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The Effectiveness of Dramatic Storytelling by Hospital Staff on Reducing the Pain Intensity of Children with Leukemia

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Abstract

Purpose: The present study is conducted with the aim of investigating the effectiveness of dramatic storytelling by hospital staff on reducing the pain intensity of children with leukemia. **Method:** This research is semi-experimental, pre-test-post-test, with the selection of two groups, including the control group and the experimental group. The statistical population of the study includes children with leukemia in Tehran, and the sample size is considered to be 40 children (20 people in the experimental group and 20 people in the control group) using a simple random sampling method. Pain measurement scale checklist was used to collect data. Data analysis was done through covariance analysis and multivariate variance analysis. **Findings:** The results indicate that dramatic storytelling by the hospital staff significantly reduced the pain intensity of children with leukemia in the post-test stage. **Conclusion:** Dramatic storytelling of hospital staff can be effective in emotional self-awareness, identification of own and others' emotions, beliefs, thoughts, attitudes, self-understanding, integration of experiences, efficiency, and subsequently, reducing the pain intensity of children with leukemia.

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Introduction

Cancer is considered as a paralyzing and incurable disease in the society, and the person suffers many physical and mental problems as a result. Cancer diagnosis is a very unpleasant and unbelievable experience for any person (1). Leukemia, like any other fatal disease, leaves many bad effects on the child and the family system. During a period that is emotionally very unpleasant, the normal course of life must change, the child's activities and contact with peers are dramatically changed, expectations and future plans are questioned (2). Following the diagnosis of cancer and its aggressive multidimensional treatments, long and frequent hospitalizations and disruptive side effects, children are often strongly dependent on their parents and therefore isolated from their peers, despite the fact that the development of independence and relationships with peers are important cornerstones of this period (3).

Along with all the psychological traumas of this period for a child with leukemia, the intensity of pain is also one of its very important complications. Although many advances have been made in the care of children, many of the cares necessary to treat the disease are traumatic, painful and uncomfortable (4). Therefore, pain is one of the important care diagnoses in children with leukemia, and all therapists, including the medical and nursing teams, should prioritize pain control. Pain exists in many critical situations and the worst memory of patients in acute illnesses and crises is related to pain (5). Thousands of cancer patients in and out of hospitals

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are suffering from severe pain caused by this disease. Between 20 and 90 percent of all cancer patients experience different degrees of pain (6). Pain is an integral part of many cancers and causes many problems for cancer patients. Among all the complications of cancer, pain is considered the most important stress factor for the family and patients with cancer. Also, pain as one of the chronic problems of these patients imposes a lot of cost on the family and society (7). Cancer pain can cause despair, helplessness and emotional distress, and in many cases it has a negative effect on the patient's coping strategies. Long-term, aggressive and painful treatments for sick children increase the severity of existing psychological problems; In such a way that studies have shown that between 50 and 80% of patients with severe diseases simultaneously suffer from a psychiatric disorder (8). Today, there is a lot of emphasis on non-pharmacological methods of pain relief. Relaxation methods, music therapy, touch therapy, yoga, thought diversion and hypnosis are among these methods. The use of this science is a framework for the clinical care of hospital staff for children, which leads them to use psycho-psychological concepts in their interventions (9).

One of the effective methods in this direction is the use of dramatic storytelling and illustration. Stories provide wonderful solutions that are possible and positive and help to get rid of inner conflicts. Storytelling is a suitable tool that can create a two-way and emotional connection between the child and the environment (10). Storytelling is effective in treating or controlling mental disorders such as behavioral-emotional problems and adjustment and behavioral problems. The use of dramatic storytelling and illustration is considered as one of the appropriate solutions at this age. Stories offer wonderful solutions that are possible and positive and help to get rid of inner conflicts. This method establishes new opportunities to change behavior and create personal relationships (11). The cognitive process of thinking through storytelling and visual stories along with providing information, helping to express and promote communication and knowledge and reminding of skills has a beneficial role in children's awareness along with the development of confrontational strategies in these situations (12).

During a research, Almaspour (2023) has studied the effectiveness of story therapy on reducing the anxiety of first grade children in the era of Covid-19. The results showed that the F value for the anxiety variable was 23.76, which is significant, and according to the calculated effect size of 0.324, the change in the anxiety variable was caused by the influence of the independent variable (story therapy); therefore, the results of this research can be used by educational centers and educational institutions to reduce children's anxiety in the era of Covid-19 (13).

In a research, Rashidzadeh and Alivandi (2021) compared the effectiveness of painting therapy, story therapy and integrated therapy on the internalized problems of children with cancer. According to the obtained results, painting therapy, story therapy and combined therapy had a positive effect on the internalized problems of hospitalized children with cancer. Based on the findings of the present study, it can be concluded that interventions based on art therapy, which are presented in the form of painting and storytelling, can be used to reduce the internalized problems of children with cancer, this issue can be due to the release of suppressed unpleasant emotions or inhibition of rumination. Based on this, it is suggested to use drawing therapy, story therapy and integrated therapy techniques to reduce the internalization problems of children with cancer in medical service centers, counseling and hospitals (14).

Mikaili et al. (2020) in their research compared thought diversion techniques (watching cartoons and making bubbles) in reducing pain caused by chemotherapy in children with cancer. The results of Tukey's test show that in pain, the average scores of the bubble-making group are significantly higher than the cartoon watching group, and the average scores of both experimental groups are significantly higher than the control group. These results mean that watching cartoons and making bubbles helps to reduce the child's pain during chemotherapy. Also, these results show that the method of making bubbles has helped to reduce pain in children during chemotherapy more than the method of watching cartoons. In general, the results showed that the thought diversion method is one of the effective non-pharmacological interventions in pain relief. In addition to having few or even no complications compared to pharmaceutical methods, this method is also inexpensive. It does not have harmful physical and mental effects for the child, it is easy to use, it requires less training and it does not take much time to perform for the child, and more importantly, it is very attractive for children and by using this method, the child will have less understanding of pain. Finally, the findings of the present study suggest the possibility of using thought diversion methods as effective non-pharmacological treatments to reduce pain in different hospital departments (15).

In a research, Dodd & Lester (2021) introduce adventure play as a mechanism to reduce the risk of childhood anxiety. When children play in an adventurous way, climbing trees, riding bikes and jumping over rocks, they experience fear and excitement, excitement and adrenaline. The positive, exciting, and playful emotions associated with this type

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of child-led play facilitate exposure to fearful situations and, in doing so, provide opportunities for children to learn about physiological arousal, uncertainty, and coping. These learning opportunities, over time, reduce the risk of increased anxiety in children by increasing children's expectations and ability to cope with anxiety, reducing intolerance, uncertainty, and preventing catastrophic misinterpretations of physiological arousal (16).

Anderson (2018), believes that with the help of stories and by focusing on reducing fears and helping to express hidden threatening emotions and teaching problem solving, it is possible to help reduce emotional regulation problems in children (17).

Table 1. Mean and standard deviation of pain intensity scores of children with leukemia in pre-test and post-test stages

Variable	Stage	Statistical index group	Mean	Standard deviation	Qty
Pain intensity in children with leukemia	Pre-test	Experiment	24.40	50.11	20
		Control	44.38	57.14	20
	Post -test	Experiment	69.30	65.12	20
		Control	19.37	55.14	20
Verbal expression of pain	Pre-test	Experiment	69.27	66.5	20
		Control	34.20	85.5	20
	Post -test	Experiment	53.19	48.7	20
		Control	70.22	14.6	20
Facial expression of pain	Pre-test	Experiment	74..6	16.3	20
		Control	14.6	47.4	20
	Post -test	Experiment	39.4	50.3	20
		Control	23.6	42.4	20
Physical expression of pain	Pre-test	Experiment	69.5	28.3	20
		Control	60.5	45.4	20
	Post -test	Experiment	89.3	78.2	20
		Control	97.5	22.4	20

Table 2. Results of one-way analysis of covariance (ANCOVA) on the average post-test scores of the two groups of subjects with pre-test control

Source of changes	sum of squares	Degrees of freedom	mean square	F	The significance level of p	Eta squared	Statistical power
pre-test	710	1	7108.79	۳۰	0.001<	0.78	1.00
group	4830	1	484.05	۲۰	0.001<	0.39	0.986
error	8280	36	22.30				

Based on this, in the present study, the effectiveness of dramatic storytelling by the hospital staff on reducing the pain intensity of children with leukemia was investigated and the following hypotheses were proposed:

Dramatic storytelling by hospital staff reduces the pain intensity of children with leukemia.

Dramatic storytelling by hospital staff reduces the components of pain intensity in children with leukemia (verbal expression of pain, facial expression of pain, and physical expression of pain).

The method of research

This research is semi-experimental, pre-test-post-test, with the selection of two groups, including the control group and the experimental group. The statistical population of the research consists of children with leukemia. In this research, the sample size included 40 children from the aforementioned community (20 people in the experimental group and 20 people in the control group), and a simple random sampling method was used to select them.

Toddler Preschooler Postoperative Pain Scale (TPPPS): To measure the pain of children in the period of infancy and childhood, which has been evaluated by Sali and his colleagues in 1992 in the Department of Surgery of the University of Massachusetts Medical Center, with Cronbach's alpha of 0.88, it has been evaluated for validity and reliability. This checklist has 7 items; 3 items are related to verbal expression of pain, 3 items are related to facial expression of pain, and 1 item is related to physical expression of pain. Its total score is between 0-7 and all these items should be examined within 5 minutes of observation (18).

In this research, the experimental group underwent 8 dramatic storytelling sessions by the hospital staff. The

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intensity of pain was measured before and after the treatment sessions; while the control group did not receive any intervention. In order to analyze the data, descriptive statistics, covariance analysis and multivariate variance analysis were used.

Results

In Table 1, the descriptive results of the research are presented.

As can be seen, in the pre-test there is not much difference in the average scores of the control and experimental groups, while in the post-test, there is a difference between the average scores of the two groups. In the examination of the variable components, a significant difference is observed in the average post-test scores of the control group and the experimental group.

Table 3. The results of multivariate analysis of variance (MANCOVA) on the average post-test scores of pain intensity components of children with leukemia in the test and control groups, with pre-test control

Title of exam	Amount	The DF of hypothesis	The DF of error	F	significance level (P)	Eta squared	Statistical power
Pillai	0.454	3	33	9.08	0.001<	0.46	0.99
Wilks's	0.548	3	33	9.08	0.001<	0.46	0.99
Hotelling	0.826	3	33	9.08	0.001<	0.46	0.99
The	0.829	3	33	9.08	0.001<	0.46	0.99

Table 4. The results of one-way analysis of covariance (MANCOVA) on the post-test average scores of pain intensity components of children with leukemia in the test and control groups, with pre-test control

Variable	Source of changes	sum of squares	Degrees of freedom	mean square	F	The significance level of p	Eta squared	Statistical power
Verbal expression of pain	pre-test	١٠٤١,٠٣	1	١٠٤١,٠٣	82.45	0.001<	0.71	1.00
	group	١١٩,٠٤	1	١١٩,٠٤	9.63	0.003	0.23	0.86
	error	٤٤٧,٠٤	34	١١,٤٨				
Facial expression of pain	pre-test	٣٦٢,٣٠	1	٣٦٢,٣٠	209.87	0.001	0.86	1.00
	group	٢٥,٢٧	1	٢٥,٢٧	13.33	0.001	031	0.96
	error	٦٠,٥٧	34	١,٧٦				
Physical expression of pain	pre-test	٣٨٨,٧٥	1	٣٨٨,٨٥	199.37	0.001	0.86	1.00
	group	٣٨,٣٤	1	٣٨,٣٤	19.23	0.001	037	0.99
	error	٦٩,٥١	34	١,٨٧				

As can be seen, dramatic storytelling by the hospital staff is effective on the pain intensity of children with leukemia. The comparison of mean scores shows that the intensity of pain of children with leukemia has decreased significantly in the experimental group.

As can be seen in Table 3, with the pre-test control, the significance levels of all tests indicate that between the children of the experimental and control groups, at least in terms of one of the dependent variables (components of pain intensity of children with to leukemia) there is a significant difference. Therefore, the second hypothesis of the current research is also confirmed. The effectiveness or difference is equal to 0.46, that is, 46% of the individual differences in the post-test pain intensity scores of children with leukemia are related to the effectiveness of dramatic storytelling by the hospital staff. The statistical power is equal to 0.99, that is, if this research is repeated 100 times, the null hypothesis may be wrongly confirmed only once.

As can be seen in Table 4, there is a significant difference in the pre-test control between children in the experimental and control groups in terms of children's verbal expression of pain (F=9.63 and p<0.003). Therefore, hypothesis 2 is confirmed. The effectiveness or difference is equal to 0.23, that is, 23% of the individual differences in the post-test scores of children's verbal expression of pain are related to the effectiveness of dramatic storytelling by the hospital staff. The statistical power is equal to 0.86, that is, if this research is repeated 100 times, only 14 times the null hypothesis may be wrongly confirmed.

Also, with the pre-test control, there is a significant difference between children in the experimental and control groups in terms of facial expression of pain (F=13.33 and p<0.001). As a result, hypothesis 2 is confirmed. The effectiveness rate is equal to 0.31, that is, 31% of the individual differences in the post-test scores of expressing pain are related to the effectiveness of dramatic storytelling by the hospital staff. The statistical power is equal to 0.96, that is, if this research is repeated 100 times, only 4 times the null hypothesis may be wrongly confirmed.

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With the pre-test control, a significant difference is observed between the children of the experimental and control groups in terms of physical expression of pain ($p<0.001$ and $F= 19.23$). Therefore, hypothesis 2 is confirmed. The effectiveness rate is equal to 0.37, that is, 37% of the individual differences in the post-test scores of physical expression of pain are related to the effectiveness of the dramatic storytelling of the hospital staff. The statistical power is equal to 0.99, that is, if this research is repeated 100 times, the null hypothesis may be wrongly confirmed only 1 time.

Discussion

The purpose of the present research is based on investigating the effectiveness of dramatic storytelling by the hospital staff on reducing the pain intensity of children with leukemia. Based on the obtained results, dramatic storytelling by the hospital staff reduces the pain intensity of children with leukemia. The comparison of mean scores shows that the pain intensity of children in the experimental group has decreased significantly. Therefore, the first hypothesis of the research is confirmed. By controlling the pre-test, the significance levels of all tests indicate that there is a significant difference between the children of the experimental and control groups, at least in terms of one of the dependent variables (components of pain intensity of children with leukemia) (4). Therefore, the second hypothesis of the current research is also confirmed. During dramatic storytelling, children try to make connections between the experiences gained from the story and the events in their lives. The events of the story, no matter how they are expressed, such as (play, film, poem), leave an effect on the listener and reader that rational arguments cannot have. This intervention can be effective in emotional self-awareness, identification of one's own and others' emotions, beliefs, thoughts, attitudes, self-understanding, integration of experiences, efficiency, and subsequently, reducing the intensity of pain in children with leukemia (9).

Conclusion

The intensity of pain in children with leukemia is a serious problem and it can be defined as a negative emotional, physical and mental reaction to long-term treatment that leads to depression, despair, lack of motivation and reduced ability in them. The aim of the therapists is to increase awareness of the feeling of ability, hope and motivation, in order to reduce the probability of children's pain intensity. Familiarity with the process of causing severe pain in children, the thoughts and feelings involved in it, and teaching effective methods to reduce its intensity, will enable the motivation of children with leukemia to reduce the intensity of pain. Stories make it possible for listeners to identify their suppressed motives and needs and refine them in a more balanced and sublime way through defense mechanisms such as identification, projection, introjection, compensation and exaltation. Storytelling can reveal the non-obvious motivations and needs of the child that events suppress or push back and avoid its appearance (12). Based on his mental representations of the dramatic behavior of the hospital staff (liveliness and hope), the child forms an active model of himself and others in his mind. By means of these patterns, a person explains environmental events and forms his expectations of the safety of the world and the acceptability of his ability. In order to conduct future research, it is suggested to compare the dramatic storytelling of the hospital staff with another intervention approach in reducing the pain intensity of children with leukemia. Among the limitations of the research, we can mention the problems of cooperation with the statistical community.

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