

# The Effect of Spiritual Care Based on Sound Heart Pattern on Adjustment of Cancer Children Undergoing Chemotherapy

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## Abstract

**Background:** One of the common ways to treat cancer in children is chemotherapy. Despite its therapeutic benefits, chemotherapy is associated with physical and psychological complications affecting the quality of life in these patients.

**Aim:** The present study was performed with aim to investigate the effect of spiritual care based on sound heart pattern on the adjustment of cancer children undergoing chemotherapy.

**Method:** This quasi-experimental study was performed on 5-12-year-old cancer children undergoing chemotherapy and hospitalized at the Shahid Madani Center in 2022. Among the clients referring to the hospital, 40 children were selected and assigned into two intervention and control groups (20 per group). The intervention was presented as a spiritual care based on the model of Sound heart in five sessions of 60 minutes in four weeks. The data were collected by a demographics form and Dokhanchi's Adjustment Questionnaire and analyzed by SPSS software (version 16).

**Results:** The mean adjustment score in the control group was  $64.11 \pm 9.02$  before the intervention and  $63.32 \pm 10.04$  after the intervention, and this difference in was not statistically significant ( $p=0.183$ ). However, the mean adjustment score in the intervention group was  $57.55 \pm 11.24$  before the invention and  $74.85 \pm 10.54$  after the intervention, and the difference was statistically significant ( $p<0.001$ ).

**Implications for Practice:** According to the findings, the adjustment of children who received spiritual care based on the sound heart pattern considerably increased. It is suggested that consider spiritual care based on this pattern in the care program of these patients.

**Keywords:** Adjustment, Cancer, Chemotherapy, Spiritual Care

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## Introduction

Cancer is one of the main problems of the health systems and one of the main causes of mortality and also the second cause of children's death in developing countries (1,2). Children and adolescents represent the future of each country. The health of society depend on the adolescents and children's health (3). Out of 100,000 children all over the world, three to four children are infected by cancer annually (4). Statistics show that almost 8300 children are annually afflicted by cancer in the United States, and this rate is constantly increasing (5). According to the available data, about 3500 children are afflicted by different types of cancer in Iran per year. Cancer treatment has undergone numerous developments in recent years, and the survival rate of cancer children has increased (4). One of the conventional approaches for treatment of cancer, especially in children, is chemotherapy. Combined with radiotherapy and surgery, chemotherapy is a standard method in treating cancer patients. However, despite its therapeutic advantages as the first line of cancer treatment, chemotherapy accompanies many complications, such as nausea, vomiting, fatigue, alopecia, infection, stomatitis, eating disorders, and mental and psychological problems like depression. The somatic and psychological intricacies of chemotherapy impact patients' quality of life and make them to resist or reject therapeutic anticancer programs (6). Cancer as a life-threatening disease secludes patients, negatively influences their social adjustment, and limits their social activities, so that some patients even avoid talking about their illness and concerns owing to the disease-imposed spiritual pressures (7). Social adaptation is a reflection of a person's interaction with others, satisfaction with their roles and how they perform in their roles, which is most likely influenced by the previous personality, culture, and family expectations. Various studies have shown that patients with cancer have lower social adaptation causing many psychological problems. Also, the evidence shows that social supports, type of treatment and age have an effect on the level of social adjustment in these patients. Diseases such as cancer may isolate people and affect their social adaptation and limit their social activities (8). The spiritual health is a salient and significant factor in a healthy life. Moreover, spirituality and religious beliefs significantly contribute to cancer patients' adjustment and give meaning and purpose to their lives (8-10). Patients with strengthened spiritual health can effectively adjust to their disease and even spend the last stages of their disease thoroughly. Studies show that cancer complications are few among patients with higher spiritual health (11).

The sound heart pattern, which is based on Islam's spirituality, introduces self-care as an approach to protect spiritual health. According to this pattern, individuals apply their spiritual beliefs as a control source and embark on the right deeds by developing relationships with God. In the light of their faith and pious practices, they consider the kingdom of the world and establish relationships with God, people, and the entire world of existence based on their beliefs in Him (12). This pattern endeavors to provide individuals with necessary capacity to modify their quality of life and attain spiritual health (sound heart) and helps them discover and employ their innate abilities to control the stressful conditions of life and earn self-confidence, hope, optimism, and positive thinking (13). Various studies prove that spiritual care based on the sound heart always has a positive effect on self-esteem and anxiety of children with cancer. Considering the correlation between self-esteem and anxiety with the degree of adaptation, this intervention can also have a positive effect on the social adjustment of school-aged children undergoing chemotherapy considering the challenges that children face due to going to school and being treated with chemotherapy at the same time and related issues (14-19).

Cancer patients' adjustment should be considered since attention to spiritual care as one of the principles of nursing care can help us reach this critical condition. Since there are few studies in this area, the present study was performed with aim to examine the effect of spiritual care based on the sound heart pattern on the adjustment of (5 to 12 years old) children undergoing chemotherapy.

## Methods

This quasi-experimental study was performed on 5-12-year-old cancer children undergoing chemotherapy in the Khorramabad Shahid Madani Hospital from September to November 2022. The sample sized was determined based on the study of Vazifehdoost Nezami and colleagues (15); accordingly among the clients referring to this medical center, 41 children who met the inclusion criteria were selected by total population sampling and one sample was excluded from the study due to being infected with covid-19. The subjects were assigned into two intervention and control groups (20 per group). The inclusion criteria were willingness to participate in the study, the lack of severe

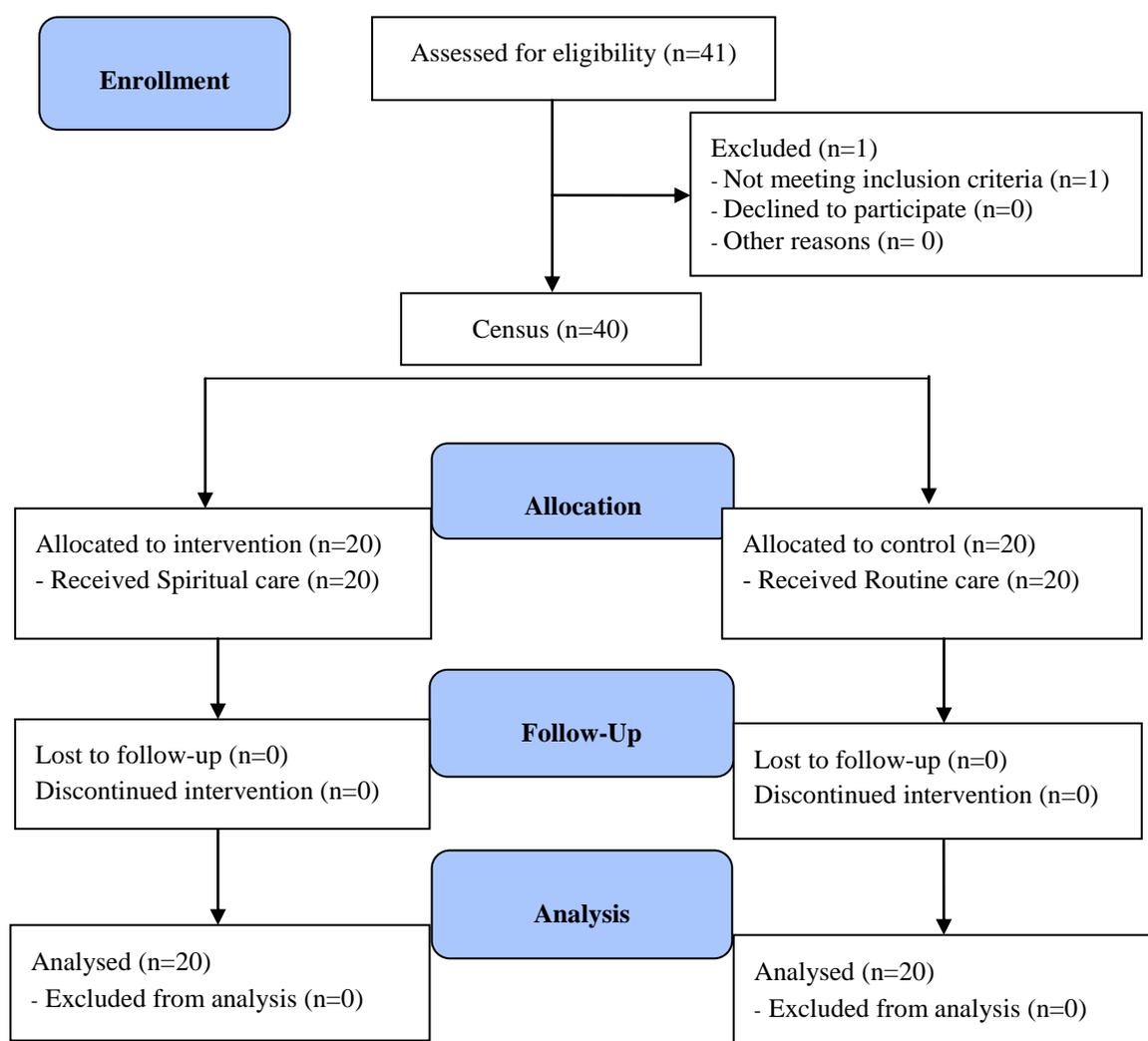
stress experienced due to the death of beloved ones or hard diseases during the past month, not suffering from doctor-approved psychological disorders, the lack of visual or hearing impairments in effective relationships, not using substances, and time and place consciousness. The exclusion criteria were the absence in more than one session of the spiritual care program, the patient's dissatisfaction to continue cooperation with the researchers, the genesis of stress and crises in the family, such as divorce, death of parents, etc. during the study, the incidence of other diseases, such as COVID-19 in the course of the research in addition to cancer, and decreased alertness. The researchers first acquired the informed consent of the research units (children and parents) and provided the necessary explanations concerning the confidentiality of the data and the participants' freedom to continue or leave the study whenever they wished. The intervention group received the spiritual care program based on the sound heart pattern in addition to their routine care. The samples in the control group received only routine nursing care and received no intervention. The questionnaires were filled out by the researcher with the help of the children's parents before and one month after the intervention. Spiritual health based on the sound heart pattern was provided to the patients undergoing chemotherapy in five 60-minute sessions in four weeks in a calm and private room and individually during evening shifts (the 4<sup>th</sup> and 5<sup>th</sup> sessions were held in week 4). For the prevention of the contamination effect, the children in the intervention and control groups were placed in separate rooms. Besides, the intervention-group patients and their family caregivers were asked not to share their intervention-related experiences with other patients and even with the health personnel (nurses). Since the researcher (first author) had participated in a study on the effect of spiritual care on the stress and death anxiety of COVID-19 patients hospitalized in Intensive Care Units (ICUs) and an educational virtual workshop entitled explaining spiritual interventions to sick children and their parents, she was adequately prepared for implementing the five-session intervention, including supportive presence (first session), continuing supportive presence (second session), supporting the patient's religious formalities (third session), continuing support from the patient's formalities (fourth session), and using supportive systems (fifth session) (Table 1).

**Table 1. The general content of the intervention sessions**

<b>First session</b>	Verbal communication, Creating trust, empathy and honesty between nurse and child, Talking with the child about religious beliefs and examining the level of faith and belief, Answering the child's questions and explaining the treatment process, strengthening hope and inner strength, Listening attentively and carefully to the child, Reassuring the child that the nurse is always available, Encouraging the child to communicate with others, Establishing non-verbal communication with the child.
<b>Second session</b>	Education in simple language, the stages of patience and its value as an effective solution in facing the pressure caused by the disease through a ten-minute video or audio file of a cleric, take a 15-minute walk with him if the patient wishes and the doctor allows, Listening to the child's favorite music, Provide the child's favorite pastime using positive words and energy in all stages of communication with the child during all sessions, Providing a relaxing audio file to the child recommending listening to it before going to sleep, listening to the song of birds and water through headphones, listening to the sound of the Qur'an and religious speeches and the sounds of nature, using pleasant smells, using joyful colors, Communicating with the child's family before the third session to follow up on their favorite pastime.
<b>Third session</b>	Communicate constructively with the child, The presence of a clergyman at the child's bedside and talking to him about the meaning and concept of life, in relation to God, himself and others, etc. If it was not possible to have a clergyman at the child's bedside, a 30-minute video or audio file was used, Providing the necessary facilities to perform religious acts, Reading the Quran for ten minutes with Persian meaning (preferably a part of the Quran would be chosen that would strengthen hope in the client), Teaching the child to read special chants to control stress and gain peace.
<b>Fourth session</b>	Encouraging gratitude and its effect on reducing negative emotions, Provide daily gratitude video or file, Encouraging the importance of the role of trust and recourse in coping with mental pressure and stress caused by the child's illness, trusting in God and leaving things to God, etc. If it is possible, the child go to the shrine, or watch a ten-minute film of a shrine together with the child and parents.
<b>Fifth session</b>	Emotional support of the child by companions and medical staff, Advice to the child's companions to help him to carry out his daily responsibilities, Encouragement to attend school, Twenty minutes of the presence of a person with whom the child feels at ease. At the end, all trained issues were added up and the children and their families expressed their attitudes and raised questions about the provided spiritual care. Furthermore, any care-related ambiguities were illuminated.

The data were collected by Dokhanchi's adjustment questionnaire and a demographic form eliciting information on age, gender, marital status, employment, education, hospitalization record, history of mental disorders, experience of receiving spiritual care training, and familiarity with adjustment-boosting methods. The adjustment questionnaire was designed by Dokhanchi (1998) for the measurement of children's adjustment. The split-half reliability and the Pearson correlation coefficient of this scale were reported at 0.79 and 0.81, respectively. This questionnaire has 37 four-choice questions and mothers choose one of the options which is more compatible with their child's behavioral status. A score of 0 to 3 is given to the options of each question. The minimum and maximum score in this questionnaire can be in the range of 0 to 111. The higher scores indicates more compatibility of the children (20). To observe the ethical considerations, the researchers transferred the prepared package to a CD and presented it to the control group in an educational session after the intervention.

After data collection, descriptive statistics were used to apply the indices of mean and Standard Deviation (SD) for quantitative variables and frequency and frequency percentage for qualitative variables. The Chi-square test was employed to measure the interrelationships of quantitative variables in the intervention and control groups, and the paired T-test and independent T-test were utilized to compare the two groups in terms of the mean scores of the variables before and after the intervention. Likewise, the Analysis of Covariance (ANCOVA) test was used to moderate the confounding effects of the quantitative variables in the base phase.  $P < 0.05$  was considered statistically significant.



**Figure 1. CONSORT flow diagram of the study**

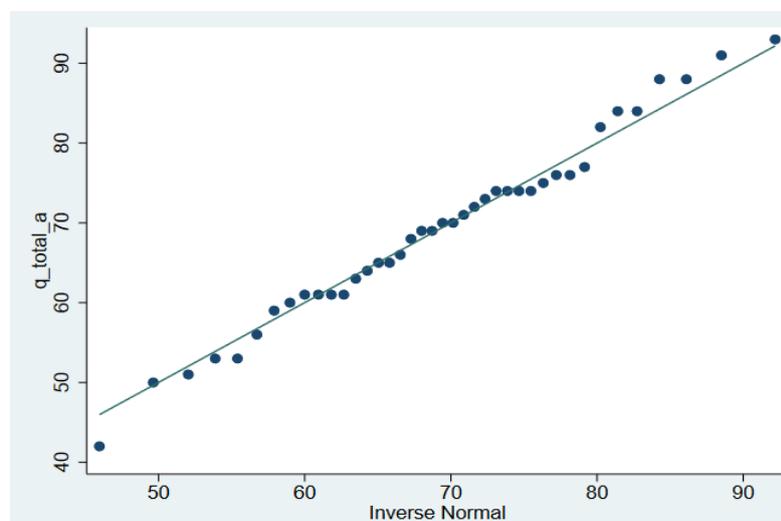
## Results

A total of 41 children who met the criteria for entering the study were included in the study, after entering the study, one sample was excluded from the study due to being infected with covid-19, so 20 samples were included in each group and there was no drop of the sample during the study and until the final analysis stage (Figure 1). The results of the Chi-square test showed no statistically significant difference between the two groups in terms of gender ( $p=1$ ), and the results of the independent T-test revealed no statistically significant differences between the groups in terms of age ( $p=0.431$ ), disease duration ( $p=0.613$ ), fathers' age ( $p=0.491$ ), and mothers' age ( $p=0.232$ ). According to the results of the Chi-square test, there was not a statistically significant difference between the two groups in the educational degree of fathers ( $p=0.527$ ). This test also revealed no statistically significant differences between the two groups in terms of the educational degrees of mothers ( $p=0.465$ ) and place of residence ( $p=0.334$ ) (Table 2). Q-Q plot was used to check the distribution of data graphically that was normal (Figure 2).

**Table 2. Frequency distribution of patients' contextual and demographic characteristics separated by the intervention and control groups**

Variable	Mean±SD		p-value
	Control	Intervention	
Children's age (yrs)	9.04±1.86	8.56±1.94	0.431*
Disease duration (month)	9.85±1.59	8.85±1.20	0.613*
Fathers' age (yrs)	34.2±6.71	32.75±6.52	0.491*
Mothers' age (yrs)	29.75±5.99	27.6±5.20	0.232*
Variable	Frequency (%)		p-value
<b>Age</b>			
Male	9 (45)	9 (45)	1**
Female	11 (55)	11 (55)	
<b>Fathers' educational levels</b>			
University educated	9(45%)	11(55%)	0.527**
No university education	11(55%)	9(45%)	
<b>Mothers' educational levels</b>			
University educated	14(70%)	16(80%)	0.465**
No university education	6(30%)	4(20%)	
<b>Place of residence</b>			
Urban	13 (65%)	10 (50%)	0.334**
Rural	7 (35%)	10 (50%)	

\*Independent T-test; \*\*Chi-square test



**Figure 2. The data distribution graphically using Q-Q plot**

Furthermore, the results of the paired T-test showed no statistically significant difference between the mean adjustment scores of the children in the control group before and after the intervention ( $p=0.181$ ), while the pre- and post-intervention adjustment scores were statistically different in the intervention group ( $p<0.001$ ). The ANCOVA test revealed that the difference between the two groups in the mean adjustment scores was statistically significant before and after the intervention after controlling the confounding effect of the adjustment score ( $p<0.001$ ) (Tables 3 and 4). The parametric test in order to not reduce the power of the study analysis, and Q-Q plot was used to check the distribution of the data graphically (Figure 2).

**Table 3. The mean adjustment scores of groups before and after the intervention**

Variable		Mean±SD		p-value*
		Pre-intervention	Post-intervention	
Adjustment score	Control group	64.11 (9.02)	63.32 (10.04)	0.183
	Intervention group	57.55 (11.24)	74.85 (10.54)	<0.001

\*Paired T-test

**Table 4. The mean adjustment scores before and after the intervention in case of controlling the confounding effect of the adjustment score before the intervention**

Variable	df	MS	F	p-value*
Difference adjustment score	1	3489.87	238.74	<0.001

\*ANCOVA test

The Pearson correlation test displayed that the children's post-intervention adjustment scores correlated with their age and were higher in older ages ( $r=0.351$ ;  $p=0.021$ ). However, the adjustment score after the intervention is not associated with the disease duration ( $p=0.693$ ), mother's age ( $p=0.571$ ), and father's age ( $p=0.916$ ). The results of the independent T-test showed that the mean post-intervention adjustment score equaled 66.431 in children residing in cities and 72.672 in those residing in villages, and the difference was not statistically significant ( $p=0.091$ ). The ANCOVA test was used to examine the relationship between the mean post-intervention adjustment score and the educational degrees of parents. The results displayed that the mean adjustment scores were not statistically different at various educational levels of mothers ( $p=0.767$ ) and fathers ( $p=0.154$ ) (Table 5).

**Table 5. The relationships between post-intervention adjustment scores and demographic variables**

Variable	Disease duration	Gender	Child's age	Father's age	Mother's age	Place of residence	Mother's education	Father's education
Adjustment score	0.693	0.834	0.021	0.916	0.571	0.091	0.767	0.154
p-value								

\*Pearson correlation test

## Discussion

The purpose of the present study was to determine the effect of spiritual care based on the sound heart pattern on adjustment score of school-age 5-12-year-old cancer children undergoing chemotherapy in Khorramabad Shahid Madani Hospital. The main findings of the study showed that children receiving spiritual health based on the sound heart pattern manifested considerable change in their adjustment

after the intervention compared to their control group who were cared conventionally, so that this change was significantly higher in the intervention group than in the control group. In the present study, the surge in the adjustment score indicates that patients could positively manipulate their adjustment after the intervention, and this finding is in line with the results of some other studies (3, 15, 21-26). They showed that the post-intervention self-esteem scores were higher in the experimental than in the control group ( $P < 0.01$ ). In another study, Vazifedoost Nezami et al. probed the effect of spiritual care based on a sound heart on cancer children's anxiety in Mashhad and revealed that the mean anxiety scores of both groups were not significantly different before the intervention in the subscales and full scale. However, the anxiety score significantly decreased in the experimental group after the intervention (14). These results were aligned with the findings of the present research.

Similar to the results of the current study, Babamohammadi et al. in their study examined the impact of spiritual health based on the sound heart pattern on the quality of life of patients with acute myocardial infarction. They found that the spiritual care program could enhance the somatic and mental health, quality of life, and general health scores by 19.8, 17.5, 11.6, and 27.2, and both groups were significantly different in their quality of life scores (27). In this regard, the results of the study by Asadzandi et al. were also in line with our findings. These researchers investigated the effect of spiritual care based on a sound heart on reducing anxiety in patients undergoing coronary artery transplants and discovered that the pre-surgery anxiety of patients decreased significantly in the experimental and increased in the control groups (22). Rossato et al. examined children's and adolescents' spiritual and religious actions toward coping with cancer and found that praying was the most applied spiritual and religious action among cancer children and adolescents, and using holy books and objects, visiting holy sites, and listening to music were in subsequent ranks. As the reports revealed, such actions improved patients' well-being and physical and emotional health (28). These outcomes were also in agreement with the findings of the present study. Similar to the results of the present study, Azimzadeh et al. determined the relationships between Islamic coping methods and the sense of psychological coherence with adaptation to disease and pain tolerance in patients with breast cancer. The findings showed that Islamic coping methods were positively and significantly associated with adaptation to disease and pain tolerance, and the behavioral and emotional subscales were positively related to adaptation to disease and pain tolerance (21). Torabi et al. studied the effect of spiritual care on cancer adolescents' adjustment and displayed that spiritual care positively contributed to the adjustment of these patients (26). These findings were also in line with the results of the present study. It seems that religious and spiritual interventions can protect the mental health of people with chronic diseases such as cancer, against depression and anxiety due to the inhibitory effect of spirituality and religion against mental disorders.

Among the studies with incompatible results, the research carried out by Nazoktabar et al., which investigated the relationship of spiritual health with the social adjustment and quality of life of cancer patients, the results showed an insignificant relationship between spiritual health and social adjustment and a significant relationship between spiritual health and quality of life (7). The inclusion criteria in their study were highly limited, and excluding a certain age group toward a more homogeneity of the examined samples' characteristics was one of the drawbacks of the research and probably a suitable justification for the incongruence of the results.

In the present research, demographic characteristics were tested by the adjustment score. It was found that the post-intervention adjustment score positively correlated with the child's age and increased as the child aged. However, no significant correlation was observed between the post-intervention adjustment score and other quantitative variables. Concerning the uptrend of the adjustment score with children's aging, we can claim that since children approach their full age, i.e., become duty-bounded according to Islam, as they grow up and receive training about religious issues and beliefs from school and family, their adjustment is more influenced by the spiritual care based on the sound heart pattern. Nasirzadeh et al. also reported the similar results (29).

The mean post-intervention adjustment scores of children in the present study revealed no statistically significant difference when separated by their place of residence. There was also no statistically significant relationship between the post-intervention adjustment score and gender. These findings were aligned with the results of some studies (22,30,31). To explain this outcome, we can assert that children's adjustment is highly dependent on the environmental, cultural, and mental conditions of children and their families, in addition to the disease condition, and gender does not directly impact

their adjustment. Moreover, the results of the present research showed that the mean adjustment score did not reveal any significant differences at various educational levels of mothers and fathers after the intervention. The similar finding was found in the studies by Asadi et al. (22) and Kholasehzadeh et al. (32). Children's adjustment highly depends on the environmental, cultural, and mental conditions of children and their families, as well as the disease condition, and parents' educational levels do not directly influence children's adjustment. Teaching spiritual care at school or in the family and from radio and television and virtual groups for children were among the limitations of our research.

### **Implications for practice**

The results of this study indicated that spiritual care based on a sound heart raised the adjustment of school-age children undergoing chemotherapy. The adjustment of these children is significant due to their vulnerability, especially at school ages and adolescence. Notably, paying attention to spiritual care as one of the nursing principles can help us reach this critical state. The findings of the current research can be a milestone for improving the quality of life in children undergoing chemotherapy through a simple and cost-effective nursing intervention, like spiritual care, which oncology nurses can employ in the care programs.

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### **Conflicts of interest**

The authors declared no conflict of interest.

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