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The effect of practical intimate relationship skills training (PAIRS) on marital satisfaction, adjustment, and sexual function in women living with HIV and AIDS: a randomized controlled trial

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Abstract

Introduction: Considering the role of marital satisfaction and adjustment in family functioning, which can be influenced by specific disease, such as acquired immune deficiency syndrome (AIDS), this study was conducted to determine the effect of practical intimate relationship skills training (PAIRS) on marital satisfaction, adjustment, and sexual function in women living with human immunodeficiency virus (HIV) and AIDS (WLHA).

Material and methods: In a randomized controlled trial, 44 WLHA referred to the Behavioral Disease Counseling Clinic of Imam Khomeini Hospital, Tehran, Iran in 2019, were randomly divided into intervention and control groups based on four randomized blocks. Eight sessions of educational counseling were provided once a week for both group. At the beginning, at the end, and at four weeks following the training, Enrich marital satisfaction questionnaire, Spinner marital adjustment, and Rosen sexual function questionnaires were completed by patients and analyzed with a SPSS-21 software.

Results: This study showed no significant difference between total score of marital satisfaction, marital adjustment, and sexual function before the intervention. Rate of marital satisfaction ($p = 0.003$), marital adjustment ($p = 0.03$), and female sexual function ($p < 0.001$) were significantly increased in the intervention group immediately and one month after the intervention. The results also indicated that 77.9% of the changes in post-test scores of marital satisfaction, 76% of marital adjustment, and 94.9% of sexual function were related to the intervention effect, demonstrating a sustainable impact of educational intervention ($p < 0.001$).

Conclusions: PAIRS can improve marital satisfaction and adjustment and sexual function in WLHA, and influence quality of family functioning.

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Key words: marital satisfaction, marital adjustment, sexual function, practical application of intimate relationship skills, PAIRS.

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Introduction

Human immunodeficiency virus (HIV) and acquired immune deficiency syndrome (AIDS) are the most life-threatening diseases of the modern era, which heavily burden health and economy of countries in terms of high mortality and high cost of care [1]. According to the latest AIDS statistics by the United Nations in 2016, out of 36.7 million people living with HIV (PLWH) worldwide, 17.8% are women over the age of 15 [2]. By mid-2017, a disease management center of Ministry of Health in Iran reported that 36,039 people have been diagnosed with HIV/AIDS [3]. It is a social phenomenon that affects almost all social and economic life dimensions of individuals, which causes a reduced quality of marital life of these patients, along with the fear of disclosure of the disease and its stigma [4].

Severe and life-threatening illnesses cause a great deal of stress for the couples [5], which can affect marital satisfaction and consequently, marital quality. Marital dissatisfaction is associated with a variety of problems including deep problems in couple relationships and hatred of spouse, annoyance, jealousy, competition, revenge, feeling of being humiliated, lack of confidence and, subsequently, divorce [6].

Marital satisfaction is a subjective evaluation and feeling of a person about marital relationship [7], while marital adjustment is a process, in which one adjusts its lifestyle to the other [8]. Most of these problems are due to a lack of relationship skills between spouses [9].

Among essential components of an effective intervention to increase marital satisfaction and adjustment can be referring to training of appropriate relationship skills to spouses, encouraging acceptance of each other, and training of practicality. One of these intervention programs, which aims at enriching and enhancing the quality of interpersonal relationships is the practical application of intimate relationship skills (PAIRS). This program is based on a psycho-educational event that addresses communication, conflict resolution, self-awareness, and style of relationship [10].

PLWH are one of the most important target groups in the main subject of sexual health, but more concentration is on the risks associated with the transmission of the disease. Other aspects of life, such as sexual satisfaction as one of the most significant components of these people's quality of life, are disregarded, which can lead to an increase in the prevalence of the disease [11].

Therefore, with regard to the above-stated issues and the importance of family health as well as sustainability, and given the increasing prevalence of HIV-infected women, it was decided to conduct a study, which aimed at determining the effect of PAIRS on increasing marital satisfaction, adjustment, and sexual function in women living with HIV and AIDS (WLHA).

Material and methods

Design

The present study was a randomized controlled clinical trial including WLHA referred to the Behavioral Disease Counseling Clinic of the Imam Khomeini Hospital, Tehran, Iran in 2019. Data were collected at beginning and one-month follow-up. The project was found to be in accordance with the ethical principles and the national norm and standards for conducting medical research in Iran. An ethics code was obtained from the Alborz University of Medical Sciences and Health Services, with code IR.ABZUMSREC1397.196 and Tehran University of Medical Sciences, with a code IR.TUMS.VCR.REC.1398.470. The study was registered in Clinical Trial System, with code IRCT20160503027728N11.

Sample size and sampling methods

According to a study by Rahmanifar *et al.* [12], based on marital satisfaction score, using G-Power software with statistical $\alpha = 5\%$, $\beta = 20\%$, and power = 95% as well as effect size of 0.9, and given the probability of a 20% loss to follow-up, the sample size comprised 50 individuals, with 25 participants in each group.

Inclusion criteria

Literate people of Iranian nationality, being in a fixed relationship with an HIV-positive partner, no alcohol consuming, expressing a desire to participate in educational courses, and not receiving individual counseling services out of educational sessions were included into the study.

Exclusion criteria

Individuals with a history of hospitalization in psychiatric clinics, taking any psychotropic drugs, incapable to complete the sessions (not attending in two sessions), and having no sexual function based on the sexual function questionnaire were excluded.

After identifying all eligible individuals, the study goals were explained, and a written consent was obtained from every partaker willing to contribute to the study. Participants were then randomly divided into intervention and control groups (with routine care) based on four randomized blocks (six probabilities of BABA, BBAA, ABAB, ABAB, and BAAB). Therefore, at the beginning of the study, one of the blocks was selected, and four participants were included. Block A was considered as the intervention group and block B was considered as the control group.

Data collection

Data were collected using an Enrich marital satisfaction questionnaire, Spanier marital adjustment questionnaire,

Rosen women's sexual function questionnaire, and social-demographic checklist.

Enrich marital satisfaction

This questionnaire is an objective self-report tool of 47 questions, which was designed by Olson and its reliability confirmed by Cronbach's α coefficient of 0.92 [13]. Correlation coefficient of the Enrich questionnaire was reported with family satisfaction scales of 0.41 to 0.60 and life satisfaction scales of 0.32 to 0.41. All sub-scales of this questionnaire differentiate satisfied and dissatisfied couples, with a good criterion of validity [14]. Grading for five-item Likert scale varies from score 5 as "strongly agree" to score 1 that denotes "strongly disagree". On this scale, the analysis is based on a total of 47 questions. The higher score, the better marital satisfaction, while the lower score, the lower marital satisfaction [10].

Graham B. Spanier: dyadic adjustment scale (DAS)

This questionnaire has been designed to assess the compatibility between couples or each two individuals who live together. The scale consists of 32 questions in four dimensions, including two-person satisfaction, two-person correlation, two-person agreement, and affection. Scoring is based on a five-point Likert scale. Higher scores indicate a better and more consistent relationship. Its validity and reliability were evaluated by Sanaei, and overall scale score with Cronbach's α of 96% had a good internal consistency [9].

Sexual behavior questionnaire by Rosen et al.

This questionnaire contains 19 questions on six dimensions of libido, sexual arousal, genital sliders or orgasmic moisture, sexual satisfaction, and pain. Scoring of the questions is based on a grading system ranged from zero to five, and the score of each dimension is obtained by summing the scores of the questions of noted dimension (higher score indicates more desirable sexual performance). The questionnaire is a standard general type, whose validity and reliability was assessed by Rosen *et al.* in 2000 [15] and it was approved by Mohammadi *et al.* in Iran. Coefficients of validity of the test with two bisection and retest methods were reported as 78% and 75%, respectively, while the mentioned coefficients were obtained between 63% and 75% for the sub-tests by the bisection method and between 70% and 81% by the retest method [16].

Personal-social checklist

This checklist includes questions about patients and their spouse as well as their age, level of education, family income, residence, number of children, number of marriages, type of marriage, duration of marriage, use of contraceptive methods, and type of contraceptive.

Procedures

This study was approved by two ethics committees from Alborz University of Medical Sciences and Health Services

Table 1. Outline of training

Session	Subject	
One	Familiarity with the rules and expressing them: creating confidence and confidence therapy	Meeting the members of the group, ice-breaking and warm-up. Expressing goals and expectations – acceptance and importance of commitment to change, and participation during meetings as well as introducing PAIRS model and implementation of pre-test
Two	The importance and logic of a relationship	Defining the relationship: relation between human needs and their goals of communication – the role of good bond in marital relationships and maintaining self-esteem and individual values – relationship characteristics and communication barriers
Three	Creating link	Designing and planning of a new way of communicating for couples: active listening – training of self-expression and effective dialogue
Four	Problem solving	Effective verbal and non-verbal dialogue between couples and training in problem-solving
Five	Making contract: clarifying mental imagination and expectations	Awareness of each person and their spouses' mental imagination: avoiding misunderstandings – expressing male and female differences – revealing hidden expectations
Six	Training sexual skills	Training of sexual skills (sexual attitudes and behaviors as well as improving sexual and emotional relationships)
Seven	Unity and adaptation in the family	Regulating dimensions of unity and adaptation to maintain family function
Eight	Concluding and ending session	Conclusion: introducing some of the functional books in the program and implementation of post-test

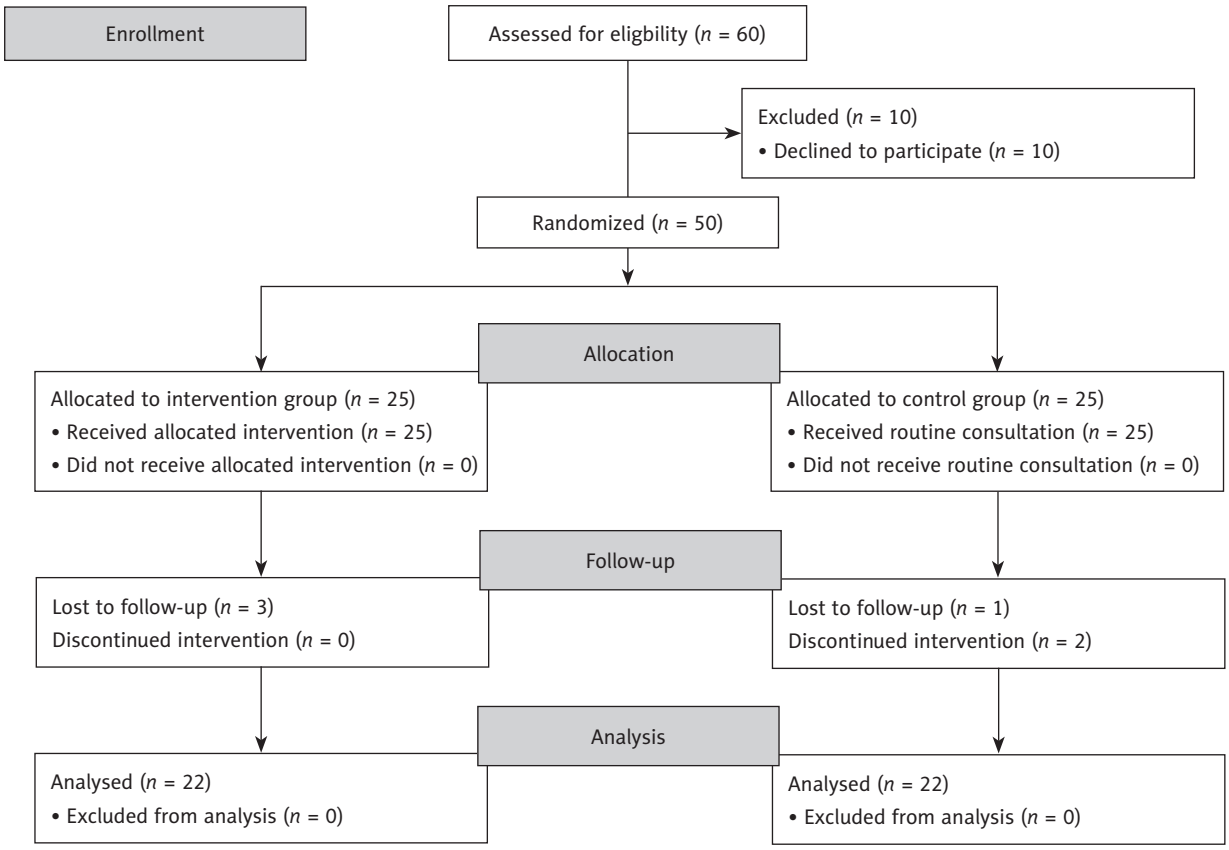

Figure 1. Consort flow diagram

with code IR.ABZUMSREC1397.196, and Tehran University of Medical Sciences with code IR.TUMS.VCR.REC.1398.470. The present study has been registered in Clinical Trial System, with code IRCT20160503027728N11.

As mentioned, the selected persons were randomly divided into intervention and control groups according to four randomized blocks. After randomization, questionnaires were completed by participants from both groups before the intervention. The obtained scores were considered as the base scores for comparison with post-intervention.

Eight sessions of counseling according to practical intimate relationship skills training were recommended to intervention group once a week (Table 1).

Intervention

Both groups received 8 sessions of training. The control group obtained training sessions according to a protocol of Behavioral Disease Counseling Clinic and in accordance with the national protocol of AIDS (they received the information about HIV care and treatment as per the national HIV guideline).

The intervention group, in addition to the routine training sessions in the control group, received 8 sessions of 45-60 minutes of training for intimate relationship skills (Table 1).

The content of these sessions was approved by a group of experts in the field of HIV. Questionnaires were completed by participants at the beginning, at the end, and at four weeks after the sessions. Involvement in the study was voluntary and participants could be excluded from the study at any time; it would not prevent them from receiving usual services.

Sixty people met the inclusion criteria, but ten people were excluded from the research due a refusal to participate. Therefore, fifty people were randomized into two groups (25 people in each group). During the study, three people from the intervention group discontinued the intervention, and in the control group, one person was lost to follow-up and two-person discontinued the intervention. Finally, the information of 44 people were analyzed from both groups (Figure 1).

Training sessions were held in a conference room of the clinic to avoid any relationships between the two groups as much as possible.

Statistical analysis

Data were entered into SPSS-21 software, and Kolmogorov-Smirnov test was used to confirm the assumption of normality of data. Information were analyzed using descriptive statistics, χ^2, and independent *t*-test as well as variance analysis with repeated-measures.

Table 2. Demographic characteristics of the participants in the intervention and control groups

Parameter	Intervention (n = 22)	Control (n = 22)	p
Qualitative variable			
Number of child			
1 or 2	13 (59.1)	15 (68.2)	0.6
3 and more	2 (9.1)	4(18.2)	0.6
Without child	7 (31.8)	3 (13.6)	0.6
Number of marriage			
1	13 (59.1)	18 (81.8)	0.2*
2	8 (36.4)	4 (18.2)	0.2*
3	1 (4.5)	0	0.2*
Type of marriage			
Permanent	17 (77.3)	19(86.4)	0.4*
Brief	5 (22.7)	3 (13.6)	0.4*
Wife education			
Primary	2 (9.1)	2 (9.1)	0.8*
Secondary	6 (31.8)	6 (27.3)	0.8*
Guidance	2 (13.6)	2 (9.1)	0.8*
Diploma	10 (45.5)	10 (45.5)	0.8*
Academic	0	2 (9.1)	0.8*
Husband education			
Primary	7 (31.8)	3 (13.6)	0.07*
Secondary	5 (22.7)	0	0.07*
Guidance	1 (4.5)	0	0.07*
Diploma	7 (31.8)	12 (54.5)	0.07*
Academic	2 (9)	7 (31.8)	0.07*
Wife job			
Household	18 (81.8)	15 (68.2)	0.2*
Employee	4 (18.2)	4 (18.2)	0.2*
Freelance job	0	3 (13.6)	0.2*
Quantitative variable	**Mean ± SD**	**Mean ± SD**	**0.2***
Marriage length	12.8 ±11.3	9.1 ±5.3	0.2**
Marriage age	23.5 ±10.6	28.2 ±10.6	0.08**
Women age	37.5 ±6.2	36.3 ±8.9	0.6**
Husband age	41.5 ±10.7	44.4 ±9.2	0.3**

*χ^2, **Independent t-test*

Outcome measures

In the present study, three main outcomes included marital satisfaction, adjustment, and sexual function were assessed.

Results

In total, 44 WLHA, with 22 individuals in each group participated in the study. The mean ± SD of women's age in the intervention group was 37.5 ± 6.5, and 36.3 ± 8.9 in the control group (p = 0.6). The two groups did not differ in terms of individual and social variables, such as average age of participants and their spouses, educational level of participants and their spouses, and occupation of partakers and their spouses (Table 2).

Based on the obtained results, there was no significant difference between two groups before intervention regarding mean scores of marital satisfaction (p = 0.79), marital adjustment (p = 0.84), and sexual function (p = 0.78), and the two groups were homogeneous in terms of investigated variable status (Table 3).

Repeated-measures test was used in the control and intervention groups before, immediately after, and one-month post-intervention in order to evaluate changes in the overall score of marital satisfaction, marital adjustment, and sexual function. The assumption of homogeneity of variances was evaluated using Levene test, which indicated their homogeneity ($p > 0.05$).

The result of repeated-measures test indicated the effect of intervention over time on the mean score of marital satisfaction (p = 0.003), marital adjustment (p = 0.03), and sexual function ($p < 0.001$), and there was a significant difference between the two groups, so that the mean score of marital satisfaction in the intervention group significantly increased compared to the control group over time, but a decreasing trend was observed in the control group.

In the intervention group, one month after the intercession, the mean score of marital satisfaction slightly decreased compared to immediately after the intervention, which indicates the need for longer counseling for further sustainability of the effect of consultation.

The mean score of marital adjustment significantly increased in the intervention group compared to the control group over time. However, there was a decreasing trend in the control group. Regarding the sexual function score, the mean score in the intervention group increased significantly over time compared to the control group, whereas in the control group, there was a decreasing trend over time (Table 3).

According to the results of one-way analysis of variance with repeated-measure (ANOVA), the effect size on marital satisfaction was 0.779. In other words, 77.9% of the differences in post-test scores of marital satisfaction were related to the effect of intervention. The effect size on marital adjustment was 0.763, which means that 76.3% of the differences in post-test scores were related to the intervention effect.

Also, the effect size on sexual function was 0.949, which demonstrates that 94.9% of the differences in sexual function post-test scores were related to the intervention effect, indicating a lasting effect of educational intervention (Table 4).

Discussion

The study showed that the mean score of marital satisfaction changed over time in both groups. An increase in the obtained scores of the intervention group and a decrease in scores of the control group were observed by compar-

Table 3. Comparison of total mean score of marital satisfaction, marital adjustment and sexual function before, immediately after and one month after intervention in intervention and control groups

Factor/Group	Before intervention mean ± SD	After intervention mean ± SD	One month after intervention mean ± SD	Repeated measures *p*-value in each group	Repeated measures *p*-value between group
Marital satisfaction					
Intervention	122.1 ± 17.1	132.6 ± 16.0	131.6 ± 13.3	0.033	0.003
Control	123.8 ± 25.0	121.6 ± 23.4	119.6 ± 23.1	0.932	
Independed *t*-test	0.79	0.04	0.03		
Marital adjustment					
Intervention	89.2 ± 9.7	98.5 ± 19.7	98.8 ± 17.3	0.017	0.03
Control	90.5 ± 25.7	87.7 ± 24.5	88.3 ± 24.8	0.834	
Independed *t*-test	0.85	0.04	0.04		
Sexual function					
Intervention	47.0 ± 16.1	69.6 ± 9.4	56.4 ± 6.9	0.009	0.000
Control	45.7 ± 14.4	44.3 ± 14.5	44.8 ± 14.1	0.051	
Independed *t*-test	0.78	0.000	0.002		

Table 4. Intergroup effects of total score ANOVA with within-group, between-group of marital satisfaction, marital adjustment and sexual function in intervention and control groups

Variable	Sum of squares	Mean square	df	*F*	*p*	Partial η^2
Marital satisfaction	2068754.735	2068754.735	1	1988.009	0.000	0.779
Marital adjustment	1053417.700	1053417.700	1	1021.556	0.000	0.763
Sexual function	309522.944	309522.944	1	745.822	0.000	0.949

ing the means. Also, 77.9% of the differences in post-test scores of marital satisfaction were related to the effect of the intervention, which indicates the sustainable impact of the educational program intervention. This finding is in line with the results of studies by Moeni *et al*., who found that relationship skills training improves women's marital satisfaction score [17]. In a study on women with cancer, Taheri *et al*. observed that 71% of changes in an intervention group were related to an effect of training of intimate relationship skills [18]. These outcomes were also confirmed in studies by Bahari *et al*. [19], Momeni *et al*. [20], Sanagooei *et al*. [21], Abbasi *et al*. [22], and Cobb and Sullivan [23]. PAIRS can help in stability of a marriage and ultimately, reduce marital conflicts, leading to more intimacy and satisfaction between couples. This approach addresses the basic needs of a family, such as love, affection, belonging, and commitment, all of which can increase the quality of life and satisfaction.

The aim of PAIRS is to achieve cohesion, empathy, and intimacy in couples' relationships. It teaches skills to build up and maintain an intimate relationship. Finally, it applies practical knowledge, strategies, and attitudes, which aim at enabling participants to build up long-lasting relationships with their spouses to live together with joy [18].

Based on the results of the present study, the mean score of marital adjustment changed over time in both groups. An increase in the mean score in the intervention group compared to the control group was observed by comparing the two groups. Also, according to the outcomes, 76.3% of the differences in post-test scores of marital adjustment were related to the effect of the intervention, which indicates the sustainable impact of the educational intervention.

The effect of group training on PAIRS in enhancing couples' satisfaction, adjustment, positive feelings, and marital intimacy was investigated in a study by Mahmoudi *et al*. [24], who showed that marital adjustment increased in an intervention group after a training. The effect of PAIRS in a post-test phase was also observed as 65% of marital adjustment [24]. The results of the present study are consistent with studies by Taheri *et al*. [18], Abbasi *et al*. [22], Gasbarrini *et al*. [25], and Williamson *et al*. [26].

The marital adjustment is a multidimensional term, which describes multiple levels of marriage and it is a process occurring throughout the lives of couples, since it requires an adaptation of tastes, recognition of personalities, development of behavioral rules, and formation of interactive patterns. Therefore, the marital adjustment is an evolutionary process between husband and wife.

The principles shown in the PAIRS approach, addressed in the present intervention, were noted by Halford [27], in order to obtain realistic expectations, flexibility of couples,

and training to maintain a positive attitude about themselves, others, and life in general. In this approach, behavioral techniques were used to teach skills to achieve intimacy in relationships, assuming that adaptive behavior is learned through imitation, pattern, and repetition. Through a variety of activities, the program improves individual self-awareness to influence attitudinal change as well as enhances conflict resolution and communication skills [27].

Based on the present findings, the overall mean score of sexual function of women changed over time in both groups, and by comparing between groups, we found an increase in the performance score in the intervention group and a decrease in the opposite group. Also, 94.9% of the differences in post-test scores on sexual performance were related to the effect of the intervention, which indicates the sustainable effect of the educational intervention. The results of the present study are consistent with studies conducted by Khamseh *et al.* [28], Moradi *et al.* [29], and Korporaal *et al.* [30]. In their studies on healthy and diabetic women, they reported the effectiveness of PAIRS on sexual function.

In this program, couples are trained to correct their behavior through an increased security and support, availability, responsiveness to spouses needs and developing safe behaviors, methods of enhancing intimacy and relationship, learning on proper relationship skills and having a desired sex.

In addition, couples should enhance their verbal and non-verbal interactions, show sexual self-esteem, including touching, embracing, and kissing in their relationship with their spouse, and express their thoughts, feelings, needs, and desires as well as to have more physical closeness [31]. PAIRS is a training program that offers a comprehensive system for raising people's awareness and developing their abilities to build and maintain enjoyable intimate relationships [32]. One of the categories of the PAIRS program, which emphasize creativity and intimacy, is the capability of problem-solving conversations in a way that couples listen to each other empathically, express discomfort without defense, acknowledge each other's differences, and resolve misunderstandings, so that they can meet each other's core needs, such as sexuality, intimacy, closeness, etc.

In this way, couples can express their thoughts, feelings, needs, and desires to become physically closer. Therefore, being aware of their spouse's needs and having the ability of talking and problem-solving, can lead to a greater satisfaction, adaptation, and sexual function [33].

An important point of the present research, which differ from other studies, is the study population. Based on reviews, no studies have been found to evaluate women acquired immune deficiency syndrome (AIDS) in Iran.

According to the expressed contents about the requirement to take practical measures for preventing the spread of the disease and the adherence of patients to treatment, the necessity of such educational interventions is proposed in particular for this vulnerable group of patients.

Limitations of the study

In the present study, a training program was provided only for women with acquired immune deficiency syndrome (AIDS), and their spouses did not participate in the program. According to the culture of our country, talking about sexual issues is accompanied with limitations and difficulties, which can be one of the biggest constraints of researchers in educating spouses of the above-mentioned women.

Conclusions

Based on the results of the study, the implementation of PAIRS improves marital satisfaction, adjustment, and sexual function in women with AIDS.

Given the multiple individual-social problems of this vulnerable group of society, who require the support and empathy of their families, especially their spouses, providing practical program that strengthen and consolidate their marital relationships is very useful, and it can be effective in adhering to treatment and preventing the spread of the disease.

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Conflict of interest

The authors declare no conflict of interest with respect to the research, authorship, and/or publication of this article.

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