Original Article

Assessing the Effectiveness of Cognitive Behavioral Stress Management (CBSM) on Pain Perception of Cancer Patients

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Abstract

Background: Disease-related cancer pain is a multidimensional phenomenon. Psychological factors that may alter pain perception in cancer patients have not been well studied. The purpose of this study was to determine the effectiveness of cognitive-behavioral stress therapy on distress in patients with cancer.

Patients and Methods: In a cross-sectional study of consecutive patients (32-70 years*)*, progression of their disease was at levels 1 to 3, high cycle education, and 3 months of chemotherapy, of which 40 were randomly available to the study and allocated to two groups (20 in experimental and 20 in control groups). The instrument was a McGill pain questionnaire (1997). Data were analyzed using two methods of Kolmogorov-Smirnov inferential statistics and multivariate analysis of covariance using SPSS Ver.17.

Results: Correlation analysis showed that the experimental group had a significant reduction in perception of pain, in the posttest after the experiment compared with the control group.

Conclusion: The short-term cognitive-behavioral stress management program could reduce the perception of pain in cancer patients.

Keywords: Cognitive-behavioral, Stress management, Cancer, Perception of Pain

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Introduction

Diagnosis of cancer is a significant source of psychological stress followed by an extended period of stressful cancer treatment[1]. Pain is one of the most distressing aspects of suffering related to cancer treatment. With new technology and treatment modalities, pediatric cancer patients have experienced a better chance of surviving, however pain is still a major side effect of treatment. The increasing rate of survival can be attributed to aggressive treatment procedures and protocols. However, this increased survival rate has resulted in some chronic issues for many of these patients. There has also been an increase in the incidence of side effects and reduced quality of life during and after treatment of cancer[1,2]. With the rising incidence of cancer survivors and pediatric oncology patients, pain is a major priority of care. Effective pain assessment is essential in order to treat pain successfully.

It is essential for providers and nurses to use evidence-based methods to best alleviate or reduce pain in pediatric oncology patients. However, this is not always as easy as it may seem. Pain management is very complex and has many aspects that must be considered[2].

Pain is one of the most distressing aspects of suffering related to cancer treatment. With new technology and treatment modalities, pediatric cancer patients have a better chance of surviving, however pain is still a major side effect of treatment[3]. The increase of the rate of survival can be attributed to the progressively more aggressive treatment procedures and protocols. However, this increased survival rate has resulted in some chronic issues for many of these patients. There has also been an increase in the incidence of side effects and reduced quality of life during and after treatment of cancer[2]. Cognitive behavioral therapy (CBT) is the most frequently used approach in studying the effects of psychological intervention in adjustment to cancer[4-7], and its value has been demonstrated in reducing distress with diverse cancer populations[8]. Tatrow and colligue in their study highlighted that CBT was particularly beneficial for breast cancer patients with respect to their short-term effects on depression, anxiety and quality of life[9]. Stress management interventions may not be effective or necessary for all patients and it is essential to identify subgroups of participants who benefit most. A meta-analysis showed that pre-intervention distress significantly moderated effects with the most distressed participants showing better adjustment. Other studies have shown that interventions may be differentially effective depending on baseline differences in optimism, social support and cancer-specific stress[10-13]. Identification of the women most in need of intervention remains an ongoing research and health care issue[4].

Methods

The statistical population of the study included cancer patients with males and females who referred to Tajrish Shohada Hospital in Tehran (capital city of Iran) (32-70 years). Progression of their disease was at levels of 1 to 3. A total of 40 patients randomly selected from the available sampling method and divided in two groups (20 in experimental and 20 in control groups). The instrument was McGill's questionnaire (1997). Data were analyzed using descriptive and inferential statistics. In the descriptive section, we used the frequency distribution of the table and the mean and standard deviations and in the inferential statistics of the Kolmogorov-Smirnov tests and multivariate covariance analysis using SPSS Ver.17 software.

McGill Pain Questionnaire (Malek, 1997): The McGill pain questionnaire is an example of a dimension specific instrument has been developed for this mean (Melzack, 1975). It has several different versions, but the core of the instrument is formed by a series of lists of adjectives to describe pain, from each of which lists the patient selects adjectives that best describe his or her pain. Individual adjectives are ranked in terms of severity based on prior research with patients treated for pain, and the items chosen by patients are summed to produce scores for three aspects of pain experience.

Results

Data obtained from the implementation of the pain perception questionnaire have a normal distribution (Kolmogorov-Smirnov test in the pain perception variable is not significant). Therefore, the presumption of the normal distribution of data was observed. Default homogeneity of variances: Homogeneous assumption of variables of perceived variance was investigated using Leven's test. The results of this test were presented in the table 2.

The results showed that Leven's test was not significant (p=0.69, F=1.09) which indicates that the variances were homogeneous. Therefore, the covariance analysis test could be applied to compare posttest perception of pain. The results of covariance analysis were presented in the table 3. To test the assumption of the homogeneity of regression coefficients, we use the F test.

According to the results of the table 3, the F test was not meaningful for convergence of regression coefficients in the study variable. Therefore, covariance analysis was performed assuming the coexistence of regression coefficients.

To examine the coexistence of the two groups in the baseline, independent t test was used.

As shown in the table 5, the results of comparing the posttest variable of pain perception in the two groups by controlling the pretest effect indicated that after cognitive-behavioral stress management. The perceived pain score in cancer patients who participated in the test group of the study had a

Table 1: Kolmogorov-Smirnov test to ensure the normal distribution of variable grades of pain perception.

Variable	Kolmogorov-Smirnov	Sig.
Perception of pain	**0.864**	**0.445**

Table 2: Leven Test to Ensure Homogeneous Variants of Pain Perception.

Variable	Df1	Df2	F	Sig.
Perception of pain	**1**	**38**	**1.09**	**0.06**

significant decrease compared to those in the control group ($p<0.05$, $F=39.72$). Therefore, the third hypothesis of the research was confirmed.

Additional, cognitive-behavioral stress management was effective in reducing the pain of people with cancer. Eta's coefficient showed that 51% reduction in pain perception in cancer patients in the experimental group was due to cognitive behavioral stress management by the researcher.

Discussion

In the eight-week period, five-contact intervention was designed to assist patients with identifying troublesome symptoms, generating intervention strategies to decrease symptom severity, and evaluating the effectiveness of the strategies. In our study, we found that coping strategies were associated with pain intensity and quality.

Data suggest that patients with advanced disease undergoing chemotherapy are able to successfully implement problem-solving strategies that reduce the severity of symptoms. The results of this study extend the work of other investigators who have reported on the effectiveness of CBTM in decreasing the severity of specific symptoms[14].

This study provides clear evidence that a briefer than the norm group-based stress management intervention can produce significant improvements in adjustment in undergoing treatment for non-metastatic cancer.

The intervention significantly reduced perceived global stress (primary outcome) post-treatment perception of pain levels. Causal relationships were demonstrated in that pretreatment emotional distress

Table 3: Regression slope check to ensure the homogeneity of variable regression coefficients of pain perception.

variable	F	Sig.
Perception of pain *Pre-test	**1.97**	**0.169**

Table 4: Independent t test.

Variable	Df	t	Sig.
Perception of pain	**38**	**-1.28**	**0.207**

Table 5: Comparison of post-test of pain perception in two groups with control of pre-test effect.

Partial Eta Squared	P-value	F	Mean Square	Df	Source
0.652	**0.000**	**69.322**	**95.942**	**1**	**Pre-test**
0.518	**0.000**	**39.722**	**54.976**	**1**	**group**
			1.384	**37**	**Error**
				40	**Total**

significantly predicted post chemotherapy fatigue.

Depression is a common but not universal reaction to cancer[15]. Depression is frequently underdiagnosed and undertreated in patients with cancer[16] and contributes to the pain experience[17]. In addition, there was a significant relationship between catastrophizing and the psychological factors of depression and state- and trait anxiety in all cancer patients. In studies of subjects with cancer pain, catastrophizing has been linked to increased pain intensity.

Conclusion

According to the results of this research and other researches on the effectiveness of psychological interventions on chronic diseases, it is necessary to

avoid medical treatments and by establishing counseling and psychotherapy centers and using psychological interventions in hospitals and oncology centers, in the process of Reduce pain were helpful.

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