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Influence of Spiritual Support Program on Quality-of-Life of Stroke Survivors Post Substance Overdose: A Randomized Controlled Trial

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ABSTRACT

Background and Aims: Stroke survivors with a history of substance abuse often face challenges in their quality of life. This study aimed to evaluate the influence of a spiritual support program on the quality of life of this patient population.

Methods: A randomized controlled trial was conducted in the ICU ward of Imam Khomeini Hospital in Iran with stroke survivors who had experienced substance overdose. Participants were randomly assigned to an intervention group ($n = 50$) receiving a four-session spiritual support program or a control group ($n = 50$). Quality of life was assessed using the Stroke-Specific Quality of Life (SS-QoL) scale at baseline and post-intervention, with data analyzed using SPSS version 25, including χ^2, Fisher's exact test, independent t-tests, and paired sample t-tests.

Results: The mean age of participants was 37.89 ± 11.32 years in the control group and 38.66 ± 11.75 years in the intervention group. The cohort was predominantly male, with 52% of the control group and 54% of the intervention group being men. Most participants were married and employed, with a high prevalence of tobacco use. Before the intervention, there was no significant difference in the mean quality of life score between the groups ($t = -0.123$, $p = 0.285$). Post-intervention, a significant disparity was observed in the mean quality of life score between the groups ($t = 1.995$, $p < 0.001$). The intervention group showed a significant improvement in the mean quality of life score ($t = 5.155$, $p < 0.001$) and its dimensions post-intervention, while the control group did not show significant changes in quality-of-life scores ($t = 1.104$, $p = 0.609$).

Conclusions: The spiritual support program can improve the quality of life for stroke survivors with substance abuse histories, emphasizing the need for holistic, patient-centered care that addresses spiritual needs to enhance well-being and recovery.

Clinical Trial Registration: The protocol has been registered at the Thai Clinical Trials Registry (TCTR20250204005).

1 | Introduction

Stroke is a major contributor to long-term disability and death worldwide, presenting a substantial public health issue [1]. According to the World Health Organization, stroke accounts for around 6.2 million deaths annually worldwide, with a high burden in both developed and developing countries [2]. In the United States alone, someone experiences a stroke every 40 s, and it is a major cause of serious long-term disability [1].

The co-occurrence of drug intoxication and stroke presents an increasingly prevalent and complex scenario within the healthcare landscape [3]. Studies estimate that up to 43% of stroke patients have concurrent substance use disorders, with opioids being a significant contributor [3, 4]. This dual burden not only exacerbates the health risks but also complicates the treatment and recovery process for these patients [5].

Drug intoxication, or substance intoxication, is a condition resulting from the recent use of a psychoactive substance, leading to impaired physical and mental faculties. It can be caused by various substances, including alcohol, prescription medications, illicit drugs, inhalants, and over-the-counter medications [6]. Symptoms vary widely but can include impaired judgment, slurred speech, motor coordination issues, dizziness, nausea, mood alterations, and changes in vital signs. In severe cases, it can lead to respiratory depression and be life-threatening [7]. Treatment typically involves supportive care to manage symptoms and stabilize the patient, which may include the administration of specific antidotes or medications. Long-term interventions may include substance abuse counseling, behavioral therapies, and support groups to address addiction and prevent future intoxication episodes [8]. Simultaneously, stroke, a leading cause of long-term adult disability, results from the interruption of blood supply to the brain, leading to diverse and often profound neurological deficits [9]. The combination of drug intoxication and stroke not only exacerbates the health risks but also complicates the treatment and recovery process, posing significant challenges for both patients and healthcare providers [10].

Substance abuse, whether involving opioids or other drugs, significantly affects the physical and psychological well-being of individuals [9]. Similarly, stroke, a primary cause of disability on a global scale, presents a range of difficulties, often resulting in lasting physical and cognitive challenges for patients [2]. These health conditions underscore the importance of considering quality of life, which encompasses the physical, mental, and social aspects of a patient's well-being [11–12]. Given the complexity of these health challenges, spiritual support has emerged as an essential element of comprehensive patient care. Spiritual care addresses existential concerns, provides solace, and imparts a sense of purpose and significance to individuals facing health-related hardships [13]. Spiritual support encompasses a range of practices and interventions designed to nurture the spiritual well-being of individuals, particularly those facing significant health challenges such as stroke and drug intoxication. This form of support recognizes that spirituality can play a crucial role in coping with illness, fostering resilience, and enhancing the overall quality of life. Spiritual care is grounded in the understanding that human experience is multidimensional, including not only the physical and psychological aspects but also the spiritual and emotional dimensions [14]. Spiritual support is often provided by a multidisciplinary team that may include chaplains, psychologists, social workers, nurses, and other healthcare professionals who are trained in spiritual care [15]. The goal is to integrate spiritual support into the overall treatment plan, ensuring that the patient's spiritual and emotional needs are addressed alongside their physical and cognitive care [16].

The impact of spiritual support on the quality of life for patients who have suffered a stroke and are facing drug intoxication is a crucial area of study within the realm of holistic patient care [17]. Stroke, often accompanied by drug intoxication, presents a multifaceted challenge, not only in terms of the physical debilitation resulting from the stroke but also due to the complexities associated with drug-related issues [18]. Addressing the holistic well-being of these patients, including their spiritual and emotional needs, is increasingly recognized as an essential component of comprehensive care [19–20]. In the context of existing literature, research on the intersection of stroke, drug intoxication, and spiritual support is limited. While there is a growing body of work on the individual components—such as the management of stroke, the treatment of drug intoxication, and the role of spirituality in health—the specific combination of these factors remains underexplored. This study aims to fill this gap by providing a comprehensive analysis of how spiritual support can enhance the quality of life for patients dealing with the dual challenges of stroke and drug intoxication.

2 | Methods

2.1 | Study Design and Participants

This single-blinded, parallel-group, randomized controlled trial was conducted in Urmia city, Iran, after receiving approval from the Research Council of Urmia School of Nursing and Midwifery and obtaining a research license from the College Ethics Committee (Ethical code: IR.UMSU.REC.1400.388). The study was registered at the Thai Clinical Trials Registry (TCTR20250204005), and Imam Khomeini Hospital was chosen for participant recruitment. Participants were thoroughly informed about the study's purpose, and each provided written consent before participating.

The sample size for the study was calculated using G Power statistical software. Based on data from Beinotti et al. [21], where the mean scores and standard deviations for the intervention and control groups were 50.0 ± 19.7 and 40.5 ± 15.7, respectively, the minimum required sample size for each group was determined to be 45 patients. This calculation assumed a 95% confidence interval and an 80% power. To account for a potential 10% attrition rate, the final sample size was adjusted to 50 patients for each group, resulting in a total of 100 patients across both the intervention and control groups (Figure 1).

2.2 | Inclusion and Exclusion Criteria

Inclusion criteria were as follows: (a) Willingness to participate: All participants must voluntarily agree to take part in the study. (b) Signed consent: Participants must provide written consent, indicating their understanding and agreement to the study's procedures and potential risks. (c) Ischemic stroke diagnosis: Participants must have a confirmed diagnosis of ischemic stroke. (d) Self-care ability: Participants must be capable of

$$n = \frac{\left(Z_{1-\frac{\alpha}{2}} + Z_{1-\beta}\right)^2 (\delta_1^2 + \delta_2^2)}{(\mu_1 - \mu_2)^2} = \frac{(1.96 + 0.84)^2 (19.7^2 + 15.7^2)}{(50.0 - 40.5)^2} = 45$$

FIGURE 1 | The sample size for the study was determined using the above equation.

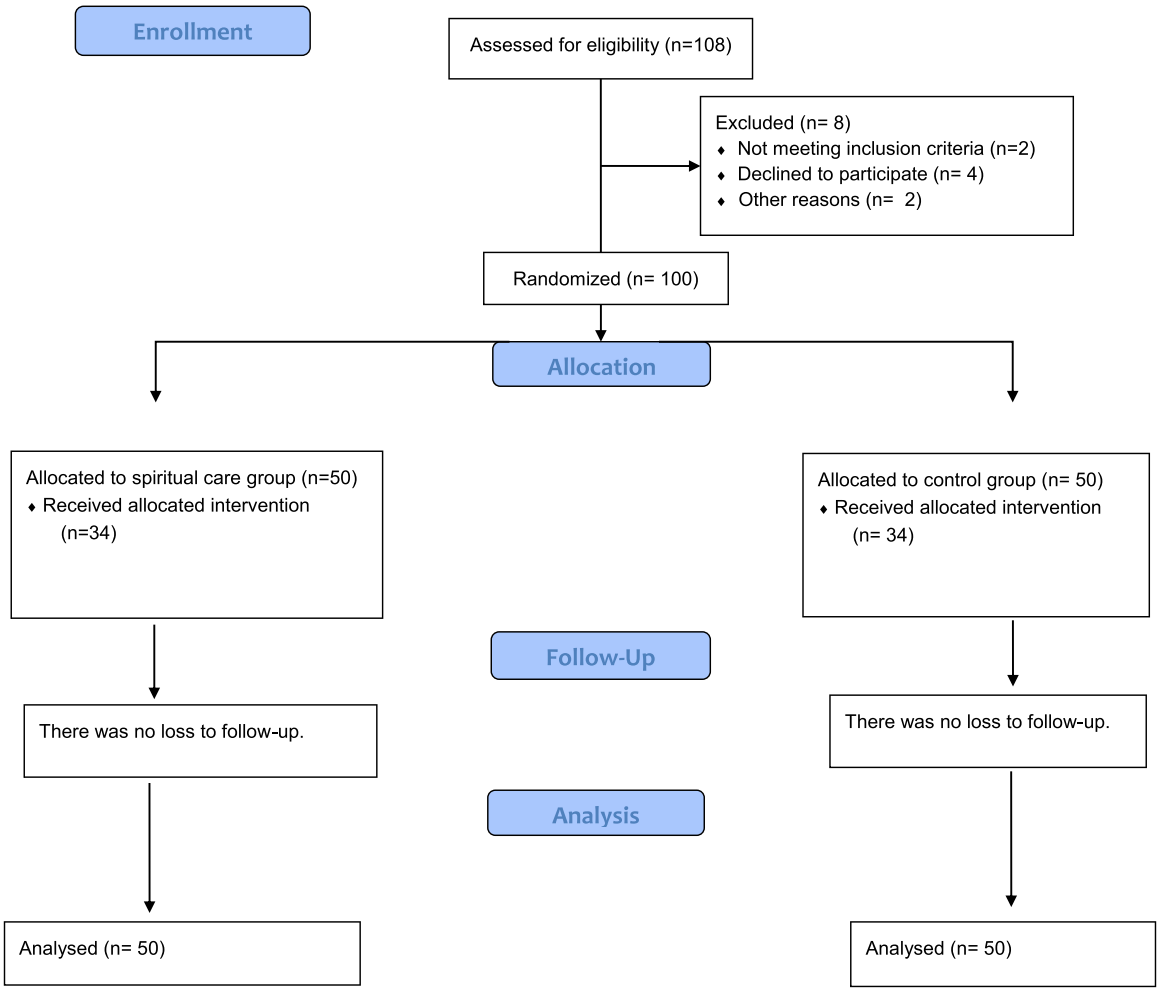

FIGURE 2 | Research flow diagram based on Consort statement.

performing basic self-care tasks independently. (e) Time since stroke onset: Participants must be at least 48 h post-stroke onset. (f) Age range: Participants must be between 18 and 60 years of age. (g) History of drug stimulant use: Participants must have a history of using drug stimulants.

Exclusions were severe visual or hearing impairments and refusal to participate. If a selected participant declined, the next person was randomly selected to participate. The participants had been using various substances, including opioids, stimulants, and benzodiazepines, for an average of 3 years before their stroke event. None of the participants had regularly practiced yoga or other spiritual/mindfulness practices before the study.

2.3 | Instrument

Data collection included a demographic survey and the Stroke-Specific Quality of Life Scale (SS-QoL). The survey gathered information on age, gender, education, marital status, residence, and medical history.

The SS-QoL, created to assess stroke patients' well-being, consists of a 12-question survey, with each item representing one of the 12 dimensions of SS-QoL, covering areas like self-care, mobility, speech, vision, work, and social roles. These dimensions are divided into physical and psychosocial categories. In the Post et al. study, the scale displayed a Cronbach's alpha coefficient of 0.70. Scores range from 12 to 60, with higher scores indicating better quality of life [22].

2.4 | Recruitment

Participants were recruited from Imam Khomeini Hospital and screened for eligibility based on inclusion/exclusion criteria. Participant recruitment started on June 15, 2023 and ended on July 07, 2023. During this period, 108 consecutive qualified patients were screened for eligibility. Of these, 4 patients declined to participate, 2 patients did not meet the inclusion criteria, and 2 patients were transferred to other medical centers due to exacerbation of their condition. The remaining 100 eligible participants were randomly assigned in a 1:1 ratio to either an intervention group ($n = 50$) or a control group ($n = 50$) (Figure 2).

2.5 | Randomization

This was a randomized controlled trial conducted with stroke survivors who had experienced substance overdose. After

meeting the inclusion criteria, participants were informed about the study's objectives and provided their consent. They were then randomly allocated to either the intervention or control group. To ensure the study's integrity, the intervention group was instructed not to share information with the control group or other participants. Random sequence generation was utilized to assign participants to the control ($n = 50$) and intervention ($n = 50$) groups. Participants drew a card (A: control group, B: intervention group) from sealed envelopes to determine their group assignment.

2.6 | Intervention

Before the intervention, both the control and intervention groups completed the demographic questionnaire and the SS-QoL. Participants were assured of the confidentiality of their responses. Following discharge, the intervention group participated in four 1-h spiritual support sessions at their homes, tailored to their individual needs and utilizing methods like meditation and yoga. The intervention group received a four-session spiritual support program over a 2-week period. Each session lasted 60 min and was delivered in a one-on-one format by a certified instructor and mindfulness coach with 5 years of experience working with stroke and substance use patients. The spiritual support program consisted of four sessions, each designed to address different aspects of the patients' spiritual well-being. Session 1 focused on establishing supportive systems, where patients received instruction about the study's purpose and spiritual care. This session aimed to build trust, empathy, and honesty between the nurse and the patient, provide psychological support, cultivate hope and inner strength, and encourage the use of positive affirmations. Session 2 facilitated patients' religious practices by assisting them in exploring the meaning of life, performing religious rituals, and seeking guidance from religious authorities. Session 3 implemented supportive systems by encouraging patients to seek out individuals with whom they feel at ease, providing emotional support, and motivating patients to resume their work responsibilities. The final session summarized the training material and encouraged patients to share their thoughts and pose questions regarding the spiritual care they received. Additionally, the spiritual interventions focused on enhancing and adapting the four dimensions of human communication: with God, others, self, and creation. Strengthening communication with God involved praying, supplication, reading the Quran, expressing gratitude for blessings, and trusting in God during illnesses and challenges. Communication with self was reinforced by emphasizing self-esteem and patience, and reading prayers that foster patience. Communication with others was improved through acts of forgiveness, charity, and kindness to build stronger relationships. Finally, communication with nature was encouraged by observing water and trees, listening to birds, using vibrant and joyful colors, showing kindness to animals, cultivating plants, and using fragrances. These sessions were conducted throughout the trial period, with the final session summarizing the training material and addressing any questions or uncertainties the patients may have had regarding the spiritual care they received. The post-intervention assessments, which included the SS-QoL scale, were conducted after the completion of these sessions to evaluate the effectiveness of the spiritual support program. Conversely, the control group did not receive training during the study but received educational material afterward. One-month post-intervention, both groups completed the SS-QoL to evaluate the impact of the spiritual support intervention.

2.7 | Statistical Analysis

Statistical analysis involved assessing data normality using the Kolmogorov-Smirnov test. A single-blinded researcher inputted the data into IBM SPSS Statistics 25.0 for analysis. Descriptive statistics, including means, standard deviations, frequencies, and percentages, were calculated. Analytical tests such as χ^2, Fisher's exact test, *t*-tests, paired samples *t*-tests, and generalized linear models were employed to compare groups and assess changes in quality-of-life scores from baseline to post-intervention. A *p*-value less than 0.05 was considered statistically significant.

3 | Results

The mean age of participants in the control group was 37.89 ± 11.32 years, and in the intervention group, it was 38.66 ± 11.75 years. Both groups were primarily composed of male, married individuals with college-level education living in urban areas, and over half were smokers. No significant differences were found between the groups in terms of gender, education, marital status, employment, residence, and smoking ($p > 0.05$). However, there was a significant difference in age between the groups ($p = 0.01$) (Table 1).

Before the intervention, there was no significant difference in the mean quality of life score between the groups ($t = -0.123$, $p = 0.285$) across various dimensions such as self-care, mobility, and mood (Table 2). Post-intervention, a significant difference was observed in the mean quality of life score between the groups ($t = 1.995$, $p < 0.001$) and its dimensions (Table 3).

In the intervention group, there was a significant improvement in the mean quality of life score ($t = 5.155$, $p < 0.001$) and its dimensions post-intervention. In contrast, the control group did not show significant changes in quality-of-life scores ($t = 1.104$, $p = 0.609$) and its dimensions before and after the intervention (Table 4). To assess the effect of the spiritual support intervention on quality of life, the researchers fit a generalized linear model with the SS-QoL score as the outcome variable. A gamma distribution with a log link function was specified, as the SS-QoL scores exhibited positive skewness.

The model included the following predictors:

- Group assignment (intervention vs. control);
- Baseline SS-QoL score;
- Age;
- Stroke severity (National Institutes of Health Stroke Scale score);
- Duration of substance use (years).

The generalized linear model showed that participants in the intervention group had a 20% higher SS-QoL score on average

TABLE 1 | Comparison of demographic characteristics of the patients in the study groups.

Variables		Groups		Results
		Control *N* (Percentage)	Intervention *N* (Percentage)	
Sex	Men	26 (52)	27 (54)	$X = 0.146$ df = 1 *p-value = 0.703
	Women	24 (48)	23 (46)	
Level of education	Primary	5 (10)	3 (6)	$X = 4.061$ df = 3 *p-value = 0.249
	Middle	11 (22)	13 (26)	
	High school	13 (26)	15 (30)	
	College	21 (42)	19 (38)	
Marital situation	Unmarried	17 (34)	15 (30)	**p-value = 0.387
	Married	33 (66)	35 (70)	
Job	Working	30 (66)	29 (58)	$X = 0.779$ df = 2 *p-value = 0.668
	Jobless	17 (30)	16 (32)	
	Not working	3 (4)	5 (10)	
Residual condition	Countryside	13 (26)	16 (32)	$X = 1.135$ df = 1 *p-value = 0.293
	City	37 (74)	34 (68)	
Tobacco use	Yes	35 (70)	31 (62)	**p-value = 0.283
	No	15 (30)	19 (38)	
Age		Control	Intervention	$t = 2.621$ df = 97 ***p-value = 0.078
		Mean ± SD1	Mean ± SD	
		37.89 ± 11.32	38.66 ± 11.75	

*χ^2 test.
**Fisher's exact test.
***Independent sample t-test.

compared to the control group, after adjusting for other factors (incidence rate ratio = 1.20, 95% CI: 1.07, 1.34, $p = 0.002$). A Higher baseline SS-QoL score was associated with better post-intervention quality of life (IRR = 1.01, $p < 0.001$). Older age (IRR = 0.998, $p = 0.045$) and greater stroke severity (IRR = 0.99, $p < 0.001$) were associated with lower post-intervention SS-QoL scores. Longer duration of substance use was also associated with lower post-intervention SS-QoL scores (IRR = 0.99, $p = 0.030$). Higher baseline SS-QoL, younger age, and lower stroke severity were also associated with better post-intervention quality of life.

4 | Discussion

The results of this randomized controlled trial demonstrate the significant impact of a spiritual support program on the quality of life of stroke survivors who have experienced substance overdose. The findings provide valuable insights into the importance of addressing the multifaceted needs of this patient population.

Before the intervention, there were no significant differences in quality-of-life scores between the control and intervention groups, as assessed by the SS-QoL. This indicates that the two groups were well-matched at the start and faced similar challenges related to their stroke and substance abuse histories.

However, following the four-session spiritual support program, the intervention group demonstrated a significant improvement in their overall quality of life scores and in specific dimensions of the SS-QoL. This suggests that the spiritual support intervention was effective in enhancing the well-being and symptoms of the stroke patients in the intervention group.

In contrast, the control group, which did not receive the spiritual support program, did not show any significant changes in their quality-of-life scores throughout the study period. This finding underscores the importance of incorporating spiritual support as an integral component of comprehensive care for stroke survivors with a history of substance abuse.

The improvements observed in the intervention group's quality of life can be attributed to the holistic and personalized nature of the spiritual support program. By addressing the patients' existential concerns, providing solace, and nurturing their sense of purpose and meaning, the spiritual support interventions likely helped the participants cope more effectively with the physical, cognitive, and emotional challenges associated with their stroke and substance abuse history.

These results emphasize the value of integrating spiritual care into the management of stroke patients with co-occurring substance abuse issues. By addressing the multidimensional needs of these individuals, healthcare providers can enhance

TABLE 2 | Contrasting the average quality of life ratings of the patients within the study groups before the intervention.

Variable Indicators for quality of life	Groups Control Mean ± SD	 Intervention Mean ± SD	Result
Self-carefulness	13.17 ± 1.44	13.22 ± 0.98	$T = -0.632$ df = 98 *$p = 0.841$
Vision	4.85 ± 0.42	4.76 ± 0.41	$T = 0.352$ df = 98 *$p = 0.723$
Language	15.12 ± 1.31	15.85 ± 1.22	$T = 0.131$ df = 98 *$p = 0.541$
Mobility	15.55 ± 1.28	15.65 ± 1.19	$T = 0.517$ df = 98 *$p = 0.663$
Work productivity	6.12 ± 0.55	6.25 ± 0.48	$T = -0.552$ df = 98 *$p = 0.881$
Upper extremity	11.33 ± 0.91	12.11 ± 1.09	$T = 0.432$ df = 98 *$p = 0.663$
Thinking	4.17 ± 0.11	4.21 ± 0.15	$T = 0.624$ df = 98 *$p = 0.985$
Personality	5.32 ± 0.29	5.27 ± 0.31	$T = 0.326$ df = 98 *$p = 0.825$
Mood	13.85 ± 1.13	14.02 ± 1.07	$T = 0.771$ df = 98 *$p = 0.862$
Family role	7.09 ± 0.33	6.86 ± 0.29	$T = 0.918$ df = 98 *$p = 0.708$
Social role	14.55 ± 1.05	15.76 ± 0.87	$T = -0.682$ df = 98 *$p = 0.426$
Energy	6.08 ± 0.35	5.87 ± 0.36	$T = 0.672$ df = 98 *$p = 0.536$
Quality of life	117.1 ± 7.86	118.49 ± 8.19	$T = -0.123$ df = 98 *$p = 0.285$

*Independent sample *t*-test.

their overall well-being and facilitate a more comprehensive and compassionate approach to rehabilitation and recovery.

In line with our results, Chen et al. demonstrated the favorable impact of spiritual support on the quality of life and spiritual well-being of chronic disease patients, advocating for its integration into routine palliative care [23]. Similarly, Sankhe et al. illustrated the beneficial effects of spiritual support training on the quality of life of cancer patients, aligning with our study's findings [24]. Other research by Balboni et al. and Babamohamadi et al. also supported the positive influence of spiritual support on patients' quality of life in different medical contexts [25–26].

The study titled "*Effect of Spiritual Care on the Quality of Life in Patients Who Underwent Intracranial Hemorrhage Surgery: A Randomized Controlled Trial*" by Goli et al. [13], demonstrated that spiritual care significantly improved the quality of life for patients following intracranial hemorrhage surgery. The randomized controlled trial showed notable enhancements in quality of life scores post-intervention, indicating the effectiveness of spiritual care as a complementary approach in the rehabilitation of these patients. While the study by Goli et al. demonstrated the effectiveness of spiritual care in improving the quality of life for patients recovering from intracranial hemorrhage surgery, there are notable differences between their research and our current study. First, Goli et al. focused specifically on stroke patients post-surgery, whereas our study evaluates the impact of a structured spiritual support program on stroke survivors with a history of substance abuse, highlighting the distinct challenges faced by these populations in their recovery. Additionally, although both studies utilized a randomized controlled trial design, the methodologies and analytical techniques may differ, with our research incorporating a more extensive assessment of quality of life dimensions. Furthermore, while both studies employed the Stroke-Specific Quality of Life (SS-QoL) scale, our study may include additional qualitative measures to capture participants' subjective experiences, providing a richer context for understanding the intervention's impact. These differences underscore the importance of contextualizing findings within specific patient populations and intervention frameworks, contributing to a broader understanding of the role of spiritual care in rehabilitation.

On the other hand, Aviles et al. and Blumenthal et al. found that spiritually oriented interventions did not significantly affect certain medical contexts [27, 28]. Our research noted a lower average quality of life score in the control group after 1 month,

TABLE 3 | Assessing the average quality of life scores of the patients in the study groups following the intervention.

Variables	Groups		Result
	Control Mean ± SD	Intervention Mean ± SD	
Self-carefulness	12.10 ± 1.19	15.29 ± 0.98	$T = -4.219$ df = 98 *$p < 0.001$
Vision	5.13 ± 0.25	8.47 ± 0.71	$T = 0.345$ df = 98 *$p < 0.001$
Language	14.96 ± 1.11	19.03 ± 1.04	$T = -0.319$ df = 98 *$p < 0.001$
Mobility	16.47 ± 1.39	18.81 ± 1.33	$T = -1.436$ df = 98 *$p < 0.001$
Work productivity	5.13 ± 0.40	8.01 ± 0.47	$T = -4.572$ df = 98 *$p < 0.001$
Upper extremity	11.72 ± 0.96	13.91 ± 1.36	$T = -3.073$ df = 98 *$p < 0.001$
Thinking	4.18 ± 0.09	6.42 ± 0.51	$T = -2.537$ df = 98 *$p < 0.001$
Personality	5.22 ± 0.41	8.08 ± 0.39	$T = 0.876$ df = 98 *$p < 0.001$
Mood	14.11 ± 1.01	17.15 ± 1.28	$T = -2.126$ df = 98 *$p < 0.001$
Family role	7.22 ± 0.39	9.09 ± 0.81	$T = 2.185$ df = 98 *$p < 0.001$
Social role	14.71 ± 1.13	18.08 ± 0.31	$T = -3.014$ df = 98 *$p < 0.001$
Energy	6.02 ± 0.21	7.55 ± 0.28	$T = -1.031$ df = 98 *$p < 0.001$
Quality of life	115.55 ± 8.72	148.75 ± 9.06	$T = 1.995$ df = 98 *$p < 0.001$

*Independent sample *t*-test.

which could be due to the lack of specific interventions and the multitude of stressors faced by stroke patients in their daily lives.

The goal of the spiritual support program is to address the emotional and physical problems in post-stroke patients [29]. Quality of life is one of the important goals in the care of post-stroke patients, as improving the quality of life of stroke survivors during treatment will enhance their adherence to thoughts and treatment or complaints experienced by post-stroke patients [30]. The quality of life of post-stroke patients can experience problems or barriers. Therefore, it is important to provide a therapy that plays a role in striving to improve the quality of life of post-stroke patients, such as the provision of spiritual emotional freedom technique therapy. The research study conducted by Sutomo and Purwanto showed that the use of a spiritual support program as an adjunct to pharmacological therapy had a positive influence on improving the quality of life in post-stroke patients. Spiritual support program was found to be effective in enhancing various aspects of quality of life, such

TABLE 4 | Contrasting the average quality of life scores of the patients in the study groups before and after the intervention.

Variables	Groups	Score before the intervention Mean ± SD	Score after the intervention Mean ± SD	Result
Self-carefulness	Intervention	13.22 ± 0.98	15.29 ± 0.98	$T = 6.683$ df = 49 *$p < 0.001$
	Control	13.17 ± 1.44	12.10 ± 1.19	$T = -1.373$ df = 49 *$p = 0.772$
Vision	Intervention	8.47 ± 0.71	8.47 ± 0.71	$T = -0.353$ df = 49 *$p < 0.001$
	Control	4.85 ± 0.42	5.13 ± 0.25	$T = 1.186$ df = 49 *$p = 0.661$
Language	Intervention	15.85 ± 1.22	19.03 ± 1.04	$T = -0.699$ df = 49 *$p < 0.001$
	Control	15.12 ± 1.31	14.96 ± 1.11	$T = 0.468$ df = 49 *$p = 0.644$
Mobility	Intervention	15.65 ± 1.19	18.81 ± 1.33	$T = 5.505$ df = 49 *$p < 0.001$
	Control	15.55 ± 1.28	16.47 ± 1.39	$T = 0.592$ df = 49 *$p = 0.559$
Work productivity	Intervention	6.25 ± 0.48	8.01 ± 0.47	$T = 0.288$ df = 49 *$p < 0.001$
	Control	6.12 ± 0.55	5.13 ± 0.40	$T = 0.522$ df = 49 *$p = 0.636$
Upper extremity	Intervention	12.11 ± 1.09	13.91 ± 1.36	$T = -14.26$ df = 49 *$p < 0.001$
	Control	11.33 ± 0.91	11.72 ± 0.96	$T = 0.381$ df = 49 *$p = 0.713$
Thinking	Intervention	4.21 ± 0.15	6.42 ± 0.51	$T = 6.661$ df = 49 *$p < 0.001$
	Control	4.17 ± 0.11	4.18 ± 0.09	$T = 1.052$ df = 49 *$p = 0.313$
Personality	Intervention	5.27 ± 0.31	8.08 ± 0.39	$T = 6.075$ df = 49 *$p < 0.001$
	Control	5.32 ± 0.29	5.22 ± 0.41	$T = 0.072$ df = 49 *$p = 0.953$
Mood	Intervention	14.02 ± 1.07	17.15 ± 1.28	$T = 8.172$ df = 49

(Continues)

TABLE 4 | (Continued)

Variables	Groups	Score before the intervention Mean ± SD	Score after the intervention Mean ± SD	Result
				*$p < 0.001$
	Control	13.85 ± 1.13	14.11 ± 1.01	$T = -1.268$ df = 49 *$p = 0.556$
Family role	Intervention	6.86 ± 0.29	9.09 ± 0.81	$T = 7.975$ df = 49 *$p < 0.001$
	Control	7.09 ± 0.33	7.22 ± 0.39	$T = 0.495$ df = 49 *$p = 0.626$
Social role	Intervention	15.76 ± 0.87	18.08 ± 0.31	$T = 3.132$ df = 49 *$p < 0.001$
	Control	14.55 ± 1.05	14.71 ± 1.13	$T = -1.268$ df = 49 *$p = 0.233$
Energy	Intervention	5.87 ± 0.36	7.55 ± 0.28	$T = 2.913$ df = 49 *$p < 0.001$
	Control	6.08 ± 0.35	6.02 ± 0.21	$T = 0.453$ df = 49 *$p = 0.612$
Quality of life	Intervention	118.49 ± 8.19	148.75 ± 9.06	$T = 5.155$ df = 49 *$p < 0.001$
	Control	117.1 ± 7.86	115.55 ± 8.72	$T = 1.104$ df = 49 *$p = 0.609$

*Paired sample *t*-test.

as improved mobility, better self-care abilities, and better management of psychological issues [31].

The treatment of stroke patients should always be tailored to the underlying factors that caused the stroke [32]. The integration of a spiritual support program with pharmacological interventions has been shown to be effective in enhancing the quality of life for post-stroke patients, which is a critical component of their overall recovery and reintegration into daily life.

We recognize limitations such as participant differences, psychological conditions, and variations in cultural, religious, and spiritual beliefs, all of which could impact study outcomes. Furthermore, our study was conducted in a single hospital with a limited number of stroke patients, indicating the need for broader, longer-term research across multiple centers.

5 | Conclusions

The findings of this randomized controlled trial highlight the significant positive impact of a spiritual support program on the quality of life of stroke survivors who have experienced substance overdose. The intervention group, which received the spiritual support program, demonstrated marked improvements in their overall quality of life and specific quality of life dimensions, in contrast to the control group, which did not receive the spiritual support intervention. These results underscore the importance of integrating spiritual care into the comprehensive management of stroke patients with co-occurring substance abuse issues to address their holistic needs and enhance their overall well-being and recovery.

Author Contributions

Leyla Alilu: funding acquisition and writing – original draft. **Mansour Arad:** investigation and funding acquisition. **Rasoul Goli:** investigation, writing – original draft, writing – review and editing, software, data curation, and supervision. **Amireh Hassanpour:** supervision, writing – review and editing, validation, methodology, writing – original draft, and conceptualization. **Navid Faraji:** conceptualization, methodology, and writing – original draft. **Sorena Nazarbaghi:** conceptualization.

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manuscript. The corresponding author, who serves as the manuscript guarantor, had full access to all the data in this study and assumes full responsibility for the integrity of the data and the accuracy of the data analysis.

Ethics Statement

The study was approved by the ethics committee of the Urmia University of Medical Sciences, with the ethical code IR.UMSU.REC.1400.388.

Conflicts of Interest

The authors declare no conflicts of interest.

Data Availability Statement

The raw data can be obtained on request from the corresponding author.

Transparency Statement

The lead author Rasoul Goli, affirms that this manuscript is an honest, accurate, and transparent account of the study being reported; that no important aspects of the study have been omitted; and that any discrepancies from the study as planned (and, if relevant, registered) have been explained.

References

1. B. Che, S. Shen, Z. Zhu, et al., "Education Level and Long-Term Mortality, Recurrent Stroke, and Cardiovascular Events in Patients With Ischemic Stroke," *Journal of the American Heart Association* 9, no. 16 (August 2020): e016671.

2. World Health Organization, "Global Health Estimates 2019: Deaths by Cause, Age, Sex, by Country and by Region, 2000–2019," (WHO, 2020).

3. W. Xiuyun, W. Qian, X. Minjun, L. Weidong, and L. Lizhen, "Education and Stroke: Evidence From Epidemiology and Mendelian Randomization Study," *Scientific Reports* 10, no. 1 (December 2020): 21208.

4. H. S. Sharma, D. F. Muresanu, A. Ozkizilcik, et al., "R. Superior Antioxidant and Anti-Ischemic Neuroprotective Effects of Cerebrolysin in Heat Stroke Following Intoxication of Engineered Metal Ag and Cu Nanoparticles: A Comparative Biochemical and Physiological Study With Other Stroke Therapies," *Progress in Brain Research* 266 (January 2021): 301–348.

5. A. Tsatsakis, A. O. Docea, D. Calina, et al. "A Mechanistic and Pathophysiological Approach for Stroke Associated With Drugs of Abuse," *Journal of Clinical Medicine* 8, no. 9 (2019): 1295.

6. R. Goli, N. Faraji, R. Janghiyamachi, and N. Talebiazar, "Nicolau Syndrome After Intramuscular Injection of Methocarbamol: A Rare Case Report," *Toxicology Reports* 11 (December 2023): 346–348.

7. N. Lagzi, A. Bateni, R. Goli, and N. Talebiazar, "The Effect of Multivitamins on Anxiety and Depression in Patients Undergoing Methadone Maintenance Treatment: A Double-Blind Randomized Controlled Trial," *International Journal of Psychiatry in Medicine* 58, no. 6 (November 2023): 576–590.

8. J. L. Stang, P. A. DeVries, L. R. Klein, et al., "Medical Needs of Emergency Department Patients Presenting With Acute Alcohol and Drug Intoxication," *American Journal of Emergency Medicine* 42 (April 2021): 38–42.

9. N. Dabhi, P. Mastorakos, J. D. Sokolowski, R. T. Kellogg, and M. S. Park, "Effect of Drug Use in the Treatment of Acute Ischemic Stroke: A Scoping Review," *Surgical Neurology International* 13 (January 2022): 367.

10. S. C. Smith, "Drug Intoxication," *Advanced Anesthesia Review* 61 (March 2023): 161.

11. T. Cai, P. Verze, and T. E. Bjerklund Johansen, "The Quality of Life Definition: Where Are We Going?," *Uro* 1, no. 1 (February 2021): 14–22.

12. M. Arad, L. Alilu, H. Habibzadeh, H. Khalkhali, and R. Goli, "Effect of Spiritual Intelligence Training on Nurses' Skills for Communicating With Patients–An Experimental Study," *Journal of Education and Health Promotion* 11, no. 1 (January 2022): 127.

13. R. Goli, N. Faraji, H. Maroofi, and A. Hassanpour, "Effect of Spiritual Care on the Quality of Life in Patients Who Underwent Intracranial Hemorrhage Surgery: A Randomized Controlled Trial," *International Journal of Surgery* 110, no. 1 (January 2024): 167–175.

14. J. Chen, H. You, Y. Liu, Q. Kong, A. Lei, and X. Guo, "Association Between Spiritual Well-Being, Quality of Life, Anxiety and Depression in Patients With Gynaecological Cancer in China," *Medicine* 100, no. 1 (January 2021): e24264.

15. E. Batstone, C. Bailey, and N. Hallett, "Spiritual Care Provision to End-Of-Life Patients: A Systematic Literature Review," *Journal of Clinical Nursing* 29, no. 19–20 (October 2020): 3609–3624.

16. V. Yousofvand, M. Torabi, K. Oshvandi, et al., "Impact of a Spiritual Care Program on the Sleep Quality and Spiritual Health of Muslim Stroke Patients: A Randomized Controlled Trial," *Complementary Therapies in Medicine* 77 (October 2023): 102981.

17. K. Oshvandi, M. Torabi, M. Khazaei, S. Khazaei, and V. Yousofvand, "Impact of Hope on Stroke Patients Receiving a Spiritual Care Program in Iran: A Randomized Controlled Trial," *Journal of Religion and Health* 63, no. 1 (February 2024): 356–369.

18. M. Rasouli, B. C. Anzali, and R. Goli, "Hemorrhagic Stroke as a Rare Complication of Opening the Permanent Dialysis Catheter by Reteplase: A Case Report Study," *International Journal of Surgery Case Reports* 105 (April 2023): 108088.

19. N. Faraji, F. Nikkhah, R. Goli, A. Hassanpour, F. Imanzadeh, and S. Yavari, "Pyknodysostosis: A Case Report of An 8-year-old Male With a Rare Genetic Disorder," *International Journal of Surgery Case Reports* 110 (September 2023): 108793.

20. B. C. Anzali, N. Talebiazar, R. Goli, et al., "Cerebro-Oculo-Nasal Syndrome, a Congenital Anomaly: A Rare Case Report," *International Journal of Surgery Open* 47 (October 2022): 100539.

21. F. Beinotti, G. Christofoletti, N. Correia, and G. Borges, "Effects of Horseback Riding Therapy on Quality of Life in Patients Post Stroke," *Topics in Stroke Rehabilitation* 20, no. 3 (May 2013): 226–232, https://doi.org/10.1310/tsr2003-226.

22. M. W. Post, H. Boosman, M. M. Van Zandvoort, P. E. Passier, G. J. Rinkel, and J. M. Visser-Meily, "Development and Validation of a Short Version of the Stroke Specific Quality of Life Scale," *Journal of Neurology, Neurosurgery and Psychiatry* 82, no. 3 (March 2011): 283–286, https://doi.org/10.1136/jnnp.2009.196394.

23. L. Chen, L. D. Xiao, D. Chamberlain, and P. Newman, "Enablers and Barriers in Hospital-to-Home Transitional Care for Stroke Survivors and Caregivers: A Systematic Review," *Journal of Clinical Nursing* 30, no. 19–20 (October 2021): 2786–2807, https://doi.org/10.1111/jocn.15807.

24. A. Sankhe, K. Dalal, V. Agarwal, and P. Sarve, "Spiritual Care Therapy on Quality of Life in Cancer Patients and Their Caregivers: A Prospective Non-Randomized Single-Cohort Study," *Journal of Religion and Health* 56, no. 2 (April 2017): 725–731, https://doi.org/10.1007/s10943-016-0324-6.

25. T. A. Balboni, M. E. Paulk, M. J. Balboni, et al., "Provision of Spiritual Care to Patients With Advanced Cancer: Associations With Medical Care and Quality of Life Near Death," *Journal of Clinical Oncology* 28, no. 3 (January 2010): 445–452, https://doi.org/10.1200/JCO.2009.24.8005.

26. H. Babamohamadi, H. Kadkhodaei-Elyaderani, A. A. Ebrahimian, R. Ghorbani, and Z. Tansaz, "Effects of Spiritual Support Based on

GHALBE SALIM Model on Quality of Life of Patients With Acute Myocardial Infarction," *Koomesh* 21, no. 2 (2019): 262–270.

27. J. M. Aviles, S. E. Whelan, D. A. Hernke, et al., "Intercessory Prayer and Cardiovascular Disease Progression in a Coronary Care Unit Population: A Randomized Controlled Trial," *Mayo Clinic Proceedings* 76, no. 12 (December 2001): 1192–1198.

28. J. A. Blumenthal, M. A. Babyak, G. Ironson, et al., "Spirituality, Religion, and Clinical Outcomes in Patients Recovering From an Acute Myocardial Infarction," *Psychosomatic Medicine* 69 (2007): 501–508, https://doi.org/10.1097/PSY.0b013e31815adb80.

29. S. Rohimah, "Efektifitas Latihan Rom Dengan Latihan Rom+ Seft Terhadap Kekuatan Otot Pasien Stroke Di V Rsud Tasikmalaya," *Jurnal Kesehatan Bakti Tunas Husada: Jurnal Ilmu-ilmu Keperawatan, Analis Kesehatan dan Farmasi* 12, no. 1 (May 2015): 28–40.

30. R. H. Putri, "Kualitas Hidup Pasien Kanker Ginekologi Yang Menjalani Terapi," *Jurnal Aisyah: Jurnal Ilmu Kesehatan* 2, no. 1 (June 2017): 69–74.

31. N. Sutomo and F. Purwanto, "Efektifitas Teknik Seft (Spiritual Emotional Freedom Technique) Terhadap Peningkatan Kualitas Hidup Pada Pasien Pasca Stroke," *Jurnal Keperawatan* 9, no. 2 (July 2016): 8.

32. A. N. Syafni, "Post Stroke Patient Medical Rehabilitation," *Jurnal Ilmiah Kesehatan Sandi Husada* 12, no. 2 (2020): 873–877.