

Effectiveness of Parental Cognitive Interventions on Anxiety, Emotional Distress and Quality of Life in Children with Cancer

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ABSTRACT

Introduction: Current survey aimed to investigate effectiveness of simultaneous use of cognitive interventions child and parent, child's attention deviation on severity of reported anxiety, distress levels due to sampling or injection into cerebrospinal fluid - CSF and quality of life in children with cancer.

Method: This study was experimental study with pre-test - post-test and control group which was conducted in 2013. The Statistical population included all children with cancer who were referred to Bo'Ali Hospital in Sari city and Amirkala Hospital in Babol city. The number of participants was 30 (N = 30). Participants were randomly assigned to two experimental and control groups. Each group was comprised of 15 children. Children were visited twice. In first session, both groups received usual care, and in second session, cognitive test group and control group received usual care. Instruments utilized in this investigation included demographic questionnaire; March scales, Cheops and visual-deductive life quality of current operation in child medicine.

Results: The results showed that parental cognitive interventions and child's attention deviation can reduce anxiety's level and improve quality of children's life. Cognitive intervention is effective in reducing anxiety, distress and improving quality of life in children with cancer undergoing sampling position of cerebrospinal fluid - CSF. **Conclusion:** It is recommended that cognitive interventions can be used in this painful procedure for management of anxiety and children's distress.

KEYWORDS: Cognitive Interventions; Anxiety; Emotional Distress; Quality of Life; Cancer

INTRODUCTION

Investigations showed that in pediatric oncology, pain is sign which children are afraid it most of time [1]. Several painful procedures on children with cancer were done [2]. One of diagnostic and therapeutic procedures in cancer pediatric is sampling of cerebrospinal fluid - CSF which is used for diagnostic purposes and may be used for therapeutic purposes [3]. It has been reported that such measures had high levels of pain, fear, anxiety and distress caused to child [4]. The pain that does not relieve has negative therapy and psychological consequences. Lack of suitable reduction of pain could prevent satisfactory quality of life [5]. Non-pharmacological strategies are widely used in pain management and coping with emotional distress [6]. Attention deviation is cognitive counteraction strategy in management of pediatric pain and children's distress which its effectiveness is well documented [7]. The research proved children that use effective counteraction behavior before and during medical procedure have less anxiety in comparison to those who does not use these behaviors and subsequently show less anxiety and pain. [8]. Some studies have shown that even stress due to short-term medical procedures, days later also they are associated with distress and eating disorders in children. For this reason, decline in children before, during and after medical intervention is important [9].

The results of meta-analysis by Oman and colleagues [10] revealed that cognitive- behavioral interventions can be effective in severe pain of needle, especially in reducing behavioral disorders due to bone marrow sampling. Researches in this area have been shown that distraction in reducing distress of kids during sampling can adjust to mental experience of pain and psychological distress. Using attention deviation method of cerebrospinal fluid - CSF sampling and bone marrow sampling has been reported successful [11]. Alavi and Zarghami [12] assessed effect of bubble formation (distracting technique) on sampling pain's intensity of children's venous blood that infected with Thalassemia which its indicated that bubble blowing to reduce pain resulting from venous blood samples and according to more economic bubble blowing, use of different distraction techniques by nurses during blood sampling lead to improving quality of children's life with Thalassemia. The result of Tavassoli's research [13] in comparison amount of effect of familiar game and distraction on pain and anxiety intensity and also injection practices of children with Thalassemia showed that mean scores for pain, anxiety and behavioral signs decrease in both familiar game and distraction group. Preparation children and their families is another critical aspect of decreasing pain and anxiety in which needle is used [14] and various studies have emphasized to role of preparing children [15]. Bereer and colleagues [16]

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investigated role of anxiety in pediatric surgical preparation. Changes in anxiety scores significantly in intervention group were better than control group. Kelk and colleagues [17] in their study in distress management of venous blood samples used preparation. Results showed that prepared children in comparison to children who had not been prepared, regardless of gender, race and injection history and parent strain were showed significantly less distress before and during venous blood samples. Due to harmful effects of pain and anxiety in children, present study intends to investigate combination of cognitive interventions, including preparing child and parent (parent's information booklet and painting and coloring pictures of short samples of cerebrospinal fluid - CSF for children) and investigate child's attention deviation (delivering TV cartoons during performance) on reported anxiety's intensity, distress levels from IT / LP and level of life quality in children with cancer.

METHOD

This study was pilot study with pre-test - post-test and control group which was conducted in 2013.

Research was done in Bo'Ali Hospital and Amirkala Hospital by achieving necessary permissions for Project from Science and Research University Zanjan Branch and Officials of Medical Centers

Participants

The Statistical population included all children with cancer (including ALL, AML, lymphoma, central nervous system tumors and tumor-skeletal - muscle) who were referred to Bo'Ali Hospital in Sari city and Amirkala Hospital in Babol city for LP / IT.

Distribution of children in type of cancer and sampling frequency of cerebrospinal fluid - CSF in research groups was randomly. In current research sampling method was available and based on aim and sample size was considered 35 patients according to limitation of study. Children with their parents were randomly assigned to either experimental or control group. Inclusion criteria for study design included age range of 9-12 years, Cancer diagnosis, and Referral center for LP / IT, Not received previous psychological intervention on anxiety management, not affliction to chronic disease and use cream before the procedure.

Measures

Data collection including self-designed demographic questionnaire (age, gender, diagnosis, ...) and inclusion criteria, Multidimensional Anxiety scale, Cheops Scale, visual- comparative quality of life scale in current performance of children's medicine (PedsQL™ VAS) .

Multidimensional Anxiety Scale: It's one of assessment tools for anxiety disorders in children that is result of empirical studies. Theoretical basis of this scale is that Diagnostic and Statistical Manual of Mental Disorders has not completely and suitable describes anxiety.

This scale also demonstrated good convergent and divergent validity and has significant test-retest reliability in clinical populations [18]. This measure was constructed by March and colleagues in 1997, it is 39-item self report instrument for assessment of symptoms and is used for assessment of anxiety signs in age group 8 to 19 years. Each item is scoring on four-point Likert scale from 0 to 3 (never, rarely, sometimes and always). This scale measures four dimensions including social anxiety, separation anxiety and avoidance of damage and physical symptoms [19].

Cheops Behavioral Observation Scale: It included in types of crying, face mood, child's language, muscular tension, legs, slope scores between 4 to 13. Since its differential validity have not been proved. Cheops behavioral observation scale should be considered as amount of behavioral anxiety during painful medical actions [20].

Current Operation of Visual-Deductive Life Quality Scales in Children: This scale is self - assessment of children which evaluate anxiety, sadness, anger, tiredness and pain by using 6 visual-deductive scales suitable for changeable age [21].

In research that conducted in Iran on life quality of children in Iran, content validity of this scale was evaluated by 11 experts (faculty members in college of psychology and Shahid Beheshti University) and amount of proportion or inappropriateness of each item of parent and child forms in scale range of 3-0 (zero is sign of inappropriateness and 3 is sign appropriateness) was identified. Generally this people believe that this scale is suitable for evaluation situational life quality of children.

Procedure

To collect data, researcher about 3 months, from 17th April 2013 to 18th July 2013 attended every day in selected hospitals then identified eligible patients in age, gender and introduction and orientation to parties, after

that investigator talk to parents of each child and explained purpose of research project. Finally parent cooperation was attracted to participate in research projects written informed consent was obtained from parents and children for their participation in the study. Parents were asked to consider child opinion to be asked to participate in study and also became interested in children's oral consent. After explaining purpose of research and informed consent of child's parent or nurse, first demographic information and data related to check scheme criteria was collected. During two meetings with children (individually), in the first meeting, both groups received usual care (received topical cream before action and rewarded after action).

At end of the first meeting presented booklet informing parents about pediatric pain management and related stories action that time interval between two meetings, parent read handbook and read related story for child then want the child to paint and colored story.

In second meeting, for children in experimental group story was read again (in the waiting room) and television cartoons (during painful procedures) were presented and control group received usual care. At each meeting, level of anxiety (5-10 minutes before proceeding), level of distress observed (during current time) and quality of life situations (infant form) were measured. The analysis of covariance was used for analyze the obtained data.

RESULTS

Table 1: Descriptive data of quality of life in pre-test and post-test

Variable		Pretest		Post-test	
		Mean	SD	Mean	SD
life's Quality	Experiment Group	29.5556	2.55495	37.3333	2.91548
	Control Group	27.6667	2.34521	26.6667	2.59808

Based on results of descriptive indicators can be said that mean of 2 control and experimental groups at pre-test does not difference but there is significant change in post-test than pre-test scores of life quality and also than post-test control group .

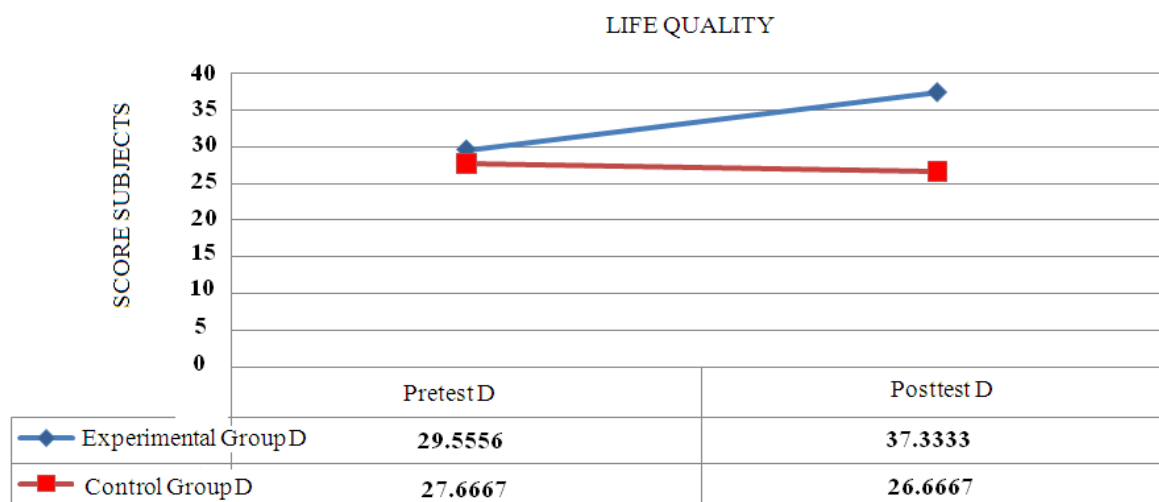


Figure 1- Comparison of mean of quality of life in two separate pre-test and post-test

Table 2: Descriptive data of distress in pre-test and post-test

Variable		Pretest		Post-test	
		Mean	SD	Mean	SD
Distress	Experiment Group	11.4444	1.13039	6.7778	.83333
	Control Group	11.0000	.86603	11.5556	.72648

Based on table can be said that mean of 2 control and experimental groups at pre-test are not difference but there is significant change in post-test than pre-test scores of amount of distress variables and also than post-test control group .

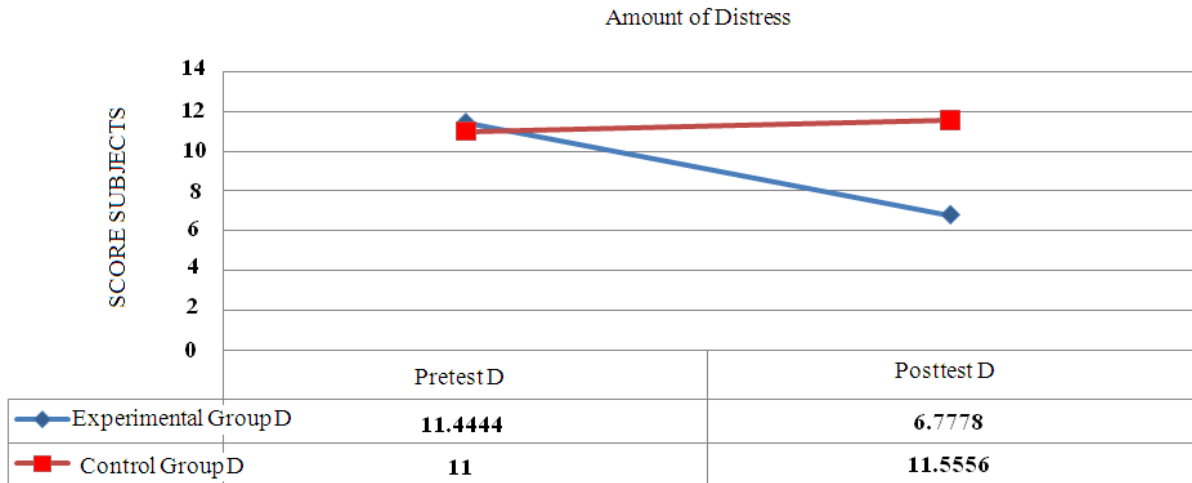


Figure 2- Comparison of mean of distress in two separate pre-test and post-test

Table 3: Descriptive data of anxiety in pre-test and post-test

Variable		Pretest		Post-test	
		Mean	SD	Mean	SD
Anxiety	Experiment Group	98.4444	3.12694	78.5556	5.81187
	Control Group	98.3333	2.34521	100.4444	3.71184

Based on table; mean of 2 control and experimental group at pre-test are not difference but there is significant change in post-test than pre-test of anxiety variables and also than post-test control group.

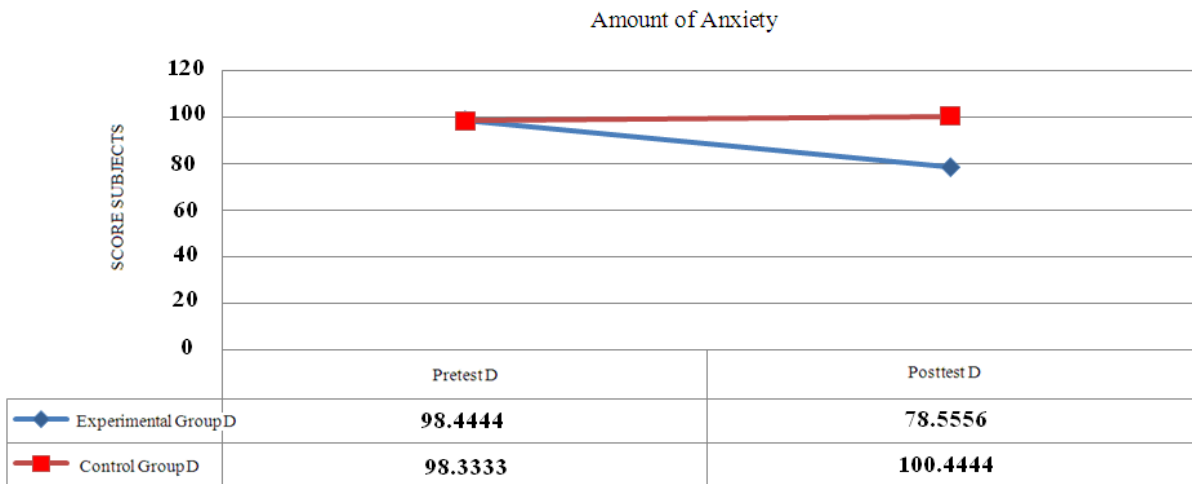


Figure 3- Comparison of mean of anxiety in two separate pre-test and post-test

Table 4: Evaluation of normality of data distribution by using the Shapiro Wilk

Variable			Wilk Shapiro test		
			Level	df	Sig.
Variable	Life's Quality	Experiment	.779	9	.312
		Control	.924	9	.423
	Distress	Experiment	.899	9	.248
		Control	.823	9	.087
	Anxiety	Experiment	.957	9	.771
		Control	.968	9	.879

Based on results of Kolmogorov-Smirnov and lack of significantly in two groups in 0.05 levels, condition of equality of variances and normal distribution of data within the group is supposed.

Table 5: Levine test for homogeneity of intergroup variance of subjects

Variable	F	df1	df2	Sig.
Life's Quality	3.621	1	16	.075
Distress	.303	1	16	.589
Anxiety	4.457	1	16	.051

Assumption of variance homogeneity of pre-test scores in both groups were assessed by using Levine's test and according to amount of F Levine in $\alpha = 0.05$ level was not significant; so, assumption of homogeneity of variance and regression slope of communication is established.

Table 6: The results analysis of covariance on anxiety

Index Sources changes	Total square	df	Mean square	F	Sig.	Eta	Power Test
diffraction Effect	144184.500	1	144184.500	6063.834	.000	.997	1.000
Group Effect	2156.056	1	2156.056	90.675	.000	.850	1.000
Error	380.444	16	23.778				
Total Corrected	146721.000	18					

According to Table 6 and $F = 90.657$, ($df=1$ & 16) in $\alpha = 0.05$ is significant. Therefore it can be concluded that cognitive interventions on anxiety in children with cancer is effective. Eta values indicate that effect of cognitive interventions on anxiety in children with cancer is 85%. Test power with value of 1 indicates adequacy of statistical model. Therefore, research hypothesis is confirmed with 95% confidence and comparison between control and experimental group's shows that mean of test group on post-test stage has declined. So it can be said that cognitive interventions is effective on anxiety in children with cancer.

Table 7: Results of covariance analysis on distress (N= 15)

Index Sources changes	Total square	df	Mean square	F	Sig.	Eta	Power Test
diffraction Effect	1512.500	1	1512.500	2475.000	.000	.994	1.000
Group Effect	102.722	1	102.722	168.091	.000	.913	1.000
Error	9.778	16	.611				
Total Corrected	1625.000	18					

According to Table 7 and $F = 168.091$, ($df=1$, 16) in level of $\alpha = 0.05$ is significant. Therefore it can be concluded that cognitive interventions for children with cancer has effect on distress level. Eta values indicate that effect of cognitive interventions on level of distress in children with cancer is 91.3%. Test power with value of 1 indicates adequacy of statistical model. So research hypothesis is confirmed with 95% certainty and comparison between control and experimental group shows that mean of test group on post-test has declined. Therefore it can be said that cognitive interventions on level of distress in children with cancer is effective.

Table 8: Results analysis of covariance on Quality of Life (N= 15).

Index Sources changes	Total square	df	Mean square	F	Sig.	Eta	Power Test
diffraction Effect	18432.000	1	18432.000	2417.311	.000	.993	1.000
Group Effect	512.000	1	512.000	67.148	.000	.808	1.000
Error	122.000	16	7.625				
Total Corrected	19066.000	18					

According to Table 8 and $F = 67.148$, ($df=1$, 16) in level of $\alpha = 0.05$ is significant. Therefore it can be concluded that cognitive have effect on quality of life for children with cancer. Eta indicates that a cognitive intervention is 80.0% on quality of life of children with cancer. Test power with value of 1 indicates adequacy of statistical model. So research hypothesis is confirmed with 95% certainty and comparison means between experimental and control groups show that mean of test group on post-test has increased. Therefore it can be concluded that cognitive interventions on level of quality of life in children with cancer is effective.

DISCUSSION

The Purpose of this research is to investigate cognitive interventions, child's attention deviation and preparation children and parents on reported anxiety, amount of distress related to IT / LP and level of life quality of children with cancer. Use of drugs and non-pharmacological strategies (preparation, self - control,

distracting, massage, hypnosis, use of analgesics) have been identified general principles of managing pain and anxiety in children [22]. There are strong and many research literature that support effective cognitive intervention (specially distracting strategy) in reducing pain anxiety which needle is used. The results of current research on reducing anxiety and distress and improving life quality are consistent with results of these studies [10, 11, 12, 13, 14, 17, and 23]. Cognitive intervention preparation and deviation can decrease pain and distress in children during injection time and improve the child's life quality. According to cognitive theory, attention capacity is limited. If task occupies individual attention to all sources, harrowing and traumatic stimuli will be perceived [23]. It seems that cognitive strategies, through which one's attention is diverted threatening traumatic situations, can distract attention from the individual to neutral or pleasant stimuli, and prevent the reach painful stimuli to awareness level and incidence of threatening thoughts that cause confusion [24].

In Prabhakar and colleagues' research [25] compared effect of distracting techniques (audio vs. audio - visual) on management of dental anxiety in children. Results showed that technique distracting audio - visual Children's Dental Anxiety management Pediatric was more effective than other methods. Caprilli and colleagues [26] in randomized futuristic study had been examined interactive music's effectiveness as treatment for pain and stress in children undergoing venous blood samples.

The results showed that pain and distress before, during and after sampling compared to controls, band was significantly lower. Marva and colleagues [27] in their study examined effectiveness of strategies used distracting music in management of anxiety in children in pediatric dentistry. The results showed that distracting auditory reduced anxiety levels of children in pediatric dental patients, but this reduction was not statistically significant level. Aghdami [28] in research was investigated on effectiveness of distraction techniques on pain and anxiety of 60 children of school age who were undergoing tonsillectomy. Experimental and control groups randomly assigned in 2 groups mere presence of researcher and test group were included in provided distraction from puzzle and half n hour before surgery. The results showed that after intervention, there was significant difference in outcome measures of pain and anxiety.

Attention is primary mechanism through which painful stimulus reaches awareness and anxiety increases is. Effective psychological interventions is common for pediatric chronic pain, anxiety, confusion, focus on case of sensory stimuli, unpleasant or distressing emotions and seem pleasant and fun alternative to driving [29]. If task occupies individual attention to all sources, harrowing and traumatic stimulus will be perceived. Because children are more sensitive to inculcate and they trust to others more than adults, often they respond well to psychological strategies that divert attention from anxiety over the painful measures. We know that often wait for scary event is worse than the event itself.

There is extensive literature about children and adults that reveals proper preparation, clearly in pain from expected aversive stimulus decreases. According to Maverr two-factor learning theory (classical conditioning and Unconditioned), painful and anxiety medical actions in child medicine with situational medical action can be conditional stimuli. Unconditional stimulus is pain associated with needle insertion. Cohen [30] points out that according to direction of conditional and non-conditional response that is associated with painful procedures and anxiety in pediatrics reduced by diverting attention from pain and anxiety provoking stimulus unconditional and conditional stimuli associated with pain [31]. Brown and colleagues (2009) [32] examined effectiveness of delivering oxygen and nitrogen monoxide in combination with interactive video for diverting child's attention on reducing behavioral distress due to invasive procedures. The results of this study in efficacy of cognitive intervention proposed to reduce distress due to painful invasive procedures; it is consistent with research achievements [33, 34, 28]. In explaining results of thesis research in explaining results of thesis research, cognitive aspects can be pointed out cognitive aspects. Since adjustment in patients with negative automatic thoughts are much and this individual selectively pay attention to negative aspects of environment may be anxiety provoking and distressing, all thing that change their focus, may be used as primary coping strategy. Simple ways of distracting, especially in people with anxiety can be beneficial [35].

In theoretical foundation strategy in attention distracting, it should be pointed that effectiveness of this strategy is in ability and cognitive capacity leads to allocate fewer resources to sign controversial anxiety (needle) [36]. Situations that are potentially threat to safety and welfare of individual assessments are likely to cause extreme physiological reactions. For example, Rimm and Litvak showed that subjects with thinking about painful stimulus, physiological arousal. Based on description provided, it appears that counteraction strategies, especially cognitive strategies apply with effect on components of cognitive, emotional and physiological can prevent incidence of negative emotions and anxiety during painful invasive procedures and reduce the distress caused by the actions of the children. As previously mentioned, although life quality in medical research is new subject and its interpretation varies, increasingly, life quality has been identified as one of the most important parameters in evaluation of medical treatments, including measures that are used to manage anxiety should be measured.

As you have seen in this study, cognitive interventions could reduce anxiety caused by medical procedures in children. Control of anxiety and related symptoms can lead to improved life quality. Due to fact that prevention is better than cure, child psychology and dental centers located in hospitals can provide simple and low-cost interventions of this kind of painful and stressful medical procedures to help children and have become

more active in these situations and so, prevent detrimental effects of anxiety and distress at leaving painful procedures on children can be urged with training hematology and oncology department personnel in management of anxiety in children to reduce anxiety and distress caused by painful procedures in children, use of psychological interventions to improve treatment in hospital. Due to effectiveness of psychological interventions can be used strategies in this plan to reduce distress in children with acute illnesses or chronic medical and dental that for it acts according to efficacy of diagnostic and therapy will be painful and stressful.

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