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## Effect of Spiritual Intelligence Training on the Hope and Self-transcendence in Mothers of Premature Neonates

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### Abstract

**Background:** Spiritual intelligence training, as one dimension of comprehensive care and a means of communicating with a higher power (God), can increase mothers' hope and self-transcendence.

**Aim:** This study aimed to determine the impact of spiritual intelligence training on hope and self-transcendence in the mothers of premature neonates hospitalized in the ICU of Fatemeh Hospital, Hamadan.

**Method:** This randomized clinical trial study included 80 mothers with premature neonates hospitalized in the neonatal intensive care unit in Iran in 2019. The permuted block method was used to randomly divide the eligible participants into intervention and control groups. Weekly training sessions were held in a hybrid of virtual and face-to-face formats for eight 90-minute sessions for the intervention group, while the control group did not receive any education. The maternal demographic and neonatal clinical characteristics form, the Hope Scale of Mothers with Premature Neonates, and the Self-Transcendence Scale were used for data gathering.

**Results:** The mean ages of the participants in the intervention and control groups were  $30.18 \pm 3.76$  and  $29.38 \pm 1.52$  years, respectively, and about 45.2% of the neonates were firstborn. The results of repeated-measures ANOVA showed that after spiritual intelligence training, the mean scores of self-transcendence ( $51.42 \pm 1.81$ ) and hope ( $160.10 \pm 7.75$ ) significantly increased in the intervention group ( $P < 0.001$ ).

**Implications for Practice:** It is possible to ensure that mothers provide quality and comprehensive care, allowing them to better perform the parent role, using mechanisms that can increase their hope and self-transcendence.

**Keywords:** Hope, Mother, Neonatal intensive care unit, Self-transcendence, Spiritual intelligence

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## Introduction

Annually, 15 million premature neonates are born across the world, accounting for more than 10% of all neonates born worldwide (1). Iran is also among the regions with a high incidence of premature births (2), where about 12% of births consist of premature and low birth-weight neonates, according to the Ministry of Health and Medical Education (3). The parents of premature newborns experience more anxiety than the parents of healthy ones (4). Since the birth and care of a premature neonate is a stressful activity, it impacts the quality of life of parents, especially mothers, and creates a sensitive, risky, and emotionally critical situation for them (4, 5). Given the importance of the mother's role in addressing the neonate's needs, caregivers should consider mothers as the main goal of interventions with the aim of promoting the neonate's health; therefore, mothers can improve their health and the neonate's health by coping with the crisis caused by premature birth and accepting the prematurity of the neonate (6). Since 70-80% of mothers with premature newborns in the neonatal intensive care unit (NICU) report high levels of stress, including neonatal mortality fear, restlessness, anxiety, depression, impaired concentration, and decreased hope (7).

The long process of neonatal treatment and care causes conflict and inconsistency in the caregiver's hope, values, and beliefs about God; moreover, it leads to the occurrence of spiritual crisis and conflict with spiritual issues in various forms, such as the inability to justify why the disease exists, doubts about divine justice, and considering sickness God's punishment for sins (8). In such circumstances, it is necessary to strengthen hope and self-transcendence as effective variables in the mother's coping response to the specific circumstances of premature birth (9). As a cognitive, emotional, and mental attitude (10), hope is one of the major sources of coping with stress in the mothers of premature newborns, helping them get through this stressful and uncertain period (9), which makes it easier to face life's challenges by inducing individual motivation (11). As a result, removing despair and attempting to form hope is critical, and self-transcendence is one of the things that can increase hope by providing new perspectives, meaning, and achieving health in the individual (12).

Self-transcendence is an inherent quality introduced in the Reed theory, aiming to discover the value of life and communicate with others. According to this theory, individuals' capacity of self-transcendence can have positive outcomes and increase their degree of adaptation. Self-transcendence, as a spiritual principle, can be viewed as a source of support for adapting to difficult situations (13). When people face the difficulties of life, they often become prone to a higher power as a way of coping and adaptation. Therefore, emphasizing human care with a holistic approach that pays special attention to the client's spiritual needs is a professional requirement (14). One of these cares is spiritual intelligence training, which can be offered by nurses (15).

Through spiritual intelligence, one becomes more aware of his/her existential dimensions (physical, psychological, and mental), and from a more general perspective, acquires a special and important ability that shapes and guides other abilities (16). Spiritual intelligence is the foundation of one's beliefs that plays an essential role in various dimensions, especially the promotion and provision of mental health, and encourages and strengthens one in the face of challenges of life and emergence of spiritual needs, such as the need for hope, meaning, and peace. In this respect, spiritual intelligence training can be considered a part of the nursing care aimed to facilitate the experience of difficulties in care provision (15) for premature neonates. So far, research has concentrated on the effect of spiritual intelligence training on nurses' ability to provide spiritual care in the ICU (17), the effect of spiritual care on the hope and self-transcendence of mothers with premature newborns (18), reduction of stress and increase of hope (19), and less on spiritual intelligence in mothers with premature neonates, and the ensuing consequences, such as spiritual intelligence, hope, and self-transcendence, on mothers. Due to the different situations of NICUs and the prematurity of the neonates as an acute problem, it is necessary to conduct a study in this regard. Therefore, this study aimed to determine the impact of spiritual intelligence training on self-transcendence and hope in mothers of premature neonates in the NICU of Fatemeh Hospital in Hamadan, Iran.

## Methods

This randomized clinical trial study was conducted with one intervention and one control group within September-December 2019 in Fatemeh Hospital. The research population consisted of mothers who had premature neonates admitted to the NICUs. The mean comparison formula

$(n = 2(1.96 + 0.85)^2 \left(\frac{1}{0.65}\right)^2 = 40)$ , the confidence coefficient of 95%, and the test power of 90% (20)

were used to determine the sample size based on the pilot study with 10 participants (5 in the intervention group and 5 in the control group). Considering a dropout rate of about 10%, the final sample size was determined at 40 cases in each group. The permuted blocks method was used to randomly divide the samples into intervention and control groups (quadruple blocks) using Excel 2017 software. In this method, "A" stands for the person receiving the intervention and "B" for the person in the control group. We assigned "AABB" code 0, "ABAB" code 1, "ABBA" code 2, "BAAB" code 3, and "BBAA" code 4 in the quadruple block. The starting point was then chosen at random using a table of random numbers, and 10 numbers were considered rows or columns. The permutation corresponding to each encountered number was placed, taking into account the order of the numbers in the table. Individuals were selected according to the inclusion criteria and divided into two groups of intervention and control using four permutation blocks after being selected by a simple random sampling method from a list of mothers.

The inclusion criterion was mothers being Iranian, being residents of Hamadan Province; being Muslim and Shiite; having premature neonates between 28 and 32 weeks of gestational age hospitalized in the NICU due to prematurity; lacking a previous history of hospitalized premature neonates; lacking a history of depression and other psychological disorders; lacking use of antidepressants, narcotics, or psychotropic substances; having a minimum of literacy; and lacking experience with stressful events in the previous 6 months. These individuals lived with their spouses and were not members of the medical staff. On the other hand, the mothers who did not attend the intervention program for more than one session or whose neonates were discharged, transferred, or passes away for any reason during the intervention were excluded from the study.

The required data were collected through questionnaires. Maternal demographic characteristics and neonatal clinical characteristics were collected through the demographic form and clinical characteristics questionnaire. The Hope Scale of Mothers with Premature Neonates admitted to the ICU developed by Panjvini et al. (2015) was used to assess the mothers' level of hope. This 36-item scale is scored on a 5-point Likert scale and consisted of 4 subscales, including feeling valued, feeling of motherhood, feelings of peace, and feeling of positive energy. Its validity was assessed qualitatively and its internal consistency reliability was calculated using Cronbach's alpha coefficient ( $\alpha=0.93$ ) (21).

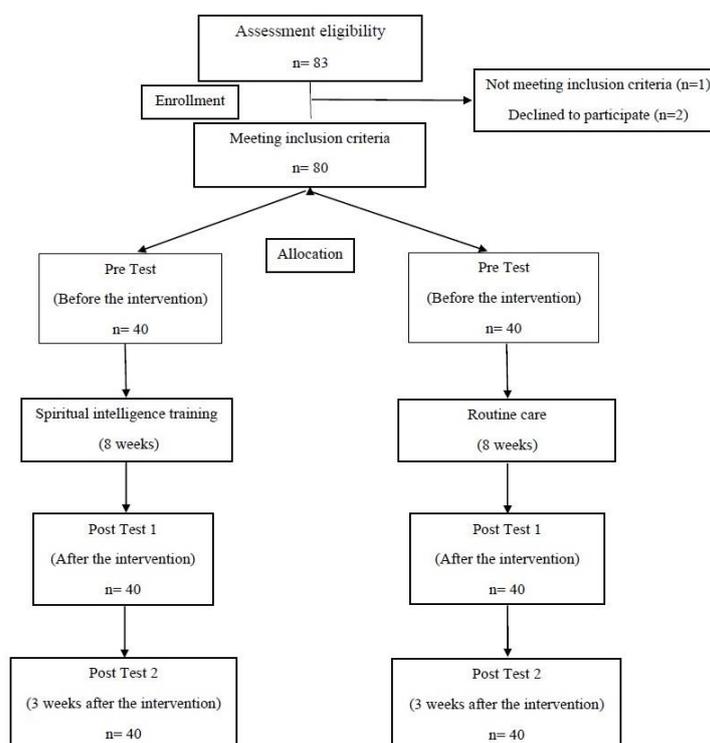
Another questionnaire used in this study was Self-Transcendence Scale, translated and validated by Shirinabadi Farahani et al. (2016). This 15-item instrument contains 2 subscales, namely self-acceptance and maturation. The items are rated on a 4-point Likert scale, and the total score of self-transcendence is obtained at the range of 15-60, with higher scores indicating a higher level of self-transcendence. Qualitative content validity and construct validity were performed by exploratory factor analysis and extracting two subscales of "self-acceptance" and "maturity". Cronbach's alpha coefficient was used to calculate the internal consistency reliability, rendering at 0.82 (22).

In the present study, in order to evaluate the validity of the instruments, face validity and qualitative content validity were measured. To assess the face validity, the instruments (Hope Scale of Mothers with Premature Neonates and Self-Transcendence Scale) was distributed among five mothers of premature neonates hospitalized in NICUs to determine the clarity and answerability of the items. To evaluate the qualitative content validity, the opinions of 10 nursing faculty members and instrument development experts were used. The reliability of this tool was evaluated using the internal consistency (i.e., Cronbach's alpha coefficient). For this purpose, the research instrument was provided to and completed by 10 people with the same characteristics as the research samples, and Cronbach's alpha coefficient was calculated. In addition, in order to determine the stability reliability, the instruments were completed by 15 individuals meeting the characteristics of the research samples, on two occasions, 2 weeks apart. Finally, the intra-class correlation coefficient (ICC) was calculated. Therefore, the Cronbach's alpha coefficient and ICC were obtained at " 0.93 and 0.88 for the Hope Scale of Mothers with Premature Neonates and 0.83 and 0.77 for the Self-Transcendence Scale, respectively.

Permission was obtained from both the university and hospital to begin sampling. All participants were informed of the confidentiality of the data and were all volunteers who agreed to participate in the study without any physical or financial risk. The research protocol was approved by the Ethics Committee of Shahid Beheshti University of Medical Sciences, Tehran, Iran. It should be noted that the researcher had passed the necessary courses and education on spiritual intelligence training methods under the

supervision of some experts in this field via virtual courses and had obtained the relevant certificate. Initially, the researcher made acquaintance with mothers, introduced herself, and mentioned the research objectives. Afterward, she distributed the questionnaires to the mothers who were willing to participate in the study. Subsequently, in the intervention group, the protocol for spiritual intelligence training was implemented. This protocol was prepared using the study conducted by Amini Javid et al. (23), Emmon's components (24), and all the articles and studies on spiritual intelligence training. The validity of the protocol was approved based on the opinions of several experts in the field. In the next step, based on a study carried out by Riahi et al. (17), 8 training sessions were held by the researcher for 8 weeks. Due to the pandemic of coronavirus disease 2019, the educational intervention included both virtual and face-to-face training. In the face-to-face section, the subjects worked in small groups of 4-5 individuals, keeping a social distance of at least 1.5 m and adhering to health protocols. These meetings were held in the mothers' rest room, adjacent to the hospital's NICU, or any other location where a training session could be held, such as the hospital assembly hall (in coordination with ward officials) or the mothers' preferred location, all in accordance with health protocols. In the virtual education section, telephone numbers were obtained from participants and a WhatsApp virtual group was created. In order to make mothers better understand the content, a time was set aside at the beginning of each session for mothers to express their opinions and questions, as well as questions and answers about the previous session's topics. Each training session lasted 90 min and was held once a week (17).

On the first session, the researcher made acquaintance with the learners and gave explanations about the number of sessions, the interval between them, and spiritual intelligence definitions. Afterward, the following topics were discussed each session: session 2, spiritual awareness and consciousness; session 3, the meaning and the purpose of life; session 4, solving problems using spiritual approach; session 5, forgiveness skills for improving interpersonal relationships; session 6, Dhikr as a spiritual skill; session 7, the importance of commitment; and in the final session, human insight and calling. During these meetings, the determined principles were explained. Data were collected on three separate occasions; once prior to the training sessions, once immediately following the last session, and once 3 weeks later. The Hope Scale of Mothers with Premature Neonates and Self-Transcendence Scale were sent to the WhatsApp group and completed by the mothers. It is noteworthy that both scales were measured in the control group without any training intervention at the same time as the intervention group. Regarding this, the case in the control group filled out the questionnaires three times, namely prior to, immediately after, and 3 weeks after the study (Figure 1). The results before



**Figure 1. Diagram of CONSORT**

and after the intervention were compared between the intervention and control groups. After the training, the educational materials were provided to the control group as well. The obtained data were analyzed in SPSS19 using descriptive statistics, Kolmogorov-Smirnov, independent t-test, and repeated measures ANOVA. P-values of less than 0.05 were considered statistically significant.

## Results

The results showed that the majority of the mothers participating in the study were housewives (72.5%) and their first child (45.2%) was hospitalized in the NICU due to prematurity. Furthermore, most neonates were only children (61.25%). Some demographic characteristics of the mothers and the neonates are displayed in Table 1.

Data distribution was normal according to the results obtained from the Kolmogorov test. Based on the results of an independent t-test, no difference was observed in the mean scores of hope before the intervention between the intervention and control groups ( $92.05 \pm 12.60$  vs.  $91.32 \pm 6.81$ ;  $P=0.75$ ). Additionally, there was no difference in the mean scores of self-transcendence before the intervention between the intervention and control groups ( $26.40 \pm 3.62$  vs.  $27.35 \pm 5.58$ ;  $P=0.63$ ). However, after the intervention, the mean scores of hope and self-transcendence were higher in the intervention group than in the control group (Table 2).

To compare the hope and self-transcendence in the intervention and control groups at three times of before, immediately after, and 3 weeks after the intervention (to evaluate the effect of time, group, and their interaction), repeated measures ANOVA was performed. The results of repeated measures ANOVA by examining the Sphericity hypothesis and using Greenhouse Geiser correction showed that hope and self-transcendence had a significant difference between mothers in the intervention and control groups at the three stages ( $P < 0.001$ ) (Table 3).

The level of hope in the control group did not change before and after the intervention, while in the intervention group, the level of hope showed an increasing trend. Figure 2 depicts the changes in the mean score of hope at three stages (i.e., before and immediately after the study and 3 weeks later) in the intervention and control groups. The mean score of self-transcendence indicated a growing trend

**Table 1. Some demographic characteristics of the mothers and neonates**

Variable	Group		P-value**
	Intervention Mean $\pm$ SD*	Control Mean $\pm$ SD	
Mother's age (year)	30.18 $\pm$ 3.76	29.38 $\pm$ 1.52	0.75
Maternal age (week)	29.43 $\pm$ 1.12	29.40 $\pm$ 1.17	0.92
Infant's birth weight (gr)	886.15 $\pm$ 125.15	892.50 $\pm$ 164.29	0.41

\*Standard Deviation

\*\* Independent t-test

**Table 2. Comparison of the mean of hope and self-transcendence among mothers before, immediately after, and 3 weeks after the intervention in both intervention and control groups**

Variable	Group Time	Intervention	Control	P-value**
		Mean $\pm$ SD*	Mean $\pm$ SD*	
Hope	Pre-intervention	92.05 $\pm$ 12.60	91.32 $\pm$ 6.81	0.75
	Post-intervention	139.30 $\pm$ 6.35	90.77 $\pm$ 5.62	<0.001
	3 weeks later	160.10 $\pm$ 7.75	93.97 $\pm$ 8.06	<0.001
	P-value***	<0.001	0.326	
Self-transcendence	Pre-intervention	26.40 $\pm$ 3.62	27.35 $\pm$ 5.58	0.63
	Post-intervention	40.10 $\pm$ 2.52	26.35 $\pm$ 1.40	<0.001
	3 weeks later	51.42 $\pm$ 1.81	28.07 $\pm$ 3.62	<0.001
	P-value***	<0.001	0.325	

\*Standard Deviation

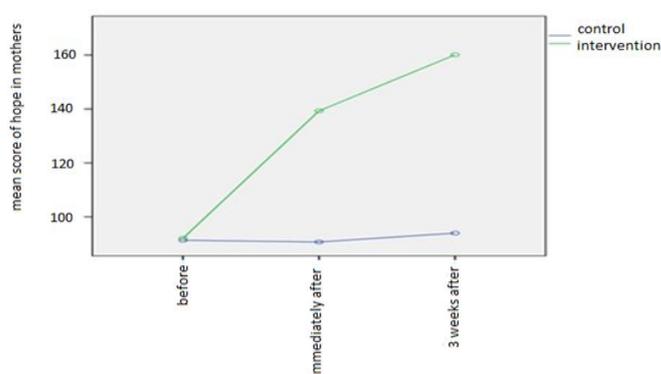
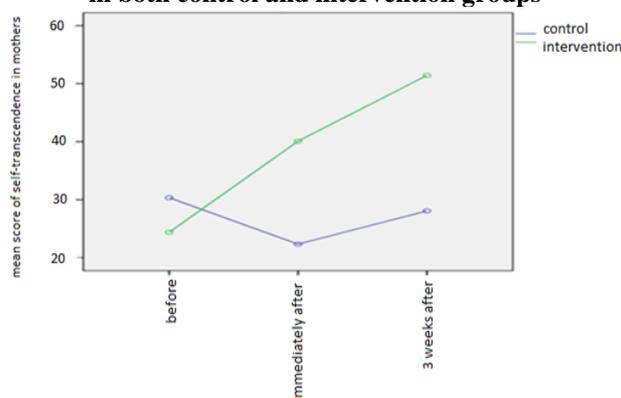
\*\*Independent t-test

\*\*\* Repeated Measures ANOVA

**Table 3. Analysis of variance with repeated measures to assess the effect of time, group, and their interaction effect on the mean scores of hope and self-transcendence in mothers with premature neonates**

Variable	Source	F	P-value
Hope	Time	3.30	0.073
	Group	2548.1	<0.001
	Time-Group	0.38	0.543
Self- transcendence	Time	13.47	<0.001
	Group	1967.06	<0.001
	Time-Group	0.018	0.892

in the intervention group. However, a slight decrease was observed in the intervention group in the second stage (i.e., immediately after the intervention), which increased again in the third stage (i.e., follow-up stage). Figure 3 shows the changes in the mean score of self-transcendence in both intervention and control groups.

**Figure2.****Figure 2. Means scores of hope in mothers before, immediately after, and 3 weeks after the intervention in both control and intervention groups****Figure3: Means scores of self-transcendence in mothers before, immediately after, and 3 weeks after the intervention in both control and intervention groups**

## Discussion

This study aimed to determine the impact of spiritual intelligence training on hope and self-transcendence in the mothers of premature neonates hospitalized in the ICU of Fatemeh Hospital, Hamadan.

The results of this study reported that the scores of hope in the mothers of premature neonates in the post-intervention and follow-up stages had a significant increase, compared to the previous stage. This indicates that spiritual intelligence training can increase hope in mothers of premature newborns. Although hopelessness can be a product of spiritual doubts, it itself can lead to the spread of spiritual doubts, and ultimately, a spiritual crisis. At the same time, having faith and confidence in God or any other spiritual power, praying, and worshipping would give hope to the believer by creating the hope that helps him/her to endure the overwhelming hardships of life. Religiosity has an extensive and

important influence on human behavior and well-being. In this respect, being religious affects how one experiences care. In Iran, given that 98% of the population is Muslim, in line with the vision of the Iranian Strategic Health Care Plan by 2025, which emphasizes the improvement of the mental-spiritual and the physical health of Iranians, religious approaches are implemented as a way of enhancing the health of patients and their families. Accordingly, addressing spiritual issues is of great importance in care provision (25).

The results of a study conducted by Lindberg and Ohrling, which aimed to explain mothers' experiences of having a premature neonate hospitalized in the ICU, showed that these mothers were not prepared to provide care for their premature neonate and experienced such feelings as worry, anxiety, and hopelessness due to their child's hospitalization. These mothers believed that if they received the necessary knowledge from the members of the health care team (i.e., nurses) and appropriate emotional support from the family, they would be able to manage and adapt and their hope would increase in the current situation (26). In other words, hope is one of the strategies used by mothers with premature newborns to gain self-control, which helps them to manage the current situation and allows them to adapt to the situation, the desire to improve, and the belief in self-development (21). In this regard, spirituality and all its related concepts, as important factors in self-confidence, adaptation, and resilience, can help foster this hope (10, 27). Therefore, mothers with premature neonates should receive more effective nursing care that is spiritually based. The findings of a study performed by Akbarbegloo et al. emphasized this critical point (28).

In a study conducted by Rezavandi et al. (29), on determining the correlation between spiritual intelligence and depression among the parents of cancer children, the Pearson correlation coefficient indicated a significant negative relationship between spiritual intelligence and depression in both parents, and the results of regression analysis showed that the variable spiritual intelligence significantly explained a major percentage of the variable depression ( $P < 0.01$ ). The findings of another study conducted by Dabirian et al. (30) on the spiritual intelligence and mental health of mothers of deaf, blind, and normal children revealed that the mothers who had spiritual perspective sought non-materialistic values in their life and possessed a positive attitude and an open and flexible mind. Worship, praying, faith, and spiritual experiences are the solution to life's problems and difficulties. In this study, about 7% of the variance of changes in mothers' mental health accounted for their spiritual intelligence.

According to the findings of the current study, self-transcendence was significantly increased at all stages of the study, compared to the previous stages. In this regard, the results of studies conducted on patients with various diseases showed that in some cases, spirituality training in all its aspects had a positive outcome on self-transcendence (31). Afaghi Roveshty et al. (2020) carried out a study to assess the impact of spiritual care on self-transcendence in the mothers of premature neonates hospitalized in NICUs. The results of the mentioned study showed that the mean scores of self-transcendence in the pre-test, post-test, and follow-up stages were significantly different (18).

Although spiritual intelligence and spiritual care are assessed as separate concepts in these studies, they are interdependent in the formation and development of self-transcendence. Spiritual intelligence is the foundation for an individual's beliefs, which influence his/her performance in providing care. Spirituality is a well-known concept and an important component of holistic nursing care, and spiritual care can help mothers adopt the best adjustment strategy. As a result, spiritual care has a significant impact on the personality unity, cohesion between mind and soul, and self-transcendence in mothers in order to provide comprehensive care. However, the findings of some studies have pointed out the ineffectiveness of spirituality-based interventions on self-transcendence (32). This discrepancy in results can be explained by differences in the nature and severity of stressful conditions in participants, repeated experiences of adverse events, differences in their religious and cultural views and beliefs, sources of support, individuals' levels of resilience, and post-traumatic growth since each of these factors has influenced the individual's perception of spirituality and self-transcendence.

People who hold spiritual beliefs are constantly connected to an understanding of their life experiences, which includes spiritual and divine interventions, and these interventions can change life events and human's thoughts and behaviors and lead him/her to self-transcendence and a spiritual journey, which has a beneficial effect on how a person copes with adverse events. Based on the findings of a study investigating the family caregivers of cancer patients, despite experiencing painful and exhausting conditions, these caregivers experienced a level of self-transcendence due to their

positive understanding of spirituality and spiritual cohesion (8).

Some studies have used the concept of growth or post-traumatic growth rather than self-transcendence, which has some semantic overlap. Growth refers to the positive psychological changes that occur as a result of a stressful life event (33). Therefore, numerous studies in this field have dealt with the concept of growth rather than the word self-transcendence.

Spirituality, according to what has been discussed, is a vital source for promoting hope and self-transcendence. The characteristics of spiritual intelligence include faith, humility, gratitude, integrative capability, emotion regulation, morality and moral behavior, forgiveness, and love (34). Consequently, having spiritual intelligence with these various and important components can lead to valuable results. The most important application of spiritual intelligence training in life is stated to be creating peace of mind, mutual understanding, and perception, and as a result, increased hope and life satisfaction (15). In this study, the spiritual intelligence training intervention led to positive changes in the level of hope and self-excellence in participating mothers. Nevertheless, sometimes due to such issues as a large number of patients, a lack of time, and a lack of executive instructions in this area the category of spirituality and spiritual care by nurses has been neglected in hospital wards, including NICUs (22).

The present study was conducted only in one city of the Hamadan Province and the participants were selected from the NICU of one hospital. Regarding this, the generalization of the results should be performed with caution, and accordingly, it is suggested to conduct more extensive sampling in future studies. Regarding the positive impact of spiritual intelligence training on hope and self-transcendence in the mothers of neonates hospitalized in NICU, it is also recommended to consider spiritual intelligence training and strengthen this concept as one of the concepts that can improve overall human health, along with other types of care. Additionally, it is suggested to conduct pieces of research on the impact of spiritual intelligence training in the mothers of children with other chronic diseases on their level of hope and self-transcendence.

### **Implications for Practice**

The long process of treatment and care of premature neonates causes frustration and conflict in the values and beliefs of the mother as a caregiver. It may even lead to a decrease in the self-transcendence of mothers and even make them doubt the justice of God. However, it is possible to ensure that the mothers provide quality and comprehensive care using mechanisms that can promote hope and self-transcendence.

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### **Conflicts of Interest**

The authors declare that they have no conflict of interest regarding the present study.

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