

## Review Paper

## Effectiveness of Mindfulness Interventions on Womens Sexual Health: A Systematic Review



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## ABSTRACT

**Background and Objective:** Sexual satisfaction and sexual function are important in women's lives. Given the prevalence of sexual disorders among women, this study aimed to investigate the effectiveness of mindfulness-based interventions on women's sexual health.

**Materials & Methods:** This systematic review study was conducted in 2023. A comprehensive search in databases such as Scopus, PubMed, Embase, PsycINFO, Cochrane Library, MagIran, SID, IranDoc, IranMedex, IRCT webiste, Google Scholar was conducted using the keywords "mindfulness interventions", "sexual satisfaction", "sexual function", "sexual health", and "women" for related studies published from 2015 to 2023. After screening the titles, abstracts, and fulltexts of 1003 studies, 14 interventional studies were finally included.

**Results:** The findings were divided into two categories of sexual performance and sexual satisfaction. Eleven studies assessed the effects of interventions on sexual function, while five studies focused on sexual satisfaction.

**Conclusion:** The mindfulness-based interventions can improve sexual satisfaction and sexual performance of women. Therefore, such interventions are recommended to increase sexual satisfaction and sexual function of women.

**Keywords:** Sexual satisfaction, Mindfulness, Female, Sexual function

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## Introduction

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exual health is one of the main aspects of personal health, affecting people at any age [1, 2]. Sexual health refers to a state where both men and women enjoy healthy, appro-

priate, and normal sexual relationships, such that their physical, mental, and behavioral conditions are favorable and reflects a kind of harmony and affection in married life [3]. Healthy sexual relationship can help strengthen emotional bonds between couples and prevent the development and exacerbation of mental dis-

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orders and the disintegration of family foundation and society [4]. Sexual activity can be affected by individual traits, interpersonal relations, family/social/cultural conditions, environment, sexual activity history of couples, physical and mental health of couples, and hormonal status [5]. Promoting women's sexual health has become interesting research topic, which primarily focuses on identifying safe and cost-effective interventions than can improve the quality of sexual relationships and treat sexual disorders [6, 7].

Sexual satisfaction refers to an individual's perception of the level of pleasure during sexual activities and reaching the peak of sexual pleasure [8]. Sexual satisfaction is important because the strength of marital relations depends on having satisfactory sexual relations, which can make life's hardships and problems bearable for couples [9, 10]. Sexual satisfaction and sexual health are crucial in preventing sexual dysfunction [5]. According to the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders, sexual dysfunction is characterized by feeling extreme distress and interpersonal strain for at least six months, excluding substance abuse or medication related sexual dysfunction. It is categorized into three diagnostic categories: Disorders of desire, arousal, and pain. Disorders of desire include reduced desire (in men), low interest; arousal disorders include erectile disorder, premature ejaculation, delayed ejaculation, orgasmic disorder (in women); pain disorders include genito-pelvic pain/penetration disorder, substance-related disorder, or other disorders [11, 12].

Mindfulness is characterized by paying attention to the present moment intentionally and non-judgmentally [13]. Mindfulness-based sex therapy emphasizes the focused attention on both internal and external experiences as they occur, helping the individual become more aware of the present, increasing nonjudgmental observation, and subsequently reducing automatic reactions [14]. Mindfulness plays an important role in treating women's sexual health problems by facilitating her experience in the present moment. This, even in a short period, can provide a way to free a person from intrusive thoughts, anxiety, and stress [15]. Considering the potential of mindfulness-based therapy, it can be integrated with other therapeutic methods such as art therapy, cognitive-behavioral therapy (CBT), and improve the efficacy of treatment [14].

Numerous studies have been conducted on mindfulness, sexual satisfaction and sexual disorders, and have reported different results [16-18]. Systematic reviews in this field are needed for assessing the impact of health in-

terventions and making informed decisions. A systematic review can help address discrepancies by finding related studies and allowing the readers to see the outcomes of different studies, and make a more informed decision [19]. Despite the importance of sexual health in women and the high effectiveness of mindfulness-based interventions in addressing sexual problems, no systematic review has been conducted in this field. Therefore, this systematic review study aims to investigate the efficacy of mindfulness-based interventions on women's sexual health.

## Materials and Methods

This is a systematic review study of all interventional studies related to mindfulness, women's sexual satisfaction, and sexual performance, indexed in various databases. The search for these articles was conducted by the first and second authors in international databases ([Web of Science](#), [Scopus](#), [PubMed](#), [PsycINFO](#), [Embase](#), and [Cochrane Library](#)), and national databases including [MagIran](#), [Scientific Information Database \(SID\)](#), [IranDoc](#), [IranMedex](#), and the [Iranian Registry of Clinical Trials \(IRCT\)](#) website. The used MeSh-based keywords in English included "Psychological interventions", "women", and "sexual satisfaction", using Boolean operators "OR" and "AND". The keywords in Persian included "mindfulness interventions", "women", "sexual satisfaction", "dysfunction", "vaginismus", "arousal", "stimulation", and "sexual desire". A time limitation was set for all relevant articles such that on those published from 2015 to 2023 were included. To achieve maximum comprehensiveness in the search, all articles were also manually searched to find additional potential studies.

The inclusion criteria were being an interventional study (quasi-experimental, experimental, and clinical trials) focusing on mindfulness-based interventions for increasing women's sexual satisfaction and performance, clear sample sizes and outcomes, and being published in Farsi or English within the time period. The studies that did not meet the determined criteria, the abstracts for conference papers, and those without available full texts were excluded.

The quality of articles was assessed using the Cochrane risk-of-bias checklist [20] to evaluate potential biases, including selection bias (random sequence generation and allocation concealment), performance bias (blinding of participants and personnel), detection bias (blinding of outcome assessment), attrition bias (incomplete outcome data), reporting bias (selective reporting), and other biases. Articles were categorized into three quality levels: "High", "Low", and "Unclear". The quality assessment results are provided in [Table 1](#).

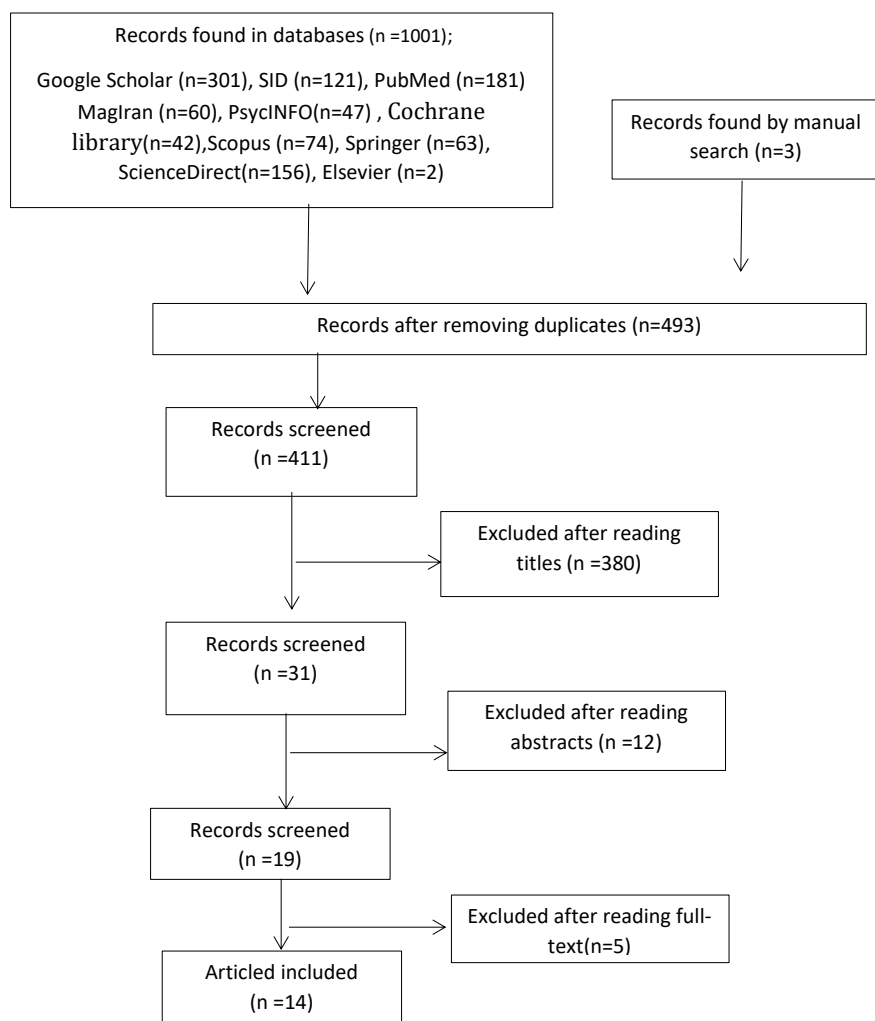


Figure 1. Diagram of the study search and selection processes

The initial search yielded 1001 articles. An additional 3 articles were found by manual search. After removing duplicates and irrelevant studies, 31 articles remained. After reading their abstracts, 12 articles were excluded, and 5 were removed after reading the full-texts. Finally, 14 studies were selected for the review (Figure 1).

After reading the abstracts and full texts of the eligible articles, the relevant data were extracted from them. The extracted information included the author’s name, the publication year, the study area, title, sample size, instruments, study design, study variables, study population, interventions, and outcomes. The data are presented in Table 2.

## Results

### Characteristics of studies

The findings extracted from 14 articles, were categorized into two groups: Sexual performance and sexual satisfaction. Eleven studies used mindfulness-based interventions for improving sexual performance and addressing sexual disorders in women [21, 22, 25-32, 34], while five studies examined the effect of mindfulness-based interventions on women’s sexual satisfaction [22-24, 33, 34]. Participants in these studies were women aged 17-56 years, with a total sample size of 557. The interventions in these studies were individual or group therapies, and none of them had used couple therapy. The participants included healthy women, women with sexual dysfunction, overweight women, pregnant women, women with multiple sclerosis [21-34].

**Table 1.** Assessing the quality of studies using Cochrane risk-of-bias checklist

Author (y)	Random Sequence Generation (Selection Bias)	Allocation Concealment (Selection Bias)	Blinding of Participants and Personnel (Performance Bias)	Blinding of the Raters (Detection Bias)	Incomplete Data (Attrition Bias)	Selective Reporting (Reporting Bias)	Other Bias
Nowroozi Dashtaki et al. 2021 [21]	L	L	H	L	L	UN	L
Shabani and Abdi, 2020 [22]	L	H	H	H	L	UN	L
Omidvar et al. 2020 [23]	L	H	H	L	L	UN	L
Nowrozi Dashtaki et al. 2021 [24]	L	L	H	L	L	UN	UN
Kazem Zadeh Atoofi and Naziry, 2022 [25]	H	H	H	H	L	UN	UN
Asadijajaei et al. 2020 [26]	L	L	H	L	L	UN	L
Brotto et al. 2016 [27]	L	L	H	H	L	UN	L
Soleimani and Soltanizadeh et al. 2022 [28]	L	H	H	H	L	UN	L
Paterson et al. 2016 [29]	L	H	H	H	L	UN	L
Hucker and McCabe, 2015 [30]	L	L	H	H	L	UN	L
Gunst et al. 2019 [31]	L	L	H	L	L	UN	L
Hocaloski et al. 2016 [32]	H	H	H	H	L	UN	L
Najiabary et al. 2022 [33]	H	H	H	H	L	UN	L
Saniei et al. 2022 [34]	L	L	H	H	L	UN	L

Abbreviations: L: Low risk of bias; UN: Unknown risk of bias; H: High risk of bias.

Current Psychosomatic Research

### Mindfulness-based interventions and women's sexual performance

Eleven studies investigated the effect of mindfulness-based interventions on the sexual performance of women [21, 22, 25-32, 34]. The participants in these studies included women with substance abuse, sexual dysfunction, and obesity. The number of intervention sessions ranged from 6 to 8, each session for 50-90 minutes. The contents of these interventions included focus on the present mo-

ment, physical mindfulness training, emotional mindfulness training, and body mindfulness training, thinking and feelings, and mindfulness regimen, which are often used in combination with other treatments [21, 22, 25-32, 34]. One study on women with substance abuse, used eight 90-minute sessions of mindfulness-based cognitive therapy. This intervention successfully improved the sexual performance of women [21]. In the study by Soleimani et al., 30 obese women underwent eight weekly mindfulness-based intervention, which resulted in im-

Table 2. Specifications of the reviewed studies

Author (y)	Location	Objective	Sample Size	Popula-tion	Study Design	Study Variables	Inter-vention	Tool	Results
Nowroozi Dashtaki et al. 2021 [21]	Iran	The effectiveness of mindfulness-based cognitive therapy on sexual desire and sexual arousal of women with drug abuse	28 women in two groups of 14	Women with Drug Abuse	Clinical trial	8 sessions of 90 min, twice a week, in group format	Sexual desire and sexual arousal	Female sexual function index (FSFI) and sexual desire diagnostic interview	Mindfulness-Based Cognitive Therapy had significant effects on improving sexual desire and sexual arousal of women with drug abuse.
Shabani and Abdi, 2020 [22]	Iran	The effectiveness of mindfulness-based cognitive therapy on sexual disorders and sexual satisfaction in women with spouses' extra-marital relationships	29 women (14 controls and 15 intervention)	Healthy women	Experimental	8 sessions, 90 minutes, Once a week in group format	Sexual disorders and sexual satisfaction	Larson's sexual satisfaction questionnaire (LSSQ) and FSFI	Sexual satisfaction and sexual performance found significant changes after mindfulness-based cognitive therapy (P<0.001).
Omidvar et al. 2020 [23]	Iran	Comparing the effectiveness of mindfulness-based cognitive therapy and CBT on sexual satisfaction of women with vaginismus disorder	46 women in two control and intervention groups	Women with vaginismus	Clinical trial	8 group sessions, Each for two hours, once a week	Sexual satisfaction	Sexual satisfaction questionnaire (SSQ)	The mindfulness-based cognitive therapy improved sexual performance and marital satisfaction of women (P=0.001).
Nowrozi Dashtaki et al. 2021 [24]	Iran	The effectiveness of mindfulness-based cognitive therapy on sexual satisfaction and body image of women with drug abuse	28 women in two groups of 14	Women with drug abuse	Quasi-experimental	8 sessions of 90 min, twice a week in group format	Sexual satisfaction and body image	FSFI and Littleton's Body Image Concern Inventory	Mindfulness training was effective in improving sexual satisfaction and body image of women with drug abuse (P<0.05).
Kazem Zadeh Atoofi and Naziry, 2022 [25]	Iran	Comparison of mindfulness-based sex therapy and cognitive-behavioral sex therapy in women with orgasmic disorder	25 women in the intervention group (mindfulness-based interventions) and 25 women in the control group (cognitive-behavioral therapy)	Healthy women	Double-blind randomized clinical trial	8 sessions of 60 minute, Once a week, group format	Orgasmic disorder	Symptom checklist-90-revised (SCL-90-R)	Mindfulness-based intervention improved the orgasm disorder (sexual performance) (P=0.021).
Asadijajaei et al. 2020 [26]	Iran	Effectiveness of mindfulness-Based cognitive therapy on family factors and sexual functions of women with sexual dysfunction	40 women in two groups of 20	Women with sexual dysfunction	Clinical trial	8 sessions of 90 minutes, once a week, group format	Sexual desire	McMaster Family Assessment Device and FSFI	The effect of mindfulness-based therapy was statistically significant on sexual functions and their subscales (P<0.001).

Author (y)	Location	Objective	Sample Size	Population	Study Design	Study Variables	Intervention	Tool	Results
Brotto et al. 2016 [27]	Canada	Mindfulness-based sex therapy effect on genital-subjective arousal concordance in women with sexual desire/arousal difficulties	79 women in two groups of 340 and 39	Women with sexual dysfunction	Clinical trial	4 sessions of 90 minutes, weekly, group format	Sexual performance	FSFI	The men sexual performance score increased significantly after mindfulness-based sex therapy (P=0.001).
Soleimani and Soltanizadeh et al. 2022 [28]	Iran	Effectiveness of mindfulness-based cognitive therapy on body image and sexual performance of obese women	30 women in two groups of 15	Obese women	Quasi-experimental	8 sessions of 90 minutes, once a week, group format	Sexual performance	Fisher's body focus questionnaire and FSFI	The mean sexual performance score increased after the intervention (P=0.023).
Paterson et al. 2016 [29]	Vancouver	Effectiveness of mindfulness-based cognitive therapy adapted for women's sexual interest/arousal disorder	26 women in two groups of 13	Healthy women	Clinical trial	8 sessions of 90 minutes, once a week, group format	Sexual interest/arousal	Sexual interest/arousal questionnaire according to the DSM-5 checklist and FSFI	The mean sexual interest/arousal increased from 78 to 118 after the intervention (P=0.001).
Hucker and McCabe, 2015 [30]	Australia	Incorporating mindfulness and chat groups into an online CBT for mixed female sexual problems	57 women (26 in the intervention group 31 in the control group)	Healthy women	Clinical trial	6 sessions of 60 minutes, once a week, group format	Sexual desire, sexual arousal, orgasm	Sexual interest/arousal questionnaire according to the DSM-5 checklist and FSFI	The mean sexual performance score increased after intervention by 36 units (P=0.031).
Gunst et al. 2019 [31]	Washington	Effectiveness of a brief, mindfulness-based psychological interventions for treatment of women's low sexual desire	70 women in two groups of 35	Healthy women	Clinical trial	4 sessions of 60 minutes, weekly, individual format	Sexual desire and sexual performance	Desire subscale of FSFI and sexual interests and desires inventory – female (SIDI-F)	The sexual performance and sexual desire in women who received mindfulness treatment increased significantly (P=0.043).
Hocaloski et al. 2016 [32]	Vancouver	A mindfulness psycho-educational group intervention targeting sexual adjustment for women with multiple sclerosis and spinal cord injury	6 women in the intervention group 6 in the control group	Women with multiple sclerosis	Quasi-experimental	6 sessions of 50-60 minutes, weekly, individual format	Sexual performance	FSFI	The sexual performance and sexual desire in women who received mindfulness therapy significantly increased (P=0.001).

Author (y)	Location	Objective	Sample Size	Popula-tion	Study Design	Study Variables	Inter-vention	Tool	Results
Najababary et al. 2022 [33]	Iran	Effect of mindfulness-based stress reduction intervention on sexual satisfaction of pregnant women	60 women in two groups of 35	Pregnant women	Clinical trial	8 sessions of 60 minutes, weekly, group format	Sexual satisfaction	Sexual satisfaction scale for women (SSS-W) and depression, anxiety and stress scale (DASS-21)	The sexual satisfaction score increased from 83.80±16.49 to 110.65±6.53 (P<0.001).
Saniei et al. 2022 [34]	Iran	Effect of mindfulness-based intervention on sexual desire and sexual satisfaction of primigravida pregnant women	72 pregnant women in two groups of 36	Pregnant women	Clinical trial	6 sessions of 90 minutes, weekly, group format	Sexual satisfaction and sexual performance	FSFI	After the intervention, the sexual satisfaction increased from 3.9 to 4.3 (P=0.02).

Current Psychosomatic Research

proved sexual performance [28]. Two studies in Iran and Canada assessed women with sexual dysfunction. These studies employed mindfulness-based sex therapy and cognitive therapy, achieving significant reductions in sexual dysfunction [25, 27]. Additionally, a study in Iran assessed the effect of mindfulness-based therapy on pregnant women, and reported that those who received the therapy had lower sexual dysfunction, suggesting the treatment’s effectiveness during pregnancy [34]. Other studies conducted in Vancouver and Australia examined the influence of mindfulness-based therapy and CBT on sexual interest/arousal in healthy women. Their findings indicated that mindfulness-based therapy can be used to effectively improve sexual performance [29, 30].

Mindfulness-based interventions and women’s sexual satisfaction

Five studies assessed the effect of mindfulness-based interventions on women’s sexual satisfaction [22-24, 33, 34], two of which was conducted on pregnant women by providing weekly sessions, once per week lasting 2 hours, for 6-8 weeks. The sessions included mindfulness training, body scan meditation, breathing exercises, music and biofeedback support, group counseling, and psycho-education (psychological challenges, grief processes, emotions associated with adapting to chronic pain, stress and pain, healthy habits including food and exercise, and mind-body interaction) [33, 34]. In another study, the effect of a mindfulness-based psychological intervention on the sexual satisfaction of women with

substance abuse was examined. The women received eight 90-minute sessions twice a week, which finally resulted in increased sexual satisfaction in women [24]. Furthermore, a study conducted in Iran assessed the comparative effects of CBT alone versus CBT plus mindfulness-based intervention. This study revealed that the group receiving the combined treatment reported a lower sexual dysfunction score, indicating the superior effect of the integrated approach compared to the CBT alone [23].

Discussion

This study reviewed 14 interventional studies (quasi-experimental, experimental, and clinical trials), that assessed the effect of mindfulness-based interventions (alone or combined with other treatments) on improving women’s sexual satisfaction and sexual performance [21-34]. Among these studies, 11 studies were found to assess the effects of mindfulness-based interventions combined with CBT or sex therapy on different groups of women such as healthy women, women with sexual dysfunction, women with substance abuse, and women with obesity [21, 22, 25-32, 34]. Five studies assessed the role of mindfulness-based interventions in increasing women’s sexual satisfaction [22-24, 33, 34]. All studies reported that mindfulness-based therapy significantly improved women’s sexual health, and suggested its application alone or with other therapeutic approaches. Norouzi et al. used 8 sessions of mindfulness-based cognitive therapy for 28 women with substance abuse which

resulted in increased sexual satisfaction and sexual performance [21, 24]. Similarly, Hocaloski et al. used 6 mindfulness training sessions for Canadian women with multiple sclerosis and reported improvements in sexual performance [32]. A study in Iran on women with obesity experiencing sexual problems, found that 8 sessions of 90 minutes significantly improved women's sexual performance [28]. In 2022, Naji Abhari et al. applied mindfulness-based therapy and could improve sexual function of pregnant women with sexual disorders [32]. These studies, despite having different study populations, have consistently reported the positive effects of mindfulness-based interventions. These studies varied in the number (from 6 to 8) and duration (50-90 minutes) of sessions. All studies used an expert to confirm the intervention content and provided the intervention by a trained person [21-34]. Thus, the correct implementation of the treatment protocol is crucial for the effectiveness of mindfulness-based interventions.

Mindfulness training includes the practice of attention to the present thoughts, feelings and emotions in a non-judgmental manner [35], which not only can reduce self-criticism and negative evaluation of sexual responses, but also can reduce disturbing thoughts during the sexual relationship [36]. This approach encourages women to consider the distracting factors such as disturbing thoughts as mental events that are not necessarily correct and there is no need to believe in them or follow them [37]. Furthermore, it helps the person not to be spectator (a concept introduced by Masters and Johnson in 1966) during sexual activity and focus on herself from a third person perspective [37]. Therefore, distractions from non-sexual thoughts can be reduced and non-judgmental self-acceptance can be increased which can directly affect various aspects of women's sexual responses [38].

Mindfulness techniques not only can improve moment-to-moment awareness of sexual stimuli and physical changes (e.g. vaginal contractions or pulsing) and maintain sexual arousal and desire, but also can encourage women to perceive other stimuli in a sexual and non-judgmental manner [39]. Moreover, mindfulness has been shown to alter the neural structure of brain regions involved in regulating attention, emotions, and self-awareness [38]. Increased awareness is related to the activity in the anterior cingulate cortex and reduced activity in various frontal brain areas and the limbic region [39]. Increased self-awareness through mindfulness training is marked by the activity of the insula, the midsection of the prefrontal cortex, the posterior cingulate cortex, the prefrontal cortex, and the striatum. Moreover, there is evidence that the ability to express feelings non-judgmentally which is improved by mindfulness training, is

positively correlated to the gray matter volume in the right anterior insula and the right amygdala, suggesting that an increase in insula volume may indicate a elevated awareness of stressful situations and improved ability in cognitive management of feelings [40]. In some diseases, individuals' sexual function may be impaired which can have various consequences. According to studies on women with sexual dysfunction [21, 23, 24, 28, 32], psychological interventions such as mindfulness-based therapy can be effective in these cases.

## Conclusion

Mindfulness-based psychological interventions are effective in improving sexual satisfaction and sexual performance of women in a short period. However, due to the limited number of studies in this field, more research with less bias is needed to obtain stronger evidence.

## Limitations

Some limitations of this study were the unavailability of full texts for some studies, not reviewing the studies in languages other than Persian and English and the lack of a meta-analysis due to the heterogeneity of findings and measurement tools in studies

## Ethical Considerations

### Compliance with ethical guidelines

All publication ethics including the avoidance of scientific misconducts (data fabrication, plagiarism, and re-submitting work for duplicate publication) were observed.

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### Authors' contributions

Data collection and data analysis: Maryam Najiabehary and Seyedeh Zeynab Hoseinnezhad; Manuscript writing and Revising the manuscript: All authors.

### Conflict of interest

The authors declared no conflict of interest.

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