Research Square

Preprints are preliminary reports that have not undergone peer review.
They should not be considered conclusive, used to inform clinical practice,
or referenced by the media as validated information.

The Silent Impact of Parental Cancer on Children's Psychosocial Well-Being

Erdinç Nayır

drerdincnyr@gmail.com

Nilda Ata
Fevziye Toros
Rahime Gökboğa
Aynur Çelik
Mehmet Ali Sungur

Research Article

Keywords: Children, psychosocial status, parent with cancer, RCADS

Posted Date: September 7th, 2026

DOI: https://doi.org/10.21203/rs.3.rs-10467108/v1

License: This work is licensed under a Creative Commons Attribution 4.0 International License.
Read Full License

Additional Declarations: No competing interests reported.

Abstract

Introduction: While a substantial body of research has examined the psychosocial status of children affected by pediatric malignancies, studies investigating the psychological well-being of children whose parents have cancer remain markedly limited. The purpose of this study was to determine the prevalence and associated factors of emotional and behavioral problems in children whose parents have been diagnosed with cancer.

Materials and Methods: This cross-sectional study was conducted in the medical oncology outpatient clinics between February and April 2025. The study included 73 children with a parent diagnosed with cancer (case group) and 59 age- and sex-matched healthy children as controls, ranging in age from 8 to 16 years. All participants completed the Revised Child Anxiety and Depression Scale (RCADS). Demographic and clinical variables recorded included age, sex, parental sex and age, educational level of the child and parent, disease duration and severity, and number of siblings.

Results: No statistically significant difference was found between the groups in terms of age, gender, education level, parent's age, gender, education level, and number of siblings ($p > 0.05$). The case group exhibited significantly elevated anxiety ($p < 0.05$) and depression scores ($p = 0.002$), along with higher total scale scores ($p < 0.001$), in comparison to the control group. Correlation analyses revealed weak but statistically significant positive correlations between age and total anxiety, depression, and total score in the case group ($p = 0.010$). Further examination of anxiety subdimensions showed similarly weak yet significant correlations with PaD, SAD, and OCD ($p < 0.001$). The females within the case group exhibited significantly higher anxiety ($p = 0.030$) and depression ($p = 0.035$) scores, and higher total scale score ($p = 0.025$) compared to males. Significant differences were observed in anxiety scores ($p = 0.018$) and total scale scores ($p = 0.047$) according to parental education level, with the highest scores consistently found among children whose parents held a master’s degree. No significant differences were observed in anxiety, depression, or total scale scores according to the child’s educational level, parent age, whether the patient was the father or the mother, disease duration and severity, and sibling status.

Conclusion: Children of parents with cancer are significantly affected by their parent’s illness. These children must be considered within the framework of a comprehensive approach to cancer care. Importantly, their need for psychosocial support and rehabilitation may be at least as great as that of the patients themselves.

Introduction

Approximately 21% of newly diagnosed cancer patients are between the ages of 25 and 54, and approximately 24% of these patients are known to have children between the ages of 0 and 18 [1, 2]. Based on these figures, it can be estimated that approximately 175,000 children in Turkey have a parent with cancer [3]. Certain cancer types, such as head and neck cancers, skin cancers, and lymphomas, tend to manifest at relatively younger ages, and patients with these malignancies are more likely to have dependent children compared to those with other cancer types [4]. Approximately one-third of breast

cancer patients—the second most common cancer in women—have children under the age of 18 [5]. Furthermore, as survival rates among cancer patients continue to improve, the number of parents living with cancer is correspondingly increasing [6].

A cancer diagnosis in any family member profoundly affects the entire family unit, with the psychosocial burden extending to other members at least as significantly as to the patient [7]. Intrafamilial relationships and daily routines are substantially disrupted in such households [8].

The psychological status of parents with cancer may range from parental stress to major depressive disorder [9], and the risk of family dysfunction in households with a parent with cancer is considerable [10]. Prolonged hospital admissions and treatment-related absences from home inevitably reduce intrafamilial communication [10]. Children of parents diagnosed with cancer are frequently required to assume additional responsibilities and often struggle to receive adequate emotional and physical support from their ill parent [11]. The fear of losing a parent to cancer constitutes a significant source of psychological distress for these children [12]. One notable consequence of this distress is a decline in academic performance [13]. Current evidence suggests that the key factors influencing the psychological well-being of these children include age, sex, the mental health status of the adult caregiver, and the stage and severity of the parent's illness [14–16].

Parents are frequently unaware of the mood-related changes occurring in their children. When a parent receives a cancer diagnosis, the resulting shift in family attention toward the ill individual often leads to children being overlooked [2]. The needs expressed by children in this situation are typically straightforward: they wish to be adequately informed about their parent's illness. It has been established that open and effective communication significantly reduces stress in these children [17]. A substantial body of literature addresses the appropriate disclosure of a parental cancer diagnosis to children and adolescents [18].

Anxiety disorders represent the most prevalent form of psychopathology in childhood, with an estimated prevalence of 15–20% (19]. Childhood anxiety disorders frequently co-occur with depressive disorders [19, 20]. Anxiety and depression rating scales developed for adults are not appropriate for use in children, as children may not respond as freely as adults when completing self-report measures [21].

While a substantial number of studies have investigated the psychological functioning of children affected by pediatric cancers, research examining the psychological status of children whose parents have cancer remains markedly limited. Identification of these children's psychosocial needs and timely provision of appropriate support have not been adequately studied [16]. Nevertheless, early identification and intervention are of critical importance for the long-term psychological well-being of these children.

The Revised Child Anxiety and Depression Scale (RCADS) was developed to identify clinical syndromes of anxiety and depression in children and has been validated across multiple languages and cultural contexts [22]. A parent-report version of the scale is also available. In Turkey, the Turkish adaptation of the RCADS has been in use since 2017 [23]. Several instruments are available for assessing anxiety and

depression in children, including the Children Behavior Check List (CBCL), The Strengths and Difficulties Questionnaire (SDQ), and the Screen for Child Anxiety Related Disorders (SCARED). Among these, the RCADS has gained increasing preference in recent years due to its ease of administration and straightforward scoring and interpretation.

Aims of the Study

The primary aim of this study was to determine the prevalence and associated factors of emotional and behavioral problems in children whose parents have been diagnosed with cancer, and to take an initial step toward addressing the psychosocial support needs identified in this population.

Materials and Methods

We conducted the study in the medical oncology outpatient clinics of VM Mersin Medicalpark Hospital between February and May 2025. We included children who had a parent diagnosed with cancer (hereafter referred to as the case group) and an age- and sex-matched control group of healthy children between the ages of 8 and 16. We excluded children with a history of psychiatric or psychological disorder (in the child or their family), those receiving treatment for any chronic disease, those with failure to thrive, those under active psychiatric support, or those with an acute illness that could potentially influence scale scores. All participants completed the RCADS, and the following variables were recorded: age, sex, parental sex and age, educational level of the child and parent, disease duration and severity (classified according to metastatic status/stage), and number of siblings. Participants read and completed the RCADS in a separate room outside the clinic.

The RCADS has six subscales, which are described as general anxiety (6 questions), separation anxiety (7 questions), panic disorder (9 questions), social phobia (9 questions), obsessive-compulsive symptoms (6 questions), and depression (10 questions). Each answer has four choices: never, sometimes, often, and always (counted as 0, 1, 2, and 3 points, respectively). A total score of 70 points and above scores was defined as elevated [22].

Based on previous studies examining RCADS scores [24], to investigate whether there is a significant difference between children who have a parent with cancer and those in the control group, the required minimum sample size for an effect size of d = 0.528 with a power of 80% and type I error rate of 5% was calculated as 58 in each group using an independent two-group design.

We obtained study permission from the Toros University Faculty of Medicine ethical committee with the file number 12-2024 and adhered to the Helsinki Declaration. All participants and their parents were informed, and their written consent was obtained to participate in this study.

Statistical Analysis

The normality of continuous variables was assessed using the Kolmogorov-Smirnov test, along with calculations of skewness and kurtosis values. Between-group comparisons for normally distributed variables with equal variances were performed using the Independent Samples t-test, while Welch's t-test was applied in cases where homogeneity of variances was not met. For comparisons involving three or more groups, One-Way ANOVA was conducted, with post hoc pairwise analyses carried out using the LSD test. Associations between continuous variables were explored through Pearson's correlation. Categorical variables were analyzed using chi-square tests; when expected cell counts were low, Fisher's exact test or likelihood ratio tests were employed. Statistical significance was set at $p < 0.05$, and data analyses were performed using IBM SPSS Statistics version 22.

Results

A total of 75 children with a parent diagnosed with cancer and 60 healthy children were initially enrolled. Following the exclusion of 2 participants from the case group and 1 from the control group due to failure to meet the eligibility criteria, the final sample comprised 73 and 59 participants in the case and control groups, respectively. The mean age in the case group was mean age 12.68 ± 2.29 years, and 12.15 ± 2.17 years in the control group. No statistically significant differences were observed between groups with respect to age, sex, educational level, or number of siblings (Table 1).

Comparison of the case and control groups

The demographic characteristics of the case and control groups are presented in Table 1. No statistically significant differences were observed between the groups with respect to age, sex, educational level, parental age, parental sex, parental educational level, or number of siblings (Table 1).

Table 1
Demographic characteristics of the case and control groups

Age (years)	**Case (n = 73)**	**Control (n = 59)**	**p**
	12.68 ± 2.29 [9–16]	**12.15 ± 2.17 [9–16]**	**0.177**
Gender, n (%)	42 (57.5)	27 (45.8)	0.220
Male	31 (42.5)	32 (54.2)	
Female			
Education, n (%)	16 (21.9)	17 (28.8)	0.486
Primary school	28 (38.4)	24 (40.7)	
Middle school	29 (39.7)	18 (30.5)	
High school			
Parent Age (years)	46.15 ± 4.99 [30–55]	NA	NA
Parent Gender, n (%)	14 (19.2)	NA	NA
Male	59 (80.8)		
Female			
Parent Education, n (%)	11 (15.1)	NA	NA
Primary school	8 (11.0)		
Middle school	16 (21.9)		
High school	30 (41.1)		
Bachelor’s degree	8 (11.0)		
Master’s degree			
Number of Child, n (%)	20 (27.4)	15 (25.4)	0.753
1	28 (38.4)	27 (45.8)	
2	22 (30.1)	14 (23.7)	
3	2 (2.7)	3 (5.1)	
4	1 (1.4)	0 (0.0)	
5			
Sibling Status, n (%)	20 (27.4)	15 (25.4)	0.798
Only child	53 (72.6)	44 (74.6)	
Has sibling			

The case group exhibited significantly elevated anxiety ($p < 0.001$) and depression scores ($p = 0.002$), along with higher total scale scores ($p < 0.001$), in comparison to the control group. A detailed examination of the anxiety scores revealed that this elevation was evident across all subdimensions, including SoP, PaD, SAD, GAD, and OCD (Table 2).

Table 2
Comparison of the scale points (t score) of the case and control groups

SoP	**Case (n = 73)**	**Control (n = 59)**	**p**
	44.95 ± 13.65	***37.33 ± 7.09***	**< 0.001**
PaD	*51.31 ± 13.26*	*46.61 ± 8.42*	**0.015**
SAD	*52.89 ± 13.91*	*46.39 ± 9.27*	**0.002**
GAD	*47.45 ± 10.81*	*40.33 ± 5.72*	**< 0.001**
OCD	*49.08 ± 10.92*	*43.31 ± 7.04*	**< 0.001**
Total Anxiety	48.31 ± 13.55	40.13 ± 7.76	**< 0.001**
MDD	50.40 ± 14.97	43.60 ± 9.06	**0.002**
Total Score	48.72 ± 14.57	40.21 ± 8.24	**< 0.001**

SoP: social phobia, PaD: panic disorder, SAD: separation anxiety disorder, GAD: generalized anxiety disorder, OCD: obsessive compulsive disorder, Total Anxiety: SoP & PaD & SAD & GAD & OCD, MDD: major depressive disorder, Total Score: Total Anxiety & Depression (MDD), descriptive statistics were presented as mean±standard deviation [minimum-maximum]

Correlation analyses revealed weak but statistically significant positive correlations between age and total anxiety, depression, and total score in the case group. Further examination of anxiety subdimensions showed similarly weak yet significant correlations with PaD, SAD, and OCD. No significant correlations were observed for SoP or GAD (Table 3)

Table 3
Correlations between child age and scale t scores in the case group (n = 73)

	Child Age	
	r	**p**
SoP	*0.190*	*0.107*
PaD	*0.352*	**0.002**
SAD	*0.302*	**0.009**
GAD	*0.118*	*0.320*
OCD	*0.300*	**0.010**
Total Anxiety	0.277	**0.018**
MDD	0.339	**0.003**
Total Score	0.301	**0.010**

SoP: social phobia, PaD: panic disorder, SAD: separation anxiety disorder, GAD: generalized anxiety disorder, OCD: obsessive compulsive disorder, Total Anxiety: SoP & PaD & SAD & GAD & OCD, MDD: major depressive disorder, Total Score: Total Anxiety & Depression (MDD)

The females within the case group exhibited significantly higher anxiety (p = 0.030) and depression (p = 0.035) scores, and higher total scale score (p = 0.025) compared to males (Table 4). A detailed examination of the anxiety subdimensions indicated that this elevation was primarily driven by higher PaD scores (p = 0.020) among females. Although females also showed higher mean scores in SAD, GAD, and SoP, these differences did not reach statistical significance (p = 0.055, p = 0.054, and p = 0.095, respectively). No significant gender difference was observed in OCD scores (p = 0.382).

(Table 4).

Table 4
Comparison of the scale points (t score) by gender within the case group (n = 73)

SoP	**Male (n = 42)**	**Female (n = 31)**	**p**
	42.55 ± 11.72	***48.20 ± 15.50***	***0.095***
PaD	*47.83 ± 6.69*	*56.03 ± 17.92*	**0.020**
SAD	*49.99 ± 10.12*	*56.82 ± 17.22*	*0.055*
GAD	*45.25 ± 8.97*	*50.43 ± 12.43*	*0.054*
OCD	*48.04 ± 8.34*	*50.49 ± 13.69*	*0.382*
Total Anxiety	45.12 ± 9.72	52.63 ± 16.67	**0.030**
MDD	47.02 ± 11.59	54.97 ± 17.79	**0.035**
Total Score	45.17 ± 10.11	53.52 ± 18.12	**0.025**

SoP: social phobia, PaD: panic disorder, SAD: separation anxiety disorder, GAD: generalized anxiety disorder, OCD: obsessive compulsive disorder, Total Anxiety: SoP & PaD & SAD & GAD & OCD, MDD: major depressive disorder, Total Score: Total Anxiety & Depression (MDD), descriptive statistics were presented as mean±standard deviation [minimum-maximum]

No significant differences were observed in anxiety, depression, or total scale scores according to the child's educational level, indicating no meaningful variation across primary, middle, and high school groups (Table 5). A detailed examination of the anxiety subdimensions indicated that this non-significant trend was primarily influenced by higher PaD scores in the high school group (p = 0.041). Although children with higher education levels also showed numerically elevated t scores in SAD, OCD, and SoP, these differences did not reach statistical significance (p = 0.158, p = 0.352, and p = 0.589, respectively). No clear pattern was observed in GAD scores across education levels (p = 0.459). (Table 5)

Table 5
Comparison of the scale points (t score) by education status within the case group (n = 73)

t score	Primary (n = 16)	Middle (n = 28)	High (n = 29)	p
SoP	*42.26 ± 13.35*	*44.73 ± 12.84*	*46.65 ± 14.75*	*0.589*
PaD	*46.06 ± 8.76*	*49.65 ± 9.88*	*55.80 ± 16.67*	**0.041**
SAD	*47.33 ± 8.78*	*53.22 ± 11.70*	*55.64 ± 17.28*	*0.158*
GAD	*44.87 ± 7.87*	*49.12 ± 12.40*	*47.26 ± 10.60*	*0.459*
OCD	*46.59 ± 8.64*	*48.28 ± 12.04*	*51.24 ± 10.85*	*0.352*
Total Anxiety	43.93 ± 10.54	48.22 ± 12.67	50.81 ± 15.50	0.268
MDD	45.15 ± 12.52	49.18 ± 13.96	54.46 ± 16.42	0.116
Total Score	43.78 ± 11.35	48.30 ± 13.21	51.85 ± 16.86	0.203

SoP: social phobia, PaD: panic disorder, SAD: separation anxiety disorder, GAD: generalized anxiety disorder, OCD: obsessive compulsive disorder, Total Anxiety: SoP & PaD & SAD & GAD & OCD, MDD: major depressive disorder, Total Score: Total Anxiety & Depression (MDD), descriptive statistics were presented as mean±standard deviation [minimum-maximum]

Correlation analyses revealed no significant correlations between parent age and total anxiety, depression, total score, or any of the anxiety subdimensions in the case group (Table 6)

Table 6
Correlations between parent age and scale t scores in the case group (n = 73)

	Parent Age	
	r	**p**
SoP	*-0.082*	*0.491*
PaD	*-0.109*	*0.358*
SAD	*-0.001*	*0.994*
GAD	*0.103*	*0.386*
OCD	*0.027*	*0.822*
Total Anxiety	-0.031	0.791
MDD	-0.064	0.593
Total Score	-0.040	0.734

SoP: social phobia, PaD: panic disorder, SAD: separation anxiety disorder, GAD: generalized anxiety disorder, OCD: obsessive compulsive disorder, Total Anxiety: SoP & PaD & SAD & GAD & OCD, MDD: major depressive disorder, Total Score: Total Anxiety & Depression (MDD)

No significant differences were observed in anxiety, depression, or total scale scores according to whether the patient was the father or the mother, indicating no meaningful variation based on parental gender. Detailed analyses of anxiety subdimensions similarly revealed no significant differences between the groups (Table 7)

Table 7
Comparison of the scale points (t score) by parent gender within the case group (n = 73)

SoP	**Father (n = 14)**	**Mother (n = 59)**	**p**
	43.30 ± 12.38	***45.34 ± 14.00***	***0.618***
PaD	*52.48 ± 18.71*	*51.03 ± 11.81*	*0.715*
SAD	*55.30 ± 21.19*	*52.32 ± 11.74*	*0.474*
GAD	*48.24 ± 11.78*	*47.26 ± 10.67*	*0.764*
OCD	*49.57 ± 9.22*	*48.97 ± 11.35*	*0.854*
Total Anxiety	48.63 ± 16.14	48.23 ± 13.02	0.923
MDD	51.91 ± 18.66	50.04 ± 14.12	0.677
Total Score	49.43 ± 18.11	48.55 ± 13.78	0.840

SoP: social phobia, PaD: panic disorder, SAD: separation anxiety disorder, GAD: generalized anxiety disorder, OCD: obsessive compulsive disorder, Total Anxiety: SoP & PaD & SAD & GAD & OCD, MDD: major depressive disorder, Total Score: Total Anxiety & Depression (MDD), descriptive statistics were presented as mean±standard deviation [minimum-maximum]

Significant differences were observed in anxiety scores (p = 0.018) and total scale scores (p = 0.047) according to parental education level, with the highest scores consistently found among children whose parents held a master's degree (Table 8). A detailed examination of anxiety subdimensions indicated that this pattern was primarily driven by significant group differences in SoP (p = 0.004), PaD (p = 0.040), and GAD (p = 0.026). Although children of more highly educated parents also exhibited higher mean scores in SAD and OCD, these differences were not statistically significant (p = 0.104 and p = 0.424, respectively). No significant differences were observed in depression scores across parental education levels (p = 0.478).

(Table 8).

Table 8
Comparison of the scale points (t score) by parent education within the case group (n = 73)

t score	Primary (n = 11)	Middle (n = 8)	High (n = 16)	BSc (n = 30)	MSc (n = 8)	p
SoP	*34.41 ± 7.63*	*46.00 ± 13.65*	*44.06 ± 13.75*	*45.39 ± 13.11*	*58.50 ± 11.88*	**0.004**
PaD	*46.35 ± 6.25*	*61.72 ± 19.86*	*47.13 ± 7.46*	*50.95 ± 11.71*	*57.38 ± 20.66*	**0.040**
SAD	*44.97 ± 6.07*	*57.95 ± 19.78*	*55.12 ± 13.01*	*51.32 ± 10.13*	*60.12 ± 23.43*	*0.104*
GAD	*38.96 ± 5.56*	*46.90 ± 8.74*	*49.01 ± 12.26*	*47.97 ± 11.29*	*54.57 ± 7.30*	**0.026**
OCD	*43.82 ± 7.14*	*51.38 ± 8.96*	*49.67 ± 14.51*	*49.07 ± 11.07*	*52.88 ± 6.80*	*0.424*
Total Anxiety	38.26 ± 6.42	52.49 ± 16.17	48.05 ± 13.74	48.28 ± 12.58	58.58 ± 14.42	**0.018**
MDD	44.56 ± 11.97	53.53 ± 19.66	47.59 ± 11.74	52.14 ± 15.02	54.39 ± 19.19	0.478
Total Score	38.82 ± 7.85	53.08 ± 17.82	47.84 ± 14.15	49.08 ± 13.82	58.38 ± 16.50	**0.047**

SoP: social phobia, PaD: panic disorder, SAD: separation anxiety disorder, GAD: generalized anxiety disorder, OCD: obsessive compulsive disorder, Total Anxiety: SoP & PaD & SAD & GAD & OCD, MDD: major depressive disorder, Total Score: Total Anxiety & Depression (MDD), descriptive statistics were presented as mean±standard deviation [minimum-maximum]

Correlation analyses revealed no significant correlations between disease duration and total anxiety, depression, total score, or any of the anxiety subdimensions except for PaD, which had a weak positive correlation, in the case group (Table 9)

Table 9
Correlations between disease duration and scale t scores in the case group (n = 73)

	Disease Duration	
	r	**p**
SoP	*0.136*	*0.251*
PaD	*0.272*	**0.020**
SAD	*0.229*	*0.051*
GAD	*0.063*	*0.597*
OCD	*0.070*	*0.556*
Total Anxiety	0.188	0.112
MDD	0.174	0.140
Total Score	0.192	0.104

SoP: social phobia, PaD: panic disorder, SAD: separation anxiety disorder, GAD: generalized anxiety disorder, OCD: obsessive compulsive disorder, Total Anxiety: SoP & PaD & SAD & GAD & OCD, MDD: major depressive disorder, Total Score: Total Anxiety & Depression (MDD)

Within the case group, although only children tended to exhibit higher mean scores across anxiety, depression, and the total scale score compared to those who had siblings, these differences were not statistically significant, indicating no meaningful variation based on sibling status. Detailed analyses of anxiety subdimensions similarly revealed no significant differences between the groups (Table 10).

Table 10
Comparison of the scale points (t score) by sibling within the case group (n = 73)

t score	Only child (n = 20)	Has sibling (n = 53)	p
SoP	*48.20 ± 16.08*	*43.72 ± 12.57*	*0.213*
PaD	*52.28 ± 15.21*	*50.94 ± 12.59*	*0.703*
SAD	*56.55 ± 18.88*	*51.51 ± 11.43*	*0.273*
GAD	*51.12 ± 12.55*	*46.06 ± 9.85*	*0.074*
OCD	*52.32 ± 12.95*	*47.86 ± 9.91*	*0.120*
Total Anxiety	52.05 ± 16.87	46.90 ± 11.95	0.221
MDD	51.98 ± 17.34	49.80 ± 14.11	0.581
Total Score	52.28 ± 18.32	47.38 ± 12.83	0.202

SoP: social phobia, PaD: panic disorder, SAD: separation anxiety disorder, GAD: generalized anxiety disorder, OCD: obsessive compulsive disorder, Total Anxiety: SoP & PaD & SAD & GAD & OCD, MDD: major depressive disorder, Total Score: Total Anxiety & Depression (MDD), descriptive statistics were presented as mean±standard deviation [minimum-maximum]

Discussion

A cancer diagnosis within the family profoundly affects all family members. Nearly all family members require psychological and social support, and this need becomes even more pronounced when children are involved. The existing literature includes numerous studies examining the psychosocial status of parents of children with cancer, offering a variety of intervention strategies. By contrast, studies investigating the psychosocial status of children whose own parents have cancer remain scarce. The available studies are methodologically heterogeneous, frequently limited by small sample sizes, and generally address only a single research question. Yet, a parental cancer diagnosis—and children's awareness of it—gives rise to a range of psychological challenges, including fear of the future, fear of parental death, caregiver fatigue during intensive treatment periods, and diminished intrafamilial communication. These challenges represent the beginning of an equally difficult journey for the children within these families. The present study focuses on this often-overlooked group.

Anxiety is a well-recognized problem among children of parents with cancer, as demonstrated by multiple prior studies [9, 10] and corroborated by a large systematic review on the subject [25]. Consistent with this body of evidence, the present study found significantly elevated scores across all subscales in the case group compared to controls, with particularly pronounced absolute differences in total anxiety scores.

Within-group analyses revealed significantly higher anxiety and depression scores among girls compared to boys in the case group, with a particularly noteworthy difference observed in the panic

disorder subscale. These findings are consistent with the existing literature [26–31]. However, some studies have reported no significant sex differences [14, 16], and at least one study has suggested that boys may be more severely affected [32]. The variability across studies may partly reflect cultural differences in the degree to which girls are able to express emotional distress openly.

The present study identified a weak but statistically significant positive association between child age and total anxiety, depression, and total scale scores, in keeping with previously published data [26, 33]. This relationship may reflect greater ease in completing self-report questionnaires among older children, as well as an age-related increase in awareness and experience regarding cancer [26]. Although a parallel association between school grade level and scale scores was anticipated, no such relationship was observed beyond a weak correlation with panic disorder scores, which may be attributable to the unequal distribution of participants across educational stages.

No significant association was identified between parental sex and anxiety or depression scores in the present study. This stands in contrast to findings from previous studies, which have reported greater psychological difficulties and higher rates of post-traumatic stress disorder among children whose mothers have cancer, particularly among girls [34–37].

No significant association was found between disease duration and scale scores in the present study. This contrasts with the literature, in which longer disease duration and more advanced disease stage have been associated with higher depression scores in affected children [32, 37–39). A plausible explanation for this discrepancy is insufficient parent-child communication regarding disease progression. Adequate and age-appropriate family communication represents a foundational first step in preserving the psychological well-being of children affected by parental cancer [40, 41].

Although not assessed in the present study, additional risk factors reported in the literature—including parental divorce and low socioeconomic status—have been associated with heightened levels of anxiety and depression among children of parents with cancer [38, 39].

A noteworthy and somewhat unexpected finding of the present study was the significantly elevated anxiety and total scale scores observed among children whose parents had attained a master's degree, compared to children of parents with lower educational levels. This pattern was primarily driven by differences in social phobia, panic disorder, and generalized anxiety subscale scores. Although direct evidence for this specific association is limited in the literature, several explanatory mechanisms may be considered [42]. Parents with higher educational attainment may be more likely to discuss their diagnosis, prognosis, and treatment in detail with their children, inadvertently increasing the child's exposure to distressing medical information [43]. Conversely, children from more educated families may have greater access to information through independent channels such as the internet, thereby increasing their awareness of the potential severity and consequences of cancer [44]. Additionally, higher parental education is often associated with elevated academic expectations, which may compound the child's psychological burden during an already stressful period [45]. This finding warrants further investigation in future studies designed to specifically explore the role of health literacy and

intrafamilial communication patterns in shaping the psychological responses of children to parental cancer.

No statistically significant difference in anxiety, depression, or total scale scores was observed according to sibling status, with only children showing numerically but not significantly higher scores than those with siblings. The hypothesized protective effect of having siblings—rooted in the notion that siblings may provide mutual emotional support and shared coping during a parent's illness—was not confirmed in the present sample. This finding is consistent with some prior studies that similarly failed to demonstrate a significant buffering effect of sibling presence [13, 14], and may reflect the fact that siblings themselves are equally affected by the parental diagnosis and therefore less able to serve as a reliable source of emotional support. The unequal distribution of family sizes in our sample may have also limited statistical power to detect a meaningful difference.

Similarly, no significant association was observed between disease severity and scale scores in the case group. While this may appear counterintuitive given that more advanced disease is generally associated with greater family burden, it may reflect the fact that children's psychological responses are shaped less by objective clinical parameters than by subjective appraisal, perceived threat, and the quality of communication within the family [46]. It is also possible that the measure of disease severity employed in the present study did not adequately capture the functional and emotional impact of illness as experienced by the child [42]. Future studies incorporating validated caregiver burden instruments and child-reported measures of illness perception may provide a more nuanced understanding of this relationship.

To our knowledge, this is the first study in Turkey to systematically examine the psychological status of children living in families affected by cancer, and the largest study to employ the RCADS in this specific population. Our findings confirm that children are significantly and meaningfully affected by their parent's illness across multiple psychological dimensions, and underscore the need to integrate child-focused psychosocial screening into routine oncology practice. We recommend the systematic use of validated screening tools such as the RCADS in oncology outpatient settings to identify children at risk, followed by timely referral for psychological support. These children must be considered within the framework of family-centered cancer care, and their need for psychosocial rehabilitation may be at least as great as that of the patients themselves. Such support may be delivered through conventional professional psychosocial interventions as well as more accessible contemporary approaches, including digital psychoeducation programs and community-based non-governmental organization initiatives [47, 48].

Limitations

The relatively limited follow-up period of the study precluded examination of the relationship between treatment response and scale scores. It is known from the literature that clinical improvement in the parent's condition is associated with reductions in children's anxiety scores (49). Notably, none of the

studies referenced in the present work employed the RCADS, making this the largest RCADS-based study conducted in this specific population to date. Nevertheless, future multicenter studies with larger sample sizes and the inclusion of the affected adult patients are warranted to further characterize and address the needs of this population.

Declarations

Author Contributions

Erdinç Nayır: Conceptualization, study design, supervision, manuscript preparation.

Nilda Ata: Originator of the study idea; contributed substantially to all stages of the study, including project development, data collection, interpretation of findings, and manuscript drafting.

Fevziye Toros: Psychiatric evaluation, interpretation of psychosocial findings, manuscript review.

Rahime Gökboğa: Psychological assessment and interpretation, manuscript review.

Aynur Çelik: Data organization and methodological support.

Mehmet Ali Sungur: Statistical analysis and interpretation of data.

All authors read and approved the final manuscript.

Funding

The authors received no financial support for the research, authorship, and/or publication of this article.

Conflict of Interest

The authors declare that they have no conflict of interest.

Ethics Approval

The study protocol was approved by the appropriate institutional ethics committee, and the study was conducted in accordance with the ethical standards of the Declaration of Helsinki.

Informed Consent

Written informed consent was obtained from all participants and/or their legal guardians prior to inclusion in the study.

Data Availability

The datasets generated and/or analyzed during the current study are available from the corresponding author on reasonable request.

References

1. National Program of Cancer Registries. 1999–2008 incidence, WONDER online database. Atlanta: Centers for Disease Control and Prevention; 2011. Available from: http://wonder.cdc.gov/cancernpcr-v2008.html
2. Rauch P.K., Muriel A.C., Cassem H. (2003) Parents with cancer: who's looking after the children? Journal of Clinical Oncology 21, 117–121.
3. Turkish Ministry of Health. Turkey Cancer Statistics 2020. Available from: https://hsgm.saglik.gov.tr/
4. Cancer Research UK. Cancer statistics for the UK. Available from: http://info.cancerresearchuk.org/cancerstats/incidence/age/ Accessed 14 May 2026.
5. Semple CJ, McCaughan E. Family life when a parent is diagnosed with cancer: impact of a psychosocial intervention for young children. (2013) European Journal of Cancer Care 22, 219–231
6. Department of Health. Improving outcomes: a strategy for cancer. London: Department of Health; 2011.
7. Osborn T. (2007) The psychosocial impact of parental cancer on children and adolescents: a systematic review. Psycho-Oncology 16, 101–126.
8. Scott J.T., Prictor M.J., Harmsen M., Broom A., Entwistle V., Sowden A., Watt I. (2003) Interventions for improving communication with children and adolescents about a family member's cancer. Cochrane Database of Systematic Reviews (Online) (4), CD004511.
9. Kirsch S.E.D., Brandt P.A. & Lewis F.M. (2003) Making the most of the moment: when a child's mother has breast cancer. Cancer Nursing 26, 47–54.
10. Hoke L.A. (2001) Psychosocial adjustment in children of mothers with breast cancer. Psycho-Oncology 10, 361–369.
11. Longfield K., Warnick A. (2009) Supporting children of parents who are dying. Canadian Oncology Nursing Journal 19, 10–12.
12. Beale E.A., Sivesind D., Bruera E. (2004) Parents dying of cancer and their children. Palliative and Supportive Care 2, 387–393.
13. Thastum M., Watson M., Kienbacher C., Piha J., Steck B., Zachariae R., Baldus C., Romer G. (2009) Prevalence and predictors of emotional and behavioural functioning of children where a parent has cancer: a multinational study. Cancer 115, 4030–4039.
14. Schmitt F., Piha J., Helenius H., Baldus C., Kienbacher C., Steck B., Thastum M., Watson M., Romer G. (2008) Multinational study of cancer patients and their children: factors associated with family functioning. Journal of Clinical Oncology 26, 5877–5883.
15. Krattenmacher T., Kuhne F., Halverscheid S., Wiegand-Grefe S., Bergelt C., Romer G., Moller B. (2014) A comparison of the emotional and behavioral problems of children of patients with cancer or a mental disorder and their association with parental quality of life. Journal of Psychosomatic Research 76, 213–220.

16. Patterson P., Pearce A., Slawitschka E. (2011) The initial development of an instrument to assess the psychosocial needs and unmet needs of young people who have a parent with cancer: piloting the offspring cancer needs instrument (OCNI). Supportive Care in Cancer 19, 1165–1174.
17. Huizinga G.A., van der Graaf W.T., Visser A., Dijkstra J.S., Hoekstra-Weebers J.E. (2003) Psychosocial consequences for children of a parent with cancer: a pilot study. Cancer Nursing 26, 195–202.
18. Kristjanson L.J., Chalmers K.I., Woodgate R. (2004) Information and support needs of adolescent children of women with breast cancer. Oncology Nursing Forum 31, 111–119
19. Birmaher B, Ryan ND, Williamson DE, et al. Childhood and adolescent depression: a review of the past 10 years. Part I. J Am Acad Child Psychiatry. 1996;35(11):1427–1439.
20. Brady EU, Kendall PC. Comorbidity of anxiety and depression in children and adolescents. Psychol Bull. 1992;111(2):244–255.
21. Emslie GJ. Pediatric anxiety – underrecognized and undertreated. N Engl J Med. 2008;359(26):2835–2836.
22. Chorpita BF, Yim L, Moffitt C, Umemoto LA, Francis SE. Assessment of symptoms of DSM-IV anxiety and depression in children: a revised child anxiety and depression scale. Behav Res Ther. 2000;38:835–855.
23. Görmez V, Kılınçaslan A, Orengül AC, Ebesutani C, Kaya I, Ceri V, et al. Psychometric properties of the Turkish version of the Revised Child Anxiety and Depression Scale–Child Version in a clinical sample. Psychiatry Clin Psychopharmacol. 2017;27(1):84–92. doi:10.1080/24750573.2017.1297494
24. Kandemir I, Gudek K, Sahin AY, Aksakal MT, Kucuk E, Yildirim ZNY, Yilmaz A, Nayir A, Bas F. Association of problems, coping styles, and preferred online activity with depression, anxiety, and other psychological disorders in Turkish adolescents diagnosed with chronic kidney disease. Pediatr Nephrol. 2024;39(9):2779–2788. doi: 10.1007/s00467-024-06391-9. Epub 2024 May 21.
25. Ellis SJ, Wakefield CE, Antill G, Burns M, Patterson P. Supporting children facing a parent's cancer diagnosis: a systematic review of children's psychosocial needs and existing interventions. Eur J Cancer Care (Engl). 2017;26(1):e12432.
26. Barnes J et al. (2002) Factors predicting communication about the diagnosis of maternal breast cancer to children. J Psychosom Res 52(4):209–214
27. Nelson E, While D (2002) Children's adjustment during the first year of a parent's cancer diagnosis. J Psychosoc Oncol 20(1):15–36
28. Visser A et al. (2007) Temperament as a predictor of internalising and externalising problems in adolescent children of parents diagnosed with cancer. Support Care Cancer 15(4):395–403
29. Thastum M et al. (2006) Evaluation of a focused short-term preventive counselling project for families with a parent with cancer. Clin Child Psychol Psychiatry 11(4):529–542
30. Kennedy VL, Lloyd-Williams M (2009) How children cope when a parent has advanced cancer. Psycho-Oncology 18(8):886–892

31. Edwards L, Watson M, St James-Roberts I, Ashley S, Tilney C, Brougham B. Adolescents' stress responses and psychological functioning when a parent has early breast cancer. Psycho-Oncology. 2008;17:1039–1047.
32. Küçükoğlu S, Çelebioğlu A (2013) Identification of psychological symptoms and associated factors in adolescents who have a parent with cancer in Turkey. Eur J Oncol Nurs 17(1):75–80
33. Rainville F et al. (2012) Psychological distress among adolescents living with a parent with advanced cancer. J Psychosoc Oncol 30(5):519–534
34. Foran-Tuller K et al. (2012) Posttraumatic stress symptoms in children of mothers diagnosed with breast cancer. J Psychosoc Oncol 30(1):41–56
35. Costas-Muniz R (2012) Hispanic adolescents coping with parental cancer. Support Care Cancer 20(2):413–417
36. Bekteshi V, Kayser K. When a mother has cancer: pathways to relational growth for mothers and daughters coping with cancer. Psycho-Oncology. 2013;22(10):2379–2385.
37. Welch AS, Wadsworth ME, Compas BE. Adjustment of children and adolescents to parental cancer: parent's and children's perspectives. Cancer 1996;77:1409–18.
38. Visser A et al. (2007) Emotional and behavioral problems in children of parents recently diagnosed with cancer: a longitudinal study. Acta Oncol 46(1):67–76
39. Torp S et al. (2013) Financial and social effects on children and adolescents when a parent is diagnosed with cancer. Child Adolesc Soc Work J 30(4):293–310
40. Park EM, Deal AM, Heiling HM, Jung A, Yopp JM, Bowers SM, et al. Families Addressing Cancer Together (FACT): feasibility and acceptability of a web-based psychosocial intervention for parents with cancer. Support Care Cancer. 2022;30(10):8301–8311. doi:10.1007/s00520-022-07278-x
41. Nakamura ZM, Deal AM, Yopp JM, Wardell AC, Manning M, Pak P, et al. A pilot randomized controlled trial of Families Addressing Cancer Together for parents with cancer: feasibility, acceptability, and preliminary effects. Psycho-Oncology. 2025;34(1):e70072. doi:10.1002/pon.70072.
42. Visser A, Huizinga GA, van der Graaf WTA, Hoekstra HJ, Hoekstra-Weebers JEHM. The impact of parental cancer on children and the family: a review of the literature. Cancer Treatment Reviews. 2004;30(8):683–694.
43. Hailey CE, Morris AS, Schmiege SJ, et al. Communication with children about a parent's advanced cancer and measures of parental anxiety and depression: a pilot study. J Fam Nurs. 2018;24(1):6–29.
44. Tan CE, Lau SCD, Latiff ZA, Lee CC, Teh KH, Sidik SM. Parents of children with cancer require health literacy support to enable them to obtain, understand and use information that meets their needs. Health Info Libr J. 2023;40(4):329–341.
45. Gao F, et al. Parent-child communication and educational anxiety: a longitudinal analysis based on the common fate model. BMC Psychol. 2024;12(1):594.

46. Schwartz-Attias I, et al. Well-being in parents of children with cancer: illness impact perceptions as a mediator. Front Psychol. 2024;15:1206520.
47. Wang Z, Wang Z, Ji Y, Duan H, Wang L, Zhao Y, et al. A 12-week WeChat education, relaxing, and care program relieves anxiety, depression, insomnia, and posttraumatic stress disorder in parents of childhood lymphoma patients. Hematology. 2024;29(1):2426825. doi:10.1080/16078454.2024.2426825
48. Phillips F, Prezio EA, Currin-McCulloch J, Jones BL. Wonders & Worries: a randomized clinical trial of a psychosocial intervention for children who have a parent with cancer. Psycho-Oncology. 2022;31:1399–1411.
49. Helseth S, Ulfsaet N. Having a parent with cancer: coping and quality of life of children during serious illness in the family. Cancer Nurs. 2003;26(5):355–362.