

The Effect of Counseling Based on Sexual Self-Concept via Social Networks on Smartphone in Infertile Women: A Randomized Controlled Trial

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ABSTRACT

Background: Infertility can affect the physical, mental and emotional aspects of a person's life. This study aimed to investigate the effect of sexual counseling via social networks on Smartphone in sexual self-concept of infertile women.

Methods: In a randomized controlled trial, 80 eligible infertile women referred to the fertility centers of Alborz University of Medical Sciences from April to July 2018. They were randomly assigned into intervention (sexual counseling with routine infertility counseling) and control groups (routine infertility counseling). Eight counseling sessions via social networks were held for both groups. The Snell's sexual self-concept questionnaire was completed by participants before and after the intervention. The data were analyzed using SPSS 19 with a significance level of $P < 0.05$.

Results: The mean age of women was 30.76 ± 0.72 years and the most infertility duration was more than 36 months. The results of a repeated measure showed that there were significant differences in positive self-concept domain between the two groups during the time by comparing the means (120.4 ± 17.9 versus 105.1 ± 16.8). We also found an increasing trend of the scores in positive sexual self-concept domain (110.6 ± 18.42 , 120.1 ± 18.7 , 120.4 ± 17.9) ($P < 0.001$) and a decrease in negative sexual self-concept domain (24.3 ± 7.87 , 20.2 ± 7.77 , 19.65 ± 6.97) ($P < 0.001$) in intervention group. In the situational self-concept, there were no difference between the two groups during the time ($P = 0.06$)

Conclusion: The results obtained in the present study showed that counseling through social networks was effective in improving the sexual self-concept in infertile women, thus ameliorating the couples' sexual relations.

Trial Registration Number: IRCT20160503027728N9

KEYWORDS: Infertility, Sex counseling, Sexual self-concept, Smart phones, Social networks

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INTRODUCTION

Infertility can be defined as unprotected intercourse for a year without pregnancy.¹ Although infertility belongs to physical problems, today it is considered as a bio-psycho-social health problem.³ For many couples, infertility is as much an emotional and mental crisis as it is a physical challenge.⁴ According to a report released by the World Health Organization (WHO), infertility in women is ranked the 5th highest serious global disability.⁵ Recent studies have revealed that approximately 72.4 million women are currently infertile; of these, 40.5 million are currently seeking infertility medical care;⁶ in the industrialized countries, approximately 6.6–26.4% of couples of reproductive age are infertile.⁶ In Iran, the prevalence of infertility rate has been reported between 10.90 - 13.20%.⁷

Infertility can lead to major emotional, social, and mental disorders, including a decrease in satisfaction with marital and quality of life. The most important factor that may be directly related to marital satisfaction is sexual function.⁸ A lack of sexual health in women can result in psychological disorders, such as depression, anxiety, mood swings, sexual fear, and sexual dysfunction.⁹ On the other hand, infertile couples often report unfavorable quality-of-life, especially in terms of sexuality. Sexual dysfunction is one of the most important problems of infertile couples. A review of the related studies conducted in Iran indicates that sexual dysfunctions are prevalent among married women and are linked to the factors such as age, duration of marriage, history of medical and psychiatric illnesses, and taking medications. A previous study showed that most women had low information, poor sexual skills and unreasonable sexual beliefs.¹⁰

Most couples assume that sexual relationship is solely for pregnancy purposes; therefore, sexual relationship is considered futile if pregnancy is not achieved and it can profoundly affect the sexual relationship; therefore, they have to be trained for this

subject.¹¹ One of the most important predictive and guiding factors of sexual function and behavior is sexual self-concept. Sexual self-concept is a general understanding that each person has about the aspects of his/her sex.¹¹ The women with positive sexual self-concept have higher motivation and excitement toward sexual issues and experience more romantic sexual relationships, compared to those with negative sexual self-concept. Sexual self-concept as a moderator (mediator) plays a key role in a person's sexual relations and functions. These factors can strongly influence the women's feelings towards their gender as to attitudes, feelings, and beliefs about one's sex organs that can influence sexual relationships.¹¹

This construct is defined as the individuals' understanding and evaluation of their own sexual desire and orientations.¹¹ It is the predictor of sexual domains¹² and consists of intrapersonal and interpersonal aspects developed along with changes in sexual growth and experiences. The subjective interpretation of others (friends and parents) and society has an effect on the growth of sexual self-concept.¹³

Assisted reproductive technologies can be used to treat infertility, but they increase the psychological stress.⁵ In order to control this problem, many different methods (e.g. drug therapy and psychotherapy) are proposed to reduce and treat it. Psychotherapy, or counseling, is a way to help people with a broad variety of mental illnesses and emotional difficulties.⁵

The objectives of infertility counseling are to seek, understand and solve problems caused by infertility and its associated treatment, and to find the ways of dealing effectively with this problem.¹⁴ Numerous investigations have revealed that psychological intervention plays a positive role in reducing mental symptoms of infertility; moreover, they have demonstrated that counseling and psychological interventions can reduce stress and depression and increase the chances of pregnancy.⁷ Since couples often have trouble

in discussing sexual issues with others, it is important to conduct counseling sessions where they feel more comfortable.¹⁵ The social networks, especially mobile phones, are everywhere and have been well accepted as a communication tool and have become a reliable means of getting health care for many physical conditions. Social network interventions have been proven to be effective by focusing on mental and emotional care.¹⁶ Although some studies have stated the positive impact of smartphone in educational contexts, such as access to various learning resources, voice call and web browsing, text messaging appears to be the most convenient method of communication;^{17, 18} however, utilizing smartphone for a long period or continuously might effect a person's health like headache¹⁷ and may affect face to face training, for example. A previous study showed the negative impact of cellphones on students' learning.¹⁹

Due to these contradictions and since there are very limited number of studies on smartphone and considering the importance of this subject, in this study we decided to investigate the effect of sexual counseling via social networks on Smartphone on sexual self-concept of infertile women.

MATERIALS AND METHODS

A parallel, randomized clinical trial was conducted on infertile women referred to the selected infertility centers of Alborz province (Ruyesh and Kamali hospital) from April to July 2018.

The sample size was determined based on a previous study.²⁰ By considering type I and II errors (0.05, 0.2) respectively, the mean change (standard deviation) scores of self-concept before and after the intervention were 3.18 (3.13) and 11.1 (3.12) in the intervention and control groups, respectively and a 10% attrition rate determined a sample size of 40 subjects in each group.

$$N = \frac{(z_{1-\alpha/2} - z_{1-\beta})^2 \sigma_1^2 + \sigma_2^2}{(\mu_1 - \mu_2)^2}$$

The inclusion criteria were the women aged 25-35 years with primary infertility, those in the process of infertility treatment by the IVF method, and the women who had access to Smartphone with telegram messenger. In addition, being literate (Under diploma, Diploma, Master degree and higher), providing written informed consent of the couples, having infertility with a female factor such as (disorder in the ovary and tube, endometriosis, adhesions, etc.), and having regular sexual intercourse with the spouse were the other criteria for inclusion in the study.

Secondary infertility, other infertility treatments except IVF, having chronic physical diseases such as multiple sclerosis and lupus, etc. Specific mental disorders, such as depression and anxiety, taking antidepressants as stated by a person herself, women working as the medical staff, compulsory marriage and failure to complete counseling sessions were among the study exclusion criteria.

The data were collected using a socio-demographic checklist (women and their husband's age, job, and education; duration of infertility; and ethnicity), and the multidimensional sexual self-concept questionnaire (MSSCQ; Snell, 1995).

The MSSCQ is an objective self-report tool which developed in 1995 by Snell. The Cronbach's alpha coefficient range was between 72 and 94%. Its validity was verified through evaluating the questionnaires' content correlation with contraceptive use behaviors and beliefs, sexual behavior and attitudes, adult romantic attachment tendencies, contributions and benefits that are associated with their sexual relationships, and initial sexual experience by canonical correlation test.²¹ Its Persian version contains 78 questions and three dimensions of positive, negative and situational sexual self-concept with 18 components.

A positive self-concept includes sexual self-efficacy components, motivation to avoid high-risk sexual relationships, sexual consciousness, sexual problem self-blame,

and management of sexual issues, sexual esteem, preventing sexual problems, sexual satisfaction, and internal control for sexual issues. On the other hand, a negative self-concept contains sexual anxiety, optimism, supervising and monitoring, fear of sexual relationship and sexual depression. Also, a situational sexual self-concept comprises sexual desire, sexual decisiveness, sexual motivation and individual sexual patterns.

In this questionnaire, of the options are scored from 0 to 4, and six questions are reverse scored. Each field consists of 3 to 5 items, and items related to each field are scattered throughout the questionnaire. The highest scores for the positive, negative and situational self-concept domains are 160, 80, and 72, respectively. In order to determine the face validity, 13 experts in psychology, family counselor, reproductive health expertise, psychiatric nurse, and 30 couples with the test group standards and characteristics were asked to check the questionnaire regarding its flow, easy comprehension, grammar, writing style, and content, and then expressed their opinions on it. The ambiguous items were controlled and revised by two experts in the field. The exploratory factorial analysis results showed the KMO index as being 0.88 and the Bartlett's test less than 0.001 with a K2 5256.13. The three factors — positive, negative, and situational - extracted from Varimax rotation determined a total of 58%

of the variances, 34.95, 12.86, and 10.32, respectively.²²

The items with impact score less than 1.5 were not suitable for analyses and were eliminated.

Besides, its correlation was examined and confirmed by Pearson's correlation coefficient. It has been reported that the reliability of this questionnaire ranges from 0.76 to 0.89 in various areas.

After obtaining the required permissions, the researcher attended the infertility centers and selected 80 eligible participants out of 100 infertile women, using convenience sampling; then, the subjects were assigned into two intervention and control groups through quadruple random-block method. Each "block" has a specified number of randomly ordered treatment assignments. Before starting the intervention, both groups completed the Snell's sexual self-concept questionnaire, and the obtained score was considered as the base score for comparison.

In the control group, routine infertility counseling, based on instructions of these centers, included training topics related to the time of intercourse, personal and health care, was carried out through the telegram channel. At the end of the counseling session, people attended the center and received the training packages containing all contents presented in the intervention group.

In the intervention group, in addition to the

Table 1: The content provided in each counseling session

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 infertility, therapeutic methods and the success rates of its treatments are presented. In addition, the effects and complications of infertility on the private and social aspects of individuals and ways of overcoming it are raised.
Session 2	Stating sexual aspects of life and behaviors which can lead to marital satisfaction and its promotion.
Session 3	Expressing feelings and beliefs about sexual behaviors and problem-solving skills and accepting supportive relationships
Session 4	Solutions to sexual satisfaction and how to communicate with a spouse
Session 5	An explanation of the female and male sexual cycle, self-esteem and self-confidence in sexual relationships
Session 6	Identifying the sexual misconceptions and replacing them with correct concepts
Session 7	Confronting shame and deciding to solve it and adorning at home
Session 8	Open channel for an hour in order to ask questions

routine infertility counseling, eight 90-minute sessions of sexual counseling were uploaded as audio files and written texts in the telegram application (the most prevalent social network in Iran) twice a week, under the supervision of a sexologist counselor (Table 1).

During the study, four people were excluded from the research due to inaccessibility to the telegram channel or reluctance to attend the channel; finally, the information of 38 people was analyzed in each groups (Figure 1). In the interval between the sessions, if the participants had questions related to the discussed issues, they could privately send them to the researcher via Telegram. Besides, if the question was asked by the majority of the people or if the researcher considered it beneficial to them, she could share its answer with the group.

In order to ensure listening and people's accessibility to trainings in the intervention group, a question was mentioned in the channel every session, so that it was analyzed at the beginning of the counseling session,

after completing the counseling sessions and the next four weeks, the Snell's Sexual Self-Concept Questionnaire was filled out by both groups again. In other words, sexual self-concept was measured three times, at the beginning, immediately and four weeks after the intervention.

All of the channel's content and questions were under the guidance of expert Consultant Sexologist who was a faculty member of the university, and under their supervision the contents were published on the channel (Table 1).

The components of the counseling were based on sexual self-concept. Intention to treat analysis (ITT) will be considered to deal with noncompliance and missing cases. The outcome measure in our RCT was sexual self-concept, and data analysis was performed through SPSS 19 and using statistical tests, Mann-Whitney, Fisher's exact test, Chi-square test, independent t-test and repeated measures. The significance level was considered $P < 0.05$.

The researcher explained the goals of

CONSORT 2010 Flow Diagram

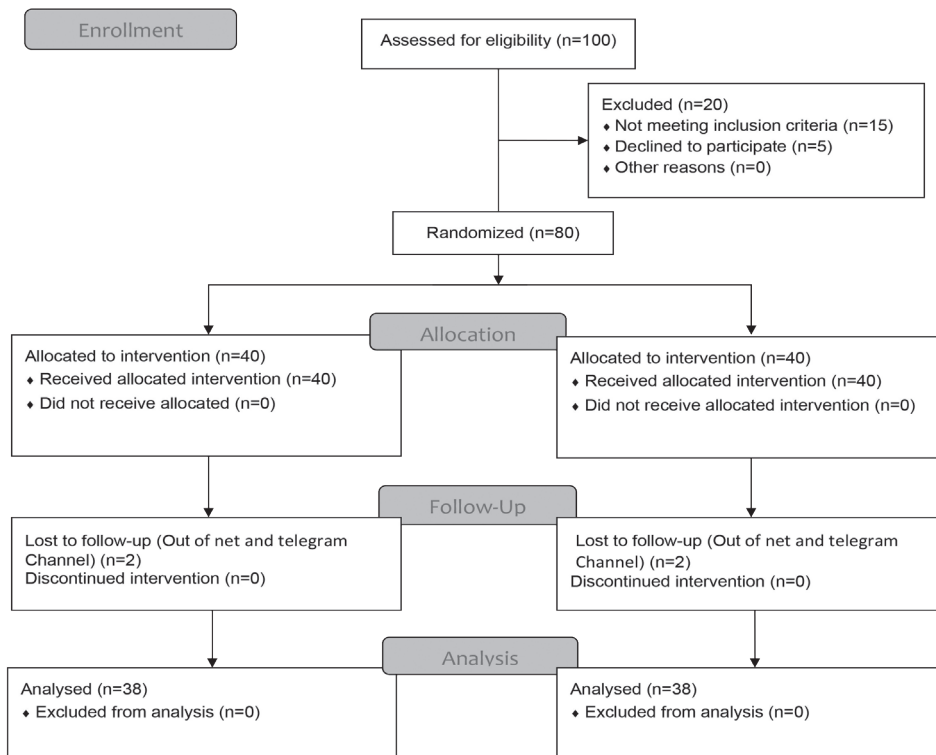


Figure 1: CONSORT flow diagram of the participants

the study to the eligible individuals and if the patients and their spouses intended to participate in the study, they signed written informed consent before starting the intervention. It was emphasized that participation in the study was voluntary and they were free to withdraw from the study at any time. The study was approved by the Medical Ethics Committee of Alborz University of Medical Sciences and Health Services on December 23, 2017 (code: 1396.146).

RESULTS

In this study, the results of examining 76 infertile women who continued their participation until the end of the research were assessed in two groups. The mean age in the control and intervention groups was 31.03±3.6 and 30.05±3.2, respectively. The mean BMI

in the control and intervention groups was 25.54±3.7 and 24.9±3.8, respectively. After exploring the normality of the variables, the data was analyzed by an Independent *t*-test and Chi-square test. It was found that the two groups were not significantly different with respect to the mean age ($P=0.50$), women's level of education ($P>0.99$), husband's level of education ($P>0.99$), body mass index ($P=0.51$), women's job ($P>0.99$), husband's job ($P>0.99$), and duration of infertility ($P=0.687$); in other words, the two groups were homogeneous in these aspects (Table 2).

Based on our findings, there was no statistically significant difference between the two groups in terms of the mean score of sexual self-concept in all three positive ($P=0.683$), negative ($P=0.879$), and situational ($P=0.931$) domains before the intervention. In other words, the two groups were the same with respect to the self-concept score before

Table 2: Frequency distribution of research units of qualitative variables in the two control and intervention groups

Demographic factors		Control group	Intervention group	P value
Women's education	Under diploma	3 (7.9)	3 (7.9)	>0.99**
	Diploma and MS	26 (68.4)	25 (65.8)	
	Higher license	9 (23.7)	10 (26.3)	
Husband's education	Under diploma	3 (7.9)	4 (10.5)	>0.99**
	Diploma and AD	27 (71.1)	28 (73.7)	
	Higher license	8 (21)	6 (15.8)	
Women's job	Housewife	32 (84.2)	32 (84.2)	>0.99**
	Employee	6 (15.8)	6 (15.8)	
Husbands' job	Employee	8 (21)	9 (23.7)	0.879**
	Self-employment	25 (65.8)	22 (57.9)	
	Worker	5 (13.2)	7 (18.4)	
Ethnic group	Kurd	5 (13.2)	6 (15.8)	>0.99**
	Fars	16 (42)	18 (47.4)	
	Lor	5 (13.2)	4 (10.5)	
	Turk	12 (31.6)	10 (26.3)	
Family size	Less than 3	35 (92.2)	36 (94.7)	>0.99**
	More than 3	3 (7.8)	2 (5.3)	
Infertility duration	12-24 month	11 (28.9)	8 (21.1)	0.687**
	24-36month	2 (5.3)	3 (7.9)	
	More than 36	25 (65.8)	27 (71)	
Duration of trying to be pregnant	1-2 year	14 (36.9)	11 (28.9)	>0.99**
	3-4 year	11 (28.9)	12 (31.6)	
	More than 5	13 (34.2)	15 (39.5)	
Treatment experience-history	Yes	26 (68.4)	29 (76.3)	0.609**
	No	12 (31.6)	9 (23.7)	

**Chi-squared test

Table 3: Comparison of the mean and standard deviation of sexual self-concept score in both groups

Variables		Before intervention	After intervention	4 week after intervention	P value
		Mean±SD	Mean±SD	Mean±SD	
Positive sexual self-concept	Control	109±15.6	106±17.1	105.1±16.8	<0.001*
	Intervention	110.6±18.42	120.1±18.7	120.4±17.9	
	Test	0.683**	0.001**	P<0.001**	
Negative sexual self-concept	Control	24.5±7.18	24.50±7.07	25.2±7.06	<0.001*
	Intervention	24.3±7.87	20.2±7.77	19.65±6.97	
	Test	0.879**	0.015**	P<0.001**	
Situational sexual self-concept	Control	41.3±99.09	41.2±9.21	40.3±8.70	0.06*
	Intervention	41.5±9.29	42.4±8.11	42.8±7.73	
	Test	0.931**	0.554**	0.194**	

*Test Repeated measure; **Independent *t* test

the intervention. In the positive self-concept domain, there were significant between group differences during the time (110.6±18.42, 120.1±18.7, 120.4±17.9) in the intervention group versus (109±15.6, 106±17.1, 105.1±16.8) in control groups. Here, by comparing the means, we would observe the upward trend in the scores across the groups for each stage during the time ($P<0.001$).

In the negative self-concept domain, there were significant between group differences during the time (24.3±7.87, 20.2±7.77, 19.65±6.97) in the intervention group versus (24.5±7.18, 24.50±7.07, 25.2±7.06) in control groups; by comparing the means, we observed a downward trend in the scores in each stage for the intervention group rather than the control one during the time ($P<0.001$). A decrease in the mean negative self-concept score and an increase in the mean positive self-concept score improved the situation in that domain; this indicated the role and effect of counseling in the intervention group rather than the controls. In the situational self-concept, the two groups did not differ in each stage or during the time ($P=0.06$) (Table 3).

DISCUSSION

In our study, no statistically significant difference in the mean scores of sexual self-concept in the positive, negative and situational domains in both groups was observed before the intervention. After the intervention, the mean score of positive sexual self-concept in the

intervention group was higher than that in the control group immediately and four weeks after the intervention. In negative sexual group, the self-concept score decreased in the intervention group compared to the control. This issue reflected the role of the counselor's presence contrary to the training package in improving the positive and negative sexual self-concept and promoting sexual performance. There were no significant differences between the groups in situational domain during the research. Changing situations or conditions was one of the ways to improve this domain, but it was not possible for this group because people were in the treatment stage of infertility, and this could be one of the reasons that this domain had no changes.

The results of the study entitled "Effect of Counseling based on Sexual Self-Concept on the Sexual Health of Women in Reproductive Age" were in agreement with the findings of the present study. They had an individual counseling (short-term counseling session for 45 minutes), and realized that sexual counseling based on sexual self-concept might be effective in maintaining and improving the women's sexual health.⁹

The result of the survey entitled "The Effectiveness of Cognitive-Behavioral Group Counseling on Self-Concept and Depression in Women with Breast Cancer" was similar to the findings of this study. They found that cognitive-behavioral group counseling could improve the positive sexual self-concept and decrease the negative aspect of sexual

self-concept in patients by challenging the irrational thoughts and replacing them with rational thinking.²⁰ The only difference between these studies and ours is the type of counseling method. We use virtual space instead of face to face counseling.

In another study aiming at investigating the effectiveness of sexual training on the outcome of treatment of infertile women, the researcher observed that the sexual skill training was very effective in improving the sexual performance of infertile women and had positive effects on fertility. In addition, they proposed sexual skill training by cognitive behavioral therapy as a non-pharmacological method which was effective for sexual and reproductive health.²³ Although this result was consistent with that of the present study and was done in the same population as the current study, there were some limitations that our study did not have. Some issues like sexual ones in our culture are taboo and it is not easy to talk about it, so if they were done in another way, the result may be changed. The couples often have difficulty expressing their sexual problems to health providers, so it's important to get advice in a place where they feel more comfortable.¹⁵ Another problem is some barriers that may affect the services delivered, such as timeliness and location of service; therefore, we need some measures to remove this limitation, like Smartphone. This technology is a cost-effective mode of presentation that removes many such barriers, offering fast and available service as well as peer support in mental health services improvements in recovery, self-esteem, self-efficacy, socialization, and self-management of difficulties.²⁴ Varying types of telemedicine and telephone consultations are available. Phone-based interventions have been effective in mental and emotional care.¹⁶ Indeed, remaining anonymous and having freedom in stating their information have made the Internet a safe place to express their problems. This case led to an increase in positive self-concept and a decrease in negative self-concept in this group of patients. Online and

telephone counseling provides greater access to the counselor anywhere and anytime. This kind of counseling is also more economical, and people can express their problems without social stigma, so patients are more pleased and satisfied with it.²⁵

We investigated the studies and did not find any study that examined the impact of Smartphone-based consultation on this variable, and most of the counseling studies had been conducted individually or collectively.^{17, 22} Accordingly, it was only possible to compare the results with those of the conducted studies, which could be one of the limitations of this research. Besides, the present study attempted to homogenize the participants.

Nevertheless, existence of different possible educational media as well as problems of access to the internet were among the limitations of this study.

CONCLUSION

The findings of this study indicated that counseling based on sexual self-concept approach through Smartphone could increase the positive self-concept score and decrease the negative one. As a consequence, due to the growing use of Smartphone and the sensitivity of sexual issues, applying correct counseling principles through virtual spaces can be an effective step towards improving the health of infertile women and the complications of infertility. Based on this result, the use of virtual spaces such as Smart- phone is suggested to treat sensitive topics similar to sexual subjects. The researcher recommend some studies as like as the present one in other topics or in other population should be carried out.

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