



Mind-Body Interventions and Male Sexual Health: A Systematic Review

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Abstract

Objectives: Male sexual health is influenced by biological, psychological, and relational factors, but evidence for mind-body interventions in men remains heterogeneous. This systematic review evaluated the effect of mind-body relation on male sexual health outcomes.

Methods: This review was reported in accordance with PRISMA 2020. PubMed, Scopus, and Web of Science were searched for English-language, peer-reviewed studies published between January 2000 and October 2025. Eligible studies evaluated adult men receiving a nonpharmacological mind-body or psychosexual intervention and reported a male sexual-health outcome. Randomized trials and prospective intervention studies, including feasibility/pilot studies, were eligible. Mixed-sex studies were eligible only when male sexual outcomes were separately extractable. Risk of bias was assessed using RoB 2 for randomized trials and the JBI quasi-experimental tool for uncontrolled intervention studies; certainty was summarized using GRADE principles.

Results: After reappraisal of eligibility, four studies were retained. Interventions included psychosexual education, mindfulness-based group therapy, mindfulness-based couple therapy after prostate cancer, and a 12-week app-based multimodal program. Psychosexual education improved sexual assertiveness and reduced fear of intercourse. A small uncontrolled mindfulness pilot suggested moderate improvement in erectile function and a large improvement in sexual satisfaction. The app-based randomized trial reported an increase in IIEF-5 score of 4.5 points versus 0.2 in the waiting-list group ($P < 0.0001$), along with improvements in disease-related quality of life and patient activation. The evidence was too heterogeneous for meta-analysis, and certainty ranged from very low to low.

Conclusions: Mind-body and psychosexual interventions may improve selected male sexual-health outcomes, particularly erectile function, sexual satisfaction, and psychosexual confidence. However, the small number of studies, methodological limitations, heterogeneity, and restricted search coverage preclude firm conclusions about efficacy. Larger preregistered randomized trials using standardized sexual outcomes are needed.

Keywords: Male sexual health, Erectile dysfunction, Mindfulness, Psychosexual intervention, Mind-body intervention, Systematic review

Introduction

Male sexual health encompasses multiple dimensions, including erectile function, libido, ejaculation and orgasm, sexual satisfaction, relational well-being, and psychological well-being. According to the World Health Organization (WHO), sexual health is “a state of physical, emotional, mental and social well-being in relation to sexuality” and is not merely the absence of disease, dysfunction, or infirmity (1,2). This definition conceptualizes sexual health as a multidimensional construct that extends beyond the presence or absence of a specific sexual disorder. Accordingly, male sexual function is best considered within a biopsychosocial framework in which biological, psychological, interpersonal, and relational factors interact to influence sexual well-being (3,4).

Erectile dysfunction (ED) is a typical example of a sexual disorder in men in which a purely biomedical perspective can become inadequate. According to the current European Association of Urology guidelines, ED frequently has mixed organic and psychogenic origins,

and a thorough medical and sexual history taking should involve information about life stressors, partner problems, and cognitive aspects of sexual performance (5). This point of view is especially relevant to the present systematic review, as the interventions under discussion are expected to affect psychological, behavioral, and relational processes that may coexist with biological factors.

Psychological distress can affect sexual functioning through several mechanisms. For instance, anxiety and performance monitoring can take up attention from erotic stimuli, increase sympathetic arousal, and trigger avoidance. Depressive symptoms can lower sexual motivation and sexual pleasure, and chronic stress can affect autonomic and neuroendocrine regulation. All of these psychological mechanisms can interact reciprocally with physiological aspects of sexual function: biological impairment can produce anticipatory anxiety and relationship problems, and vice versa (4).

Cognition is recognized as an important determinant of sexual function in a systematic review of 67 studies



examining cognitive processing and sexual function in both females and males. This review identified recurrent relationships related to cognitive distraction, attentional control, automatic sexual thoughts, causal attribution, efficacy expectation, and perceived performance demand (6). Anxiety is also clinically relevant since a systematic review of men with anxiety disorders reported a median prevalence of ED of 20.0% despite the wide range of estimates across different samples and methodologies (7). Therefore, the interventions aimed at attentional control, catastrophic expectations, self-monitoring, and performance anxiety seem to be plausible, even though the psychological determinants of sexual dysfunction can vary a lot among individuals.

Psychological and mind-body interventions try to affect these psychological mechanisms independently of pharmacology. Mindfulness-based interventions cultivate non-judgmental awareness of moment-to-moment experience; psycho-sexual education reduces fear and negative beliefs; cognitive-behavioral strategies help challenge dysfunctional cognitions and avoidance; and multimodal digital interventions can combine psychological techniques with behavioral and physical ones. Mindfulness-based interventions demonstrated effectiveness in stress regulation and emotional functioning in some clinical settings; however, evidence is condition-specific and cannot be transferred automatically to male sexual dysfunction (5).

In addition, the general evidence on nonpharmacological treatment implies that intervention format can play an important role. A systematic review and meta-analysis of bibliotherapy for sexual dysfunctions included 15 randomized controlled trials (RCTs) and 1,113 participants (332 males), but limitations in study designs and precision prevented making firm conclusions on many outcomes (8). Similarly, the systematic review of mindfulness-based interventions included 15 original studies, out of which only one was about ED in men, indicating significant sex imbalance in this research area (9). All these considerations make the present systematic review of interventions focused on men relevant and necessary, and also show that it is important to assess the evidence on the male population separately.

Specific studies for men span various populations and intervention formats. Some of them address the problem of ED directly, while others examine sexual function in cardiac rehabilitation or among prostate cancer survivors. The heterogeneity of studies makes it difficult to interpret results, and thus, it is important to distinguish validated measures of male sexual function from generic well-being measures. The goal of this systematic review is to evaluate the impact of nonpharmacological mind-body and psychosexual interventions on male sexual function and to estimate methodological quality and certainty of evidence.

Methods

Reporting Standard and Protocol

This review has been updated and reported according to the PRISMA 2020 statement (10). The original review protocol was not prospectively registered with PROSPERO or any other registry. The lack of prospective registration of the protocol is explicitly noted here as a methodological limitation. A completed PRISMA 2020 checklist is included in Supplementary file 1.

Eligibility Criteria

Studies were eligible for inclusion if they satisfied the following criteria: 1- adult male participants (≥ 18 years) or a mixed-sex or couples sample where separate data for male sexual health outcomes were presented; 2- a non-pharmacological intervention aimed at psychological, behavioral, relational or mind-body processes that would affect sexual health; 3- at least one male sexual health outcome including erectile function, sexual satisfaction, sexual assertiveness, fear/distress related to intercourse, or another validated measure of male sexual function; 4- RCT, randomized cross-over trial or a prospective intervention/feasibility study; and 5- a peer-reviewed article in English language. Studies with only cross-sectional designs, reviews, case reports, exclusively female participants, studies where male sexual health outcomes could not be extracted separately, and studies that had only a pharmacological intervention were excluded. Outcomes for general quality of life, sleep, burnout, mindfulness, or emotional well-being were not considered meeting eligibility unless there was also an outcome for male sexual health.

Information Sources and Search Strategy

A comprehensive literature search was conducted to identify studies evaluating nonpharmacological mind-body, psychological, and psychosexual interventions for male sexual-health outcomes. The following electronic databases were searched from 1 January 2000 to 31 Oct 2025: PubMed/MEDLINE, Scopus, Web of Science Core Collection. To identify ongoing, completed, or unpublished studies, ClinicalTrials.gov and the World Health Organization International Clinical Trials Registry Platform (WHO ICTRP) were also searched. In addition, reference lists of all included studies and relevant systematic reviews were manually screened, and forward citation tracking was performed to identify additional potentially eligible publications.

The search strategy was developed around three principal concepts: (1) mind-body, psychological, behavioral, relational, and psychosexual interventions; (2) male sexual-health and sexual-function outcomes; and (3) male participants. Both controlled vocabulary and free-text terms were used, with database-specific adaptation of subject headings, including Medical Subject

Headings (MeSH) in PubMed, Emtree terms in Embase, and the corresponding controlled vocabulary available in PsycINFO and CINAHL.

Terms related to the intervention concept included combinations and variants of mind-body therapy, mindfulness, mindfulness-based intervention, meditation, cognitive behavioral therapy, cognitive behavioral therapy, CBT, psychotherapy, psychosexual therapy, psychosexual counseling, sex therapy, sexual counseling, sensate focus, psychoeducation, psychosexual education, relaxation, guided imagery, acceptance and commitment therapy, and couple- or couples-based therapy. Terms related to male sexual health included erectile dysfunction, impotence, sexual dysfunction, sexual function, sexual health, sexual satisfaction, sexual desire, libido, sexual quality of life, sexual assertiveness, and fear or distress related to sexual intercourse. Male-specific terms included male, males, men, and man (See documented search strategy in Supplementary file 1).

In PubMed, the search combined relevant MeSH terms with title/abstract keywords. A representative search syntax was as follows:

("Mind-BodyTherapies"[Mesh]OR"Mindfulness"[Mesh] OR "Meditation"[Mesh] OR "Cognitive Behavioral Therapy"[Mesh] OR "Psychotherapy"[Mesh] OR "Sex Counseling"[Mesh] OR "mind-body"[tiab] OR "mind body"[tiab] OR mindfulness[tiab] OR "mindfulness-based"[tiab] OR meditation[tiab] OR "cognitive behavioral therapy"[tiab] OR "cognitive behavioural therapy"[tiab] OR CBT[tiab] OR psychosexual[tiab] OR "psychosexual therapy"[tiab] OR "psychosexual counseling"[tiab] OR "psychosexual counselling"[tiab] OR "sex therapy"[tiab] OR "sexual counseling"[tiab] OR "sexual counselling"[tiab] OR "sensate focus"[tiab] OR psychoeducation[tiab] OR "psychosexual education"[tiab] OR "psycho-sexual education"[tiab] OR relaxation[tiab] OR "guided imagery"[tiab] OR "acceptance and commitment therapy"[tiab] OR "couple therapy"[tiab] OR "couples therapy"[tiab]) AND ("Erectile Dysfunction"[Mesh] OR "Sexual Dysfunction, Physiological"[Mesh] OR "Sexual Health"[Mesh] OR "Libido"[Mesh] OR "erectile dysfunction"[tiab] OR impotence[tiab] OR "sexual dysfunction"[tiab] OR "sexual function"[tiab] OR "sexual health"[tiab] OR "sexual satisfaction"[tiab] OR "sexual desire"[tiab] OR libido[tiab] OR "sexual quality of life"[tiab] OR "sexual assertiveness"[tiab] OR "fear of intercourse"[tiab]) AND ("Male"[Mesh] OR male*[tiab] OR men[tiab] OR man[tiab]).

Study Selection

Two independent reviewers screened titles/abstracts and evaluated full texts for potential inclusion. Disagreements were resolved through discussion, with further consultations with other authors when consensus could not be reached. Eligibility criteria were applied again during the revision process. Specifically, the article by

Grensman et al was excluded due to its study population composed of 84 women and 10 men without presenting any male sexual function results separately (11). Full-text exclusions were categorized into the following groups: pharmacological-only intervention, ineligible design, no male-specific sexual outcome, ineligible population, or another predefined reason.

Data Extraction

Study design, participant characteristics, sample size, intervention and comparison characteristics, duration, outcome measurement instruments, follow-up time points, sexual health results, and adverse events were independently extracted by two authors. Only nonsexual secondary outcomes were kept as the contextual background for the studies presenting the directly eligible male sexual health outcome. Discrepancies were resolved by discussion.

Risk of Bias Assessment

Risk of bias has been independently assessed by two reviewers. RCTs were assessed using the Cochrane RoB 2 tool, which evaluates bias related to the randomization process, deviations from intended interventions, missing outcome data, measurement of outcomes, and reporting of results (12). Uncontrolled prospective feasibility/ intervention studies were assessed using the JBI critical appraisal tool for quasi-experimental studies (13). Decisions were based on the information provided in the articles; when reporting was inadequate, a conservative decision was taken. A detailed risk-of-bias assessment is provided in Supplementary file 1.

Certainty of Evidence and Synthesis

As the included studies differed in population, intervention, comparison, outcome measurement instrument, and design, pooling the results was not considered appropriate. Results were synthesized narratively. Certainty of evidence was evaluated for each outcome using the GRADE approach, considering risk of bias, inconsistency, indirectness, imprecision, and publication bias (14). Certainty judgments are presented in Table 3 and Supplementary file 1.

Results

Study Selection

The original database searches identified 609 records, of which 219 were reported as duplicates, leaving 390 records for screening. The subsequent counts reported in the original manuscript did not reconcile arithmetically. After consistent reapplication of the revised eligibility criteria, Grensman et al was excluded because male-specific sexual outcomes could not be extracted from the predominantly female sample (11). Four studies therefore remain in the revised qualitative evidence table. Figure 1 presents the PRISMA 2020 structure and clearly flags the screening

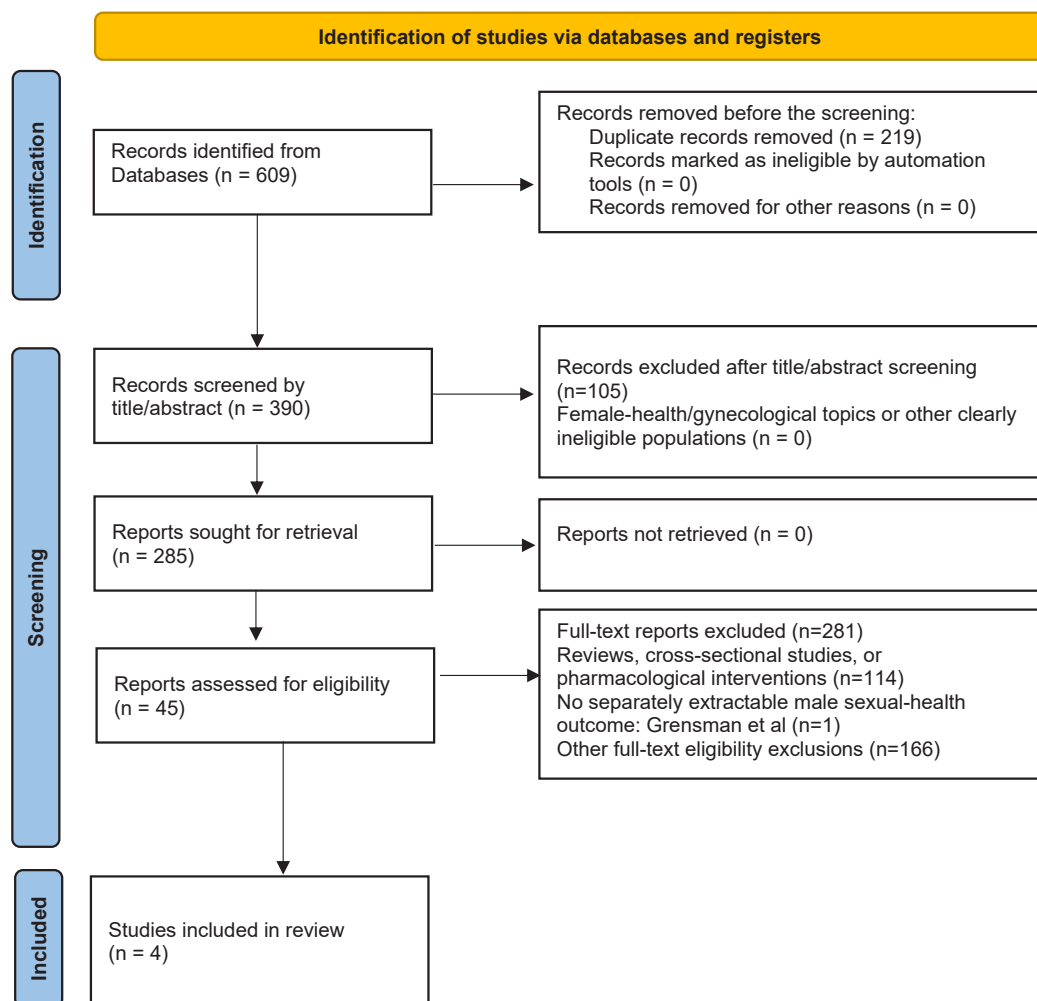


Figure 1. PRISMA flowchart of the study selection.

counts that require confirmation from the original screening log before resubmission.

Characteristics and Findings of Included Studies

The four included studies comprised two RCTs and two uncontrolled feasibility studies. Their characteristics and principal findings are summarized in Table 1. Samples used were males who had undergone coronary artery bypass grafting. These men had situational ED, prostate cancer survivors and their partners, and men with ED in a digital health study. The duration of interventions ranged from two psycho-sexual education sessions to 12 weeks.

Study-Level Findings

Sorosh et al investigated a psychosexual education program in males with cardiac rehabilitation. Following adjustment for baseline scores, the intervention led to increased sexual assertiveness and decreased fear associated with sexual intercourse, while no differences were found in other psychosexual factors and in sexual quality of life (15). This finding suggests a more specific

effect on confidence and fear than a general effect on all the measured factors.

Bossio et al conducted a four-week mindfulness-based group intervention in 10 men who have situational ED. Within-person effect sizes were moderate ($d=0.63$) for erectile function and large ($d=1.02$) for overall sexual satisfaction between pretreatment and six-month follow-up. Since the study was performed to prove feasibility and did not involve a control group, these results prove feasibility but do not prove efficacy (16).

Bossio et al examined a four-session mindfulness-based group intervention in 14 couples of prostate-cancer survivors. Male partners displayed a moderate improvement in overall sexual satisfaction at six months ($d=0.50$) and a large improvement in mindfulness ($d=0.91$). Again, the lack of control and the small sample prevent causal inference (17).

The largest included randomized trial was conducted by Kliesch et al ($n=241$). In 12 weeks, IIEF-5 score increased by 4.5 points in the app group and by 0.2 points in the waiting-list group ($P<0.0001$). Disease-related quality of life

Table 1. Characteristics and Principal Findings of Included Studies

Study	Design/participants	Intervention/comparator	Male sexual-health measures	Key findings
Soroush et al (15)	RCT; 43 men aged 35–70 years after CABG (23 intervention, 20 control)	Levin-based psychosexual education program: two 1-h sessions + routine education vs routine education	Multidimensional Sexual Questionnaire; Sexual Quality of Life Questionnaire	Sexual assertiveness improved ($P=0.034$), and fear of intercourse decreased ($P=0.007$). Other psychosexual domains and sexual quality of life were not significantly different.
Bossio et al (16)	Single-arm mixed-methods feasibility pilot; 10 men with situational ED, age 20–67 years	Four weekly 2.25-h mindfulness-based group sessions with psychoeducation, sex therapy, mindfulness skills, and home practice	IIEF; relationship and mindfulness measures; sexual satisfaction	At 6 months, erectile function showed a medium within-person effect ($d=0.63$) and overall sexual satisfaction a large effect ($d=1.02$). No control group; efficacy cannot be inferred.
Bossio et al (17)	Single-arm mixed-methods feasibility study; 14 prostate-cancer survivor couples (14 men)	Four weekly 2-h mindfulness-based couple group sessions with psychoeducation, sex/cognitive therapy, and mindfulness	IIEF overall satisfaction; GMSEX; dyadic adjustment; sexual intimacy-related measures	Male survivors showed a moderate improvement in overall sexual satisfaction at 6 months ($d=0.50$); mindfulness increased ($d=0.91$). No control group.
Kliesch et al (18)	Randomized single-blind controlled trial; 241 men with ED (122 intervention, 119 waiting-list control)	12-week app-based multimodal program including cardiovascular/ pelvic-floor training, mindfulness, sensate focus, psychological support, and ED education vs waiting list/current management	IIEF-5; QOL-Med-15; PAM-13	IIEF-5 improved by 4.5 points vs 0.2 in controls ($P<0.0001$). QOL-Med improved by 20.5 vs 0.0 and PAM-13 by 11.2 vs 0.6 (both $P<0.0001$).

increased by 20.5 points in the former group and changed negligibly in the latter, while patient activation increased by 11.2 points versus 0.6 points (both $P<0.0001$) (18). Although this is the strongest study in the current review, it includes several intervention components; therefore, its results do not isolate mindfulness' contribution from that of any other component.

Risk of Bias

Both randomized trials were considered to have some concerns due to incomplete information about allocation concealment and blinding in the published papers, as well as self-reporting in behavioral interventions. The two feasibility studies by Bossio et al had substantial limits due to the absence of a control group and a small sample size (Table 2).

Overall certainty of evidence ranged from low to very low. Evidence concerning erectile function and sexual assertiveness/fear of intercourse was rated as low certainty, whereas evidence regarding sexual satisfaction and intimacy was rated as very low certainty. Downgrading was mainly related to risk of bias, small sample sizes, imprecision, heterogeneity, and limited replication. Outcome-level GRADE judgments are summarized in Table 3.

Discussion

The current systematic review revealed a limited and heterogeneous group of studies indicating potential positive effects of mind-body and psychosexual approaches on certain dimensions of male sexual health. The most solid evidence was provided by the

RCT of the mobile application for ED. In turn, studies of mindfulness techniques were mainly feasibility trials, providing preliminary but not definitive evidence of their effectiveness. The brief psychosexual education trial demonstrated a beneficial effect on certain psychological dimensions of sexual performance—sexual assertiveness and fear of intercourse.

However, the general trend of findings is in accordance with the current guidelines in clinical practice, which emphasize the importance of considering the psychosexual history, cognition, and social context during the evaluation and treatment of ED, as well as the potential value of psychosocial interventions, including psychosexual education and cognitive-behavioral techniques (5). Nonetheless, the endorsement of a treatment class by the clinical guidelines does not necessarily mean that all mind-body approaches are equally effective. The current review involves only four studies.

The results provide evidence in favor of the biopsychosocial understanding of men's sexual problems. Psychosexual education can diminish fear, myths, and avoidance, while mindfulness could lower evaluative attention and facilitate non-judgmental awareness during sexual activity. However, currently available data cannot indicate the contribution of any intervention element to effectiveness. This is especially true for Kliesch et al's study since it combined cardiovascular training, pelvic floor muscle exercises, mindfulness, sensate focus, psychotherapeutic support, and education (18). Thus, its effectiveness can be viewed as evidence for a multimodal digital intervention rather than mindfulness alone.

Proposed mechanisms are also in line with the existing

Table 2. Summary Risk-of-Bias Appraisal

Study	Tool	Key domain-level concerns	Overall appraisal
Soroush et al (2018)	RoB 2	Randomization/allocation reporting: some concerns; deviations: some concerns; missing data: some concerns; outcome measurement: some concerns; selective reporting: low concern	Some concerns
Kliesch et al (2024)	RoB 2	Randomization: some concerns based on available reporting; deviations: some concerns; missing data: low concern; outcome measurement: some concerns; selective reporting: low concern	Some concerns
Bossio et al (2018)	JBI quasi-experimental	Clear intervention/outcome sequence and repeated measurements; no control group; very small sample; self-reported outcomes	Serious limitations for causal inference
Bossio et al (2021)	JBI quasi-experimental	Clear intervention/outcome sequence and follow-up; no control group; small sample; self-reported outcomes	Serious limitations for causal inference

Table 3. GRADE-Based Certainty of Evidence by Outcome Domain

Outcome domain	Evidence base	Main reasons for downgrading	Certainty
Erectile function	1 RCT (n=241) + 1 uncontrolled pilot (n=10)	Risk of bias; heterogeneity of intervention/design; limited replication	Low
Sexual satisfaction/intimacy	2 small uncontrolled feasibility studies	Very small samples; no control groups; imprecision; indirectness	Very low
Sexual assertiveness/fear of intercourse	1 small RCT (n=43)	Risk-of-bias concerns; imprecision; single-study evidence	Low
Disease-related quality of life/patient activation	1 RCT (n=241)	Single-study evidence; outcomes secondary/indirect to core sexual function	Low

cognitive literature. In their review, Tavares et al noted that distraction from erotic stimuli, negative sexual thoughts, expectations, and interpretations of sexual events are repeatedly associated with sexual functioning (6). Mindfulness and cognitive-behavioral techniques might thus be helpful not only because they decrease general distress but also because they can change the organization of attention and meaning during sexual situations. Nevertheless, the mechanism's plausibility differs from that of established mediation. None of the included studies was designed to show that changes in attention, anxiety, or mindfulness mediate improvements in the erectile or satisfaction outcomes.

Clinically speaking, there is a need to differentiate statistical significance from clinical significance. According to Kliesch et al, there was a mean improvement in the score on the IIEF-5 scale of 4.5 points compared to 0.2 points in the control group (6). It was a substantial change on a 5-item erectile function scale. However, it should be noted that the widely cited 4-point minimal clinically important difference was established for the six-item domain of erectile function of the full IIEF and was based mostly on the phosphodiesterase-5 inhibitor trials (19). Thus, it is incorrect to equate the 4.5-point change on IIEF-5 to the 4-point change on IIEF-EF. The trial authors viewed it as clinically important, but a verification against an IIEF-5-specific anchor and longer-term patient-centered outcomes would further enhance the interpretation.

External literature also provides an example of the importance of being cautious when translating statistically significant differences into clinical practice

recommendations. A bibliotherapy meta-analysis found some beneficial effects of bibliotherapy on sexual functioning and satisfaction but stressed heterogeneity, small or methodologically flawed trials, and uncertainty about the magnitude and sustainability of effects in men (8). Similarly, the mindfulness systematic review found the evidence about men's sexual dysfunction quite sparse, with just one ED study among 15 included studies (9). Thus, the present findings provide some male-specific evidence in the area that is much less developed than the literature on sexual dysfunction in women.

The review does not provide information on whether combining pharmacological treatment with the mind-body intervention is more effective than either alone, due to the exclusion criterion. Clinical trials with pharmacological interventions, therefore, are not used to support the conclusions. Clinically, the present findings suggest considering psychologically informed or mind-body approaches as potential components of personalized treatment regimens when psychological, relational, or behavioral factors play a crucial role. However, they do not support abandoning evidence-based medicine.

The multimodal nature of the intervention deserves some discussion. As mentioned above, according to a 2024 systematic review and meta-analysis on physical activity for ED, exercise interventions can improve erectile function in men without phosphodiesterase-5 inhibitor use, with the strongest signal for aerobic exercise (20). This external evidence does not allow attribution of the EDDIG trial effect to exercise, mindfulness, pelvic floor exercises, or psychotherapeutic support separately. On the contrary, it confirms the likelihood of several active

intervention elements' contribution. Thus, future trials are needed to determine which elements are necessary, which are synergistic, and which can be safely dropped.

The evidence base contains some critical flaws. First, three bibliographic databases were searched. Sources such as Embase, PsycINFO, Cochrane CENTRAL, CINAHL, trial registries, conference proceedings, and grey literature were not included. This increases the risk of retrieval and publication biases. Secondly, the original protocol was not prospectively registered. The review was limited to English-language peer-reviewed full-text publications. There was considerable heterogeneity in designs, populations, interventions, and outcomes. Two included studies were also small uncontrolled feasibility studies. The certainty of the outcome-level evidence was therefore low or very low. Finally, the original counts of study selection were provided inconsistently. The revised PRISMA structure requires reconciliation with the original screening log before resubmission.

In the future, trials should be preregistered and designed in accordance with a randomized design; allocation and attrition should be reported transparently. Standardized male sexual health outcomes, for instance, validated IIEF domains, should be used. In addition, there is a need for clinically interpretable responder or threshold analysis. Component or factorial designs would be useful for separating the contribution of mindfulness, psychosexual counseling, physical training, pelvic floor exercises, and educational elements. Moreover, a longer follow-up period should be used to determine whether the benefits persist after the intervention ends.

In addition to all that, future research should report intervention adherence, treatment fidelity, partner involvement, adverse events, and clinically interpretable responder outcomes, in addition to mean changes on questionnaires. Since sexual function is highly dependent on the relationship context, comorbidity, medication exposure, and the baseline severity, sufficiently powered trials should prespecify subgroup and moderator analyses rather than rely on post hoc comparisons. Finally, trials of digital or self-guided interventions should be documented by engagement metrics and the degree of clinician support.

Conclusion

There is limited evidence that non-pharmacological mind-body and psychosexual interventions can improve certain outcomes in male sexual health, including erectile function, sexual satisfaction, sexual assertiveness, and fear related to intercourse. The most convincing evidence came from a relatively large randomized trial of a multicomponent, app-based ED intervention, whereas the evidence for mindfulness was based on small, uncontrolled feasibility studies. Given the low to very low certainty of the evidence, these findings should be considered promising but not definitive. More rigorous, preregistered randomized trials with standardized sexual outcomes and

clinically meaningful interpretation of effects are needed.

Authors' Contribution

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Conflict of Interests

Authors have no conflict of interest.

Data Availability

The data extraction form and extracted review dataset are available from the corresponding author upon reasonable request.

Declaration of AI-Assisted Tools in the Writing Process

To improve the linguistic quality and logical coherence of the English manuscript, the authors utilized ChatGPT-4 as a supportive tool during the translation and editing process. All scientific content, data interpretation, and final revisions were performed solely by the authors, who take full responsibility for the integrity and accuracy of the presented information.

Ethical Issues

Not applicable.

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Supplementary files

Supplementary file 1 contains (a) Documented Search Strategy and Information-Source Coverage, (b) PRISMA 2020 Reporting Checklist, (c) Detailed Risk-of-Bias Assessment, and (d) GRADE Certainty-of-Evidence Assessment.

References

1. Arabkari Z, Alipour F, Fallahi-Khoshknab M, et al. Assessing Sexual Health: A Comprehensive Scoping Review of

- Measurement Questionnaires. *Med J Islam Repub Iran.* 2024;38:139.
2. Ma MC, Chao JK, Hung JY, Sung SC, Chao IC. Sexual Activity, Sexual Dysfunction, and Sexual Life Quality Among Psychiatric Hospital Inpatients With Schizophrenia. *J Sex Med.* 2018;15(3):324-333. doi:10.1016/j.jsxm.2018.01.008
 3. Nimbi FM, Tripodi F, Rossi R, Navarro-Cremades F, Simonelli C. Male Sexual Desire: An Overview of Biological, Psychological, Sexual, Relational, and Cultural Factors Influencing Desire. *Sex Med Rev.* 2020;8(1):59-91. doi:10.1016/j.sxmr.2018.12.002
 4. Herder T, Spoelstra SK, Peters AWM, Knegtering H. Sexual dysfunction related to psychiatric disorders: a systematic review. *J Sex Med.* 2023;20(7):965-976. doi:10.1093/jsxmed/qdad074
 5. Skott M, Gnech M, Bujons A, et al. Summary of the European Association of Urology/European Society of paediatric urology guidelines on transition in urology. *J Pediatr Urol.* 2026;22(1):105632. doi:10.1016/j.jpuro.2025.10.002
 6. Tavares IM, Moura CV, Nobre PJ. The Role of Cognitive Processing Factors in Sexual Function and Dysfunction in Women and Men: A Systematic Review. *Sex Med Rev.* 2020;8(3):403-430. doi:10.1016/j.sxmr.2020.03.002
 7. Velurajah R, Brunckhorst O, Waqar M, McMullen I, Ahmed K. Erectile dysfunction in patients with anxiety disorders: a systematic review. *Int J Impot Res.* 2022;34(2):177-186. doi:10.1038/s41443-020-00405-4
 8. van Lankveld JJDM, van de Wetering FT, Wylie K, Scholten RJPM. Bibliotherapy for Sexual Dysfunctions: A Systematic Review and Meta-Analysis. *J Sex Med.* 2021;18(3):582-614. doi:10.1016/j.jsxm.2020.12.009
 9. Jaderek I, Lew-Starowicz M. A Systematic Review on Mindfulness Meditation-Based Interventions for Sexual Dysfunctions. *J Sex Med.* 2019;16(10):1581-1596. doi:10.1016/j.jsxm.2019.07.019
 10. Page MJ, McKenzie JE, Bossuyt PM, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. *BMJ.* 2021;372:n71. doi:10.1136/bmj.n71
 11. Grensman A, Acharya BD, Wändell P, et al. Effect of traditional yoga, mindfulness-based cognitive therapy, and cognitive behavioral therapy, on health related quality of life: a randomized controlled trial on patients on sick leave because of burnout. *BMC Complement Altern Med.* 2018;18(1):80. doi:10.1186/s12906-018-2141-9
 12. Sterne JAC, Savović J, Page MJ, et al. RoB 2: a revised tool for assessing risk of bias in randomised trials. *BMJ.* 2019;366:l4898. doi:10.1136/bmj.l4898
 13. Barker TH, Habibi N, Aromataris E, et al. The revised JBI critical appraisal tool for the assessment of risk of bias for quasi-experimental studies. *JBI Evid Synth.* 2024;22(3):378-388. doi:10.11124/JBIES-23-00268
 14. Guyatt GH, Oxman AD, Vist GE, et al. GRADE: an emerging consensus on rating quality of evidence and strength of recommendations. *BMJ.* 2008;336(7650):924-926. doi:10.1136/bmj.39489.470347.AD
 15. Soroush A, Komasi S, Heydarpour B, Ezzati P, Saeidi M. The effectiveness of psychosexual education program on psychological dimensions of sexual function and its quality in cardiac rehabilitation patients. *Iranian Journal of Cardiovascular Medicine.* 2018;7(2):82-6.
 16. 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):1478-1490. doi:10.1016/j.jsxm.2018.08.013
 17. Bossio JA, Higano CS, Brotto LA. Preliminary Development of a Mindfulness-Based Group Therapy to Expand Couples' Sexual Intimacy after Prostate Cancer: A Mixed Methods Approach. *Sex Med.* 2021;9(2):100310. doi:10.1016/j.esxm.2020.100310
 18. Kliesch S, Cremers JF, Krallmann C, 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):1003-1010. doi:10.1016/j.euf.2024.05.020
 19. Rosen RC, Allen KR, Ni X, Araujo AB. Minimal clinically important differences in the erectile function domain of the International Index of Erectile Function scale. *Eur Urol.* 2011;60(5):1010-1016. doi:10.1016/j.eururo.2011.07.053
 20. Chen Z, Wang J, Jia J, Wu C, Song J, Tu J. Effect of different physical activities on erectile dysfunction in adult men not receiving phosphodiesterase-5 inhibitors therapy: A systematic review and meta-analysis. *Andrology.* 2024;12(8):1632-1641. doi:10.1111/andr.13682

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