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Investigating the effect of online narrative therapy on the genital self-image and sexual satisfaction of infertile women: a randomized controlled trial

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Abstract

Background One of the problems of infertility is damage to the genital self-image, which is one of the essential components of sexual health and is associated with sexual satisfaction and all dimensions of sexual function. Recently, narrative therapy has been used to treat a wide range of sexual disorders and marital incompatibility. The present study aimed to determine the effect of online narrative therapy on the genital self-image and sexual satisfaction of infertile women.

Methods This randomized controlled trial was conducted with 64 women with infertility, who were selected through the convenience sampling method from gynaecologists with infertility fellowship and family physician clinics. Genital self-image score and sexual satisfaction of the participants were evaluated using the Female Genital Self-Image Scale (FGSIS) and the Hudson sexual satisfaction questionnaire, respectively. The participants were randomly assigned to two narrative therapy and control groups of 32 women using the RANDBETWEEN software. The intervention group received five sessions of weekly 90-minute online narrative therapy sessions using the WhatsApp platform, and the control group received routine care. The data of the two groups, before the intervention, immediately after, and 45 days after the completion of the intervention, were collected and assessed. SPSS version 22 software and statistical tests such as Mann–Whitney U, Friedman, Bonferroni test, and repeated measures ANOVA were used for data analysis.

Results The Mann–Whitney U test showed that the mean score of the genital self-image in infertile women in the intervention and control groups showed no significant differences before the intervention ($p=0.312$). The study results immediately and 45 days after the intervention demonstrated significant differences regarding the mean score of genital self-image compared to the control group ($p<0.001$). In addition, according to the Bonferroni test, the mean sexual satisfaction score immediately and 45 days after the intervention had a significant difference from before the intervention ($p<0.001$).

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Conclusions Online narrative therapy can be a suitable approach to improving genital self-image score and sexual satisfaction in infertile women.

Trial registration The protocol of this research was registered in the Iranian Registry of Clinical Trials (IRCT20161126031117N11) on 15/11/2021.

Keywords Infertile, Women, Genital self-image, Sexual satisfaction, Narrative therapy

Background

Infertility is defined as the inability to conceive after at least one year of continuous sexual activity without using contraceptive methods [1]. According to statistics published by the World Health Organization, globally, 48.5 million couples experience infertility [2]. In the United States, 9% of men and 10% of women aged 15 to 44 are infertile [3], and in Iran, the prevalence of primary and secondary infertility is about 5% and 2%, respectively [4]. Infertility is one of the most essential crises in life, which leads to psychological problems and severe experiences for couples [5]. Many couples with each type of infertility, especially in traditional societies like Iran, in addition to being deprived of having children, are exposed to various individual, familial, social, and economic challenges [6].

Factors such as low self-confidence among women and dissatisfaction with their physical appearance lead to considerable concern among women regarding their reproductive system [7]. Since fertility is a fundamental event in women's lives, the prediction of infertile women in two dimensions of sufficiency and capability more than others negatively affects their body image; therefore, it should be expected that their psychosocial adaptations will also be affected [8]. Infertile women show a change in their body image due to the loss of sense of body control and reduced self-esteem [9]. One of the infertility challenges is damage to the genital self-image, which means the attitude, feelings, and beliefs of women about their reproductive organs, which are influential factors in sexual relationships [10, 11].

The concept of genital self-image was first proposed by Waltner (1986), who considered it a component of sexual identity that can be influenced by cultural, social, and external norms related to the genital system, as well as sexual and social experiences. These factors can strongly affect women's feelings regarding the image of their genitals [12]. In general, women's perception regarding their genitalia is different in various cultures and societies [13], and women's attitudes towards genitals are more negative than men's. Women feel more concerned about their sexual partners' reactions to their genitals due to their detailed view of their bodies [14]. Women who feel ashamed of their bodies and feel incompetent concerning their chosen criteria for femininity may suffer from sexual disorders and be able to have sexual intercourse only

in complete darkness, and not allow touching or seeing certain parts of the body. In addition, these women seek harmful surgical procedures for their genitals, including labia surgery and the use of toxic cosmetics to reduce the bad feelings they often have about their genital appearance and function [14].

The results of a study showed that infertile women exhibit degrees of body image disturbances. Infertile women with poor body image experience more psychological problems, which can affect all aspects of their lives. For example, it leads to concerns about sexual attractiveness, physical appearance, self-esteem, and overall health. In contrast, women who experience pregnancy feel that their bodies are functioning properly; therefore, their body image improves [15]. In general, infertility in women leads to a decrease in sexual self-concept and a reduction in quality of life and sexual well-being [16, 17].

According to studies, a positive genital self-image is associated with sexual satisfaction in all aspects of women's sexual function [18–21]. Anxiety and concern regarding childlessness and sadness about infertility are considered a significant crisis in infertile women, so their self-image regarding themselves and their bodies is disturbed in individual dimensions [8]. As a result, their infertility leads to a decrease in their sexual self-esteem and satisfaction and affects all aspects of their sexual function. In this situation, their sexual relationship is disappointing, emotionally painful, and leads to low sexual desire [21].

Recently, different treatment approaches have been used to treat sexual disorders. Narrative therapy, which Michael White and David Epston first established, is one of these approaches, derived from the perspective of postmodernism, which focuses on everyone's inner reality [22]. Narrative therapy is an approach that considers the formation of problems as a result of an individual's problematic narratives. The basis of this approach is the use of narration and story, and psychological changes and problem-solving become possible by changing the problematic narrative [23]. Narrative therapy attempts to change the subjective frameworks that a person constantly refers to through critical thinking on the individual's subjective assumptions [24]. Paying attention to the strengths and capabilities of the clients in addition to their problem, focusing on solutions instead of problems,

belief in human variability and induction of a sense of hope to clients, flexibility in treatment, and attention to the individual characteristics of clients and avoiding generalization in treatment were the main advantages of narrative therapy approach [25]. In contexts like Iran, where infertility is often framed as a 'failure' of femininity, narrative therapy can help women deconstruct these dominant narratives and reconstruct self-stories aligned with personal values rather than cultural mandates. For example, by externalizing infertility as a 'problem' separate from the self, women may resist internalized shame tied to religious or familial expectations [26]. This approach is particularly salient in Iran, where reproductive health is deeply intertwined with gender roles and marital legitimacy [27].

The literature review showed that infertile women have more genital self-image disorders compared with fertile women, and the importance of genital self-image to an individual with infertility was emphasized. As the benefits of the narrative therapy approach were assessed in various studies [28–30], the present study was conducted to investigate the effect of online narrative therapy on the genital self-image and sexual satisfaction of infertile women. Given the high prevalence of infertility in Iran and its adverse effects on the sexual self-concept and sexual functioning of infertile women, and considering the importance of providing counseling and intervention programs in this regard, there have been no effective psychological interventions to improve the sexual self-concept of infertile women to date. Therefore, the present study aims to investigate the impact of online narrative therapy on the sexual self-concept and sexual satisfaction of infertile women.

We hypothesized that narrative therapy in infertile women undergoing treatment would increase the positive genital self-image and improve the sexual satisfaction scores compared to the control group.

Methods

Study design and participants

The current study was a randomized controlled trial (RCT) conducted on 64 eligible women aged 18–40 selected from gynecologists with infertility fellowship and family physician clinics at Sari, Mazandaran, Iran, through a convenience sampling method.

The eligible women were divided randomly into two groups of 32 women using the block randomization method. For this purpose, 16 quadruple blocks were considered. The six possible blocks are TTCC, TCTC, TCCT, CCTT, CTCT, and CTTC, where T is considered for the intervention group, and C is for the control group. The numbers were randomly generated with the RAND-BETWEEN in Excel software in the range 0 to 6 and selected according to the values of one of the blocks (for a

production number between 0 and 1 "CTTC" and a production number between 1 and 2, "CTCT", and so on).

Inclusion and exclusion criteria

The inclusion criteria were Iranian nationality, literate, aged between 18 and 40 years old, not getting pregnant after at least one year of regular and unprotected sexual intercourse, having infertility for more than one year, women primary infertility who are undergoing treatment, and confirmation of infertility by gynaecologists, having a smartphone and internet, having a formal marriage and a written consent to participate in the study.

The women's addiction to drugs and alcohol, the occurrence of a stressful event in the past six months, diagnosis of severe physical and psychological illness based on the Goldberg General Health Questionnaire, use of drugs affecting sexual health, or having a considerable physical and mental disability affecting sexual function, a history of pelvic surgery or radiation to the reproductive system and having an adopted child considered as exclusion criteria.

Sample size

According to the sample size formula below and study results (22), the mean score of the genital self-image in the intervention and control groups (51.2 ± 5.34 and 47.2 ± 5.96 , respectively), the integrated variance in these two groups equal to 32.02, considering $p = 1$ (equal number of intervention and control groups), with a confidence level of 95% and a power ($\beta - 1$) of 90% and drop out of 15%, the minimum sample size required for each of the intervention and control groups, was determined 32 women [31].

$$N = \frac{(p + 1) * (z_{1-\alpha/2} + z_{1-\beta})^2 * \sigma_p^2}{p * (\mu_1 - \mu_2)^2}$$

Instruments

In this study, three questionnaires were used for data collection as follows:

Socio-demographic characteristics form

The personal and family information and profile form includes age, husband's age, education, husband's education, job status, husband's job status, monthly income sufficiency, housing ownership status, Body mass index (BMI), having a private bedroom, marriage duration, infertility duration, duration of infertility treatment and type of infertility treatment such as In vitro fertilization (IVF), intrauterine insemination (IUI), and microinjection.

The female genital self-image scale (FGSIS)

Hernbek's FGSIS-I scale, which includes seven questions, was used to evaluate the genital self-image [32]. The response to each item was on a 4-point Likert scale ranging from 1, "completely disagree," to 4, "completely agree." The total score in this questionnaire is 7–28, and higher scores indicate a more positive genital self-image. The psychometric properties of FGSIS were assessed in the Iranian population, and its reliability was confirmed by Cronbach's alpha coefficient, 0.86 [33]. In this current study, its reliability was evaluated on 20 samples with an interval of two weeks, and according to the intraclass correlation (ICC), it is estimated to be equal to 0.95.

Hudson sexual satisfaction questionnaire

This tool was developed in 1981 by Hudson-Harrison and Kruscup to assess the sexual satisfaction levels among couples. This self-report scale consists of 25 questions, and the response to each test item is scored on a 7-point scale from 0 (never) to 6 (always). The total score of the subjects is between 0 and 150. In addition, in some items of this tool, including 4, 5, 6, 7, 8, 11, 13, 14, 15, 18, 18, 20, 24, and 25, a reverse scoring is considered, and a high score in this scale reflects higher sexual satisfaction [34]. According to the results of two Iranian studies, the reliability of this scale was estimated at 0.94–0.95 [35, 36]. Notably, due to the questionnaires being checked by the researcher after completion, no missing data were found.

Intervention

To implement the treatment steps, the research team has started to design the online narrative therapy program protocol. The initial version of the current protocol was based on the concepts and principles of narrative

therapy theory, inspired by narrative therapy books, and based on a comprehensive literature review. To check the content validity, the comments of 8 expert professors of Mazandaran University of Medical Sciences (PhD in reproductive health, gynecologist, psychiatrist, and clinical psychologist) were obtained. Their comments were implemented in the protocol and finally approved by them. Each session included a review of the previous session, questions and answers, discussion, control of homework, if any, and presentation of educational content, summarized in Table 1.

In the intervention group, the narrative therapy was carried out in 5 sessions of 90 min weekly [37] in 4 groups of 7 women and one group of 4 women on the WhatsApp platform. At the beginning of each session, attendance was taken, and any assignments were checked before starting the new topic of the session.

The narrative therapy counseling package was carried out online and using the WhatsApp platform by a master's student of midwifery counseling who had received the certification of counseling in this regard prior training in narrative therapy. Throughout the study, the therapist adhered to a structured narrative therapy protocol and was supervised weekly by the supervisor, a reproductive health specialist and a PhD in clinical psychology with 15 years of expertise in narrative therapy. This ensured fidelity to the method despite the therapist's student status. The formulation of the therapy package was based on the narrative therapy theory and the concepts and principles of narrative therapy theory [38]. It should be noted that, according to the topics discussed in the sessions, the participants were asked to perform their homework if they had. Finally, the participants prepared their assignments and written narratives and sent them personally to the

Table 1 The content of the intervention sessions

Sessions	Contents of intervention
First	1. Narrative stage or taking the dominant story and containing the problem 2. Deconstruction by externalizing the problem and naming the problem (using deconstructive questions) 3. Examining the effect of the problem (infertility) on different aspects of the client's life, especially sexual aspects 4. Considering the negative impact of culture and society on the problem 5. Summarize the session and make sure to externalize the problem
Second	1. Induction of hope and flexibility through the brilliant moments of discovering technique (obstacles and moments of overcoming a problem and weakening its effects) 2. Use open-ended questions that lead to the discovery of brilliant moments. 3. Use preference questions (to ensure that brilliant moments or unique outcomes represent preferred experiences) 4. Summarize the session and make sure to externalize the problem and emphasize brilliant moments
Third	1. Creating a new story based on the unique outcomes of past exposure to problem and its effects 2. Using the guiding questions technique to present a new story 3. Using the semantic questions to challenge negative self-images and emphasize positive factors and capabilities. 4. Summarize the session and make sure to externalize the problem and emphasize brilliant moments
Fourth	1. Using questions to push the story into the future (to support changes and reinforce positive developments or to reinforce a new story) 2. Summarize the session and make sure to externalize the problem and emphasize a brilliant moment
Fifth	Writing a letter by the therapist means a deep appreciation for what the client has done. In other words, a summary of a new story and the therapist's trust in the client's ability to continue progressing

researcher on WhatsApp. The content of the narrative therapy sessions is shown in Table 1.

The control group received routine care, which was regular visits by a gynecologist, and no interventions were carried out by the researcher for the control group.

Statistical analysis

SPSS version 22 software was used for data analysis. Descriptive statistics such as mean and standard deviation (SD) were used for quantitative variables, and frequency and percentage were applied to report the qualitative variables. For inferential analysis, the normality hypothesis of the variables was first examined using the Shapiro-Wilk and Kolmogorov-Smirnov tests. A t-test and a chi-square test were used to compare the means of the two groups for quantitative and the frequency of qualitative variables. To compare the mean score of the genital self-image in the intervention and control groups before, immediately, and 45 days after the intervention, the Friedman test and to compare the mean score of sexual satisfaction in the intervention and control groups before, immediately, and 45 days after the intervention, repeated measures ANOVA test, and also, Bonferroni's test was used to compare the mean difference and standard deviation of the sexual satisfaction score in the intervention and control groups. A significant level of 0.05% was also considered.

Ethical considerations

This study started after obtaining permission from the Council and Ethics Committee of Mazandaran University of Medical Sciences (ethical code: IR.MAZUMS.REC.1400.10428).

and reported according to CONSORT guidelines.

In addition, the protocol of this study was registered in the Iranian Registry of Clinical Trial on 15/11/2021 with IRCT registration number IRCT20161126031117N11. The full version of the registered protocol is available at <https://irct.behdasht.gov.ir/trial/59083>.

During the study, the study's objectives, intervention structure, and sessions were explained to the participants, and they were assured that all of the collected information would be kept confidential and anonymous. In addition, researchers demonstrated to the participants that their participation in this research was voluntary. Then, informed and written consent was received from women who intended to participate in this study that met the Declaration of Helsinki guidelines.

Results

In this study, of 98 infertile women assessed for eligibility, 24 women who had no inclusion criteria and 10 infertile women reluctant to participate in the study were excluded, and 64 patients were randomly allocated

into two groups: of narrative therapy group ($n=32$) and a control group ($n=32$). During the follow-up stage, no infertile women were excluded. Finally, 32 patients in the narrative therapy group and 32 in the control group were analyzed (Fig. 1).

The socio-demographic and clinical characteristics of the participants in the intervention and control groups

The socio-demographic and clinical characteristics of the participants in the two interventions and control groups are shown in Table 2. According to the t-test, in the intervention and control groups, the mean \pm SD of age for women was 30.69 ± 5.72 and 30.59 ± 4.59 years, respectively, and the difference was not statistically significant ($p=0.885$). In addition, based on the t-test, the mean \pm SD of the husband's age was 35.31 ± 6.23 and 35.22 ± 5.28 years in the intervention and control groups, respectively, and these differences were not statistically significant ($p=0.948$). Regarding other demographic variables such as BMI, marriage duration, women's and husband's education and job status, housing ownership status, income adequacy, and clinical variables such as infertility duration and diagnosis types and treatment, IVF and IUI, there were no significant differences between intervention and control groups ($p>0.05$).

The mean score of the genital self-image of infertile women in the intervention group before, immediately after the narrative therapy, and 45 days after the intervention was 11.28 ± 1.65 , 21.59 ± 2.46 , and 22.25 ± 2.45 , respectively. The results of the Friedman test indicated that the score of the genital self-image had a significant difference between the measurement times ($\chi^2=59.56$, $p<0.001$). Regarding the control groups, the mean score of genital self-image was 11.34 ± 3.26 before the intervention, 11.56 ± 2.49 immediately after the intervention, and 11.34 ± 2.47 , 45 days after the intervention. The results of the Friedman test showed that the score of the genital self-image did not have a significant difference between the measurement times and did not change over time in the control group ($\chi^2=4.907$, $p=0.086$) (Table 3).

The Mann-Whitney U test, which compares the mean score of the genital self-image in infertile women in the intervention and control groups before the intervention, showed no significant differences (11.28 ± 1.65 vs 11.34 ± 3.26 , $p=0.312$). The study results immediately and 45 days after the intervention demonstrated significant differences regarding the mean score of genital self-image compared to the control group (22.25 ± 2.45 vs. 11.34 ± 2.47 , $p<0.001$) (Table 3; Fig. 2).

According to the Bonferroni test, the mean sexual satisfaction score immediately (-11.969 ± 1.442 , $p<0.001$) and 45 days after the intervention (-12.844 ± 1.439 , $p<0.001$) had a significant difference from before the intervention, while no significant difference was observed between the

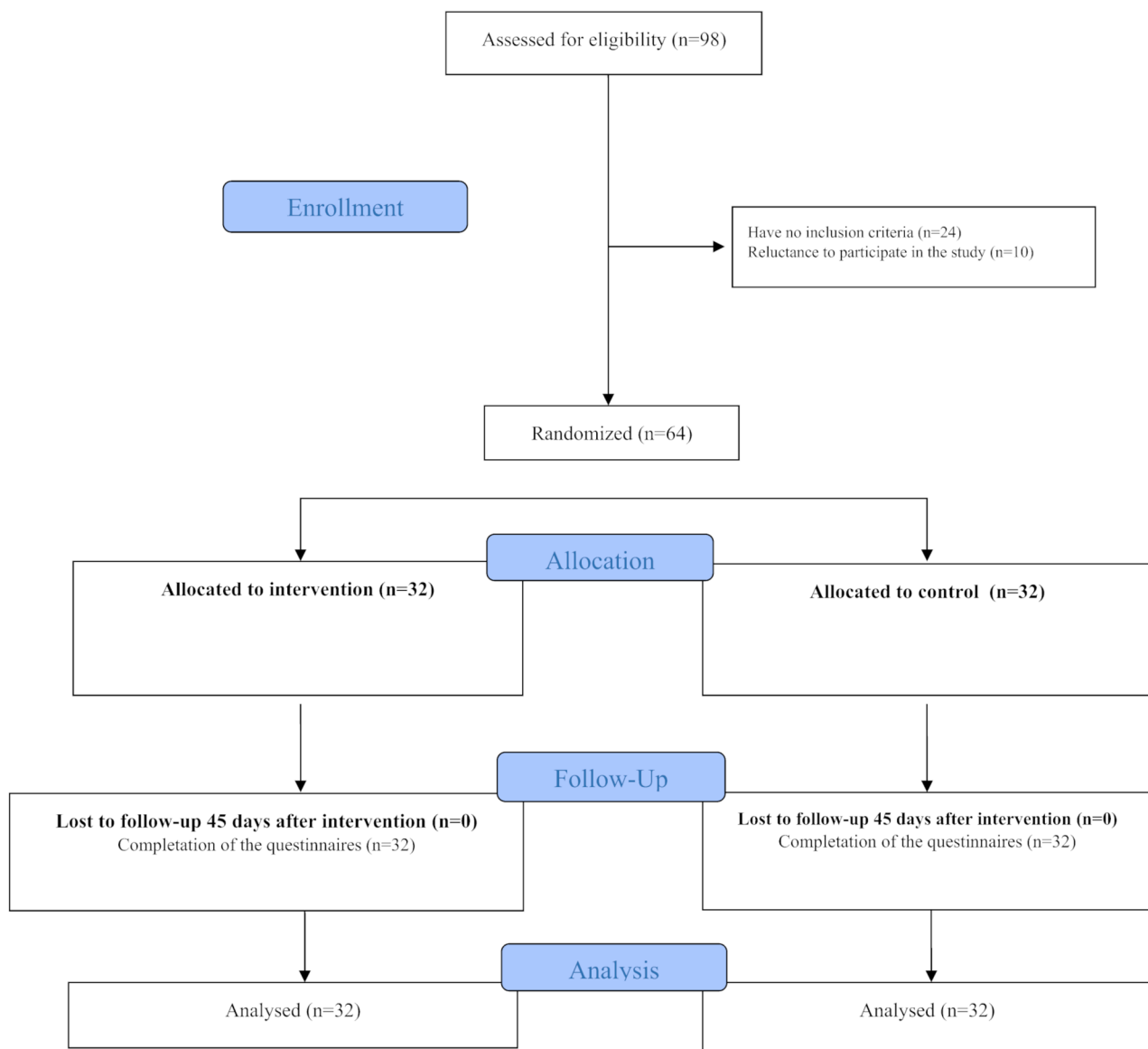


Fig. 1 Consort diagram

two times after the intervention (-0.875 ± 0.420 , $p = 0.124$) (Table 4).

Regarding sexual satisfaction, Mauchly's Test of Sphericity in repeated measures ANOVA showed that the correlation between the three measurement times was not equal ($p < 0.001$) in the intervention and control groups, so the adjusted results were presented according to the Greenhouse-Geisser method. The results indicate that in the intervention group, time had a significant effect on the sexual satisfaction score; the mean sexual satisfaction score had a significant difference between the measurement times (122.31 ± 12.50 , $p < 0.001$). Regarding the control group, the results indicate that time did not significantly affect the sexual satisfaction score, and there was no significant difference in the mean

sexual satisfaction score between the measurement times (97.78 ± 16.29 , $p = 0.420$) (Table 5).

According to Fig. 3, the total mean of sexual satisfaction before the intervention was approximately similar in the two groups. At the same time, there was a significant difference between immediately and 45 days after completing narrative therapy. In addition, the total score of sexual satisfaction did not have a considerable difference immediately and 45 days after the narrative therapy, which indicates the stability of the effect of narrative therapy on sexual satisfaction in infertile women.

Table 2 The socio-demographic and infertility characteristics of the participants in the intervention and control groups

Variables	Intervention (Mean ± SD) or n (%)	Control (Mean ± SD) or n (%)	p-value
Age (Years)	30.69 ± 5.79	30.50 ± 4.59	0.885 [†]
Spouse age (Years)	35.31 ± 6.23	35.22 ± 5.28	0.948 [†]
B.M.I.	27.33 ± 3.38	25.91 ± 3.05	0.082 [†]
Marriage duration (years)	6.63 ± 3.19	7.31 ± 4.31	0.471 [†]
Woman's education			
Diploma or under	9 (28.1)	2 (6.3)	0.077 ^{††}
Advanced Diploma	5 (15.6)	6 (18.7)	
B.Sc.	15 (46.9)	16 (50.0)	
M.Sc.	3 (9.4)	8 (25.0)	
Woman's job status			
Houseworker	17 (53.1)	15 (46.9)	0.768 ^{††}
Employed	11 (34.4)	14 (43.7)	
Self-employed	4 (12.5)	3 (9.4)	
Husband's education			
Diploma or under	10 (31.3)	4 (12.5)	0.129 ^{††}
Advanced Diploma	3 (9.4)	3 (9.4)	
B.Sc.	12 (37.5)	10 (31.3)	
M.Sc.	7 (21.8)	15 (46.8)	
Husband's job status			
Employed	8 (25.0)	14 (43.8)	0.114 ^{††}
Self-employed	24 (75.0)	18 (56.2)	
Income adequacy			
High	5 (15.6)	12 (37.5)	0.162 ^{††}
Moderate	22 (68.8)	16 (50.0)	
Low	5 (15.6)	4 (12.5)	
Housing ownership status			
Owner	16 (50.0)	14 (43.8)	0.470 ^{††}
Renter	12 (37.5)	16 (50.0)	
Living with family	4 (12.5)	2 (6.2)	
Private bedroom	32 (100.0)	32 (100.0)	> 0.999 ^{††}
Infertility duration (years)	4.16 ± 2.70	5.19 ± 4.33	0.259 [†]
Infertility diagnosis type			
Male	6 (18.7)	8 (25.0)	0.479 [†]
Female	26 (81.3)	23 (72.0)	
Combined	0 (0)	1 (3.0)	
Infertility treatment duration (years)	3.92 ± 2.48	4.75 ± 3.92	0.317 [†]
Drug treatment for infertility			
Yes	12 (37.5)	9 (28.1)	0.429 ^{†††}
IUI			
Yes	10 (31.2)	7 (21.9)	0.396 ^{†††}
IVF			
Yes	8 (25.0)	10 (31.3)	0.578 ^{†††}
Microinjection			
Yes	2 (6.3)	5 (15.6)	0.426 ^{†††}

[†] Values given as mean \pm S.D. (standard deviation) and analyzed by independent student's t-test

^{††} Values are given as a number (percentage) and analyzed by a Chi-squared test

^{†††} Values are given as a number (percentage) and analyzed by Fisher's exact test

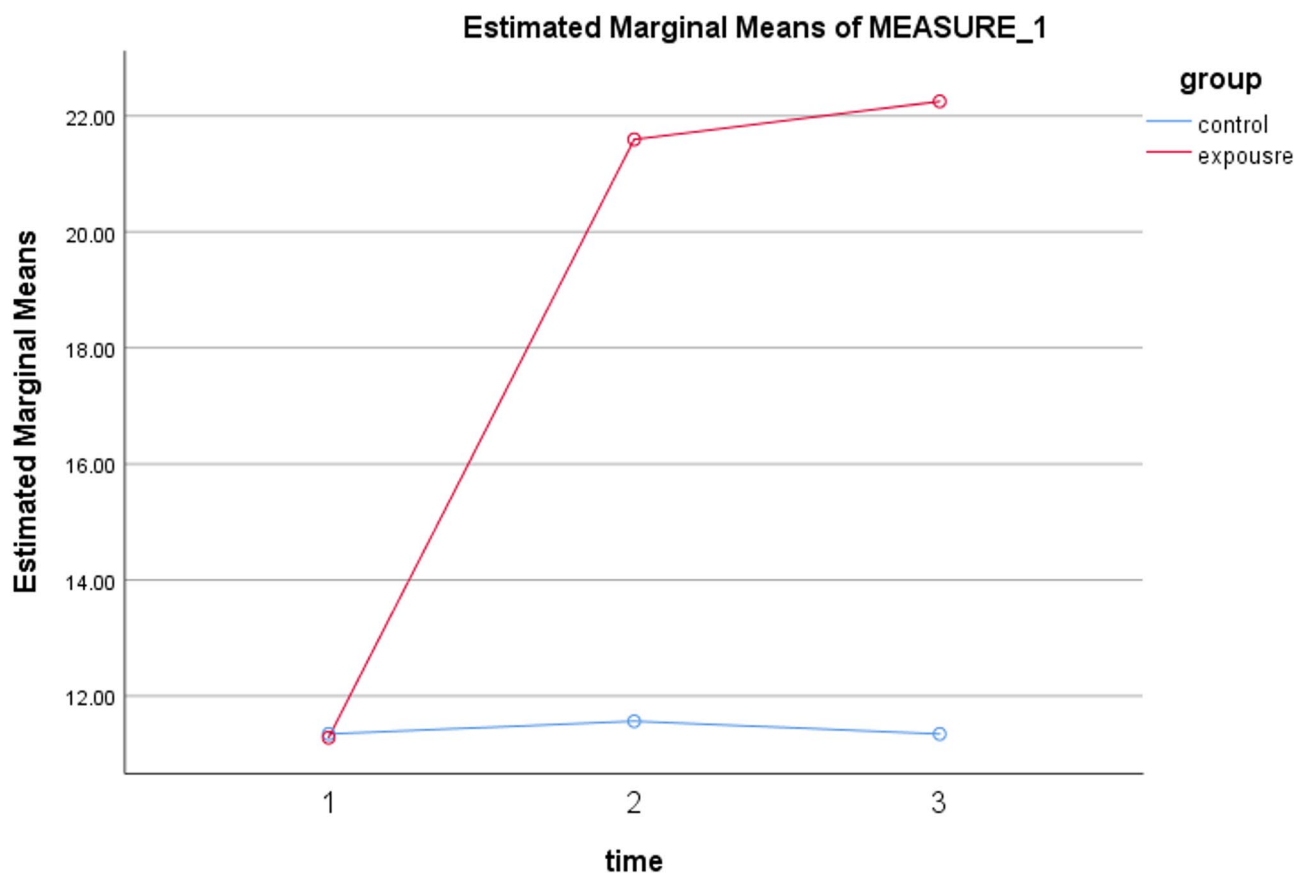
Discussion

This study was conducted to determine the effect of online narrative therapy on the genital self-image and sexual satisfaction of infertile women. Women's fertility

is considered an opportunity to reduce their sensitivity towards the body's attractiveness and beauty, and experience a period of peace. It seems that infertile women are deprived of experiencing these relaxing periods [39]. In

Table 3 Comparison of the mean score of the genital self-image in and between the intervention and control groups before, immediately after, and 45 days after the narrative therapy

Time	Intervention	χ^2 , <i>p</i> -value	Control	χ^2 , <i>p</i> -value
Before intervention	11.28 ± 11.56	59.56, < 0.001	11.34 ± 3.26	4.907, 0.086
Immediately after intervention	21.59 ± 2.46		11.56 ± 2.49	
45 days after intervention	22.25 ± 2.45		11.34 ± 2.47	
Time	Intervention	Control	<i>p</i> -value	
Before intervention	11.28 ± 1.65	11.34 ± 3.26	0.312	
Immediately after intervention	21.59 ± 2.46	11.56 ± 2.49	< 0.001	
45 days after intervention	22.25 ± 2.45	11.34 ± 2.47	< 0.001	

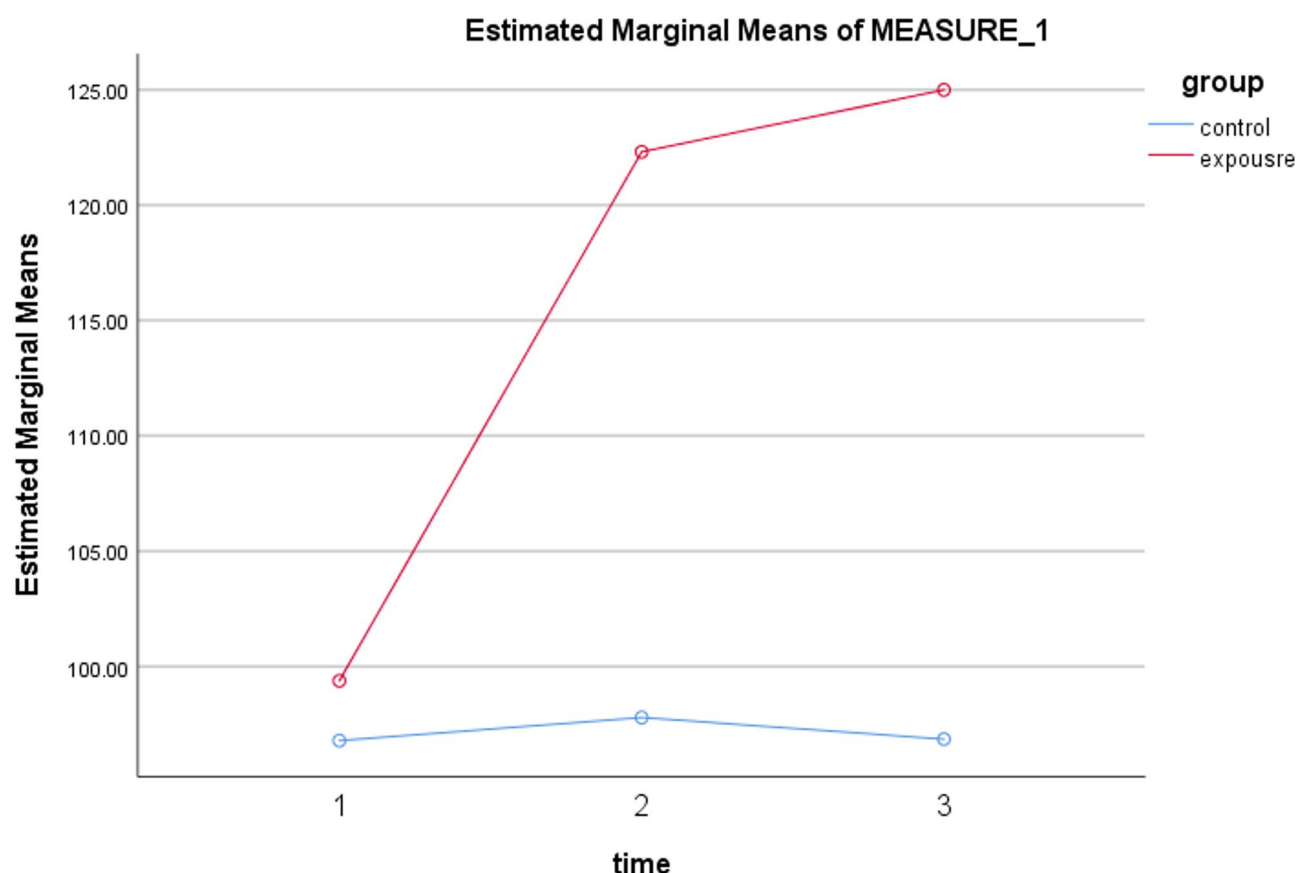
**Fig. 2** Comparison of the total mean score of the genital self-image between the two intervention and control groups before, immediately, and 45 days after the narrative therapy**Table 4** Comparison of mean difference and standard deviation of sexual satisfaction score two by two between times

Time		Mean difference ± SD	<i>p</i> -value
Before intervention	Immediately after intervention	-11.969 ± 1.442	< 0.001
	45 days after intervention	-12.844 ± 1.439	< 0.001
Immediately after intervention	45 days after intervention	-0.875 ± 0.420	0.124

the social dimension, especially in Iranian society, there is a high value on women's fertility, and such concern is entirely acceptable for a woman because body image is not only a mental image created by the individual but also the active presence of the whole culture is observed in this image [40]. In general, the psychological counseling and treatments conducted to improve the sexual life of infertile women include: The effectiveness of cognitive-behavioral therapy on the sexual functioning of infertile women [41], the effectiveness of acceptance and commitment therapy on the sexual satisfaction of infertile women [42], sexual counseling for women with primary infertility based on the BETTER model [43],

Table 5 Comparison of the mean score of sexual satisfaction with the repeated measures test in the intervention and control groups before, immediately after, and 45 days after the narrative therapy

Groups	Time	(mean \pm S.D.)	Effect	Sum of squares	Degrees of freedom	F	p-value
Intervention	Before intervention	99.37 \pm 15.56	-	-	-	-	-
	Immediately after intervention	122.31 \pm 12.50	Time	12693.250	1.113	81.075	<0.001
	45 days after intervention	125.00 \pm 12.22	Error	4853.417	34.501		
Control	Before intervention	96.78 \pm 19.19					
	Immediately after intervention	97.78 \pm 16.29	Time	20.083	1.141	0.718	0.420
	45 days after intervention	96.84 \pm 15.72	Error	866.583	35.370		

**Fig. 3** Comparison of the total mean score of sexual satisfaction between two intervention and control groups before, immediately and 45 days after the narrative therapy

the effectiveness of transactional analysis on the sexual functioning of infertile women [44], training in marital skills aimed at managing sexual relationships in infertile women [45], the effectiveness of integrated behavioral couple therapy on self-efficacy, adaptation and sexual satisfaction in infertile women [46], the effectiveness of narrative therapy on enhancing attitudes and sexual satisfaction in infertile married couples, the effect of narrative therapy and the “good enough” sexual experience model on cognitive, behavioral, and emotional attitudes towards sexual relationships in infertile individuals [30]. While these approaches demonstrate efficacy, narrative therapy uniquely targets the meaning infertile women attach to their bodies and fertility struggles. Unlike CBT’s focus on

modifying thoughts or ACT’s emphasis on acceptance, narrative therapy helps women externalize infertility and reconstruct self-narratives divorced from societal expectations of motherhood [30, 47]. This is particularly salient in cultures like Iran, where fertility is often equated with female identity [48].

In this research, both studied groups in terms of individual socio-demographic characteristics such as the woman’s and husband’s education, the woman’s and husband’s job status, income adequacy, housing status, having a private bedroom, stage of infertility treatment, marriage duration, BMI, infertility duration and treatment were similar. Considering that the subjects were randomly assigned to groups in the present

study, the groups were comparable regarding the above characteristics.

The results of this study showed that the mean score of the genital self-image in infertile women in the intervention and control groups before the intervention showed no significant differences, while immediately and 45 days after the intervention demonstrated significant differences among the two groups so that narrative therapy in infertile women receiving infertility treatment increases the positive genital self-image compared to the control group that was consistent with the author's hypothesis. This improvement is in line with narrative therapy's key principle of reauthoring: the intervention group of women reconstituted their genital self-image by way of challenging dominant discourses and instead bringing resilience into the foreground. Clinicians can observe that such shifts can be effected by culturally sensitive cues, for instance, talking about local metaphors for strength to encourage acceptance.

Consistent with these study results, the results of an Iranian RCT study assessed the effect of psychosexual education on improving sexual function, genital self-image, and sexual distress in women with Rakitansky syndrome, showing that psychosexual education improves sexual function and genital self-image and reduces sexual distress in women with this syndrome [49]. Another Iranian study that determined the effect of sexual expression training on the genital self-image of married women demonstrated the positive impact of sexual self-expression training on the genital self-image of the participants [50]. In a study that assessed the effectiveness of a short educational film on the genital self-image of Australian adolescent girls, the results showed that the educational film could significantly increase the knowledge and attitude of adolescent girls regarding the anatomy of the reproductive system and improve their genital self-image [51]. In contrast, the results of a study investigating the effect of water Pilates on the genital self-image and urinary incontinence of older women aged ≥ 60 showed that the Pilates method does not improve urinary incontinence, sexual function, and the genital self-image of older adults [52]. In addition, according to the Iranian study, which assessed the effectiveness of an educational package on the genital self-image and sexual function of Iranian women aged 18 to 40 years, training did not affect the genital self-image and sexual function of women [53]. The leading causes of differences in this current study's results and the mentioned study were different study designs, different participant age groups, and various interventional programs that considerably affect observed results.

Regarding the study hypothesis that narrative therapy in infertile women undergoing treatment improves the sexual satisfaction scores compared to the control

group, this study's results showed a significant difference between the mean score of sexual satisfaction before the intervention, immediately, and 45 days after the intervention. Still, no significant difference was observed between the two time measurements after the intervention. In other words, narrative therapy in infertile women improves their sexual satisfaction score compared to the control group. The results of an Iranian study that determined the effectiveness of narrative therapy on early maladaptive schemas, quality of life, and sexual satisfaction of 30 couples showed that narrative therapy had a significant effect on sexual satisfaction, maladaptive schemas, and quality of life of couples applying for divorce [54]. In addition, in another Iranian study, sexual skills education increases marital communication, sexual satisfaction, and marital satisfaction. Also, it increases the ability to resolve conflicts and positive feelings of closeness and intimacy of couples [55]. In general, body self-image is an important psychological factor that affects sexual desire and satisfaction, so dissatisfaction with body image causes sexual dysfunction and decreased sexual desire and satisfaction [56, 57]. The results of the mentioned studies are consistent with the present study, and women who had a more positive genital self-image had higher sexual satisfaction [58]. Professionals applying narrative therapy in infertility contexts should anticipate resistance when societal narratives (e.g., 'Motherhood is mandatory') conflict with individual reauthoring. Structured exercises, such as mapping 'problem-saturated' stories versus 'preferred' identities, can bridge this gap. Future studies should explore how therapist cultural competency (e.g., familiarity with local fertility myths) moderates outcomes.

Limitations of the study

Due to the online nature of the intervention, participants may not follow all the recommendations, training, and assignments carefully, which may affect the interpretation of the study results. Due to the self-report completion of the questionnaires by the participants, it is possible that participants do not report their sexual information well due to shame or confidentiality, which makes this study prone to information bias. However, according to the researcher's explanation about the confidentiality of information and proper communication with the participants, we tried to control this limitation. In this study, blinding was performed at the level of the participants and the evaluation of the results. As the master student of this study must conduct the intervention, blinding was not considered at this stage. However, it should be noted that the random allocation of samples and online evaluation of the participants was considered, and researcher involvement in this type of evaluation was minimized.

The genital self-image may also be related to the different types of infertility diagnoses that in this study, women were assessed, and we did not focus on the possibility of genital self-image.

Theoretical and practical implications of this research

The results of this study can be a helpful step towards realizing the goals of women's sexual health policies, and healthcare providers can use this study's results to prepare culturally appropriate treatment packages to improve the genital self-image level of infertile women visiting health centres to improve their sexual health. In addition, considering the importance of female genital self-image interventions and the use of effective interventions such as narrative therapy, it seems that the use of this study's results by experienced and trained staff in practical settings can be helpful.

The results of this research can effectively be used to conduct subsequent and supplementary research with different treatment methods. The findings of this study can be used to design, implement, and evaluate high-quality interventions. Therefore, it is recommended to conduct more studies to assess genital self-image interventions in infertile women.

Conclusion

The results of this study showed that online narrative therapy was a suitable approach that improved the genital self-image and sexual satisfaction scores in infertile women. In addition, as infertility can negatively affect the genital self-image, sexual function, and satisfaction of infertile women, considering these types of counselling therapies by counselling of midwifery specialists and psychologists, along with the clinical treatments in the infertility centres, can be effective and improve infertile women's psychosexual conditions.

Abbreviations

FGSIS	Female Genital Self-Image Scale
RCT	Randomized controlled trial
BMI	Body mass index
IVF	In vitro fertilization
IUI	Intrauterine insemination
SD	Standard deviation

Acknowledgements

The authors thank Mazandaran University of Medical Sciences and all participants who agreed to be included in this study for their time and effort.

Author contributions

F. Sh.: Data collection, data curation, and writing the draft of the manuscript, S. Kh.: Design, conceptualization, review, and supervision of the manuscript, M.A.: Writing and editing the draft of the manuscript, A.F.: Design and conceptualization, N.M.Z.: Review and supervision the manuscript, A.H.N.: measurement: Data curation, statistical analysis. All authors revised, read, and approved the final manuscript.

Funding

This research received no financial support.

Data availability

The data supporting this study's findings are available from the corresponding author upon reasonable request.

Declarations

Ethics approval and consent to participate

During the study, the study's objectives, intervention structure, and sessions were explained to the participants, and they were assured that all of the collected information would be kept confidential and anonymous. In addition, researchers demonstrated to the participants that their participation in this research was voluntary. Then, informed and written consent was received from women who intend to participate in this study. This study started after obtaining permission from the Council and Ethics Committee of Mazandaran University of Medical Sciences (ethical code: IR.MAZUMS.REC.1400.10428).

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

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Received: 8 May 2024 / Accepted: 26 May 2025

Published online: 05 June 2025

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