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ORIGINAL ARTICLE

Anxiety, Depression Levels, and Quality of Life in Children and Adolescents of Parents with Cancer

Neslihan KURTUL,[1] **Hatice ALTUN**[2]

[1]Department of Radiation Oncology, Kahramanmaraş Sütçü İmam University Faculty of Medicine, Kahramanmaraş-*Türkiye*
[2]Department of Child and Adolescent Psychiatry, Kahramanmaraş Sütçü İmam University Faculty of Medicine, Kahramanmaraş-*Türkiye*

OBJECTIVE

Children and adolescents face significant changes in their routines and family roles when a parent is diagnosed with cancer. The aim of our study was to evaluate the levels of anxiety and depression and the quality of life in children and adolescents of parents with cancer.

METHODS

The study included 50 children and adolescents, aged 8–17 years, whose parents had cancer, and 50 age- and sex-matched healthy controls. Anxiety and depression levels were assessed using the State-Trait Anxiety Inventory (STAI-1 and STAI-2) and the Children's Depression Inventory (CDI), respectively. The Pediatric Quality of Life Inventory (PedsQL) was used to measure the quality of life.

RESULTS

Compared to the control group, the children and adolescents of parents with cancer had significantly higher STAI-1, STAI-2, and CDI scores and significantly lower scores on the PedsQL physical health and psychosocial health subscales, as well as the total scale score ($p<0.05$). The majority of these children and adolescents were found to experience one or more problems related to their parent's illness, such as increased responsibilities and changes in lifestyle.

CONCLUSION

Our study found that anxiety and depression levels were higher and quality of life was poorer in children and adolescents of parents with cancer. These results highlight the importance of providing psychological support to these children and adolescents.

Keywords: Adolescents; anxiety; cancer; children; depression; parents; quality of life.

INTRODUCTION

An estimated 2,001,140 new cases of cancer and 611,720 cancer deaths will occur by 2024.[1] The diagnosis of cancer, in addition to leading to negative consequences for the patient, is known to have a significant impact on various aspects of the lives of loved ones, especially children.[2]

Children and adolescents with parental cancer may experience intense distress when faced with the symptoms of the disease, the side effects of treatments, and the threat of the parent's death. In addition, the temporary inaccessibility of the parent in case of hospitalization can also have negative effects on children.[3] When a parent is diagnosed with cancer, children and adolescents experience significant changes in their

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Dr. Neslihan KURTUL
Kahramanmaraş Sütçü İmam Üniversitesi Tıp Fakültesi,
Radyasyon Onkolojisi Anabilim Dalı,
Kahramanmaraş-Türkiye
E-mail: drneslihankurtul@gmail.com

routines and family roles, may take on additional responsibilities, and may receive less emotional support from both parents during this time. These new responsibilities place an additional emotional and physical burden on children, preventing them from doing their schoolwork and spending as much time as usual playing games or engaging in leisure activities.[4–6]

It has been reported that psychological and psychosocial problems, such as anxiety and depressive symptoms, emotional/behavioral problems, and low self-esteem, are observed in children of cancer patients, usually due to the perception of weakness in the sick parent, the threat of losing the parent, and the change in daily activities.[7–10] However, there are mixed results in intergroup studies comparing children and adolescents of parents with cancer with control groups or national norms. Latency-aged children have been shown to function emotionally and behaviorally similarly to other children. However, some studies have shown that adolescent children of cancer patients experience more emotional problems than other adolescents. Some studies have reported that children and adolescents function similarly or better than other children.[11–16]

Although many studies have been conducted on the emotional impact of cancer on families in relation to spouses and adult children, especially in our country, there has been little focus on psychiatric problems in children under 18 years of cancer patients. In this study, we aimed to evaluate anxiety and depression levels, quality of life, and factors affecting the quality of life of children and adolescents aged 8–17 years of patients with any diagnosis of cancer.

MATERIALS AND METHODS

In this case-control study, children aged 8–17 years of cancer patients who applied to Kahramanmaraş Sütçü İmam University Faculty of Medicine Hospital, Department of Radiation Oncology, for radiotherapy were included. A total of 100 children and adolescents, 50 in the study group and 50 in the control group, were included in the study. Children with a known intellectual disability, autism spectrum disorder, substance abuse, psychosis, and bipolar affective disorder, those with any known neurological, genetic, metabolic, or endocrine disease, and those with incomplete completion of the questionnaire forms were not included in the study.

As a control group, 50 age- and gender-matched healthy children and adolescents with healthy parents who did not have any known psychiatric, neurological, genetic, metabolic, or endocrine disease, substance addiction, or drug abuse were included in the study. The study group was asked questions prepared by the researchers, including the effect of the parent's illness on the child's life, such as their knowledge of their parent's illness, their reactions when they learned about the illness, role changes in the family, changes in their responsibilities, difficulties they experienced, and fear of developing a similar illness.

Furthermore, both the study group and the control group completed the sociodemographic data form prepared by the investigators, the State-Trait Anxiety Inventory (STAI-1 and STAI-2), which was used to assess the children's anxiety levels, the Child Depression Inventory (CDI), which was employed to assess the children's depression levels, and the Quality of Life Scale for Children and Adolescents (PedsQL), which was utilized to assess the children's quality of life. The sociodemographic scale form of the control group did not include questions pertaining to parental illness and related matters.

Data Collection Tools

Sociodemographic Data Form

The questionnaire prepared by the researchers consists of sociodemographic data such as age, gender, age of parents, gender of the sick parent, and type of cancer, as well as questions that determine situations that may be problematic for children and adolescents, such as role changes within the family during the course of the disease, increased responsibilities, difficulties they experience, fear of getting the disease, knowledge of the parent's disease, reaction to the disease, and thoughts about the severity of the disease.

The State and Trait Anxiety Inventory

The "State and Trait Anxiety Inventory" (STAI) was employed in this study, as developed by Spielberger, Gorsuch, and Lushene in 1970.[17] The scale is comprised of two sections, each containing 20 items. The State Anxiety Scale (STAI-1) is designed to assess the subjective experience of anxiety in a given situation, whereas the Trait Anxiety Scale (STAI-2) is intended to evaluate the general disposition towards anxiety. Scores on both scales range from 20 to 80, with higher scores indicating elevated levels of anxiety. The Turkish version of the scale exhibits comparable characteristics to the original, and its validity and reliability were examined by Öner and LeCompte.[18]

Children's Depression Inventory

The Children's Depression Inventory (CDI) is a self-assessment scale comprising 27 items designed for children and adolescents between the ages of 6 and 17. It is used to investigate child and adolescent depression. The scale was initially developed by Kovacs and subsequently adapted into Turkish by Oy.[19,20] The test validity (r=0.70) and internal consistency (α=0.80) of the scale were found to be high. Each item on the scale presents three distinct options (0, 1, 2 points) through which the severity of a symptom related to depression over the past two weeks is evaluated. The maximum score is 54 points. A score of 19 or above indicates the presence of a depressive disorder.[20]

The Quality of Life Scale for Children

The scale is a general quality-of-life assessment tool utilized in children and adolescents between the ages of two and eighteen.[21] Four distinct versions of the scale are provided for children aged 2–4, 5–7, 8–12, and 13–18, with each narrative tailored to align with the age group in question. The scale is comprised of four subsections, each of which assesses a distinct aspect of the child's functioning: physical, emotional, social, and school-related. The scale allows for the evaluation of the following scores: emotional functioning score (EFS), social functioning score (SFS), school functioning score (FSS), physical health total score (PHTS), psychosocial health total score (PSTS), and total scale score (TSS). The scale employs a five-point Likert-type scale, with responses ranging from 0 (never) to 4 (always). The scores obtained from the items are linearly converted to a value between 0 and 100 points (0=100, 1=75, 2=50, 3=25, 4=0). As the scores, which can range from 0 to 100, increase, the quality of life also increases.[22] A validity and reliability study was conducted by Memik et al.,[23,24] and the scale was found to be highly valid and reliable in both age groups.

Statistical Analysis

The data from the study were evaluated using the SPSS (Statistical Package for Social Sciences) 22.0 program for Windows. Numerical variables were expressed as mean±standard deviation, and categorical variables were expressed as number and percentage. The Kolmogorov-Smirnov test was employed to assess the conformity of the numerical data to the normal distribution. Those that conformed to the normal distribution were evaluated by Student's t-test, and those that did not conform to the normal distribution were evaluated by the Mann-Whitney U test. Significance was accepted as $p<0.05$.

RESULTS

The mean age of the cases in the study group was 13.52±2.84 years, while the mean age of the healthy controls was 14.12±2.26 years. No significant differences were observed between the two groups with regard to mean age, age range, mean age of parents, and gender ($p>0.05$ for all). The majority of the cancer patients were mothers (80%), and the majority were women diagnosed with breast cancer (54%) (Table 1).

Family role changes, increased responsibilities, and difficulties experienced by children and adolescents after parental cancer are shown in Table 2.

The STAI-1, STAI-2, and CDI scores were found to be significantly higher ($p<0.05$) in the study group compared to the control group, while the PEDsQL physical, psychosocial, and total scores were observed to be significantly lower (Table 3).

A significant difference was observed in the STAI-2 scores between genders, with girls exhibiting higher scores than boys ($p=0.017$). No significant differences were observed between girls and boys in terms of depression and quality of life scale scores and related factors ($p>0.05$).

With regard to the age groups within the study group (8–12 and 13–17 years), no significant differences were observed between the two age groups in terms of family role changes, increased responsibilities, difficulties experienced, gender, and other scale scores utilized in the study, with the exception of depression ($p>0.05$ for all). The adolescent group (13–17 years) exhibited a higher level of depression ($p=0.027$) and demonstrated a more pronounced reaction to the disease ($p=0.035$).

The STAI-1 score was found to be lower in individuals who were aware of their parents' disease diagnosis compared to those who were not (mean±sd = 42.94±6.98; 48.32±7.36, $p=0.022$). No significant differences were observed in the other scale scores ($p>0.05$ for all).

The results indicated that all subscale scores for quality of life were significantly lower in children whose mothers had cancer compared to those whose fathers had cancer ($p=0.016$, $p=0.004$, $p=0.001$). Conversely, the change in family roles ($p=0.007$), the rate of knowledge regarding the illness of the parent ($p=0.006$), and the fear of developing the disease ($p=0.014$) were observed to be higher.

DISCUSSION

In our study evaluating the anxiety and depression levels, quality of life, related factors, and life problems

Table 1 Demographic characteristics of children and adolescents of parents with cancer (study group) and control groups

	Study group n=50		Controls group n=50		p
	n	%	n	%	
Age (years)	13.52±2.84		14.12±2.26		0.246
Age range					0.809
6–11 age	12	30	13	32.5	
12–17 age	28	70	27	67.5	
Gender					0.542
Female	31	62	28	56	
Male	19	38	22	44	
Maternal age (mean±SD)	42.92±5.55		41.90±4.84		0.330
Paternal age (mean±SD)	45.50±5.50		45.02±5.31		0.658
Ill parent					
Mother	40	80			
Father	10	40			
Diagnosis of the ill parent					
Breast	27	54			
Brain	13	26			
Head and neck	6	12			
Endometrium	4	8			

p<0.05: statistical significance. SD: Sstandart deviation

experienced by children of parents with cancer, it was found that children and adolescents of parents with cancer had higher levels of anxiety and depression and lower quality of life compared to the control group.

Many studies have shown that a parental diagnosis of cancer has negative psychosocial effects on their children. The offspring were typically found to exhibit elevated levels of internalizing and externalizing problems, distress, anxiety, depression, stress, and cancer-related worry. Additionally, they demonstrated diminished health-related quality of life and self-esteem.[13,25–31] A review of the literature also demonstrated that children aged 10–24 years at the time of their parent's initial diagnosis exhibited significant psychosocial, social, and behavioral effects as a result of their parent's cancer.[32] The elevated rates of anxiety and depression observed in our study are consistent with the findings reported in the existing literature. However, some studies show that children affected by parental cancer do not differ significantly from control subjects in psychological, social, and family functioning.[12] In another study, it was noted that the population tends to have similar or lower levels of internalizing and externalizing problems compared to norms.[11] Some studies have identified positive effects and experiences related to children's cancer experiences.[13–16]

The quality of life of young children of cancer patients has been relatively under-researched in comparison to the psychological effects of cancer on children, such as internalizing and externalizing problems.[10,33,34] Jeppesen and colleagues reported that in a sample of adolescents, 42% of participants had low levels of quality of life.[35] A study revealed that the quality of life of children was similar to that of other studies conducted on children of cancer survivors.[36] In a study conducted by Hauken et al.,[34] children between the ages of 8 and 18 were evaluated, and it was reported that their quality of life was low and their anxiety levels were high. In relation to the quality of life of children, family-related factors such as family functionality, palliative treatment, and parental gender or single parenthood, as well as high anxiety levels, were identified as related factors.[34,36,37]

In our study, quality of life was found to be lower when the patient's parent was a mother. Given the functional roles of mothers in the home, it was hypothesized that the diagnosis of cancer in the mother may have resulted in adverse psychosocial outcomes for children and adolescents, thereby affecting quality of life.

In our study, it was found that there were significant changes in the lives of children with a parent diagnosed with cancer. Approximately 46% of children and adoles-

Table 2 Family roles, increased responsibilities, experienced difficulties of children and adolescents in study group

	Study group	
	n=50	**%**
Family roles		
Changed (caregiver, mother)	24	48
Unchanged	26	52
Increased responsibilities		
Being the ill parent's caregiver	10	20
Undertaking responsibilities of siblings	17	34
Do housework	18	36
Other	13	26
Experienced difficulties		
Limitation of daily activities	22	44
Decrease in social activity with peer grups	9	18
Decrease in lesson work	18	36
Other	9	18
Awareness of the diagnosis		
Yes	37	74
No	13	26
Reaction to the disease		
Yes (sadness, cry ie)	48	96
No	2	4
Fears of becoming cancer		
Yes	30	60
No	20	40

cents reported that their role in the family had changed. The most common roles were caregiver (69.6%) and mother (30.4%). They reported that they had increased and new responsibilities, such as taking responsibility for housework (36%), taking responsibility for siblings (34%), and caring for a sick parent (20%). At the same time, not being able to spare time for themselves (44%), not being able to study (36%), and not being able to spend time with friends (18%) were reported as the most common difficulties. Sixty percent of children and adolescents stated that they were fearful of contracting the disease.

In previous studies, similar to our own, it has been reported that family members, children, and adolescents who are caregivers of a person with cancer develop new responsibilities. These include assuming the role of the parent, limiting daily chores, assuming the responsibilities of siblings, and having to do housework during the illness. These new responsibilities impose an additional emotional and physical burden on children and cause psychological distress.[4–6]

The results of our study indicated that the trait anxiety score was higher in girls, while the depression and quality of life scale scores were similar in both genders. The observed changes in family roles, increase in responsibilities, difficulties experienced, and fear of getting the disease were found to be similar in girls and boys.

With regard to the children most affected by parental cancer, the extant literature indicates that girls experience greater challenges than boys.[26,35,38] This situation has a deleterious impact on girls' mental health. Prior research has documented a heightened prevalence of internalized disorders, such as depression and anxiety, among girls, while reports indicate a higher incidence of externalizing behaviors, including hostility and irritability, among young men.[7,11] The elevated anxiety levels observed in girls in our study align with the findings of the aforementioned literature.

The study group exhibited elevated depressive symptoms in the adolescent age group (13–17 years) relative to the younger age group. However, no significant differences were observed in anxiety and quality of life scale scores. Furthermore, it was established that the 13–17 age group exhibited a heightened response to

Table 3 STAI-1, STAI-2, CDI, PEDsQL scores of the study and control groups

	Study group (n=50) (median) (min-max)	Controls group (n=50) (mean±SD)	p
STAI-1	46.00(30-6)	30.00(23-43)	<0.001*
STAI-2	48.00(35-67)	40.00(24-55)	<0.001*
CDI	11.00(0-32)	9.00(1-16)	0.002*
PEDsQL Physical health	59.37(12.50-100)	78.16(53.75-100)	0.001*
PEDsQL Psychosocial health	75.00(30-100)	85.00(60-98.33)	<0.001*
PEDsQL Total (mean±SD)	68.26±14.85	80.95±9.47	<0.001**

p<0.05: Statistical significance; *: Mannwitneyy; **: Student t test. STAI-1: State-trait anxiety inventory-1; STAI-2: State-trait anxiety inventory-2; CDI: Children's depression inventory; PEDsQL: The Pediatric quality of life inventory; Min: Minumum; Max: maximum; SD: Standart deviation the disease, manifesting as feelings of profound sadness and increased levels of crying. No significant differences were observed between the two age groups in the study with regard to the scale scores, changes in family roles, increases in responsibilities, difficulties experienced, fear of contracting the disease, and gender.

The findings of previous research indicate that adolescents and young adults exhibit elevated levels of anxiety and depression and are more prone to developing emotional and behavioral symptoms in comparison to preadolescent children.[32,33] This is in accordance with the observations made by Compas et al.[5]. Moreover, older children frequently assume additional household and caregiving responsibilities due to their parents' illness, and they often report greater activity limitations, social isolation, daily distress, and stress compared to children of healthy parents.[39,40] The elevated depression levels observed in the adolescent age group in our study are consistent with the findings of previous studies in the literature.

The findings of our study indicate that children and adolescents who were aware of their parent's diagnosis exhibited lower levels of state anxiety. Furthermore, the levels of trait anxiety, depression, and quality of life observed in these individuals were comparable to those of individuals who were not aware of their parent's diagnosis. It is well established that uncertainty in a given situation or with regard to a disease state is a significant contributor to the development of anxiety. The reduced level of state anxiety observed in this study indicates that it may be beneficial to provide information about the disease and the treatment process in a manner that is accessible to the child. Nevertheless, further research on this topic is required.

In our study, it was determined that all subscale scores of quality of life were lower in those with a mother who had been diagnosed with cancer than in those with a father who had been diagnosed with cancer. Additionally, the rate of change of roles within the family, the rate of knowing the disease of the parent, and the fear of getting the disease were higher in this group. These results are to be expected when the role of the mother at home and family functionality are taken into consideration. Furthermore, the fact that the majority of the mothers in our study had breast cancer may have caused the fear of developing the disease to be higher in terms of genetic predisposition. The effect of the gender of the ill parent on the child's functioning is unclear, and studies do not provide definitive results. Our study results support the findings of previous studies in the literature which indicate that maternal cancer has more negative results than paternal cancer.[41,42]

The major limitation of this study was its cross-sectional design. As the study was applied to a small sample group, it cannot be generalized to all children of cancer patients. Other limitations were that the cases were not psychiatrically evaluated and assessed with a semi-structured psychiatric interview, such as the Schedule for Affective Disorders and Schizophrenia for School-Aged Children-Present and Lifetime Version (K-SADS-PL), and that the groups were assessed with measurement tools based on self-reports of children and adolescents. Nevertheless, it was considered an important study that can serve as a basis for prospective, large-scale studies in our country and as a resource for assessing anxiety/depression levels, quality of life, and difficulties experienced by children and adolescents with parental cancer.

CONCLUSION

The results of this study indicate that children and adolescents of parents with cancer experience higher levels of anxiety and depression and have a lower quality of life compared to healthy children of healthy parents. Additionally, parental cancer causes distress in various aspects of life for these children and adolescents. The study also found that more negative consequences are observed in adolescents, girls, and in cases where the mother is diagnosed with cancer. These findings emphasize the importance of providing psychosocial support to children and adolescents of cancer patients; particularly, they highlight the need for this support to be prioritized by healthcare professionals from the moment the parent is diagnosed and throughout the treatment process.

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