ORIGINAL ARTICLE

Investigation of Cancer Coping Attitudes of Children Receiving Cancer Treatment between the Ages of 10-18

Çiğdem Müge HAYLI[1], Seockhoon CHUNG[2*], Mediha CANBEK[3], Dilek DEMİR KÖSEM[1], Senanur CAN[4]

[1] *Faculty of Health Sciences, Department of Nursing, Hakkari University, Zeynel Bey Campus, Hakkari, Turkey*
[*2] *Department of Psychiatry, Asan Medical Center, University of Ulsan College of Medicine, Songpa-gu, Seoul, Korea*
[3] *Faculty of Science, Department of Biology, Department of Molecular Biology, Eskişehir Osmangazi University, Turkey*
[4] *Faculty of Engineering and Natural Sciences, Molecular Biology and Genetics, Biruni University, İstanbul, Turkey*
***Correspondence:** schung@amc.seoul.kr*
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ABSTRACT

OBJECTIVE: This study aimed to examine the coping attitudes of children between the ages of 10-18 who are receiving cancer treatment.

METHODOLOGY: The data for this research were collected online between September 18, 2024, and November 18, 2024. The study group consisted of children between the ages of 10-18 who were receiving cancer treatment. Online questionnaire method, sociodemographic questionnaire form and Pediatric Cancer Coping Scale (PCCS) were used from 85 those receiving cancer treatment between the ages of 10-18 who voluntarily participated in the collection of research data and were selected by convenience sampling method, one of the improbable sampling methods, with written consent from their parents. SPSS 25.0 data analysis program was used.

RESULTS: Among children between the ages of 10-18 who received cancer treatment, 65.5% were male and 34.4% were female. Examining the coping attitudes of children between the ages of 10-18 who were undergoing cancer treatment, no statistically significant difference was found with the characteristics of gender, age, education level, diagnosis, age at diagnosis, current treatment, duration of treatment, and it was observed that their coping perceptions towards cancer were similar.

CONCLUSİON: As a result, it is recommended that children between the ages of 10 and 18 who are receiving cancer treatment have personal coping strategies that do not vary according to the characteristics of their cancer and that alternatives for children to cope with cancer should be developed in cooperation with families and nurses.

KEYWORDS: Children, between the ages 10-18, Cancer, Treatment, Coping

INTRODUCTION

The incidence of childhood cancer is increasing worldwide, with approximately 300,000 children between the ages of 0-19 diagnosed with cancer each year. The most common childhood cancers are leukemias, followed by central nervous system tumors and lymphomas[1]. In our country, in the 2018 report of the Ministry of Health, similar to the rest of the world, leukemias, central nervous system tumors and lymphomas are the top three types of cancer seen in children[2]. Today, with the development of diagnostic and treatment methods, the life expectancy of children diagnosed with cancer is increasing[3]. Although the success rates in cancer treatment have increased, children may experience physical and psychosocial problems caused by the treatment process[4].

In children and adolescents diagnosed with cancer, the most common psychosocial problems during the treatment process include separation from friends, deterioration of body image, loss of independence, constant feeling of being sick and tired, having issues with school, difficulty in family and friend relationships, and decreased cognitive abilities[5]. The quality of life of children who are affected psychosocially and who try to cope with many stressful situations can be negatively affected[6]. On the other hand, cancer treatment can cause psychological problems such as anxiety and depression in children[6]. At this point, establishing psychosocial programs that support children becomes crucial. In the study conducted by Barakat et al. (2006)[5] to determine the psychosocial programs needed by adolescents with cancer, it was determined that adolescents mostly needed programs on coping with physical changes related to treatment and coping with cancer.

Children can be affected physically and psychosocially by cancer treatment. Symptoms such as nausea, vomiting, mucositis, pain, and fatigue may occur during the early stages of treatment[7]. Improvements can be observed in the communication of children diagnosed with cancer with their parents and friends, and positive effects can be seen in making plans, setting goals, health self-efficacy, and the development of spiritual feelings[8]. In addition to the positive effects, adverse effects such as psychological problems, school-related issues, adaptation problems, decreased quality of life, meaninglessness, and hopelessness can be observed in children[8,9]. It has been observed that psychological issues such as anxiety, depression, mood disorders, eating disorders, personality disorders, and post-traumatic stress disorder may occur in children and adolescents diagnosed with cancer during the treatment process and in the long term after the end of treatment[10]. For cancer treatment to be successful concerning these possible problems, the person needs to comply with the treatment. Factors such as the child's behavior, anxiety, depression, quality of life, social withdrawal, and somatic complaints during the cancer treatment process are effective in determining the child's compliance with treatment[11]. Personal characteristics of the child, disease-related characteristics, physical factors, and family-related characteristics can all affect treatment compliance[12]. Mental illnesses, functional disorders, lack of education and income, lack of social support, and life stressors can pose a risk in reducing treatment compliance. Based on the information in the literature, good guidance for children receiving cancer treatment in coping with cancer will help reduce bio-psychological and social negative situations that may occur. It will support children to have a better quality of life, especially during the critical age period of 10-18 years.

This study aimed to examine the attitudes of children between the ages of 10-18 who are receiving cancer treatment.

METHODOLOGY

The descriptive research was collected using an online questionnaire method (Google Form) from September 18, 2024, to November 18, 2024. The research population consisted of children between the ages of 10-18 who were receiving cancer treatment. However, since it is almost children between the ages of 10-18 who were receiving cancer treatment living in Şırnak and Hakkari, the study was created online. Children between the ages of 10 and 18 who were receiving cancer treatment and had access to the internet were included in the study (n = 85). A survey was employed as a data collection technique in the research, and the online survey form (Google Forms) was disseminated through social networks and social media to reach a large number of people.

Data Collection Tools

Research data will be collected with the following data collection forms:

- Sociodemographic questionnaire form
- Pediatric Cancer Coping Scale (PCCS)

Sociodemographic questionnaire form: A total of 7 questions regarding the children's gender, age, educational status, diagnosis, age of diagnosis, current treatment, and duration of treatment.

Pediatric Cancer Coping Scale (PCCS): The scale was developed by **Wu et al. (2011)**[13] for children with cancer aged 7-18. The validity and reliability of the Turkish language were assessed by **Kısacik Şengül et al.** (2022)[14] in children with cancer aged 7 to 18. The scale contains 33 items, including cognitive coping, problem-focused coping, and defensive coping dimensions. It is a scale whose items are graded on a scale of 0 to 3. The score obtained from the scale ranges from 0 to 99. A high score on the scale indicates that coping strategies are effective. The Cronbach's alpha coefficient for the original study was determined to be 0.91[13]. The total Cronbach's alpha (α) value of the Turkish form of the scale was found to be 0.77[14]. It is observed that the scale is utilized in studies to assess the coping levels of adolescents with cancer[24]. In this study, the Cronbach's α value for the scale is 0.90. The Cronbach-α coefficients of the sub-dimensions are 0.90 in the cognitive coping dimension, 0.92 in the problem-focused coping dimension, and 0.84 in the defensive coping dimension.

Evaluation of data: The SPSS (Statistical Package for the Social Sciences) 25.0 software package was used to analyze the data in this study. The compatibility of the scores obtained from the Pediatric Cancer Coping Scale (PCSC-S) of children aged 10-18 years with normal distribution was examined by calculating the skewness and kurtosis values. Descriptive analyses were performed to investigate the participants' PCBS-I scores. An independent samples t-test was used to compare PCBSI-S scores according to the variables of gender and age at diagnosis. One-way analysis of variance (ANOVA) was used to compare PCBSI-S scores across age groups, education levels, diagnoses, treatments received, and treatment durations. The assumption of homogeneity of variances was examined using Levene's test[15], and it was determined that the variances of the groups were homogeneously distributed ($p > 0.05$). The statistical significance level was set at $p < 0.05$, and the confidence interval was 95%.

RESULTS

Table I: Distribution of participants according to diagnostic characteristics

		F	%
Gender	Boys	55	65.5
	Girls	29	34.5
Age	10-12	24	28.6
	13-15	32	38.1
	16-18	28	33.3
Educational status	Elementary School	23	27.4
	Middle school	33	39.3
	High School	28	33.3
Diagnosis	Tumor cancer	7	8.3
	Leukemia cancer	44	52.4
	Other	33	39.3
Age at diagnosis	10-12 years old	65	77.4
	13-15 years old	19	22.6
The treatment she/he is currently receiving	Oncological treatment	23	27.4
	Drug treatment	55	65.5
	Other	6	7.1
Duration of treatment	Less than 1 year	39	46.4
	1 year	29	34.5
	1 year and above	16	19.0

Table I shows the distribution of participants according to their descriptive characteristics. Of the children who participated, 65.5% were boys (n = 55) and 34.5% were girls (n = 29).

Table II: Descriptive values of participants' scores from the pediatric cancer coping scale

Variables	Min.	Mak.	Mean	Ss
Defender	3	27	17.27	4.89
Cognitive	4	28	19.67	5.94
Problem-oriented	5	32	22.07	6.47
PCCS Total	15	86	59.01	15.97

The scores of defensive coping, one of the subdimensions of the PCCS, ranged from 3 to 27, with a mean score of 17.27±4.89 (**Table II**).

Table III: Pediatric cancer coping scale score means, standard deviations, and Independent Groups T-Test results by gender and Anova results by age groups, educational status, diagnosis status

Variables	Gender	N	Med.	Ss	$t(82)$	p
Defender	Female	29	18.21	4.68	1.27	0.21
	Male	55	16.78	4.97		
Cognitive	Female	29	20.83	5.62	1.31	0.20
	Male	55	19.05	6.06		
Problem-oriented	Female	29	23.52	7.09	1.50	0.14
	Male	55	21.31	6.05		
PCCS Total	Female	29	62.55	16.46	1.49	0.14
	Male	55	57.15	15.54		
Variables	**Age group**	**N**	**Med.**	**Ss**	**F(2,81)**	**p**
Defensive	10-12	24	17.63	5.06	0.09	0.92
	13-15	32	17.16	4.78		
	16-18	28	17.11	5.04		
Cognitive	10-12	24	19.79	6.26	0.87	0.42
	13-15	32	20.56	5.20		
	16-18	28	18.54	6.46		
Problem-oriented	10-12	24	22.00	6.12	0.04	0.96
	13-15	32	22.31	7.12		
	16-18	28	21.86	6.21		
PCCS Total	10-12	24	59.42	16.00	0.19	0.82
	13-15	32	60.03	16.03		
	16-18	28	57.50	16.36		
Variables	**Education Status**	**N**	**Med.**	**Ss**	**F(2,81)**	**p**
Defensive	Elementary School	23	17.83	5.02	0.20	0.82
	Middle school	33	17.03	4.81		
	High School	28	17.11	5.04		
Cognitive	Elementary School	23	20.04	5.91	0.78	0.46
	Middle school	33	20.36	5.53		
	High School	28	18.54	6.46		
Problem-oriented	Elementary School	23	22.48	6.11	0.06	0.94
	Middle school	33	21.97	7.09		
	High School	28	21.86	6.21		
PCCS Total	Elementary School	23	60.35	15.39	0.21	0.81
	Middle school	33	59.36	16.43		
	High School	28	57.50	16.36		
Variables	**Diagnosis**	**N**	**Med.**	**Ss**	**F(2,81)**	**p**
Defensive	Tumor cancer	44	17.57	5.02	1.30	0.28
	Leukemia cancer	7	14.43	5.35		
	Other	33	17.48	4.57		
Cognitive	Tumor cancer	44	19.55	5.87	0.96	0.39
	Leukemia cancer	7	17.00	5.94		

	Other	33	20.39	6.03		
Problem-oriented	Tumor cancer	44	21.57	6.31	0.64	0.53
	Leukemia cancer	7	20.71	5.50		
	Other	33	23.03	6.90		
PCCS Total	Tumor cancer	44	58.68	16.05	0.89	0.42
	Leukemia cancer	7	52.14	15.02		
	Other	33	60.91	16.11		

It was observed that the coping perceptions of boys and girls included in the study were similar. According to the results of the analysis, there was no statistically significant difference between the age groups in terms of defensive coping (F(2,81) = 0.09, p = .92), cognitive coping (F(2,81) = 0.87, p = .42), problem-focused coping (F(2,81) = 0.04, p = .96) sub-dimensions and total scores (F(2,81) = 0.19, p = .82) of PCCS. There was no statistically significant difference between the defensive (F(2,81) = 0.20, p = .82), cognitive (F(2,81) = 0.78, p = .46), problem-focused (F(2,81) = 0.06, p = .94) sub-dimensions of the scale and total scores (F(2,81) = 0.21, p = .81) of the children studying at primary, secondary and high school levels. There was no statistically significant difference between the defensive (F(2,81) = 1.30, p = .28), cognitive (F(2,81) = 0.96, p = .39), problem-focused (F(2,81) = 0.64, p = .53) sub-dimensions of the scale and total scores (F(2,81) = 0.89, p = .42) of children diagnosed with leukemia cancer (n = 44), tumor cancer (n = 7) and other cancer types (n = 33) (**Table III**).

Table IV: Pediatric cancer coping scale score means, standard deviations and İndependent Groups T-Test results by age at diagnosis and Anova results according to the type of treatment received, treatment duration

Variables	**Age at Diagnosis**	**N**	**Med.**	**Ss**	**t(82)**	**p**
Defensive	10-12	65	16.89	5.14	-1.33	0.19
	13-15	19	18.58	3.76		
Cognitive	10-12	65	19.75	5.92	0.25	0.81
	13-15	19	19.37	6.15		
Problem-oriented	10-12	65	21.65	6.60	-1.12	0.27
	13-15	19	23.53	5.94		
PCCS Total	10-12	65	58.29	16.42	-0.76	0.45
	13-15	19	61.47	14.49		
Variables	**Type of Treatment Received**	**N**	**Med.**	**Ss**	**F(2,81)**	**p**
Defensive	Oncological treatment	23	16.87	4.53	0.32	0.73
	Drug treatment	55	17.29	5.24		
	Other	6	18.67	2.73		
Cognitive	Oncological treatment	23	19.43	5.92	0.73	0.49
	Drug treatment	55	19.45	6.21		
	Other	6	22.50	2.07		
Problem-oriented	Oncological treatment	23	21.35	6.74	0.69	0.51

	Drug treatment	55	22.07	6.42		
	Other	6	24.83	6.15		
PCCS Total	Oncological treatment	23	57.65	15.83	0.66	0.52
	Drug treatment	55	58.82	16.59		
	Other	6	66.00	9.63		

Variables	**Treatment Duration**	**N**	**Med.**	**Ss**	**F(2,81)**	**p**
Defensive	Less than 1 year	39	17.13	5.31	0.22	0.81
	1 year	29	17.07	4.69		
	1 year and above	16	18.00	4.40		
Cognitive	Less than 1 year	39	20.28	5.93	2.12	0.13
	1 year	29	17.93	5.50		
	1 year and above	16	21.31	6.31		
Problem-oriented	Less than 1 year	39	22.08	7.12	0.90	0.41
	1 year	29	21.10	5.95		
	1 year and above	16	23.81	5.67		
PCCS Total	Less than 1 year	39	59.49	17.13	1.03	0.36
	1 year	29	56.10	14.82		
	1 year and above	16	63.13	14.96		

There was no statistically significant difference between the defensive (t(82) = -1.33, p = .19), cognitive (t(82) = 0.25, p = .81), problem-focused (t(82) = -1.12, p = .27) sub-dimensions of the scale and total scores (t(82) = -0.76, p = .45) of children diagnosed between the ages of 10-12 and 13-15. According to the results of one-way analysis of variance (ANOVA), there was no statistically significant difference between the defensive (F(2,81) = 0.32, p = .73), cognitive (F(2,81) = 0.73, p = .49), problem-focused (F(2,81) = 0.69, p = .51) coping strategies and scale total scores (F(2,81) = 0.66, p = .52) of patients receiving oncological treatment, drug treatment and other treatments. According to the results of one-way analysis of variance (ANOVA), there was no statistically significant difference between the defensive (F(2,81) = 0.22, p = .81), cognitive (F(2,81) = 2.12, p = .13), problem-focused (F(2,81) = 0.90, p = .41) coping strategies and scale total scores (F(2,81) = 1.03, p = .36) of patients whose treatment duration was less than 1 year, 1 year and more than 1 year (Table IV).

DISCUSSION

The sociodemographic data of the children aged 10-18 years who participated in the study showed variability, and the total scores of the scale used ranged between 15 and 86, with a mean total score of 59.01 ± 15.97.

According to the results of the pediatric cancer coping scale, no statistically significant difference was found between male and female children participating in the study, indicating that their perceptions of dealing with cancer were similar. This result shows that the gender variable is not effective in coping with cancer. This result is consistent with the study conducted by Compas et al. (2014)[16] on children and adolescents coping with cancer: Self and parental reports on coping and anxiety/depression; it was concluded that the coping attitudes of children and adolescents towards cancer were similar according to gender. Similarly, **Hagedoorn et al. (2011)**[17] in Coping with cancer: Perspectives of relatives of patients and **Norberg et al.'s (2005)**[18] study on coping strategies of parents of children with cancer are similar to our findings.

When the results of coping with pediatric cancer according to age groups were examined, no statistically significant difference was found in the gender variable. It was observed that the coping perceptions of children in different age groups included in the study were similar. **Li et al. (2011)**[19] found that there was no difference between age groups in the results of exploratory research on coping strategies used by children hospitalized with cancer, and similar results were obtained. In **Sposite et al.'s (2015)**[20] study on coping strategies used by hospitalized children with cancer receiving chemotherapy, it was found that there was no variability between ages. The results of **Sharma et al.'s (2018)**[21] study on coping strategies used by parents of children diagnosed with cancer are in parallel with our findings.

No statistically significant difference was found according to the education level of children with pediatric cancer. These results: In the study of **Kupst and Patenaude (2015)**[22] on coping with pediatric cancer, it was concluded that there was no difference according to the educational status of children with cancer, and in the study of **Gage-Bouchard et al. (2013)**[23] on the relationship between sociodemographic characteristics, family environment and coping attitudes of caregivers in families of children with cancer, it was found that children's cancer coping attitudes were similar. The study by **Kim and Yoo (2010)**[24] on the factors associated with the resilience of school-age children with cancer aligns with our findings.

The other variable of our study, the diagnosis (leukemia, blood cancer and other etc.) of children with pediatric cancer, showed that there was no determinant effect according to their type. In the study of **Ismael et al. (2024)**[25] investigating coping strategies among the caregivers of childhood cancer survivors in Jordan, it was found that the cancer diseases experienced by the children were not effective in coping and that cancer was more challenging for the caregivers. Likewise, in **Boman and Bodegård (2004)** [26], the results of the study "Life after Childhood Cancer: Social Cohesion and Educational and Occupational Status of Young Adult Survivors" concluded that the duration of coping with cancer did not affect the problems they experienced. Still, instead, they survived this process with their families in a more comfortable way. In another study, it was concluded that the cancer process experienced by children did not affect coping[27].

No statistically significant difference was found according to the age at diagnosis of pediatric cancer patients. These results show that the age at which children are diagnosed with cancer does not have a determining effect on their coping strategies. **Noia et al. (2015)**[28] found that the age at which they were diagnosed with cancer did not have a determining impact on coping strategies in their study on dealing with the diagnosis and hospitalization of a child with childhood cancer. In **Germann et al. (2015)**[29], "Hoping is Coping: A Guiding Theoretical Framework to Promote Coping and Adaptation after Pediatric Cancer Diagnosis," there was no significant difference according to age at diagnosis. The results of the study by **Peek and Melnyk (2010)**[30], Initiating interventions for parents of children newly diagnosed with cancer: an evidence review with implications for clinical practice and future research, also show parallels.

No significant difference was found between the results of pediatric cancer coping according to the type of treatment received by the children with cancer between the ages of 10-18 who participated in our study, indicating that the kind of treatment that children are currently receiving does not have a determining effect on their coping strategies. This finding is in line with **Derman and Deatrick's (2016)**[31] study, promoting well-being during the treatment of childhood cancer: A literature review on art interventions as a coping strategy shows that the treatment received by children has positive results in coping with cancer, but it is not similar to the results of our study. Likewise, the results of **Han et al.(2017)**[32] study on coping strategies of children receiving leukaemia treatment in China are not similar to our findings, which indicate that the treatment received by children has positive bio-psycho-social results. The results of **Matos et al.'s (2023)**[33] study on quality of life and coping in children with cancer also contradict our findings. The results of the study showed that the treatment children received during cancer also positively affected their coping methods.

There was no statistically significant difference between pediatric cancer coping according to the duration of treatment of pediatric cancer patients in the 10-18 age group. According to these results, the duration of treatment does not significantly affect children's coping strategies. This finding, as reported by **Koopman et al. (2005)**[34], in a 5-year follow-up study on health-related quality of life and coping strategies in children after malignant bone tumour treatment, revealed that coping strategies did not vary according to the treatment processes of the children; instead, the quality of life yielded positive results. The results of **Hermont et al.'s (2015)**[35] study on anxiety and worry when coping with cancer treatment: reconciliation between patient and surrogate responses are similar. This finding contradicts our results.

CONCLUSİON

In our results of examining the coping attitudes of children between the ages of 10-18 who were undergoing cancer treatment, no statistically significant difference was found with the characteristics of gender, age, education level, diagnosis, age at diagnosis, current treatment, duration of treatment, and it was observed that their coping perceptions towards cancer were similar. It is recommended that coaching and counseling services should be provided for children with ongoing cancer treatment, the necessary equipment and manpower should be established to continue technology-based practices during hospitalization, psychosocial motivation programs for primary caregivers should be expanded and nurses should improve themselves in integrative approaches and coaching practices.

Ethical permission: Permission was obtained via email for the PCCS, which was validated and reliable in Turkish by Kısacik Şengül et al. (2022)[23]. Permission was obtained from the Hakkari University Scientific Research and Publication Ethics Committee (IRB: 2024/153-1) for the research. Identity information was neither obtained nor shared by the parents in any way.

To prevent ethical violations within the scope of the study, informed consent was obtained from the parents.

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Data Sharing Statement: The corresponding author can provide the data proving the findings of this study on request. Privacy or ethical restrictions bound us from sharing the data publicly.

AUTHOR CONTRIBUTION

HAYLI CM:	Conceptualization, Data curation, methodology, writing original draft, writing review and editing
CHUNG S:	Conceptualization, writing review and editing
CANBEK M:	Conceptualization
KÖSEM DD:	Conceptualization
CAN S:	Conceptualization

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