

## A Comparison of Quality of Life, Anxiety and Depression in Children with Cancer and Healthy Children, Kermanshah-Iran

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### Abstract

#### Background

Cancer is a major public health problem in many parts of the world. The present study aimed to compare the quality of life, anxiety and depression in children with cancer and healthy children.

#### Materials and Methods

In this descriptive and causal-comparative study, the statistical population consisted of cancer patients visiting Mohammad Kermanshahi Hospital based in Kermanshah, Iran, in the summer of 2016. Moreover, 60 samples were selected through the convenience sampling. For data collection, three questionnaires were utilized: WHO Quality of Life-BREF (WHOQOL-BREF), Children's Depression Scale (CDS), and the Revised Children's Manifest Anxiety Scale (RCMAS). Furthermore, data were analyzed through the descriptive (frequency, mean, and standard deviation) and inferential statistics (multivariate analysis of variance (MANOVA)) using the SPSS Statistics Software Version 23.0.

#### Results

The results of the present study demonstrated that there were significant differences between the cancer and healthy children in terms of all coping styles. The results also revealed that the mean scores of depression and anxiety of cancer children exceeded those of healthy children, while the mean score of cancer children's quality of life was lower than that of healthy children.

#### Conclusion

According to the results of the present study, it can be concluded that emotional-behavioral changes are the strongest and most stable elements that make a difference in cancer and healthy children. Hence, giving full consideration to Factors is of special importance.

**Key Words:** Anxiety, Cancer, Children, Depression, Quality of Life.

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## 1- INTRODUCTION

In recent years, the incidence of cancer has witnessed an unprecedented growth in the world. Due to the prevalence of this disease and its adverse effects on the psychological, physical and social aspects of cancer patients, it has been introduced as one of the major problems of health in the twentieth century (1). Cancer victims are estimated to be more than seven million people per year. The researchers also predict that the number of cancer patients will increase from 10 million to 15 million by 2020 (2). Moreover, cancer is known as the major cause of human mortality after cardiovascular diseases and accidents in the world (3).

Cancer is seen as one of the health problems in developed and developing countries. The number of cancer children and adults is gradually on the rise. Further, cancers in children constitute 0.5 to 1% of all cancers, and this rate varies depending on the age range. According to the new cases among the American children aged 0-14 years old, there were an estimated 11,630 cases of cancer children (4). Cancer, as a debilitating and common disease, is known as one of the leading causes of death in children in both developed and developing countries. Cancer accounts for four percent of deaths in children under five years of age and 13% of deaths in children aged between five to 15 years of age in Iran's population (5). The cancer prevalence is the same in both genders prior to puberty, and the ratio of this prevalence in females to males is 2:1 during adolescence (6).

Among the raised psychological issues relating to cancer, depression is known as one of the most common psychiatric disorders (7). Although depression has long been known as one of the major mental problems, the importance of this disease has received lots of attention in terms of the suffering that patients should endure as well as the burden that this

disease imposes on the medical sources of nations (8). Research has shown that 50 to 80 percent of cancer patients suffer from a psychiatric disorder, too. Adjustment disorder and depression have been identified as the most common psychiatric disorder and the second most common psychiatric diagnosis, respectively (9). Together with cancer, depression is seen as a risk factor for shorter survival in cancer patients and is a major factor in the rejection of treatment on the part of these patients (10, 11). Depression affects the function of the immune components of the body and consequently the treatment of cancer. So, it can predict cancer progression and the resultant mortality (6).

Generally speaking, the simultaneous occurrence of depression with cancer brings about various adverse effects on one's personal and social life, mental and physical health, disease treatment and progression. Additionally, well-timed prevention, diagnosis and intervention are of prominent importance when it comes to the incidence of depression in cancer patients. Young patients suffering from cancer may also experience multiple stressors resulting from the disease itself and their normal developmental tasks (12). Therefore, given the characteristics of depressed people, it can be claimed that this factor can act as one of the underlying causes of the differences between cancer and healthy children people.

Anxiety disorders are the most abundant of childhood psychiatric disorders. Moreover, diagnostic symptoms associated with anxiety in childhood may be viewed in different ways. A prime example is a kind of behavioral inhibition which is defined as a mood characteristic in which the child responds to new and unfamiliar people, situations and events with fear and avoidance and he/she is generally reserved (13). Some of the causes of anxiety in cancer patients lies in the implications of diagnosis within the minds

of patients and their families, including the possibility of deformity, pain, financial and social losses, dependence, and death (9, 14). Accordingly, it can be concluded that one of the factors that can make a difference between cancer and non-cancer patients is anxiety. With the development of science, cancers in children and adolescents have gradually changed from severe and fatal diseases to a chronic ones, an indication that appropriate coping strategies have been found against this disease in children and adolescents. Today, more than 50 percent of children with cancer can live five more years (15).

Research and theoretical evidence indicate that behavioral-emotional changes and quality of life are the strongest and most stable factors that make a difference in cancer and healthy childrenpatients (16).

It was demonstrated that adolescents suffering from cancer are more likely to experience psychological problems (17). Therefore, adolescents are more in need of special care and attention compared to other age groups. In a study conducted by Bektas and Demir (2016) about anxiety, depression and quality of life of patients with gastrointestinal cancer, it was revealed that male patients with poor economic conditions experienced more symptoms than others. It was also shown that the patient's general health was reduced with the increase of the duration of the disease. In addition, the anxiety scores went up with young ages, while both anxiety and depression scores increased in line with the increased duration of the disease (18).

In this study, quality of life, anxiety and depression were considered as factors that could make a difference in cancer and healthy childrenchildren and adolescents. Hence, it appears that the emotional and behavioral causes of cancer patients vary in cancer and healthy childrenpeople. In addition, these factors have not been addressed in previous literature

thoroughly. Therefore, the present study aimed to compare the quality of life, anxiety and depression in children with cancer and healthy children in Kermanshah, Iran.

## **2- MATERIALS AND METHODS**

### **2-1. Study Design and Population**

In this descriptive and causal-comparative study, the statistical population consisted of children with and without cancer residing in Kermanshah-Iran, in 2016. The samples of cancer children were selected from cancer patients visiting Mohammad Kermanshahi Hospital based in Kermanshah- Iran, while the samples of normal children were chosen from normal students in schools across Kermanshah through convenience sampling.

### **2-2. Methods**

The statistical population consisted of children with cancer and healthy children in the 10-16 age range visiting Mohammad Kermanshahi Hospital based in Kermanshah, Iran, in the summer of 2016. Moreover, 60 samples were selected through the convenience sampling (30 patients with leukemia and 30 healthy children). To collect the resquired data, three questionnaires were utilized.

Since the smallest sample size was suggested by Delavar (1995) to be 15 for each group in causal-comparative studies (19). Accordingly, 30 samples (15 boys and 15 girls) were selected from cancer patients visiting Mohammad Kermanshahi Hospital based in Kermanshah- Iran; and 30 normal samples (15 boys and 15 girls) were chosen from normal students in schools across Kermanshah.

### **2-3. Measuring Tools: Validity and Reliability**

#### **2-3-1. WHO Quality of Life-BREF (WHOQOL-BREF)**

This questionnaire was developed by the European Organization for Research and Treatment of Cancer (20), and it was revised by Ravens-Siebere and Bullinger in (1998) to determine the general quality of life of children with chronic diseases such as cancer (21). The Cronbach's alpha coefficient for the questionnaire measured 0.71 (22). The reliability and validity of the Iranian version of this instrument were confirmed by Nejat et al. (23) and Usefy et al. (24). In addition, this questionnaire has been translated and validated in more than 40 countries (21). The Cronbach's alphas for the dimensions of physical health, psychological health, social relationships and environmental health measured 0.81, 0.78, 0.82, and 0.80, respectively.

The reported internal consistency of different aspects of the instrument measured between 0.52 and 0.84 for healthy and sick people using Cronbach's alpha (24). The questionnaire included a total of 26 questions. The dimension of physical health consisted of seven questions (mobility, activities of daily living, work capacity, energy and fatigue, pain and discomfort, and sleep and rest). The dimension of psychological health consisted of six questions (bodily image and appearance, negative feelings, positive feelings, self-esteem, thinking, learning, memory and concentration, and spirituality/religion/personal beliefs).

As for the dimension of social relationships, it consisted of three questions (personal relationships, social support, and sexual activity). The dimension of environmental health consisted of eight questions (financial resources, physical safety and security, health and social care, home environment, physical environment (pollution/noise/traffic/climate), opportunities for acquiring new information and skills, participation in and opportunities for recreation/leisure activities, and transport). Furthermore, the

health status and quality of life are generally evaluated by two separate questions in this questionnaire (25). Each dimension has a score ranging from 4 to 20. A score of four denotes the worst quality of life as opposed to a score of 20 denoting the best quality of life. In the present study, the Cronbach's alpha coefficients measured 0.70, 0.69, 0.55 and 0.85 for the subscales of physical health, psychological health, social relationships and environmental health, respectively.

### **2-3-2. Children's Depression Scale (CDS)**

This 66-item scale was developed by Kovacs (1992) to assess the depression of children aged between seven and 17 years old (26). This scale has five subscales: negative mood, interpersonal problems, ineffectiveness, anhedonia, and negative self-esteem. The reliability coefficient of this questionnaire has been assessed through internal consistency by many researchers (0.80 and higher) (27-29). Additionally, the validity of this questionnaire has been confirmed in various studies (27, 30). The psychometric properties of the questionnaire was examined by Dehshiri et al. (2009) in Iran, and its test-retest reliability and internal consistency measured 0.82 and 0.83, respectively (31).

The 66 items are divided into 48 depressive items and 18 positive items. Furthermore, the questions of this scale were on five-point Likert scale (one=absolutely false, 2=false, 3=no idea, 4= correct, 5=absolutely correct). The difference between the total score and the sum of scores of subscales parental expectations (PE) and Multidimensional Perfectionism (MP) determines the total score of depression. The minimum and maximum scores are 66 and 330, respectively. The Cronbach's alpha coefficient of the questionnaire measured 84% (32).

### 2-3-3. The Revised Children's Manifest Anxiety Scale (RCMAS)

This scale was developed by Reynolds and Richmond (1997) to assess the children's anxiety and included 37 yes/no questions (33). This is a revised form of Children's Manifest Anxiety Scale (CMAS) (34), which was developed by Reynolds and Richmond (35). Moreover, the reliability coefficient of the scale was reported by Reynolds and Paget (36) through test-retest, which measured 0.64. Moreover, 28 items were related to anxiety and the rest were related to lie detecting. Additionally, the sum of the "Yes" answers to the questions formed the final score.

The normalization of this questionnaire was conducted for the students of different levels of education in Iran by Taghavi and Alishahi (37). Additionally, the reliability of this scale was assessed using the test-retest and split-half (measuring 0.67 and 0.66, respectively). The results of a study done by Taghavi and Alishahi in Shiraz showed that this scale has good validity and reliability (0.67) (38).

### 2-4. Inclusion and exclusion criteria

The inclusion criteria were being in the 10-16 age group, confirmed diagnosis of leukemia, having the symptoms of anxiety and depression according to the criteria of the clinical interview.

### 2-5. Ethical Consideration

It must be mentioned that principals, students, and parents had been briefed about objectives of the research. Moreover, written consent had been obtained from the students' parents before they were included in the study.

### 2-5. Data Analyses

Data were analyzed through the descriptive (frequency, mean, and standard deviation) and inferential statistics (multivariate analysis of variance) using

the SPSS statistics software version 23.0. In the descriptive statistics section, frequency was used for the analysis of demographic variables, and average and standard deviation were utilized for the variable quality of life, anxiety and depression. As for the inferential statistics, the multivariate ANOVA was used for comparing the two groups of normal and cancer children in terms of the quality of life, anxiety, and depression. P-value less than 0.05 were statistically significant.

## 3- RESULTS

In total, there were 60 participants in the present study (30 girls and 30 boys). In both groups, 25% of the samples were chosen from the normal children and 25% were selected from cancer children (**Table.1**). The healthy girls had the lowest mean of anxiety ( $7.84 \pm 4.31$ ), while healthy boys had the lowest depression ( $9.65 \pm 5.16$ ). However, girls and boys with cancer had the highest means in terms of depression and anxiety, respectively (**Table.2**).

Before using the multivariate analysis of variance, the Levine's test was used to meet the assumptions of the analysis. The results of this test revealed that the homogeneity condition of variance was observed. Thus, the multivariate analysis of variance was permitted (**Table.3**).

Based on the results of MANOVA test (178.37), the differences between the two groups were significant with a degree of freedom of six at  $P < 0.001$ . In other words, the two groups were significantly different at least in terms of one of the variables under study. Furthermore, the statistical power of 0.95 indicates that the sample size was sufficient (**Table.4**).

According to the results of the present study, the two groups of children with and without cancer were significantly different from each other in terms of all three variables (quality of life, anxiety and

depression) ( $P < 0.001$ ). Moreover, both groups had significant differences in terms of depression (with a confidence level of 91%), anxiety (with a confidence level of

82%), and quality of life (with a confidence level of 78%) ( $P < 0.001$ ) (**Table.5**).

**Table-1:** Distribution of children with cancer and healthy children by gender

Status								Total	
Healthy children subjects				Cancer subjects					
Female		Male		Female		Male		Frequency	Percentage
Frequency	Percentage	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage		
15	25	15	25	15	25	15	25	60	100

**Table-2:** The Mean of Depression, Anxiety and Quality of Life among children participating in the study

Variables	Status							
	Healthy children subjects				Cancer subjects			
	Female		Male		Female		Male	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Depression	11.34	5.16	9.65	5.03	38.69	4.53	36.25	4.32
Anxiety	7.84	4.31	8.46	6.35	67.57	5.12	51.64	5.28
Quality of Life	107.34	10.37	102.69	10.80	46.81	5.78	43.76	5.17

SD: Standard deviation.

**Table-3:** The results of Leven Test of Anxiety, Depression and Quality of Life among Cancer and Healthy children Subjects

Variables	F	DF1	DF2	P-value
Depression	3.27	1	58	0.148
Anxiety	1.69	1	58	0.138
Quality of Life	6.57	1	58	0.034

F: ANOVA; 1: Degree of freedom; 2: Error Degree of freedom.

**Table-4:** Summary of the Results of Multivariate Analysis of Variance of Scores of Depression, Anxiety and Quality of Life among Cancer and Healthy children Subjects

Test	Value	F	DF	Error Degree of freedom	P-value	Power of test
Pillai trace	0.953	178.37	6	53	0.001	0.95
Wilks's lambda	0.047	178.37	6	53	0.001	0.95
Hotelling trace	20.194	178.37	6	53	0.001	0.95
Roys largest rot	20.194	178.37	6	53	0.001	0.95

F: ANOVA; DF: Degree of freedom.

**Table-5:** The Results of Multivariate Analysis of Variance of Depression, Anxiety and Quality of Life among Cancer and Healthy children Subjects

Variables	Sum of squares	DF	Mean Square	F	P-value	Power of test
Depression	11438.25	1	11438.25	472.24	0.001	0.91
Anxiety	11206.50	1	11206.50	634.93	0.001	0.82
Quality of Life	53964.26	1	53964.26	541.36	0.001	0.78

F: ANOVA; DF: Degree of freedom.

#### 4- DISCUSSION

The present study aimed to compare the quality of life, anxiety and depression in cancer and healthy children in Kermanshah, Iran. The results of the present study demonstrated that there were significant differences between the cancer and healthy children in terms of all coping styles. The results also revealed that the mean scores of depression and anxiety of cancer children exceeded those of healthy children, while the mean score of cancer children's quality of life was lower than that of healthy children.

Research has shown that 50 to 80 percent of cancer patients suffer from a psychiatric disorder too. Adjustment disorder and depression have been identified as the most common psychiatric disorder and the second most common psychiatric diagnosis, respectively (9, 39). Research and theoretical evidence indicate that behavioral-emotional changes and quality of life are the strongest and most stable factors that make a difference in cancer and healthy children patients (16). Hence, the results of the present study can be well accounted for.

The results indicated that cancer and non-cancer children and adolescents were significantly different in terms of all coping styles. These results were consistent with the results of studies conducted by Sanjari et al. (40), Ahadi et al. (41), and Vellone (42).

The levels of depression in cancer and non-cancer children and adolescents were different, which was confirmed by the results of the present study. This finding was concurrent with the results of studies performed by Banki et al. (12), Kamangar (43), and Zhao et al. (44). No direct study has ever compared these variables simultaneously in cancer and non-cancer children and adolescents. However, in a study conducted by Banki et al. (2012), the role of cognitive variables in cancer

adolescents' depression was investigated (12). The results demonstrated that adolescents' depression positively correlated with health locus of control, emotion-oriented coping and disease perception, while there were significant inverse correlations between the adolescents' depression and each of task-oriented and avoidance-oriented coping strategies. In addition, the emotion-oriented and task-oriented coping strategies and disease perception are more likely to predict depression in adolescents. In a study conducted by Kamangar (2013), the relationship between coping styles against stress and quality of life was investigated in cancer patients (43). The results revealed that with the increase of problem-oriented coping, the cancer patients' quality of life was improved.

Cancer is a major public health problem in many parts of the world (6). Furthermore, in a study conducted by Vellone (2006) on cancer patients and their coping styles, it was revealed that hope was regarded as a key element for coping, disease control and psychological adaptation among cancer patients. In other words, a hopeful person would be able to adopt more positive and more hopeful views about treatment and life and deal with problems and maintain his/her morale (42). Clarke et al. (2006) expressed that cancer patients' self-esteem is damaged due to feelings of rejection and failure to meet one's needs and others' (45). They are also exposed to disappointment, anxiety and depression because of multiple problems and stress caused by high costs of treatment and lack of control over life.

#### 5- CONCLUSION

Based on the findings of the present study, it can be concluded that children suffering from cancer have significantly lower quality of life and significantly higher levels of depression and anxiety in comparison with healthy children. Given

the effects of psychological factors in improving cancers, especially in children, it is recommended that psychological treatments be utilized along with drug therapies with the aim of increasing the quality of life and reducing depression and anxiety in this group of patients.

## 6- CONFLICT OF INTEREST

There is no conflict of interest to declare.

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