctions has published findings using qualitative data analysis. This study reported on experiences of participants from an integrated CBT-/MBT-based group therapy for women with provoked vestibulodynia using semi-structured interviews that were conducted 12 to 18 months after completion of the program (Brotto et al., 2013). Participants' accounts were analyzed via qualitative content analysis, from which six major themes emerged: positive psychological outcomes of the group intervention, feelings of normality created by the group setting, the impact of relationship factors (cooperative vs. uncooperative partner), appreciation of to treatment, barriers treatment adherence, and increased sense of pain-related self-efficacy.

Online Interventions for Low Sexual Desire

Technological advancements have facilitated the development of online (i.e., internet-based) self-help interventions for a variety of health conditions including sexual dysfunctions (Andersson, 2018; Van Lankveld, 2016). Preliminary evidence from five studies investigating online interventions for sexual dysfunctions in women support their feasibility and efficacy (Van Lankveld, 2016), with effect sizes that mirror face-to-face group therapies (Frühauf et al., 2013). Incorporating participants' subjective experiences with online interventions is crucial to advance structure and content of these novel treatments, especially as the internet-based format is often self-guided with only limited contact to clinical psychologists or other study personnel.

In order to explore participants' experiences with a 12-week online program for sexual difficulties following gynecologic cancer, semi-structured interviews were conducted (Brotto et al., 2017). Out of the 46 women with complete data, a subsample of six women were interviewed and reported that the program provided opportunities for self-reflection about sexuality and sexual relationships, provided new information, and fostered a renewed sense of intimacy and openness in their relationships.

In a first study examining an online treatment for low sexual desire, semi-structured qualitative interviews were conducted with sixteen women who completed an initial pilot module of an online intervention for low sexual desire, called eSense (Zippan et al., 2020). Participants' responses suggested a overall high satisfaction with the accessibility of the website. Participants felt validated and hopeful, and reported greater knowledge about their sexual desire. Results of this study may, however, not be generalizable because of the small and selective pilot sample which consisted of highly motivated women, and the inclusion of only one out of eight eSense modules. In other words, this study did not account for a more representative sample of participants' experiences over the complete course of a CBT-intervention. To overcome this limitation, a second qualitative study including eleven women who completed the 8-module eSense intervention was conducted (Stephenson et al., 2021). Women reported high satisfaction with the program's functionality and stated improved knowledge about sexuality and an increased awareness of negative thought patterns. As this study focused on investigating the feasibility of an unguided CBT-based online intervention, the interviews did not cover questions about treatment adherence, nor a detailed exploration of difficulties experienced by participants throughout the program. As the participants received no professional guidance throughout the intervention (i.e., no regular feedback on completed modules), the important aspect of coaching that is a crucial component of many online interventions (Berger, 2017) could not be examined.

Aims of This Study

The main objective of this study was to use a qualitative approach to explore the personal experiences of participants with two guided, online interventions – a CBT-based and an MBT-based program – for low sexual desire in women. The study aimed to attain a more detailed overview of participants' experience as reported in previous studies by using a comprehensive set of questions for the interview. In addition, the aspired sample size was chosen to reach enough material for an in-depth qualitative analysis. Semi-structured telephone-interviews were conducted using a sample of 51 women with HSDD who participated in an RCT investigating the efficacy of internet CBT and MBT versus a waitlist control group (Meyers et al., 2020). Experiences of participants were analyzed according to the following themes: Overall helpfulness of the intervention, perceived strengths and weaknesses of the intervention content, perceived strengths and weaknesses of the structure and presentation, and challenges to treatment adherence.

Method

Data for this study were collected as part of an RCT that was registered at ClinicalTrials.gov NCT03780751 (Meyers et al., 2020). Trans- and cis-women 18 years or older who met the diagnostic criteria for HSDD as defined by the ICD-11 were included in the trial (for a complete list and explanation of inclusion criteria, see Meyers et al., 2020).

Participants

The sample consisted of 51 cis-women (see Table 1 for sample characteristics). At the time of the interview, participants had completed a mean of 6.8 (SD = 1.4) modules and 15 women (29%) had completed all eight modules of the program.

Description of the Online Interventions

Both interventions under investigation consisted of eight modules plus an additional booster module. Participants were invited to complete one module per week. They received text-based, asynchronous feedback on each completed module by female clinical psychology students trained for this study. Coaching for each participant was provided by the same student who was also available to answer any questions concerning the intervention. Information was provided via videos, texts, and graphic illustrations. Mindfulness exercises were available as downloadable audio files. At-home assignments, meant to be completed between modules, were presented on the treatment platform as well as via pdf-files. While about half of the content of each intervention was based on its therapeutic approach (i.e., CBT or MBT), both included elements of sex education and sex therapy (Brotto, 2017; Brotto & Velten, 2020). For a detailed overview of the modules' content, see Table 2.

Table 1. Sample characteristics.

	Complete sample (N = 51) n (%)	CBT (n = 27) n (%)	MBT (n = 24) n (%)
Marital status			
Married	26 (51)	11 (40.7)	15 (62.5)
Not married	22 (43.1)	14 (51.9)	8 (33.3)
Divorced	3 (5.9)	2 (7.4)	1 (4.2)
Relationship status			
Monogamous relationship	44 (86.3)	23 (85.2)	21 (87.5)
Non-monogamous	3 (5.9)	1 (3.7)	2 (8.3)
Open relationship			
Single	4 (7.8)	3 (11.1)	1 (4.2)
Children			
0	25 (49.0)	16 (59.3)	9 (37.5)
1	12 (23.5)	5 (18.5)	7 (29.2)
2+	14 (27.5)	6 (22.2)	8 (33.3)
Sexual orientation			
Exclusively heterosexual	44 (86.3)	23 (85.2)	21 (87.5)
Mostly heterosexual	6 (11.8)	4 (14.8)	2 (8.3)
Bisexual	1 (2.0)	0 (0)	1 (4.2)
Living situation			
With Partner (and children)	40 (78.4)	19 (70.4)	21 (87.5)
Alone	7 (13.7)	5 (18.5)	2 (8.3)
Shared flat	3 (5.9)	3 (11.1)	0 (0)
Other	1 (2.0)	0 (0)	1 (4.2)
Education (Highest degree)			
Vocational training	14 (27.5)	6 (22.2)	8 (33.3)
Undergraduate degree	11 (21.6)	6 (22.2)	5 (20.8)
Graduate or postgraduate degree	16 (31.4)	10 (37.0)	6 (25.0)
Other (e.g., student, no degree)	10 (19.6)	5 (18.5)	5 (20.8)
Occupation			
Full-time occupation	22 (43.1)	14 (41.9)	8 (33.3)
Part-time occupation	17 (33.3)	6 (22.2)	11 (45.8)
Student	6 (11.8)	4 (14.8)	2 (8.3)
Other (e.g., retired, parental leave)	6 (11.8)	3 (11.1)	3 (12.5)

Note. CBT = cognitive-behavioral therapy, MBT = mindfulness-based therapy.

Table 2. Content of the modules.

Module	Content		
	CBT	MBT	Sex therapy
1	Introduction to cognitive-behavioral model	Introduction to mindfulness	Psychoeducation
2	Sexual myths	Formal and informal mindfulness	Self-exploration
3	Cognitive distortions	Sitting meditation	Self-exploration
4	Situational analysis	Mindfulness toward thoughts	Self-stimulation
5	Vertical arrow technique	Being present during sexual activity	Self-stimulation
6	Cognitive restructuring	Letting go	Sensate Focus Exercises
7	Cognitive restructuring	Detached awareness	Sensate Focus Exercises
8	Relapse prevention	Addressing difficulties with mindfulness	-

Note. CBT = cognitive-behavioral therapy, MBT = mindfulness-based therapy. The same sex therapy components were included in both programs.

The CBT-based intervention utilized techniques commonly used in the treatment of mental health problems such as depression or anxiety. Specific techniques included thought protocols, situational analyses, cognitive restructuring, and information on cognitive schemas.

The MBT-based intervention focused on mindfulness as a therapeutic concept and included several formal and informal mindfulness-exercises (e.g., body scan, sitting meditation, or mindful eating) adapted from established mindfulness treatments for chronic depression, stress, and sexual dysfunctions (e.g., Brotto et al., 2015a; Kabat-Zinn & Hanh, 2009). Each module introduced a new aspect of mindfulness (e.g., mindful breathing, mindfulness for everyday activities) and included new mindfulness exercises to be completed between modules.

Semi-Structured Interview

A semi-structured interview was developed for this study based on previous quantitative (Brotto et al., 2017; Fleischmann et al., 2018) and qualitative (Holländare et al., 2016; Svartvatten et al., 2015; Wiljer et al., 2011) studies on participants' experiences with psychological interventions, which indicated that questions on the perceived effects and attitudes toward the program as well as toward coaching and support should be included. Further, questions concerning the effects on intimate partners and the role of the relationship were added. Interview themes and questions were developed and finalized through an iterative process involving regular team meetings with study director, study management, and clinical psychology students, who provided feedback on readability and intelligibility.

The final interview consisted of 13 questions (see Supplementary Material 1), supplemented by follow-up questions that depended on the experiences reported by the participants. The main themes were experienced changes attributed to the interventions, participants' views on the helpfulness of specific parts of the interventions, advantages and disadvantages of online interventions, difficulties experienced during participation, challenges to participation and adherence, and the role of their intimate partner during the intervention. The overall level of helpfulness was rated based on the answer to an

open-ended question, with a positive attitude toward the program and answers indicating positive changes being rated as "*helpful*," and a negative attitude toward the program as well as answers reporting no changes or negative effects as "*not helpful*."

The perceived strengths were deduced from spontaneous answers to questions concerning the helpfulness of the program as well as follow-up questions concerning specific elements of the interventions. To increase participants' openness to disclose aspects of the program they found problematic or less helpful, several questions were included in the interview (see Supplementary Material 1). Responses to both general and specific questions (e.g., concerning certain parts of the intervention) as well as unsolicited comments were analyzed to identify answers related to the main themes (e.g., strengths and weaknesses of the content).

Procedure

All active participants (i.e., not in the waitlist condition) who had completed at least four out of eight treatment modules at 12 weeks after randomization were invited via e-mail to a semi-structured telephone-interview until the planned sample size (N = 50) was reached. Sample size was determined based on practical considerations as well as recommendations for studies on content and thematic analysis, which suggest samples of 10 to 50 participants (Vasileiou et al., 2018). While the planned sample size was 50, scheduling issues led to a complete sample of 51 women. Interviews were conducted between April 2019 and March 2020 by the study coordinator and five trained clinical psychology students. At the start of the interview, all participants provided informed consent concerning the recording and pseudonymized transcription of the interview. As some of the questions pertained specific elements of the interventions, interviewers were not blind to the treatment group. Further, as the Sexual Interest and Desire Inventory-Female (Clayton et al., 2006), a clinician-administered interview assessing symptoms associated with HSDD, was conducted before the semi-structured interview presented here, interviewers were not blind to the participants' treatment outcome either. Willingness to participate in the interview had no consequences on the participation in the treatment trial. Women who were interviewed received a reimbursement of 10 Euro. Mean interview duration was 27 minutes (SD = 7) with a range from 16 to 44 minutes. The study was approved by the Ethics Committee of the Faculty of Psychology of the Ruhr-University Bochum.

Data Preparation and Analysis

The interviews were transcribed verbatim (Kuckartz, 2016), pseudonymized, and were analyzed using a combination of thematic analysis and content analysis (Mayring, 2014). The analysis of the interviews followed a two-sided approach. Based on the existing literature, a set of expected themes and codes was created for hypothesized experiences reported in other trials (Brotto & Basson, 2014; Brotto et al., 2017; Fleischmann et al., 2018; Johansson et al., 2015). These included themes related to the technical aspects of the program, such as technical issues or difficulties, themes related to possible strengths and weaknesses (e.g., accessibility, anonymity), themes related to the influence of eCoaching, such as motivational effects, normalization or reassurance. In the following, a thorough reading of the interview transcripts was conducted by a team of clinical psychology students, the study coordinator and the study director in order to familiarize with the data. As part of an iterative process, new codes were then created and organized into a list of themes and sub-themes after each consecutive reading of the material. Disagreements were discussed until consensus was reached (Patton, 2002). By reviewing and discussing the results, the authors agreed on the final codes and themes. Themes were explored separately for CBT and MBT in order to identify possible sub-themes emerging from the differences in treatment approaches. Participants' quotations will be summarized and presented to illustrate the identified themes and sub-themes (for examples of participants' verbatim quotes see Supplementary Material 2). Further, the number of participants who endorsed main and sub-themes are reported.

Results

Strengths and Weaknesses Concerning the Content of the Interventions

The level of overall helpfulness as indicated by the participants was high, as 86% considered the intervention to be helpful (CBT: n = 22, 81%; MBT: n = 22, 91%).

Cognitive-Behavioral Therapy (CBT)

Many participants perceived treatment elements focusing on identifying and modifying maladaptive thought patterns as particularly helpful. Among these exercises, elements of cognitive restructuring, identification of cognitive distortions, and situational analysis were described as useful elements of the program. When asked *what about* the interventions they found to be helpful, participants mentioned that the exercises enabled their awareness of negative thoughts e.g., through analyzing negative thoughts more thoroughly. Further, participants mentioned that the intervention evoked more helpful thought patterns. Only a few participants mentioned difficulties with cognitive elements, describing exercises as difficult to understand or too complicated.

Mindfulness-Based Therapy (MBT)

Many women perceived the formal mindfulness exercises (e.g., sitting meditation, body scan) to be helpful, whereas fewer participants (see Table 3), explicitly mentioned the usefulness of the informal mindfulness exercises (i.e., mindfulness during day-to-day activities). Many participants described mindfulness as an effective means to improve their focus on bodily experiences during sex. Others mentioned the effect of mindfulness exercises on cognitive processes, increasing their awareness of thoughts. Yet, other participants expressed their discomfort with the idea of mindfulness in general while others were not satisfied with the selection of exercises.

Table 3. Strengths and weaknesses concerning the content of the interventions.

Strengths	*n* (%)
Cognitive-behavioral therapy (CBT, *n* = 27)	
Exercises: Cognitive restructuring	15 (55.6)
Exercises: Situational analysis	12 (44.4)
Education: Cognitive distortions	11 (40.7)
Mindfulness-based therapy (MBT, *n* = 24)	
Exercises: Formal mindfulness	19 (79.2)
Education: Concept of mindfulness	14 (58.3)
Exercises: Informal mindfulness	8 (33.3)
Sex therapy (*N* = 51)	
Exercises: Self-stimulation	22 (43.1)
Exercises: Body image	21 (41.2)
Exercises: Sensate focus	17 (33.3)
Education: Case examples	13 (25.5)
Education: Sexual response cycle	11 (21.6)
Education: Sensual lifestyle products	5 (9.8)
Weaknesses	
CBT (*n* = 27)	
Exercises: Situational analysis	3 (11.1)
Exercises/Education: Cognitive methods	2 (7.4)
MBT (*n* = 24)	
Education: Overall concept of mindfulness	4 (16.7)
Exercises: Selection	4 (16.7)
Sex therapy (*N* = 51)	
Exercises: Self-stimulation	5 (9.8)
Exercises: Genital body image	2 (3.9)

Note. CBT = cognitive-behavioral therapy, MBT = mindfulness-based therapy.

Elements of Sex Therapy

Self-stimulation exercises were most commonly mentioned as being helpful for exploring one's own needs and improving one's sexual desire (see Table 3). Additionally, exercises focusing on body image and self-acceptance (e.g., using a handheld mirror to look at one's genitals) were mentioned as being helpful tools to achieve a more compassionate attitude toward oneself (see Table 3). Further, sensate focus exercises (i.e., taking turns in providing increasingly sexual touch to a partner) were considered effective to rediscover intimate touch without the pressure to perform sexually. Psychoeducational content was mentioned as a helpful means to improve knowledge about one's own sexuality and sexual problems (see Table 3). As potential targets for improvement of the interventions, some participants reported a lack of material or worksheets aiming at educating a partner about the goals and procedures of the sensate focus exercises. Some participants mentioned their reluctance toward self-stimulation exercises, citing a lack of experience with self-touch and feeling uncomfortable in one's own skin as sources of their unease.

Perceived Strengths and Weaknesses Concerning the Structure and Presentation of the Interventions

Several subthemes related to the perceived strengths and weaknesses of the structure and presentation of the interventions emerged from the analysis.

Coaching and (Lack of) Personal Contact

The coaching provided by clinical psychology students was reported to be a helpful part of the intervention, with only two participants (4%) explicitly stating that they could have completed the program without this support. Participants found the feedback to be motivating (n = 27, 53%), reassuring (n = 16, 31%), positive (n = 12, 24%) normalizing (n = 11, 22%), and empathic (n = 8, 16%) Eight participants (16%) praised the feedback as being personalized: Furthermore, eleven participants praised the practical instructions provided by their coach (22%).

In contrast, half of the participants (n = 27, 53%) mentioned the lack of personal, real-life contact to a health care professional as a shortcoming of the internet-based approach. Some participants (n = 9, 18%) described this form of written feedback as too formal and standardized. Some participants also mentioned an overall lack of individualization of the modules (n = 6, 12%). A few participants expressed a wish for more immediate and synchronous interactions (e.g., chat messages) in contrast to the asynchronous communication with the coaches which was usually provided within a 48-hour timeframe (n = 6, 12%).

Twelve participants (24%) felt burdened by the high level of personal commitment and initiative necessary to continue with or to complete all modules of the online intervention. Many of these participants explicitly mentioned the high degree of self-organization necessary to complete a self-guided program as compared to attending personal appointments. Eleven participants (22%) assumed that the lack of in-person contact might lower some women's obligation to continue with/to complete the program.

Anonymity and Accessibility

A strength mentioned by more than half of the participants (n = 30, 59%) was the anonymity resulting from the online treatment format. Some participants described previous difficulties in talking about sexual problems with health care professionals and cited these experiences as a reason for choosing an internet intervention. It became clear from the participants' accounts that fear of stigmatization and shame had kept some women from seeking help in the past. A lot of women mentioned that they found the program to be easily accessible, at least in comparison to getting access to a qualified sexual health care provider (n = 14, 28%).

Flexibility

Another important advantage mentioned was the flexibility offered by an internet intervention (n = 27, 53%). Participants approved of the fact that they could complete modules and exercises any time or place they liked. Nine participants (18%) also mentioned the self-guided character of the online interventions as another strength.

Technical Aspects

While nine participants (18%) mentioned challenges concerning the usability of the treatment platform (e.g., having to manually save one's progress during completion of a module), technical problems or difficulties, such as not being able to access the platform, were rarely reported (n = 3, 6%). Some participants mentioned the motivational effects of reminders they received for incomplete modules as an advantage of the online format (n = 5, 10%).

Challenges to Treatment Adherence

Four participants (8%) reported technical problems on their part (e.g., problems with their internet provider), keeping them from taking part in the intervention regularly. Three participants reported dissatisfaction with the content of their

program (6%), and an additional two participants (4%) expressed doubts about the intervention's efficacy. Seventeen participants (26%) reported more general motivational problems. Another problem addressed in the interviews was the lack of privacy (n = 11, 21%). Nine participants' (18%) treatment adherence was challenged by partner-related difficulties. While some of these participants mentioned struggling with motivating their partners to take part in the exercises, others reported difficulties in explaining educational information to their partners.

Many participants mentioned problems with time management and stress in their everyday lives as challenges to treatment adherence. Among the most frequently mentioned factors keeping participants from continuing with the intervention were stress in everyday life (n = 21, 41%), children (n = 11, 22%), and the overall lack of time (n = 32, 63%), due to the burden of work, family, household chores, and own personal needs. In this context, participants also mentioned that time constraints were worsened by the large amount of content of the interventions (n = 14, 28%), the amount of time needed to complete the modules and exercises (n = 8, 16%), and the relatively short 1-week interval between modules (n = 8, 16%).

Discussion

The purpose of this study was to examine women's personal experiences with CBT- and MBT-based internet interventions for HSDD. Toward this goal, semi-structured telephone-interviews were conducted with 51 women. Across both treatments, the vast majority of participants reported overall positive effects of the interventions which were perceived to be helpful in increasing sexual desire.

Content of the Interventions

Most participants expressed satisfaction with both CBT and MBT-based content. Concerning CBT, many participants perceived the identification and modification of maladaptive thought patterns (i.e., cognitive methods) as particularly helpful. A minority of participants, however, described these methods – especially the more complex elements such as cognitive restructuring or situational analysis – as rather complicated or challenging. While the interventions were designed to be easily understandable and to be completed without personal assistance of a clinical psychologist, the nature of these exercises still required participants to carefully read instructions and to follow detailed guidelines. These somewhat contradicting findings pose a significant challenge for the further development and improvement of CBT-based internet interventions as it is unclear for whom these cognitive exercises are crucial drivers of change and whether the degree of complexity with which these exercises are presented may impact treatment success. Findings from RCTs on CBT's efficacy suggest that client characteristics such as age or education might moderate treatment outcome (Tovote et al., 2017; Zilcha-Mano, 2019). Yet, a combination of different moderators seems to be responsible for the fit between client and treatment option, making clinical-decision making in routine care challenging (Zilcha-Mano, 2019; Zilcha-Mano et al., 2018). Concerning the treatment of HSDD in women, future studies should examine whether a successful completion of these "complex" cognitive methods is necessary to improve disorder-specific dysfunctional cognitions (Velten et al., 2019; Zahler et al., 2021) and whether improvements in these cognitions is related to improvements in low desire symptoms.

MBT participants expressed a high level of satisfaction with formal mindfulness exercises. A main difference between the specific content included in the MBT vs. the CBT intervention was that most of the instructions concerning mindfulness exercises were an integral part of the audio-files provided to participants (i.e., "*Please focus your attention on your breathing.*") and did not require as much additional text-based explanations. Critical feedback, however, included the relatively high time-commitment needed for a daily mindfulness practice (Laurie & Blandford, 2016) as well as skepticism concerning the concept of mindfulness. This aspect is important as potential negative aspects of MBT are often neglected. In a study focusing on possible side effects of MBT (Baer et al., 2019), Baer et al. showed that participation in MBT can be associated with higher levels of stress and that some participants feel pressured to adhere to a time-consuming exercise schedule. This finding is in accordance with the experiences described in this study. To reduce burden on participants, future research should determine the optimal or even minimal levels of mindfulness exercises needed to facilitate change. Overall, the experiences described by most women in our study underlined the feasibility of delivering MBT via the internet. Our findings also support the notion that providing written instructions on how to complete such exercises may be sufficient to facilitate an understanding of underlying concepts as well as to encourage a regular mindfulness practice.

The elements based on sexual therapy, such as sensate focus exercises, were considered very helpful and were described as effective tools to develop a more positive attitude toward one's own sexual needs and desires. The reduced pressure to perform sexually, facilitated by the specific instructions of the exercises (e.g., by the guideline not to pursue vaginal intercourse during the exercises), was mentioned as another factor that put participants in a position to explore their sexuality more freely.

Structure and Presentation of the Interventions

Most participants mentioned flexibility and anonymity as the interventions' main advantages. This is important, as the treatment gap in psychological interventions for sexual problems is caused at least to some extent by fear of stigmatization or shame associated with talking openly about one's own sexuality with a health care provider (Bergvall & Himelein, 2014; Hobbs et al., 2019).

The written feedback provided after each session was considered helpful by half of the participants. They felt accepted and mentioned the normalizing effect of the feedback they received. Some participants, however, were ambivalent in their assessment of the coaches' actual role and their contribution to improvement. While some participants stated they could have completed the program without any assistance, others expressed the wish for additional guidance, for example, to discuss difficulties with at-home exercises. This mixed

finding is important as criticism toward internet interventions often includes the lack of personal contact. The experiences from participants in this study are, however, more in line with other studies, showing self-guided treatments without or with limited contact to a mental health care professional to be effective in reducing distress and symptom severity (Andersson & Titov, 2014; Gershkovich et al., 2017; Lappalainen et al., 2015). Furthermore, a productive working alliance with a care provider can be established even in solely text-based internet interventions (Berger, 2017). As the number of individuals seeking help for sexual concerns can be expected to rise (Hobbs et al., 2019), it is important to consider treatment options that are both effective and efficient. Interventions with limited guidance could prove to be sufficient and helpful for most participants while requiring fewer resources.

Challenges to Treatment Adherence

To attain detailed information about potential areas for improvement of internet CBT and MBT for HSDD, participants were inquired about aspects that made it difficult for them to adhere to programs' structure or to complete the interventions. Finding time to complete at-home exercises and treatment modules as well as difficulties in keeping up motivation were commonly mentioned as challenges to treatment adherence. While these aspects are of particular relevance for internet self-help interventions, they are relevant for other treatment settings as well (Helbig & Fehm, 2004; Rees et al., 2005; Vettese et al., 2009). While it may be possible to relieve the burden on participants by reducing the scope of CBT- and MBT-programs via tailored treatment options and increased individualization (i.e., omitting information that may not be crucial for a certain participant; Tang & Kreindler, 2017), regular exercises to be completed between modules or between in-person sessions are integral components of both treatment approaches (Parsons et al., 2017; Rees et al., 2005; Vettese et al., 2009). However, individuals are sometimes overwhelmed by the unexpected additional resources (e.g., time, energy) necessary to reach improvement or reduction of symptoms (Halmetoja et al., 2014; Lundgren et al., 2018). Including additional content aiming at increasing intrinsic motivation for treatment (Rollnick & Miller, 1995) as well as setting realistic expectations about the time-commitment beforehand are potential means to improve internet interventions. Thus, in addition to regular adherence reminders, psychological methods aiming at increasing treatment motivation should be included in future internet interventions.

The observation that many participants would have preferred more time to complete the modules is important in this respect as well. As participants needed a high level of privacy to complete many of the at-home exercises, providing a flexible schedule and allowing for completion of modules within a two-week time-frame might be an effective means to improve treatment adherence and satisfaction (Beatty & Binnion, 2016).

Additionally, participants mentioned problems with motivating their partner to participate in and contribute to the intervention. Although the inclusion of relatives into a treatment process can also be a challenge in interventions for other disorders, it is especially important to be able to involve partners in exercises for sexual dysfunctions. Brotto et al. (2017) showed that women with sexual dysfunctions often wished for support concerning interactions and communication with their partners. It is crucial to develop means to improve partner involvement in internet interventions for sexual concerns, as communication between partners and partner characteristics can influence sexual distress and sexual function and thereby impact treatment outcomes (Brotto et al., 2013; Gunst et al., 2017; McCabe & Jones, 2013; Velten & Margraf, 2017).

Clinical Implications and Future Directions

From a participant's perspective, CBT- and MBT-based internet interventions for HSDD are feasible and helpful. They are easily accessible and can provide care anonymously, thus enabling individuals to avoid the stigma often attached to seeking help for sexual problems (Bergvall & Himelein, 2014; Moreira et al., 2005). To consult with a sexual health care provider, patients often face long waiting periods (Muñoz et al., 2012). Internet interventions could be effective in improving the care situation concerning sexual concerns in women, especially when larger distances need to be covered (e.g., in rural areas) or when the mental and sexual health care situation is less than ideal (Muñoz et al., 2016).

While this study shed light on the personal experiences of women participating in two internet interventions for HSDD, perceived changes and the underlying mechanisms have yet to be closely examined. A further examination of these factors is necessary, as they might help to identify treatment components that are crucial to success, and thereby provide important guidance on how to reduce the overall amount of content or information that is presented to participants. Previously, cognitive mechanisms (Barlow, 1986; Velten et al., 2019; Zahler et al., 2021) and factors connected to an improvement in mindfulness (Stephenson, 2017) have been thought to effect change in individuals with sexual difficulties. As subjective experiences often differ from changes in quantitative measures (e.g., subjective and physiological measures for sexual arousal; Chivers et al., 2010; Velten et al., 2018), the effects of the program with regard to objective measures such as symptom severity, sexual desire and, sexual distress have yet to be explored. Furthermore, a combined analysis of qualitative and quantitative measures in a mixed methods approach could be helpful to identify possible relations between critical feedback and treatment efficacy. So far it is unclear how closely women's personal accounts are related to their treatment success or whether their feedback is rather an indication of their ability to reflect on their experiences during the interventions.

Furthermore, little is known about whether CBT- or MBT-based internet interventions are equally effective for different types of participants (e.g., partnered vs. unpartnered women; sexual and gender majority vs. minority women) and those for whom a personal format might be more efficacious. While meta-analytic findings point to the equivalence of CBT-based internet and face-to-face interventions, studies on sexual concerns in women were not included in this analysis (Carlbring et al., 2018).

Limitations

While this study included qualitative data of more than 50 women, a lack of diversity concerning certain variables of interest limited the generalizability of findings to the general population of women seeking help for sexual concerns. Despite great efforts to invite sexual and gender minority women (e.g., trans women, lesbian women) to the RCT that served as the basis for this study, the overwhelming majority of participants endorsed a heterosexual orientation. Thus, we cannot determine whether we were successful in creating content that is equally appealing and helpful to both sexual minority and majority women. Owing to the relatively high level of education of our participants, it remains unclear whether the content and structure of the interventions would be equally adequate for women with, for example, lower reading levels. As the qualitative interview was one of the few aspects of the randomized controlled trial that included synchronous, telephone-based contact with study personnel, participants may have felt inclined to respond in a socially desirable manner. Thus, it may be possible that some of the more problematic aspects of the interventions were not shared as openly during the interviews. Additionally, interviewers were neither blind to participants' treatment conditions nor their treatment outcomes. Although we tried to control for interviewer bias by standardizing the interview as much as possible, follow up questions might have been dependent on the interviewers' own views.

Conclusion

Qualitative interview data provided by participants of CBT- and MBT-based internet interventions for low sexual desire showed good feasibility and overall helpfulness of both treatment programs. CBT techniques such as cognitive restructuring were mentioned as being helpful for challenging maladaptive thinking patterns, while formal mindfulness-exercises allowed women to disengage from negative thoughts. Strengths of the online format included anonymity, flexibility, and convenient access. Overall, women's personal accounts supported the feasibility, acceptability, and clinical usefulness of psychological internet interventions targeting low sexual desire.

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