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Original Article

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Effects of Hospital Clowning on Anxiety and Fatigue in Children with Cancer undergoing Chemotherapy

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Abstract

Background: Chemotherapy is associated with various physical and psychological complications such as fatigue and anxiety in children. Although hospital clowning completely affects health care in pediatric patients, it is a little-known distraction approach in children undergoing chemotherapy in Iran.

Aim: This study aimed to investigate the effect of hospital clowning on anxiety and fatigue in children with cancer undergoing chemotherapy.

Method: The participants in this clinical trial were 7-15-year-old children (n = 18) with cancer undergoing chemotherapy in a hospital in southeastern Iran, 2019. Participants were selected using convenience sampling and randomly assigned to the intervention (n=40) and control groups (n=40). The intervention group and clown participated in different games for two weeks, 3 sessions per week, and each session lasted 2 to 3 hours in the playroom of the oncology ward. The control group received routine care. A demographic survey, the Revised Children's Manifest Anxiety Scale (RCMAS), and the Visual Analog Fatigue Scale (VAFS) were completed before and immediately after the intervention by interviewing the two groups. Data were analyzed by IBM SPSS v.21 using the Independent t-test, Paired t-test, and Chi-square.

Results: The mean and standard deviation of the age in the intervention and control groups were 9.61±2.84 and 9.65±2.28 years old, respectively. The mean difference between anxiety and fatigue in the two groups was significantly different after hospital clowning (P<0.001).

Implications for Practice: The present study indicated that hospital clowning reduced anxiety and fatigue in children with cancer undergoing chemotherapy. Using hospital clowning is recommended in clinical wards due to the negative effects of anxiety and fatigue on the treatment of children with cancer.

Keywords: Anxiety, Cancer, Chemotherapy, Fatigue, Hospital clowning

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Introduction

Cancer and its treatments as stressful and traumatic events (1) are associated with numerous complications that reduced the quality of life in children (2). Chemotherapy as the first-line therapy causes many physical consequences including nausea and vomiting, fatigue, alopecia areata, infection, stomatitis, eating disorders, and pain as well as psychological impacts such as anxiety and depression (3, 4). Many physiological and psychological factors, as well as chemotherapy or nutritional deficiencies resulting in Cancer-related fatigue in children (5). Cancer-related fatigue has been reported in 70-100% of patients undergoing chemotherapy (6).

Anxiety has been reported in several studies as the other common cancer-related complication in children (3, 7). Pharmacological and non-pharmacological interventions are used for reducing the complications of cancer and related treatments. Different non-pharmacological methods such as distraction techniques, storytelling, video games, music, and cartoon have been used for children (8, 9). Distraction is a technique in cognitive-behavioral therapy that has been widely used by families, health specialists, and nurses for declining the pains of medical procedures (10). Hospital clowning is a part of patient-centered care in the pediatric ward that is used as a new distraction approach in health care (11). Currently, health care professionals consider hospital clowning as a communication skill to improve the patient's physiological and psychological state. In this method, the therapeutic clown is employing techniques such as ridiculous imitation, magic, music, storytelling, and other skills to distract patients' minds from the hospital environment, pain, and anxiety (12, 13). The therapeutic clown is much more effective when the clown is a member of the health care team (14). Recent studies have shown that hospital clowning has a positive effect on patients (15-17). Numerous studies have indicated the effect of hospital clowning on reducing the severity of preoperative anxiety and postoperative pain in children (8, 15, 16, 18). Asghari Nekah et al. showed that structured group play therapy reduced anxiety and depression in children with cancer in Iran (19). Several studies have demonstrated that hospital clowning is also effective in reducing fatigue in children with cancer undergoing chemotherapy (20, 21). Nurses as a key role effectively reduce cancer-related treatment complications by hospital clowning through 24-hour contact with sick children (22). Hospital clowning is used as one of the new and effective methods for reducing cancer-related complications in many countries (23). However, no study, to the best of my knowledge, has been reported on the effect of hospital clowning on children with cancer and chemotherapy complications in Iran. Accordingly, the present study aimed to determine the effect of hospital clowning on anxiety and fatigue in Iranian children with cancer undergoing chemotherapy.

Methods

The present clinical trial was conducted with two groups in 2019 using pretest-posttest design, parallel, non-blind groups. The research population was 7-15-year-old children with cancer admitted to the hematology unit of a teaching hospital located in southeastern Iran. The sample size was 40 persons for each group following Dionigi et al.'s study (4). A total of 80 children were selected using convenience sampling and randomly assigned to the intervention and control groups using color cards. The researchers placed 40 red and 40 blue cards in the envelopes. Each participant chose one of the cards. So, the children were included in one of the groups based on the selected color (Figure1).

The inclusion criteria were being 7-15 years old, receiving at least one course of chemotherapy, having no mental retardation or hearing loss and other chronic illness, not receiving anti-anxiety medication or any other drug that distort the results of the study, and no coulrophobia. Absence for more than one session, death, and illness of the child were considered as the exclusion criteria.

The data were collected using a demographic survey, the Revised Children's Manifest Anxiety Scale (RCMAS), and the Visual Analog Fatigue Scale (VAFS). The Revised Children's Manifest Anxiety Scale is a 37-item self-report inventory, with 28 items measuring anxiety and the other 9 items serving as a lie detector. This scale assesses the symptoms of physiological and social anxiety. The scale is a Yes/No test which is scored 1 or zero. The score is the sum of all "yes" answers on this scale. The total score is between 0-37. A higher score indicates more anxiety. The Cronbach's alpha coefficient for this scale was equal to 0.78 to 0.89 and the test-retest reliability was measured as equal to 0.65 to 0.71 (24). Taghavi et al. assessed the reliability and validity of the instrument equal to 0.67 by using the test-retest method (25) and its Cronbach's alpha was reported 0.77 in Mashhadi's study (26). The internal consistency of the instrument in the present study was equal to 0.86 through the Cronbach's

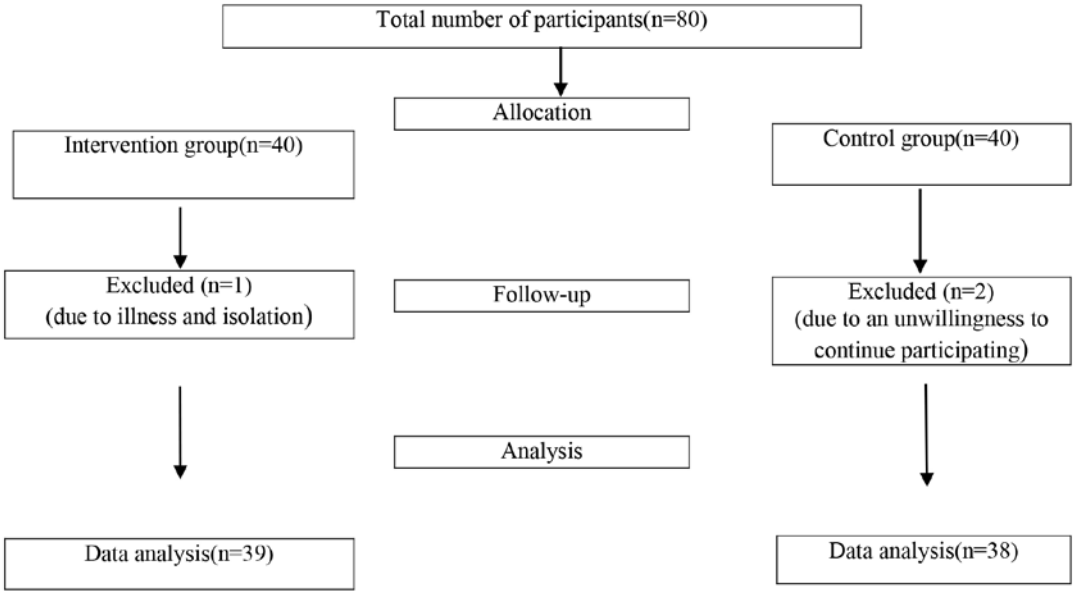

Figure 1. CONSORT flow diagram

alpha coefficient.

The Visual Analog Fatigue Scale is the simplest one-dimensional fatigue tool that is scored on a scale of 1 to 10. The scores on the scale are interpreted as 0 = no fatigue, 1-3 = low fatigue, 4-6 = moderate fatigue, 7-9 = high fatigue, 10 = severe fatigue (27). The reliability index of the scale is equal to 0.91 using the test-retest method which is acceptable (28). This scale has been used in several studies in Iran. Cronbach's alpha coefficient has been reported 0.90 in the Persian version of this questionnaire (29, 30). The internal consistency of the instrument in the present study was equal to 0.89 using the Cronbach's alpha coefficient.

The researcher provided the children and their parents with some explanations about the objectives and the procedures after getting acquainted with them and obtaining informed written consent. The parents were assured that the collected information was confidential and that participants could leave the study at any time. The questionnaires were completed by the participants after dividing them into two intervention and control groups.

The intervention was implemented for 2 weeks and 2 sessions per week from 2 to 4 p.m. in the playroom of the pediatric oncology unit. The researcher had received the necessary training in this field. The intervention was performed according to the age and stage of development in two groups of 2 to 3 children aged 7-11 and 11-15 years. The researcher welcomed the children by wearing happy clothes in red, blue, light green, and pink with wigs, nose, and clown makeup at the beginning of each session. The children would be given interesting and funny masks to be worn during the intervention if they wished. The children played different games such as storytelling, finger puppets, music, magic, word games, pantomime, and bubble games depending on the age of the group during each session. The two questionnaires were again completed for children in both groups immediately after the intervention. After collecting the data, their normality was evaluated using the Shapiro–Wilk test.

Data were analyzed using descriptive and inferential statistics with IBM SPSS v.21. Paired and independent t-test were used to compare the mean in each group before and after the intervention. A Chi-square test was used to compare the frequency of qualitative variables of the two groups. P-value = 0.05 was considered as the significance level. Shapiro-Wilk test was used to test the normality of the distribution of observations ($p>0.05$).

Results

Out of 80 patients, 1 patient in the intervention group (due to illness and isolation) and 2 patients in the control group (unwillingness to continue participating) have left the study. Therefore, the study

Table 1. Characteristics of patients with cancer (N= 77)

Characteristics	Intervention N (%)	Control N (%)	P value
Sex			
Male	15(38.5)	16(42)	0.36*
Female	24(61.5)	22(58)	
Diagnosis			
Leukemia	34(87.2)	29(76.3)	0.17*
Lymphoma	5(12.8)	9(23.7)	
Stage of cancer			
Stage 1	31(79.5)	30(78.9)	0.58*
Stage II or III	8(20.5)	8(21.1)	
	Mean±Standard Derivation	Mean±Standard Derivation	P value
Age (years)	9.61±2.84	9.65±2.28	0.94**
Duration of disease(years)	2.10±1.69	2.50±1.85	0.33**

* Chi-square
** Independent t-test

was performed on 77 participants. The analysis of the participants' demographic data indicated the mean and standard deviation of the age of children in the intervention and control groups were 9.61±2.84 and 9.65±2.28, respectively. The duration of cancer in the intervention and control groups were 2.10±1.69 and 2.50±1.85 years, respectively. Other individual characteristics of the participants are shown in Table 1. No significant difference was observed between the two groups in terms of the demographic and clinical variables.

The mean and standard deviation score of anxiety in the intervention group decreased from 19.97±5.25 to 17.17±4.78 after hospital clowning which shows a significant difference (P <0.001). However, the mean difference in the anxiety scores was not significant before and after the intervention for the participants in the control group. The changes in the anxiety scores were significantly different between the intervention and control groups (P <0.001) after hospital clowning. Besides, the mean score of fatigue in the intervention group decreased from 6.15±1.79 to 5.38±1.84 after hospital clowning which shows a significant difference (P <0.001). However, the mean difference in the fatigue scores was not significant before and after the intervention for the participants in the control group. Nevertheless, the changes in the fatigue scores were significantly different between the intervention and control groups (P <0.001) after hospital clowning (Table 2).

Table2. Mean and standard derivation of anxiety and fatigue scores in children before and after the intervention

Variable	Before	After	Changes	Paired t-test (Intragroup)
	Mean±Standard Derivation	Mean±Standard Derivation	Mean±Standard Derivation	
Anxiety				<0.001
Intervention	19.97±5.25	17.17±4.78	-2.79±3.64	0.16
Control	18.97±10.03	19.18±9.93	0.21±0.90	
Independent t-test (Between group)	0.58	0.26	<0.001	
Fatigue				
Intervention	6.15±1.79	5.38±1.84	0.77±0.84	
Control	6.05±2.27	6.07±2.30	0.03±0.28	<0.001
Independent t-test (Between group)	0.82	0.14	<0.001	0.57

Discussion

The findings of the present study suggested that hospital clowning reduced fatigue and anxiety in children of the intervention group undergoing chemotherapy. However, this difference between the two groups was significant. Petrangeli et al.(2012) observed a significant reduction in the rate of the children's fatigue by examining the effect of hospital clowning on children with cancer undergoing chemotherapy (20) which is consistent with the present study. Lopes et al.(2018) reported that hospital clowning improves the fatigue and psychological stress of children with cancer undergoing chemotherapy in Brazil (31). However, they reported that the implementation of hospital clowning fails to relieve the fatigue of children with cancer contrary to the present study. This difference is due to cultural differences, study setting, type of measuring instrument, the chemotherapy protocols, and type of cancer.

In the present study, pre-intervention anxiety scores were not significantly different between the intervention and control groups. However, anxiety in the intervention group significantly decreases after the intervention. Kocherov et al.(2016) indicated that hospital clowning reduces preoperative anxiety, postoperative pain, and hospitalization costs in children undergoing surgery (15). Furthermore, Goldberg et al.(2014) showed that hospital clowning reduced anxiety and perceived pain in children undergoing skin prick testing which is consistent with the results of the present study (32). Mortamet et al.(2017) reported that performing 2 hours of hospital clowning twice a week reduced the anxiety of children admitted to the pediatric intensive care unit which is considered as a desirable distraction method, as was observed in the present study (12). However, no study, to the best of our knowledge, has been conducted in Iran on the effect of hospital clowning on cancer complications and related therapies. Asghari et al.(2015) showed that cognitive-behavioral structured group play therapy can be an effective solution to reduce anxiety and depression in children with cancer (19). Contrary to the above-mentioned results, Meisel et al.(2009) stated that hospital clowning fails to reduce postoperative distress in children, but it could reduce children's maladaptive behaviors postoperatively (33). Nevertheless, further studies need to be conducted which age, gender, and research populations were taken into consideration. Comparing the clown's intervention with different types of interventions would also be interesting in future studies.

Evaluating fatigue and anxiety immediately after the study should be considered as a limitation. So, these variables should be measured over a longer time in further studies.

Implications for Practice

This study suggested that hospital clowning reduced anxiety and fatigue in 7-15 years old children with cancer undergoing chemotherapy. Accordingly, nurses are recommended to effectively acquire the necessary skills to perform hospital clowning as an efficient non-pharmacological intervention in pediatric wards. Further studies must be performed in other settings and at longer intervals with larger sample sizes as well as before and after painful and stressful procedures such as surgery, blood sampling, and other diagnostic and therapeutic methods in children with cancer.

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Conflicts of Interest

The authors declare that there is no actual conflict of interest.

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