International Journal of Contemporary Issues in Social Sciences
Volume 3, Issue 2, 2024 ISSN(P):2959-3808 | 2959-2461

MENTAL AND FAMILY ADJUSTMENT TO CANCER AND THEIR LINK TO DEPRESSIVE SYMPTOMS IN ADOLESCENTS

Hina Rafique[1], Mubeena Munir[*2], Ayesha Mubeen Puri[3], Nudra Malik[4], Aqsa Shabbir[5], Naveed Iqbal[6], Amina Muazzam[7]

[1]MS Student Department of Applied Psychology, Lahore College for Women University, Lahore, Pakistan; [2]Lecturer, Department of Applied Psychology, Lahore College for Women University, Lahore, Pakistan; [3]PHD Scholar, Department of Stem Education, Lahore College for Women University, Lahore, Pakistan; [4]Assistant Professor, Department of Applied Phycology, Lahore College for Women University, Lahore, Pakistan; [5]Associate Professor, Department of Electrical Engineering, Lahore College for Women University, Lahore, Pakistan; [6]Assistant Professor, Department of Mass Communication, Lahore College for Women University, Lahore, Pakistan; [7]Professor, Chairperson Applied Psychology Department, Lahore College for Women University, Lahore, Pakistan

[1]prof.marham@gmail.com; [*2]mubeenamunir9@gmail.com; [3]aisha.puri28@gmail.com; [4]nudramalik@gmail.com; [5]aqsa.shabbir@lcwu.edu.pk; [6]naveed.iqbal@lcwu.edu.pk; [7]amina.muazzam@lcwu.edu.pk

Corresponding Author: *

Received: 01 March, 2024 **Revised:** 30 March, 2024 **Accepted:** 09 April, 2024 **Published:** 23 April, 2024

ABSTRACT

It is well established that cancer can emotionally impact patients as well as their families. anxiety, distress, and depression are common emotions throughout this life-changing experience. The study aimed to investigate the mental adjustment to cancer on family adjustment and depressive symptoms among adolescents with cancer. The sample size was *N* = 135, adolescents aged between 11 to 14 years (*M*=12.65, *SD*=1.06). A correlational research design was used for this study, with the data being collected through non-probability purposive sampling technique. The data was gathered from Children's Hospital, Faisalabad. Mental Adjustment to Cancer (MACS) scale (Watson et al., 1988) (α=.79), Parenting and Family Adjustment scale (PAFAS) (Sanders et al., 2014) (α=.79-.87) and Patient Health Questionnaire (PHQ-9) (Kroenke et al., 2001) (α=.89) were used for measuring constructs of this study among adolescents diagnosed with cancer. There was a significant positive relationship between family adjustment and depressive symptoms (r= .78**) among adolescents with cancer. Family adjustment does not have a mediating role between mental adjustment to cancer and depressive symptoms

Keywords: mental adjustment to cancer, family adjustment, depressive symptoms, adolescents, cancer.

INTRODUCTION

Cancer is one of the leading causes of death worldwide, with higher mortality rates in underdeveloped countries (Giovannucci et al., 2010). According to World Health Organization figures, the mortality rate of cancer is increasing, with at least 8 million deaths yearly attributed to cancer (Wild et al., 2014). In Pakistan, in the previous twenty-seven years (1994 to 2021), 119,456 neoplasms were reported at Shaukat Khanum Memorial Cancer Hospital and Research Center (SKMCH&RC) and the Karachi Diagnostic Center (KDC), with 7,515 benign and 111,941 malignant. Male and female distributions were 47.3 and 52.7 percent, respectively. Approximately 90.4 per cent of tumors were discovered in adults, whereas 9.6 per cent were found in teenagers. These calculations were done by calculating the population-weighted average of treatment rates by gender, location, and age (Mahmood et al., 2021).

Adolescence is a phase of significant physical and mental change and being diagnosed with cancer during this period has significant psychological and physical developmental implications (McInally et al., 2021). During adolescence, the focus is on autonomy, independence, and sexuality. Attractiveness is essential for self-esteem, and the diversity of maturity at all ages enhances self-esteem. Development theorist Erik Erikson believes tremendous growth and catastrophe can occur at this stage. Adolescents face a crossroads trying to discover themselves but are still lost while working on many physical and social changes. According to Jean Piaget, adolescents also reach new levels of cognition that allow for abstract, logical, and conceptual thinking. Developmental theories provide the basis for the problems predicted in this age group but cannot explain the disorders presented by life-threatening and life-transforming illnesses such as cancer (Erikson, 1993).

Cancer diagnosis in adolescents and young age is a life-changing experience for them and their relatives. Despite breakthroughs in therapy that have boosted the overall five-year survival rate for youth malignancies to almost 80 per cent, cancer remains the second biggest cause of mortality in children aged 5 to 14 (Howlader et al., 2013; Murphy et al., 2015). Adolescents' response to diagnosis and treatment often follows patterns that correspond to the developmental goals of this age group. A study examined the frequency and type of symptoms reported in adolescents, 4-8 weeks after a cancer diagnosis. The most common symptoms are physical problems, personal changes in their body image (e.g., hair loss, malaise, weight changes), and problems related to treatment (e.g., lack of school or relaxation activities) (Manier et al., 2018; Hedström et al., 2005). In addition to this, in this early phase of the illness, adolescents report severe concerns that they may not recover. Cancer diagnosis produces more psychological stress in people than any other disease, and it causes a slew of issues in the medical, emotional, social, financial, and familial aspects (Zemestani et al., 2013).

An individual's psychological responses and mental adjustment to the diagnosis of cancer also play a role. The experience of being diagnosed, if delayed, can be a significant burden and affect the process of accepting the disease (Ball et al., 2016). Pessimistic emotions, loss of control, and uncertainty about survival and death can be harmful, particularly in patients with dire prognoses. Anxiety and depression are the most frequently stated disturbing indicators in cancer patients (House & Stark, 2002). Situational anxiety, illness-reported anxiety, treatment-related fear, and exacerbation of pretreatment anxiety disorders remain with the anxiety of four types. Cancer-related depression is a clinical, emotional reaction to a lack of normality and rapid change in one's world due to the diagnosis and treatment of cancer (Pandey et al., 2006). It generally has a high incidence in cancer patients. Anxiety and depression react to the sickness or may be connected to the treatment's physical effects (Miller & Massie, 2006). When it comes to the psychological effects of cancer, most significant attention has been on anxiety and depression. Anxiety is a mental and physical reaction to an impending threat, being quite common among cancer patients (Ford et al., 2012). Psychological distress is an easy-to-understand response to life be it with or without a cancer diagnosis, acute care, and the presence or absence of cancer (Coulter & Gordon-Nesbitt, 2016). Studies show that of cancer patients, 33% to 40% have a substantial level of distress at diagnosis. Studies also reveal that high levels of distress have a poor impact on the quality of life of individuals with cancer, satisfaction with care, and post-treatment self-management (Gordon et al., 2011).

Body image is a multidimensional psychological concept that includes self-awareness and attitudes associated with the body, such as beliefs, emotions, and behaviors (Cash & Smolak, 2011). Many physical and sexual changes occur at the beginning of puberty, and these changes are confusing and distressing for teens but are expected and normalized within the social population. Researchers have found that hair loss, central venous catheter appearance, weight changes, and surgical scarring are the most annoying bodily changes that can destroy an adolescent's self-image. According to developmental theory (Erikson, 1993), adolescence is a crucial phase in which the self-esteem develops, independence is determined, and self-image is defined. Patients receiving cancer treatment experience physical changes, limited regular activity that may add to chemotherapy, difficulty coping with treatment, side effects, and post-treatment readjustment. These individuals may experience mental health problems after treatment (Bertan & Castro, 2010). The family influences how the patient

builds self-esteem. Self-esteem of breast cancer patients reflects how their families view the patient and their illness. Each family member must be able to instruct the patient on how to accept their condition and carry out treatment processes so that the patient can recover. Patients are in a loving and compassionate atmosphere when the family has total and permanent self-esteem.

Cancer is a family experience, and a family can deal with many difficulties from which patients suffer. The family goes through several phases of disease adaptation - Anger, resentment, regret, and malaise - these are examples of emotional reactions that may or may not lead to acceptance of the illness (Budziszewska et al., 2005). The stages of cancer diagnosis and subsequent disease and treatment can be very stressful for the patient and family. Patients and their families confront life challenges with uncertainty, treatment plans, risk of recurrence, or treatment failure. Several children with cancer and their siblings are functioning normally, but many suffer from chronic disease-related stress (Alderfer et al., 2010). For family members, the phase towards the end of a patient's life is the most difficult (Walden-Gałuszko, 2011). Significant stress responses can be caused by the fear of the patient being alone when in medical isolation, the expected distress, loss of control over the situation, and the time of mortality. The family goes beyond an emotional stage in response to the illness. Anger is often the first strong emotion and it may appear depending on the diagnosis or in a situation where the family believes that the treatment provided by the doctor or nurse is not sufficiently professional or in other words, they do not care enough. Manne et al. (1999) discovered that the patient's illness in the family is linked with an increased need for patient care, which interferes with the caregiver's schedule and activities outside the home. Parental mental health and upbringing can also affect a sibling's adaptation to childhood cancer (Vrijmoet-Wiersma et al., 2008).

Childhood cancer patients can face social disadvantages through inpatient isolation, discrimination, and repeated absences from school (Ruland et al., 2009). Social support may shield adolescent cancer patients from the detrimental effects of stresses and symptoms, especially when the bonds are powerful. The patient's relatives and friends are the most cited social support resources (Woodgate, 2006). Regular adolescents are becoming increasingly independent, instead of relying on their parents. However, in the case of a cancer diagnosis, they become more dependent upon their parents. Adolescents show more significant psychological adjustment to cancer treatment when their parents are more understanding and supportive (Williamson et al., 2010). With family support, patients can stay active and help overcome illness-related problems. Friends are another vital source of emotional support for cancer-stricken adolescents. Compared to younger children, adolescents depend more on peer social support (Barrera et al., 2008). Ritchie, (2001) shows that solid peer interactions help adolescents regain normality in other areas of life.

According to a prior study, stress, anxiety, and other types of mental illness' including adjustment difficulties, are widespread among people with cancer. Furthermore, studies indicate that in the US, about 35 and 50 per cent of people with cancer suffer from depression with negative mood, the most prevalent medical condition (Zabora et al., 2001). Reid-Arndt et al. (2009) evaluated the relationship between cognitive difficulties after chemotherapy and functional outcomes. Yardeni et al. (2021) examined the paths and risks for anxiety and depression in cancer-affected school-aged children and adolescents. They found that pediatric and parent's anxiety and depression decrease as the time of disease passes, and the health of the individuals becomes better over time. In the same line, Nazari et al. (2017) showed that children diagnosed with cancer had a higher score on depression and anxiety than healthy children, and children with cancer have a lower average quality of life than healthy children. Tel et al. (2011) concluded that both patient tiredness, anxiety, and depression levels have a positive and substantial association. Anxiety, discomfort, and depression are all greater in female patients. For women and children, Jimenez-Fonseca et al. (2018) found that the incidence of anxiety and depression is 49.8 and 36.6 per cent, respectively. Banki et al. (2011) investigated the role of cognitive variables in adolescent depression with cancer. Results were inversely correlated with adolescent depression and health care beliefs, illness cognition, problem-focused, and avoidance-focused coping.

Dewar et al. (2021) concluded that people that have survived cancer is their adolescence and during their young-adult age have a higher incidence

of cognitive impairment and psychological distress than the general inhabitants. According to the descriptive study of Neville et al. (1996), adolescents with leukemia suffer from psychological distress. Duan et al. (2021) found that the prevalence of psychological distress in adolescents is generally relatively high, while among young adults with cancer in China it is 83.4. Carlson et al. (2019) conducted a study to evaluate distress in a geographically diverse sample of cancer patients after cancer social workers performed mandatory grief screening. Fan and Eiser (2009) found no consistent indication of body image differences among cancer-affected kids and adolescents and healthy controls. Children and adolescents with cancer face several problems. Lee et al. (2012) investigated the body image experiences of teenagers and adolescents with cancer. They found that individuals with more cancer symptoms have more body image changes—finally, teenagers and adolescents with cancer experience several difficulties connected to body image alterations. Begovic-Juhant et al. (2012) aimed to explore body image, physical attractiveness, and femininity in breast cancer survivors and examine variables' impact on depression and quality of life. A study was conducted by Leite et al. (2015) to assess the self-esteem of cancer patients receiving chemotherapy. They discovered that while most patients have high self-esteem, some have ordinary or low self-esteem. Noghani et al. (2006) compared the self-esteem of male and female cancer patients. According to this study, most both male and female cancer patients have a healthy sense of self-esteem.

Furthermore, Robinson et al. (2007) identified characteristics that impact the relationship between a father and a daughter, distress in cancer households and comparative peers. According to the findings, the suffering of the father and the child are partly mediated by the family setting. Children who have upset parents are much more prone to be upset too. Edwards and Clarke (2004) conducted a study that examined diagnosed adult patients and studied their adult relatives for depression and anxiety levels. They found that families with open communication, straightforward expression of feelings, and successful problem-solving have lower rates of psychological problems. Moreover, Maru Barrera et al. (2004) found that mothers of cancer patients have higher rates of depression, anguish coping, and social protection than mothers of children with acute illnesses. They concluded that stress and strain mediate the association between a child's behavior and depression, as well as the relationship between angst coping and each readjustment measurement.

Hullmann et al. (2010) examined the relationship between overprotective parenting, perceived child fragility and caregiver wellness life quality in parents of children with cancer. Further research found that a child's perceived vulnerability mediated the relationship between overly protective parents and health-related life quality. Schepers et al. (2019) found that Parent-Child interaction alleviates the association between parental stress and adaptation in the adolescent-reported model, higher care improves the outcome of the adolescent-reported adaptation and overprotection results in poorer adjustment outcomes. Kim et al. (2006) investigated the impact of careers' numerous tasks, such as working and caring for minors in their home, on their psychological health. The findings confirm that the higher the caregiver's social responsibilities, the more likely they are to suffer stress and poor effect. Van Schoors et al. (2019) studied the relationship between family life, cancer evaluation, and parents and siblings. The results came from the fact that family functioning and brain tumor evaluation are crucial for patients, parents, and siblings' adjustment when facing a cancer diagnosis in a child. Previous literature has shown that the most common psychological impacts of cancer on an individual among adolescents are anxiety, depression, psychological distress, body image, and self-esteem. It is evident from previous literature that adolescents with cancer show high levels of anxiety, depression, distress, and low self-esteem, while the individuals with more cancer symptoms have more changes in their body image. The objectives of the study were to identify the relationship between the mental adjustment to cancer and family adjustment among adolescents diagnosed with cancer. On the basis of these evidences, following hypotheses were developed.

Hypotheses

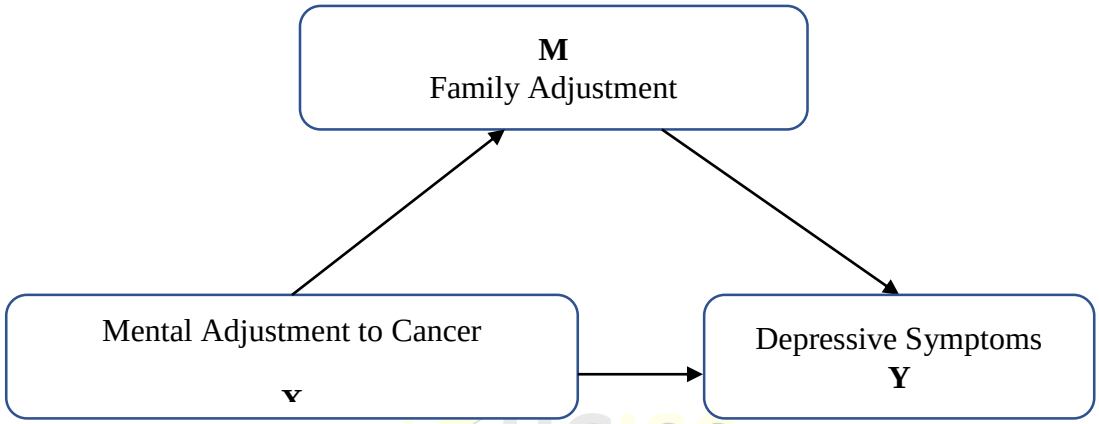
- There will be a negative relationship between the mental adjustment to cancer and depressive symptoms among adolescents with cancer.
- There will be a positive relationship between the mental adjustment to cancer and family adjustment among adolescents with cancer.

- The mental adjustment to cancer would negatively predict depressive symptoms among adolescents with cancer.
- The family adjustment would negatively predict the depressive symptoms among adolescents with cancer.
- Family adjustment will mediate the relationship between the mental adjustment to cancer depressive symptoms
- Girls will show more mental adjustment to cancer than boys. Family adjustment in female caregivers will higher as be compared to males

Proposed Model

Figure 2

Conceptual framework for the relationship of Mental Adjustment to Cancer (X) and Depressive Symptoms (Y) with Family Adjustment (M).



Method

Research Design

The present research followed a correlational research design to investigate the relationships between study variables.

Sample and Sampling Technique

Non-probability purposive sampling technique was used to select the sample. The sample included 135 adolescents with cancer, ranging in age between 11 and 14 years (M=12.65, SD=1.06). Participants were of both sexes (male and female). The minimum sample estimate of 135 was calculated through α - Priori G-Power Analysis. The actual power for n= 135 was reported to be 0.95, i.e., excellent, indicating a slight chance of committing a type-II error. Data was collected from hospitals that provided treatment for cancer. Comorbidity of other diseases has been excluded. Adolescents that were excluded were of different ages rather than a specified age group.

Table 1 displays the demographics of the participants. The sample included 67 boys and 68 girls. Thirty-three per cent of participants were from grade 6. The birth order of most participants was second. The nuclear family system was 74%, whereas the joint was 25%. Most of the fathers of the participants were government employees. The monthly income of most participants' fathers was less than fifty thousand. 60% of participants were with blood cancer. Most participants were suffering from stage 1 cancer. Around 82% of the participants bear the cost of their treatment.

Table 1

Demographic Characteristics of Participants

Demographics	*f*	*%*
Age		
11 years	23	17%
12 years	38	28.1%
13 years	37	27.4%
14 years	37	27.4%
Gender		

Boys	67	49%
Girls	68	50%
Education		
Fifth Class	23	17%
Six Class	45	33.3%
Seventh Class	34	25%
Eight Class	28	20.7%
Ninth Class	5	3.7%
Birth order		
First	36	26.7%
Second	37	27.4%
Middle	33	24.4%
Last	18	13%
Other	11	8%
Number of Siblings		
Single	1	.7%
Two or more	52	38.5%
Other	82	60.7%
Family System		
Nuclear	100	74%
Joint	35	25%
Father's Profession		
Government employee	47	34.8%
Laborer	41	30%
Farmer	19	14%
Vehicle driver	28	20.7%
Father's Monthly Income		
	18	13%
Less than twenty-five thousand	37	27%
	49	36%
Equal or more than twenty-five thousand	31	23%
Less than fifty thousand		
Equal or more than fifty thousand		
Type of cancer		
Blood cancer	83	60%
Brain and CNS tumor	31	22%
Wilms tumor	21	15.3%
Stage of cancer		
Stage 1	76	55.5%
Stage 2	59	43%
Duration of treatment		
Three months	60	43%
Six months	46	33%
One year	16	11%
More than one year	13	9%
Treatment Expenses		
Yes	111	82%
No	24	17%

Note, N=135, F= frequency, %= percentage

Measures

Demographic Form

A self-made demographic data sheet was used for gathering data regarding personal information of the participants, i.e., age, gender, education, birth order, number of siblings, family system (joint or nuclear), father's profession, and father's monthly income.

Mental Adjustment to Cancer Scale (Watson et al. 1988)

The Mental Adjustment to Cancer (MAC) scale, was used to assess the psychological adjustment to

cancer. The scale consisted of 40 items ranging from 1 (definitely does not apply to me) to 4 (definitely applies to me) on a 4-point Likert scale. Fighting spirit, helplessness/hopelessness, anxious preoccupation, fatalism, and avoidance are the five subscales of the scale. The MAC scale has a reliability of 0.79. The higher the score, the better the participant is mentally adjustment to cancer. The MAC Scale assesses patients' progress in adjusting to cancer diagnosis and treatment. A higher subscale score suggests that coping is used more frequently (Boyes et al., 2011).

Parenting and Family Adjustment scale (PAFAS) (Sanders et al., 2014)

The family adjustment was measured with the parenting and family adjustment scale consists of 30 items. It was a 4-point Likert scale. The scale consists of two parts - parenting and family adjustment. Paternal consistency, aggressive parenting, constructive encouragement, and parent-child interaction are the four subscales of parenting. Parental adjustment, family bonds, and parental cooperation are the three subscales of family adjustment. Items 2, 3, 6, 8, 11, 14-18, 20, 22, 23-25, 28, 30 are reversed scored. The scale's reliability ranged from 0.79 to 0.87 (Sanders et al., 2014). The higher score on this scale indicates lower levels of family adjustment. According to psychometric studies, adaptive-scale families and parenting have rational composition and competitive validity, as well as strong internal consistency (scores> .60 on all subscales) and test-retest reliability (scores> .60) (Mejia et al., 2015). This questionnaire was filled by the caregivers of the adolescents.

Patient Health Questionnaire (PHQ-9) (Kroenke et al., 2001)

Depressive Symptoms were assessed using the Patient Health Questionnaire (PHQ-9). On a 4-point Likert scale, the scale has nine items ranging from 0 (not at all) to 3 (almost every day). The scale's reliability was 0.89 (Kroenke et al., 2001). The PHQ-9 has a high internal consistency of 0.88 and test-retest reliability of 0.94. In terms of composition validity, there was a strong association between the frequency of functional status assessment, sickness, and consultation (Zuithoff et al., 2010).

The Urdu version of the MAC scale, PHQ-9 scale and PAFAS scale were used in this research, back-translation method was used to translate the scales, which included the following steps; first a forward translation was conducted, in which the scales were translated into Urdu by the researcher and supervisor who were bilingual. Then a back translation was conducted, in which questionnaire was given for the backward translation to another bilingual person who was not involved in forwarding translation procedure. After backward translation, we compared both English and Urdu versions. The statements were retained that were matched in both versions. In the end, cognitive debriefing and review by the supervisor were also considered. Proofreading was done, and the questionnaires were finalized.

Procedure

Institutional letters were obtained from the Head of the Department of Applied Psychology, Lahore College for Women University, Lahore, for the study. A purposive sample of n = 135, with adolescents ranging from 11 to 14 years. was taken from Children Hospital Faisalabad. Permission was sought from the authors of the mental adjustment to cancer scale (MAC), patient health questionnaire (PHQ-9), and parenting and family adjustment scale (PAFAS); then, these scales were translated into Urdu using the standard method of translation, which was back translation method. First, participants were briefly informed about the study's goal and the privacy of their personal information and then requested to give their accurate responses honestly. They were then told their information would be kept private and only used for academic and research purposes. Informed consent and a questionnaire with detailed instructions were given to participants to take their responses. Every took time to respond; the maximum time noticed was between 25 and 30 minutes. After collecting questionnaires, each participant was thanked for their participation. In the end, forms were entered into the SPSS data sheet for further statistical analysis. Date collection of adolescent participants was challenging. It was difficult to convince them to fill out questionnaires, but their families were supportive. Guidance and assistance were provided to participants in reading questionnaires. Parents filled out the questionnaires at a given time, but participants took more time.

Ethical Considerations

Ethics were followed in the study according to APA:

- Prior permission was obtained from the authors for the use of scales.
- The study's purpose was presented to the participants at the beginning, and they were asked to participate freely.
- All information was obtained after the participant's consent. They were told that entire data obtained from them would be considered secret and no information relating to them would be utilized for purposes other than academic research, ensuring that confidentiality would not be violated.
- Participants were not forced to give the data and they were provided the privilege to withdraw at any moment where they feel uncomfortable.
- There was no deception use during data collection and no harm to the participant either, physical or psychological.

Results

The present study aimed to examine the mental adjustment to cancer on depressive symptoms and family adjustment among adolescents with cancer. The data analysis was done using SPSS-25. The demographic variables were identified using frequencies and percentages. Reliability and descriptive statistics of study scales were also computed. The relationship between the mental adjustment to cancer, depressive symptoms, and family adjustment was assessed by Pearson Correlation. Multiple regression analysis was used to find out the strength of a relationship between the outcome variable (depressive symptoms) and predictor variables (mental adjustment to cancer and family adjustment). Mediation analysis was also used to find the mediating effect of the family adjustment on the mental adjustment to cancer and depressive symptoms among adolescents with cancer.

Table 2

Reliability Coefficient and Descriptive Statistics of Study Scales (N=135)

Scales	*M*	*SD*	Range	Cronbach's α
Mental Adjustment to Cancer Scale	104.16	8.12	86-122	.64
Parenting and Family Adjustment scale	43.92	17.64	. 17-81	.93
Patient Health Questionnaire -9	12.72	6.08	2-25	.85

Table 3

Pearson Product Moment Correlation among study variables (N=135)

Variables	1	2	3
Mental Adjustment to Cancer	-	.009	-.046
Family Adjustment	-	-	.785**
Depressive Symptoms	-	-	-

Note, **p<0.01, *p<0.05

Pearson product moment correlation was conducted to find out the association between the mental adjustment to cancer, family adjustment, and depressive symptoms. This table shows a non-significant positive correlation between the mental adjustment to cancer and family adjustment (r= .009). There is a negative correlation between the mental adjustment to cancer and depressive symptoms (r= -.046). It is also revealed that there is a significant positive correlation between family adjustment and depressive symptoms in adolescents (r= .785**, p<0.01), which means that lower levels of family adjustment (high score indicates worse adjustment) are associated with more depressive symptoms.

Table 4

Multiple Regression Analysis showing Predictors of Depressive Symptoms

		Variables	Depressive Symptoms				
			B	SE *B*	*t*	*p*	95% *CI*
		Constant	4.98	4.27	1.165	.246	[-3.47, 13.43]
		Mental adjustment to cancer	-.040	.040	-.990	.323	[-.119, .040]
		Family adjustment	.271***	.019	14.64	.000	[.234, .308]

Note: *p<.05, **p<.01, ***p<.001

It was hypothesized that the mental adjustment to cancer would negatively predict depressive symptoms, and family adjustment will negatively predict the depressive symptoms among adolescents with cancer. To test this hypothesis, mental adjustment to cancer, family adjustment, and depressive symptoms were put into the multiple linear regression analysis. The dependent variable was depressive symptoms, and the mental adjustment to cancer and family adjustment were taken as independent variables. The table shows the multiple regression analysis in which the R^2 value of .62 revealed that the predictors explained 62% variance in the outcome variable (β = -.053, .786 t = -.992, 14.64). The findings revealed that the mental adjustment to cancer is a non-significant negative predictor of depressive symptoms (β = -.053, p > .05). In contrast, family adjustment is a significant positive predictor of depressive symptoms (β = .786, p < .001). It showed that worse family adjustment is predicting depressive symptoms in adolescents diagnosed with cancer.

Table 5

Independent Sample t-Test Comparing Study Variables among Girls And Boys.

Variables	Group 1 (*n*=67)		Group 2 (*n*=68)				95%CI		Cohen' s *d*
	M	*SD*	*M*	*SD*	*t*(135)	*p*	*LL*	*UL*	
Mental adjustment to cancer	103.64	9.11	104.67	7.03	-.73	.03	-3.80	1.73	0.12
Family adjustment	39.16	17.32	48.60	16.78	-3.2	.32	-15.24	-3.63	0.55
Depressive Symptoms	11.13	6.21	14.27	5.56	-3.1	.06	-5.15	-1.13	0.53

Note, Group 1= boys, Group 2= girls, **p< .05.

An independent sample t-test was used to test the gender difference in adolescents in study variables. A significant difference is found among girls (*M*=104.67, *SD*= 7.03) and boys (*M*=103.64, *SD*= 9.11) in mental adjustment to cancer. The mean value of the mental adjustment to cancer among girls is 104.67, which is a little bit higher than the mean value among boys. The table shows that family adjustment in female caregivers was worse (*M*=48.60, *SD*= 16.78) than in males (*M*= 39.16, *SD*= 17.32). Depressive symptoms were reported more in boys (*M*= 11.13, *SD*= 6.21) than girls (*M*= 14.27, *SD*= 5.56). The value of Cohen's d (Cohen's d= .12) reveals the minimal effect size, which shows a minimum difference between girls and boys on mental adjustment to cancer. The value of Cohen's d (Cohen's d = .55) shows the medium effect size, indicating a difference between females and males in family adjustment. Furthermore, Cohen's d value (Cohen's d = .53) indicates a medium effect size,

which reveals a difference between girls and boys in depressive symptoms.

Table 6

Regression Coefficients, Standard Error, and Model Summary Information for the depressive Symptoms, Mental Adjustment to Cancer, and Family Adjustment Mediation Analysis

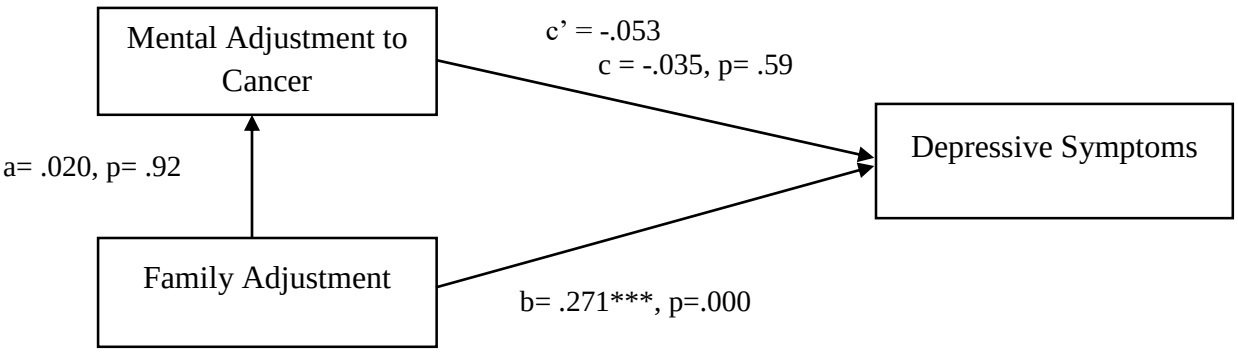
Outcome variable	Predictor variable	*β*	*SE*	*P*	*LL*	*UL*
		Total Effect				
Depressive Symptoms	Mental Adjustment to cancer	-.035	.188	.916	-.353	.393
		Direct Effect				
		-.053	.28	.000	.234	.308
		Indirect Effect				
		.005	.050	.621	-.097	.103

Note, β= Beta, SE= Standard error, LL= Lower limit, UL= Upper limit, p***<0.001

The mediation model through the process was used to investigate the hypothesis that family adjustment mediates the effect of the mental adjustment to cancer on depressive symptoms. Depressive symptoms is taken as an outcome variable, the mental adjustment to cancer as a predictor variable, and family adjustment as a mediating variable. Findings revealed that the total effect was insignificant between outcome (depressive symptoms) and predictor variable (mental adjustment to cancer). Further, three pathways were explored. Pathway 1 explored the direct effect of the independent variable (mental adjustment to cancer) with the dependent variable (depressive symptoms.) known as c'. The effect was non-significant, meaning IV did not have any effect; however, pathway 2 explored the mental adjustment to cancer on family adjustment (a) to be non-significant with a variance of .00%. Pathway 3 was significant (b), with variance explained at .62%. Moreover, an indirect effect of the mental adjustment to cancer on depressive symptoms was non-significant because BootLLCL and BootULCL were not in the same direction, one has a positive value, and the other has a negative value. Since BootLLCL and BootULCL values have zero in between these two values, hence, family adjustment non-significantly mediates mental adjustment to cancer and depressive symptoms.

Figure 1

Theoretical Model of Relationship between Mental Adjustment to Cancer, Family Adjustment, and Depressive Symptoms.



Discussion

The present study examined the relationship between the mental adjustment to cancer, family adjustment, and depressive symptoms among adolescents with cancer. The total sample size of this research participant was 135. Three scales were used - mental adjustment to cancer scale, a parenting and family adjustment scale, and a patient health questionnaire (PHQ-9) along with the demographic and information sheet for the data collection. SPSS-25 was used for data analyses.

In the present study, the hypothesis was that there would be a negative relationship between the mental adjustment to cancer and depressive symptoms among adolescents with cancer. This hypothesis was tested using Pearson Product Moment Correlation. The findings showed that the hypothesis was accepted, and there is a negative relationship between the mental adjustment to cancer and depressive symptoms among adolescents with cancer. Results were consistent with previous studies. Larsson et al. (2010) conducted research that shows that the cancer group has poorer psychological health, vigor and a greater degree of depression than the comparison group up to 6 months following diagnosis. At 18 months, the situation reverses, and after 48 months, the cancer group reports better levels of vigor and less anxiety and depression than the comparison group. Andersen et al. (2007) also found that participation in the intervention for depression and anxiety directly enhanced health.

Another hypothesis was that there would be a negative relationship between the mental adjustment to cancer and family adjustment among adolescents with cancer. This hypothesis was tested using correlation, and the results revealed that the hypothesis is rejected. Previous studies support the results. Long and Marsland (2011) conducted qualitative and quantitative research that shows parents experience stronger relationships with their sick children and overprotect them. Van Schoors et al. (2019) also found that parents' perceptions of family adjustment post-diagnosis were cross-sectionally and positively associated with psychological flexibility and networking capabilities; psychological flexibility and social support were found to predict improved family adjustment over time. As the result of this hypothesis proved that mental adjustment to cancer have a positive relationship with family adjustment because parents of sick children have a strong relationship with their children and overprotect them.

The third hypothesis of the study was that the mental adjustment to cancer would negatively predict depressive symptoms among adolescents with cancer. This hypothesis was tested using multiple regression analysis, and the findings showed that the hypothesis was accepted. The findings were consistent with prior research by Kugbey et al. (2018); anxious preoccupation and helplessness-hopelessness negatively predicted the quality of life and wellbeing. Pinto-Gouveia et al. (2014) found lower levels of depression and stress symptoms, as well as an improved quality of life and wellbeing.

The fourth hypothesis of the study was that worse family adjustment would positively predict depressive symptoms among adolescents with cancer. This hypothesis was tested using multiple regression analysis, and the findings showed that the hypothesis was accepted. The findings were also consistent with prior research. Toledano et al. (2021) conducted research that shows resilience was positively correlated with quality of life and psychological wellbeing but negatively with family caregiver depression, anxiety, and caregiver burden in children with cancer. Cohen et al. (1994) also found similar findings. The current study's findings were like those of Jobe-Shields et al. (2009); child distress was high when parental depression symptoms were high, independent of household circumstances. On the other hand, family coherence and openness contributed protective variables against child distress when parental depressive symptoms were low.

The fifth hypothesis was that family adjustment would mediate the relationship between the mental adjustment to cancer and depressive symptoms among adolescents with cancer. This hypothesis was tested using mediation analysis, and the findings showed that the hypothesis was rejected and that the results were non-significant. Various factors are faced by the family of pediatric cancer patients, due to which the results are non-significant. The patient might have been facing cultural and social barriers. Family conflict rises due to the illness. Not enough financial resources can overcome the needs of the family and the patient. The parents have trouble managing the family needs and other external matters. The chaos in the government

hospitals is hectic and psychologically distressing. There are not enough facilities provided to the patient in the government hospitals. The bills and medication expenses are high in the private sector, and parents cannot afford treatment. Parents face the psychological burden of illness and cannot maintain an equilibrium between the financial and social factors. The patient cannot live an everyday life due to psychological and physical causes. Previous studies also support the results. Woźniak and Iżycki (2014) conducted a study that shows caregivers are sometimes overwhelmed by the added tasks and commitments they must bear. It becomes increasingly difficult for them to manage a home, and it also becomes increasingly challenging to offer emotional support to the sick. Their family structure might impact family troubles and how loved ones view the situation. Manne et al. (1999) found that negative attitudes regarding the patient's sickness in the family unit may be connected with an increased need for patient care, which intervenes with caregiver's plans and out-of-domestic activities. Ferrario et al. (2003) show that 20% of caregivers face practical or financial difficulties in fulfilling the additional obligations that arise from long-term care, transporting the patient to the hospital for testing. Budziszewska et al. (2005) found that the more rigid the family structure, the more difficult it becomes for the family members to adjust to the new situation. It is also possible that the family would disintegrate because of the challenges and crises.

The final hypothesis was that there would be a difference among genders that would exist in the study variables among adolescents with cancer. This hypothesis was tested using an independent sample t-test, and the findings showed that the hypothesis that gender differences exist in study variables, is accepted. Yee et al. (2000) evaluated gender disparities in the caring time and indicated that women spend more time on caregiving than males. Women are more likely to spend more time providing care to ill children. Koyama et al. (2016) show that female cancer patients were more likely to experience psychological concerns such as changes in appearance, familial problems, and sexuality issues in comparison to male patients. Ernstmann et al. (2009) evaluate that women are more emotionally impacted than males and require more psychological help.

Conclusion

The gist of the results is that the mental adjustment to cancer has a positive relationship with family adjustment, which means the higher the mental adjustment to cancer of the individual, the higher the family adjustment in caregivers will be. The mental adjustment to negatively predicts depressive symptoms among adolescents with cancer. With the low mental adjustment to cancer in adolescents, the health of cancer adolescents' will be better. Low levels of family adjustment have a significant positive relationship with depressive symptoms, which means worse family adjustment is associated with more depressive symptoms. According to current research findings, cancer's psychological impact negatively predicts depressive symptoms. In contrast, family adjustment is a significant positive predictor of depressive symptoms among adolescents with cancer. With high mental adjustment to cancer on an individual, the depressive symptoms of cancer adolescents will be low. The higher the family adjustment is in caregivers, the less will be the depressive symptoms in cancer adolescents. Family adjustment in male caregivers is better as compared to males. Girls show a higher mental adjustment to cancer than boys. Since there are a relatively few studies related to the current study, the current study can serve as the foundation for future studies.

The study suggests the following limitations: No scales were constructed for the indigenous population. Results cannot provide generalized conclusions because a limited sample size (135) was only taken from adolescents. Because of the long questionnaires, few adolescents were left in between. Moreover, some parents filled out the questionnaire, but their children did not. All types of cancers were included, so we cannot undermine that the severity of type and stage of cancer can be confounding variables. The researcher gave the following recommendations: Using indigenous tools would be more helpful for data collection. The participants of another city should be included in future research. If there is more time, more in-depth qualitative investigations can be conducted. The sample size should be more significant and include adolescents and young adults to make the results more generalizable. Qualitative research methods should be utilized in conjunction with quantitative research approaches to increase study quality and data collection.

The research has implications: This study is the foundation for estimating the variables influencing depressive symptoms among cancer adolescents. The present study helps young cancer patients understand psychological problems associated with cancer. This study is also helpful for health psychologists to understand the psychological impacts of cancer in children. This study will open a new window of knowledge for future researchers in the area of adolescents.

References

Alderfer, M. A., Long, K. A., Lown, E. A., Marsland, A. L., Ostrowski, N. L., Hock, J. M., & Ewing, L. J. (2010). Psychosocial adjustment of siblings of children with cancer: a systematic review. *Psycho-oncology*, *19*(8), 789–805.

Andersen, B. L., Farrar, W. B., Golden-Kreutz, D., Emery, C. F., Glaser, R., Crespin, T., & Carson, W. E. (2007). Distress reduction from a psychological intervention contributes to improved health for cancer patients. *Brain, Behavior, and Immunity*, *21*(7), 953–961. https://doi.org/https://doi.org/10.1016/j.bbi.2007.03.005

Ball, H., Moore, S., & Leary, A. (2016). A systematic literature review comparing the psychological care needs of patients with mesothelioma and advanced lung cancer. *European Journal of Oncology Nursing*, *25*, 62–67.

Banki, Y., Abedin, A. R., & Monirpoor, N. (2011). *The role of cognitive variables in depression of adolescents with cancer*.

Barrera, M, Andrews, G. S., Burnes, D., & Atenafu, E. (2008). Age differences in perceived social support by paediatric haematopoietic progenitor cell transplant patients: a longitudinal study. *Child: Care, Health and Development*, *34*(1), 19–24.

Barrera, Maru, D'Agostino, N. M., Gibson, J., Gilbert, T., Weksberg, R., & Malkin, D. (2004). Predictors and mediators of psychological adjustment in mothers of children newly diagnosed with cancer. *Psycho-Oncology: Journal of the Psychological, Social and Behavioral Dimensions of Cancer*, *13*(9), 630–641.

Begovic-Juhant, A., Chmielewski, A., Iwuagwu, S., & Chapman, L. A. (2012). Impact of Body Image on Depression and Quality of Life Among Women with Breast Cancer. *Journal of Psychosocial Oncology*, *30*(4), 446–460. https://doi.org/10.1080/07347332.2012.684856

Bertan, F. C., & Castro, E. K. (2010). Quality of life, anxiety and depressions indicators and sexual satisfaction in adult patients with cancer. *Rev Salud Soc*, *1*(2), 76–88.

Boyes, A. W., Girgis, A., D'Este, C., & Zucca, A. C. (2011). Flourishing or floundering? Prevalence and correlates of anxiety and depression among a population-based sample of adult cancer survivors 6 months after diagnosis. *Journal of Affective Disorders*, *135*(1–3), 184–192.

Budziszewska, B. K., Piusińska-Macoch, R., Sułek, K., & Stępień, A. (2005). Psychologiczne problemy rodziny pacjentów z chorobami nowotworowymi krwi w koncepcji systemowej. *Acta Haematologica Polonica*, *36*(3), 317–325.

Carlson, L. E., Zelinski, E. L., Toivonen, K. I., Sundstrom, L., Jobin, C. T., Damaskos, P., & Zebrack, B. (2019). Prevalence of psychosocial distress in cancer patients across 55 North American cancer centers. *Journal of Psychosocial Oncology*, *37*(1), 5–21. https://doi.org/10.1080/07347332.2018.1521490

Cash, T. F., & Smolak, L. (2011). *Understanding body images: Historical and contemporary perspectives.*

Cohen, D. S., Friedrich, W. N., Jaworski, T. M., Copeland, D., & Pendergrass, T. (1994). Pediatric cancer: Predicting sibling adjustment. *Journal of Clinical Psychology*, *50*(3), 303–319.

Coulter, A., & Gordon-Nesbitt, R. (2016). *All Party Parliamentary Group on Arts, Health and Wellbeing: submission to the DCMS white paper consultation*.

de Walden-Gałuszko, K. (2011). Zaburzenia snu. *W: Psychoonkologia w Praktyce Klinicznej. Wydawnictwo Lekarskie PZWL, Warszawa*, 38–42.

Dewar, E. O., Ahn, C., Eraj, S., Mahal, B. A., & Sanford, N. N. (2021). Psychological distress and cognition among long-term survivors of adolescent and young adult cancer in the USA. *Journal of Cancer Survivorship*, *15*(5), 776–784. https://doi.org/10.1007/s11764-020-00969-6

Duan, Y., Wang, L., Sun, Q., Liu, X., Ding, S., Cheng, Q., Xie, J., & Cheng, A. S. (2021). Prevalence and Determinants of Psychological Distress in Adolescent and Young Adult Patients with Cancer: A Multicenter Survey. *Asia-Pacific Journal of Oncology Nursing*, *8*(3), 314–321. https://doi.org/https://doi.org/10.4103/2347-5625.311005

Edwards, B., & Clarke, V. (2004). The psychological impact of a cancer diagnosis on families: the influence of family functioning and patients' illness characteristics on depression and anxiety. *Psycho-Oncology: Journal of the Psychological, Social and Behavioral Dimensions of Cancer*, *13*(8), 562–576.

Erikson, E. H. (1993). *Childhood and society*. WW Norton

& Company.

Ernstmann, N., Neumann, M., Ommen, O., Galushko, M., Wirtz, M., Voltz, R., Hallek, M., & Pfaff, H. (2009). Determinants and implications of cancer patients' psychosocial needs. *Supportive Care in Cancer*, *17*(11), 1417–1423.

Fan, S.-Y., & Eiser, C. (2009). Body image of children and adolescents with cancer: A systematic review. *Body Image*, *6*(4), 247–256. https://doi.org/https://doi.org/10.1016/j.bodyim.2009.06.002

Ford, E., Catt, S., Chalmers, A., & Fallowfield, L. (2012). Systematic review of supportive care needs in patients with primary malignant brain tumors. *Neuro-Oncology*, *14*(4), 392–404.

Giovannucci, E., Harlan, D. M., Archer, M. C., Bergenstal, R. M., Gapstur, S. M., Habel, L. A., Pollak, M., Regensteiner, J. G., & Yee, D. (2010). Diabetes and cancer: a consensus report. *Diabetes Care*, *33*(7), 1674–1685.

Gordon, L. G., Beesley, V. L., & Scuffham, P. A. (2011). Evidence on the economic value of psychosocial interventions to alleviate anxiety and depression among cancer survivors: a systematic review. *Asia-Pacific Journal of Clinical Oncology*, *7*(2), 96–105.

Hedström, M., Ljungman, G., & von Essen, L. (2005). Perceptions of distress among adolescents recently diagnosed with cancer. *Journal of Pediatric Hematology/Oncology*, *27*(1), 15–22.

House, A., & Stark, D. (2002). Anxiety in medical patients. *Bmj*, *325*(7357), 207–209.

Howlader, N., Noone, A.-M., Krapcho, M., Garshell, J., Neyman, N., Altekruse, S. F., Kosary, C. L., Yu, M., Ruhl, J., & Tatalovich, Z. (2013). SEER cancer statistics review, 1975–2010. *Bethesda, MD: National Cancer Institute*, *21*, 12.

Hullmann, S. E., Wolfe-Christensen, C., Meyer, W. H., McNall-Knapp, R. Y., & Mullins, L. L. (2010). The relationship between parental overprotection and health-related quality of life in pediatric cancer: the mediating role of perceived child vulnerability. *Quality of Life Research*, *19*(9), 1373–1380.

Jimenez-Fonseca, P., Calderón, C., Hernández, R., Ramón y Cajal, T., Mut, M., Ramchandani, A., Donnay, O., & Carmona-Bayonas, A. (2018). Factors associated with anxiety and depression in cancer patients prior to initiating adjuvant therapy. *Clinical and Translational Oncology*, *20*(11), 1408–1415. https://doi.org/10.1007/s12094-018-1873-9

Jobe-Shields, L., Alderfer, M. A., Barrera, M., Vannatta, K., Currier, J. M., & Phipps, S. (2009). Parental depression and family environment predict distress in children before stem cell transplantation. *Journal of Developmental and Behavioral Pediatrics : JDBP*, *30*(2), 140–146. https://doi.org/10.1097/DBP.0b013e3181976a59

Kim, Y., Baker, F., Spillers, R. L., & Wellisch, D. K. (2006). Psychological adjustment of cancer caregivers with multiple roles. *Psycho-Oncology: Journal of the Psychological, Social and Behavioral Dimensions of Cancer*, *15*(9), 795–804.

Koyama, A., Matsuoka, H., Ohtake, Y., Makimura, C., Sakai, K., Sakamoto, R., & Murata, M. (2016). Gender differences in cancer-related distress in Japan: a retrospective observation study. *BioPsychoSocial Medicine*, *10*(1), 1–8.

Kroenke, K., Spitzer, R. L., & Williams, J. B. W. (2001). The PHQ-9: validity of a brief depression severity measure. *Journal of General Internal Medicine*, *16*(9), 606–613.

Kugbey, N., Meyer-Weitz, A., & Oppong Asante, K. (2018). Mental adjustment to cancer and quality of life among women living with breast cancer in Ghana. *The International Journal of Psychiatry in Medicine*, *54*(3), 217–230. https://doi.org/10.1177/0091217418805087

Larsson, G., Mattsson, E., & von Essen, L. (2010). Aspects of quality of life, anxiety, and depression among persons diagnosed with cancer during adolescence: A long-term follow-up study. *European Journal of Cancer*, *46*(6), 1062–1068. https://doi.org/https://doi.org/10.1016/j.ejca.2010.01.021

Lee, M., Mu, P., Tsay, S., Chou, S., Chen, Y., & Wong, T. (2012). Body image of children and adolescents with cancer: A metasynthesis on qualitative research findings. *Nursing & Health Sciences*, *14*(3), 381–390.

Leite, M. A. C., Nogueira, D. A., & Terra, F. de S. (2015). Evaluation of self-esteem in cancer patients undergoing chemotherapy treatment. *Revista Latino-Americana de Enfermagem*, *23*, 1082–1089.

Long, K. A., & Marsland, A. L. (2011). Family Adjustment to Childhood Cancer: A Systematic Review. *Clinical Child and Family Psychology Review*, *14*(1), 57–88. https://doi.org/10.1007/s10567-010-0082-z

Mahmood, S., Faraz, R., Yousaf, A., Quader, A., Asif, H., Atif, A., Parveen, N., Tanveer, R., Hussain, A., Zafar, A., Kiran, F., Amin, U., & Badar, F. (2021). *Annual cancer registry report-2021*. Shaukat Khanum Memorial Cancer Hospital & Research Center, Pakistan

Manier, K. K., Rowe, L. S., Welsh, J., & Armstrong, T. S. (2018). The impact and incidence of altered body image in patients with head and neck tumors: a

systematic review. *Neuro-oncology practice*, *5*(4), 204–213. https://doi.org/10.1093/nop/npy018

Manne, S. L., Alfieri, T., Taylor, K. L., & Dougherty, J. (1999). Spousal negative responses to cancer patients: the role of social restriction, spouse mood, and relationship satisfaction. *Journal of Consulting and Clinical Psychology*, *67*(3), 352.

McInally, W., Gray-Brunton, C., Chouliara, Z., Kyle, R. G. (2021). Experiences of living with cancer of adolescents and young adults and their families: A narrative review and synthesis. *Enfermería Clínica (English Edition)*, *31*(4), 234-246. https://doi.org/10.1016/j.enfcle.2020.12.005.

Mejia, A., Filus, A., Calam, R., Morawska, A., & Sanders, M. R. (2015). Measuring parenting practices and family functioning with brief and simple instruments: validation of the Spanish version of the PAFAS. *Child Psychiatry & Human Development*, *46*(3), 426–437.

Miller, K., & Massie, M. J. (2006). Depression and anxiety. *The Cancer Journal*, *12*(5), 388–397.

Murphy, S. L., Kochanek, K. D., & Xu, J. (2015). *Deaths: Final data for 2011*. *Natl Vital Stat Rep*, *63*(3),1-120

Nazari, B., Bakhshi, S., Kaboudi, M., Dehghan, F., Ziapour, A., & Montazeri, N. (2017). A comparison of quality of life, anxiety and depression in children with cancer and healthy children, Kermanshah-Iran. *International Journal of Pediatrics*, *5*(7), 5305–5314.

Noghani, F., Monjamed, Z., Bahrani, N., & Ghodrati Jablo, V. (2006). The comparison of self-esteem between male and female cancer patients. *Journal of Hayat*, *12*(2), 33–41.

Pandey, M., Sarita, G. P., Devi, N., Thomas, B. C., Hussain, B. M., & Krishnan, R. (2006). Distress, anxiety, and depression in cancer patients undergoing chemotherapy. *World Journal of Surgical Oncology*, *4*(1), 1–5.

Pinto-Gouveia, J., Duarte, C., Matos, M., & Fráguas, S. (2014). The protective role of self-compassion in relation to psychopathology symptoms and quality of life in chronic and in cancer patients. *Clinical Psychology & Psychotherapy*, *21*(4), 311–323.

Reid-Arndt, S. A., Yee, A., Perry, M. C., & Hsieh, C. (2009). Cognitive and Psychological Factors Associated with Early Posttreatment Functional Outcomes in Breast Cancer Survivors. *Journal of Psychosocial Oncology*, *27*(4), 415–434. https://doi.org/10.1080/07347330903183117

Ritchie, M. A. (2001). Self-esteem and hopefulness in adolescents with cancer. *Journal of Pediatric Nursing*, *16*(1), 35–42.

Robinson, K. E., Gerhardt, C. A., Vannatta, K., & Noll, R. B. (2007). Parent and family factors associated with child adjustment to pediatric cancer. *Journal of Pediatric Psychology*, *32*(4), 400–410.

Ferrario, R. S., Zotti, A. M., Massara, G., & Nuvolone, G. (2003). A comparative assessment of psychological and psychosocial characteristics of cancer patients and their caregivers. *Psycho-Oncology: Journal of the Psychological, Social and Behavioral Dimensions of Cancer*, *12*(1), 1–7.

Ruland, C. M., Hamilton, G. A., & Schjødt-Osmo, B. (2009). The complexity of symptoms and problems experienced in children with cancer: a review of the literature. *Journal of Pain and Symptom Management*, *37*(3), 403–418.

Sanders, M. R., Morawska, A., Haslam, D. M., Filus, A., & Fletcher, R. (2014). Parenting and Family Adjustment Scales (PAFAS): validation of a brief parent-report measure for use in assessment of parenting skills and family relationships. *Child Psychiatry & Human Development*, *45*(3), 255–272.

Schepers, S. A., Okado, Y., Russell, K., Long, A. M., & Phipps, S. (2019). Adjustment in childhood cancer survivors, healthy peers, and their parents: the mediating role of the parent–child relationship. *Journal of Pediatric Psychology*, *44*(2), 186–196.

Tel, H., Tel, H., & Doğan, S. (2011). Fatigue, anxiety and depression in cancer patients. *Neurology, Psychiatry and Brain Research*, *17*(2), 42–45. https://doi.org/https://doi.org/10.1016/j.npbr.2011.02.006

Toledano-Toledano, F., Luna, D., Moral de la Rubia, J., Martínez Valverde, S., Bermúdez Morón, C. A., Salazar García, M., & Vasquez Pauca, M. J. (2021). Psychosocial Factors Predicting Resilience in Family Caregivers of Children with Cancer: A Cross-Sectional Study. In *International Journal of Environmental Research and Public Health* (Vol. 18, Issue 2). https://doi.org/10.3390/ijerph18020748

Van Schoors, M., De Paepe, A. L., Norga, K., Cosyns, V., Morren, H., Vercruysse, T., Goubert, L., & Verhofstadt, L. L. (2019). Family Members Dealing With Childhood Cancer: A Study on the Role of Family Functioning and Cancer Appraisal. *Frontiers in Psychology*, *10*. https://www.frontiersin.org/article/10.3389/fpsyg.2019.01405

Vrijmoet-Wiersma, C. M., van Klink, J. M. M., Kolk, A. M., Koopman, H. M., Ball, L. M., & Maarten Egeler, R. (2008). Assessment of parental psychological stress in pediatric cancer: A

review. *Journal of Pediatric Psychology*, *33*(7), 694–706.

Watson, M., Greer, S., Young, J., Inayat, Q., Burgess, C., & Robertson, B. (1988). Development of a questionnaire measure of adjustment to cancer: the MAC scale. *Psychological Medicine*, *18*(1), 203–209.

Wild, C. P., Stewart, B. W., & Wild, C. (2014). *World cancer report 2014*. World Health Organization Geneva, Switzerland.

Williamson, H., Harcourt, D., Halliwell, E., Frith, H., & Wallace, M. (2010). Adolescents' and parents' experiences of managing the psychosocial impact of appearance change during cancer treatment. *Journal of Pediatric Oncology Nursing*, *27*(3), 168–175.

Woodgate, R. L. (2006). The importance of being there: perspectives of social support by adolescents with cancer. *Journal of Pediatric Oncology Nursing*, *23*(3), 122–134.

Woźniak, K., & Iżycki, D. (2014). Cancer: a family at risk. *Przeglad Menopauzalny = Menopause Review*, *13*(4), 253–261. https://doi.org/10.5114/pm.2014.45002

Yardeni, M., Abebe Campino, G., Hasson-Ohayon, I., Basel, D., Hertz-Palmor, N., Bursztyn, S., Weisman, H., Pessach, I. M., Toren, A., & Gothelf, D. (2021). Trajectories and risk factors for anxiety and depression in children and adolescents with cancer: A 1-year follow-up. *Cancer Medicine*, *10*(16), 5653–5660.

Yee, J. L., & Schulz, R. (2000). Gender differences in psychiatric morbidity among family caregivers: A review and analysis. *The Gerontologist*, *40*(2), 147–164.

Zabora, J., BrintzenhofeSzoc, K., Curbow, B., Hooker, C., & Piantadosi, S. (2001). The prevalence of psychological distress by cancer site. *Psycho-Oncology: Journal of the Psychological, Social and Behavioral Dimensions of Cancer*, *10*(1), 19–28.

Zemestani, M., Hasannejad, L., & Nejadian, A. (2013). Comparison of quality of life, sleep quality and social adjustment of cancerous patients with intact individual in Ahvaz city. *Studies in Medical Sciences*, *24*(7), 471–482.

Zuithoff, N., Vergouwe, Y., King, M., Nazareth, I., van Wezep, M. J., Moons, K. G. M., & Geerlings, M. I. (2010). The Patient Health Questionnaire-9 for detection of major depressive disorder in primary care: consequences of current thresholds in a crosssectional study. *BMC Family Practice*, *11*(1), 1–7.