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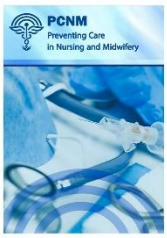

Original Article

The Effect of Cognitive Behavioral Counseling on Stress and Quality of Life of Pregnant Women with a History of Spontaneous Abortion: A Randomized Controlled Trial

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Abstract

Background: Spontaneous abortion is a physically and psychologically distressing event, often necessitating psychological support in subsequent pregnancies to mitigate adverse mental health outcomes.

Objectives: This study aimed to evaluate the effectiveness of individual cognitive-behavioral therapy (CBT) counseling in reducing stress and improving the quality of life among pregnant women with a history of spontaneous abortion.

Methods: A parallel-group randomized controlled trial was conducted with 72 pregnant women at 6–10 weeks of gestation, all of whom had a prior spontaneous abortion and exhibited stress symptoms. Participants were randomly assigned to an intervention group (n=36) receiving 10 individual CBT sessions or a control group (n=36) receiving routine prenatal care. Stress and quality of life were assessed at baseline, post-intervention, and two-month follow-up. Nonparametric statistical analyses were performed, with significance set at $p < 0.05$.

Results: Post-intervention, the CBT group showed a significant reduction in stress levels compared to controls (from 28.3 to 19.9 post-intervention and 19.7 at follow-up; $p < 0.001$). Significant improvements were also observed in psychological, social, environmental, and general health domains of quality of life (e.g., overall QoL increased from 60.4 to 70.8; $p < 0.001$). These benefits were largely maintained at the two-month follow-up, though no significant change occurred in the physical domain.

Conclusion: Individual CBT counseling is an effective intervention for reducing stress and enhancing quality of life in pregnant women with a history of spontaneous abortion, supporting its integration into prenatal mental health care for this vulnerable group.

Implications for Nursing and Midwifery Preventive Care

- Individual counseling with a cognitive-behavioral approach can help reduce mothers' stress, improve their quality of life, and effectively enhance midwifery services and maternal and child health outcomes.

Introduction

Abortion is defined as the termination of an intrauterine pregnancy up to the 20th week of gestation. Early pregnancy loss, which occurs during the first trimester (up to approximately the 13th week), is the most common type [1]. This experience is widely recognized as both a physically and emotionally distressing event [2]. Individuals with a history of early pregnancy loss exhibit a higher prevalence of mental disorders compared to those with normal pregnancies [3], constituting a significant risk to maternal mental health [4]. It can precipitate a range of psychological disorders, including depression, anxiety, and diminished satisfaction across various life domains [2,5]. Although the medical management of abortion often receives considerable attention, its psychological sequelae are frequently overlooked [6].

Stress represents a primary psychological consequence of abortion [7]. It can be defined as an individual's reaction to internal, external, or self-imposed pressure, resulting in physiological, psychological, and behavioral changes [8]. While not inherently negative and sometimes yielding potentially positive outcomes [9], persistent stress during pregnancy is particularly concerning. It triggers the release of hormones that, upon crossing the placental barrier, can induce irreversible effects on fetal psychological development [10]. Research further indicates that maternal anxiety or depressive symptomatology may be associated with an elevated risk of miscarriage [11]. Consequently, miscarriage is an established risk factor for the development of post-traumatic stress disorder (PTSD) in affected women [12].

The loss of a pregnancy is thus one of the most profound emotional stressors a woman can endure, typically accompanied by a significant grief reaction [13]. Miscarriage or perinatal loss frequently initiates a substantial bereavement process. This mourning period serves as a vital adaptive mechanism for coping with the loss; however, inadequate psychological processing during this time can lead to complicated grief and associated psychopathologies, including anxiety, depression, and PTSD [13]. Grief plays a pivotal role in the development of these conditions, with psychological disorders often emerging as part of, or alongside, the natural grieving process [12]. In most affected women, depressive symptoms are most pronounced in the initial months following the loss and tend to attenuate over time [14].

The experience of abortion can also substantially diminish the quality of life. The World Health Organization defines quality of life as an individual's perception of their position in life within the context of their culture and value systems, and in relation to their goals, expectations, standards, and concerns [15]. It is a multidimensional, complex construct reflecting a personal evaluation of various life aspects, encompassing emotional responses, attitudes, fulfillment, life satisfaction, and contentment with work and relationships [16]. A key characteristic, widely acknowledged in social science, is its multidimensional and dynamic nature [17]. Pregnancy itself alters quality of life, often in ways perceived as unsatisfactory by pregnant women [18].

Women frequently experience diverse psychological complications after miscarriage that significantly impair their quality of life [19], with the poorest reported outcomes typically in the psychological domain [20]. Various interventions have been implemented to mitigate stress and enhance the quality of life in this population. These include psychological interventions, pharmacological approaches, and counseling, all of which have demonstrated efficacy in stress alleviation [21]. Although supportive counseling may not be universally recommended for all women post-abortion, it can be particularly beneficial for those experiencing high levels of psychological distress [22]. Correspondingly, Abu Shreida et al. demonstrated that psychological interventions reduce post-traumatic stress symptoms in women with a history of abortion [23]. Additionally, self-compassion training [24] and cognitive-behavioral therapy (CBT) have shown positive impacts on quality of life in pregnant women with a history of pregnancy loss [25].

Cognitive-behavioral counseling represents an innovative and widely accepted approach in

psychological treatment. Its core premise is that directly altering emotions is challenging; therefore, it focuses on modifying maladaptive thoughts and behaviors to effectively target distressing emotions. CBT equips individuals with skills to enhance awareness of their thoughts and feelings, and to understand the interplay between situations, cognitions, behaviors, and emotions [26].

A review of the existing literature reveals that most studies investigating post-abortion psychological challenges have focused on women with recurrent pregnancy loss, while the struggles of those experiencing a single abortion remain comparatively neglected. Furthermore, the majority of supportive interventions have been educational, and among the limited studies implementing counseling, a standardized, protocol-driven approach is often lacking.

Objective

This study aimed to evaluate the effectiveness of individual cognitive-behavioral therapy (CBT) counseling on stress and quality of life in pregnant women with a history of spontaneous miscarriage, given the high psychological impact and limited support

Methods

Study Design

This study was a parallel, randomized controlled trial with a 1:1 allocation ratio. It was conducted after obtaining approval from the Deputy of Research at the University of Medical Sciences and registration on the Iranian Registry of Clinical Trials (IRCT) with the code IRCT20160521027994N4. This trial was conducted in urban and rural health centers in Khodabandeh County and Zanjan City between 2018 and 2019.

Participants

Inclusion criteria comprised willingness to participate, a score of 19–37 on the Cohen Perceived Stress Scale (PSS), pregnant women between 6 and 10 weeks of intrauterine pregnancy confirmed by ultrasound, absence of physical or mental illnesses, education level of at least middle school, and no exposure to major stressful events (e.g., death of a loved one, accidents, severe family conflicts, divorce, migration, or financial bankruptcy) in the six months before the study. Exclusion criteria included withdrawal from the study, pregnancy-related complications such as bleeding and abdominal pain as signs of miscarriage, or experiencing major stressful events during the research.

First, written consent was obtained from pregnant mothers to participate in the study.

Randomization

Sampling was initially conducted using a convenience method. Out of 821 pregnant women with a history of one abortion and a PSS score of 19–37, 72 eligible participants were enrolled. They were randomly assigned to intervention (A) and control (B) groups using block randomization. Eighteen blocks of four participants each were created, with possible combinations of AABB, BBAA, ABAB, BABA, ABBA, or BAAB. Blocks were randomly selected using a random number table, resulting in 36 participants per group. Post-intervention, three participants from the intervention group and three from each group during follow-up were excluded. Final analysis included data from 30 intervention and 31 control participants (Figure 1).To prevent bias, the intervention and control groups were identified only by numbers at the time of data entry, and the data analyst was unaware of the nature of the groups.

Blinding

Although participants were not blinded, group assignments were coded during data entry, and the analyst remained blinded to these codes throughout the data analysis.

Sample Size

Based on the methodology outlined by Jabari et al. [27], the sample size was calculated using a standard deviation of 1.7 for the intervention group and 2.3 for the control group for post-intervention outcomes, a mean difference of 1.5 units, a 95% confidence level ($\alpha = 0.05$), and 80% statistical power. This

calculation indicated a requirement of 29 participants per group. To account for a potential attrition rate of 20%, the sample size was increased, resulting in 36 participants per group. The total sample was therefore set at 72 pregnant women at 6–10 weeks of gestation. This determination was further corroborated by applying Cochran's formula with identical parameters (α = 0.05, power = 0.8, 95% CI), which yielded a minimum sample size of 60. After incorporating an additional 12 participants (six per group) to offset potential attrition, the final sample size remained 72 individuals.

Interventions:

Cognitive-behavioral counseling sessions were conducted following Antony et al.'s (2007) protocol [28]. The program consisted of 10 sessions designed to identify, challenge, and modify negative cognitions in individuals experiencing emotional difficulties such as depression, anxiety, stress, or excessive anger. The sessions included:

1. Introduction to stress and pregnancy-related reactions.
2. Pregnancy stressors and their consequences.
3. Physiological stress responses and management techniques.
4. Psychological stress responses and cognitive restructuring strategies.
5. Autogenic training for relaxation and rational thinking.
6. Autogenic training focusing on heart rate, breathing, and coping strategies.
7. Guided imagery and development of effective coping responses.
8. Mantra meditation and anger management techniques.
9. Breathing exercises and assertiveness training.
10. Integration of imagery, meditation, social support, and session summaries.

Due to the nature of the intervention, participants and the therapist were aware of group allocation. However, blinding of outcome assessors and the data analyst was not implemented, which is acknowledged as a limitation of the study.

Outcomes

Primary outcomes were stress and quality of life. Data collection tools included:

- Demographic and obstetric checklist (age, time since abortion, infertility history, education, spouse's education/occupation, economic status).
- Cohen Perceived Stress Scale (PSS-14) [29], scoring 0–56 (0–18: low stress; 19–37: moderate; 38–56: high). Cronbach's alpha: 0.73.
- WHO Quality of Life Questionnaire (WHOQOL) [30], with 24 items across physical (7–35), psychological (6–30), social (3–15), environmental (8–40), and general health (2–10) domains. Raw scores were converted to a 0–100 scale. Persian version reliability: Cronbach's alpha 0.7.
- General Health Questionnaire: General Health Questionnaire: The 28-question version of this questionnaire has the highest validity, sensitivity, and specificity. This questionnaire assesses symptoms of mental disorder within the past month up to the time of the test. The General Health Questionnaire is a screening questionnaire based on a self-report method that is used to identify people with a mental disorder. The individual's score on each of the subscales will range from 0 to 21, and the entire questionnaire will range from 0 to 84. In this study, this questionnaire was used to exclude people with mental disorders [31].

Statistical Methods:

Data from the remaining participants were entered into SPSS-16, cleaned, and checked for normality using the Shapiro-Wilk test, confirming a non-normal distribution ($p < 0.05$). Non-parametric tests were applied, including Mann-Whitney U for group comparisons, Friedman for repeated measures ranking, and chi-square for categorical variables.

Six participants were lost to follow-up (three from the intervention group and three from the control group), resulting in slightly unequal final sample sizes (30 vs. 31). An intention-to-treat (ITT) analysis was not performed, which is acknowledged as a study limitation. Due to the small sample size,

additional analyses to assess time and group effects or to report effect sizes were not feasible, and this limitation is discussed in the manuscript.

Results

The mean (standard deviation) age of participants in the intervention group was 28.1 (5.8) years, while in the control group, it was 27.7 (5.9) years. The cause of the previous miscarriage in all mothers was spontaneous abortion. A history of infertility was reported in 6.7% of both groups. Most mothers in the intervention group (43.3%) had a high school diploma, and similarly, the highest percentage in the control group (40%) also held a high school diploma. Based on the results of statistical tests, there was no significant difference between the two groups in terms of demographic and obstetric characteristics before the intervention (Table 1).

Before the intervention, the highest mean quality of life in the intervention group was related to the social domain, with a score of 63.5 (14.8), while in the control group, it was also the social domain, with a score of 63.5 (12.8). Stress levels in the intervention group were 28.3 (4.2), compared to 28.0 (3.5) in the control group. There was no statistically significant difference between the two groups in any of the quality-of-life subscales or stress levels.

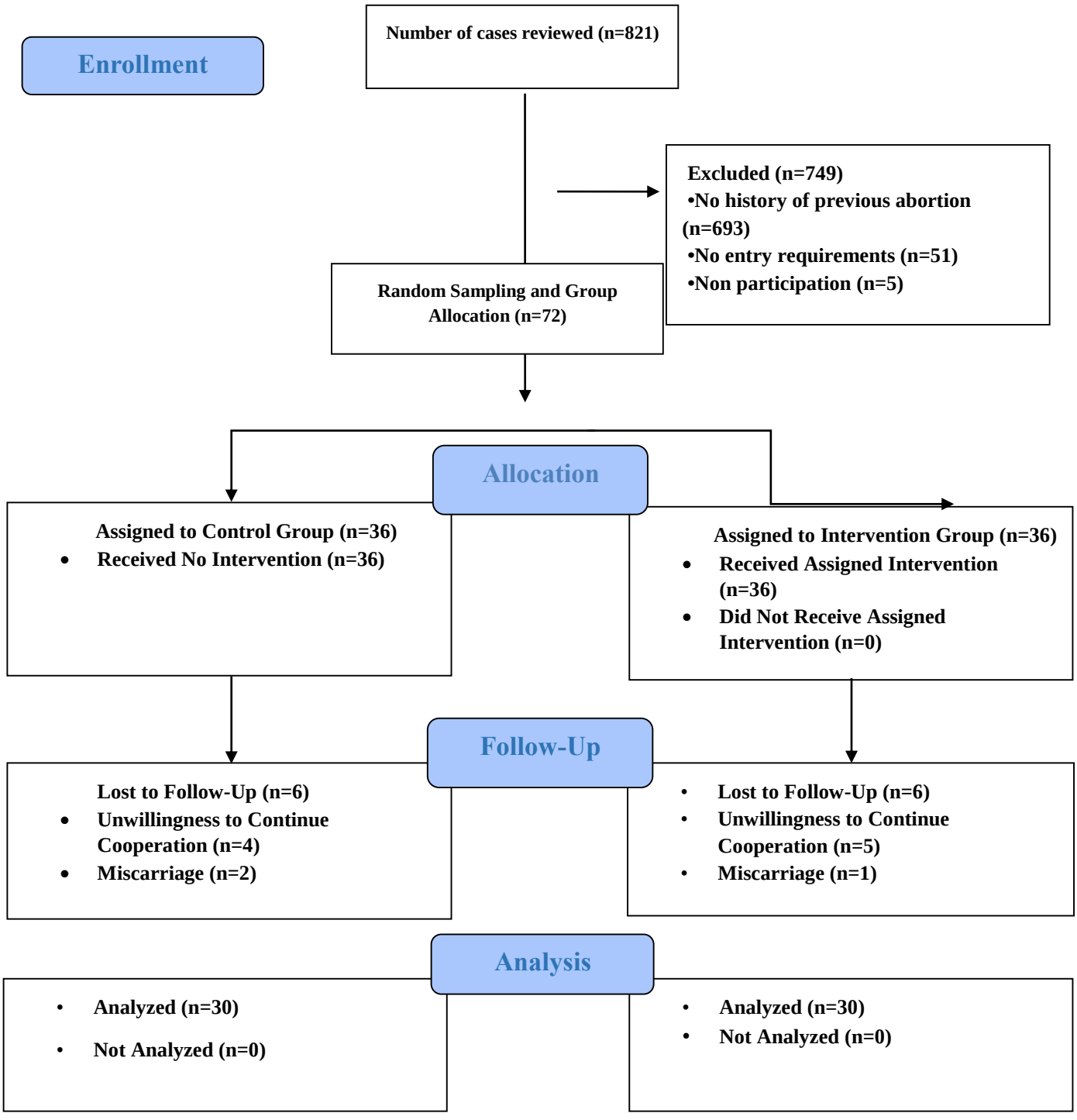
Immediately after the intervention, the highest mean quality of life in the intervention group was related to overall quality of life and general health, with a score of 70.8 (9.4), whereas in the control group, it was the psychological domain, with a score of 59.4 (16.9). Stress levels in the intervention group decreased to 19.9 (3.9), while in the control group, they remained at 28.0 (3.5). A statistically significant difference was observed between the two groups in the psychological domain ($p = 0.016$), social domain ($p = 0.034$), overall quality of life and general health ($p < 0.001$), and stress levels ($p < 0.001$). However, no significant differences were found in the physical or environmental domains. Two months after the intervention, the highest mean quality of life in the intervention group remained in the overall quality of life and general health domain, with a score of 71.2 (6.6), while in the control group, it was the social domain, with a score of 63.2 (11.7).

Table1. Comparison of Demographic and Obstetric Characteristics between the Intervention and Control Groups

Variable	Intervention Group	Control Group	*p*
Age, M (SD)	28.1 (5.8)	27.7 (5.9)	0.847
Infertility			
Yes	2 (6.7%)	2 (6.7%)	1
No	28 (93.3%)	28 (93.3%)	
Education			
Secondary School	9 (30.0%)	11 (36.7%)	1
Diploma	13 (43.3%)	12 (40.0%)	
Bachelor's Degree	6 (20.0%)	5 (16.7%)	
Master's Degree	2 (6.7%)	2 (6.7%)	
Spouse's Education			
Secondary School	8 (26.7%)	5 (16.7%)	0.36
Diploma	16 (53.3%)	17 (56.7%)	
Bachelor's Degree	4 (13.3%)	6 (20.0%)	
Master's Degree	2 (6.7%)	2 (6.7%)	
Occupation			
Unemployed	19 (63.3%)	19 (63.3%)	0.918
Part-time	3 (10.0%)	5 (16.7%)	
Full-time	7 (23.3%)	4 (13.3%)	
Student	1 (3.3%)	2 (6.7%)	
Spouse's Occupation			
Part-time	6 (20.0%)	5 (16.7%)	0.741
Full-time	24 (80.0%)	25(83.3%)	
Economic Status			
Poor	1 (3.3%)	1 (3.3%)	0.982
Moderate	22 (73.3%)	23 (76.7%)	
Good	7 (23.3%)	6 (20.0%)	

Table 2. Comparison of Quality-of-Life Domain Scores and Stress Levels between the Intervention and Control Groups

Time Point	Domain	Intervention Group, M (SD)	Control Group, M (SD)	*p*
Before Intervention				
	Physical Health	43.6 (22.2)	46.4 (24.6)	0.474
	Psychological	56.0 (20.8)	60.0 (19.1)	0.464
	Social Relationships	63.5 (14.8)	63.8 (12.8)	0.916
	Environment	54.0 (12.7)	53.5 (13.1)	0.982
	Overall QoL & General Health	60.4 (22.9)	60.8 (26.0)	0.827
	Stress	**28.3 (4.2)**	**28.2 (3.4)**	**0.929**
After Intervention				
	Physical Health	46.3 (21.1)	46.8 (23.9)	0.770
	Psychological	67.8 (15.2)	59.4 (16.9)	**0.016**
	Social Relationships	71.3 (9.3)	64.2 (12.2)	**0.034**
	Environment	57.3 (10.8)	53.1 (12.2)	0.261
	Overall QoL & General Health	70.8 (9.4)	55.4 (16.9)	**<0.001**
	Stress	**19.9 (3.9)**	**28.0 (3.5)**	**<0.001**
Two Months After Intervention				
	Physical Health	49.8 (19.8)	46.4 (24.2)	0.707
	Psychological	69.3 (15.2)	59.4 (18.1)	**0.013**
	Social Relationships	69.1 (11.6)	63.2 (11.7)	**0.022**
	Environment	59.2 (11.7)	51.9 (11.7)	**0.026**
	Overall QoL & General Health	71.2 (6.6)	52.0 (13.9)	**<0.001**
	Stress	**19.7 (3.5)**	**27.9 (3.5)**	**<0.001**



Flowchart 1: How Participants Enter the Study

Table 3. Results of the Friedman Test for Intra-Group Changes across Measurement Time Points

Variable	Group	Mean Rank (Before)	Mean Rank (After)	Mean Rank (2-Month Follow-up)	χ^2	*df*	*p*	Kendall's *W*
Stress	Intervention	2.98	1.48	1.53	46.248	2	< 0.001	0.771
	Control	2.18	1.97	1.85	2.040	2	0.361	0.034
Overall Quality of Life	Intervention	1.72	2.13	2.15	5.106	2	0.078	0.085
	Control	2.22	1.98	1.80	3.376	2	0.185	0.056
Physical Domain	Intervention	1.63	2.03	2.33	13.455	2	0.001	0.224
	Control	1.93	2.08	1.98	1.000	2	0.607	0.017
Psychological Domain	Intervention	1.27	2.33	2.40	36.400	2	< 0.001	0.607
	Control	2.12	1.93	1.95	1.104	2	0.576	0.018
Social Domain	Intervention	1.55	2.32	2.13	19.233	2	< 0.001	0.321
	Control	2.02	2.10	1.88	1.755	2	0.416	0.029
Environmental Domain	Intervention	1.63	2.12	2.25	9.475	2	0.009	0.158
	Control	2.07	2.03	1.90	0.982	2	0.612	0.016

Stress levels in the intervention group were 19.7 (3.5), compared to 27.9 (3.5) in the control group. Significant differences were observed between the two groups in the psychological domain ($p = 0.013$), social domain ($p= 0.022$), environmental domain ($p= 0.026$), overall quality of life and general health ($p< 0.001$), and stress levels ($p < 0.001$). However, no significant difference was found in the physical domain.

The results of the Friedman test indicate that the intervention group experienced statistically significant improvements over time in most variables, with large effect sizes observed for stress (Kendall's W = 0.771) and the psychological domain (Kendall's W = 0.607), reflecting substantial reductions in stress and enhancements in psychological well-being. Medium effects were noted for the social domain (Kendall's W = 0.321), while small to medium effects were found for the physical domain (Kendall's W = 0.224) and environmental domain (Kendall's W = 0.158). In contrast, no significant changes occurred in the control group, with all effect sizes negligible (Kendall's W < 0.05), demonstrating that the intervention had a meaningful and sustained impact on the intervention group without similar effects in the control group (Table 3).

Following the significant results of the Friedman test (Table 3), post-hoc pairwise comparisons were performed using the Wilcoxon signed-rank test to identify the specific time points where significant changes occurred within each group (Table 4).

Table 4. Post-hoc Comparisons of Stress and Quality of Life Scores across Time Points Using the Wilcoxon Signed-Rank Test

Measure	Comparison	Group	*Z*	*p* (two-tailed)
Stress	Before vs. Immediately After	Intervention	-4.711	< **0.001**
		Control	-0.550	0.582
	Before vs. 2 Months After	Intervention	-4.787	< **0.001**
		Control	-0.505	0.614
	Immediately After vs. 2 Months After	Intervention	-0.509	0.611
		Control	-0.160	0.873
Overall QoL	Before vs. Immediately After	Intervention	-2.679	**0.007**
		Control	-1.803	0.071
	Before vs. 2 Months After	Intervention	-2.652	**0.008**
		Control	-1.910	0.056
	Immediately After vs. 2 Months After	Intervention	-0.258	0.796
		Control	-1.537	0.124
Physical QoL	Before vs. Immediately After	Intervention	-1.836	0.066
		Control	-0.789	0.430
	Before vs. 2 Months After	Intervention	-2.847	**0.004**
		Control	-0.368	0.713
	Immediately After vs. 2 Months After	Intervention	-1.933	0.053
		Control	-1.000	0.317
Psychological QoL	Before vs. Immediately After	Intervention	-4.248	< **0.001**
		Control	-0.264	0.791
	Before vs. 2 Months After	Intervention	-4.180	< **0.001**
		Control	-0.183	0.855
	Immediately After vs. 2 Months After	Intervention	-1.109	0.268
		Control	0.000	1.000
Social QoL	Before vs. Immediately After	Intervention	-3.558	< **0.001**
		Control	-0.575	0.565
	Before vs. 2 Months After	Intervention	-2.678	**0.007**
		Control	-0.408	0.683
	Immediately After vs. 2 Months After	Intervention	-1.634	0.102
		Control	-0.780	0.436
Environmental QoL	Before vs. Immediately After	Intervention	-2.368	**0.018**
		Control	-0.240	0.810
	Before vs. 2 Months After	Intervention	-3.029	**0.002**
		Control	-0.168	0.867
	Immediately After vs. 2 Months After	Intervention	-1.622	0.105
		Control	-0.458	0.647

In the intervention group, significant improvements were observed from baseline to post-intervention and from baseline to the two-month follow-up for stress (both $p < 0.001$), the psychological domain (both $p < 0.001$), the social domain ($p < 0.001$ and $p = 0.007$, respectively), the environmental domain ($p = 0.018$ and $p = 0.002$, respectively), and overall quality of life ($p = 0.007$ and $p = 0.008$, respectively). For the physical domain, a significant improvement was found only at the two-month follow-up compared to baseline ($p = 0.004$). No significant differences were observed between the post-intervention and two-month follow-up scores for any variable in the intervention group (all $p > 0.05$), indicating the improvements were sustained.

In contrast, within the control group, none of the pairwise comparisons between the three time points reached statistical significance for any of the measured variables (all $p > 0.05$) (Table 4).

Discussion

The findings of this clinical trial demonstrate that individually administered cognitive-behavioral therapy (CBT) significantly reduced stress and improved quality of life among pregnant women with a history of spontaneous abortion. Significant differences between the intervention and control groups were observed post-intervention immediately and were sustained at the two-month follow-up across stress levels and most quality-of-life domains. The intervention yielded a very large effect on stress reduction (Kendall's W = 0.771) and a large effect on improving psychological well-being (Kendall's W = 0.607), with medium effects observed for the social domain and small-to-medium effects for the environmental domain. This provides robust evidence for the durable efficacy of a structured, face-to-face CBT protocol in enhancing psychological health during a subsequent pregnancy.

The observed reduction in stress aligns with findings from other studies that employed various counseling approaches for pregnant women with a history of pregnancy loss [12, 22, 23]. While the literature confirms that psychological interventions can alleviate stress, many prior studies have focused on women with recurrent miscarriage, and interventions have often been educational or lacked a standardized theoretical foundation [12,22]. This study addresses notable gaps by targeting women with a single prior miscarriage, an often-overlooked population, and implementing a manualized CBT protocol. The inclusion of a two-month follow-up further demonstrates the sustainability of the benefits, suggesting the acquisition of lasting coping skills.

The positive impact of CBT on multiple quality of life domains is consistent with prior research. Heratzadeh et al. reported similar benefits on quality of life from self-compassion training [24], while Silva et al. found CBT improved quality of life and social functioning post-miscarriage [18]. Furthermore, Hiltunen et al. indicated that CBT could enhance quality of life even when delivered by less experienced therapists [32]. The mechanism through which CBT confers benefit can be explained by its focus on modifying cognitive and behavioral responses to stress. Through cognitive restructuring, individuals develop rational self-talk, which reduces psychological distress in anxiety-provoking situations [33]. Techniques such as behavioral activation help counteract depression and amotivation by increasing engagement in pleasurable activities, thereby revitalizing motivation and life satisfaction through the modification of core beliefs [34].

The lack of a significant effect in the physical domain of quality of life may be attributable to the predominant hormonal and physiological changes of pregnancy, which are less amenable to psychosocial intervention. However, as the primary challenges for this population are psychological, CBT remains a highly suitable

supportive approach. This study has several limitations that should be considered. First, the reliance on self-report measures may introduce response bias. Second, participant retention challenges occurred, and the small sample size, drawn from a specific geographic area, limits the statistical power and generalizability of the findings. The small sample size also restricted our ability to conduct more robust analyses of interaction effects and to report a comprehensive range of effect size measures. Third, the inability to blind participants to the intervention and the lack of blinding for outcome assessors may have introduced performance and measurement bias, particularly for self-reported outcomes like quality of life. Finally, the lack of an intention-to-treat (ITT) analysis, due to dropout, may have influenced the effect size estimates, potentially overstating the intervention's efficacy. Despite these limitations, a key strength is the use of individual, face-to-face CBT counseling, which facilitated open emotional expression, personalized feedback, and structured between-session assignments to promote skill acquisition and reflection.In conclusion, individual CBT counseling appears to be an effective and sustainable intervention for reducing stress and improving quality of life in pregnant women with a prior miscarriage. Future research with larger, more diverse samples and rigorous methodological designs, including blinded outcome assessment and ITT analysis, is recommended to confirm these findings and facilitate the integration of this approach into standard perinatal mental health pathways.

Conclusion

The results of this study suggest that individual cognitive-behavioral counseling may help reduce stress and improve most domains of quality of life in pregnant women with a history of spontaneous abortion. These findings contribute to the growing body of evidence supporting the potential benefits of cognitive-behavioral approaches for maternal mental health. Further research with larger and more diverse samples is needed to confirm these effects and inform clinical practice.

Ethical Consideration

This article is derived from a Master's thesis in Midwifery Counseling with ethics code (IR.ZUMS.REC.1396.334) and is registered in the Clinical Trials Registry with code IRCT20160521027994N4. Additionally, all methods were carried out according to relevant guidelines and regulations, and participants provided consent to participate in the study.

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Conflict of Interest

No conflict of interest.

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Authors' Contributions

Azadi Z: The study conception and design; data collection, interpretation, and manuscript preparation. Kharaghani R: The study design, the manuscript preparation, reading, revision, and approval, Ebrahimi L: The study design, the manuscript preparation, reading, revision, and approval, Emamgholi Khooshehchin T: The study was conceived and designed, analyzed, and interpreted, with manuscript preparation, reading, revision, and approval. All authors read and

approved the final manuscript and agreed to be personally accountable for their contributions.

Artificial Intelligence Utilization

During manuscript preparation, minor assistance from artificial intelligence (AI) tools was utilized to enhance English phrasing and improve the clarity of scientific writing. All analytical decisions and final editing were performed by the authors. The use of AI complied with ethical standards of academic publishing and did not replace the author's responsibility.

Data Availability Statement

The data are available from the corresponding author.

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