Review Article

Interventions to Improve Sexual Health in Iranian Cancer Patients: A Systematic Review

Abstract

Background: The sexual health of cancer patients may be impaired by cancer diagnosis, treatment-related complications. The goal of this systematic review is to describe the interventions used to improve sexual health in Iranian cancer patients. **Materials and Methods:** The following databases were searched: MEDLINE, Web of Science, Scopus, Cochrane Library, and Iranian databases (Magiran, SID, NoorMags), and gray literature from their inception until 21 December 2023. Keywords include sexual health, sexuality, sexual activity, sexual function, cancer, neoplasm, tumor, malignancy, and Iran. The reference lists of articles were also searched. Trials were included that compared psychosexual interventions in adults aged 18 years or over with a cancer diagnosis versus usual care and other controls. These trials were conducted in Iran and were results published in Persian or English journals and reported sexual outcomes as the main findings. Two review authors independently considered trials for inclusion in the review, assessed the risk of bias, and extracted data. **Results:** All studies (n = 291) were reviewed and 20 met the inclusion criteria. Most studies (n = 18) focused on breast cancer patients and were conducted in Tehran (n = 11). The majority of studies were psychosexual interventions leading to positive effects in aspects of sexual health, including body image, sexual function, sexual satisfaction, sexual self-esteem, sexual schemas, sexual quality of life, and sexual desire. **Conclusions:** The results showed that psychosexual interventions have been effective in improving the sexual health of cancer patients. Sexual health care should be an integral part of holistic, person-centered care for patients with cancer.

Keywords: *Iran, neoplasms, sexual health, sexuality*

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Introduction

Cancer and cancer treatment negatively affect the dimensions of the patient's quality of life, including sexual health due to direct and indirect physiological, psychological, and interpersonal.[1] Sexual health, i.e. the "state of physical, emotional, mental and social well-being about sexuality."[2] Since sexual health is one of the important elements of returning to the normal life of patients after cancer care and treatment, so sexual problems may indirectly affect the patient's condition and reduce the quality of life.[3] Cancer not only causes physical changes and decreases fertility but also can cause psychological pressures such as lowering self-esteem,[4] creating emotional distance between couples, feeling uncomfortable by the partner, negative thoughts about sexual contact, or difficulty in sexual intercourse. Sexual side effects can affect patients regardless of age, gender, or location of cancer. Between 40 and 100% of cancer patients subsequently experience sexual health disorders, particularly those with pelvic or breast tumors.[5]

Sexual desires are an important part of human life that plays a critical role in their quality of life and health. In many cultures, the sexual taboo that patients face leads to the negligence of their sexual health, especially patients with incurable diseases such as cancer.[6] On the other hand, according to Iranian family culture, marital relationship is a very personal and private issue, so it is not often discussed in treatment and medical programs and follow-up care of patients.[7] Issues such as the centrality of cancer treatment for caregivers, the taboo of talking about sexual issues, and the lack of a proper emotional relationship between therapists and cancer patients may cause this aspect of the life of this group to be neglected.[8]

Considering the high prevalence of all types of cancer in our country and the long-term survival of patients with this disease,

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therefore, it is suggested to pay attention to the sexual health needs of these patients by designing appropriate interventions to improve the sexual health of cancer patients in the form of specialized educational programs by the principles of ethics and established social norms of the Iranian society.[6]

Since sexual health is a cultural-social issue, interventions to improve sexual health should be based on the culture of Iranian patients, so identifying appropriate interventions that have been used to improve sexual health in Iranian cancer patients is essential for evidence-based practice. Several researches have been conducted on improving the sexual health of cancer patients in Iran. However, there has not been a comprehensive study on interventions related to improving sexual health in cancer patients. Aggregating and integrating the results of the conducted studies provide correct information for evidence-based decisionmaking by health policymakers and hospital managers. The purpose of this study was to provide an overview of studies that addressed interventions to improve sexual health in Iranian cancer patients and to highlight gaps in knowledge.

Materials and Methods

This systematic review was conducted in 2023 following the Preferred Reporting Items for Systematic Reviews and Meta-Analyze (PRISMA) guideline.[9] All studies were included[1]: the studies were conducted in Iran[2]; the subjects were married and ≥18 years old[3]; experimental designs studies including (randomized clinical trial and quasi-experimental)[4] the subjects were patients diagnosed with cancer[5]; studies were published as full papers in English or Persian language[6]; the studies that assessed sexual issues as a primary or secondary outcome[7]; the interventions to promote sexual health in cancer patients. To have maximum access, the criterion for the year of the study was not considered. Articles that had a focus on related concepts to sexual health, like sex hormones and sex cells, marital conflict, marital satisfaction, and fertility preservation, were excluded. Non-interventional studies, including descriptive, qualitative, review articles, abstracts, short communications, letters to the editor, protocol articles, book reviews, and those without having access to full text were also excluded.

First, the appropriate keywords were identified using Mesh, Snomed, Embase, and related articles to start the review process. With the advice of an expert medical librarian (AN), the researchers developed a specific search strategy for the databases above. Four electronic international databases were searched: Web of Science, Scopus, PubMed/MEDLINE Cochrane Library with the following keywords and strategies were used: ("sexual health" OR sexuality OR "psychological sexual dysfunction" OR "psychosexual dysfunction" OR "psychosexual disorder" OR "physiological sexual dysfunction" OR "physiological sexual disorder" OR "sex disorder" OR "sexual behavior" OR "sexual activity" OR "sexual function" OR "sexual satisfaction" OR "sexual frequency" OR " sexual attractiveness") AND (cancer OR neoplasm OR tumor OR "malignancy*" OR "malignant neoplasm" OR neoplasia*) AND (Iran) OR ("Islamic Republic of Iran"). Three Persian language databases were searched: Mag Iran, SID, and Noor Mags using the following keywords and strategy ("sexual health" OR "sexual function" OR "sexual satisfaction" OR "sexual disorder" OR "sexual problem" OR "sexual need") AND (cancer OR malignancy OR tumor) AND (Iran). The reference lists of relevant articles obtained were also screened. A manual search was also performed for retrieving grey literature. To preserve all the valuable data, no time limit was considered, and the searches ended on 21 December 2023.

All retrieved articles were entered into EndNote X7 software. After removing duplicates, the titles and abstracts of retrieved articles were reviewed independently by two researchers (MM, MB) based on the inclusion criteria. In case of disagreement between the two authors, the articles were reviewed by a third author (AR). Then, the reviewers will independently screen full-texts for potentially eligible studies, and finally the number 15 articles remain for final review. The sources of the selected articles were also subjected to a secondary review to find related articles, which led to another number of five articles [Figure 1]. Two authors (MM, MB) independently reviewed the full text. They extracted all critical data from included studies: author, year of publication, geographical distributions of study, study design, sample size, type of cancer, measurement tools, focus of study, intervention content, study duration, intervention type, and major finding. Differences were discussed with a third review author (AR) until a consensus was reached [Table 1]. The quality of the articles was assessed by two authors (MM, MB) independently using the Cochrane "risk of bias" tool.[10] This tool contains six domains: random sequence generation, allocation concealment, selective reporting, measurement of intervention (exposure), blinding of outcome assessment, incomplete outcome data, and selective outcome reporting (ratings: low, unclear, or high risk of bias). Differences of opinion were discussed with a third review author (AR) until a consensus was reached [Figure 2].

Ethical considerations

This review article was approved by the ethics committee of Isfahan University of Medical Sciences (IR.MUI.MED.REC. 1401.018). The authors committed to avoiding duplicate publication and plagiarism. The results of the analysis were quite honest.

Result

From a pool of 291 articles, 20 met the eligibility criteria [Figure 1]. After removing 56 duplicate articles, 235 articles remained. Many articles were excluded based on their titles (n = 208); 9 were excluded after reading the abstract, a further 3 were excluded after reading the full text and 15 eligible articles remained. The manual search in reference

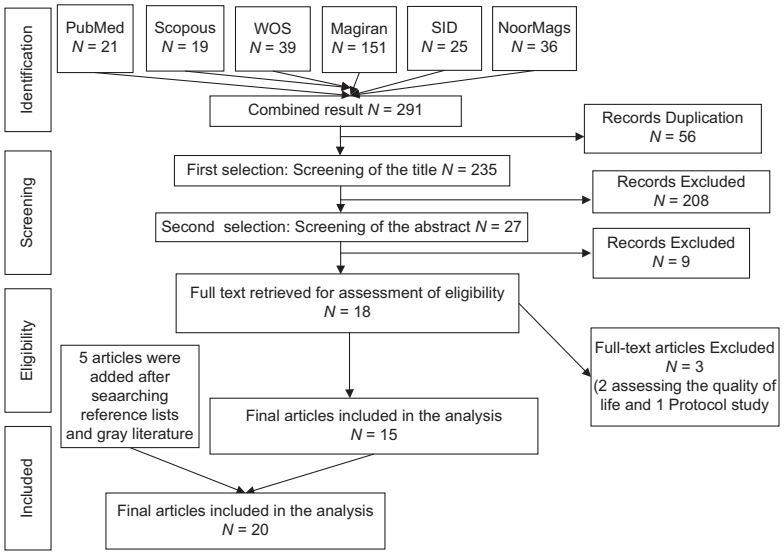

Figure 1: Study flow diagram

Figure 2: Risk of bias assessment: using the Cochrane risk of bias tool

	Random sequence generation (selection bias	Allocation concealment (selection bias)	Blinding of participants and personnel (performance bias)	Blinding of outcome assessment (detection bias)	Incomplete outcome data (attrition bias)	Selective reporting (reporting bias)	Other bias
Abdollahzadeh 2019	***	**	**	**	**	***	***
Ahmadi 2020	***	**	**	**	**	***	**
Ahmadian 2018	***	**	**	**	**	***	***
Akbari 2017	**	*	*	*	**	***	***
Akbari 2017	**	*	*	*	**	***	**
Anoushirvan 2021	**	*	*	*	**	***	***
Bokaie 2022	*	*	*	*	*	***	***
Esmkhani 2021	***	***	*	*	**	***	***
Far nam 2021	***	***	*	*	**	***	***
Fatehi 2019	**	*	*	*	**	***	***
Ghasemi 2019	*	*	*	*	**	***	**
Ghods 2022	**	*	*	*	***	***	***
Heravi Karimovi 2006	*	**	*	*	***	***	***
Keshavarz 2021	*	*	*	*	**	***	***
Khoei 2020	***	***	*	*	***	***	***
Mohammadizadeh 2013	***	*	*	*	***	***	**
Safar Mohammadlou 2021	**	*	*	*	***	***	***
Sheydaei Aghdam 2019	**	*	*	*	**	***	***
Taheri 2020	***	*	*	*	***	***	***
Yaraei 2018	**	*	*	*	***	***	***

*Low risk of bias. **Unclear risk of bias. ***High risk of bias

lists and gray literature 5 articles were added to 15 eligible articles. Finally, 20 studies were included in the analysis.

Design

Out of 20 studies included, five studies were randomized clinical trial (RCT) design,[18-20,23,31] and nine studies were quasi-experimental with two-group design (Ahmadian, 2018 #6466).[11-16,21,26,29] The two studies were single group,[17,24] two studies with three groups,[12,22] one study with four groups,[30] and one study with multiple groups design. In 17 studies, the unit of randomization was the group of participants. In one study, the unit of randomization was the couple[19]; in two studies, the unit of randomization was the individual participant.[21,24]

Setting

Eleven studies were conducted in Tehran, three in Isfahan,[12,21,29] two in Zanjan,[18,32] two in Sari,[11,20] one in Urmia,[19] and one

Table 1: Overview of study characteristics, correlates of sexual health, and reported outcomes (*n*=20)

N	Author and Geographical Distributions	Design	Sample, Type , Measurements	Focus of study	Intervention	Major Finding
1	Abdollahzadeh *et al*. 2019[11] (Behshahr and Sari)	Quasi-experimental with two-group design	30 women; breast cancer; Standard Cook's Internalized Shame Inventory and Schwarz Sexual Self-Esteem questionnaire	Determinate the effectiveness of acceptance and commitment therapy on internalized shame and sexual self-esteem of women after mastectomy surgery.	Group; in-person, and on-site; the intervention consisted of 10 weekly counseling programs based on acceptance and commitment in (10 sessions 90 min each); assessments occurred pre- and post-intervention	Counseling programs based on acceptance and commitment have a positive impact on shyness and self-esteem and also the a positive impact on some components of sexual self-esteem like experience and skill, attractiveness, control, moral judgment, and adaptiveness.
2	Ahmadi *et al*. 2020[12] (Isfahan)	Quasi-experimental with three-group design	30 men; not report; Rosen *et al*. Men's Sexual Health Questionnaire	Determine the effectiveness of mindfulness training and commitment and acceptance therapy on sexual function.	Group; in-person; and on-site; the first group underwent mindfulness training, the second group received acceptance and commitment therapy, and the control group did not receive any treatment (8 sessions 90 min) per week; assessment occurred pre- and post-intervention	Mindfulness training, acceptance, and commitment therapies had a significant effect on increasing sexual function in men with cancer.
3	Ahmadian *et al*. 2018[13] (Kermanshah)	Quasi-experimental with two-group design	26 women; breast cancer; Oxford Happiness List, Anxiety state questionnaire, Larson Sexual Satisfaction questionnaire	Evaluating the effect of stress management training on the reduction of anxiety and promotion of happiness and sexual intimacy in females with breast cancer,	Group; in-person; and on-site; the intervention consisted counseling program based on a problem-solving approach, (8 sessions 90 min each) per week; assessment occurred pre- and post-intervention, and 2 months later (follow-up)	Stress management training could reduce anxiety and promote happiness and sexuality.
4	Akbari *et al*. 2017[14] (Tehran)	Quasi-experimental with two-group design	30 women; breast cancer; Sexual Self-Esteem Inventory for Women (SSEI-W)	The efficacy of four-factor psychotherapy (therapeutic relationship, expectancy to therapy, increasing awareness and behavior regulation) on increasing sexual desire and its five subscales (skill, attractiveness, control, moral judgment, and adaptiveness).	Group; in-person; and on-site; the intervention consisted of a 10-weekly four-factor psychotherapy program (10 sessions 90 min each); assessment occurred pre- and post-intervention, and 2/5 months later (follow-up)	Four-factor psychotherapy led to a significant effect on increasing women's sexual self-esteem and improving control and moral judgment subscales.
5	Akbari *et al*. 2017[15] (Tehran)	Quasi-experimental with two-group design	30 women; breast cancer; Hurlbert Index of Sexual Desire	Determine the effects of four-factor psychotherapy on increasing sexual assertiveness in breast cancer survivors.	Group; in-person; and on-site; the intervention consisted of a 10-weekly four-factor psychotherapy program (10 sessions 90 min each); assessment occurred pre- and post-intervention, and 2/5 months later (follow-up)	There was no significant difference between levels of sexual assertiveness in the experimental and control group after treatment.

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Table 1: Contd...

N	Author and Geographical Distributions	Design	Sample, Type , Measurements	Focus of study	Intervention	Major Finding
6	Anooshiravani *et al*. 2021[16] (Tehran)	Quasi-experimental with two-group design	30 women; breast cancer, Thomson and Zoroff Self-Criticism questionnaires, the Siranoski and Andersen's Sexual Schemas questionnaire	Determine the effectiveness of compassion-based therapy on self-criticism and sexual schemas in women with breast cancer.	Group; in-person; and on-site; the intervention consisted of a program based on compassion therapy (8 sessions 90 min) per week; assessment occurred pre- and post-intervention	Compassion-based therapy was significant in self-criticism and sexual schemas.
7	Bokaie *et al*., 2022[17] (Tehran)	Single group pretest-posttest semi-experimental design	32 women, breast cancer, Female Sexual Function Index (FSFI), and Larson Sexual Satisfaction questionnaires	Determine the effectiveness of group counseling based on problem-solving on women's sexual function and satisfaction after mastectomy surgery.	Group; in-person; and on-site: the intervention consisted of a counseling program based on a problem-solving approach, (8 sessions 90 min each) per week, assessments occurred pre- and post-intervention, and one month later (follow-up)	Sexual function and satisfaction were statistically significant after sexual counseling and one month later
8	Esmkhani *et al*., 2021[18] (Zanjan)	Three-arm parallel-group randomized controlled trial	75 women, breast cancer (25 in each group), Quality of Life questionnaire (QLQ-C30V.3)	Compare the effect of individual therapy (PLISSIT Model) versus group therapy (sexual health model) on the quality of life.	Group and individual; in-person; and on-site ; PLISSIT group received this model on its 4-stage approach in 1–3 sessions (length of sessions not described). In the SHM group, the counseling about sexual health in a six-hour workshop through a question-and-answer format, the control group received routine care, assessments occurred pre- and 6 weeks, and 12 weeks after the last intervention session	PLISSIT model and SHM model have similar effects on improving the quality of life of breast cancer at 6 and 12 weeks follow-up, almost all dimensions of the quality of life in all groups improved significantly.
9	Farnam *et al*., 2021[19] (Urmia)	Randomized controlled clinical trial with two-group design	100 women, breast cancer (50 in each group), Body Image Scale (BIS)	Determine the effect of Good Enough Sex (GES) model-based counseling intervention on body image.	Couple; in-person; and on-site: the intervention group received 4 counseling sessions (90–120 min) according to the GES model once a week, the control group received routine care, and assessments occurred pre- and 2 and 3 months after the last intervention session	Good Enough Sex (GES) model-based sexual counseling was effective in improving body image.
10	Fatehi *et al*., 2019[20] (Sari)	Randomized controlled clinical trial with two-group design	118 women, breast cancer, Beck Depression Inventory, FSFI, Larson Sexual Satisfaction questionnaire, and Sexual Quality of Life-Female (SQOL-F) questionnaire	Determine the effects of psychosexual counseling on sexual function, satisfaction, and quality of sexual life.	Group and individual; in-person; and on-site; the intervention consisted of 6 weekly psychosexual counseling sessions (90 to 120 min each), assessments occurred at the beginning of the study, after the final session of the intervention, and at 3 months following the intervention	Psychosexual intervention program was effective in improving sexual function and quality of sexual life.

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Table 1: Contd...

N	Author and Geographical Distributions	Design	Sample, Type , Measurements	Focus of study	Intervention	Major Finding
11	Jabalameli *et al*., 20 19[21] (Isfahan)	Quasi-experimental with two-group design	26 women; breast cancer; Hurlbert Index of Sexual Desire	Investigate the effectiveness of acceptance and commitment therapy on sexual desire after mastectomy.	Individual; in-person; and on-site; the intervention consisted of an 8-weekly counseling program based on acceptance and commitment therapy (8 sessions 60 min each); assessment occurred pre- and post-intervention.	ACT was effective in improving sexual desire in patients.
12	Ghods *et al*. 2022[22] (Tehran)	Quasi-experimental with three-groups design	120 women; breast cancer, Rogers' Self-concept , Siranoski and Andersen's Sexual Schemas questionnaire	Determine the effectiveness of schema therapy and acceptance and commitment therapy in women's sexual schema after breast cancer surgery.	Group; in-person; and on-site; the group 1, (9 sessions 90 min) schema therapy and group 2 received (8 sessions 90 min) of ACT and the control group did not receive any training; assessment occurred pre- and post-intervention, and 2 months later (follow-up)	Schema therapy and acceptance and commitment therapy were effective in improving sexually maladaptive schemas
13	Heravi Karimovi *et al*. 2006[23] (Tehran)	Randomized clinical trial with two-group design	114 women; breast cancer; EORTC QLQ-Br23	Determine the effects of group counseling on the quality of sexual life of patients with breast cancer treated with chemotherapy.	Group; in-person; and on-site; the intervention consisted group counseling program, (5 sessions 60–90 min) per week; assessment occurred pre- and post-intervention, and 3 months later (follow-up)	Group counseling promotes body image, sexual function, and sexual enjoyment.
14	Keshavarz *et al*., 2021[24] (Tehran)	single group pretest-posttest semi-experimental design	65 women, breast cancer, FSFI, Beck Depression Inventory-II, State-Trait Anxiety Inventory, QoL-Brief, and Female Sexual Distress Scale-Revised	Compare the effect of the PLISSIT model counseling l on sexual function, quality of life, and sexual distress.	Individual; in-person, and on-site: the intervention group received a counseling program based on the PLISSIT model for sexual treatment (7 sessions 60 min each), duration was 4 weeks, assessments occurred at pre- and 2 and 4 weeks after intervention	The PLISSIT model-based counseling significantly reduced sexual distress and increased the scores of quality of life and sexual function
15	Khoei *et al*., 2020[25] (Zanjan)	Three-arm parallel-group randomized controlled trial	75 women, breast cancer (25 in each group), Sexual Distress questionnaire, Sexual Behavior questionnaire	Compare the effect of PLISSIT-based counseling versus grouped sexuality education on self-reported sexual behaviors.	Group; in-person; and on-site: the PLISSIT group (intervention group A) received individual 1–3 sessions 45–90 min each, In the GSE group (intervention group B), counseling was provided through group training in an interactive six-hour workshop through the PowerPoint slides and questions and answers (length of sessions not described), the control group received routine care, assessments occurred pre-,6 weeks and 12 weeks after the intervention (follow-up)	Both GSE and PLISSIT are effective in improving sexual capacity, motivation, and performance at 6- and 12-week follow-ups after the intervention. The GSE model showed more efficiency in measures of sexual behavior than the PLISSIT model.

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Table 1: Contd...

N	Author and Geographical Distributions	Design	Sample, Type , Measurements	Focus of study	Intervention	Major Finding
16	Mohammadizade *et al*. 2013[26] (Tehran)	Quasi-experimental with two-group design	30 women; breast cancer; Vaziri and Lotfi Kashani Sexual Self-Efficacy questionnaire	Evaluate the effectiveness of mindfulness training on sexual self-efficacy.	Group; in-person; and on-site; the intervention consisted of 8 sessions of mindfulness training (90 min each); assessment occurred pre- and post-intervention, and 2 months later (follow-up)	Mindfulness training was effective in increasing the sexual self-efficacy of patients and this effect was sustainable in the follow-up examination.
17	Safar Mohammadlou *et al*. 2021[27] (Tehran)	Quasi-experimental with a multi-group design	45 women; breast cancer; Sexual Quality of Life–Female (SQOL–F) and FSFI	Compare the effects of emotion-focused therapy and cognitive-behavioral therapy on the quality of sexual life and sexual function in breast cancer patients.	Group; in-person; and on-site; the intervention consisted of a program based on emotion-focused therapy and cognitive-behavioral therapy (10 sessions 90 min) per week; assessment occurred pre- and post-intervention, and 3 months later (follow-up)	There was a significant difference in the quality of sexual life between the experimental and control groups.
18	Sheydaei Aghdam *et al*. 2019[28] (Tehran)	Quasi-experimental with four-group design	60 women; breast cancer, Arizona Sexual Experience Scale Questionnaire	Determine the effectiveness of integrative psychotherapy, spiritual therapy, and cognitive-behavioral therapy on sexual dysfunction in patients with breast cancer.	Group; in-person; and on-site; the group 1 cognitive-behavioral therapy, group 2 spiritual therapy, group 3 integrative psychotherapy, and the control group did not receive any training; assessment occurred pre- and post-intervention, and 2 months later (follow-up)	The interventions were effective on the sexual performance of patients under training, and this effect was consistent in the follow-up test.
19	Taheri *et al*. 2020[29] (Isfahan)	Quasi-experimental with two-group design	32 patients (women and men): colorectal cancer; Hudson Sexual Satisfaction Questionnaire (1981)	Evaluate the effectiveness of acceptance and commitment therapy enriched with compassion on sexual satisfaction after colostomy surgery.	Group; in-person; and on-site; the intervention consisted of a program based on acceptance and commitment therapy enriched with compassion (10 sessions 90 min) per week; assessment occurred pre- and 3 days after intervention	The acceptance and commitment therapy enriched with compassion have led to a significant increase in sexual satisfaction scores.
20	Yaraei *et al*. 2018[30] (Tehran)	Quasi-experimental with three-group design	22 women; breast cancer; Larson sexual satisfaction questionnaire	Comparison between the effectiveness of combined psychosexual intervention and medical treatment on sexual satisfaction.	Group; in-person; and on-site; the intervention consisted combined psychosexual program, (6 sessions) per week; assessment occurred pre- and post-intervention	Relationship anxiety was reduced in the psychosexual intervention group compared with the medical group and the total sexual satisfaction scale was improved in the psychosexual intervention group compared with the medical group.

in Kermanshah.[13] Primary settings were University-affiliated hospitals in ten studies,[12-14,19,20,22,26,28,33] cancer centers in seven studies,[17,18,21,23,29,30,32] and specialized clinics in three studies.[11,24,27]

Cancer diagnosis

Most of the studies focused on patients treated for breast cancer (n = 18), one study was of patients treated for

colorectal cancer,[29] and one study did not report the patients' cancer type.[12]

Duration of the intervention

The total intervention duration varied between studies and ranged from short duration (3–5 weeks) in four studies[19,18,23,32] to intermediate duration (6–7 weeks) in three studies.[20,24,30] In the remaining twelve studies, the intervention duration was 8–10 weeks. The number of the interventions was 8–10 sessions; the sessions in seven studies were eight sessions.[12,13,16,17,21,22,26] In five studies, the number of sessions was 10.[11,14,15,27,29] The session's duration ranged from 45–90 minutes.

Providers

In four studies, sexologists delivered the intervention.[11,12,18,32] In three studies, the Doctor of Philosophy (PhD) of reproductive health delivered the interventions.[19,20,24] In two studies, nurses delivered the interventions.[17,23] In the remaining eleven studies, psychologists and counselors delivered the intervention.

Intervention delivery format

The intervention format in all studies was clinic-based interventions for practice at home. Researchers delivered interventions in therapeutic sessions to groups, couples, or individual formats. Two studies delivered interventions individually face-to-face,[21,24] one study used blended methods for intervention delivery, consisting of individual face-to-face and face-to-face groups,[18] and one study delivered interventions in couple formats.[19] The remainder of the studies delivered interventions in groups.

Training provider

Three studies reported that intervention providers were trained.[18,29,32] The remaining seventeen studies did not report whether providers were trained before delivering the intervention.

Control condition

Eighteen studies compared the effect of a psychosexual intervention versus routine care. In these eighteen studies, routine care consisted of no intervention. Two studies did not have a control group.[17,24]

Types of interventions

All of the interventions (n = 20) were psychosexual. Although the level of detail provided about the psychosexual programs varied greatly, programs generally included a combination of educational topics, including the anatomy of sexual organs and sexual cycles in both genders, safe sexual relations, the effects of cancer and its treatments on sexual function, changes in sexuality, body image, arousal-enhancing techniques, the use of dilators, lubricants, or pelvic floor muscle strengthening.

Psychological counseling topics generally included problem-solving and coping skills, confronting stress, techniques of relaxation and establishing effective communication, creating and maintaining intimacy, alternative solutions for improving the couple's relationship, training mindfulness techniques to reduce negative thinking and distress, commitment and acceptance skills, empathy, non-judgmental acceptance, identifying negative spontaneous thoughts, self-compassion, and dealing with common concerns associated with treatment.

Intervention format considerations

In most studies, interventions focus on at least one physiologic, psychological, or relational aspect of sexual well-being. Only in three studies, intervention components included three aspects of sex and intimacy (physiologic, psychological, and couple-based relational).[17,19,30] In four studies, the intervention included the physiologic aspects,[18,23,24,32] and in ten studies, it included psychological and communication skills aspects of sexual health.[11-13,16,21,22,26-29] Three studies included physiological and psychological aspects of sexual health.[14,15,20] All studies described a specific session-by-session syllabus, with one exception: one study.[34] Nineteen studies instructed participants for home practice with one exception: one study.[30]

Outcome measures

All 20 included studies reported aspects of sexual health as a primary and secondary outcome. Six studies assessed sexual function.[12,17,20,24,27,28] Five of those six studies used the Female Sexual Function Index (FSFI),[17,20,24,27,28] and the other one study used the Rosen.[12] Men's Sexual Health Questionnaire. Five studies assessed sexual satisfaction.[13,17,20,29,30] Four of those five studies used the scales of the Larson Sexual Satisfaction Questionnaire,[13,17,20,30] and the other study used the Hudson sexual satisfaction questionnaire.[29] Three studies assessed sexual quality of life.[20,23,27] Two of those three studies used the scale of the Sexual Quality of Life–Female,[20,27] and the other study used the scale of European Organization for Research and Treatment of Cancer Quality of Life Questionnaires-Breast 23 (EORTC QLQ-Br23) for assessed sexual quality of life. Two studies assessed sexual self-esteem.[11,14] To assess sexual self-esteem, one study used the scale of the Sexual Self-Esteem Inventory for Women (SSEI-W)[15] and another study used the scale of the Schwarz sexual self-esteem questionnaire.[11] Three studies assessed sexual desire.[15,21,24] Two of those three studies used the scale of the Hulbert Index of Sexual Desire, and the other study used the scale of the Female Sexual Distress Scale-Revised. Two studies assessed sexual schemas using the scale of Siranoski and Andersen's sexual schemas questionnaire.[16,21] One study assessed body image using the scale of the Body Image Scale (BIS).[19] One

study assessed sexual behaviors using a sexual behavior questionnaire.[32] Two studies assessed quality of life.[18,24]

Effectiveness of the interventions

Most studies (n = 18) revealed a positive intervention effect on some measure of sexual health, with two exceptions.[15,27]

Post-intervention outcome assessments

As a result of variance in intervention duration, the time between baseline and post-intervention outcome assessment ranged from one week in the Taheri *et al*. study[29] to two weeks in Keshavarz *et al*. study[24] to six weeks in Esmkhani *et al*. study[18] and Khoei *et al.* study[25] to eight weeks in Farnam *et al*. study.[19]

Follow-up outcome assessments

Twelve studies included one follow-up assessment,[13-15,17,18,20,21,23,24,26,27,32] and one study included two follow-up assessments.[19] The follow-up durations ranged from four weeks[17,24] to eight weeks[13,19,21,26] to ten weeks[14,15] and twelve weeks[18,20,23,25,27] are post-intervention. Seven studies had no follow-up assessment.

Discussion

The purpose of this study was to investigate the interventions used to improve sexual health in Iranian cancer patients. Regarding the population in this review, most of the studies focused on patients with breast cancer. In Sopfe *et al*.[35] review study, all interventional studies were conducted in patients with breast cancer. Significant differences may exist in sexual concerns between patients depending on their different cancer types and stages.[36] However, interventions to improve the impact of sexual concerns have largely focused on sexual or reproductive cancers, and health professionals are less likely to discuss sexual changes with individuals or couples experiencing non-reproductive cancer.[37]

Since patients with different types of non-reproductive cancers also experience sexual health problems, it is recommended to pay attention to the sexual health of patients with other types of cancer and to use interventions to improve their sexual health.

In this review study, most interventions were performed in female patients and no intervention was found in men. Men, like women, experience sexual problems after cancer and its treatment.[38] However, the sexual dimension is one of the dimensions of men's quality of life and because sexual activity is a sign of their masculinity. This piece of the puzzle of the quality of life of men with cancer in Iran is ignored. Therefore, in different types of cancer, attention should be paid to the sexual health of male patients.

Most of the studies were conducted in Tehran City since Iran is a vast country with different cultures and geography. Sociocultural diversity can affect patient's attitudes toward sexual health issues. Considering that sexual problems are a cultural issue, to increase the generalizability of the evidence, it is better to conduct studies in diverse cultural settings in Iran.

In this review, most interventions were provided by psychologists and mental health professionals. The results of other systematic reviews also showed that in all the included studies, the psychological intervention was performed by a psychologist[39]

However, Krouwel *et al*.[40] suggested that interventions regarding the sexual health of cancer patients should be delivered by a multidisciplinary team. Due to the multifaceted nature of sexual health, sexual health care for cancer patients should be provided with an inter-professional team approach (oncologist, nurse, psychologist, urologist, mental health professional, reproductive health specialist).

In this review, the intervention format in all studies was clinic-based interventions for practice at home. However, no study has measured adherence at home. This study is consistent with the results of Bakker *et al*., and DuHamel *et al*., whose studies instructed participants for home practice.[41,42] Most of the studies delivered group-based interventions. Carter's review also showed that most in-person psycho-educational interventions have utilized group sessions.[43] In this regard, the findings of D'Eath *et al*.'s[44] study showed that the participants had a positive experience from participating in the group and felt comfortable when sharing their experiences.

In this review, most studies did not state whether the provider had previously been trained in intervention delivery, except in three studies.[18,29,32] In line with this study and other systematic review studies, the intervention provider did not receive any training.[35,39] While in some studies the provider had professional training in the field of intervention.[18,29,32] It is recommended that the intervention provider has specialized training in the field of sexual issues of cancer patients so that they can provide appropriate training to the patients.

The number of interventions in this review varied from 8 to 10 sessions. This review's findings align with a prior systematic review that the number of interventions varied, ranging from 2 to 12 sessions.[39] The results of other studies showed that the greater number of sessions and hours of intervention positively affected the intervention outcomes.

Outcomes measures to assess sexual health concepts varied significantly. In this review, fifteen different tools for measuring the outcomes of concepts related to sexual health are reported in the reviewed studies. The outcomes measured in these studies indicate the inconsistency in understanding which sexual health outcomes are related to cancer patients and the best way to measure them. This variation in outcome measures is consistent with the findings of Arthur *et al*.[39] systematic review. Therefore, due to this inconsistency in the

tools used, it is not possible to recommend a uniform tool to measure the patient's sexual problems.

Results showed that interventions significantly improved participants' sexual health compared with routine care. Positive changes were frequently reported regardless of whether the intervention was offered to individuals, couples, or groups, and whether delivered in-person or online. The findings of this review are partly in line with Arthur *et al*.[39] systematic review that most interventions reported at least one positive sexual well-being outcome in women with gynecologic, anal, or rectal cancer. In Kang *et al*.[36], systematic review also reported that online-based interventions have effective effects on patient sexual function and interest and the psychological aspect of sexual problems. Therefore, conducting psychosexual counseling for couples can be effective in improving the sexual satisfaction and sexual life of patients.

In this study, the studies mainly included psychological or educational interventions. However, because psychosexual interventions often consist of multiple components, it is impossible to understand which components were the most impactful.

The content analysis of the descriptions of each intervention revealed that most interventions included several different components, each of which was difficult to separate. This has provided new insights into the complexity of interventions that seek to address sexual disorders related to cancer; for example, the education components generally included the effects of cancer and its treatments on sexual function, changes in sexuality, and sexual problems management related to cancer and its treatments in combination with psychological components for lifestyle changes as well as the introduction of psychological skills including problem-solving and coping skills, relaxation techniques and effective communication. This indicates that sexual issues must be approached from a holistic perspective.[45]

However, variability in intervention content and study design, small sample size, lack of dose, diversity of outcome criteria, and tools used limit recommendations for best practice. The unfavorable risk bias of most studies due to poor methodology (semi-experimental) and small sample size (n = 30) of most studies limited the specific recommendation of intervention results for application in clinical practice.

Considering the effectiveness of psychological-educational interventions in improving the sexual health aspects of cancer patients, it is suggested that informing patients about the efficacy of these interventions and empowering health service providers to provide psychosexual interventions to improve the health and the quality of life of patients helped. Intervention studies on sexual health in patients with cancer were not designed or powered to evaluate the superiority of intervention content (psychoeducation, psychologic), session number, or delivery format (individual, couple, or group; in person, via the telephone, or online). Future studies are necessary to identify (appropriate content, session number, presentation format, outcomes, evaluation tool, and implementation method) of the intervention. There is a need for further research to examine the effect of a specific psychosexual intervention across a range of cancer types with a standard and valid methodology (experimental studies). One of the limitations of this study was that despite a thorough search of the databases, not all interventional studies to improve the sexual health of cancer patients in Iran may have been identified. Lack of review of abstracts of articles published in conferences, congresses, and organizational reports, as well as limited access to some databases, can be weaknesses of this study. Another limitation is that our literature search only included articles in English and Persian language. Therefore, there may have been studies published in other languages that were not included in the present study due to language limitations.

Conclusion

According to the reviewed studies, it is recommended that healthcare providers pay attention to the sexual health of patients with other cancers (besides breast cancer) and pay attention to sexual health not only for female patients but also to evaluate the sexual problems of male patients and design appropriate interventions to improve men's sexual health. According to the interventions examined in this review, to solve the sexual problems of cancer patients, multifaceted psychosexual interventions such as acceptance and commitment therapy, mindfulness training, group counseling programs, stress management, communication skills training, and counseling based on the PLISSIT model are recommended. Considering that sexual problems are a cultural issue, to increase the generalizability of the evidence, it is better to conduct interventions in other cities of Iran and diverse cultural backgrounds. Considering the multidimensional nature of sexual health, it is suggested to provide interventions to promote sexual health with an inter-professional approach. Based on the reviewed interventions, it seems that group counseling and training models are more efficient than individual sessions in conservative cultures such as Iran's sexual culture.

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Conflicts of interest

Nothing to declare.

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