







information would remain confidential. Furthermore, the questionnaires were anonymously coded. After completing the study, the protocol of spiritual therapy and mindfulness-based stress reduction was performed for the experimental groups. Finally, the data were analyzed using univariate analysis of variance (ANOVA) in SPSS software (version 23; IBM Corp., Armonk, NY, USA).

**CD4 cell test:** The CD4 cell test measures the number of these cells per cubic millimeter of blood. The normal number of these cells is between 500 and 1600. Since the number of CD4 cells varies greatly, some healthcare providers prefer the CD4 cell percentage. This percentage is more stable than the number of CD4 cells. A number of CD4 cells below 200 indicates severe damage to the immune system and is a sign of AIDS in people with HIV. Although the percentage of CD4 cells may be a better predictor of disease progression, the number of CD4 cells is better for deciding when to start treatment. A cell number of less than 300 indicates a weakened immune system and a predisposition to opportunistic infections. A cell number of less than 200 indicates an acquired immunodeficiency syndrome and a risk of opportunistic infections. The type of measurable sample was whole blood containing ethylenediaminetetraacetic acid (EDTA) anticoagulant or heparin. The required sample size was 5 cubic meters.

**The World Health Organization Quality of Life-BREF Questionnaire:** The WHO Quality of Life-BREF Questionnaire (WHOQOL-BREF) includes 26 items and the 4 subscales of physical health, psychological health, social relations, and environment. This questionnaire can also assess general health. The items of this questionnaire are scored on a 5-point Likert scale. A higher score indicates a better QOL. The discriminative and content validities and reliability of this questionnaire (Cronbach's alpha coefficient for physical health = 0.80, psychological health = 0.76, social relations = 0.66, and environment = 0.80) were reported to be at a good level. The validity and reliability of this questionnaire in Iran have been assessed among 1167 people in Tehran. The test-retest reliability of the subscales of physical health, psychological health, social relations, and the environment was reported at 0.77, 0.77, 0.75, and 0.84, respectively. Their internal consistency using Cronbach's alpha coefficient was reported as 0.70, 0.73, 0.55, and 0.84, respectively (WHOQOL Group, 1998).

The Contents of the spiritual therapy sessions and mindfulness-based therapy cognition sessions is shown in tables 1 and 2.

**Spiritual therapy protocol:** Regular group-based spiritual therapy was trained in 8 sessions of 90 minutes, 1 session per week, using the 2 methods of discussion about the presuppositions of spiritual life and strategic spiritual training.

In the descriptive statistics section, central indicators and dispersion, such as mean and standard deviation, were used. In inferential statistics, multivariate analysis of covariance (MANCOVA) was used. To test the defaults of the inferential test, Levene's test (to check the homogeneity of variances), Kolmogorov-Smirnov (K-S) test (to normalize the distribution of data), and Mbox test were used. The above statistical analyses were performed in SPSS software (version 22; IBM Corp., Armonk, NY, USA). The significance level of the tests was considered to be 0.05.

## **Results**

The mean (standard deviation) age in the experimental group was 38.94 (5.49) years, and in the control group was 37.13 (6.55) years.

As shown in table 3, because the significance level is greater than 0.05, the two groups are the same in terms of gender distribution. The mean and standard deviation of variables are presented in table 4.

**Table 1.** Contents of the spiritual therapy sessions

Sessions	Content
1	The group members were introduced to each other, and the rules and principles governing group counseling were explained to them. An empathetic relationship was established with the participants and hope was created, and then, the participants' problem was formulated in the form of a spiritual therapy model. A summary of the brochures and sessions was made available to them.
2	After reviewing the previous session and giving feedback to the clients, they were taught the first (saving reality) and second presumptions (pleasant and unpleasant feelings are not related to phenomena, but depend on inner attitudes and feelings). Moreover, in this session, promoting the intention and purposefulness of behaviors, and positive mental imaging towards God were taught.
3	The third presumption (this principle is based on God's mercy and generosity, that is, God always provides the opportunity for human growth) and the fourth presumption (divisibility, which means that worldly affairs can be divided into changeable and unchangeable affairs) were taught to the spiritual man. In this session, the status of the order in the will of the existing system and the practice of order in life were taught.
4	The fifth presumption (the moral world is created and always moves in the direction of happiness) was taught to the spiritual man. In addition, the strategy of prayer, and its status in human life, transcendence, and coping with anxiety were discussed in this session.
5	The sixth presumption (the future is not entirely in our hands) was taught to the spiritual man. Moreover, strategies of praying, hope, and trust in God for problems that occur in the future were discussed in this session.
6	The seventh presumption (man is in constant communication with God) was taught to the spiritual man. Furthermore, in this session, the spiritual and unifying description and interpretation of the life events of the participants were explained, and patience was presented as a strategy to cope with anxiety.
7	The eighth presumption (the spiritual man lives with his traits, not with his/her possessions and assets) and the ninth presumption (achieving a spiritual life requires charity, forgiveness, and affection) was taught to the spiritual man. Furthermore, in this session, polite presence in the presence of God was taught.
8	The tenth presumption (understanding the meaning of hardships and difficulties and responsibility towards God, self, others, and existence) was taught to the spiritual man. In addition, in this session, the 10 presuppositions of the spiritual man were reviewed once again.

The results presented in table 4 show differences between the control and experimental groups in terms of the mean scores of the variables of the number of CD4 cells and QOL. Statistical methods were used to examine these differences. The results of the K-S test showed that all research variables have a normal distribution. Levene's test results showed that the value of none of the variables was significant, and thus, the assumption of the equality of variances was confirmed. According to the assumption of homogeneity of variances, the correlation between the dependent variables, and the assumption of homogeneity of regression slopes, MANCOVA was used.

The results presented in table 5 show a significant difference between the 3 groups of control, mindfulness-based stress reduction, and spiritual therapy in terms of mean posttest CD4 ( $F(2) = 11.3$ ;  $P < 0.05$ ;  $\eta^2 = 0.361$ ). However, the QOL of AIDS patients ( $F(2) = 2.06$ ;  $P > 0.05$ ;  $\eta^2 = 0.093$ ) did not differ significantly among the 3 groups, and this difference was higher in CD4 compared to QOL. Based on the Eta coefficient, the effects of mindfulness-based stress reduction and spiritual therapy on increasing QOL (0.093) were less than on CD4 (0.361).

The results presented in table 6 show that mindfulness-based stress reduction had a significant effect on increasing CD4 cells and QOL in AIDS patients. The mindfulness-based stress reduction technique significantly improved the QOL of AIDS patients. Moreover, spiritual therapy had a significant effect on increasing CD4 cells and QOL in AIDS patients. There was no significant difference between the effects of mindfulness-based stress reduction and spiritual therapy techniques on CD4 cells. The mindfulness-based stress reduction technique was more effective than spirituality therapy on QOL.

**Table 2.** Contents of the mindfulness-based therapy cognition sessions

Sessions	Content
1	Introducing participants, providing explanations on AIDS and its effects on family and members, discussing marital relationships, and practicing the raisin meditation, explaining that many people live in an unconscious mind and often do not pay attention to what they are doing, practicing mindful breathing, and practicing body scan meditation
2	practicing body scan meditation, inviting participants to talk about their experiences of mindfulness exercises, examining barriers, discussing some features of mindfulness such as non-judgment or abandonment, practicing thoughts and feelings, and practicing mindful breathing meditation
3	practicing of short seeing or hearing, sitting meditation focused on breathing and body sensations, 3-minute breathing space practice, practicing conscious body movement
4	Practicing sitting meditation focused on breathing, body, sounds, and thoughts, discussing stress and the usual reactions of people to difficult situations and alternative attitudes and reactions, practicing conscious walking
5	Practicing sitting meditation with a focus on breathing, body, sounds, and thoughts, discussing the acceptance of the reality of the present situation as it is, practicing the second series of conscious body movements
6	Practicing the 3-minute breathing space practice, discussing the frequent lack of reality of the content of our thoughts
7	Practicing sitting meditation and open consciousness (to anything that comes to consciousness from moment to moment), discussing what is the best way to take care of yourself, practicing the reviewing of pleasant versus unpleasant daily activities, and learning to plan for pleasant activities, love, and kindness
8	Practicing body scan meditation, discussing the use of the taught content, evaluating the training, providing more resources

**Discussion**

The present study was conducted to compare mindfulness-based stress reduction and spiritual therapy techniques in terms of increasing CD4 cell and QOL in AIDS patients. The results of the present study revealed that spiritual therapy was effective in increasing CD4 cells, but was not effective on the QOL of AIDS patients. These results are consistent with those of the research conducted by Speca, Carlson, Goodey, and Angen (2000), and inconsistent with the results of other researchers who showed that spiritual therapy does not affect the QOL of AIDS people. In contrast, the results of this study, in line with previous studies, revealed that spiritual therapy increased CD4 cells. Since CD4 T lymphocytes are the first group of cells affected by the virus and their number decreases rapidly, measuring them is an important indicator of the onset and progression of the disease to the final stage of AIDS. The main goal of treating HIV patients is to slow down and reduce CD4 cells, and keep them stable in order to prevent various diseases and infections in these patients.

Given the psychological problems of AIDS patients, the need for psychotherapy, in addition to the medication, has been proven. Many of these treatments, in addition to treating psychological problems, have played a significant role in physiological changes in the body. One of the best physiological therapies in AIDS patients is spiritual therapy. Several studies have revealed that people with chronic diseases use spirituality to cope with the disease, create a sense of meaning and purpose in life, and reduce the feeling of suffering caused by their disease.

**Table 3.** Frequency distribution and demographic characteristics of participants

Demographic variables	Spiritual therapy		Mindfulness-Based Stress Reduction		Control	P-Value		
	n	%	n	%	n			
Gender	Female	8	53.3	9	60	7	46.7	27.0
	Male	7	38.9	46.7	40	8	53.3	

**Table 4.** Descriptive indices related to the variables of the number of CD4 cells and quality of life

Demographic variables	Group	Pretest		Pretest	
		Mean	SD	Mean	SD
Number of CD4 cells	Spiritual therapy	858	168.81	993.20	177.62
	Mindfulness-Based Stress Reduction	822.11	155.17	987.10	181.45
	Control	834.93	160.47	849.93	181.56
Quality of life	Spiritual therapy	73.90	10.12	81.93	12.44
	Mindfulness-Based Stress Reduction	75.88	11.19	89.51	15.46
	Control	76.21	10.02	78.59	10.15

Reduced feeling of suffering is characterized by lowering cortisol in the body. Thus, the measurement of physiological parameters has importance in psychological therapies. According to Quinic, spirituality is the personal search and study to understand the answers to questions about life, meaning, and relation to a sacred or transcendent force, resulting in the growth of religious rites and the development of society. Given the importance of CD4 cell count in patients with AIDS, it is possible to increase lymphocytes by teaching the techniques of this therapeutic approach, which play an important role in controlling and directing the immune system, especially its adaption to the environment. With the reduction of CD4 cells, they cause AIDS, weaken the immune system to infections, or kill cancer cells. With the increasing of CD4 cells, they can play a major role in the treatment process of the disease (Izudi, Aloni, Kerukadho, & Ndungutse, 2016).

The major problem of AIDS patients is their isolation from society and discrimination. This issue overshadows the patient's development that directly relates to his/her mental health and has a significant impact on his/her QOL. QOL has different dimensions, including physical, psychological, and social dimensions, and covers a wide range of a person's life. QOL is an individual's unique understanding of whether his/her life is acceptable or not considering his/ her relationship with family, friends, and community, and whether his/ her physical, psychological, social, and economic needs are met or not. Mohamadi and Rahimzadeh Tehrani (2018) showed that logotherapy increases QOL and its components (mental, physical, social, and environmental health). Moreover, logotherapy increases spiritual health in the dimensions of existential and religious health. Mohamad Karimi and Shariatnia (2018) and Pirasteh Motlagh and Nikmanesh (2012) showed a positive relationship between spirituality and QOL. Given what was stated above, spirituality therapy does not affect the QOL of AIDS patients. The present study had some limitations such as small sample size, being limited to Shahriar city, and the impossibility of comparing the effectiveness of treatment between the two sexes. Hence, it is recommended that a larger sample of patients be used and the two sexes be compared with each other in future researches. It is necessary to consider cultural differences, the way the therapist communicates with the participants, and the level of cooperation of the center officials with the researcher (Ghiasvand et al., 2019).

**Table 5.** Multivariate analysis of covariance results regarding the evaluation of the effect of mindfulness-based stress reduction and spiritual therapy techniques on a new combination of CD4 and quality of life of AIDS patients

Effect	Test	Value	F-value	df	Df error	P-value	$\eta^2$
Pretest CD4	Pillai's trace	0.765	63.58	2	39	0.001	0.765
	Wilks' Lambda	0.237	63.58	2	39	0.001	0.765
Pretest quality of life	Pillai's trace	0.982	1091.66	2	39	0.001	0.982
	Wilks' Lambda	0.018	1091.66	2	39	0.001	0.982
Group	trace Pillai's	0.434	5.54	4	80	0.001	0.217
	Wilks' Lambda	0.592	5.85	4	78	0.001	0.231

**Table 6.** Tukey’s post hoc test for pairwise comparison of posttest CD4 and quality of life of AIDS patients among control, mindfulness-based stress reduction, and spiritual therapy groups

Variable	Group	Comparison of groups	Mean difference	Standard error	Sig
Pretest CD4	Control	Spiritual therapy	143.24	64.52	0.079
		Mindfulness	169.27	64.52	0.032
Pretest quality of life	Spiritual therapy	Mindfulness	26	64.52	0.91
		Control	-3.34	0.87	0.011
	Control	Spiritual therapy	-10.92	1.19	0.001
		Mindfulness	-7.58	2.17	0.001

Betancur et al. (2017) evaluated the effectiveness of mindfulness-based stress reduction on CD4 and QOL of AIDS patients and found that the use of mindfulness-based stress reduction therapy increased CD4 cells, but was not effective on QOL. However, many studies have shown that this treatment improves QOL (Asghari et al., 2016; Zhang, Zhao, & Zheng, 2019).

In this study, the effect of mindfulness-based stress-reduction therapy on CD4 count was investigated for the first time. Mindfulness-based stress reduction is an effective psychological factor that positively affects various chronic patients, and even their caregivers. Mindfulness means paying attention to the goal at the moment with qualities such as empathy, curiosity, acceptance, and non-judgment. It is defined as a state of arousal and awareness of what is happening at the moment. Mindfulness-based intervention is a systematic and intensive approach used to acquire new types of control and wisdom based on the inner capabilities of relaxation, attention, awareness, and insight (Armani et al., 2018). The results of a review study that included 10 controlled studies (including experimental and control groups) showed that the mindfulness-based stress reduction intervention program improves psychological problems in patients with a variety of chronic pains and increases the skills of mindfulness, pain acceptance, well-being, and life satisfaction in them, which is followed by a reduction in pain severity, disability, and the sense of helplessness caused by pain. Psychological studies have shown that people who meditate regularly are more satisfied with their lives than other groups of the community (Armani et al., 2018).

Many studies have referred to the low QOL in AIDS patients. Rasoolinajad et al. (2018) showed that AIDS patients had lower QOL, social support, and general health compared to healthy individuals. These studies also investigated the importance of psychological interventions, especially mindfulness, in enhancing the QOL of chronic patients. Mindfulness can be viewed as the ability to see and accept feelings, emotions, and physical phenomena as they occur. Specca et al. (2000) indicated that increasing mindfulness is associated with increased psychological well-being, agreement, openness, conscience, and reduced pain symptoms. People with a high level of mindfulness can recognize, manage, and solve everyday problems.

The study conducted by Zhang et al. (2019) on using this method showed that many patients with problems such as heart disease, cancer, AIDS, chronic pain, stomach problems, stress-related pain, headache, hypertension, sleep disorders, depression, anxiety, and panic used this method. This method has been effective in a wide range of people with various problems, including sadness, depression, insomnia, sexual problems, chronic pain, addiction to alcohol and drugs, eating disorders, and gambling. Shakeri, Hatami, Hasani, and Shakeri (2018) showed that



mindfulness-based stress reduction intervention had improved the QOL and mental health of diabetic patients. Momeni, Omidi, Raygan, and Akbari (2016) showed that reducing mindfulness-based stress reduction effectively improved cardiovascular patients' QOL. Khazaeili, Zargham Hajebi, Mohamadkhani, Mirzahoseini (2019) also showed that a mindfulness-based intervention program effectively increases the QOL of MS patients. Given what was stated and the results of previous studies, mindfulness-based intervention effectively increases the QOL of chronic patients. However, the results of this study indicate that its effect in increasing the QOL of AIDS patients was only 7.3%.

There was no difference between mindfulness-based stress reduction and spiritual therapy in terms of their effect on increasing CD4 cells and the QOL of AIDS patients.

The results of the present study are in line with those of the studies conducted by Nikoo Seresht et al. (2014) and Speca et al. (2000). However, the findings are inconsistent with that of Shakeri et al. (2018), Mohamadi and Rahimzadeh Tehrani (2018), Momeni et al. (2016), Afsharnia, Pakgohar, Khosravi, and Haghani (2016), and Mohamad Karimi and Shariatnia (2018). Mindfulness-based stress reduction is a program used to reduce stress in order to promote mental health and reduce pain. This treatment acts as both an acute and preventive treatment and a strategy for patients to cope with challenges and stressful events in their lives. As a result, it can be used as acute treatment in AIDS patients (Scott-Sheldon et al., 2019).

Based on a study conducted by Speca et al. (2000), there is an association between QOL and psychological variables such as anxiety and depression, and the biological parameters of CD4s such as lymphocytes and viral load, which should be considered in health decisions and interventions. The results of the present study indicated that mindfulness-based stress reduction and spiritual therapy were effective in increasing CD4 cells. However, they did not have a significant effect on increasing the QOL of AIDS patients. Lack of effect on increasing the QOL of AIDS patients can be attributed to the fact that QOL is a complex issue and training that increases QOL requires a longer time to be institutionalized gradually in the psychosocial life of these patients.

## Conclusion

It can be concluded that mindfulness-based stress reduction had a significant effect on increasing CD4 cells and QOL in AIDS patients. Moreover, mindfulness-based stress reduction was more effective than spirituality therapy on QOL.

## Conflict of Interests

Authors have no conflict of interests.

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