

Original Article

Cite this article: Hamidi F, Elyasi F, Mousavinasab S-N, Ghasemi A, Keshavarz Z, Shahhosseini Z (2023). Effect of a social network-based supportive program (WhatsApp) on the sexual self-concept of women with breast cancer: A single-blind-randomized controlled trial. *Palliative and Supportive Care* **21**, 27–37. <https://doi.org/10.1017/S1478951522000220>

Received: 24 February 2021

Revised: 6 January 2022

Accepted: 13 February 2022

Key words:


Breast cancer; Cancer; Sexual self-concept; Social networks

Author for correspondence:


Zohreh Shahhosseini,
Department of Reproductive Health and
Midwifery, Faculty of Nursing and Midwifery,
Sexual and Reproductive Health Research
Center, Mazandaran University of Medical
Sciences, Sari, Iran.

E-mail: zshahhosseini@yahoo.com

Effect of a social network-based supportive program (WhatsApp) on the sexual self-concept of women with breast cancer: A single-blind-randomized controlled trial

Fatemeh Hamidi, M.Sc.¹, Forouzan Elyasi, M.D.² ,

Seyed-Nouraddin Mousavinasab, Ph.D.³, Arash Ghasemi, M.D.⁴,

Zohre Keshavarz, Ph.D.⁵ and Zohreh Shahhosseini, Ph.D.⁶ 

¹Student of Midwifery Counseling, Student Research Committee, Mazandaran University of Medical Sciences, Sari, Iran; ²Sexual and Reproductive Health Research Center, Department of Psychiatry, Psychiatric and Behavioral Sciences Research Center, Addiction Research Institute, Mazandaran University of Medical Sciences, Sari, Iran;

³Department of Biostatistics, Health Sciences Research Center, Research Institute of Traditional and Complementary Medicine, Mazandaran University of Medical Sciences, Sari, Iran; ⁴Department of Radiology, School of Medicine, Mazandaran University of Medical Sciences, Sari, Iran; ⁵Department of Reproductive Health and Midwifery, Midwifery and Reproductive Health Research Center, Shahid Beheshti University of Medical Sciences, Tehran, Iran and ⁶Department of Reproductive Health and Midwifery, Faculty of Nursing and Midwifery, Sexual and Reproductive Health Research Center, Mazandaran University of Medical Sciences, Sari, Iran

Abstract

Objectives. Sexual self-concept has an influence on the sexual behaviors of women with breast cancer. Supportive programs for these women have demonstrable empirical efficacy; however, their effectiveness has not been examined. The aim of this study was to investigate the effect of a supportive program based on social networks on the sexual self-concept of women with breast cancer.

Methods. In this randomized controlled single-blind trial, 60 women were assigned to the intervention ($n = 30$) and control ($n = 30$) groups using permuted block randomization. Overall, eight 45-min intervention sessions were held (twice a week). The primary outcome was sexual self-concept, and the secondary outcomes were women's sexual quality of life and participants' satisfaction. The questionnaires were completed by patients before the intervention and immediately and 1 month after the intervention.

Results. The generalized equation estimation test showed that the positive sexual self-concept score of the intervention group versus the control group had increased by 15.67 points ($P < 0.001$, effect size = 2.00) 1 month after the intervention. The negative sexual self-concept score had decreased by 2.65 points ($P < 0.001$, effect size = 0.74), and the situational sexual self-concept score had upturned by 6.82 points ($P < 0.001$, effect size = 2.08) in the intervention group at the same period. Also, the sexual quality of life score in the intervention group compared to the control group generally increased by 13.82 points ($P < 0.001$, Effect size = 2.08) 1 month following the intervention.

Significance of the results. A social networking support program can be a promising approach to improve the sexual self-concept of women with breast cancer.

Clinical trials.gov identifier. Iranian Clinical Trial Register, IRCT20150608022609N8. Registered on 2 July 2020.

Background

Breast cancer is characterized by abnormal and malignant proliferation of breast tissue cells (Dehghan et al., 2018). It accounts for about 25% of all cancers in women (Akbari et al., 2017), and its global incidence is estimated at 38 per 100,000 individuals (Ianakieva et al., 2016). In Iran, like in several other developing countries, breast cancer is the most common cancer in women and is the second most common cancer after lung cancer (Keihanian et al., 2017).

Breast cancer can have profound effects on women's sexual health, including their sexual function (Shahid Sales et al., 2017). It has been shown that women with breast cancer may suffer from some degrees of sexual dysfunction (Kowalczyk et al., 2019), marital dissatisfaction (Esfandiari Dolabi et al., 2015), and sexual dissatisfaction (de Camargo, 2016). Meanwhile, although medical factors, such as the extent of the disease and the type of treatment, play an essential role in women's sexual health (Del Pup et al., 2019), evidence shows that the impact of cancer on women's sexual activity is unlike. Some women with breast cancer, despite the consequences of treatment such as surgery and hormone therapy, report that their sexual activity has not stopped and they have been able to balance their sex life with

their illness (Andersen, 1999; Yurek et al., 2000). However, in some other patients, the diagnosis and treatment of cancer significantly affects their sexual life, and they report significant reductions in sexual desire and activity (Boswell and Dizon, 2015; Bai et al., 2019).

Therefore, it seems that breast cancer, as a stressful factor in life, cannot be accounted for as the reason for the difference in sexual activity. Meanwhile, it seems that factors such as sexual identity and sexual role can play a critical role in the sexual function of women along with physical and physiological conditions. In this regard, the construct of sexual self-concept seems to be able to explain why the sexual activity of some women with breast cancer is stopped completely, while in some others, sexual activity is almost unaffected (Andersen, 1999; Yurek et al., 2000; Ziaei et al., 2018). This means that women with negative sexual self-concept can be predicted to have more sexual problems following the diagnosis and treatment of cancer (Ziaei et al., 2018). Because these women are generally less romantic and sensual in their emotions, they try less to adjust to their sexual problems, experience less sexual activity, and are more prone to negative emotions and cognitions such as shame and anxiety (Mohammadinik, 2017; Yazdani et al., 2019). In contrast, women with positive sexual self-concept are predicted to have higher levels of sexual response, sexual satisfaction, marital satisfaction, and marital adjustment; thus, they become more involved in sexual activity (Aliakbari Dehkordi, 2010; Blunt, 2012; Anderson, 2013; De Camargo, 2016; Yazdani et al., 2019). In this regard, it has been stated that sexual self-concept scores predict sexual changes following the diagnosis of breast cancer (Andersen, 1999; Yurek et al., 2000).

Studies have shown that women's sexual self-concept in certain conditions, including chronic diseases, may be compromised (Steinke et al., 2008; Carpenter et al., 2009). In particular, breast cancer-related surgeries such as mastectomy can affect sexual self-concept (Yurek et al., 2000). Sexual self-concept is a multidimensional, active, and dynamic trait that refers to individuals' positive and negative perceptions and feelings about themselves as sexual beings (Ramezani et al., 2013). Sexual self-concept is the feelings, beliefs, and perceptions that people have about their sexual issues, based on which they adjust their behaviors (Ramezani et al., 2018). This emotional phenomenon helps to gain awareness, identity, and self-esteem during one's sexual life (Ziaei et al., 2013). Sexual self-concept originates from experiences, emerges in current experiences, and serves as a guide for sexual behaviors. How one feels about themselves, as sexual beings will affect their sexual behaviors and experiences (Deutsch et al., 2014). The evaluation of sexual self-concept is a key predictor of the occurrence of sexual behaviors and can be effective in promoting mental and sexual health (Nekouefard and Jahangiry, 2014). Since breast cancer targets one of the most important sexual organs of women, it is extremely vital to adopt strategies to promote sexual health, including sexual self-concept, in patients with this disease.

A review of the literature shows that various methods such as telephone counseling, web-based training (Hummel et al., 2015), and social networking (Anderson, 2013) have been used to improve sexual health. Today, people can communicate and exchange information, regardless of social status or time. The predominant term for such sharing of ideas and information on the Internet or mobile operating systems is the "social media" (Lloyd, 2014). Due to the increasing use of new technologies, such as the Internet and social spaces and groups and virtual channels, and their traceability, availability, and ease of use, the Internet has

become one of the main ways to provide information to clients and educate those (Sedaghati and Ardjmand, 2006). Thus, health education and health promotion researchers around the world are working to discover creative ways based on the Internet and other social media to increase the effectiveness of interventions (Kagan and Kuhn, 2004).

Internet use in Iran has surged markedly, and Iranian users are ranked fifth in using online networks. Reports indicated that the ranking of Iranian users in the use of Internet websites in 2016 was as follows: 4th for Yahoo, 5th for Wikipedia, 6th for Blogfa, 9th for Instagram, and 14th for Telegram and WhatsApp. On a global scale, the use of Telegram and WhatsApp in the USA, Russia, Italy, and Spain is after Iranian users (Ghaffari et al., 2017). Some of the benefits of using social media include increasing people's access regardless of age, education, race, and place of residence (Moorhead et al., 2013), as well as boosting people's self-confidence and sense of ownership. In addition, social networks allow receiving and responding information simultaneously. Therefore, this method has a higher efficiency than traditional methods (Latkin and Knowlton, 2015).

According to our search of the available literature, so far no study has attempted to promote sexual self-concept in women with breast cancer based on a social networks-based support program. Due to the high prevalence of breast cancer in Iran and the problems it causes in women's lives, sexual self-concept has become an important aspect in the lives of women with breast cancer, and support program based on social networks can be a promising approach to promote this trait. New studies, such as the current one, can help patients identify and modify negative attitudes, beliefs, and thoughts that people may hold about their gender.

Methods

Study design

A randomized controlled single-blind trial with a control group was conducted from April 2020 to August 2020. This study was approved by the Research Council and Ethics Committee of Mazandaran University of Medical Sciences (Code No. 6440).

Participants and recruitment

Participants of the study included women with breast cancer who were willing to participate in the study. The participants were recruited from the private office of a radio oncologist in Sari, Iran.

Inclusion criteria

Being Iranian, at least primary education, married women of childbearing age, one week after the last course of treatment (radiotherapy), stages 1–3 of the disease, living with the spouse for the past four weeks, no history of adverse events (e.g., the death of a family member or severe accident) in the last 3 months, failure to attend sexual health-related classes in the past 6 months, no depression, anxiety, or severe stress according to the DASS-21 questionnaire, lack of severe complications caused by radiotherapy at the discretion of the radio oncologist specialist consultant, and consent to participate in the research (Ziaei et al., 2018; Yazdani et al., 2019).

Exclusion criteria

Participants with exacerbation of the disease (occurrence of latest metastases) or occurrence of an adverse event (death of relations or accident resulting in disability or divorce) during the study and until follow-up were excluded (Ziaei et al., 2018).

Sample size

The number of samples in each group was calculated at least 28 people using the following formula, considering $\alpha = 0.05$ (reliability coefficient), $\beta = 0.10$ (type II error), the number of repetitions, $m = 3$, the correlation value of data before and after the intervention $P = 0.05$, and a medium effect size of 0.5. To increase accuracy, 30 people in each group were studied.

$$n = \frac{2 \times (Z_{1-(\alpha/2)} + Z_{1-\beta})^2 (1 + (m - 1)\rho)}{m((\mu_1 - \mu_2)/\sigma)^2}$$

Randomization

After selecting the desired patients according to the checklist prepared by the research team and according to the inclusion criteria, eligible patients were contacted. The depression, anxiety, and stress questionnaires were provided to the participants in order to be more in line with the researchers' inclusion criteria. In the case of a score of 15 and above in the depression scale, a score of 13 and above in the anxiety scale, and a score of 18 and above in the stress scale, the patient was excluded from the study. In addition, to observe ethics, there was an opportunity to answer the possible questions of patients who were not eligible to continue their study about their illness and, if necessary, they were advised to refer to medical centers. Then, the eligible individuals were provided with a written informed consent form and additional explanations about the study objectives and their importance. Then, the 60 eligible patients were divided randomly into the two groups of intervention and control using the permuted block randomization method. According to the statistical consultant, 60 envelopes were prepared, numbers 1–60 were written on them, and the names of the groups were placed in the envelopes according to the computer program. The envelopes were opened by the researcher consecutively, and they were randomly assigned into intervention or control groups.

Intervention group

The social network-based support program was implemented by a master's degree student in midwifery counseling under the supervision of a reproductive health specialist, a psychiatrist, a sex therapist, and a radiologist. Then, it was completed by asking for the opinion of two professors in the field of mental health (a psychiatrist and a Ph.D. clinical psychologist) and one professor in the field of midwifery; the experts' comments were applied. The support program was held in eight sessions (two 45-min sessions per week) on WhatsApp messengers. In the first 10 min of each session, the participants were assigned to attend. In the following 20 min, they listened to a voice message prepared in advance. After that, the possible questions of the participants were answered for 15 min. It should be noted that according to the topics mentioned in each session, homework was given to the participants, and they were asked to do homework and practice the techniques learned

Table 1. Content provided in each session in the intervention group

Number of sessions	Content of each session
Session 1	Initially, the goals and rules of the channel are expressed and introduced. Then, a short definition, statistics and the prevalence of breast cancer, the effects of breast cancer on patients' sexual life, and sexual self-concept
Session 2	Training anatomy and sex cycle in men and women
Session 3	Providing information about misconceptions and replacing them with correct concepts
Session 4	Strengthening self-confidence and self-esteem in sexual intercourse
Session 5	Teaching how to deal with shame in sexual intercourse and deciding to solve it and body image
Session 6	Teaching the technique of sensory focus and explaining how to complete the session self-assessment form
Session 7	Teaching strategies to enhance marital satisfaction and expressing feelings and opinions about sexual behavior
Session 8	Training problem-solving skills and acceptance of supportive relationships

during the week and to send them the personal account of the researcher on WhatsApp. During each session, the participants were given the opportunity to express their experiences and problems. The contents of the sessions are briefly presented in Table 1.

Control group

In the control group, eight sessions (two 45-min per week) were held on WhatsApp messenger; they received audio and video files whose content was not related to sexual self-concept. The contents of the sessions are briefly shown in Table 2.

Outcomes

The primary outcome was sexual self-concept, and the secondary outcomes were women's sexual quality of life and participants'

Table 2. Content provided in each session in the control group

Number of sessions	Content of each session
Session 1	Breast cancer & coronavirus
Session 2	Nutrition and exercise during breast cancer
Session 3	Skin care during breast cancer
Session 4	Menopause, hot flashes, and sleep deprivation in breast cancer
Session 5	Osteoporosis in breast cancer
Session 6	Hair loss and memory loss affected by breast cancer treatments
Session 7	Infertility affected by treatment in breast cancer
Session 8	Strategies to prevent recurrence of breast cancer

satisfaction. All the participants completed a socio-demographic characteristics form as well as Female Sexual Function Questionnaire (FSFI), Depression, Anxiety, Stress Scale (DASS), and Body Image Scale (BIS) at baseline. Also, they completed the Snell's Multidimensional Sexual Self-Concept Questionnaire (MSSCQ), women's Sexual Quality of Life Questionnaire (SQOL-F), and Clients' Satisfaction Questionnaire-8 (CSQ-8) at baseline, immediately, and 1 month after the intervention. The questionnaires completed by the Porsline program online.

Measures

Snell's Multidimensional Sexual Self-Concept Questionnaire

The MSSCQ was designed by Snell and included 100 questions in 20 domains (Snell, 1998). Its Cronbach's α coefficient has been reported from 72% to 94% in different dimensions. Also, its reliability in the Iranian context was reported to be 88% (Ziaei et al., 2013). The Persian version includes 78 questions in 18 domains, which are classified into the three dimensions of positive, negative, and situational sexual self-efficacy. The positive dimension includes 44 questions in 10 domains, the negative dimension includes 16 questions in 4 domains, and the situational dimension includes 18 questions in 4. This questionnaire is rated on a 5-point Likert scale as no expressions = 0, little = 1, somewhat = 2, high = 3, and totally = 4, and a higher score indicates a higher sexual self-concept in each dimension (Jaafarpour and Molaiezhad, 2016). In the present study, its reliability was evaluated in a population of 20 breast cancer women at a two-week interval, which was 0.95 for the positive dimension, 0.73 for the negative dimension, and 0.78 for the situational sexual self-concept.

Women's Sexual Quality of Life Questionnaire

This questionnaire was introduced by Symonds and Quirk (2005), and its validity and reliability were established Iranian women (Maasoumi et al., 2013). It measures the quality of women's sexual life in four domains, i.e., sexual psychological feeling, sexual satisfaction, self-worthlessness, and sexual repression with 18 questions. Each question was rated in six options from 0 to 6 (strongly disagree, relatively disagree, somewhat disagree, somewhat agree, relatively agree, and strongly agree), with a higher score indicating a more desirable level of quality of sexual life (Symonds and Quirk, 2005). The internal consistency of this instrument with 95% Cronbach's α coefficient was confirmed, and the test-retest method showed good result ($r = 85$, $P = 0.001$) (Maasoumi et al., 2013).

Female Sexual Function Questionnaire

This questionnaire measures women's sexual function in the areas of desire, psychological stimulation, moisture, orgasm, satisfaction, and sexual pain during the last 4 weeks (Rosen et al., 2000). Its reliability was established in the Iranian context by Cronbach's α coefficient of 70% (Mohammadi et al., 2008). The scoring of the questionnaire is based on the Likert scale from 0 or 1 to 5, and the higher score indicates better sexual function.

Depression, Anxiety, Stress Scale

The tool was designed by Lovibond in 1983 on a 42-item scale (Lovibond and Lovibond, 1995) and then a shorter version of DASS with 21 items was introduced (Brown et al., 1997). The DASS-21 scale consists of a set of three self-assessment subscales designed to measure negative emotional states of depression, anxiety, and stress. Each of the three subscales contains seven items in a 4-point scale from zero to three (it does not apply to me at all to it does apply to me at all). The total score ranged from 0 to 42 (Sahebi et al., 2015), and its Cronbach's α coefficients for the DASS were reported to be 0.94, 0.87, and 0.91, respectively (Antony et al., 1998). Also, its reliability coefficient was satisfactory in the Iranian population (Sahebi et al., 2015).

Body Image Scale

This 10-item BIS was developed by Hopwood that assesses affective (self-awareness), behavioral (difficulty looking at the naked body), and cognitive (such as appearance satisfaction) issues (Hopwood et al., 2001). Clients can indicate body image symptoms on a 4-point scale from zero to three (never, very little, somewhat, and very much). The minimum and maximum scores of this tool are 0 to 30. A higher score means a higher level of body image disturbance (Melissant et al., 2018).

Clients' Satisfaction Questionnaire-8

The CSQ-8 was developed by Larsen; it is an eight-item scale (Larsen et al., 1979). This scale is designed to measure clients' satisfaction with counseling and treatment services. For each question, a score between 1 and 4 is considered. The score range is between 8 and 32, with higher scores indicating greater satisfaction. The internal consistency coefficient of this questionnaire is 0.93, indicating a good structural and content validity (McMurtry and Hudson, 2000). The reliability of this scale in the Iranian population has been established in several studies with Cronbach's α coefficients of 0.86–0.94, demonstrating excellent internal coordination (Aliabadi et al., 2020).

Statistical analysis

In this study, the collected data were transferred to SPSS version 20. Then, descriptive statistical methods were used to describe quantitative and categorical variables. To evaluate the normality of quantitative values, the Shapiro–Wilk test was used, and if it was not normal, the Mann–Whitney nonparametric test was used. Also, independent t -test, Mann–Whitney, χ^2 , and Fisher's exact tests were used to assess socio-demographic characteristics in the intervention and control groups. The Mann–Whitney nonparametric test was used to compare quantitative variables in each of the intervention and control groups. A generalized equation estimation test was also run to control the effect of interfering factors. The effect sizes of treatment and confidence interval were also calculated. A P -value of less than 0.05 was considered significant.

Results

Flow of participants through the trial and recruitment

Sixty participants were recruited for this trial from April to August 2020. Sixty participants were recruited for the experiment

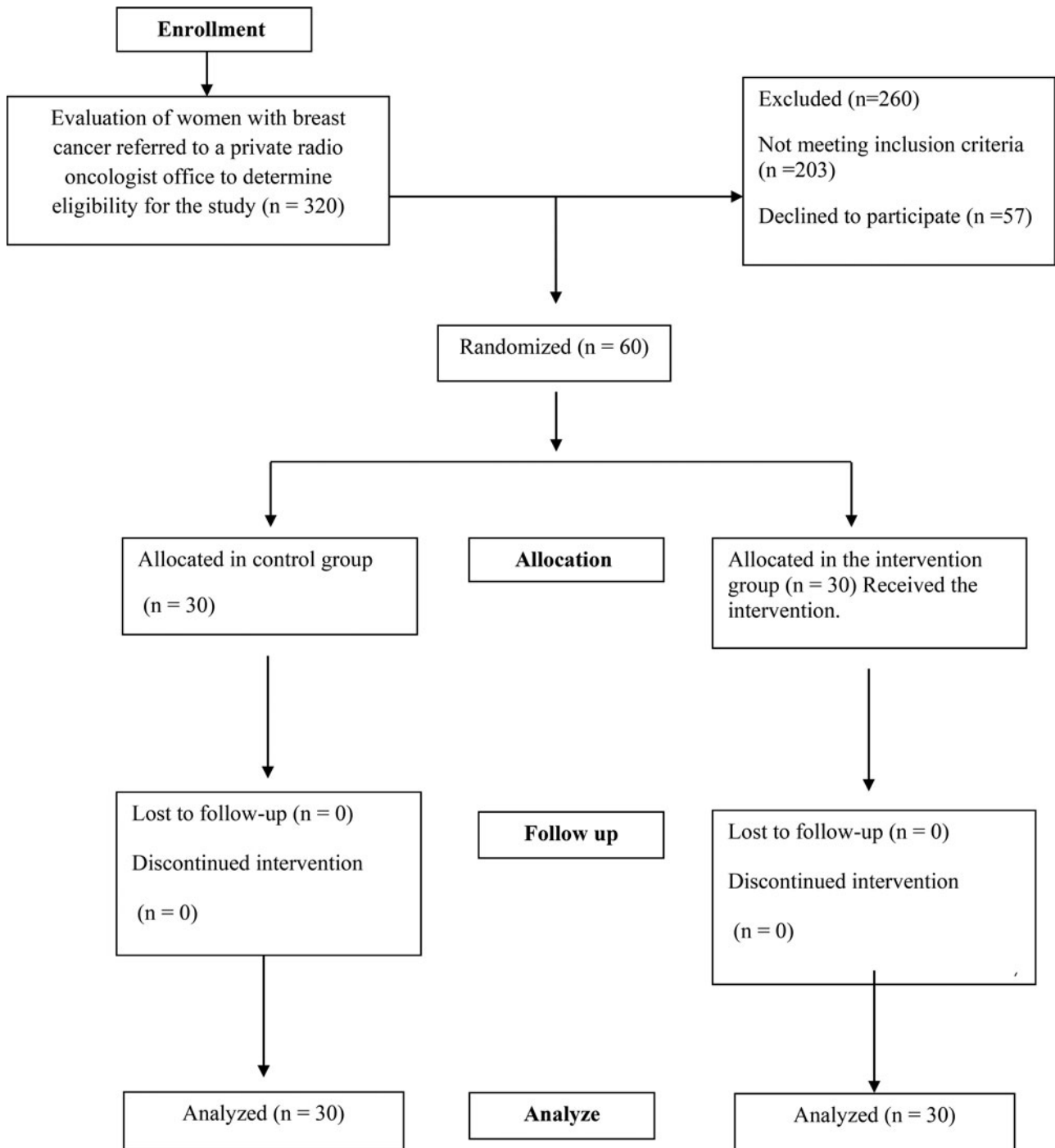


Fig. 1. CONSORT flow diagram of participant.

between April 2020 and August 2020 and were analyzed by the end of that number. Probably one of the reasons for the lack of subject attrition was the scarcity of support programs for the sexual problems of women with breast cancer in Iranian society. Thus, this support program was welcomed by the participants and they remained in the trial until the end. In addition, following up and controlling the patients can be another reason for the lack of participant drop out. The flow of the participants is provided in Figure 1, including the number of recruited participants and the reasons for dropping out.

Participant characteristics

Table 3 presents the patients’ characteristics overall and by group assignment. Data were collected from 60 breast cancer women (age of the control group = 40.23 ± 5.87 years, age of the intervention group = 40.50 ± 6.28 years). The baseline demographic characteristics of the participants in the intervention and control groups were generally similar. The results of the Mann–Whitney test showed that the mean scores of depression, anxiety, stress, sexual function, and body image as confounder factors

Table 3. Demographic characteristics of participants

	Control group	Intervention group	P-value
Patient age (years)	40.23 ± 5.87	40.50 ± 6.28	0.866
Age of spouses (years) (Mean ± SD)	45.57 ± 7.47	45.87 ± 7.57	0.878
Duration of marriage (years) (Mean ± SD)	17.30 ± 3.37	19.77 ± 8.22	0.086
Duration of diseases (months) (Mean ± SD)	13.90 ± 6.20	13.77 ± 7.33	0.814
Number of chemotherapy sessions (Mean ± SD)	7.37 ± 1.97	7.20 ± 1.51	0.363
Number of radiotherapy sessions (Mean ± SD)	21.37 ± 6.11	23.23 ± 4.59	0.128
Female education, N (%)	Less than a bachelor's degree	17 (56.7)	0.795
	More than a bachelor's degree	13 (43.3)	
Menopausal status, N (%)	Yes	11 (36.7)	0.791
	No	19 (63.3)	
Cancer stage, N (%)	I	6 (20.0)	0.491
	II	21 (70.0)	
	III	3 (10.0)	

Table 4. Comparison of the mean and standard deviation of depression, anxiety, stress, sexual function, and body image scores in the both groups

Variables	Group	Before intervention	
		Mean ± SD	P-value
Depression	Control	7.50 ± 3.75	0.597
	Intervention	7.70 ± 3.75	
Anxiety	Control	4.66 ± 2.85	0.251
	Intervention	3.86 ± 2.92	
Stress	Control	4.43 ± 3.15	0.602
	Intervention	4.10 ± 3.33	
Sexual function	Control	16.57 ± 7.95	0.060
	Intervention	19.53 ± 8.28	
Body image	Control	13.36 ± 7.48	0.700
	Intervention	12.60 ± 7.13	

were not significantly different in the two groups before the intervention (Table 4).

Primary outcome: Sexual self-concept

Based on our findings, there was no significant difference between the two groups in terms of the mean score of sexual self-concept in the positive ($P = 0.599$), negative ($P = 0.354$), and situational ($P = 0.733$) dimensions before the intervention. In the positive self-concept score, there were significant differences between the groups immediately and 1 month after the intervention (119.70 ± 18.98 and 117.03 ± 17.57 in the intervention group versus 92.93 ± 21.92 and 87.86 ± 10.61 in the control group, respectively). The effect size was 1.30 immediately after the intervention and 2.00 1 month after the intervention. In the negative self-concept score, there were significant differences between the groups immediately and 1 month after the intervention (28.03 ± 10.09 and 29.50 ± 4.99 in the intervention group versus 35.70

± 10.64 and 35.76 ± 10.75 in the control group, respectively). The effect size was 0.73 immediately after the intervention and 0.74 1 month after the intervention. In the situational self-concept score, there were significant differences between the groups immediately and 1 month after intervention (34.63 ± 8.77 and 31.83 ± 3.37 in the intervention group versus 43.60 ± 9.38 and 43.96 ± 7.52 in the control group, respectively). The effect size was 0.98 immediately after the intervention and 2.08 1 month after the intervention (Table 5).

Also, using the generalized equation estimation test and considering the scores of positive, negative, and situational sexual self-concept and controlling the effect of time of measuring the consequences, the support program intervention based on social networks was significantly effective. Thus, the positive sexual self-concept score of the intervention group increased by 15.67 points, the negative sexual self-concept score decreased by 2.65 points, and the situational sexual self-concept score increased by 6.82 points compared to the control group (Table 7).

Secondary outcomes: Sexual quality of life and clients' satisfaction

The results of the Mann-Whitney test showed that the mean scores of sexual quality of life in the two groups of intervention and control before the intervention were not significantly different ($P = 0.678$). However, immediately after the intervention, it significantly increased in the intervention group compared to the control group ($P < 0.001$). The results also showed that the mean score of sexual quality of life in the intervention group was significantly higher compared to the control group 1 month after the intervention ($P < 0.001$).

The effect size immediately after the intervention in the intervention group was 1.81, and 1 month after the intervention it was 2.09 (Table 6). Also, using the generalized equation estimation test and considering the score of quality of sexual life and controlling the effect of time of measuring the consequences, the support program based on social networks was significantly effective. Thus, the sexual quality of life score of the intervention group

Table 5. Comparison of the mean and standard deviation of sexual self-concept score in the both groups

Variables	Group	Before intervention		After intervention		Effect size (confidence interval)	4-week after intervention		Effect size (confidence interval)
		Mean ± SD	P-value	Mean ± SD	P-value		Mean ± SD	P-value	
Positive sexual self-concept	Control	100.46 ± 21.89	0.599	92.93 ± 21.92	<0.001	1.30 (0.74–1.86)	87.86 ± 10.61	<0.001	2.00 (1.39–2.63)
	Intervention	95.30 ± 32.68		119.70 ± 18.98			117.03 ± 17.57		
Negative sexual self-concept	Control	31.50 ± 8.44	0.354	35.70 ± 10.64	0.013	0.73 (–1.26, –0.21)	35.76 ± 10.75	<0.001	0.74 (–1.27, –0.22)
	Intervention	33.43 ± 9.80		28.03 ± 10.09			29.50 ± 4.99		
Situational sexual self-concept	Control	38.00 ± 8.89	0.733	34.63 ± 8.77	<0.001	0.98 (0.45–1.52)	31.83 ± 3.37	<0.001	2.08 (0.45–1.52)
	Intervention	38.56 ± 9.28		43.60 ± 9.38			43.96 ± 7.52		

Table 6. Comparison of the mean and standard deviation sexual quality of life score in the both groups

Variables	Group	Before intervention		After intervention		Effect size (confidence interval)	4 week after intervention		Effect size (confidence interval)
		Mean ± SD	P-value	Mean ± SD	P-value		Mean ± SD	P-value	
Sexual quality of life	Control	65.96 ± 23.21	0.678	61.43 ± 20.00	<0.001	1.81 (1.20–2.40)	61.33 ± 12.44	<0.001	2.09 (1.46–2.72)
	Intervention	68.96 ± 24.42		92.90 ± 14.38			92.60 ± 17.06		

Table 7. Effect of time and intervention based on the generalized equation estimation

Intervention group versus the control group in general	B	SE	95% Wald confidence interval		Hypothesis test		
			Lower	Upper	df	Wald χ^2	P-value
Positive sexual self-concept	15.67	3.97	7.98	22.46	1	15.67	0.001
Negative sexual self-concept	-2.65	1.75	-6.09	0.777	1	2.30	0.001
Situational sexual self-concept	6.82	1.40	4.06	9.58	1	23.49	0.001
Sexual quality of life	13.82	3.41	7.12	20.52	1	16.36	0.001

increased by 13.82 points compared to the control group (Table 7). The mean score of client satisfaction in the two groups of intervention and control immediately and 1 month after the intervention were not significantly different ($P > 0.05$).

Discussion

The present study investigated the effect of a WhatsApp support program on sexual self-concept in women with breast cancer. The results of this study showed that the support program based on social networks increased positive sexual self-concept and situational sexual self-concept and reduced negative sexual self-concept immediately and 1 month after the intervention.

Unfortunately, there are currently insufficiently documented studies on the sexual self-concept of women with breast cancer. Therefore, a large study gap exists in this area to compare the results of studies, with similar conditions, with the present study. However, a limited number of clinical trials have examined the effect of educational, counseling, and psychological interventions on women's sexual self-concept. For example, the results of a study by Yazdani et al. showed that education through social networks improved the positive dimension of sexual self-concept and decreased the negative dimension of sexual self-concept in infertile women (Yazdani et al., 2019). Also, the results of the study were stable 1 month after the intervention. The above study focused on the anatomy and sexual cycle, sexual behaviors and satisfaction, body image and shame in sex, misconceptions about sex, and problem-solving techniques. It tried to improve women's sexual self-concept, which was consistent in this regard with the results of the present study. However, the situation was inconsistent with the present study because participants were in the infertility treatment phase, and this could be one of the reasons that the negative dimension of sexual self-concept was not changed.

The results of the present study were consistent with the findings of Mohammadi (2010) and Ziaei et al. (2018) regarding women of reproductive age. These studies focused on group and individual counseling on sexual skills, changing people's attitudes about sexual beliefs and mental images, and the right way to have sex to improve sexual self-concept and improve women's sexual health, which were in line with the present study. Also, the results of the study were stable 1 month after the intervention. In addition, the study of Gharibiasl et al. (2016) using cognitive-behavioral group counseling and challenging irrational thoughts with rational thinking improved the positive self-concept and the negative aspect of self-concept in patients with breast cancer. The results of the present study were consistent with the study of Ramezani et al. (2018), Bavi et al. (2014), and Vahidvaghef (2015)

on women of reproductive age. These studies were conducted with the aim of examining the effectiveness of sex education on women's sexual self-concept, and their results showed that sex education reduces the negative dimension of sexual self-concept (i.e., sexual anxiety and sexual depression) and increases the positive dimension of sexual self-concept (i.e., sexual self-expression, sexual optimism, sexual self-efficacy, monitoring, and management of sexual problems). In this regard, researchers concluded that sexual education could prevent sexual problems and improve women's sexual health, including sexual self-concept.

Also, the results of the study of Vahidvaghef (2015) were stable in the 6-month follow-up after the intervention. Another method that focuses on improving women's sexual self-concept is cognitive-behavioral therapy. Ghorbanshiroudi et al. (2012) investigated the effect of cognitive-behavioral therapy on improving sexual self-concept in women of reproductive age. The researchers in that study showed that the intervention increased the positive dimension of sexual self-concept (sexual satisfaction and sexual confidence) and declined the negative dimension of sexual self-concept (sexual depression). Finally, the researchers concluded that cognitive-behavioral therapy for improving sexual self-concept should be considered as an adjunct to drug therapy in women.

It seems that due to the few studies that have been performed on the promotion of sexual self-concept in women with breast cancer, patients with breast cancer need comprehensive care and support programs to prevent and manage the physical and psychosocial effects of cancer and its treatments (Ganz, 2006; Stanton, 2006). Studies in high-income countries (HICs) and low- and middle-income countries (LMICs) have shown that cancer patients and their families may have unmet physical and psychosocial supportive care needs (Knaul and Bhadelia, 2012; Cardoso et al., 2013). Supportive care is often a low priority in LMICs (Knaul and Bhadelia, 2012). Integrating supportive care into the existing programs for women with breast cancer is an integral part of a multidisciplinary and interdisciplinary approach to cancer care that requires both professional health education and patient awareness of supportive care services (Schmid-Büchi et al., 2011). Providing supportive care to women with breast cancer ensures that cancer patients receive comprehensive care that can improve adherence to treatment recommendations and other related symptoms (Cardoso et al., 2013). In the present study, by developing and implementing a support program for improving sexual health, especially the sexual self-concept of women with breast cancer and providing appropriate techniques and solutions to women with breast cancer, we tried to identify patients' negative beliefs and perceptions about themselves and their gender, and by practicing the techniques and strategies

provided, empowered them to solve their sexual problems and improve their sexual health, especially the various dimensions of sexual self-concept and its consequences. The only difference between the above studies and the present study is the method of performing the interventions, such that the mentioned were conducted in person, while the present study was conducted using social networks and in cyberspace (WhatsApp). This technology is a cost-effective method that removes many obstacles (Watzke et al., 2017) in providing fast and accessible services and improving sexual health services (Gibson and Cartwright, 2014). In fact, anonymity and freedom of expression have made the Internet a safe place to express one's problems (Yazdani et al., 2019). Online and telephone training provides more access to counselors and healthcare professionals regardless of time and place, and those who feel uncomfortable discussing sexual issues can benefit from online interventions by expressing their problems. This led to an increase in positive sexual self-concept and a decrease in negative sexual self-concept in this group of patients. Few studies on social media-based interventions have focused on the sexual health of women with breast cancer. In general, the present study was consistent with the study of Hummel et al. (2015) and Salonen et al. (2009). The results of these two studies showed that Internet-based cognitive-behavioral therapy and telephone-based interventions reduced sexual problems and improved sexual intimacy, body image, sexual function, and overall sexual health in women with breast cancer. As a result, the quality of sexual life increased. Also, the results of the study of Hummel et al. (2015) 3 and 9 months after the intervention were stable. Our findings showed that the social media-based support program was effective in improving the sexual health of women with breast cancer and has potential benefits for cancer patients with sexual concerns. However, it should be noted that most studies involving patients with prostate, genital, and breast cancer have been performed in high-income countries with good web-based technology systems. Therefore, caution should be exercised in generalizing these results.

The strengths of this study include blinding the participants, random allocation of the samples, and holding consistent and weekly intervention sessions. On the other hand, providing homework to the participants in the intervention sessions, questions and answers, feedback, and review of homework to consolidate the content provided are the other strengths of the present study. Also, in this study, the research team examined and recorded clients' satisfaction with the consultant, and it was shown that the majority of the participants had a high proportion of satisfaction. Also, by examining the percentage of participants who participated in each session, which is equivalent to adhering to or accepting treatment in pharmaceutical work, the majority of the participants (97.49%) in the intervention group were present in each session of the support program that is another strength of the present study that the researcher and the research team were able to achieve this success. However, many studies, without considering the above, conducted interventional studies that ultimately had a negative effect on the quality of study results. Finally, the intervention was implemented based on a protocol designed and validated by the research team.

One of the limitations of the present study was that due to the online nature of the support program, the participants may have not adhered to all the advice, training, and homework carefully, and this may to some extent affect the interpretation of the results. Also, due to the fact that all the questionnaires were completed by the participants, the participants' reports may have not

been accurate enough due to shame or confidentiality, which may prone the study findings to self-report bias. However, to control this limitation, the researcher gave the necessary explanations about the confidentiality of information and coding of the questionnaires, and the appropriate communication between the researcher and the patients caused the questions to be answered clearly. Because, in the study, the person performing the intervention was the person reviewing the results, this may be prone the study to diagnostic bias. In addition, blinding only at the level of participants may have undermined the study power. However, the evaluation of the patients was performed by questionnaires, and the researcher's involvement in this type of evaluation was minimized. In addition, due to the wide scope of the study, not all factors related to sexual self-concept, such as history of sexual abuse, were addressed. Also, because, in this study, women with at least primary education were enrolled, some might have been unable to use social networks, and this may to some extent affect the participation of individuals and the results of our study. It is suggested that further studies be implemented to investigate the effect of social media-based supportive programs on the sexual self-concept of newly diagnosed women with breast cancer and their husbands as a couple or separately.

Conclusions

The findings of this study indicated that providing counseling regarding sexual self-concept through social networks (WhatsApp) could increase the positive and situational sexual self-concept scores and lower the negative sexual self-concept score. As a consequence, due to the growing use of social networks and the sensitivity of sexual issues, adopting correct counseling approaches through virtual spaces can be an effective step toward improving the sexual health of women with breast cancer and reducing the complications of breast cancer. Based on this result, the use of virtual spaces such as WhatsApp is suggested to treat sensitive topics similar to sexual subjects. The researcher recommends performing studies similar to the present one on other topics or in other population groups.

Acknowledgments. This study was extracted from the Master of Science thesis in Midwifery. Hereby, I would like to thank the Research Deputy of Mazandaran University of Medical Sciences for their support, and I would like to thank all breast cancer women who participated in this study.

Ethical approval. The Research and Ethical Committee of Mazandaran University of Medical Sciences approved this research (IR.MAZUMS.REC.1399.6440).

Funding. This project was fully supported and funded (Grant No. 6440) by the Mazandaran University of Medical Sciences (MAZUMS), Iran.

Conflict of interest. The authors declare that they have no competing interests.

References

- Akbari ME, Sayad S, Sayad S, et al. (2017) Breast cancer status in Iran: Statistical analysis of 3010 cases between 1998 and 2014. *International Journal of Breast Cancer* 1–10. doi:10.1155/2017/2481021.
- Aliabadi R, Shareh H and Touzandeh Jani H (2020) The effectiveness of mindfulness-based schema-therapy on depression, anxiety and hopelessness of betrayed women: A randomized clinical trial. *Journal of Neishabour School of Medical Sciences* 8 (2), 140–155.

- Aliakbari Dehkordi M** (2010) Relationship between women sexual function and marital adjustment. *International Journal of Behavioral Sciences* 4(3), 199–206.
- Andersen BL** (1999) Surviving cancer: The importance of sexual self-concept. *Medical and Pediatric Oncology* 33(1), 15–23. doi:10.1002/(SICI)1096-911X(199907)33:1<15::AID-MPO4>3.0.CO;2-L
- Anderson R** (2013) Positive sexuality and its impact on overall well-being. *Bundesgesundheitsblatt-Gesundheitsforschung-Gesundheitsschutz* 56(2), 208–214. doi:10.1007/s00103-012-1607-z.
- Antony MM, Bieling PJ, Cox BJ, et al.** (1998) Psychometric properties of the 42-item and 21-item versions of the Depression Anxiety and Stress scales in clinical groups and community sample. *Psychological Assessment* 10, 176–181.
- Bai L, Arver B, Johansson H, et al.** (2019) Body image problems in women with and without breast cancer 6–20 years after bilateral risk-reducing surgery — A prospective follow-up study. *The Breast* 44, 120–127. doi:10.1016/j.breast.2019.01.013.
- Bavi A, Amanolahi A and Atari Y** (2014) Efficacy of premarital sexual training on self-concept among women in marriage age in ahvaz. *Jundishapur Journal of Health Sciences* 13(4), 485–493.
- Blunt H** (2012) *People Aren't Mind Readers: A Study of Sexual Self-Concept, Partner Communication, and Sexual Satisfaction* (Doctor of Philosophy thesis). University of South Florida, pp. 1–214.
- Boswell EN and Dizon DS** (2015) Breast cancer and sexual function. *Translational Andrology and Urology* 4(2), 160–168.
- Brown TA, Chorpita BE, Korotitsch W, et al.** (1997) Psychometric properties of the Depression Anxiety Stress Scales (DASS) in clinical samples. *Behaviour Research and Therapy* 35, 79–89.
- Cardoso FBN, Distelhorst SR, Bevilacqua JL, et al.** (2013) Supportive care during treatment for breast cancer: Resource allocations in low-and middle-income countries. A Breast Health Global Initiative 2013 consensus statement. *The Breast* 22(5), 593–605. doi:10.1016/j.breast.2013.07.050
- Carpenter KM, Andersen BL, Fowler JM, et al.** (2009) Sexual self-schema as a moderator of sexual and psychological outcomes for gynecologic cancer survivors. *Archives of Sexual Behavior* 38(5), 828–841. doi:10.1007/s10508-008-9349-6.
- De Camargo JD** (2016) The sexuality of women undergoing treatment for breast cancer. *Enfermería Global* 15(3), 388–405.
- Dehghan P, Mogharabi M, Zabbah I, et al.** (2018) Modeling breast cancer using data mining methods. *Journal of Health and Biomedical Informatics* 4(4), 266–278.
- Del Pup L, Villa P, Amar I, et al.** (2019) Approach to sexual dysfunction in women with cancer. *International Journal of Gynecologic Cancer* 29(3), 1–5. doi:10.1136/ijgc-2018-000096
- Deutsch AR, Hoffman L and Wilcox BL** (2014) Sexual self-concept: Testing a hypothetical model for men and women. *The Journal of Sex Research* 51(8), 932–945. doi:10.1080/00224499.2013.805315
- Esfandiari Dolabi Z, Joulaei A and Asli Azad M** (2015) Comparison of marital satisfaction and general health among breast cancer patients with breast evacuation, breast keeping and cancer free women in Tehran. *Iranian Journal of Rehabilitation Research in Nursing* 1(4), 39–48.
- Ganz PA** (2006) Monitoring the physical health of cancer survivors: A survivorship-focused medical history. *Journal of Clinical Oncology* 24(32), 5105–5111. doi:10.1200/JCO.2006.06.0541
- Ghaffari M, Rakhshanderou S, Mehrabi Y, et al.** (2017) Using social network of TELEGRAM for education on continued breastfeeding and complementary feeding of children among mothers: A successful experience from Iran. *International Journal of Pediatrics* 5(7), 5275–5286.
- Gharibiasl A, Sodani M and Atari Y** (2016) The effectiveness of cognitive-behavioral group counseling on self-concept and depression in women with breast cancer. *Jundishapur Scientific Medical Journal* 15 (3), 333–345.
- Ghorbanshiroudi S, Khalatbari J and Keikhayfarzaneh M** (2012) Studying the effectiveness of cognitive-behavioral therapy in developing sexual self-concept. *Journal of Basic and Applied Scientific Research* 2(4), 378–381.
- Gibson K and Cartwright C** (2014) Young people's experiences of mobile phone text counselling: Balancing connection and control. *Children and Youth Services Review* 43, 96–104. doi:10.1016/j.childyouth.2014.05.010.
- Hopwood P, Fletcher I, Lee A, et al.** (2001) A body image scale for use with cancer patients. *European Journal of Cancer* 37, 189–197. doi:10.1016/S0959-8049(00)00353-1
- Hummel SB, Van Lankveld JJ, Oldenburg HS, et al.** (2015) Internet-based cognitive behavioral therapy for sexual dysfunctions in women treated for breast cancer: Design of a multicenter, randomized controlled trial. *BMC Cancer* 15(1), 321–332. doi:10.1186/s12885-015-1320-z
- Ianakieva I, Fergus K, Ahmad S, et al.** (2016) A model of engagement promotion in a professionally facilitated online intervention for couples affected by breast cancer. *Journal of Marital and Family Therapy* 42(4), 701–715. doi:10.1111/jmft.12172
- Jaafarpour M and Molaeinezhad M** (2016) Relationship between sexual self-concept and sexual performance in married women referring to mobarakeh health centers. *Iranian Journal of Research Development in Nursing & Midwifery* 12(3), 40–47.
- Kagan KO and Kuhn U** (2004) Sport und schwangerschaft [exercise and pregnancy]. *Herz* 29(4), 426–434. doi:10.1007/s00059-004-2590-4
- Keihanian S, Ghadi SF, Zakerhamidi M, et al.** (2017) Evaluation of lifestyle in women with breast cancer referred to Imam Sajad hospital, Ramsar in 2015. *Advances in Nursing & Midwifery* 26(94), 11–18.
- Knaut FM and Bhadelia A** (2012) *Closing the Cancer Divide: An Equity Imperative*. Boston, MA: Harvard Global Equity Initiative, pp. 1–404.
- Kowalczyk R, Nowosielski K, Cedrych I, et al.** (2019) Factors affecting sexual function and body image of early-stage breast cancer survivors in Poland: A short-term observation. *Clinical Breast Cancer* 19(1), 30–39. doi:10.1016/j.clbc.2018.09.006 m
- Larsen DL, Attkisson CC, Hargreaves WA, et al.** (1979) Assessment of client/patient satisfaction: Development of a general scale. *Evaluation and Program Planning* 2(3), 197–207. doi:10.1016/0149-7189(79)90094-6
- Latkin CA and Knowlton AR** (2015) Social network assessments and interventions for health behavior change: A critical review. *Behavioral Medicine* 41(3), 90–97.
- Lloyd A** (2014) Social media, help or hindrance: What role does social media play in young people's mental health? *Psychiatry Danubina* 26(1), 340–346.
- Lovibond PF and Lovibond SH** (1995) The structure of negative emotional states: Comparison of the Depression Anxiety Stress Scales (DASS) with the beck depression and anxiety inventories. *Behaviour Research and Therapy* 33, 335–343.
- Maasoumi R, Lamyian M, Montazeri A, et al.** (2013) The sexual quality of life-female (SQOL-F) questionnaire: Translation and psychometric properties of the Iranian version. *Reproductive health* 10(1), 1–6. doi:10.1186/1742-4755-10-25
- McMurtry SL and Hudson WW** (2000) The Client Satisfaction Inventory: Results of an initial validation study. *Research on Social Work Practice* 10 (5), 644–663. doi:10.1177/104973150001000506
- Melissant HC, Neijenhuijs KI, Jansen F, et al.** (2018) A systematic review of the measurement properties of the Body Image Scale (BIS) in cancer patients. *Supportive Care in Cancer* 26(6), 1715–1726.
- Mohammadi SH** (2010) *The Effect of Cognitive Behavioral Group Concelling on Sexual Satisfaction and Women Sexual self-concept* (Master thesis in Midwifery Counseling). Islamic Azad University of Marvdasht. Faculty of Educational Sciences, pp. 1–140.
- Mohammadi K, Heidari M and Faghihzadeh S** (2008) The Female Sexual Function Index (FSFI): Validation of the Iranian version. *Payesh* 7(3), 269–278.
- Mohammadinik M** (2017) *Sexual Self-Concept and Its Related Factors in Married Women in Tehran University of Medical Sciences* (Master thesis in Midwifery). Tehran University of Medical Sciences, pp. 1–150.
- Moorhead SA, Hazlett DE, Harrison L, et al.** (2013) A new dimension of health care: Systematic review of the uses, benefits, and limitations of social media for health communication. *Journal of Medical Internet Research* 15 (4), 85.
- Nekouefard O and Jahangiry L** (2014) Sexual function among patients with breast cancer. *Payesh (Health Monitor)* 13(4), 425–431.
- Ramezani M, Ghaemmaghami A, Talakar M, et al.** (2013) Reliability and validity assessment of multi-dimensional sexual self-concept questionnaire in Iran. *Journal of Military Medicine* 14(4), 249–254.

- Ramezani MA, Ahmadi K, Ghaemmaghami A, *et al.* (2018) Evaluation of quality of life therapy effectiveness in contrast to psycho-sexual education on sexual self-concept of Iranian women. *Iranian Red Crescent Medical Journal* **20**(S1), 22424. doi:10.5812/ircmj.22424
- Rosen R, Brown C, Heiman J, *et al.* (2000) The Female Sexual Function Index (FSFI): A multidimensional self-report instrument for the assessment of female sexual function. *Journal of Sex & Marital Therapy* **26**(2), 191–208.
- Sahebi A, Asghari MJ and Salari RS (2015) Validation of Depression Anxiety and Stress Scale (DASS-21) for an Iranian population. *Journal of Iranian Psychologists* **4**, 25–42.
- Salonen P, Tarkka MT, Kellokumpu-Lehtinen PL, *et al.* (2009) Telephone intervention and quality of life in patients with breast cancer. *Cancer Nursing* **32**(3), 177–190. doi:10.1097/NCC.0b013e31819b5b65
- Schmid-Büchi S, Van den Borne B, Dassen T, *et al.* (2011) Factors associated with psychosocial needs of close relatives of women under treatment for breast cancer. *Journal of Clinical Nursing* **20**(7-8), 1115–1124. doi:10.1111/j.1365-2702.2010.03376.x
- Sedaghati P and Ardjmand A (2006) Does regular ergometric training have any effect on the pregnancy outcome? *Iranian Journal of Pediatrics* **16**(3), 325–331.
- Shahid Sales S, Hasanzadeh M, Sania Saggade S, *et al.* (2017) Comparison of sexual dysfunction in women with breast cancer: Case control study. *Tehran University Medical Journal* **75**(5), 350–357.
- Snell Jr WE (1998) The multidimensional sexual self-concept questionnaire. In Davis CM, Yarber WL, Bauseman R, Schreer G & Davis SL (eds.), *Handbook of Sexuality-Related Measures*. Newbury Park: Sage, pp. 521–524.
- Stanton AL (2006) Psychosocial concerns and interventions for cancer survivors. *Journal of Clinical Oncology* **24**(32), 5132–5137. doi:10.1200/JCO.2006.06.8775
- Steinke EE, Wright DW, Chung ML, *et al.* (2008) Sexual self-concept, anxiety, and self-efficacy predict sexual activity in heart failure and healthy elders. *Heart & Lung* **37**(5), 323–333. doi:10.1016/j.hrtlng.2007.09.004.
- Symonds TBM and Quirk F (2005) Development of a questionnaire on sexual quality of life in women. *Journal of Sex and Marital Therapy* **31**, 385–397. doi:10.1080/00926230591006502
- Vahidvaghef M (2015) *Study the Effectiveness of Cognitive-Behavioral Sex Training in Improving Women's Sexual Self-Concept in Tehran, Iran* (PhD thesis in Clinical and Health Physiology). Autonomous University of Barcelona, pp. 1–134.
- Watzke B, Haller E, Steinmann M, *et al.* (2017) Effectiveness and cost-effectiveness of telephone-based cognitive-behavioural therapy in primary care: Study protocol of TIDE — Telephone intervention for depression. *BMC Psychiatry* **17**(1), 263–271. doi:10.1186/s12888-017-1429-5
- Yazdani M, Mahmoodi Z, Azin SA, *et al.* (2019) The effect of counseling based on sexual self-concept via social networks on smartphone in infertile women: A randomized controlled trial. *International Journal of Community Based Nursing and Midwifery* **7**(3), 231–240.
- Yurek D, Farrar W and Andersen BL (2000) Breast cancer surgery: Comparing surgical groups and determining individual differences in post-operative sexuality and body change stress. *Journal of Consulting and Clinical Psychology* **68**(4), 697. doi:10.1037/0022-006X.68.4.697
- Ziaei T, Khoei EM, Salehi M, *et al.* (2013) Psychometric properties of the Farsi version of modified Multidimensional Sexual Self-concept Questionnaire. *Iranian Journal of Nursing and Midwifery Research* **18**(6), 439–445.
- Ziaei T, Farahmand Rad H, Roshandel G, *et al.* (2018) Effect of counseling based on sexual self-concept on the sexual health of women in reproductive age. *Global Journal of Reproductive Medicine* **3**(5), 85–90. doi:10.19080/GJORM.2018.03.555622