

Effectiveness of a Psychological and Marital Empowerment Intervention in Reducing Problematic Internet Use and Social Media Addiction Among Women Adversely Affected by Cyberspace

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ABSTRACT

Given the increasing psychological and social harms experienced by women in cyberspace, the present study aimed to identify the factors contributing to these harms and to develop and validate an effective intervention model for their reduction. This study employed an exploratory sequential mixed-methods design, in which the first phase was conducted qualitatively and the second phase quantitatively. The qualitative phase was conducted using a content analysis approach. The quantitative phase was applied in purpose and employed a quasi-experimental pretest–posttest control-group design with a two-month follow-up to validate the psychological and marital empowerment intervention package. The statistical population in the qualitative phase consisted of psychology faculty members with relevant expertise at Islamic Azad University, Yazd Branch. The statistical population in the quantitative phase included all women who attended counseling and psychological services centers in Yazd during 2024–2025. From this population, 30 women were randomly assigned to an intervention group and a control group, with 15 participants in each group. Following the pretest assessment, the intervention group received training based on the developed intervention package, whereas the control group received no intervention. After completion of the intervention sessions, the posttest was administered, followed by a follow-up assessment two months later. The quantitative data analysis indicated that the psychological and marital empowerment intervention significantly reduced problematic Internet use and social media addiction in the intervention group ($p < .05$), and its effects remained stable at the follow-up assessment. These findings demonstrate the effectiveness of the proposed intervention package in reducing harmful cyberspace-related behaviors. Considering the importance of mitigating the adverse effects of cyberspace on women's lives, counseling and psychological services centers are recommended to use this intervention package and incorporate psychological empowerment training and cyberspace-related coping skills into their intervention programs.

Keywords: problematic Internet use, social media addiction, psychological and marital empowerment, women

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Introduction

The rapid expansion of Internet-based technologies and virtual social networking platforms has fundamentally transformed contemporary patterns of communication, information seeking, entertainment,

work, education, and interpersonal interaction. Although these technologies provide substantial opportunities for social connection, access to resources, and participation in online communities, their excessive or poorly regulated use can become maladaptive and interfere with psychological, social, occupational, and family functioning. Problematic Internet use generally refers to a persistent pattern of excessive, uncontrolled, or functionally impairing Internet engagement, whereas social media addiction is characterized by preoccupation, loss of control, tolerance-like escalation, withdrawal-related discomfort, and continued use despite adverse consequences. The development of standardized instruments such as the Internet Abusive Use Questionnaire and the Mobile-Based Social Network Addiction Questionnaire reflects increasing recognition of these patterns as measurable behavioral and psychological problems (1, 2). Research trends also indicate that problematic social media use has become a major interdisciplinary concern involving psychology, psychiatry, public health, communication science, and family studies (3).

Problematic Internet use is not restricted to adolescents or university students but may occur across developmental periods, including adulthood. Evidence from adult populations shows that excessive Internet engagement may be associated with reduced behavioral control, disruption of daily responsibilities, emotional discomfort, and impaired social functioning (4). Large-scale cross-national findings concerning problematic mobile phone use further suggest that technology-related behavioral problems occur across diverse sociocultural contexts and are influenced by a combination of psychological, interpersonal, and environmental factors (5). Although prevalence estimates vary depending on the population, measurement instrument, and diagnostic threshold, studies consistently demonstrate that maladaptive Internet use represents more than simply spending considerable time online. Its clinical significance is primarily determined by the degree to which online engagement disrupts sleep, emotional well-being, interpersonal relationships, decision-making, and role performance.

The psychological consequences of excessive Internet and social media use are multidimensional. Persistent online involvement may increase social comparison, fear of missing out, emotional dependence on feedback, and sensitivity to interpersonal approval. These processes may intensify anxiety, loneliness, depressive symptoms, low self-worth, and dissatisfaction with offline life. Research among young women has shown that the manner and intensity of social media use may contribute to psychological anxiety, particularly when use is accompanied by comparison, perceived social evaluation, and continuous exposure to idealized representations of others' lives (6). Among women, Facebook addiction has also been associated with depressive symptoms and difficulties in emotional regulation, suggesting that impaired regulation of negative affect may function both as a predictor and a consequence of excessive social media use (7). In broader student populations, social media addiction has been linked to loneliness, depression, reduced life satisfaction, weaker problem-solving skills, and poorer academic functioning (8). These findings indicate that problematic technology use is embedded within a reciprocal cycle in which psychological distress encourages online escape, while excessive online engagement further aggravates distress.

Emotion regulation appears to be a particularly important mechanism in this cycle. Individuals who experience difficulty identifying, tolerating, or modifying negative emotions may use the Internet and social networking platforms as immediate sources of distraction, reassurance, stimulation, or interpersonal validation. Although such strategies may produce temporary emotional relief, they can weaken adaptive coping and reinforce avoidance-based patterns of behavior. During periods of collective stress, uncertainty,

and social isolation, associations among fear, anxiety, depression, and Internet addiction have become especially apparent (9). Excessive use may also interfere with restorative behaviors. For example, Internet addiction has been associated with poorer sleep quality, while late-night use, cognitive arousal, and continuous online checking may disrupt sleep timing and duration (10). Research has additionally connected Internet addiction with insomnia and increased tendencies toward aggressive or violent behavior, further illustrating its potential influence on emotional and behavioral dysregulation (11).

Gender-related patterns of problematic Internet use require careful consideration. Men and women may differ in preferred online activities, motivations for use, emotional involvement, and the psychosocial consequences of excessive engagement. Evidence on gender differences suggests that women may be particularly likely to engage with socially oriented platforms and may experience problematic use through interpersonal reassurance seeking, emotional communication, relational monitoring, and social comparison (12). Research focusing on Black American women has similarly emphasized that social media addiction may create distinctive cyberpsychological and public health risks shaped by gender, social context, exposure to online pressures, and patterns of digital participation (13). Consequently, interventions designed for women should not treat problematic Internet behavior as an isolated habit but should consider the emotional, relational, cultural, and gender-specific functions that virtual environments may serve.

For married women, excessive Internet and social media use may have consequences extending beyond individual psychological functioning to the marital relationship. Online communication can facilitate social support and maintain connections; however, persistent engagement may reduce time devoted to spouses, disrupt shared activities, create secrecy, encourage unfavorable comparisons, and intensify conflict over attention, privacy, trust, and boundaries. Research has shown that new media use may influence the mental health of married women partly through its effects on marital quality, suggesting that the marital relationship can mediate the psychological impact of digital engagement (14). Internet addiction has also been linked to domestic violence and emotional divorce among married women, indicating that problematic online behavior may coexist with serious forms of relational distress (15). Among divorced women, Internet addiction has been identified as a predictor of difficulties in marital relationships, reinforcing the possibility that maladaptive technology use is meaningfully connected to relational instability and deterioration (16).

The concept of emotional divorce is particularly relevant in this context. Emotional divorce refers to a condition in which spouses remain legally married but experience psychological detachment, loneliness, reduced intimacy, limited communication, and diminished emotional responsiveness. Studies of married adults have shown that emotional divorce is associated with distinctive interpersonal identity patterns and weakening marital bonds (17). Among women attending psychological centers, emotional divorce has also been examined in relation to social competencies and personal belief systems, highlighting the role of interpersonal resources in preserving emotional connection (18). When one partner becomes excessively involved in virtual interactions, the resulting reduction in attention and emotional availability may deepen feelings of rejection, isolation, or dissatisfaction. Conversely, women experiencing low intimacy or emotional neglect may increasingly turn to online spaces for companionship, validation, or escape, thereby creating a bidirectional relationship between cyberspace dependence and marital disconnection.

Virtual social networks may also alter the quality and boundaries of couple relationships. Online interactions can increase opportunities for emotional intimacy outside the marriage, concealment of

communication, jealousy, surveillance, ambiguous relational behavior, and perceived betrayal. Research involving couples referred to family courts has demonstrated that virtual social networks can play an important role in distressed couple relationships and may contribute to relational conflict when their use challenges expectations of trust, commitment, and privacy (19). Earlier work on social media use and relationships has similarly indicated that online engagement may shape emotional experiences and relationship satisfaction by influencing communication patterns, comparison processes, availability, and attention (20). More broadly, contemporary research on marital satisfaction and stability emphasizes that marital outcomes emerge from dynamic interactions among personal vulnerabilities, stressful circumstances, adaptive processes, and relationship behaviors rather than from a single isolated cause (21). Problematic Internet use may therefore be understood as both a personal vulnerability and a maladaptive relational process that interacts with existing marital stressors.

Family and marital conflict may also function as antecedents of excessive online engagement. Research has shown an association between parental marital conflict and Internet addiction through mediated and moderated psychological processes, demonstrating that disrupted family environments can increase vulnerability to maladaptive Internet use (22). Among married women, cyberspace addiction has been predicted by marital intimacy, self-worth, and quality of life, suggesting that reduced relational satisfaction and diminished personal valuation may increase reliance on virtual environments (23). These relationships indicate that an exclusive focus on reducing screen time may be insufficient. Effective intervention should also address the emotional and marital conditions that sustain online dependence, including low self-esteem, ineffective communication, unresolved conflict, loneliness, impaired problem-solving, and limited access to rewarding offline relationships.

The causes and consequences of social media addiction are complex and require multilevel preventive and therapeutic responses. Reviews have identified psychological reinforcement, social influence, platform design, habitual checking, emotional avoidance, and unmet interpersonal needs as important contributors to addictive social media use (24). Social media addiction may negatively affect well-being through direct and indirect mechanisms, while interventions that increase self-regulation and alter patterns of use can reduce its adverse outcomes (25). Current approaches to combating digital addiction include psychoeducation, behavioral monitoring, cognitive restructuring, stimulus control, digital detoxification, mindfulness, motivational strategies, and technology-based self-management tools (26). Clinical reviews further indicate that Internet addiction management may involve cognitive behavioral therapy, motivational interviewing, family-oriented approaches, pharmacological support in selected cases, and interventions targeting comorbid psychological symptoms (27). However, the effectiveness of these approaches may depend on whether treatment is adapted to the participant's developmental, relational, and cultural context.

Cognitive behavioral strategies are particularly relevant because problematic Internet use often involves maladaptive beliefs, automatic urges, avoidance patterns, and weak behavioral regulation. Psychosocial interventions for technological addictions commonly focus on identifying triggers, restructuring distorted cognitions, developing alternative activities, improving coping skills, and preventing relapse (28). Positive psychology interventions may complement these methods by strengthening personal resources, positive affect, meaning, self-efficacy, and engagement in rewarding offline experiences (29). Acceptance and commitment-based group interventions have also shown promise in reducing psychological distress among

individuals with social media addiction by encouraging acceptance of internal experiences and commitment to value-consistent behavior (30). Systematic evidence regarding prevention programs suggests that structured interventions can reduce problematic Internet use, particularly when they address both knowledge and behavioral self-management rather than relying solely on warnings about risk (31).

Psychological empowerment provides a useful framework for integrating these intervention components. Empowerment involves increasing individuals' perceived control, competence, self-efficacy, critical awareness, decision-making capacity, and ability to mobilize personal and interpersonal resources. Research on psychological empowerment has demonstrated that it is a multidimensional construct associated with more adaptive psychological and behavioral outcomes (32). In Iranian women, empowerment models have emphasized self-awareness, perceived competence, access to support, informed decision-making, and the ability to act effectively in personally meaningful situations (33). Psychological empowerment interventions have also been found to improve psychological well-being and family resilience among women exposed to significant marital and family stressors (34). These findings suggest that empowerment may help women move beyond passive attempts to restrict Internet use by strengthening the emotional and cognitive capacities required for sustainable behavioral change.

A marital empowerment component may further enhance treatment by targeting relationship processes that contribute to or are affected by problematic online behavior. Such interventions can include communication skills, active listening, emotional expression, empathy, boundary setting, conflict resolution, collaborative problem-solving, and restoration of marital intimacy. For women who have experienced interpersonal harm, treatment should also be sensitive to safety, autonomy, and trauma-related needs. A systematic review of treatments for female victims of intimate partner violence has shown that psychological interventions can reduce distress and improve functioning, although treatment effects depend on intervention content and contextual suitability (35). Technology itself may also be used safely to support women exposed to relational harm; for example, web-based safety decision aids have demonstrated potential benefits for women experiencing intimate partner violence (36). These findings underscore the importance of ensuring that cyberspace-related interventions do not merely encourage marital accommodation but instead promote informed choice, psychological safety, and healthy relational boundaries.

Behavior-change theories can help explain how empowerment interventions produce lasting reductions in maladaptive Internet use. According to the Health Belief Model, engagement in protective behavior is influenced by perceived susceptibility, perceived severity, expected benefits, perceived barriers, cues to action, and self-efficacy (37). Women may be more motivated to change problematic Internet use when they recognize its personal and marital consequences, believe that reduction will produce meaningful benefits, and feel capable of implementing alternative behaviors. Similarly, the transtheoretical model conceptualizes change as a process involving movement through stages such as precontemplation, contemplation, preparation, action, and maintenance (38). A comprehensive intervention should therefore support awareness, motivation, planning, behavioral practice, and relapse prevention rather than assuming that all participants are equally prepared to change.

Despite the growing literature, several gaps remain. Much research has examined adolescents, students, or general community samples, while comparatively fewer studies have focused specifically on married women adversely affected by cyberspace. Existing studies have often investigated isolated correlates such as

depression, sleep, anxiety, marital intimacy, or emotional divorce without integrating them into a culturally appropriate intervention model. Moreover, measurement studies in Iran have established the psychometric utility of instruments assessing problematic Internet use and related behaviors (39), and Iranian scholarship has increasingly addressed women's psychological experiences in digital and family contexts (40); nevertheless, intervention research that simultaneously targets psychological functioning, marital processes, and digital behavior remains limited. A mixed-methods approach can address this gap by first identifying women's lived experiences and intervention needs and then translating those findings into a structured protocol.

An exploratory sequential design is especially appropriate when the phenomenon is multidimensional and context-dependent. Qualitative findings can reveal how women interpret cyberspace-related harm, which emotional and marital conditions maintain excessive use, and which forms of support they perceive as acceptable and relevant. These findings can then inform a manualized intervention integrating cognitive behavioral techniques, mindfulness, life-skills training, time-management strategies, emotional regulation, communication skills, and marital relationship repair. Such an intervention may reduce problematic Internet use and social media addiction by increasing self-awareness, strengthening self-control, improving coping with negative emotions, enhancing offline functioning, and rebuilding supportive marital interactions. By evaluating outcomes immediately after treatment and at follow-up, it is also possible to determine whether improvements persist beyond the active intervention period.

Therefore, the present study aimed to develop and evaluate the effectiveness of a psychological and marital empowerment intervention in reducing problematic Internet use and social media addiction among women adversely affected by cyberspace.

Methods and Materials

Study Design and Participants

The present study employed an exploratory sequential mixed-methods design in which a qualitative phase was followed by a quantitative phase. The qualitative phase was conducted to identify the experiences, psychological and marital needs, and cyberspace-related vulnerabilities of women adversely affected by Internet and social media use. The findings of this phase were subsequently used to develop a psychological and marital empowerment intervention. In the qualitative phase, participants were selected through purposive sampling from among women who had experienced psychological, emotional, interpersonal, or marital difficulties associated with cyberspace use. Data were collected through semi-structured interviews focusing on participants' patterns of Internet and social media use, perceived psychological and family-related consequences, emotional and relational experiences, coping strategies, and intervention needs. Interviews continued until the collected data provided sufficient conceptual coverage of the phenomenon. The interview data were examined using a content analysis approach. Meaning units were identified, open codes were extracted, and conceptually related codes were organized into subthemes and main themes. Six specialists in psychology also participated in the qualitative and intervention-development phase by reviewing the extracted themes and evaluating the relevance and appropriateness of the proposed intervention content. The qualitative analysis ultimately yielded nine main themes and 38 subthemes, which

formed the conceptual and practical basis of the psychological and marital empowerment intervention protocol.

The quantitative phase was applied in purpose and used a quasi-experimental pretest–posttest control-group design with a two-month follow-up assessment. The statistical population consisted of all women who attended counseling and psychological services centers in Yazd, Iran, during 2024–2025. Participants were recruited through cluster random sampling. Three counseling and psychological services centers were initially selected, after which potentially eligible women were screened according to the study criteria. Based on Cohen's sample-size guidelines for experimental studies and the available eligible population, 30 women were selected and randomly assigned to an intervention group or a control group, with 15 participants in each group. Both groups completed the study measures at the pretest stage. The intervention group then participated in the psychological and marital empowerment program, whereas the control group received no psychological intervention during the study period. Immediately after completion of the intervention sessions, both groups completed the posttest measures. The same instruments were administered again two months later to determine whether the effects of the intervention had been maintained.

The inclusion criteria were providing informed consent to participate in the study, obtaining elevated scores on the study screening questionnaires, having been married for at least six months, being older than 20 years, possessing at least a high school diploma, and having no diagnosed severe physical or psychological disorder that could interfere with participation in the intervention. The exclusion criteria were the use of psychiatric or psychotropic medications, absence from more than two intervention sessions, simultaneous participation in another psychological or therapeutic intervention, and a history of substance or tobacco use. Participation was voluntary, and participants were informed that they could withdraw from the study at any stage without penalty. The confidentiality of personal information and questionnaire responses was maintained throughout the research process.

Data Collection

The Addiction to Social Networks Questionnaire was developed by Khajeh Ahmadi et al. (2016) to assess problematic and addictive patterns of social networking platform use. The questionnaire consists of 23 items distributed across four dimensions: impaired individual functioning, impaired time management, impaired self-control, and impaired social relationships. Items are scored on a five-point Likert scale ranging from 1 to 5, with responses scored as strongly disagree = 1, somewhat disagree = 2, neither agree nor disagree = 3, somewhat agree = 4, and strongly agree = 5. Total scores range from 23 to 115, with higher scores indicating more severe social media addiction. The developers proposed four interpretive levels: scores from 23 to 46 indicating below-average use, scores from 46 to 69 indicating ordinary use, scores from 69 to 92 indicating risk of addiction, and scores from 92 to 115 indicating social media addiction. The content validity index and content validity ratio of the instrument were reported as .95 and .86, respectively (Moradi et al., 2019). Khajeh Ahmadi et al. (2016) assessed internal consistency and reported Cronbach's alpha coefficients of .91 for impaired individual functioning, .82 for impaired time management, .72 for impaired self-control, .68 for impaired social relationships, and .93 for the total questionnaire. The content validity index was .95 for the overall questionnaire and above .79 for each of its dimensions. In the present study, Cronbach's alpha for the total questionnaire was .715, indicating acceptable internal consistency in the study sample.

The Internet Abusive Use Questionnaire was developed by Calvo-Francés (2016) to assess maladaptive and potentially harmful patterns of Internet use. The questionnaire contains 12 items and measures two dimensions: irritability and functional impairment. The irritability dimension is assessed by Items 1, 2, 11, and 12, whereas the functional impairment dimension is assessed by Items 3 through 10. Each item is rated on a five-point Likert scale ranging from 0 to 4, with strongly disagree = 0, disagree = 1, neither agree nor disagree = 2, agree = 3, and strongly agree = 4 (Servidio et al., 2019). Higher scores indicate greater irritability, more severe interference with daily functioning, and a higher level of problematic Internet use. In the original psychometric evaluation, Cronbach's alpha coefficients of .91 for women and .89 for men were reported, demonstrating strong internal consistency across genders (Calvo-Francés, 2016). The questionnaire was translated and psychometrically evaluated in Iran by Mottaghi and Safaei (2017). In the Iranian version, Cronbach's alpha coefficients were .90 for irritability, .70 for functional impairment, and .91 for the total questionnaire. Test–retest reliability, calculated using Pearson's correlation coefficient, was reported as .80. In the present study, Cronbach's alpha was .821, indicating good internal consistency.

The Internet Affective Relationships Inventory was developed by Barghi Irani and Aziz (2015) to assess individuals' emotional and relational involvement in Internet-mediated interactions. The inventory consists of 28 items organized into five dimensions: trust, honesty, enjoyment, tendency toward sexual relationships, and preference for online communication. Trust is measured by Items 17 through 28, honesty by Items 13 through 16, enjoyment by Items 1 through 3, tendency toward sexual relationships by Items 4, 11, and 12, and preference for online communication by Items 5 through 10. Responses are scored using a five-point Likert-type format. The responses strongly disagree and disagree are both assigned a score of 1, neither agree nor disagree is assigned a score of 3, agree is assigned a score of 4, and strongly agree is assigned a score of 5. Higher scores represent stronger emotional involvement in online relationships and a greater preference for virtual rather than face-to-face interpersonal communication. The content validity of the inventory was confirmed through expert evaluation, and its construct validity was supported by exploratory factor analysis. The Kaiser–Meyer–Olkin measure of sampling adequacy was .888, and Bartlett's test of sphericity was statistically significant, $\chi^2(378) = 2726.708$, indicating that the correlation matrix was suitable for factor analysis. Barghi Irani and Aziz (2015) reported reliability coefficients of .73 for trust, .70 for honesty, .71 for enjoyment, and .84 for preference for online communication, as well as an overall Cronbach's alpha coefficient of .90. In the present study, Cronbach's alpha for the inventory was .723, demonstrating acceptable internal consistency.

The Emotional Divorce Questionnaire was developed by Gottman (1995) to assess emotional disengagement and psychological separation within marital relationships. The questionnaire contains 24 dichotomously scored items, with yes responses scored as 1 and no responses scored as 0. It assesses manifestations of emotional divorce across four principal areas, including feelings of separation from one's spouse, loneliness, the need for companionship and conversation, and experiences of restlessness, boredom, or emotional dissatisfaction. Item scores are summed to produce a total score, with higher scores indicating greater emotional distance and a higher likelihood of emotional disconnection between spouses. A total score of 8 or higher is interpreted as indicating that the marital relationship may be at risk of emotional and psychological dissolution and that signs of emotional divorce are present. Examination of item communalities and factor loadings indicated that all item loadings ranged from .49 to .80, supporting the

factorial adequacy of the questionnaire. The overall Cronbach's alpha coefficient has been reported as .93, and its face validity has been confirmed by specialists in psychology and family counseling. Studies conducted with married women and men have similarly reported a Cronbach's alpha coefficient of .93 and satisfactory expert-confirmed face validity. In research involving women attending psychological services centers in Ahvaz, reliability coefficients above .70 were reported, indicating acceptable reliability. The Iranian version has also demonstrated an internal consistency coefficient of .83 and satisfactory content validity. In the present study, reliability was assessed using the split-half method, yielding a coefficient of .737.

Intervention

The psychological and marital empowerment intervention was developed by the researchers on the basis of the nine main themes and 38 subthemes identified through the qualitative content analysis and subsequently reviewed by six psychology specialists. The final protocol integrated principles and techniques derived from cognitive behavioral therapy, mindfulness-based practices, and life-skills training and was delivered in ten 90-minute sessions. The protocol was designed to be applicable in either an individual or group format. The first session focused on establishing therapeutic rapport, creating a psychologically safe environment, conducting an initial assessment, clarifying participants' expectations, discussing personal experiences of cyberspace-related harm, and setting individualized therapeutic goals. Participants were asked to write about the effects of cyberspace on their lives and monitor the amount of time they spent online during the following week. The second session addressed the psychological, emotional, and family-related consequences of excessive cyberspace use, including anxiety, depressive symptoms, reduced self-esteem, emotional divorce, and overreliance on virtual experiences. Homework included analyzing a negative cyberspace-related situation, reducing daily online activity by 30 minutes, completing a brief digital detoxification exercise, and recording the associated emotional and behavioral experiences. The third session emphasized self-awareness and the identification of maladaptive cognitive patterns. Participants learned to recognize automatic negative thoughts, evaluate dysfunctional beliefs, and generate more adaptive alternative thoughts. They recorded negative thoughts during the week, replaced them with realistic alternatives, and examined situations that undermined their self-esteem. The fourth session focused on strengthening self-esteem and emotional autonomy through exercises related to self-worth, self-acceptance, personal boundaries, and assertive refusal skills. Participants identified five positive personal qualities and practiced saying no in situations associated with emotional or Internet-related dependence. The fifth session addressed stress management and emotional regulation. Participants were introduced to the physiological and psychological characteristics of stress and practiced controlled breathing, meditation, mindfulness, and mental relaxation techniques. Daily breathing and meditation practice and the systematic recording of stressful situations and coping responses were assigned as homework. The sixth session concentrated on communication skills and conflict management, including active listening, effective dialogue, constructive disagreement, and interpersonal problem-solving. Participants practiced active listening, documented a marital or family conflict and their response to it, and applied either a five-stage problem-solving model or an effective dialogue technique. The seventh session aimed to enhance personal competence, independent decision-making, self-confidence, and practical problem-solving. Participants applied the learned problem-

solving procedure to a real-life difficulty and documented an experience in which they successfully made an independent decision. The eighth session focused on time management and restoring balance between cyberspace and real-life activities. Participants were trained in structured scheduling, timeboxing, the Eisenhower priority matrix, and the Pomodoro technique. Homework involved monitoring online activity for one week, developing a more balanced daily schedule, and applying the Eisenhower matrix and Pomodoro technique to daily responsibilities. The ninth session addressed the reconstruction of emotional relationships and the strengthening of relational skills through empathy, emotional responsiveness, family relationship repair, and reflection on emotional changes. Participants practiced empathic interaction with a spouse or family member, described an experience of emotional change, and wrote a letter to their future selves. The final session included a comprehensive review of the skills acquired during the intervention, an evaluation of individual progress, identification of potential relapse triggers, and development of a long-term plan for maintaining psychological, marital, and digital balance. Participants established a long-term goal for reducing dependence on cyberspace, prepared a personal follow-up plan, and completed and revised the letter written to their future selves.

Data Analysis

Qualitative and quantitative data were analyzed separately in accordance with the exploratory sequential mixed-methods design. In the qualitative phase, the semi-structured interviews were transcribed, repeatedly reviewed, and analyzed using content analysis. Statements relevant to the participants' psychological, emotional, interpersonal, marital, and cyberspace-related experiences were identified as meaning units. These meaning units were condensed and assigned open codes. Codes with conceptual similarities were compared and grouped into subthemes, and related subthemes were subsequently integrated into broader main themes. The resulting thematic structure, consisting of nine main themes and 38 subthemes, was reviewed by the research team and psychology specialists and was used to determine the objectives, content, therapeutic techniques, and homework assignments included in the intervention protocol.

In the quantitative phase, descriptive statistics, including means, standard deviations, frequencies, and percentages, were used to summarize participants' demographic characteristics and outcome scores at the pretest, posttest, and follow-up assessments. Cronbach's alpha coefficients were calculated to evaluate the internal consistency of the study instruments, except for the Emotional Divorce Questionnaire, for which split-half reliability was calculated. Before inferential analysis, the assumptions underlying parametric repeated-measures analysis were examined, including the normality of score distributions, homogeneity of variances, and sphericity of repeated measurements. The intervention and control groups were compared across the pretest, posttest, and two-month follow-up assessments using a mixed-design repeated-measures analysis of variance, with time as the within-subject factor and group as the between-subject factor. The time-by-group interaction was examined to determine whether changes in problematic Internet use, social media addiction, Internet-based affective relationships, and emotional divorce differed significantly between the intervention and control groups. When significant time or interaction effects were identified, Bonferroni-adjusted pairwise comparisons were used to determine the specific differences between the assessment stages and to evaluate the maintenance of treatment effects at follow-up. The threshold for statistical significance was set at $p < .05$.

Findings and Results

The mean age of participants was 34.73 years ($SD = 8.33$) in the intervention group and 32.46 years ($SD = 7.71$) in the control group. Regarding educational attainment, 53.3% of the participants in the intervention group had a high school diploma, 26.7% had an associate degree, and 20.0% had a bachelor's degree. In the control group, 33.3% had a high school diploma, 40.0% had an associate degree, 20.0% had a bachelor's degree, and 6.7% had a master's degree. Overall, the two groups were relatively comparable in terms of age and educational attainment.

Table 1. Descriptive Statistics for the Study Variables by Group and Assessment Time

Variable	Group	Pretest, <i>M</i>	Pretest, <i>SD</i>	Posttest, <i>M</i>	Posttest, <i>SD</i>	Follow-Up, <i>M</i>	Follow-Up, <i>SD</i>
Problematic Internet use	Intervention	70.20	18.23	63.33	19.61	61.66	18.85
Problematic Internet use	Control	64.06	18.75	65.73	19.77	66.60	18.90
Social media addiction	Intervention	84.40	8.87	72.33	9.55	71.60	8.55
Social media addiction	Control	83.00	12.73	85.33	11.78	86.21	9.91

As shown in Table 1, the mean problematic Internet use score in the intervention group decreased from 70.20 ($SD = 18.23$) at pretest to 63.33 ($SD = 19.61$) at posttest and 61.66 ($SD = 18.85$) at the two-month follow-up. In contrast, the corresponding mean score in the control group increased slightly from 64.06 ($SD = 18.75$) at pretest to 65.73 ($SD = 19.77$) at posttest and 66.60 ($SD = 18.90$) at follow-up. A similar pattern was observed for social media addiction. The intervention group's mean score decreased from 84.40 ($SD = 8.87$) at pretest to 72.33 ($SD = 9.55$) at posttest and remained relatively stable at 71.60 ($SD = 8.55$) at follow-up. Conversely, the control group's mean social media addiction score increased from 83.00 ($SD = 12.73$) at pretest to 85.33 ($SD = 11.78$) at posttest and 86.21 ($SD = 9.91$) at follow-up. These descriptive findings indicate that the reductions observed in both outcomes were primarily confined to the intervention group and were maintained during the follow-up period.

Before conducting the inferential analyses, the assumptions underlying mixed-design repeated-measures analysis of variance were evaluated. The distributions of the outcome scores and model residuals did not demonstrate substantial departures from normality, and no material concerns were identified regarding the homogeneity of variances between the intervention and control groups. Independence of observations was maintained through the separate participation of the individuals and their assignment to distinct study groups. Because the sphericity assumption was not supported for the repeated assessment factor in the reported analyses, Greenhouse–Geisser corrections were applied to the within-subjects tests. Accordingly, the corrected degrees of freedom are reported for the effects of time and the interaction between time and group. Multivariate tests based on Pillai's trace were also considered because they do not require the assumption of sphericity.

Table 2. Mixed-Design Repeated-Measures Analysis of Variance for Problematic Internet Use and Social Media Addiction

Outcome	Analysis	Effect	Test Statistic	<i>F</i>	Hypothesis <i>df</i>	Error <i>df</i>	<i>p</i>	Partial η^2
Social media addiction	Multivariate	Time	Pillai's trace = .264	4.848	2	27	.016	.264
Social media addiction	Multivariate	Time $\times$ Group	Pillai's trace = .485	12.690	2	27	.001	.485

Social media addiction	Within-subjects, Greenhouse–Geisser	Time	—	8.175	1.434	40.139	.003	.226
Social media addiction	Within-subjects, Greenhouse–Geisser	Time × Group	—	20.377	1.434	40.139	.001	.421
Social media addiction	Between-subjects	Group	—	6.497	1	28	.017	.188
Problematic Internet use	Multivariate	Time	Pillai's trace = .245	4.390	2	27	.022	.245
Problematic Internet use	Multivariate	Time × Group	Pillai's trace = .506	13.844	2	27	.001	.506
Problematic Internet use	Within-subjects, Greenhouse–Geisser	Time	—	5.021	1.977	55.352	.010	.152
Problematic Internet use	Within-subjects, Greenhouse–Geisser	Time × Group	—	15.903	1.977	55.352	.001	.362
Problematic Internet use	Between-subjects	Group	—	16.711	1	27	.001	.382

The results presented in Table 2 demonstrated a significant multivariate main effect of time on social media addiction, Pillai's trace = .264, $F(2, 27) = 4.848$, $p = .016$, partial $\eta^2 = .264$. More importantly, the multivariate time-by-group interaction was significant, Pillai's trace = .485, $F(2, 27) = 12.690$, $p = .001$, partial $\eta^2 = .485$, indicating that changes in social media addiction across the three assessments differed significantly between the intervention and control groups. The Greenhouse–Geisser-adjusted within-subjects analysis similarly revealed a significant effect of time, $F(1.434, 40.139) = 8.175$, $p = .003$, partial $\eta^2 = .226$, and a significant time-by-group interaction, $F(1.434, 40.139) = 20.377$, $p = .001$, partial $\eta^2 = .421$. The between-subjects effect of group was also significant, $F(1, 28) = 6.497$, $p = .017$, partial $\eta^2 = .188$, indicating that 18.8% of the variance in social media addiction scores was associated with group membership.

For problematic Internet use, the multivariate main effect of time was significant, Pillai's trace = .245, $F(2, 27) = 4.390$, $p = .022$, partial $\eta^2 = .245$. The multivariate time-by-group interaction was also significant, Pillai's trace = .506, $F(2, 27) = 13.844$, $p = .001$, partial $\eta^2 = .506$. The Greenhouse–Geisser-adjusted analysis showed a significant main effect of time, $F(1.977, 55.352) = 5.021$, $p = .010$, partial $\eta^2 = .152$, as well as a significant time-by-group interaction, $F(1.977, 55.352) = 15.903$, $p = .001$, partial $\eta^2 = .362$. The significant interaction indicated that the pattern of change in problematic Internet use differed between the two groups, with reductions occurring in the intervention group but not in the control group. The between-subjects group effect was also significant, $F(1, 27) = 16.711$, $p = .001$, partial $\eta^2 = .382$, indicating that 38.2% of the variance in problematic Internet use scores was explained by group membership. Collectively, these findings support the effectiveness of the psychological and marital empowerment intervention in reducing both social media addiction and problematic Internet use.

Table 3. Bonferroni-Adjusted Pairwise Comparisons of Assessment Times by Group

Outcome	Group	Comparison	Mean Difference	SE	p	95% CI Lower	95% CI Upper
Social media addiction	Intervention	Pretest – Posttest	12.067	2.945	.003	4.064	20.270
Social media addiction	Intervention	Pretest – Follow-up	12.800	2.621	.001	5.677	19.923
Social media addiction	Intervention	Posttest – Follow-up	0.733	1.419	1.000	-3.124	4.590
Social media addiction	Control	Pretest – Posttest	-2.333	1.271	.263	-5.788	1.121
Social media addiction	Control	Pretest – Follow-up	-3.200	1.694	.239	-7.803	1.403
Social media addiction	Control	Posttest – Follow-up	-0.867	0.910	1.000	-3.339	1.605
Problematic Internet use	Intervention	Pretest – Posttest	6.867	1.823	.006	1.913	11.821
Problematic Internet use	Intervention	Pretest – Follow-up	8.533	1.502	.001	4.451	12.615
Problematic Internet use	Intervention	Posttest – Follow-up	1.667	1.319	.681	-1.918	5.251
Problematic Internet use	Control	Pretest – Posttest	-1.667	0.950	.303	-4.247	0.914
Problematic Internet use	Control	Pretest – Follow-up	-2.533	1.540	.366	-6.717	1.651
Problematic Internet use	Control	Posttest – Follow-up	-0.867	1.447	1.000	-4.799	3.066

The Bonferroni-adjusted comparisons presented in Table 3 showed that social media addiction in the intervention group decreased significantly from pretest to posttest, mean difference = 12.067, $SE = 2.945$, $p = .003$, and from pretest to follow-up, mean difference = 12.800, $SE = 2.621$, $p = .001$. The difference between posttest and follow-up was not significant, mean difference = 0.733, $SE = 1.419$, $p = 1.000$, indicating that the reduction achieved following the intervention was maintained during the two-month follow-up period. None of the pairwise differences in the control group were statistically significant, with p values ranging from .239 to 1.000.

A similar pattern was found for problematic Internet use. In the intervention group, scores decreased significantly from pretest to posttest, mean difference = 6.867, $SE = 1.823$, $p = .006$, and from pretest to follow-up, mean difference = 8.533, $SE = 1.502$, $p = .001$. The posttest-to-follow-up comparison was not significant, mean difference = 1.667, $SE = 1.319$, $p = .681$, demonstrating that the intervention effect remained stable after treatment. No significant changes were observed across the three assessment times in the control group, with all Bonferroni-adjusted p values exceeding .05. These findings confirm that the psychological and marital empowerment intervention produced significant and sustained reductions in both social media addiction and problematic Internet use among women adversely affected by cyberspace.

Discussion and Conclusion

The present study examined the effectiveness of a psychological and marital empowerment intervention in reducing problematic Internet use and social media addiction among women adversely affected by cyberspace. The findings showed that participants who received the intervention experienced significant reductions in both problematic Internet use and social media addiction from pretest to posttest, whereas no significant changes were observed in the control group. These improvements remained stable at the two-month follow-up, as the differences between posttest and follow-up scores were not statistically significant.

The significant time-by-group interactions further indicated that the patterns of change across the three assessment points differed between the intervention and control groups. The intervention accounted for a meaningful proportion of the variance in both outcomes, with a particularly strong effect on problematic Internet use. Overall, the findings support the effectiveness of a multidimensional intervention that simultaneously addresses psychological functioning, self-regulation, digital habits, marital communication, and emotional relationships.

The significant reduction in social media addiction is consistent with evidence suggesting that addictive social media use can be modified through structured psychological interventions that target cognitive, emotional, and behavioral mechanisms. Social media addiction is commonly maintained by habitual checking, emotional avoidance, perceived social rewards, fear of missing out, social comparison, and immediate reinforcement generated by online interactions (24, 25). The intervention developed in the present study addressed several of these mechanisms through self-monitoring, digital detoxification, cognitive restructuring, mindfulness, time management, and the development of alternative patterns of behavior. By helping participants identify triggers for excessive use and understand the psychological and marital consequences of their online behavior, the intervention may have reduced automatic and unreflective engagement with social networking platforms.

The findings are also in line with research emphasizing the effectiveness of cognitive behavioral and psychosocial approaches in the treatment of technological addictions. Cognitive behavioral interventions seek to identify dysfunctional thoughts associated with online use, modify unrealistic beliefs, improve behavioral control, and replace excessive Internet engagement with more adaptive activities (28). In the present protocol, participants were taught to recognize negative automatic thoughts, examine beliefs that encouraged dependence on virtual environments, and generate realistic alternative cognitions. They also monitored their use, gradually reduced online time, and practiced structured problem-solving. These techniques may have interrupted the cycle in which distressing thoughts or interpersonal difficulties triggered online escape and temporary relief, which subsequently reinforced continued use. The observed results therefore support the view that problematic digital behavior can be reduced when cognitive restructuring is combined with active behavioral regulation.

The intervention's mindfulness and emotion-regulation components may also explain the reduction in social media addiction. Previous research has shown that problematic Internet and social media use is associated with depression, anxiety, emotional dysregulation, and the use of online platforms as a strategy for coping with unpleasant internal states (7, 9). Women who experience difficulty tolerating loneliness, marital dissatisfaction, stress, or negative self-evaluation may repeatedly turn to social media for distraction, validation, and emotional relief. However, this form of avoidance may intensify dependence and reduce opportunities to develop adaptive coping skills. In the present study, mindfulness, breathing exercises, meditation, and emotional self-monitoring were used to help participants recognize internal experiences without reacting automatically. These skills may have increased emotional tolerance and reduced the urgency to regulate negative affect through repeated social media use.

The findings are further consistent with acceptance-based interventions that have demonstrated benefits in reducing psychological distress among individuals with social media addiction. Acceptance and commitment-oriented approaches encourage individuals to reduce experiential avoidance, observe thoughts

and emotions without excessive struggle, and choose actions based on personally meaningful values (30). Although the present intervention was not exclusively based on acceptance and commitment therapy, its mindfulness, self-awareness, and future-planning components may have operated through similar processes. Participants were encouraged to become aware of the emotional functions of their online behavior, tolerate discomfort, identify personal and relational priorities, and establish long-term goals for maintaining digital balance. This shift from immediate emotional relief to value-consistent action may have contributed to the maintenance of improvement at follow-up.

The reduction in problematic Internet use also aligns with evidence showing that excessive Internet engagement is a multifactorial problem requiring comprehensive intervention. Clinical reviews have recommended combinations of cognitive behavioral therapy, motivational strategies, family-focused methods, behavioral scheduling, psychoeducation, and relapse-prevention techniques for the management of Internet addiction (26, 27). The current intervention incorporated many of these elements rather than relying on a single technique. Participants learned about the adverse effects of excessive Internet use, monitored their daily online activity, reduced exposure gradually, organized their time, improved emotional regulation, and prepared plans for relapse prevention. The integration of multiple components may explain why the intervention produced a substantial effect on problematic Internet use and why the reduction persisted for two months after the completion of treatment.

Time-management training was probably an important contributor to the observed improvement. Problematic Internet use often becomes embedded in unstructured daily routines, procrastination, boredom, and the absence of clear boundaries between online and offline activities. In the present study, participants were trained in timeboxing, the Eisenhower matrix, and the Pomodoro technique. These strategies may have increased awareness of how Internet use displaced family responsibilities, rest, personal development, and face-to-face relationships. They also provided practical alternatives to vague recommendations such as “use the Internet less.” By converting behavioral intentions into scheduled and observable actions, participants may have gained greater control over their digital habits. This interpretation is consistent with findings indicating that behavioral self-management and structured prevention programs can reduce problematic Internet use more effectively than information-based warnings alone (31).

The psychological empowerment framework provides another explanation for the findings. Psychological empowerment includes perceived competence, self-efficacy, autonomy, critical awareness, decision-making capacity, and a sense of control over personal circumstances (32). Women affected by problematic Internet use may feel unable to regulate their behavior, manage emotional distress, or change unsatisfactory marital interactions. Such perceived helplessness can increase reliance on virtual environments. The intervention emphasized personal strengths, self-worth, assertiveness, independent decision-making, and problem-solving, thereby potentially increasing participants’ sense of agency. The results are consistent with research showing that psychological empowerment programs can improve psychological well-being and family resilience among women exposed to significant family stress (34). They also align with empowerment models developed for Iranian women, which emphasize self-awareness, competence, support, informed choice, and effective action (33).

The intervention’s focus on self-esteem and personal competence may have been particularly important because low self-worth has been identified as a predictor of cyberspace addiction among married women

(23). Women who experience low self-esteem may depend more heavily on online approval, social comparison, or virtual relationships to obtain a temporary sense of value. The intervention included exercises designed to identify positive personal characteristics, challenge self-devaluing thoughts, strengthen assertiveness, and practice emotional independence. These activities may have reduced dependence on external digital validation and encouraged participants to obtain satisfaction through personal achievements and real-world relationships. This interpretation is also compatible with positive psychology interventions that have shown effectiveness in addressing Internet addiction by increasing positive affect, engagement, meaning, and personal resources (29).

The marital component of the intervention may distinguish the present program from interventions that focus only on individual self-control. Research has shown that problematic Internet use among married women is related to marital intimacy, marital quality, domestic violence, and emotional divorce (14, 15, 23). Excessive engagement with cyberspace can reduce emotional availability, increase secrecy, produce conflict over time and attention, and create opportunities for emotionally significant online relationships. At the same time, low marital intimacy, loneliness, and unresolved conflict may motivate women to seek emotional compensation through online environments. The intervention addressed this reciprocal relationship through communication training, active listening, empathy, conflict management, emotional expression, and the reconstruction of marital relationships. Improving these skills may have reduced the need to use cyberspace as a substitute for unmet relational needs.

The findings are consistent with studies indicating that virtual social networks can influence couple relationships, particularly when online interactions affect trust, commitment, privacy, and emotional boundaries (19). Social media use may alter relationship satisfaction by reducing shared time, increasing comparison with other couples, and intensifying jealousy or suspicion (20). The intervention encouraged participants to examine how their online behavior affected their spouses and families and to practice empathy and effective dialogue. By increasing awareness of relational consequences and offering specific communication skills, the program may have strengthened offline emotional engagement and reduced attachment to virtual interactions. This interpretation is compatible with contemporary models of marital stability, which emphasize the interaction of personal vulnerabilities, stressful contexts, and adaptive relationship processes (21).

The stability of treatment effects at follow-up is an important finding. The absence of significant differences between posttest and follow-up indicates that the improvements were not limited to a temporary reaction immediately after the intervention. The homework exercises, behavioral monitoring, long-term goal setting, and relapse-prevention planning may have supported the continued use of acquired skills. According to stage-based models of behavior change, lasting improvement requires progression from awareness and preparation to action and maintenance (38). The intervention supported these stages by first increasing recognition of cyberspace-related harm, then building motivation and practical skills, and finally helping participants create individualized maintenance plans. Similarly, the Health Belief Model proposes that protective behavior is more likely when individuals perceive the seriousness of a problem, recognize personal vulnerability, believe in the benefits of change, and possess sufficient self-efficacy (37). The intervention may have influenced each of these determinants.

The significant reductions may also be interpreted in light of the broader mental health consequences of problematic digital use. Excessive Internet and social media engagement has been associated with anxiety among young women, depressive symptoms, loneliness, reduced life satisfaction, impaired problem-solving, and poor sleep quality (6, 8, 10). Although the current study focused on problematic Internet use and social media addiction as primary outcomes, the intervention targeted several underlying psychological processes, including stress, emotion regulation, self-esteem, and coping. Improvement in these areas may have indirectly reduced the psychological need for excessive online involvement. The integrated structure of the program therefore appears appropriate for a problem that is both behavioral and affective.

The findings may also reflect the cultural relevance of developing the protocol from qualitative data obtained from women affected by cyberspace-related problems. Rather than applying a fully predetermined intervention, the researchers identified nine main themes and 38 subthemes that represented participants' experiences and needs. This procedure likely increased the contextual suitability of the sessions and allowed the intervention to address psychological, marital, and digital concerns that were meaningful to the target population. Given the evidence that gender, culture, family structure, and social context influence the development and expression of problematic Internet use (5, 12, 13), culturally adapted interventions may be more acceptable and effective than generic programs.

Overall, the findings extend previous research by showing that a combined psychological and marital empowerment intervention can reduce both problematic Internet use and social media addiction among women adversely affected by cyberspace. Previous studies have frequently examined correlates of digital addiction or applied interventions targeting only individual behavior. The present results suggest that integrating cognitive behavioral techniques, mindfulness, psychological empowerment, time management, emotional regulation, and marital skills may provide a more comprehensive response. The significant group differences, large time-by-group effects, and maintained follow-up outcomes indicate that the intervention produced meaningful behavioral change rather than simple fluctuations over time.

The present study had several limitations. The sample was relatively small and consisted only of women attending counseling and psychological services centers in Yazd, which restricts the generalizability of the findings to women in other geographic, cultural, socioeconomic, or clinical contexts. The use of self-report questionnaires may have increased the possibility of recall bias, social desirability, and inaccurate reporting of Internet and social media use. The control group received no active intervention, making it impossible to determine whether the results were specifically attributable to the intervention content or partly influenced by therapist attention, group support, or expectations of improvement. The follow-up period was limited to two months and therefore did not establish the long-term durability of the treatment effects. In addition, variables such as marital satisfaction, emotional regulation, self-esteem, and actual screen time were not analyzed as mediators of intervention effectiveness.

Future research should replicate the study with larger and more diverse samples drawn from different regions and socioeconomic groups. Randomized controlled trials using active comparison conditions would provide stronger evidence regarding the specific effectiveness of the intervention. Longer follow-up assessments at six months and one year are recommended to evaluate the durability of treatment gains and identify possible relapse patterns. Future studies should also incorporate objective digital-use indicators obtained from mobile devices or platform records alongside self-report measures. Examining psychological

empowerment, emotion regulation, marital intimacy, self-esteem, and time-management skills as potential mediators would clarify how the intervention produces change. Comparative studies could also determine whether individual, group, couple-based, face-to-face, and online delivery formats differ in effectiveness and acceptability.

In practice, counseling and psychological services centers should consider incorporating psychological and marital empowerment training into programs for women experiencing harmful patterns of Internet and social media use. Clinicians should assess not only the frequency of digital engagement but also its emotional functions, marital consequences, triggers, and effects on daily functioning. Intervention programs should combine psychoeducation with cognitive restructuring, mindfulness, stress management, communication skills, time management, and relapse prevention. Involving spouses may be appropriate when excessive use is closely linked to marital conflict or emotional disconnection, provided that participation is safe and acceptable to the woman. Counselors should also help clients develop individualized digital-use plans, establish realistic boundaries, increase meaningful offline activities, and strengthen social and family support so that behavioral improvements can be sustained after treatment.

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Authors' Contributions

All authors equally contributed to this study.

Declaration of Interest

The authors of this article declared no conflict of interest.

Ethical Considerations

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants.

Transparency of Data

In accordance with the principles of transparency and open research, we declare that all data and materials used in this study are available upon request.

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