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Effectiveness of an empowerment-based skills training program on self-control, abstinence self-efficacy, and addiction readiness among women with substance-dependent spouses: A quasi-experimental study

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Abstract

Background

Women living with substance-dependent spouses often experience ongoing psychological distress, reduced coping capacity, and limited access to supportive interventions. This study aimed to evaluate the effect of an empowerment-based skills training program on abstinence self-efficacy, self-control, and addiction readiness in this population.

Methods

This quasi-experimental pre-test/post-test study with a control group was conducted at the Welfare Organization in Sari, Iran from July 2025 to February 2026. A total of 68 eligible women aged 18–60 years were recruited through convenience sampling and allocated to intervention and control groups (34 in each group). The intervention group received an 8-week empowerment-based skills training program delivered in 8 sessions, twice weekly, each lasting 120 minutes, followed by 12 weeks of weekly telephone reinforcement. Data were collected at baseline, 1 month, and 3 months after the intervention using the Tangney Self-Control Scale, the Abstinence Self-Efficacy Scale, and the Addiction Readiness Scale.

Results

Compared with the control group, the intervention group showed significantly higher abstinence self-efficacy and self-control and significantly lower addiction readiness at both post-test and 3-month follow-up. The findings indicate that the intervention produced meaningful and sustained psychological benefits in women living with substance-dependent spouses.

Conclusions

An empowerment-based skills training program may be a feasible and effective strategy for strengthening coping-related psychological resources and reducing vulnerability among women affected by a spouse's substance use, particularly in high-stress family contexts.

Introduction

Substance use disorder is a major public health problem that extends beyond the individual user and affects the entire family system (1, 2). Women who live with substance-dependent spouses often bear a persistent and largely invisible burden that includes emotional distress, financial insecurity, social stigma, and uncertainty about the future (3). Over time, these stressors may erode psychological well-being, limit coping capacity, and reduce women's sense of control over their daily lives. In Iran, qualitative

and quantitative research has shown that wives of substance-dependent spouses commonly report emotional needs, informational deficits, financial constraints, and psychological distress related to their husbands' substance use and treatment-related difficulties, underscoring the context-specific and multifaceted nature of this burden (4–6).

The psychological consequences of living in such an environment are important because chronic family stress can weaken key self-regulatory resources, including self-control and self-efficacy. Self-efficacy, a central construct in Social Cognitive Theory, refers to a person's belief in her ability to manage difficulties and carry out actions that promote desired outcomes (7, 8). In substance-related contexts, stronger self-efficacy is associated with better coping, healthier decision-making, and lower vulnerability to maladaptive behavior, whereas low self-efficacy may contribute to helplessness and reduced adaptive functioning (9–11). Self-control is similarly crucial because it supports emotional regulation, impulse management, and goal-directed behavior under pressure (12). For women living with a substance-dependent spouse, these capacities are not abstract psychological constructs; they are practical resources that may shape how daily stress is handled and whether vulnerability is reinforced or reduced (5, 13, 14).

Empowerment-based interventions are especially relevant in this context because they aim to strengthen agency, competence, and coping rather than focusing solely on pathology or deficits. Psychological empowerment involves a greater sense of personal control, skill development, and readiness to act within one's environment (15). Evidence from women's health and addiction research suggests that structured skills training can improve coping confidence, support self-regulation, and enhance adaptive functioning when it includes repeated practice, guided discussion, and supportive reinforcement. At the same time, broader family- and addiction-focused literature has shown that interventions that strengthen self-efficacy and self-control can improve treatment outcomes and reduce vulnerability to relapse or other maladaptive behaviors (16). Nevertheless, despite the conceptual strength of empowerment approaches, intervention studies specifically targeting women living with substance-dependent spouses remain limited, particularly in settings where stigma, social pressure, and economic dependence continue to shape women's daily lives (17, 18).

This gap is especially relevant in Iran, where women affected by a spouse's substance use may have limited access to specialized psychosocial care and may instead rely on welfare or community-based services. Previous Iranian studies have documented lower quality of life among women with substance-dependent spouses and higher violence exposure in women with substance-dependent spouses compared with those without such spouses. These findings suggest that the consequences of spouse substance use are not only personal but also relational, social, and health-related (5, 19). Yet there remains a need for intervention studies that directly test whether empowerment-based skills training can improve abstinence self-efficacy, self-control, and addiction readiness over time in this population (6, 20).

Accordingly, the present quasi-experimental study aimed to examine the effect of an empowerment-based skills training program on abstinence self-efficacy, self-control, and addiction readiness among women with substance-dependent spouses. We hypothesized that women receiving the intervention would demonstrate greater improvement in abstinence self-efficacy and self-control and a greater reduction in addiction readiness compared with women in the control group over the follow-up period. In addition, this study sought to determine whether such an intervention could provide a feasible and practice-oriented strategy for strengthening psychological resources and reducing vulnerability in this underserved population.

Methods

Study design

This study was a quasi-experimental, pre-test/post-test study with a control group designed to evaluate the effectiveness of an empowerment-based skills training program among women with substance-dependent spouses. The study followed the logic of a nonrandomized intervention evaluation and was reported in a manner consistent with quasi-experimental behavioral research (21, 22).

Setting

The study was conducted at the Welfare Organization in Sari, Iran from July 2025 to February 2026. This setting was selected because it provides access to women who receive social support services and who may experience psychosocial difficulties related to living with a substance-dependent spouse (23).

Participants

The study population consisted of women aged 18 to 60 years who had a substance-dependent spouse. A total of 68 eligible women were recruited and entered the study, with 34 participants in the intervention group and 34 participants in the control group. This participant profile was appropriate for the research question because the intervention targeted women exposed to a chronic family-related stressor who could potentially benefit from empowerment training (23, 24).

Sampling

Participants were recruited using convenience sampling. This approach is common in quasi-experimental studies when access to a clearly defined vulnerable group is limited. Although practical and feasible in the study setting, convenience sampling may reduce representativeness and increase the risk of selection bias; therefore, this issue should be considered when interpreting the findings (22).

Eligibility criteria

Inclusion criteria were literacy, age between 18 and 60 years, having a spouse with a history of substance use for at least one year, at least one year of cohabitation, and the ability to use one of the

social media platforms used for educational support, including WhatsApp, Telegram, or Eitaa. Exclusion criteria included self-reported psychiatric disorders such as depression, bipolar disorder, or psychosis; concurrent use of psychotropic medication or alcohol; a personal history of substance use recovery; participation in other psychological interventions during the study period; and missing more than two intervention sessions. These criteria were reasonable because they reduced major clinical and behavioral confounding and improved the interpretability of the results.

Sample size

The sample size was estimated a priori using power analysis to ensure statistical robustness. Based on an expected effect size of 0.69, an alpha level of 0.05, and a power of 0.80, the required sample size was 64 participants, and 68 participants were finally considered to allow for a 10% attrition rate. This sample size rationale is acceptable for an intervention study and improves methodological transparency (25).

Intervention

The intervention was an empowerment-based skills training program developed after reviewing Persian and English books, articles, and theses related to empowerment, self-efficacy, coping, and related behavioral skills. The program was grounded in self-efficacy theory and empowerment theory and was informed by CBT principles. The content was reviewed and approved by experts in health education, mental health, and psychology before implementation. This theoretical grounding strengthens the conceptual coherence of the intervention and is consistent with standards for reporting behavioral interventions.

Intervention delivery

Following written informed consent, baseline data were collected from both groups. In the intervention group, a rapport-building phase was established between the researcher and participants before the start of the program, during which the session objectives, contents, and procedures were clearly explained. This initial stage was intended to increase trust, participation, and engagement in the educational process.

The 8-week program was delivered in 8 sessions, twice weekly, with each session lasting 120 minutes, including 45 minutes of instruction and 75 minutes of interactive group discussion and question-and-answer [Q&A]. Sessions were conducted face-to-face in small groups of 6–8 participants using PowerPoint presentations and a problem-solving approach. To supplement in-person learning, the researcher developed multimedia materials, including infographics, posters, educational videos, and booklets, which were distributed via WhatsApp, Telegram, and Eitaa. Participants were encouraged to actively participate by sharing experiences and practicing practical problem-solving strategies.

A 12-week telephone follow-up was conducted, consisting of one 10-minute call per week, to provide verbal encouragement, answer questions, and reinforce learned concepts. Post-test questionnaires were

administered in person at 1 month and 3 months after the intervention. The detailed session structure is presented in Table 1.

Insert Table 1 here

Intervention development and protocol

The intervention was grounded in Bandura's Self-Efficacy Theory (26) and Zimmerman's Empowerment Model (15), and it was specifically designed to address the multiple challenges faced by women with substance-dependent spouses, including psychological stress, social isolation, cultural stigma, and economic dependency. The empowerment skills training package was developed through an extensive review of Persian and English books, articles, and theses related to empowerment skills, and the content was synthesized under the supervision of the research team. The intervention also drew on CBT principles to strengthen coping, problem-solving, and adaptive behavioral responses. To ensure content validity, the developed package was reviewed and approved by a panel of experts in Health Education, Mental Health, and Psychology.

The intervention targeted three key dimensions. Psychological empowerment focused on enhancing self-efficacy, abstinence self-control, and decision-making confidence. Social empowerment aimed to strengthen support networks and reduce social isolation. Skill-based empowerment focused on developing life skills, including problem-solving, stress management, and effective communication. These three dimensions were selected because women living with a substance-dependent spouse often need not only information, but also practical skills and social resources to manage persistent family stress and emotional burden.

Control group

The control group did not receive a structured intervention during the study period. However, to ensure ethical fairness, participants in the control group received the educational booklet upon completion of the study and took part in two subsequent question-and-answer (Q&A) sessions to receive guidance on problem management. This approach is acceptable in quasi-experimental community studies because it preserves the comparison condition while still offering post-study benefit to the control group.

Outcome measures

Data were collected using a demographic questionnaire and three standardized instruments: the Tangney Self-Control Scale, the Abstinence Self-Efficacy Scale, and the Addiction Readiness Scale. These measures were appropriate because they directly matched the aims of the study and captured the intervention's intended psychological outcomes. Using validated instruments improves the reliability and interpretability of the findings.

Instrumentation

Data were collected using a demographic questionnaire and three validated psychometric scales.

***1. Demographic Questionnaire*:** A self-administered questionnaire was used to collect data on age, education, residence, employment status of the participant and spouse, income, psychiatric history, and recent stressful life events. This tool was used to describe the sample and to examine whether any background characteristics might influence the study outcomes.

2. Tangney Self-Control Scale (TSCS): Developed by Tangney et al. (2004) (27), this 36-item scale assesses individual self-regulation using a 5-point Likert scale ranging from 1 ("does not describe me at all") to 5 ("describes me very well"). Total scores range from 36 to 180, and items 1, 2, 3, 5, 7, 8, 9, 10, 11, 13, 15, 16, 18, 19, 20, 22, 24, 27, 28, 30, 31, 32, 33, and 34 are reverse-scored. The scale has been used in Iranian populations, and its reliability has been confirmed by Aghababaei et al (2011) (28), with Cronbach's α values reported between 0.80 and 0.89. In the present study, this instrument was suitable for assessing the degree to which the intervention improved behavioral regulation and impulse control in participants.

3. Abstinence Self-Efficacy Scale (ASES):Developed by DiClemente et al (1995) (29), this 20-item scale measures self-efficacy in avoiding substance-use triggers across three domains: emotional (13 items), social (4 items), and grief-related (3 items). It uses a 5-point Likert scale ranging from 1 ("almost never") to 5 ("always"), with total scores ranging from 20 to 100. The scale was translated and validated in Iran by Jafari (2009) (30). In the current study, internal consistency was Cronbach's α = 0.69. This measure was appropriate because it directly captured participants' perceived ability to resist or manage substance-related cues within the context of chronic family stress.

4. Addiction Readiness Scale (ARS):Developed by Weed et al. (1992) (31), this 41-item scale assesses two factors: active readiness, including antisocial behavior, desire to use, positive attitude toward substances, depression, and sensation seeking; and passive readiness, including lack of self-expression and depression. Responses are scored on a 4-point Likert scale ranging from 0 ("strongly disagree") to 4 ("strongly agree"), with items 12, 15, 21, and 33 reverse-scored. The total score ranges from 0 to 144, excluding the five lie-scale items. Scores of 48 or below indicate low readiness, 49 to 96 indicate moderate readiness, and above 96 indicate high readiness. The scale's psychometric properties have been validated in different contexts, including Iranian studies by Zargar et al (2023) (32). In this study, the ARS was used to examine whether the intervention reduced psychological vulnerability and readiness toward maladaptive addiction-related responses.

Data collection

Baseline measurements were obtained before the intervention, and the same instruments were administered again at 1 month and 3 months after the intervention. This repeated-measures structure made it possible to examine both short-term and follow-up effects. The design is appropriate for evaluating whether behavioral and psychological changes persist beyond the immediate training period.

Statistical analysis

Data analysis was performed using SPSS version 24. Descriptive statistics, including mean, median, mode, minimum, maximum, variance, and standard deviation, were used to summarize participant characteristics. Data normality was assessed using the Kolmogorov-Smirnov test. Given the non-parametric distribution of the data, the following tests were applied: the Friedman test for within-group longitudinal comparisons across pre-test, 1-month, and 3-month follow-up; the Wilcoxon signed-rank test for within-group temporal comparisons; and the Mann-Whitney U test for between-group comparisons at each phase. Statistical significance was set at $p < 0.05$.

Ethical considerations

Written informed consent was obtained from all participants before enrollment. The study also used an ethical compensation strategy for the control group by providing the educational booklet after the intervention period.

Results

1. Participant characteristics

A total of 68 women with substance-dependent spouses were enrolled in the study, with 34 participants assigned to the intervention group and 34 to the control group. At baseline, the two groups were comparable with respect to demographic, socioeconomic, and addiction-related characteristics, and no statistically significant differences were observed between them ($p > 0.05$) (Table 2).

Table 2
Baseline demographic, socioeconomic, and addiction-related characteristics of the intervention and control groups

Variable	Intervention (n = 34)	Control (n = 34)	p-value	Test
Demographics				
Age (Mean ± SD)	33.4 ± 6.2	34.1 ± 5.8	0.67	Mann-Whitney U
Education, n (%)			0.89	χ2
Primary/Middle	21(61.8%)	13(38.2%)		
High School/Diploma	9(26.5%)	8(23.5%)		
University	4(11.8%)	13(38.2%)		
Employment, n (%)			0.72	χ2
Homemaker	26(76.5%)	27(79.4%)		
Employed	8(23.5%)	7(20.6%)		
Socio-economic				
Monthly Income (< 5 mil)	18(52.9%)	19(55.9%)	0.79	χ2
Household Income (Low)	20(58.8%)	21(61.8%)	0.82	χ2
Number of Children (0–1)	12(35.3%)	13(38.2%)	0.64	Mann-Whitney U
Addiction-related				
Type of Substance, n (%)			0.91	χ2
Stimulants (e.g., Meth)	14(41.2%)	15(44.1%)		
Opioids (e.g., Heroin)	11(32.4%)	11(32.4%)		
Others/Multiple	9(26.5%)	8(23.5%)		
Spouse Relapse (Yes/No)	9/25(26/74%)	8/26(24/76%)	0.85	χ2

As shown in Table 2, there were no significant differences in age ($p = 0.67$), educational level ($p = 0.89$), or employment status ($p = 0.72$). Socio-economic indicators, such as monthly income and household income, were also comparable between groups ($p > 0.05$). As, the groups were similar in terms of age, educational level, employment status, monthly income, household income, number of children, type of spouse's substance use, and spouse relapse history, indicating an appropriate starting point for evaluating the intervention effect. Furthermore, variables related to the spouse's addiction profile—such as the type of substance used and the history of substance-related adverse events—were balanced between the groups, minimizing the potential for confounding effects, and showed no statistical disparity between the groups (Table 2).

Insert Table 2 _here_

2. Data Distribution

The Shapiro-Wilk test showed that self-control, abstinence self-efficacy, and addiction readiness scores were not normally distributed at any measurement point in either group. Therefore, non-parametric analyses were used for all outcome comparisons, including the Friedman test for repeated measures, the Wilcoxon signed-rank test for post-hoc within-group pairwise comparisons, and the Mann-Whitney U test for between-group comparisons.

3. Primary Outcomes

The intervention group showed significant improvement in abstinence self-efficacy and self-control and a significant reduction in addiction readiness over the 3-month follow-up period, whereas the control group showed no meaningful improvement over time. The longitudinal changes in all three outcomes are presented in Table 3.

Table 3
Longitudinal changes in primary outcomes over time

Variable	Group	Pre-test (Median [IQR])	1-month (Median [IQR])	3-month (Median [IQR])	Within-group pp (Friedman)	Between-group pp (Mann-Whitney UU)
Abstinence Self-Efficacy	Intervention	20 (0)	20 (0)	20 (0)	< 0.001**	
	Control	20 (1)	20 (2)	20 (2)	0.133	**0.002 (1m) / 0.008 (3m)**
Self-Control	Intervention	145 (11)	155 (25)	160 (18)	< 0.001**	
	Control	137 (11)	138 (9)	139 (9)	0.451	**< 0.001 (1m/3m)**
Addiction Readiness	Intervention	44 (8)	41 (8)	43 (8)	< 0.001**	
	Control	46 (5)	44.5 (7)	45 (7)	0.060	**0.006 (1m) / 0.011 (3m)**

Insert Table 3 _here_

3.1. Abstinence Self-Efficacy

In the intervention group, abstinence self-efficacy changed significantly across time points (Friedman: $\chi2(2) = 60.525$, $p < 0.001$). Post-hoc comparisons showed that self-efficacy increased significantly from

baseline to 1 month (Z = -1.933, p = 0.04) and from baseline to 3 months (Z = -2.015, p = 0.01). In the control group, no significant longitudinal change was observed (Friedman: χ2 (2) = 14.932, p = 0.133).

Between-group comparisons indicated significant differences at 1 month (U = 344.5, Z = -3.127, p = 0.002) and 3 months (U = 358, Z = -2.660, p = 0.008), while baseline values were comparable between groups. Change-score analysis also showed greater improvement in the intervention group at both follow-up points (Δ1 (p = 0.041) and Δ2 (p = 0.038)) (Table 4).

Table 4
Comparison of change scores (Δ) between groups

Outcome Variable	Change Index	Intervention (Mean Rank)	Control (Mean Rank)	U-statistic	Z-score	p-value
Abstinence Self-Efficacy	Δ1 (Pre to 1m)	91.34	31.03	465	-1.013	0.041**
	Δ2 (Pre to 3m)	91.35	30.18	435	-1.012	**0.038**
Self-Control	Δ1 (Pre to 1m)	42.95	22.73	199.5	-4.320	< 0.001**
	Δ2 (Pre to 3m)	32.46	19.27	88.5	-5.773	**< 0.001**
Addiction Readiness	Δ1 (Pre to 1m)	20.25	41.05	270.5	-3.413	< 0.001**
	Δ2 (Pre to 3m)	52.25	40.72	88.5	-5.773	**< 0.001**

3.2. Self-Control

Self-control increased significantly in the intervention group over time (Friedman: χ2 (2) = 6.000, p < 0.001). Pairwise comparisons showed significant increases from baseline to 1 month (Z = -5.014, p < 0.001) and from baseline to 3 months (Z = -4.721, p < 0.001). The control group did not show a significant change across the three measurement points (Friedman: χ2 (2) = 0.798, p = 0.451).

Between-group comparisons showed significantly higher self-control scores in the intervention group at 1 month (U = 215.5, Z = -4.104, p < 0.001) and 3 months (U = 142, Z = -5.061, p < 0.001). The change-score (Δ) analysis confirmed that improvement was greater in the intervention group at both follow-up points [Δ1 (p < 0.001) and Δ2 (p < 0.001)] (Table 4).

3.3. Addiction Readiness

Addiction readiness decreased significantly in the intervention group over time (Friedman: χ2 (2) = 38.617, p < 0.001). Post-hoc testing showed significant reductions from baseline to 1 month (Z = -5.016,

$p < 0.001$) and from baseline to 3 months ($Z = -3.373$, $p = 0.001$). The control group did not show a significant longitudinal change (Friedman: $\chi 2\ (2) = 8.220$, $p = 0.060$).

Between-group comparisons demonstrated significantly lower addiction readiness in the intervention group at 1 month ($U = 321$, $Z = -2.723$, $p = 0.006$) and 3 months ($U = 333.5$, $Z = -2.557$, $p = 0.011$). Change-score (Δ) analyses also indicated that the reduction in addiction readiness was greater in the intervention group at both follow-up points [$\Delta 1$ ($p < 0.001$) and $\Delta 2$ ($p < 0.001$)] (Table 4).

Change-score comparison

Change-score analyses confirmed that the intervention group improved more than the control group in all three outcomes over the follow-up period. The magnitude of improvement in abstinence self-efficacy and self-control was greater in the intervention group, while addiction readiness decreased more in the intervention group than in the control group.

****Insert** Table 4 *here***

4. Demographic modifiers

Spearman correlation and Kruskal-Wallis analyses were used to examine whether age, income, education, occupation, or spouse's substance type were associated with the primary outcomes. No significant associations were found, suggesting that the intervention effect was not meaningfully modified by the measured demographic or socioeconomic variables ($p > 0.05$).

Discussion

Principal findings

The present quasi-experimental study showed that an empowerment-based skills training program improved abstinence self-efficacy and self-control and reduced addiction readiness among women with substance-dependent spouses over a 3-month follow-up period. The intervention effects were observable both in within-group analyses and in between-group comparisons, with significant differences between the intervention and control groups at post-test and follow-up assessments. These findings suggest that the program produced meaningful behavioral and psychological changes that extended beyond initial baseline differences, underscoring the value of an empowerment-oriented approach for women navigating persistent family stress, diminished personal control, and the heavy emotional and social burden that comes with living alongside a substance-dependent spouse.

Impact on Abstinence Self-Efficacy

The significant increase in abstinence self-efficacy in the intervention group suggests that an empowerment-based skills training program can strengthen women's perceived ability to cope with the emotional and practical stressors associated with living with a substance-dependent spouse. This

finding is consistent with Social Cognitive Theory, which holds that self-efficacy develops through mastery experiences, social persuasion, and coping-related learning, and that stronger self-efficacy supports adaptive behavior change (7). In the present study, group discussion, role modeling, problem-solving exercises, and telephone follow-up likely contributed to this improvement by helping participants practice and reinforce coping responses in a supportive environment.

This interpretation is supported by a 2014 qualitative study by Fereidooni et al., which showed that women with substance-dependent spouses experience emotional strain, informational needs, social pressure, and financial insecurity; these pressures can weaken coping confidence if they are not addressed directly (33). The result also aligns with a 2015 interventional study by Salimi-Bajestani and colleagues on self-encouragement training in women with substance-dependent husbands in Tehran, which reported improvement in mental health after the intervention, suggesting that psychologically focused educational programs can enhance women's adaptive functioning in similar contexts (34). Together, these studies indicate that interventions aimed at strengthening coping confidence are especially relevant for women facing chronic family-related stress and limited social support (13, 35).

The persistence of higher self-efficacy at both 1 and 3 months in the intervention group suggests that the intervention produced more than a temporary motivational effect. Rather, it appears to have helped participants internalize coping strategies and use them in their daily lives. This pattern is consistent with evidence showing that abstinence self-efficacy and coping are closely linked to substance-use outcomes, and that higher abstinence self-efficacy is associated with lower substance use (36). It also aligns with evidence suggesting that structured, skill-based, and relational interventions can strengthen self-regulation and coping capacities over time (3, 37). Further support comes from studies indicating that self-efficacy beliefs and social support are important protective factors against addiction vulnerability, suggesting that stronger coping beliefs may reduce readiness for addiction (38).

At the same time, the literature is not entirely uniform. Some evidence suggests that gains in self-efficacy may be highly context-dependent and do not necessarily translate into durable behavioral change unless they are reinforced by ongoing support and broader environmental conditions. In highly stressful family settings, a brief intervention may improve confidence, but it may not fully remove structural barriers such as economic dependence, stigma, and persistent relationship strain. Therefore, the present findings should be interpreted as encouraging but preliminary, and future work may benefit from longer follow-up periods, booster sessions, and stronger family- or community-level support to sustain the observed gains. Overall, the present results support Bandura's proposition that self-efficacy can be strengthened through mastery experiences, verbal encouragement, and guided coping practice. The intervention in this study appears to have provided all three: participants practiced skills in group sessions, received encouragement from the researcher, and were reinforced through repeated follow-up calls. This combination may explain why abstinence self-efficacy improved despite the chronic and emotionally difficult context in which these women live.

Impact on Self-Control

A notable finding of the present study was the significant improvement in self-control within the intervention group. This result suggests that the empowerment-based training helped participants strengthen their capacity to regulate emotions, delay impulsive reactions, and respond more adaptively to the ongoing stress associated with living with a substance-dependent spouse. In a high-stress family context, self-control is not only a personal trait but also a practical coping resource that can protect against emotional dysregulation and maladaptive responses (39). In this study, the observed increase in self-control suggests that the training helped participants strengthen their emotional regulation and impulse-management skills, and move from reactive coping toward more deliberate and regulated behavior.

This interpretation is consistent with the broader literature on self-regulation and family stress, which shows that stressful environments can undermine self-control, while structured psychosocial support can improve it (40). It also aligns with evidence suggesting that structured, skill-based, and relational interventions can strengthen self-regulation and coping capacities over time (41). The training in the present study likely contributed to this change by giving participants repeated opportunities for reflection, problem-solving, discussion, and behavioral rehearsal. These components may have helped them pause before reacting, evaluate stressful situations more carefully, and choose more adaptive responses. In this sense, the intervention appears to have provided both cognitive tools and practical strategies for managing daily emotional burden.

The sustained improvement at 3 months suggests that the effect was not limited to short-term enthusiasm or temporary emotional relief. Rather, it appears that the participants internalized some of the self-regulatory skills introduced during the sessions and were able to apply them over time. This is particularly important because women living with substance-dependent husband often face chronic stress, uncertainty, and emotional exhaustion, all of which can weaken self-control if they are not addressed directly. The persistence of the effect therefore supports the idea that structured empowerment training can help stabilize emotional functioning even in difficult family circumstances. Our findings also fit with evidence that skill-based and relational interventions can strengthen self-regulation when they include guided practice, supportive interaction, and repetition. Group discussion may have allowed participants to hear similar experiences from others, normalize their struggles, and learn alternative coping approaches (41, 42). Problem-solving exercises may also have helped them move from emotional reaction to more organized and controlled responses. Telephone follow-up likely reinforced these gains by keeping the training active in participants' daily lives and reducing the risk of returning to older coping patterns (43).

At the same time, the literature suggests that self-control is shaped not only by individual skill but also by the surrounding environment (44). In highly stressful family situations, behavioral gains may be fragile unless they are supported by social and emotional resources (40, 42). For this reason, the present findings should be viewed as encouraging but still limited by the reality that participants continued to live in the same stressful context. Future interventions may therefore benefit from longer follow-up, booster

sessions, and broader family- or community-level support to maintain and strengthen self-control over time.

Overall, the present results suggest that empowerment-based skills training can improve self-control by helping women in difficult family situations regulate emotion more effectively, manage impulses more carefully, and respond to stress with greater stability. This finding is clinically meaningful because improved self-control may not only reduce emotional distress, but also support other adaptive outcomes such as better coping, stronger decision-making, and lower vulnerability to maladaptive behavior.

Impact on Addiction Readiness

Another important finding of the present study was the significant reduction in addiction readiness in the intervention group. This result suggests that the empowerment-based skills training may have reduced participants' psychological vulnerability to addiction-related thoughts, attitudes, and behaviors. In a family context characterized by chronic stress and uncertainty, readiness for addiction may reflect not only personal inclination but also the extent to which a person feels exposed to risk and unable to manage distress (14, 45). The observed reduction therefore points to a meaningful psychological shift rather than a simple statistical change.

The reduction in addiction readiness also aligns with the broader logic of empowerment interventions. When individuals gain a greater sense of agency, they are less likely to remain psychologically positioned in a passive or vulnerable state. The group-based structure of the sessions, the opportunity to share experiences, and the reinforcement provided through follow-up likely helped participants reinterpret their circumstances in a less helpless and more active way. This shift may be especially important for women whose lives are shaped by ongoing relational strain, because chronic exposure to stress can otherwise preserve a sense of vulnerability and reduce readiness for adaptive coping (46, 47). In this sense, the training appears to have worked not only by improving skills, but also by changing how participants related to stress and risk.

The sustained decrease at 3 months is also notable. It suggests that the intervention did not simply produce a short-lived emotional lift, but may have helped participants retain a more stable and protective psychological orientation over time. This is important because addiction readiness is not only a static trait; it can fluctuate with stress, support, and coping opportunities (14). The present findings therefore imply that structured empowerment training may interrupt some of the psychological processes that maintain vulnerability in high-stress family settings. At the same time, the literature suggests that changes in addiction readiness are likely to be influenced by the broader environment (19, 47). In families affected by addiction, ongoing stressors such as financial insecurity, stigma, and relational conflict may continue to shape vulnerability even after training (45). For this reason, the present findings should be interpreted as encouraging but not definitive. Longer follow-up, booster sessions, and family- or community-level support may be needed to make the reduction in addiction readiness more durable. Overall, the results indicate that empowerment-based skills training can reduce addiction readiness by strengthening coping, increasing perceived control, and helping women in stressful family contexts

move away from vulnerability toward more adaptive psychological functioning. This is clinically meaningful because lowering addiction readiness may protect against future maladaptive coping, even when the external stressor itself has not fully resolved (45).

Limitations of the Study

This study had several limitations that should be considered when interpreting the findings. **First**, the quasi-experimental design without random allocation may have introduced selection bias and reduced the strength of causal inference, even though the two groups were comparable at baseline. **Second**, the sample was recruited by convenience from a single welfare setting in Sari, which may limit the generalizability of the findings to women in other regions, service settings, or socioeconomic contexts. **Third**, the outcomes were measured through self-report questionnaires, which may be influenced by recall bias, social desirability, and participants' desire to report improvement after receiving an intervention. Although self-report is common and often necessary in psychosocial research, it may overestimate actual behavioral change, especially in sensitive topics related to substance use and family functioning. **Fourth**, the follow-up period was limited to 3 months. Therefore, it is not possible to determine whether the observed improvements in self-control, abstinence self-efficacy, and addiction readiness were sustained over the long term. Fifth, participants continued to live in the same stressful family environment during the study period, so ongoing marital strain, financial stress, stigma, and other contextual pressures may have influenced the outcomes despite the intervention. **Finally**, although the intervention included follow-up reinforcement by telephone and social media, the study did not include objective behavioral or biological indicators of change, such as clinical observation, partner reports, or validated external measures. Future studies should use randomized controlled designs, larger and more diverse samples from multiple regions, longer follow-up periods (e.g., 6–12 months), booster sessions, and mixed-method or objective outcome measures (e.g., partner reports, clinical observations) to strengthen the evidence base and clarify the durability of the intervention effects.

Clinical Implications

The findings of this study have several important implications for clinical practice, health education, and service delivery for women living with substance-dependent spouses.

First, the demonstrated effectiveness of an empowerment-based skills training program suggests that clinicians, counselors, and health educators should integrate structured psychosocial interventions into routine care for women affected by a partner's substance use. Rather than focusing exclusively on the substance-using individual, services should explicitly address the needs of spouses who live in this high-stress environment. The observed improvements in self-control, abstinence self-efficacy, and reduced addiction readiness indicate that building these psychological resources is a feasible and meaningful clinical target, even when marital and familial stressors persist.

Second, the sustained benefits over the 3-month follow-up period indicate that relatively brief, structured interventions can produce lasting changes in women's coping capacity and psychological resilience. This

supports incorporating such programs into primary health care, community counseling centers, women's health clinics, and addiction treatment settings, including in resource-limited contexts. In practice, core components such as emotion regulation, problem-solving, assertiveness, relapse-prevention strategies, and stress management can be woven into existing group or individual counseling formats.

Third, the results highlight the importance of addressing the broader relational and social context in which these women live. Although participants showed measurable psychological gains, they continued to face ongoing marital, emotional, and social pressures. This suggests that optimal clinical outcomes may be achieved through multi-level approaches that combine individual empowerment training with family-based interventions (when safe and feasible), couple counseling, or linkage to broader social support networks. Connecting women with peer support groups, legal and social services, and community resources may further strengthen the impact of the skills training.

Fourth, the persistence of improvements into the follow-up period also points to the value of continuity of care. For many women, booster sessions, periodic follow-up contacts, or short refresher modules may help reinforce acquired skills, prevent erosion of gains, and support adaptive coping when new stressors emerge. From a service-design perspective, integrating follow-up mechanisms into routine care pathways could enhance the sustainability of intervention effects.

Finally, these findings underscore the need for a paradigm shift in how services for families affected by substance use are conceptualized and delivered. Empowerment-oriented, skills-based programs represent a practical, evidence-informed strategy to improve psychological outcomes, reduce vulnerability, and enhance resilience among women who are often overlooked in traditional addiction treatment models. Incorporating such interventions into clinical guidelines and public health programs can help ensure that these women receive support that is both psychologically meaningful and practically feasible in their daily lives.

Conclusions

The findings of this study indicate that an empowerment-based skills training program can serve as an effective approach for supporting women living with substance-dependent spouses. The intervention led to improved self-control, increased abstinence self-efficacy, and reduced addiction readiness over a 3-month follow-up period, suggesting enhanced coping capacity and psychological resilience in a challenging family context. These results highlight that, despite ongoing marital, emotional, and social pressures, structured and supportive interventions can facilitate a shift from vulnerability toward greater self-regulation and adaptive functioning. Notably, the observed improvements were sustained beyond the immediate post-intervention phase, pointing to the potential for lasting impact in participants' daily lives. However, the continued presence of environmental stressors suggests that these gains may be further strengthened through booster sessions, extended follow-up, and broader family or community-based support. Overall, the findings support the implementation of empowerment-oriented, skills-based

programs as a promising strategy for improving psychological outcomes among women affected by a spouse's substance use.

Declarations

Ethics approval and consent to participate

This study was approved by the Ethics Committee of Mazandaran University of Medical Sciences, Sari, Iran (Approval Code: IR.MAZUMS.REC.1404.219). All procedures were conducted in accordance with the Declaration of Helsinki and its later amendments. Written informed consent was obtained from all participants prior to enrollment. Participants were assured of the confidentiality of their information and identities, and they were informed that participation was voluntary and that they could withdraw from the study at any stage without any consequences.

Consent for publication

Not applicable. The manuscript does not contain any identifiable personal data.

Availability of data and materials

The datasets generated and analyzed during the current study are not publicly available due to confidentiality agreements with participants but are available from the corresponding author on reasonable request.

Competing interests

The authors declare that they have no competing interests.

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Authors' contributions

MK conceptualized and designed the study, contributed to data collection, and performed data analysis. ZZ contributed to data collection. SAN, MCK, and KP performed data analysis and contributed to the interpretation of findings. MK drafted the manuscript. All authors reviewed and approved the final manuscript.

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Table

Table 1. Detailed structure of the empowerment skills training program

Session	Theme	Content & Learning Objectives	Instructional Methods & Materials	Duration
1	Orientation & Awareness	Introduction to empowerment and addiction; impact of substance use on women and family health.	Lecture, Q&A, group discussion, educational booklet	120 min
2	Self-Care & Self-Control	Managing anger, anxiety, and impulsive reactions; self-care activities (e.g., deep breathing and relaxation).	Lecture, video, Q&A, infographics	120 min
3	Self-Efficacy & Self-Esteem	Recognizing abstinence self-efficacy and self-esteem; sharing successful experiences and modeling.	Group discussion, modeling, peer support	120 min
4	Healthy Boundaries & Stress Management	Establishing healthy boundaries; mindfulness, cognitive restructuring, and stress management.	Lecture, mindfulness exercises, group discussion	120 min
5	Life Skills & Communication	Enhancing communication skills, decision-making, and problem-solving through role-playing.	Role-playing, group discussion, practical exercises	120 min
6	Financial Independence & Addiction Readiness	Addressing economic stressors; introducing vocational skills (e.g., digital literacy, crafts) to reduce addiction readiness.	Lecture, infographics, video	120 min
7	Support Networks & Self-Efficacy	Strengthening social networks and peer support; identifying community and psychological resources.	Group discussion, resource mapping	120 min
8	Evaluation & Maintenance	Review of all learned skills (self-efficacy, self-control, and prevention); long-term goal setting.	Review, goal-setting workshop	120 min