



The Effectiveness of Telemedicine in Managing Male Sexual Dysfunction: A Systematic Review

Khadigeh Mirzaiinajmabadi ¹, Fatemeh Purbarar ², Zahra Karimian ³, Jila Ganji ^{4,*}

¹ Department of Midwifery, School of Nursing and Midwifery, Mashhad University of Medical Sciences, Mashhad, Iran

² PhD Student in Reproductive Health, Student Research Committee, School of Nursing and Midwifery, Shahrood University of Medical Sciences, Shahrood, Iran

³ Trauma Nursing Research Center, Kashan University of Medical Sciences, Kashan, Iran

⁴ Postdoctoral Researcher, Department of Midwifery, School of Nursing and Midwifery, Mashhad University of Medical Sciences, Mashhad, Iran

*Corresponding Author: Department of Midwifery, School of Nursing and Midwifery, Mashhad University of Medical Science, Mashhad, Iran. Email: zhila.ganji@yahoo.com

Received: 23 June, 2025; Revised: 1 November, 2025; Accepted: 2 November, 2025

Abstract

Context: Previous studies have introduced telemedicine as a cost-effective and accessible approach for managing male sexual dysfunction (MSD). However, existing evidence remains fragmented and lacks a systematic synthesis regarding the efficacy of these interventions across different types of dysfunctions.

Methods: This study is a systematic review conducted in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) 2020 guidelines. A comprehensive literature search was performed using Scopus, Web of Science (WOS), PubMed, ScienceDirect, and Google Scholar for studies published from 2006 to January 30, 2025. A structured, population, intervention, comparison, and outcome (PICO)-based search strategy was used to comprehensively evaluate the relevant literature. Various telemedicine delivery methods, including web-based platforms, phone consultations, video conferencing, and mobile applications, were considered. The primary assessed outcomes included sexual satisfaction and overall sexual function. Studies were selected based on predefined inclusion criteria: Randomized controlled trials (RCTs) assessing sexual satisfaction or overall sexual function in adult men. Exclusion criteria encompassed studies without original data, reviews, protocols, quasi-experimental studies, and those focusing on female sexual dysfunction or non-telemedicine interventions. The quality and risk of bias (RoB) of the included studies were assessed using the Critical Appraisal Skills Programme (CASP) checklist for randomized studies and the RoB tool.

Results: A total of 286 studies were initially identified through database searches, of which 10 met the inclusion criteria after screening. These 10 studies were conducted in the USA (n = 1), Iran (n = 2), Australia (n = 2), Italy (n = 1), Germany (n = 1), the Netherlands (n = 1), and Sweden (n = 2). Most studies reported significant improvements in erectile function [in men with erectile dysfunction (ED)], sexual satisfaction, as well as reductions in premature ejaculation (PE, in men with PE) and enhancement of sexual self-confidence. However, the magnitude and specific outcomes varied across studies due to differences in intervention types and study populations. The interventions included therapeutic treatments, self-help programs, and consultative services delivered via various telemedicine platforms.

Conclusions: Telemedicine demonstrates significant potential in improving key aspects of MSD, particularly erectile function and sexual satisfaction. Despite variability in outcomes across different intervention approaches, findings consistently support telemedicine as an effective alternative to conventional care. Future research should focus on standardizing intervention protocols and exploring long-term efficacy.

Keywords: Telemedicine, Digital Health, Men's Health, Sexual Dysfunction, Systematic Review

1. Context

Male sexuality is a multifaceted physiological phenomenon and plays a significant role in overall quality of life. Normal sexual performance requires the harmonious interaction of several body systems, including the nervous, cardiovascular, endocrine, and reproductive systems (1). Changes in physical systems or psychological factors can disturb a man's sexual life. Sexual dysfunction in men is not a single illness, but rather a problem that can appear at any stage of sexual

activity, such as desire, erection, penetration, or ejaculation (2). Research indicates that approximately 31% of men experience some form of sexual dysfunction (3). Among older men, 30 - 52% suffer from varying degrees of sexual dysfunction, with 54% facing one or more sexual health problems lasting three months or longer (4, 5). In Iran, 35.6% of men report having sexual issues, with erectile dysfunction (ED) being the most common, ranging from 14% to 87.7% (6, 7). Social stigma and feelings of embarrassment often prevent men from seeking help for these conditions (8). Although various

treatments for sexual dysfunction are available (9), many men still refrain from seeking assistance (10). A contributing factor is adherence to societal expectations of masculinity, which often hinders men from reaching out for medical support (11).

Male sexual dysfunction (MSD) can affect various aspects of life, including physical health, mental well-being, self-esteem, and intimate relationships. Sexual satisfaction, an essential human right, is closely linked to overall health and well-being (12, 13). When sexual function is impaired, it can lead to diminished satisfaction and negatively influence self-esteem, relationships, and mental health (14). Conversely, good sexual health can enhance overall well-being, improve relationship satisfaction, and contribute to a better quality of life (15). Sexual dissatisfaction can lead to serious issues, such as relationship problems, family conflicts, infidelity, and divorce, and may even contribute to higher rates of criminal behavior and mental health disorders (16-24). As such, MSD represents a significant concern for many men (25).

Despite the high prevalence of sexual dysfunction, particularly among younger men who may lack a primary care physician (26, 27), many men are hesitant to seek care due to the stigma surrounding ED (28, 29). In response to these challenges, telemedicine services have rapidly expanded, especially during the COVID-19 pandemic, providing an alternative means of addressing sexual health concerns. Telehealth is now a crucial component of men's healthcare (30). Telemedicine offers numerous advantages, such as increased accessibility, affordability, confidentiality, and convenience, overcoming barriers such as geographic limitations (31-33). Healthcare providers can remotely diagnose, treat, and monitor patients, using modern communication technologies to complement in-person consultations (34). Studies have shown that telemedicine is effective in addressing various aspects of MSD, including ED (35, 36), with internet-based therapies such as cognitive behavioral therapy proving beneficial in treating ED (37).

Despite the high prevalence and significant impact of MSD on quality of life, many affected men do not seek or receive timely and effective treatment due to factors such as stigma, limited access to specialized healthcare, and geographic barriers. Telemedicine, as an emerging digital health approach, offers a promising solution by providing convenient, accessible, and confidential care. However, despite growing interest, evidence regarding the effectiveness of telemedicine interventions

specifically for managing MSD remains scarce and fragmented.

2. Objectives

This systematic review aims to critically evaluate and synthesize existing research on telemedicine-based management of MSD, identifying current knowledge gaps and guiding future high-quality studies to optimize patient outcomes and healthcare delivery in this domain.

3. Methods

3.1. Data Sources

The research question was prepared following the population, intervention, comparison, and outcome (PICO) methodology (Table 1). The present review complies with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) 2020 guidelines (38), and its protocol was prospectively registered in PROSPERO under the unique identifier CRD420250632730.

A comprehensive search was conducted across seven electronic databases from 2006 to January 30, 2025. Database-specific search strategies were developed and executed, with detailed syntax provided in Table 2 and results presented in Table 3. In addition, the entire literature search process up to the final decision on the number of studies included in this review is depicted in Figure 1 using the PRISMA Flowchart.

3.2. Study Selection

The inclusion criteria for this review required articles to meet the following criteria: (1) Articles examining the effectiveness of telemedicine for the management of MSD in peer-reviewed journals; (2) all electronically published randomized controlled trial (RCT) studies in peer-reviewed journals; (3) published in English and Persian; (4) relevant outcomes defined and reported using the PICO framework (Table 1); (5) provision of sufficient data for quality appraisal.

Studies were excluded for the following reasons: (1) Quasi-experimental and other non-randomized study designs were excluded to minimize selection and confounding biases, thereby focusing on the highest available level of evidence; (2) studies published in conference proceedings, non-original research (including books, review articles, theoretical works, letters to the editor, commentaries, opinions, meta-

Table 1. Population, Intervention, Comparison, and Outcome Statement

Items	Statement
P (population)	Men aged 18 and older diagnosed with any type of sexual dysfunction, including ED, PE, low libido, or sexual dissatisfaction; studies including men with comorbidities such as diabetes, hypertension, and cancer will also be considered.
I (intervention)	Telemedicine-based interventions, such as online consultations with healthcare providers, video therapy sessions, and mobile health apps designed to improve sexual health. These interventions may include educational content, lifestyle advice, and behavioral therapies.
C (comparison)	Traditional in-person or group treatments that do not involve telemedicine.
O (outcomes)	Primary outcomes: Improvements in sexual function assessed using validated tools, including: The IIEF, The PEDT, and self-reported measures of libido; secondary outcomes: Patient satisfaction.
Type of studies	Articles on high-quality RCTs regarding telemedicine interventions for MSD

Abbreviations: ED, erectile dysfunction; PE, premature ejaculation; IIEF, International Index of Erectile Function; PEDT, Premature Ejaculation Diagnostic tool; RCT, randomized controlled trial; MSD, male sexual dysfunction.

Table 2. Systematic Search Strategy and Results by Database

Database	Search Date	Search Strategy	Records Identified
PubMed	Jan 30, 2025	["Telemedicine"(Mesh) OR "Digital Health"(Mesh) OR "Telehealth" OR "Remote Health"] AND ["Sexual Dysfunction, Physiological"(Mesh) OR "Erectile Dysfunction"(Mesh) OR "Premature Ejaculation"(Mesh)] AND ["Men"(Mesh) OR "Male"(Mesh)]	85
Scopus	Jan 30, 2025	[(telemedicine OR "digital health" OR telehealth) AND ("sexual dysfunction" OR "erectile dysfunction" OR "premature ejaculation") AND (men OR male)]	78
WOS	Jan 30, 2025	[(telemedicine OR "digital health" OR telehealth) AND ("sexual dysfunction" OR "erectile dysfunction" OR "premature ejaculation") AND (men OR male)]	62
Science Direct	Jan 30, 2025	(telemedicine AND "sexual dysfunction" AND men)	18
Google Scholar	Jan 30, 2025	telemedicine "sexual dysfunction" men	25
SID	Jan 30, 2025	("Telemedicine" OR "Digital Health") AND ("Sexual Dysfunction" OR "Erectile Dysfunction") AND ("Men" OR "Males")	12
Magiran	Jan 30, 2025	("Telemedicine" AND "Sexual Dysfunction" AND "Men")	6

Abbreviation: SID, The Society for Information Display; WOS, Web of Science.

analyses, and reports), case studies, and those focusing on gay or bisexual men were excluded from this analysis.

3.3. Screening Method and Removal of Irrelevant Articles

Two reviewers (J. G. and Z. K.) independently screened the titles and abstracts of the studies identified in the search. In cases of disagreement between the two reviewers, the final decision was made by a third reviewer (K. H. M.). The data extraction form included key details such as titles, objectives, and conclusions of the relevant studies.

3.4. Data Extraction

In this systematic review, to facilitate understanding of the content from the eligible studies, key information was organized into a table format. The Methods section was expanded to provide a detailed description of the data extraction process. Specifically, data extraction was performed independently by two reviewers (J. G. and K. H. M.) using a standardized data extraction form developed a priori. This form included specific fields:

Study characteristics (author, year, country), participant demographics (age, sample size), intervention details (type, duration, frequency), and outcome measures. Outcome measures were categorized as primary and secondary. The primary outcomes focused on improvements in sexual function, assessed using validated instruments: The International Index of Erectile Function (IIEF) for ED, the Premature Ejaculation Diagnostic tool (PEDT) for PE, and self-reported measures for libido. Secondary outcomes included patient satisfaction with the intervention. Each field was clearly defined, and coding schemes were applied to systematically categorize qualitative and quantitative data. Discrepancies between reviewers were resolved through discussion or consultation with a third reviewer. The finalized dataset was then used for qualitative synthesis. All findings were categorized according to the review objectives.

3.5. Quality Assessment

The methodological quality of the included studies was independently assessed by two reviewers (J. G. and

Table 3. General Overview of the Eligible Studies

Author Name, Country (Publication Year) (Reference)	Design	No. of Participants	Intervention	Control Group	Intervention Duration	Intervention Provider	Follow-up	Outcome	Main Findings
Kliesch et al., Germany (2024) (39)	RCT	241	Digital health application (EDDIG study)	Continue current ED management (control group)	12 wk	Physicians	At baseline and end of study	Erectile function, quality of life, patient activation	Participants who received the intervention experienced significant enhancements in erectile function (measured by IIEF-5), overall quality of life (QOL-Med), and self-management capabilities (PAM-13), compared to those in the control group ($P < 0.0001$).
Zarei et al., Iran (2020) (40)	RCT	70	Mobile-based educational intervention on sexual-marital life for men with spinal cord injury	Spinal cord injury men	8 wk	Health specialist	Baseline, 4- and 8-weeks post-intervention	Sexual adjustment, satisfaction, marital satisfaction	Notable increases in both sexual satisfaction and marital satisfaction were observed at 4- and 8-weeks post-intervention ($P < 0.001$). However, no statistically significant changes were found in marital adjustment at these time points ($P = 0.16$ and $P = 0.25$, respectively).
van Lankveld et al., Netherlands (2009) (41)	RCT	98	Internet-based sex therapy	Waiting-list control group	3 mo	Sex therapists	Pre-, post-, and follow-up at 3 and 6 months	Erectile functioning, PE, sexual desire, overall satisfaction, and self-confidence	The intervention led to significant enhancements in erectile function ($P < 0.05$), sexual satisfaction ($P < 0.001$), and sexual self-confidence ($P < 0.05$). However, no significant changes were observed in the PE group.
Rahimi et al., Iran (2020) (42)	RCT	60	App-based group for men with spinal cord injury	Lecture-based sexual education group	2 mo	Health specialist	Pre-, post-, and follow-up at 6 weeks	Sexual satisfaction	Significant increase was observed in sexual satisfaction in the app-based group compared to lecture-based group ($P < 0.05$).
Schover et al., United States (2012) (43)	RCT	115 couples	Internet-based CARESS intervention, email contact	Traditional face-to-face counseling	12 wk	Therapist	Baseline, post-treatment, 3, 6, 12 months	Sexual function and satisfaction	A notable improvement in sexual satisfaction was observed in the app-based intervention group compared to the lecture-based group ($P < 0.05$). Significant positive effects on sexual function and satisfaction were found following both internet-based and face-to-face counseling methods ($P < 0.05$).
Wooten et al., Australia (2017) (44)	RCT	142	Self-guide online psychological intervention (MRA + Forum)	MRA only and Forum-only	10 wk	Web-delivered	Pre-, post-, and follow-up at 3 and 6 months	Erectile function, total sexual satisfaction	The MRA + Forum group experienced a significant enhancement in sexual satisfaction ($P = .004$). Improvements in sexual function and self-esteem were key factors contributing to this increased satisfaction.
Fagerkvist et al., Sweden (2024) (45)	RCT	278	Self-help, web-based intervention for sexual problems in young adults treated for cancer	Wait-list control	12 wk	Web-delivered	Pre-, post-, and follow-up at 3 months	Satisfaction with sex life, body image, emotional distress, quality of life, self-efficacy	There was no statistically significant difference in satisfaction with sex life between groups ($P > 0.05$). However, the intervention group reported significantly lower levels of vaginal dryness and emotional distress compared to the control group ($P < 0.05$).
Optale et al., Italy (2020) (46)	RCT	35 (IG = 17, CG = 18)	Mobile coaching app exercises	TAU	15 sessions daily	Smartphone-delivered	Pre- and post-assessments	PE	The app group showed significant improvements in both the PE Diagnostic Tool and Profile scores compared to the TAU group ($P < 0.01$).
Andersson et al., Sweden (2011) (37)	RCT	78	Web-based program with email support	Active control group (online forum)	7 wk	Therapist	Pre-, post-treatment, and 6 months follow-up	Erectile function	Significant improvement in erectile function in the treatment group compared to the control group at post-treatment ($P < 0.05$).
McCabe et al., Australia (2008) (47)	RCT	31 (IG = 12, CG = 19)	Internet-IMI	Control group	10 wk	Therapist	Pre-, post-, and follow-up at 3 months	Erectile function, marital satisfaction, sexual satisfaction, self-esteem, relationship	The treatment group demonstrated a significant enhancement in erectile function compared to the control group after the intervention ($P < 0.05$). Additionally, the treatment group showed significant improvements in both erectile function and the quality of sexual relationships ($P < 0.01$).

Abbreviations: RCT, randomized controlled trial; ED, erectile dysfunction; IIEF-5, International Index of Erectile Function-5; QOL-Med, Quality of Life Questionnaire-Medical Version; PAM-13, patient activation measure-13; PE, premature ejaculation; MRA, mindfulness-based relaxation approach; TAU, treatment as usual; IMI, internet-mobile intervention.

K. H. M.) using the Critical Appraisal Skills Programme (CASP) checklist (11 items) (48) for RCTs. Each “Yes” response was assigned 1 point, while “No” or “Can’t tell” responses received 0 points. The total score ranged from 0 to 11. Studies were categorized as high quality (9 - 11), moderate quality (6 - 8), or low quality (≤ 5). Detailed quality assessments are presented in Table 4. The overall risk of bias (RoB) for each study was judged using the Cochrane RoB 2 tool (48), evaluating bias across five domains: (1) Bias arising from the randomization process, (2) bias due to deviations from intended interventions, (3) bias due to missing outcome data, (4) bias in measurement of the outcome, and (5) bias in selection of the reported result. Studies were

categorized as having “low risk of bias”, “some concerns”, or “high risk of bias” based on these domain assessments. The results of the RoB assessment were reviewed and approved by all authors, incorporating feedback from external reviewers. Detailed quality assessment is presented in Figure 2.

4. Results

The systematic search across four databases [Web of Science (WOS), Google Scholar, Scopus, and PubMed] identified 286 records. After removing 40 duplicates and 61 records marked as ineligible by automation tools, 165 records underwent title and abstract screening. During this stage, 129 records were excluded due to irrelevant

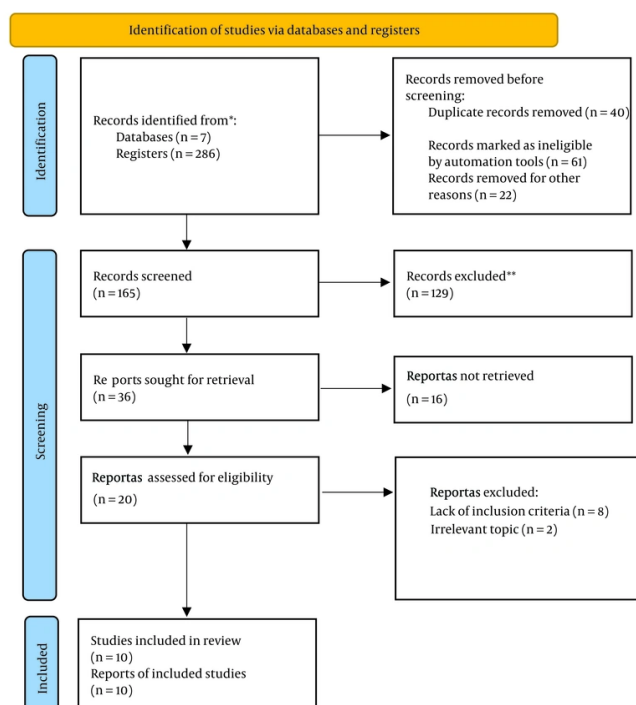


Figure 1. Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) flowchart for study selection

Table 4. Summary of Quality Assessment for Randomized Controlled Trial Studies Using Critical Appraisal Skills Programme^a

Studies	CASP Questions										
	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11
(Kliesch et al., 2024) (39)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
(Zarei et al., 2020) (40)	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y
(van Lankveld et al., 2009) (41)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
(Rahimi et al., 2020) (42)	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y
(Schover et al., 2012) (43)	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y
(Wootten et al., 2017) (44)	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y
(Fagerkvist et al., 2024) (45)	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y
(Optale et al., 2020) (46)	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y
(Andersson et al., 2011) (37)	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y
(McCabe et al., 2008) (47)	Y	CT	Y	Y	N	Y	Y	Y	CT	Y	Y

Abbreviation: CASP, Critical Appraisal Skills Programme.

^a Record 'Yes', 'No', or 'Can't tell' in response to the questions.

topic focus. From the remaining 36 records sought for retrieval, 16 were excluded based on irrelevant abstracts or inability to retrieve the full text. The remaining 20 full-text articles were thoroughly assessed for eligibility. Of these, 10 studies were excluded for the following

reasons: Eight studies failed to meet the inclusion criteria, and two studies were deemed irrelevant upon full-text examination. Ultimately, 10 studies met all eligibility criteria and were included in the qualitative

Studies	Randomization process	Deviations from intended interventions	Missing outcome data	Measurement of the outcome	Selection of the reported result	Overall risk of bias judgement
Kliesch et al. (2024) (39)						Some concerns
Zarei et al. (2020) (40)						Some concerns
van Lankveld et al. (2009) (41)						Some concerns
Rahimi et al. (2020) (42)						Some concerns
Schover et al. (2012) (43)						Some concerns
Wootten et al. (2017) (44)						Some concerns
Fagerkvist et al. (2024) (45)						Some concerns
Optale et al. (2020) (46)						Some concerns
Andersson et al. (2011) (37)						Some concerns
McCabe et al. (2008) (47)						Some concerns

Figure 2. The risk of bias (RoB) in randomized studies (ROB 2-tools) (37, 39-47)

synthesis. The study selection process is detailed in the PRISMA flow diagram (Figure 1).

4.1. Characteristics of the Included Studies

The eligible studies were conducted in several countries, with a total of 10 studies meeting the inclusion criteria. These studies originated from Germany (n = 1) (39), Iran (n = 2) (40, 42), the USA (n = 1) (43), Australia (n = 2) (44, 47), Italy (n = 1) (46), the Netherlands (n = 1) (41), and Sweden (n = 2) (37, 45). The publication years ranged from 2008 to 2024. The studies evaluated the effectiveness of various digital and web-based interventions such as online counseling, mobile applications, and telehealth platforms aimed at improving sexual function, marital satisfaction, and patient self-efficacy. Sample sizes ranged from 31 to 278 participants, with intervention durations spanning

from 4 weeks to 12 months. Outcomes were measured using validated tools such as IIEF-5. These studies varied in their design specifics and intervention modalities, which are summarized in Table 3.

4.2. Risk of Bias of the Included Studies

The overall RoB was assessed using the Cochrane RoB tool. Ten studies raised some concerns, primarily related to measurement of outcomes (39, 47) and selection of reported results (41, 44-47) and missing outcome data (41, 43, 44, 46, 47). No studies showed high RoB. These concerns may be related to factors such as blinding or incomplete outcome data. Overall, the studies included in this review generally provided reliable evidence; however, the presence of some concerns in the majority of studies should be noted as a potential limitation. The

detailed assessment is presented in Table 4. Assessment using the Cochrane RoB tool was indicated in Figure 2.

4.3. Effect of Interventions

Several studies assessed the effectiveness of various telemedicine-delivered psychological, educational, and behavioral interventions for managing MSD. These interventions were delivered via mobile applications, web-based, internet-based, or hybrid platforms and primarily targeted outcomes such as erectile function, sexual satisfaction, sexual confidence, and sexual desire.

4.3.1. Psychological Interventions

Five studies evaluated psychological interventions, including cognitive-behavioral therapy (CBT), psychodynamic therapy, and mindfulness approaches, many of which were provided through online or hybrid platforms. Two CBT-based studies (37, 43) demonstrated significant improvements in erectile function (IIEF-5; $P < 0.05$), sexual satisfaction [Sexual Satisfaction Scale (SSS); $P < 0.01$], and sexual self-confidence [Sexual Self-confidence Scale (SECS); $P < 0.05$]. Psychodynamic therapy (46) led to significant enhancement in PE control and sexual satisfaction ($P < 0.05$). Similarly, a mindfulness-based intervention (39) significantly improved erectile function and sexual desire after treatment.

4.3.2. Educational Interventions

Four studies investigated educational approaches, including sexual health education and psychoeducation, often delivered via telemedicine tools. Among spinal cord injury patients (40, 42), sexual health education significantly improved sexual satisfaction in both studies ($P < 0.001$), with additional gains in marital satisfaction and sexual adjustment in one study each ($P < 0.05$). In cancer survivors, two psychoeducational interventions (44, 45) also demonstrated significant improvement in sexual satisfaction ($P < 0.05$).

4.3.3. Behavioral Interventions

Two studies explored behavioral strategies, such as sensate focus and pelvic floor muscle training, delivered through online guidance. Sensate focus (41) resulted in significant improvements in erectile function, sexual desire, and sexual self-confidence ($P < 0.05$), though no significant effect was observed for PE. Pelvic floor

exercises (39) significantly enhanced erectile function ($P < 0.05$).

4.4. Telemedicine Delivery Platforms

Different telemedicine modalities were used to deliver these interventions. Mobile applications (39, 40, 46) showed consistent improvements in erectile function, sexual satisfaction, and PE ($P < 0.05$). Web-based platforms (41, 45) had mixed results – while one study (41) showed significant improvement across all assessed outcomes, another (45) reported no significant change in sexual satisfaction. Internet-based platforms (37, 40, 44, 46) consistently demonstrated significant improvements in erectile function, PE, sexual satisfaction, and self-confidence ($P < 0.05$). Hybrid approaches (43) also reported significant gains in sexual function and satisfaction ($P < 0.05$).

Overall, the findings indicate that telemedicine-based interventions, particularly those integrating psychological and educational components, are effective in improving key aspects of male sexual function and satisfaction. These results support the growing role of digital health tools in addressing sexual dysfunction among men, offering accessible and effective alternatives to traditional face-to-face therapy.

5. Discussion

This systematic review provides comprehensive evidence supporting the effectiveness of telemedicine-based interventions in managing MSD. Drawing from ten RCTs published between 2008 and 2024, the review demonstrates that multidisciplinary interventions – particularly those integrating psychological, educational, and behavioral components – effectively improve multiple dimensions of male sexual health, including erectile function, sexual satisfaction, sexual self-confidence, sexual desire, and relational outcomes.

5.1. Effectiveness Across Intervention Types

Psychological interventions consistently emerged as among the most effective therapeutic approaches. The CBT produced marked improvements in erectile function, sexual satisfaction, and self-confidence (37, 43). These findings align with earlier systematic reviews that identified CBT as a key approach for promoting adaptive emotional and behavioral change by reshaping unhelpful thoughts and responses (49). Mindfulness-based programs (39) also enhanced erectile function and sexual desire, likely by fostering greater body

awareness and emotional self-regulation. By cultivating present-moment attention and self-acceptance, mindfulness encourages individuals to shift focus away from distressing memories or anticipated performance issues toward current sensory experiences (50). The present findings support previous reviews confirming the positive influence of mindfulness on sexual functioning (51). Psychodynamic therapy contributed to improved control over PE and enhanced relational satisfaction, underscoring the therapeutic value of addressing deep-seated psychological conflicts (46).

Educational and psychoeducational strategies – particularly among men dealing with chronic health conditions such as spinal cord injury or cancer (40, 42, 44, 45) – were associated with higher levels of sexual satisfaction. This supports prior research indicating that accurate sexual education helps dispel misconceptions, provides reliable information, and leads to improved sexual well-being (52).

Behavioral interventions, such as sensate focus (41) and pelvic floor muscle training (39), produced significant gains in both physiological and psychosocial outcomes. Sensate focus techniques enhanced erectile capacity, desire, and self-confidence, while pelvic floor training improved erectile performance. These findings are consistent with reviews highlighting the dual benefits of behavioral methods (53). Earlier systematic reviews primarily focused on in-person psychological and behavioral interventions and reported improvements in erectile function, sexual satisfaction, and self-confidence (49, 51). Our findings extend this evidence by showing that telemedicine-based and hybrid interventions can achieve comparable or even enhanced outcomes, while overcoming barriers such as geographic distance, stigma, and limited access to specialized care (53, 54). Similarly, prior reviews highlighted the effectiveness of educational and psychoeducational interventions in improving sexual function and sexual satisfaction (53-59), which our study fully supports through digital delivery methods.

Overall, this review provides updated evidence that technology-supported interventions are effective, feasible, and scalable, supporting their integration into routine clinical practice for MSD.

5.2. Methodological Considerations and Limitations

Most included studies were rated as “some concerns” using the RoB 2 tool, primarily due to self-reported outcomes and limited blinding. No study was rated as high risk. Heterogeneity in intervention type, duration,

and outcome measures, as well as short follow-up periods, limited the ability to perform meta-analysis and draw conclusions about long-term effects. Reliance on self-reported data introduces potential bias. Future studies should use standardized outcome measures, objective assessments, and longer follow-up periods.

5.3. Clinical Implications and Future Directions

Multidisciplinary and telemedicine-based interventions offer comprehensive, patient-centered care for men with sexual dysfunction. Clinicians can integrate these digital strategies into routine practice to enhance accessibility, reduce stigma, and improve continuity of care. Future research should focus on large-scale trials with standardized outcomes, longer follow-up, diverse populations, cost-effectiveness analysis, partner involvement, and long-term adherence to establish optimal telemedicine models for male sexual health.

5.4. Conclusions

This systematic review demonstrates that telemedicine-based interventions are effective and feasible for managing MSD. Multidisciplinary approaches, combining psychological, educational, and behavioral strategies, consistently improved erectile function, sexual satisfaction, sexual self-confidence, and sexual desire. Digital platforms – including mobile, web-based, and hybrid modalities – offer accessible, cost-effective, and flexible alternatives to conventional face-to-face interventions, particularly benefiting men with limited access to specialized care or those concerned about stigma.

Acknowledgements

The authors sincerely express their gratitude to Mashhad University of Medical Sciences, Mashhad, Iran. The authors thank all contributors for their participation and support.

Footnotes

Authors' Contribution: Study concept and design: J. G. and K. M. N.; Acquisition of data: F. P. and Z. K.; Analysis and interpretation of data: J. G. and Z. K.; Drafting of the manuscript: J. G. and K. M. N.; Critical revision of the manuscript for important intellectual content: J. G., Z. K., and F. P.; Study supervision: K. M. N. In this manuscript,

the initial draft was translated into English using artificial intelligence tools, and the text was subsequently reviewed and revised by the authors to ensure accuracy and clarity.

Conflict of Interests Statement: The authors declare no conflict of interest.

Data Availability: The dataset presented in the study is available on request from the corresponding author during submission or after publication.

Funding/Support: The present study received no funding/support.

References

1. Trajanovska AS, Vujovic V, Ignjatova L, Janicevic-Ivanovska D, Cibisev A. Sexual Dysfunction as a Side Effect of Hyperprolactinemia in Methadone Maintenance Therapy. *Med Arch*. 2013;**67**(1):48-50. [PubMed ID: 23678840]. <https://doi.org/10.5455/medarch.2013.67.48-50>.
2. Rosing D, Klebingat KJ, Berberich HJ, Bosinski HA, Loewit K, Beier KM. Male Sexual Dysfunction: Diagnosis and Treatment from a Sexological and Interdisciplinary Perspective. *Dtsch Arztebl Int*. 2009;**106**(50):821-8. [PubMed ID: 20049092]. [PubMed Central ID: PMC2801066]. <https://doi.org/10.3238/arztebl.2009.0821>.
3. Ramirez-Santos J, Cristobal-Canadas D, Parron-Carreño T, Lozano-Paniagua D, Nievas-Soriano BJ. The Problem of Calculating the Prevalence of Sexual Dysfunction: a Meta-analysis Attending Gender. *Sex Med Rev*. 2024;**12**(2):116-26. [PubMed ID: 38336366]. <https://doi.org/10.1093/sxmrev/qead058>.
4. Towler LB, Graham CA, Bishop FL, Hinchliff S. Sex and Relationships in Later Life: Older Adults' Experiences and Perceptions of Sexual Changes. *J Sex Res*. 2023;**60**(9):1318-31. [PubMed ID: 35852483]. <https://doi.org/10.1080/00224499.2022.2093322>.
5. Schnatz PF, Whitehurst SK, O'Sullivan DM. Sexual dysfunction, depression, and anxiety among patients of an inner-city menopause clinic. *J Womens Health*. 2010;**19**(10):1843-9. [PubMed ID: 20677995]. <https://doi.org/10.1089/jwh.2009.1800>.
6. Mohammadian S, Dolatshahi B. Sexual problems in Tehran: Prevalence and associated factors. *J Educ Health Promot*. 2019;**8**:217. [PubMed ID: 31867381]. [PubMed Central ID: PMC6905287]. https://doi.org/10.4103/jehp.jehp_231_19.
7. Ramezani MA, Ahmadi K, Ghaemmaghami A, Marzabadi EA, Pardakhti F. Epidemiology of Sexual Dysfunction in Iran: A Systematic Review and Meta-analysis. *Int J Prev Med*. 2015;**6**:43. [PubMed ID: 26097672]. [PubMed Central ID: PMC4455123]. <https://doi.org/10.4103/2008-7802.157472>.
8. Ezhova I, Savidge L, Bonnett C, Cassidy J, Okwuokei A, Dickinson T. Barriers to older adults seeking sexual health advice and treatment: A scoping review. *Int J Nurs Stud*. 2020;**107**:103566. [PubMed ID: 32380261]. <https://doi.org/10.1016/j.ijnurstu.2020.103566>.
9. Shoshany O, Katz DJ, Love C. Much more than prescribing a pill - Assessment and treatment of erectile dysfunction by the general practitioner. *Aust Fam Physician*. 2017;**46**(9):634-9. [PubMed ID: 28892593].
10. Holden CA, Jolley DJ, McLachlan RI, Pitts M, Cumming R, Wittert G, et al. Men in Australia Telephone Survey (MATes): Predictors of men's help-seeking behaviour for reproductive health disorders. *Med J Aust*. 2006;**185**(8):418-22. [PubMed ID: 17137429]. <https://doi.org/10.5694/j.1326-5377.2006.tb00637.x>.
11. O'Brien R, Hunt K, Hart G. 'It's caveman stuff, but that is to a certain extent how guys still operate': Men's accounts of masculinity and help seeking. *Soc Sci Med*. 2005;**61**(3):503-16. [PubMed ID: 15899311]. <https://doi.org/10.1016/j.socscimed.2004.12.008>.
12. Saminfar S, Sh V. [The association of sexual dysfunction and sexual satisfaction with the mediating effect of sexual self-efficacy among married women in Tehran]. *Commun Health*. 2019;**6**(4):397-405. FA.
13. Pascoal PM, Narciso Ide S, Pereira NM. What is sexual satisfaction? Thematic analysis of lay people's definitions. *J Sex Res*. 2014;**51**(1):22-30. [PubMed ID: 24070214]. <https://doi.org/10.1080/00224499.2013.815149>.
14. Movahed M, Azizi T. [A study on the relationship between the sexual satisfaction of women in a married life and conflicts between spouses, among married women in Shiraz]. *Wom Dev Pol*. 2011;**9**(2):181-206. FA.
15. Pakniyat M, Roshan Chesli R. [Predict marital satisfaction based on sensation seeking, intimacy, sexual function, personality characteristics in nurses]. *Clin Psychol Per*. 2020;**16**(1):159-78. FA. <https://doi.org/10.22070/cpap.2020.2845>.
16. Neijenhuijs KI, Hooghiemstra N, Holtmaat K, Aaronson NK, Groenvold M, Holzner B, et al. The Female Sexual Function Index (FSFI): A Systematic Review of Measurement Properties. *J Sex Med*. 2019;**16**(5):640-60. [PubMed ID: 30956110]. <https://doi.org/10.1016/j.jsxm.2019.03.001>.
17. Fakhri A, Pakpour AH, Burri A, Morshedi H, Zeidi IM. The Female Sexual Function Index: translation and validation of an Iranian version. *J Sex Med*. 2012;**9**(2):514-23. [PubMed ID: 22146084]. <https://doi.org/10.1111/j.1743-6109.2011.02553.x>.
18. Heidari M, Ghodusi M, Rezaei P, Kabirian Abyaneh S, Sureshjani EH, Sheikhi RA. Sexual Function and Factors Affecting Menopause: A Systematic Review. *J Menopausal Med*. 2019;**25**(1):15-27. [PubMed ID: 31080785]. [PubMed Central ID: PMC6487288]. <https://doi.org/10.6118/jmm.2019.25.15>.
19. Rezaei N, Azadi A, Sayehmiri K, Valizadeh R. Postpartum Sexual Functioning and Its Predicting Factors among Iranian Women. *Malays J Med Sci*. 2017;**24**(1):94-103. [PubMed ID: 28381932]. [PubMed Central ID: PMC5346007]. <https://doi.org/10.21315/mjms2017.24.1.10>.
20. Chedraui P, Perez-Lopez FR, Sanchez H, Aguirre W, Martinez N, Miranda O, et al. Assessment of sexual function of mid-aged Ecuadorian women with the 6-item Female Sexual Function Index. *Maturitas*. 2012;**71**(4):407-12. [PubMed ID: 22342384]. <https://doi.org/10.1016/j.maturitas.2012.01.013>.
21. Torshiz M, Sharifzadeh G, Saeedi Bazkhan E, Dastjerdi R. [Evaluation of Sexual Quality of Life and its Relationship with Marital Satisfaction and Emotional Divorce in Hemodialysis Patients in Birjand, 2017]. *J Jiroft Univ of Med Sci*. 2019;**5**(2):35-45. FA.
22. Modiri F, Ghazi TM. [A study on the effects of the quality of marital life on the childbearing intention]. *J Sociol Soc Inst*. 2019;**5**(12):73-94. FA.
23. Aghajanian A, Thompson V. Recent Divorce Trend in Iran. *J Divorce Remarriage*. 2013;**54**(2):112-25. <https://doi.org/10.1080/10502556.2012.752687>.
24. Masoudinia Z, Bankipoorfar AH, Gholizadeh A. [Qualitative study of the experiences of divorced men and women of cultural factors inducement divorce]. *J Appl Sociol*. 2015;**26**(1):39-64. FA.
25. Choy JT, Eisenberg ML. Male infertility as a window to health. *Fertil Steril*. 2018;**110**(5):810-4. [PubMed ID: 30316415]. <https://doi.org/10.1016/j.fertnstert.2018.08.015>.

26. Nguyen HMT, Gabrielson AT, Hellstrom WJG. Erectile Dysfunction in Young Men-A Review of the Prevalence and Risk Factors. *Sex Med Rev.* 2017;5(4):508-20. [PubMed ID: 28642047]. <https://doi.org/10.1016/j.sxmr.2017.05.004>.
27. Capogrosso P, Colicchia M, Ventimiglia E, Castagna G, Clementi MC, Suardi N, et al. One patient out of four with newly diagnosed erectile dysfunction is a young man--worrisome picture from the everyday clinical practice. *J Sex Med.* 2013;10(7):1833-41. [PubMed ID: 23651423]. <https://doi.org/10.1111/jsm.12179>.
28. Arya ST, Dibb B. The experience of infertility treatment: The male perspective. *Hum Fertil.* 2016;19(4):242-8. [PubMed ID: 27563936]. [PubMed Central ID: PMC5152535]. <https://doi.org/10.1080/14647273.2016.1222083>.
29. Fisher JR, Hammarberg K. Psychological and social aspects of infertility in men: an overview of the evidence and implications for psychologically informed clinical care and future research. *Asian J Androl.* 2012;14(1):121-9. [PubMed ID: 22179515]. [PubMed Central ID: PMC3735147]. <https://doi.org/10.1038/aja.2011.72>.
30. Halpern JA, Darves-Bornoz AL, Fantus RJ, Keeter MK, Wren J, Bennett NE, et al. Underutilization of primary medical care among men presenting for fertility evaluation. *F S Rep.* 2020;1(1):9-14. [PubMed ID: 34223206]. [PubMed Central ID: PMC8244266]. <https://doi.org/10.1016/j.xfre.2020.04.001>.
31. Nuwamanya E, Nalwanga R, Nuwasiima A, Babigumira JU, Asiimwe FT, Babigumira JB, et al. Effectiveness of a mobile phone application to increase access to sexual and reproductive health information, goods, and services among university students in Uganda: A randomized controlled trial. *Contracept Reprod Med.* 2020;5(1):31. [PubMed ID: 33292724]. [PubMed Central ID: PMC7603751]. <https://doi.org/10.1186/s40834-020-00134-5>.
32. Hartzler AL, Venkatakrishnan A, Mohan S, Silva M, Lozano P, Ralston JD, et al. Acceptability of a team-based mobile health (mHealth) application for lifestyle self-management in individuals with chronic illnesses. *Annu Int Conf IEEE Eng Med Biol Soc.* 2016;2016:3277-81. [PubMed ID: 28269007]. <https://doi.org/10.1109/EMBC.2016.7591428>.
33. Gkatzidou V, Hone K, Sutcliffe L, Gibbs J, Sadiq ST, Szczepura A, et al. User interface design for mobile-based sexual health interventions for young people: Design recommendations from a qualitative study on an online Chlamydia clinical care pathway. *BMC Med Inform Decis Mak.* 2015;15:72. [PubMed ID: 26307056]. [PubMed Central ID: PMC4549868]. <https://doi.org/10.1186/s12911-015-0197-8>.
34. Dubin JM, Wyant WA, Balaji NC, Ong WL, Kettache RH, Haffaf M, et al. Telemedicine Usage Among Urologists During the COVID-19 Pandemic: Cross-sectional Study. *J Med Internet Res.* 2020;22(11):e21875. [PubMed ID: 33031047]. [PubMed Central ID: PMC7647472]. <https://doi.org/10.2196/21875>.
35. Jesse E, Thirumavalavan N, Loeb A. Increase in Direct-to-Consumer Telemedicine in Urology. *Curr Sex Health Rep.* 2022;14(4):119-27. [PubMed ID: 35966236]. [PubMed Central ID: PMC9362147]. <https://doi.org/10.1007/s11930-022-00332-z>.
36. Lim C, Wu W, La J, Chan V, Schubach KM, Duns G, et al. Direct-to-Consumer Telemedicine Practices in the Health and Fertility of Men: A Systematic Review of the Literature. *World J Mens Health.* 2024;42(1):148-56. [PubMed ID: 37652657]. [PubMed Central ID: PMC10782129]. <https://doi.org/10.5534/wjmh.230057>.
37. Andersson E, Walen C, Hallberg J, Paxling B, Dahlin M, Almqvist J, et al. A randomized controlled trial of guided Internet-delivered cognitive behavioral therapy for erectile dysfunction. *J Sex Med.* 2011;8(10):2800-9. [PubMed ID: 21797983]. <https://doi.org/10.1111/j.1743-6109.2011.02391.x>.
38. Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, et al. The PRISMA 2020 statement: An updated guideline for reporting systematic reviews. *BMJ.* 2021;372:n71. [PubMed ID: 33782057]. [PubMed Central ID: PMC8005924]. <https://doi.org/10.1136/bmj.n71>.
39. Kliesch S, Cremers JF, Krallmann C, Epplen R, Scheffer B, Schubert T, et al. App-based Therapy of Erectile Dysfunction Using a Digital Health Application (EDDIG Study): A Randomized, Single-blind, Controlled Trial. *Eur Urol Focus.* 2024;10(6):1003-10. [PubMed ID: 38853028]. <https://doi.org/10.1016/j.euf.2024.05.020>.
40. Zarei F, Rashedi S, Tavousi M, Haeri-Mehrzi AA, Maasoumi R. A mobile-based educational intervention on sexo-marital life in Iranian men with spinal cord injury: A randomized controlled trial. *Spinal Cord.* 2020;58(11):1189-96. [PubMed ID: 32457513]. <https://doi.org/10.1038/s41393-020-0489-4>.
41. van Lankveld JJ, Leusink P, van Diest S, Gijs L, Slob AK. Internet-based brief sex therapy for heterosexual men with sexual dysfunctions: A randomized controlled pilot trial. *J Sex Med.* 2009;6(8):2224-36. [PubMed ID: 19493295]. <https://doi.org/10.1111/j.1743-6109.2009.01321.x>.
42. Rahimi H, Mehrpooya N, Vagharseyyedin SA, Javan N. Comparing App-based and Lecture-based Methods of Sexual Satisfaction Education: A Randomized Controlled Trial. *Mod Care J.* 2020;17(2). <https://doi.org/10.5812/modernc.101378>.
43. Schover LR, Canada AL, Yuan Y, Sui D, Neese L, Jenkins R, et al. A randomized trial of internet-based versus traditional sexual counseling for couples after localized prostate cancer treatment. *Cancer.* 2012;118(2):500-9. [PubMed ID: 21953578]. [PubMed Central ID: PMC4022136]. <https://doi.org/10.1002/cncr.26308>.
44. Wooten AC, Meyer D, Abbott JM, Chisholm K, Austin DW, Klein B, et al. An online psychological intervention can improve the sexual satisfaction of men following treatment for localized prostate cancer: Outcomes of a Randomised Controlled Trial evaluating My Road Ahead. *Psychooncol.* 2017;26(7):975-81. [PubMed ID: 27503036]. <https://doi.org/10.1002/pon.4244>.
45. Fagerkvist K, Jahnukainen K, Ljungman L, Lampic C, Wettergren L. Efficacy of a web-based psychoeducational intervention, Fex-can sex, for young adult childhood cancer survivors with sexual dysfunction: A randomized controlled trial. *Internet Interv.* 2024;36:100739. [PubMed ID: 38623084]. [PubMed Central ID: PMC11016752]. <https://doi.org/10.1016/j.invent.2024.100739>.
46. Optale G, Burigat S, Chittaro L, Riva G. Smartphone-Based Therapeutic Exercises for Men Affected by Premature Ejaculation: A Pilot Study. *Sex Med.* 2020;8(3):461-71. [PubMed ID: 32565067]. [PubMed Central ID: PMC7471091]. <https://doi.org/10.1016/j.esxm.2020.05.003>.
47. McCabe MP, Price E, Piterman L, Lording D. Evaluation of an internet-based psychological intervention for the treatment of erectile dysfunction. *Int J Impot Res.* 2008;20(3):324-30. [PubMed ID: 18305485]. <https://doi.org/10.1038/ijir.2008.3>.
48. Ma LL, Wang YY, Yang ZH, Huang D, Weng H, Zeng XT. Methodological quality (risk of bias) assessment tools for primary and secondary medical studies: What are they and which is better? *Mil Med Res.* 2020;7(1):7. [PubMed ID: 3211253]. [PubMed Central ID: PMC7049186]. <https://doi.org/10.1186/s40779-020-00238-8>.
49. Vasconcelos P, Gomez Ponce de Leon R, Serruya SJ, Carneiro B, Nobrega C, Pereira R, et al. A Systematic Review on Psychological Interventions for Sexual Health in Older Age. *Int J Sex Health.* 2023;35(3):399-413. [PubMed ID: 38595928]. [PubMed Central ID: PMC10903596]. <https://doi.org/10.1080/19317611.2023.2215766>.
50. Bossio JA, Basson R, Driscoll M, Correia S, Brotto LA. Mindfulness-Based Group Therapy for Men With Situational Erectile Dysfunction: A Mixed-Methods Feasibility Analysis and Pilot Study. *J Sex Med.* 2018;15(10):1478-90. [PubMed ID: 30297094]. <https://doi.org/10.1016/j.jsxm.2018.08.013>.

51. Stephenson KR. Mindfulness-Based Therapies for Sexual Dysfunction: A Review of Potential Theory-Based Mechanisms of Change. *Mindfulness*. 2016;**8**(3):527-43. <https://doi.org/10.1007/s12671-016-0652-3>.
52. Ghaderi N, Zarei F, Ghofranipour F. Educational intervention on sexual satisfaction of Iranian men: Application of the information, motivation and behavioral skills model. *Front Pub Health*. 2025;**13**:1533261. [PubMed ID: 40443942]. [PubMed Central ID: PMC12121505]. <https://doi.org/10.3389/fpubh.2025.1533261>.
53. Joneidi E, Mirzaii Najmabadi K, Mousafarkhane E, Hoseini B, Aalaei S. Impact of Telemedicine on Women's Sexual Dysfunction: A Systematic Review and Meta-Analysis. *J Nurs Midwifery Sci*. 2024;**11**(3). <https://doi.org/10.5812/jnms-149235>.
54. Han M, Wang X, Yang H, Wang X, Zhu H, Song M. Efficacy of online cognitive behavioral therapy for nonorganic erectile dysfunction in reproductive-age males during the COVID-19 pandemic: A randomized wait list-controlled trial. *J Sex Med*. 2023;**20**(11):1325-32. [PubMed ID: 37740951]. <https://doi.org/10.1093/jsxmed/qdad117>.
55. Hucker A, McCabe MP. Incorporating Mindfulness and Chat Groups Into an Online Cognitive Behavioral Therapy for Mixed Female Sexual Problems. *J Sex Res*. 2015;**52**(6):627-39. [PubMed ID: 24742343]. <https://doi.org/10.1080/00224499.2014.888388>.
56. Hamidi F, Elyasi F, Mousavinasab SN, Ghasemi A, Keshavarz Z, Shahhosseini Z. Effect of a social network-based supportive program (WhatsApp) on the sexual self-concept of women with breast cancer: A single-blind-randomized controlled trial. *Palliat Support Care*. 2023;**21**(1):27-37. [PubMed ID: 35257652]. <https://doi.org/10.1017/S1478951522000220>.
57. Brotto LA, Stephenson KR, Zippin N. Feasibility of an Online Mindfulness-Based Intervention for Women with Sexual Interest/Arousal Disorder. *Mindfulness*. 2022;**13**(3):647-59. [PubMed ID: 35035598]. [PubMed Central ID: PMC8750367]. <https://doi.org/10.1007/s12671-021-01820-4>.
58. Brotto LA, Dunkley CR, Breckon E, Carter J, Brown C, Daniluk J, et al. Integrating Quantitative and Qualitative Methods to Evaluate an Online Psychoeducational Program for Sexual Difficulties in Colorectal and Gynecologic Cancer Survivors. *J Sex Marital Ther*. 2017;**43**(7):645-62. [PubMed ID: 27592509]. <https://doi.org/10.1080/0092623X.2016.1230805>.
59. Hummel SB, van Lankveld J, Oldenburg HSA, Hahn DEE, Kieffer JM, Gerritsma MA, et al. Efficacy of Internet-Based Cognitive Behavioral Therapy in Improving Sexual Functioning of Breast Cancer Survivors: Results of a Randomized Controlled Trial. *J Clin Oncol*. 2017;**35**(12):1328-40. [PubMed ID: 28240966]. <https://doi.org/10.1200/JCO.2016.69.6021>.