



Original Article

Investigating the Relationship Between Sexual Health Literacy, Sexual Self-Care, and Marital Satisfaction in Women in Zahedan, Eastern Iran

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Abstract

Introduction: Marital satisfaction constitutes a fundamental determinant of both family cohesion and the psychological welfare of individuals. This study aimed to investigate the relationship between sexual health literacy (SHL), sexual self-care, and marital satisfaction in married women attending health centers in Zahedan, 2024.

Methods: This cross-sectional study included 460 married women selected by multi-stage sampling. Data were collected using the SHELA questionnaire, the female sexual health self-care questionnaire, and the Enrich marital satisfaction questionnaire. Data were analyzed using Chi-square, *t*-test, ANOVA, and hierarchical linear regression in SPSS version 22.

Results: The mean age of the participants was 33 ± 7.2 years. Education, occupation, number of children, and marriage age were significantly associated with SHL and self-care ($P=0.001$). Hierarchical regression showed demographic factors explained 31% of the variance in marital satisfaction. Adding SHL increased it to 48% ($\Delta R^2=0.17$), and including self-care brought it to 63% ($\Delta R^2=0.15$). Promoting sexual health ($\beta=0.56$) and preventing unwanted pregnancy ($\beta=0.57$) were the strongest predictors.

Conclusion: Enhancing SHL and sexual self-care practices significantly contributes to women's marital satisfaction. Targeted educational programs and counseling interventions are recommended to strengthen marital relationships and family well-being.

Keywords: Sexual health, Health literacy, Self-care, Marital satisfaction, Iran



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Introduction

Marital satisfaction, as an individual's overall perception of the quality of the relationship with their spouse, is considered one of the fundamental pillars of mental health, family stability, and optimal social functioning (1). This multidimensional concept is influenced by various factors including interpersonal communication, adjustment, emotional expression, and, in particular, sexual health and functioning (2). Due to their pivotal role in family dynamics, women represent a key group whose marital satisfaction has a direct impact on the overall well-being of the family and future generations (3). However, studies show that many women face challenges in the area of sexual and relationship health that can severely affect their marital satisfaction. Therefore, identifying factors that can improve women's marital satisfaction is a research and

health priority (4).

Globally, marital satisfaction varies significantly across cultures and regions. A large cross-cultural study across 33 countries has provided comprehensive data on this topic, though specific satisfaction rates for Western versus Middle Eastern countries require direct extraction from that dataset (5). In Iran, a systematic review and meta-analysis reported that the standardized marital satisfaction score was 49% (95% CI: 39-60%) among infertile women, with significant regional variation: 54% in Tehran and neighboring provinces compared to 45% in other regions (1). Other studies in Iranian populations have shown varying rates. For instance, 32.7% of pregnant women in Semnan reported very high satisfaction while 24.2% reported moderate satisfaction (6). A cohort study of newly married women in Shiraz found high satisfaction in



89.3% of participants (7). These discrepancies highlight the influence of population characteristics and measurement tools on reported satisfaction rates, emphasizing the need for region-specific investigations.

In Zahedan, the capital of Sistan and Baluchestan province, socio-cultural norms and economic challenges may further impact marital satisfaction. However, specific local data on this topic remain limited (8). Understanding these contextual factors is essential for developing culturally sensitive interventions, yet research addressing these specific contexts remains scarce.

The rationale for the present study is grounded in three key gaps within the existing literature. First, while numerous studies have examined the relationship between general health literacy and health outcomes, limited research has specifically investigated sexual health literacy (SHL) in relation to marital satisfaction(9). Second, despite the recognized importance of sexual self-care, few studies have quantitatively examined its contribution to marital satisfaction beyond general sexual function. Third, most previous studies have been conducted in large urban centers of Iran, with little attention to culturally distinct regions such as Zahedan, where discussing sexual issues often faces cultural limitations. These gaps highlight the need for region-specific research that can inform culturally sensitive interventions.

To address these gaps, sexual health literacy (SHL) and sexual self-care, as two individual empowerment factors, have significant potential to affect the quality of marital relationships. SHL refers to an individual's capacity to access, understand, critically evaluate, and use reliable sexual health information to make informed decisions (10). This literacy enables women to recognize their sexual needs and rights, communicate effectively with partners about preferences and boundaries, and seek professional services when facing problems(11). In other words, SHL serves as the foundation for clear and satisfying communication within a marital relationship(12).

Sexual self-care is defined as a set of conscious and responsible behaviors aimed at maintaining, protecting, and promoting sexual health(13). These behaviors include preventive care (e.g., regular checkups and proper contraception use), psycho-emotional care (e.g., developing positive body image and managing stress), and relational care (e.g., diversifying intimacy with the partner) (14). Effective sexual self-care not only sustains physical health but also enhances a sense of control, competence, and security. These positive feelings reduce performance anxiety, increase sexual pleasure, and promote active participation in the marital relationship(15, 16). In essence, sexual self-care translates knowledge derived from SHL into action, serving as a bridge between awareness and satisfying experience(17).

Although several studies conducted in Iran have examined the relationship between these variables and sexual health or performance(18, 19), a clear research gap exists regarding their direct contribution to women's overall marital satisfaction, especially in culturally distinct

settings. Zahedan, with its unique sociocultural norms, presents an environment where open discussion of sexual issues is often limited (20). These conditions may hinder women's access to reliable information, expression of needs, and practice of sexual self-care, indirectly affecting their marital satisfaction (21). Investigating this relationship in such a context can provide valuable insights for designing culturally sensitive interventions.

Therefore, the present study was designed to determine the relationship between SHL, sexual self-care, and marital satisfaction among women attending health centers in Zahedan. The findings are expected to identify existing challenges in this area and serve as a foundation for designing educational programs and health interventions aimed at empowering women and strengthening the family institution in this region.

Materials and Methods

Study Design and Data Collection

This cross-sectional study was conducted from January to September 2024 on married women referring to comprehensive health service centers in Zahedan city. Inclusion criteria were willingness to participate (informed consent), being married, being sexually active in the past 6 months, Iranian nationality, ability to read and write in Persian, and absence of acute physical or psychological conditions that could significantly impact marital satisfaction.

Exclusion criteria were failure to complete the questionnaire and unwillingness to continue participation.

The sample size was estimated to be 460 people based on the study conducted by Mostafaei et al²² and considering an effect size of 0.15 for multivariate regression analysis, a type I error of 0.05, a statistical power of 0.80, and 10 predictor variables.

Participants were recruited using a multistage sampling method. Initially, the municipal districts of Zahedan were stratified into 5 geographic zones: northern, southern, eastern, western, and central. Following this stratification, 5 primary healthcare facilities were randomly selected from each zone, and subsequently, 19 eligible married women were consecutively enrolled from each facility using convenience sampling.

To assess the presence of severe physical or psychological problems that could affect marital satisfaction, participants were asked about any diagnosed chronic illnesses (e.g., cardiovascular disease, diabetes, cancer, etc.), current use of psychiatric medications, and history of any major psychiatric disorder during the initial screening. Therefore, women reporting these conditions were excluded from the study.

The data collection tool in this study included a three-part information form:

1. Demographic Information Form: A researcher-made checklist was used to record information such as age, education, occupation, number of children, and age at marriage.
2. Sexual Health Literacy for Adults (SHELA)

Questionnaire: This 40-item standard questionnaire was used to measure SHL in adults. This tool measures four main dimensions: access, reading and comprehension, evaluation and analysis, and application of information. Each item is scored on a 5-point Likert scale from “strongly disagree” (score 1) to “strongly agree” (score 5), and the total score varies between 40 and 200. The reliability of this tool has been confirmed in previous studies, and a Cronbach’s alpha coefficient of 0.86 was obtained by conducting a pilot study on 30 people in the present study (23).

3. The Female Sexual Health Self-care (FSHS) Questionnaire: This questionnaire assesses sexual self-care behaviors. It contains 40 items covering 4 subscales: prevention of sexually transmitted infections, prevention of female cancers, prevention of unwanted pregnancy, and promotion of sexual health. Items are rated on a 5-point Likert scale, and the total score ranges from 40 to 200. The original reliability was reported to be $\alpha = 0.94$. In this study, content validity was confirmed by experts ($CVI > 0.79$, $CVR > 0.62$), and a pilot study demonstrated high internal consistency (Cronbach’s $\alpha = 0.92$) (24). For the Iranian population, the questionnaire was translated using the forward-backward method and assessed for face validity through cognitive interviews with 10 women. Content validity was confirmed by a panel of 10 experts ($CVI > 0.79$, $CVR > 0.62$), and a pilot study with 30 women demonstrated high internal consistency (Cronbach’s $\alpha = 0.92$). The psychometric properties of this questionnaire have been previously evaluated in the Iranian population by Yazdani et al (2023) (14), reporting a content validity index of 0.93, a content validity ratio of 0.96, and a Cronbach’s alpha coefficient of 0.94. While Yazdani et al developed a validated sexual self-care questionnaire for Iranian women, the current instrument was selected for its comprehensive coverage of 4 distinct self-care domains relevant to the study objectives.
4. Enrich Marital Satisfaction Questionnaire: The standard Enrich questionnaire was used to measure the dependent variable of the study. This questionnaire has 47 items and 12 subscales that are scored on a 5-point Likert scale (from “strongly disagree” = 1 to “strongly agree” = 5). The total score is obtained by summing the scores of all items, which ranges between 47 and 235, with a higher score indicating greater marital satisfaction. The reliability of this questionnaire was calculated on a sample of 30 people (pilot) with a Cronbach’s alpha coefficient of 0.91 in the present study (25).

Data Analysis

After collection, the data were entered into SPSS version 22 software. In the descriptive statistics section, mean and standard deviation indices were used for quantitative variables and frequency and percentage for qualitative variables. In the inferential statistics section, independent

t-tests and one-way analysis of variance were used to examine the relationship between demographic variables and the main research variables. The relationship between research variables was also examined using Pearson’s correlation coefficient. Finally, hierarchical linear regression was used to determine the predictive contribution of independent variables in explaining marital satisfaction. The significance level in all tests was considered to be 0.05.

Results

The descriptive statistics for the main study instruments are summarized in Table 1. The mean total score for SHL was 147.76 ± 35.58 , it was 108.44 ± 32.73 for sexual self-care, and it was 126.53 ± 16.50 for marital satisfaction.

The results of this study showed that the mean age of the participating women was 33 ± 7.2 . Most of the participants were housewives (85.7%) and married under the age of 25 (96.5%). Education level ($P = 0.001$), occupation ($P = 0.001$), number of children ($P = 0.001$), and age at marriage ($P = 0.001$) showed a significant relationship with SHL. In addition, education level ($P = 0.001$), occupation ($P = 0.001$), number of children ($P = 0.001$), and age at marriage ($P = 0.001$) showed a significant relationship with sexual self-care (Table 2).

According to Table 3, there was a bivariate correlation between sexual health literacy, sexual self-care, and marital satisfaction in all dimensions (Table 3).

The factors of marital satisfaction were predicted using hierarchical linear regression. As shown in Table 4, demographic variables were significant predictors of marital satisfaction ($F = 10.22$; $P = 0.001$) in the first stage.

In the initial step, demographic characteristics accounted for 31% of the total variance in marital satisfaction scores. The subsequent addition of SHL dimensions to the model contributed an extra 17% of explained variance ($\Delta R^2 = 0.17$; F change = 15.34; $P = 0.001$). Finally, the inclusion of sexual self-care measures increased the cumulative explained variance by an additional 15% ($\Delta R^2 = 0.15$; F change = 22.70; $P = 0.001$).

Overall, the full model (demographic variables, SHL, and sexual self-care) explained a total of 63% of the variance in marital satisfaction.

Before performing the hierarchical regression analysis, its underlying assumptions were tested. The normality of the residuals was confirmed using the Kolmogorov-Smirnov test ($P > 0.05$) and through visual inspection of Q-Q plots. The independence of errors was verified by a Durbin-Watson statistic value close to 2. Furthermore, Variance Inflation Factor (VIF) and Tolerance statistics

Table 1. Descriptive Statistics of the Main Study Instruments

Instrument	Mean total score	Standard deviation	Possible range
Sexual health literacy	147.76	35.58	40-200
Sexual self-care	108.44	32.73	40-200
Marital satisfaction	126.53	16.50	18-108

Table 2. The Relationship between Demographic Characteristics and Sexual Health Literacy and Sexual Self-care in Women

Variables	Dimensions	Sexual health literacy			Sexual self-care	
		Number (percentage)	Mean $\pm$ SD	P-value	Mean $\pm$ SD	P-value
Education level	Elementary	104(22.6%)	90.14 $\pm$ 20.77	0.001*	81.84 $\pm$ 17.48	0.001*
	Undergraduate	204(44.3%)	157.38 $\pm$ 13.77		92.86 $\pm$ 23.5	
	Diploma	87(18.9%)	162.35 $\pm$ 12.17		106.72 $\pm$ 31.1	
	University education	65(14.1%)	182.04 $\pm$ 16.19		151.87 $\pm$ 25.8	
Job	Housewife	394(85.7%)	140.72 $\pm$ 34.21	0.001**	92.9 $\pm$ 25.6	0.001**
	Employed	66(14.3%)	181.74 $\pm$ 16.34		151.12 $\pm$ 16.34	
Number of children	Less than three	214(46.5%)	154.26 $\pm$ 31.28	0.001*	108.82 $\pm$ 35.71	0.001*
	Three or more	246(53.5%)	139.94 $\pm$ 37.28		94.81 $\pm$ 28.49	
Age at marriage	Less than 25	444(96.5%)	145.25 $\pm$ 35.11	0.001**	99.5 $\pm$ 31.75	0.001**
	25 or more	16(3.5%)	184.18 $\pm$ 18.77		151.43 $\pm$ 18.77	

*P-value based on one-way ANOVA test

**P-value based on independent t-test

Table 3. Correlation between Dimensions of Sexual Health Literacy and Sexual Self-care

Dimensions	1	2	3	4	5	6	7	8	9	Mean $\pm$ SD
Access skills (1)	1									27.5 $\pm$ 7.65
Reading and comprehension skills (2)	0.923*	1								69.7 $\pm$ 19.6
Analysis and evaluation skills (3)	0.612*	0.661*	1							9.38 $\pm$ 3.29
Information application skills (4)	0.686*	0.714*	0.664*	1						39.9 $\pm$ 7.87
Prevention of sexually transmitted diseases (5)	0.331*	0.379*	0.601*	0.538*	1					48.03 $\pm$ 8.3
Prevention of women's cancer (6)	0.385*	0.404*	0.586*	0.553*	0.714*	1				14.09 $\pm$ 7.8
Prevention of unwanted pregnancy (7)	0.424*	0.449*	0.643*	0.591*	0.578*	0.641*	1			12.85 $\pm$ 7.34
Promoting sexual health (8)	0.395*	0.435*	0.598*	0.608*	0.68*	0.777*	0.605*	1		26.3 $\pm$ 13.98
Marital satisfaction (9)	0.267*	0.315*	0.491*	0.495*	0.527*	0.545*	0.575*	0.799*	1	126.53 $\pm$ 16.5

Correlation is significant at the 0.01 level (two-tailed).*

were calculated for all predictor variables to assess multicollinearity. The VIF values were generally below the common threshold, and tolerance values were above the acceptable cutoff, indicating that the assumption of no severe multicollinearity was met.

Discussion

The main objective of this investigation was to elucidate the relationship between SHL, sexual self-care, and marital satisfaction among women attending healthcare facilities in Zahedan. The stepwise regression analysis revealed that the full model incorporating demographic indicators, SHL, and sexual self-care collectively accounted for 63% of the observed variability in marital satisfaction scores. This finding confirms the determining role of these factors in marital satisfaction. In the first stage, demographic variables, including age, education, occupation, age at marriage, and number of children, were able to explain 31% of the variance in marital satisfaction. This finding is consistent with the theoretical framework of the biopsychosocial model, which emphasizes the complex interaction of biological (age), psychological, and socioeconomic (education and occupation) factors in shaping health and well-being outcomes (26, 27). Specifically, higher levels of education and employment were associated with higher scores of marital satisfaction in the present study. These results are consistent with the

findings of previous studies. For example, Dehghankar et al (2022) reported that women with university education and formal jobs are more likely to experience desirable sexual performance and satisfaction (18). This alignment can be attributed to the role of social and economic resources that increase access to information, bargaining power in the relationship, and feelings of self-efficacy.

Adding sexual health literacy components in the second stage increased the explanatory power of the model to 48%. More interestingly, among the health literacy dimensions, the components of information assessment and analysis skills and application were significant predictors of marital satisfaction, while more basic level components such as access and reading did not have a predictive role. This pattern of findings strongly supports Notbeam's hierarchical model of health literacy. According to this model, functional health literacy (understanding basic information) is necessary but insufficient. Interactional health literacy (communication skills and the application of information in a social context) and especially critical health literacy (the ability to critically analyze information and social factors affecting health) create higher levels of empowerment (28, 29). Our results indicate that what predicts marital satisfaction among women in Zahedan is not simply knowing information, but the ability to analyze this information in the context of their personal life and relationship, and then to transform this knowledge into

Table 4. Hierarchical Linear Regression to Predict Marital Satisfaction Based on Demographic Characteristics, Sexual Health Literacy, and Sexual Self-care

Variables	Beta	SE	R2 change	F change	P-value
Step 1					
Age	-0.594	0.124			0.001*
Education	0.978	1.09			0.373
Job	2.08	2.98	0.318	10.22 $P=0.001^*$	0.48
Age at marriage	3.011	4.22			0.476
Number of children	-0.84	1.17			0.471
Step 2					
Age	-0.351	0.11			0.003*
Education	0.469	1.45			0.001*
Job	1.37	3.124			0.661
Age at marriage	-5.814	4.11			0.159
Number of children	-1.875	1.09	0.486	15.34 $P=0.001^*$	0.089
Access skills	0.052	0.235			0.824
Reading and comprehension skills	0.08	0.1			0.935
Analysis and evaluation skills	2.08	0.319			0.001*
Information application skills	0.431	0.153			0.005*
Step 3					
Age	-0.298	0.107			0.006*
Education	4.04	1.35			0.003*
Job	6.83	2.86			0.017*
Age at marriage	-4.95	3.73			0.186
Number of children	-0.8	1.016			0.937
Access skills	0.117	0.211			0.58
Reading and comprehension skills	0.03	0.093			0.724
Analysis and evaluation skills	0.724	0.314	0.632	22.7 $P=0.001^*$	0.023
Information application skills	0.09	0.145			0.535
Prevention of sexually transmitted diseases	0.019	0.118			0.87
Prevention of women's cancer	0.56	0.147			0.7
Prevention of unwanted pregnancy	0.567	0.125			0.001*
Promoting sexual health	0.13	0.03			0.001*

* $P < 0.05$

appropriate conversation and behavior with their spouse. Our results corroborate the findings reported by Azarnik et al and Banaei et al, who similarly emphasized the centrality of communication competencies in relational outcomes (12, 30). However, in contrast to some studies that have measured health literacy primarily with basic knowledge, this study shows that it is the more complex dimensions of literacy that have a stronger relationship with relationship outcomes. The most important finding of the study was the role of sexual self-care, which increased the explanatory power to 63% when entered into the model in the third stage. Among the dimensions of self-care, the components of preventing unwanted pregnancy and promoting sexual health were the strongest predictors of marital satisfaction.

This finding can be interpreted in light of the health belief model and theories of behavior change. These models emphasize that in order to achieve a health outcome (such as satisfaction), a transition from belief and attitude (of which SHL is a part) to action and behavior (self-care) is necessary. Effective sexual self-care, which includes conscious management of fertility and active efforts for sexual well-being and pleasure, directly leads to reduced anxiety, increased feelings of security, control, and intimacy in the relationship (31). Our results corroborate the findings reported by Bonyadpour et al, who documented a positive association between self-care engagement and sexual experience (32). Furthermore, these findings are in accordance with the work of Karimi et al, who similarly identified a significant correlation between sexual self-care and marital satisfaction (33). In contrast, the results of the study conducted by Rothschild et al (2024) on rural Indian women did not show a significant effect for self-care (34). This contrast highlights the importance of context. It is possible that in the very restrictive context of that study, structural barriers (poverty, lack of access to services, etc.) were so strong that they blocked the path to translating knowledge into action, whereas in our study community, the presence of a health facility infrastructure, albeit inadequate, may have made this path possible to some extent. Accordingly, our findings not only substantiate the significance of self-care but also underscore that its effectiveness is contingent upon the availability of a basic threshold of community infrastructure and resources.

The findings of this study support an integrative model: structural-demographic factors (biopsychosocial model), through increasing access to high levels of health literacy (Notbeam model), enable purposeful self-care behaviors (health belief model), and these behaviors directly lead to marital satisfaction. This model provides a valuable framework for designing interventions in Zahedan, Iran.

Clinical Applications

The findings of this study have several important clinical and practical applications:

1. Healthcare providers, particularly those working in primary care and reproductive health settings in culturally conservative regions like Zahedan, should integrate the assessment of SHL into routine care for married women. Simple screening questions about sexual knowledge and self-care practices could help identify women at risk of low marital satisfaction.
2. Counseling centers and family health clinics should develop structured educational programs that extend beyond basic sexual health information to include skill-building components. Specifically, interventions should focus on:
 - Enhancing communication skills between couples regarding sexual needs and preferences
 - Teaching practical self-care behaviors including regular gynecological screening, contraceptive counseling, and strategies for maintaining sexual intimacy
 - Providing culturally appropriate materials that address

local norms and sensitivities

3. Mental health professionals working with couples experiencing relationship difficulties should consider SHL and sexual self-care as potential modifiable factors. Addressing these areas may complement traditional marital therapy approaches.
4. Public health policymakers in Sistan and Baluchestan province should consider implementing community-based sexual health education programs that are sensitive to local cultural values. Such programs should particularly target vulnerable groups identified in this study, including women with lower education levels and housewives.

Given the findings, future programs should be:

1. Targeted: Focus specifically on low-literate women and housewives as at-risk groups.
2. Skill-based: Move beyond basic information training, emphasizing strengthening information analysis skills, marital dialogue, and practical self-care methods.
3. Context-sensitive: Provide practical and socially acceptable solutions, taking into account the cultural norms of the region.

Strengths and Limitations

This study has several strengths. First, it is one of the first investigations to simultaneously examine both SHL and sexual self-care in relation to marital satisfaction in the culturally distinct context of Zahedan. Second, the use of validated instruments with good psychometric properties enhances the reliability of the findings. Third, the hierarchical regression approach allowed for the examination of the incremental contribution of each variable set beyond demographic factors.

This study has limitations including a cross-sectional design (no causal inference), self-report error, and limited generalizability to women attending health centers.

Additional limitations can also be noted. For example, the use of convenience sampling from health centers may limit generalizability to women who do not regularly attend these centers. Additionally, the focus on married women excludes unmarried individuals who may also benefit from such interventions. Moreover, the study did not assess the partner's characteristics or relationship dynamics, which could confound the associations. Furthermore, the cross-sectional nature of the study prevents determination of temporal relationships between the variables.

Based on these limitations, future research should consider: (1) conducting longitudinal studies to establish causal relationships between SHL, sexual self-care, and marital satisfaction over time, (2) including men and couples to examine dyadic effects, (3) utilizing qualitative methods to explore the lived experiences of women in this cultural context, (4) expanding the study to include women from rural areas and those not attending health centers, and (5) developing and testing intervention programs based on the identified predictors in randomized controlled trials.

However, as one of the first studies to test this model in the specific cultural context of Zahedan, it provides important insights for future studies and practical actions.

Conclusion

The results of this study showed that SHL and sexual self-care are strong predictors of marital satisfaction in women in Zahedan. Hierarchical regression analysis confirmed that these two variables, after controlling for demographic factors, explained 32% of the variance in marital satisfaction in an additive manner. The key finding was the superior predictive power of sexual self-care (as a level of practice) over basic knowledge.

The following findings are directly supported by the study results. Demographic variables explained 31% of variance, the addition of SHL to the model increased the explained variance to 48% (β for analysis and evaluation skills = 2.08, $P = 0.001$), and the inclusion of sexual self-care further increased the explained variance to 63% (β for preventing unwanted pregnancy = 0.567, $P = 0.001$; β for promoting sexual health = 0.13, $P = 0.001$). This hierarchical pattern confirms that each set of variables contributes uniquely and incrementally to marital satisfaction, with self-care behaviors being particularly influential.

These results emphasize that to improve marital satisfaction, health interventions should go beyond information education and simultaneously focus on improving practical self-care skills and the ability to analyze and apply information in the context of relationships and women's personal lives. Considering the specific cultural context of Zahedan, designing and implementing culturally sensitive educational-counseling programs that cover these dimensions can be an effective strategy for empowering women, increasing marital satisfaction, and ultimately strengthening families. It is recommended to focus these programs on more vulnerable groups (e.g., women with low education and housewives) and evaluate their effectiveness in future intervention studies.

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Competing Interests

The authors declare that they have no conflict of interests.

Ethical Approval and Consent to Participate

All procedures in this study were performed in accordance with the ethical standards of the Declaration of Helsinki. The study was approved by the Research and Technology Committee of

the University (No. 11460) and the Ethics Committee of Zahedan University of Medical Sciences (IR.ZAUMS.REC.1403.237). Prior to enrollment, written informed consent was obtained from all individual participants after explaining the purpose and procedures of the study.

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