



Effects of Virtual Emotion Regulation Training on Positive and Negative Sexual Self-Concept of Diabetic Married Women Covered by Comprehensive Health Centers in Gorgan, Iran

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Abstract

Background: Sexual self-concept is an individual's perception of his/her sexual feelings and actions, which can be affected by chronic diseases, including diabetes. As a biological and psychological crisis, diabetes can cause mood changes. The present study was conducted to determine the effects of virtual emotion regulation training on the positive and negative sexual self-concept of diabetic married women.

Methods: An interventional study was conducted on women with type 2 diabetes covered by the comprehensive health service centers of Gorgan (Iran) in 2019. Overall, 36 eligible diabetic women were enrolled via available sampling. The subjects were assigned to an intervention group (n=19) and a control group (n=17) through four-block allocation and random selection without placement. Virtual emotion regulation training was held during 4 sessions, once a week, for the intervention group. Both groups completed the Persian version of Beck's Depression Inventory and Snell's Multidimensional Sexual Self-Concept Questionnaire at baseline, immediately after the last virtual training session, and one month after the last training session. Data were analyzed using ANOVA and Bonferroni's post hoc test at a significance level of 0.05.

Results: The mean score of positive sexual self-concept of patients after the last training session was 133.68 ± 18.91 in the intervention and 131.17 ± 18.86 in the control group. The mean score of positive sexual self-concept of patients one month after the training was 10 ± 9.51 in the intervention group and 15.17 ± 11.92 in the control group. The mean score of negative sexual self-concept of patients after the last training session was 10.42 ± 10.04 in the intervention and 14.52 ± 14.39 in the control group. The interaction effects of time and group on the positive sexual self-concept did not differ significantly ($P=0.316$). The group effect was also not statistically significant ($P=0.58$). The interaction effects of time and group on the negative sexual self-concept were significant ($P=0.023$), and the group effect was not statistically significant ($P=0.47$).

Conclusion: The significant interaction of time and group on negative sexual self-concept indicates that the negative sexual self-concept in diabetic women has been affected by the intervention. Given the significant effects of virtual emotion regulation training on the management of negative emotions, this type of intervention can be beneficial for improving the health of diabetic women.

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Highlights:

What is current knowledge?

Survey in some regions of Iran and other countries indicate that sexual self-concept of diabetic patients is low and efforts should be made to improve it. Emotions regular training can be beneficial for improving the health of women.

What is new here?

Emotion regulation training is one of the methods that increases behavioral and emotional capabilities and can improve negative sexual self-concept.

Introduction

Sexual self-concept refers to the understanding of oneself as a sexual being (1) and recognizing one's sexual aspects (2). It is influenced by cognition, beliefs, and environment (3) and is related to the sexual experiences and behaviors of a person (4). Sexual self-concept is classified into positive, negative, and situational dimensions (5). These dimensions can be affected by various factors including social factors (6), age (7, 8), race (9), chronic diseases, including diabetes (10), infertility (11, 12), disability (13), sexually transmitted diseases (14), vaginismus (15, 16), depression (17), mental health (18), anxiety (17), body image (19), important sexual events, such as starting sexual behaviors in early adolescence (2), history of sexual abuse in childhood (20, 21), and risky sexual behaviors (22). Promoting the positive dimension of sexual self-concept and controlling the negative dimension of sexual self-concept can improve sexual performance in women of reproductive age (23). Sexual self-concept can also predict marital satisfaction and sexual performance of women (24).

Diabetes can result in many complications that influence the psychological and social well-being of the patients (25). It can also disrupt patients' jobs, family relationships, and sexual relations (26). Diabetic women have a weaker positive sexual self-concept, sexual performance, and sexual satisfaction and a stronger

negative sexual self-concept (10, 27-30). Due to the financial costs and psychosocial burden of diabetes (31), the main goal of treating these patients is not only to remove the physical symptoms of the disease but also to improve the overall quality of life (32).

Counseling based on the sexual self-concept via smartphones has been able to increase the score of positive self-concept and decrease the score of negative self-concept (33). Moreover, cognitive-behavioral sex training can improve sexual self-concept (34). In this regard, a study reported that the positive sexual self-concept of infertile women would improve one month after emotional regulation training (12). This approach has been used by experts to solve self-concept-related weaknesses, especially sexual self-concept (35).

Emotion regulation skills increase cognitive, behavioral, motivational, and emotional capabilities, and prepare a person to deal with different situations in life (36, 37). The present study was designed to determine the effects of virtual emotion regulation training on the positive and negative sexual self-concepts of diabetic married women.

Methods

This interventional, controlled study with a pretest-posttest design was conducted on women with type 2 diabetes who had been registered in the comprehensive health centers of Gorgan (northeastern Iran) in 2019. Of an overall of 518 people (aged 18 to 50 years), 42 eligible patients were included in the study (Figure 1). Allocation of samples to the intervention and control groups was done through block allocation (AABB-ABAB ABBA-BAAB-BABA-BBAA) and random selection without placing each block corresponding to the permutations of that block (A represents the intervention group and B represents the control group). The random selection of blocks and placement of samples in the intervention and control groups continued according to the location of the block until the desired amount was reached, which was 21 people in each group. The sample size (17 for each group) was calculated at the confidence level of 0.95 according to a study by Ziaei et al. (12), considering the incidence of

depression in diabetic women (0.19) (38), 20% dropout rate, and statistical power of 0.99 using the G power software.

Inclusion criteria included having Iranian nationality, high school education and above, living with a spouse in the last 4 weeks, and confirmed diagnosis of type 2 diabetes according to the results of fasting and non-fasting blood sugar and glucose tolerance tests. Exclusion criteria were a history of physical or mental diseases, taking psychiatric medication, having a history of receiving life skills training, obtaining a score of 36-63 from the Beck's Depression Inventory (BDI) at the beginning of the study, and history of infertility, being pregnant, breastfeeding, and menopause.

The data collection tool included a demographic information form, the Persian version of Snell's Multidimensional Sexual Self-Concept Questionnaire (MSSCQ), and the Persian version of BDI.

The MSSCQ was originally designed by Snell in 1998 (39) and standardized by Ziaei et al. (2012) in Iran (5). The Persian version has 78 questions, 3 dimensions, and 18 sub-dimensions. The positive dimension of sexual self-concept includes 10 areas of sexual self-efficacy, sexual awareness, motivation to avoid risky sexual relations, self-blame in sexual problems, sexual optimism, sexual management, sexual self-esteem, sexual satisfaction, prevention of sexual problems, and internal control of sexual issues. The negative dimension of sexual self-concept includes four areas of sexual anxiety, sexual depression, sexual surveillance, and fear of sexual intercourse. Each field consists of 3 to 5 items. Items belonging to each area are distributed throughout the questionnaire. The answers to the questions are scored on a Likert scale from 0 (does not apply to me at all) to 4 (completely applies to me). Four items are scored in reverse. The minimum score in the positive and negative self-concept dimensions is zero, the maximum score in the positive self-concept is 176, and the maximum negative self-concept score is 64. The reliability of the questionnaire has been reported as 0.89 (5).

The BDI was developed in 1961 by Beck et al. and includes 21 items in the form of sequential phrases, each phrase corresponding to a specific symptom of depression (40). The subjects should choose the sentence that expresses their current state the most. Quantitative values of each item range from 0 to 30 in a way that 0 is mental health in the desired item, 1 is mild disorder, 2 is moderate disorder, and 3 is severe disorder. Only one sentence in each item has the highest score and is therefore considered in the calculations. The sum of scores ranges from 0 to 63 and a negative score is not considered. An overall score of 1-18, 19-28, 29-35, and 36-63 indicates normal mental health, mild depression, moderate depression, and severe depression, respectively. This questionnaire was standardized in Iran by Hojjat et al. (2014) with an alpha coefficient of 0.85 (41).

A written informed consent form was obtained from all subjects before participation. The questionnaires were completed three times: at baseline, immediately after the last training session, and one month after the last training session.

The training was held by an MSc student in midwifery counseling and under the supervision of professors in reproductive health and Counseling (Table 1). The four training sessions were held once a week. The content and structure of each session were based on the principles of group cognitive therapy and skills workshop training (42). At the end of the study period, the training file was given to the members of the control group.

Data were analyzed using SPSS16 and descriptive statistics including mean, standard deviation (SD), as well as frequency and percentage. Repeated measures analysis of variance, Bonferroni's post hoc test, and the chi-square test was also used for data analysis. The normality of quantitative variables and the dimensions of sexual self-concept were assessed using the Shapiro-Wilk test. All analyzes were carried out at a significance level of 0.05.

Table 1. The content of the emotion regulation training program

Session	Training session content
1	Introduction, explaining class objectives, rules for attending sessions, familiarity with the concept of negative emotion, psychological symptoms and presenting assignments.
2	Reviewing the assignments of the previous session and providing feedback, identifying negative thoughts and presenting assignments.
3	Reviewing the assignments of the previous session, providing feedback, investigating a variety of cognitive errors, providing solutions to reduce negative thoughts, and presenting assignments.
4	Reviewing assignments and topics discussed in the previous sessions, investigating the reasons and evidence for the advantages or disadvantages of negative thoughts, providing solutions to reduce negative thoughts, completing the questionnaires, and thanking the participants.

Results

The average age of the participants in the intervention and control groups was 58.1 ± 4.53 and 55.41 ± 4.99 years, respectively. The average duration of diabetes treatment in both groups was 6 years. Most of the subjects were homemakers and

not receiving insulin. Demographic variables did not differ significantly between the two groups (Table 2).

There was no statistically significant difference in the mean scores of depression between the two groups at all test intervals (Table 3).

Table 2. Comparison of the frequency distribution of qualitative demographic between diabetic women in intervention and control groups

Variables	Group	Intervention	Control	*P-value
		Number (%)	Number (%)	
Education level	High school	5(26.3)	3(17.6)	0.61
	Diploma	8(42.1)	6(35.3)	
	University degree	6(31.6)	8(47.1)	
Education level of the husband	High school	4(21.1)	9(52.9)	0.13
	Diploma	6(31.6)	3(17.6)	
	University degree	9(47.9)	5(29.4)	
Job	Homemaker	17(89.5)	16(94.1)	1
	Employed	2(10.5)	1(5.9)	
Job of husband	Self-employed	12(63.2)	11(64.7)	0.92
	Employed	7(36.8)	6(35.3)	
Type of diabetes	Insulin-dependent	4(21.1)	4(23.5)	1
	Non-insulin-dependent	15(78.9)	13(76.5)	
Treatment	Non-insulin	16(84.2)	14(82.4)	1
	Insulin	3(15.8)	3(17.6)	
Ethnicity	Fars	17(89.5)	16(94.1)	1
	Other	2(10.5)	1(5.9)	
History of disease	Blood pressure	5(26.3)	6(35.3)	0.55
	Other	14(73.7)	11(64.7)	
History of disease in the husband	Blood pressure	3(15.8)	5(29.4)	0.32

Table 3. Comparison of the mean score of depression between the intervention and control groups before and immediately and one month after the intervention

Variable	Groups	Mean±SD		
		Before	Immediately	After one month
Depression	Intervention	89.8±57.8	7.15±7.52	3.20±4.84
	Control	59.9±35.10	5.63±8.11	3.05±5.29
	P-value	57.*0	79.*0	67.**0

* Mann-Whitney U test, ** Independent t-test

The time-group interaction effect on the positive sexual self-concept was not statistically significant. At baseline, the mean score of positive sexual self-concept in the control group was lower than in the intervention group; however, after the intervention, it increased in the control group and decreased in the intervention group. One month after the intervention, the mean score of positive sexual self-concept increased in both groups (Figure 2).

There was a significant time-group interaction effect on the negative sexual self-concept (P=0.023), but the effect of group was not statistically significant (Table 4). In the negative sexual self-concept, the effect of time was significant (P=0.035), meaning that changes in the mean score of negative sexual self-concept in at least one of the intervention or control groups were significant over time. The changes within the intervention group over time were significant at baseline and after the intervention. The mean score of the negative sexual self-concept at baseline was higher in the intervention group than in the control group; however, it decreased immediately after the intervention and remained unchanged in the control group. One month after the intervention, the mean score of the negative sexual self-concept decreased in the control group and increased in the intervention group (Figure 3).

Table 4. Intra and intergroup comparison of the mean score of positive and negative sexual self-concept over time

Variable	Group	Mean ±SD			*P-value	Adjusted Bonferroni test		
		Before	Immediately	After one month		1,2	1,3	2,3
Positive Sexual Self-Concept	Intervention	134.05± 20.81	133.68± 18.91	136.1±18.33	0.85	1	1	1
	Control	125.88± 22.84	131.17± 18.86	136.76± 22.91	0.01	0.24	0.04	0.51
	P-value***	0.27	0.69	0.99	-	-	-	-
Negative Sexual Self-Concept	Intervention	16.89± 9.03	10±9.51	10.42± 10.04	<0.001	<0.001	<0.001	1
	Control	15.17±11.16	15.17± 11.92	14.52± 14.39	0.87	1	1	1
	P-value***	0.61	0.16	0.33	-	-	-	-

* Frequent analysis of variance test *** Independent t-test
 **At baseline (1), immediately after the intervention (2), one month after the intervention (3)

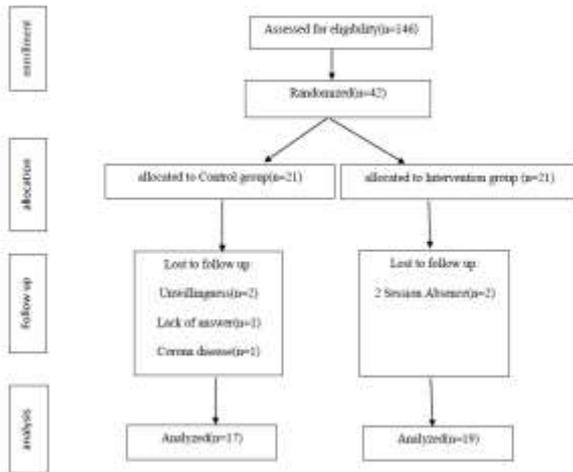


Figure1: Comparison of sexual self-concept between intervention and control groups at 3 times ,before, immediately and one month after the intervention

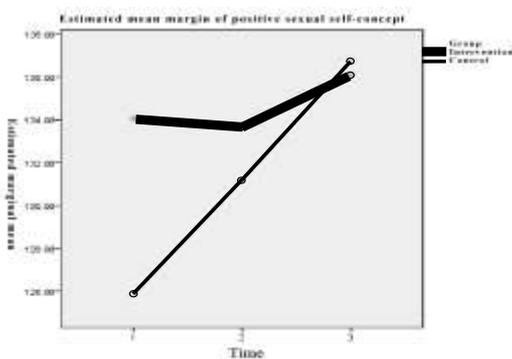


Figure2: Comparison of the mean of positive sexual self-concept during the study between the intervention and control groups at 3 times ,before, immediately and one month after the intervention

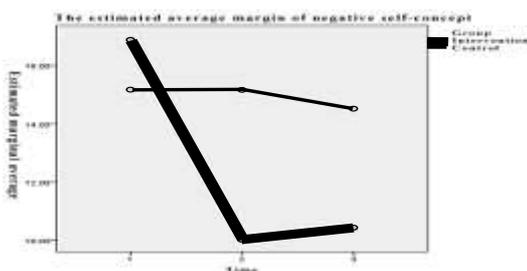


Figure3: Comparison of the mean of negative sexual self-concept during the study between the at 3 times ,before,immediately and one month after the intervention intervention and control groups

Participants in the experimental group and 56.70% of the participants in the control group were men. In addition, 83.3% of the participants in the experimental group and 80% of those in the control group were married. Result of the Chi-square test and t-test showed no significant difference in the variables of age, gender, marital status, level of education, occupation, history of smoking, and underlying diseases between the study groups (P>0.05) (Table 1).

Results of the independent t-test showed a significant difference in self-efficacy scores between the study groups at time of discharge (P=0.29). In addition, there was a significant difference in self-efficacy scores two weeks (P=0.01) and four weeks (P=0.001) after discharge from the hospital. According to the results of the repeated-measures ANOVA, the self-efficacy score in the experimental group increased significantly over time. Furthermore, group and time had significant effects on the self-efficacy score (P<0.05) (Table 2).

Discussion

The present study was conducted to determine the effects of virtual emotion regulation training on the positive and negative sexual self-concept of diabetic women. In the intervention group, the mean score of negative sexual self-concept in diabetic women decreased significantly after the intervention. However, the mean score of positive sexual self-concept after the intervention did not differ significantly between the study groups. Yazdani et al. (2018) found that sex therapy along with routine infertility counseling via smartphones reduces the negative self-concept of infertile women immediately and one month after the intervention. In this study, the positive sexual self-concept of infertile women increased immediately and one month after the intervention. In a study by Ziaei et al. (2017), counseling on sexual self-concept reduced the negative sexual self-concept and strengthened sexual performance in women of reproductive age. It also increased the positive sexual self-concept in women of reproductive age (23). In a study by Ghorbanshiroudi, cognitive-behavioral therapy caused a significant reduction in negative sexual self-concept and a significant increase in the positive sexual self-concept of married women immediately after the intervention (43). In another study, cognitive-behavioral sex therapy was effective in improving women's sexual self-concept and decreasing the mean score of negative sexual self-concept (34).

In the study by Ziaei et al., the negative sexual self-concept did not change immediately after the intervention but decreased after one month. In addition, the positive sexual self-concept decreased immediately after the intervention and increased after the one-month follow-up, indicating the interaction effect of time (12).

The result of the present study about the effect of emotion regulation training on the positive sexual self-concept was not consistent with the results of other studies. However, since the main goal of our study i.e. reduction of the negative sexual self-concept was achieved, the positive self-concept might require a longer time to change. Nevertheless, it should be noted that holding virtual group meetings rather than face-to-face interventions could have a significant impact on the outcome of the intervention (44, 45).

The limitations of this study were holding classes virtually due to the coronavirus disease pandemic, difficulty in installing Skype on the subjects' mobile phones, and Internet connection interruptions during the trainings.

Conclusion

Since reducing the negative dimension of sexual self-concept is one of the important aspects of promoting women's sexual health, especially in those suffering from chronic diseases, emotion regulation training could be a beneficial approach for reducing negative emotions, particularly in diabetic women. It is recommended to compare the outcomes of virtual and face-to-face approaches to determine the most effective method for reducing the negative dimension of sexual self-concept.

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Ethical statement

This study was approved by the ethics committee of Golestan University of Medical Sciences (ethics code IR.GOUMS.REC.1399.183). A written informed consent form was obtained from all subjects prior to participation.

Conflict of interest

The authors declare that there is no conflict of interest regarding the publication of this article.

Author contributions

TZ and SK presented the initial idea. TZ, SK, and MT gathered and analyzed the data. SK wrote the manuscript. All authors read and approved the final manuscript.

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