Online Adres http://www.hemarge.org.tr/
Hemşirelikte Araştırma Geliştirme Derneği-HEMAR-G yayın organıdır

ISSN:1307- 9557 (Basılı), ISSN: 1307- 9549 (Online)
Hemşirelikte Araştırma Geliştirme Dergisi 2016; 18(2-3): 44-52

Hemşirelikte Araştırma Geliştirme Dergisi

Comparison of The Relationship Between Depressive Symptom Levels and Self-Concept in Healthy Children and Children with Cancer*

Kanserli ve Sağlıklı Çocukların Depresif Belirti Düzeyleri ile Benlik Kavramları Arasındaki İlişkinin Karşılaştırılması

Naime ALTAY [a1], *Ender DURUALP* [b]

[a] *Doç. Dr., Gazi Üniversitesi Sağlık Bilimleri Fakültesi, Hemşirelik Bölümü, Beşevler-ANKARA*
[b] *Doç. Dr., Ankara Üniversitesi Sağlık Bilimleri Fakültesi, Çocuk Gelişimi Bölümü, Altındağ-ANKARA*

Original Research

Abstract

Objective:The aim of study was to determine and compare the depressive symptom levels and self-concept in children with cancer and healthy children between 9-16 years of age.
Methods: 66 children with cancer and 66 healthy children were included in the sample. The"Child Introduction Form", "Children's Depression Inventory" and "Piers-Harris Children's Self-Concept Scale" were used for data collection. The data were analyzed with the Kolmogorov-Smirnov test, Mann-Whitney U test, Spearman-Brown's correlation coefficient. No significant difference was found between the depressive symptom levels of children with cancer and healthy children ($p>0.05$).
Results: A moderate, negative and significant relationship was found between the depressive symptom levels and self-concept of children with cancer and healthy children and the depressive symptom levels decreased when the self-concept increased ($p<0.05$).
Conclusion: We believe that providing psychological assistance according to results of studies on depressive symptom levels and self-concept will have a positive effect on the treatment of children with cancer.

Keywords: child, cancer, depression, self-concept

[1]*E-mail addres: naimealtay@gazi.edu.tr*
*This research was presented as a verbal proceeding in the 17th ECCO, 38th ESMO, 32nd ESTRO European Cancer (September 27-October 1, 2013, Netherlands).
Received Date: April 22, 2016 / Accepted Date: July 19, 2017

Öz

Amaç: Araştırmada 9-16 yaşlarındaki kanserli ve sağlıklı çocukların depresif belirti düzeyleri ile benlik kavramlarının belirlenmesi, aralarındaki ilişkinin incelenmesi ve karşılaştırılması amaçlanmıştır.
Yöntem: Örnekleme, kanserli 66 çocuk ile aynı yaş ve cinsiyetteki 66 sağlıklı çocuk alınmıştır. Verilerin toplamasında "Çocuk Tanıtım Formu", "Çocuklarda Depresyon Ölçeği" ve "Piers-Harris Çocuklarda Öz Kavramı Ölçeği" kullanılmıştır. Verilerin analizinde Komogorov-Smirnov, Mann Whitney U testleri ve Spearman-Brown's Korelasyon katsayısından yararlanılmıştır.
Bulgular: Araştırma sonucunda kanserli çocukların sağlıklı çocuklara göre depresif belirti düzeylerinin anlamlı bir fark olmadığı görülmüştür ($p>0,05$). Kanserli ve sağlıklı çocukların depresif belirti düzeyleri ile benlik kavramları arasında orta düzeyde, negatif yönde ve anlamlı bir ilişki olduğu, benlik kavramları yükseldikçe depresif belirti düzeylerinin azaldığı saptanmıştır ($p<0,05$).
Sonuç: Kanserli çocuklara depresif belirti düzeyi ve benlik kavramı değerlendirme sonuçlarına göre verilecek psikososyal desteğin, çocukların tedavilerine olumlu katkısının olacağı düşünülmektedir.

Anahtar Kelimeler: çocuk, kanser, depresyon, benlik kavramı

Introduction

Childhood cancers are one the important health problems of our time. Globally 160 000 new cancer cases and 90 000 cancer-related deaths are estimated to occur annually in children under 15 years of age.[1]The diagnosis and treatment of cancer is a physically, emotionally and psychologically devastating, stressful and threatening experience, especially for children.[2,3] Children with cancer have to cope with the disease, frequent hospitalizations, intensive treatments and the numerous side effects of these treatments. These children may encounter physical, social and psychological problems.[4]

The disease and treatment-related problems such as hair loss, weight loss, and amputation cause changes in the outer appearance of the child.[5]Studies in healthy children have reported that children's physical health affect their psychological health and self-concept.[6, 7]In addition, healthy children with low self-esteem were reported to have quite high depression levels.[8,9] Studies report the presence of problems with friends, depression, adjustment problems and excessive worry about physical issues in general among the difficulties in childhood cancer.[10-14]These issues may adversely affect children's self-perceptions. Oncologic diseases can especially cause low self-perception, depressed mood, anger, despair, and feelings of inadequacy and insecurity in children.[15]One of the most common emotional responses to cancer is depression and studies show children with cancer to be a big risk group.[16-18] In healthy children low self-esteem was also observed to be related with depression[19], and high self-esteem to be related with good emotions and happiness.[20] We therefore believe the evaluation of self-concept and depression status of these children is important.

There are many studies on depression as it is a common emotional problem in children with cancer. However, we did not come across any study investigating self-concept and the relationship of self-concept with depression in this group. The purpose of this study was to determine and compare the depressive symptom levels and self-concepts and their relationship in children with cancer and healthy children between 9 and 16 years of age.

Research Questions

1. Is there a difference between depressive symptom levels of children with cancer and healthy children?
2. Is there a difference between self-concepts of children with cancer and healthy children?
3. Are there any relationships between depressive symptom levels and self-concepts of children with cancer and healthy children?

Methods

Study Design

This study was conducted descriptively in order to determine and compare depressive symptom levels and self-concept of children with cancer aged 9-16 years who had been hospitalized in the oncology service and healthy children of the same age and sex.

Population and sample selection

The study population consisted of children with cancer aged 9 to 16 years who had been hospitalized in Turkey in the Ankara University Faculty of Medicine, Department of Pediatrics, Children's Hematology and Oncology service and healthy children of the same age and sex. The study sample included a total of 66 children who attend the cancer treatment (31 females and 35 males) who had been hospitalized, who had received two or more cycles of chemotherapy and who consented along with their family to participate. Sample selection has not been made in the study. 69 children who met the criteria for screening were reached. Three children did not agree to participate in the study. The study was completed with 66 children. For comparison purposes, 66 healthy elementary school and high school children (female = 31, male = 35), who haven't any chronic disease were also recruited. For the comparison group, an elementary schooland a high school located in Ankara was randomly selected. Healthy children of the same age-group and the same gender as the children with cancer were identified, and a list was made. Children from this list, who were selected by using a table of random numbers, constituted the control group. The age and genders of the children with cancer and healthy children were therefore equal. Children between the ages of 9 and 16 were included in the study as we took into account the applicability of the scales used to children.

Data Collection Tools

The data of the study were collected with the "Child Identification Form", "Children Depression Inventory" and "Piers-Harris Children's Self Concept Scale". During piloting, the data forms were administered to the 15 children and it was determined that all forms were understood.

Child identification form: The form included questions about the child's; age, gender, birth order, number of siblings, class, academic achievement, family type, number of individuals in the family, living place, the parents' age, education level, occupation, employment status, whether they were alive and the actual parent, and income, as well as the diagnosis, the age of diagnosis, and duration of diagnosis and hospitalization in sick children.

Children's depression inventory: This inventory was developed by Kovacs (1980) in order to determine the depressive symptom level of children and was adapted to Turkish by Öy (1991). The Children's Depression Inventory is a kind of self-assessment scale used to determine the depressive symptom level. It can be applied to children and adolescents aged 6-17, individually or as a group. The scale has a total of 27 items and is completed by the child itself or by reading it to the child. There

are three options to choose from for each item that evaluates the child's last two weeks. Each situation includes expressions concerning the symptoms of childhood depression. The child has to choose and mark the most appropriate sentence from the three options. Selected situations are evaluated as 0-1-2 and the depression score is obtained by adding the scores. The internal consistency coefficient of the scale was found to be 0.86.The test-retest reliability of the scale with an interval of four weeks was 0.77. The maximum score is 54. The cut-off point of the scale is 19. 19 point and over shows that depressive symptoms. A high total score shows a high level of depressive symptoms. The scale can differentiate between groups showing and not showing depressive symptoms.[21,22]

Piers-Harris children's self-concept scale: The scale was developed by Piers and Harris in the United States in 1964. The scale aims to evaluate the thoughts, feelings and attitudes of children towards themselves. It is used to investigate and determine determination of self-concept or self-understanding in children, its dimension, and its relationship with personality and environmental elements. It is composed of 80 descriptive expressions developed in order to determine the self-concept of children in the 9-16 years age group. The expected answers to the expressions are in the form of "yes" or "no". The possible scores range from 0 to 80. The scale contains six different dimensions of self-concept (happiness and satisfaction, anxiety, popularity and social appreciation - being the favorite, behavior compliance, physical appearance, intellectual and school status). A high score indicates the presence of a positive and a low score of a negative self-concept. The scale was adapted to the conditions in Turkey by Çataklı (1985) and Öner (1996).The test-retest test method and invariance coefficients of this scale calculated with Pearson's Moment Multiplication correlation technique ranged from 0.91 to 0.72 for primary school 1st level and 0.98 to 0.79 for 2nd level. Internal consistency coefficients determined by the alpha correlations, a generalized form of the Kuder-Richardson 20 formula, was found to be 0.87 for the primary school 1st level and 0.86 for the second stage.[23,24]

Ethical Dimension of the Study

Written permission was obtained from the Dean of the Ankara University Faculty of Medicine prior to the study. Children included in the study and their parents were met, time was spent together and the children and the parents were provided information about study. The purpose and method of the study was explained to ensure cooperation.. The verbal and written consent of the children and their families was obtained. The same procedure was applied to the healthy children attending primary and high school and their families.

Data collection Method

Children aged 9-16 years with cancer who agreed to participate in the study were asked to complete data collection forms. Data forms were filled out by the children or by reading them to the child by researchers. After collecting data about the sick children, healthy children of the same age and gender attending elementary school who accepted to participate in the study were randomly determined. Since the emotional indicators and depressive symptom levels of children are thought to be affected by age and gender, the age and gender of the sick children and healthy children were equalized in this study. The Child Identification Form, Children's Depression Inventory and the Piers-Harris Children 's Self Concept Scale were then administered to the healthy children as well. The data were collected between January 2011 and January 2012.The administration took about 15-25 minutes.

Data Analysis

The Kolmogorov-Smirnov test was used to assess whether the scores of the children regarding depression symptom levels and self-concept showed a normal distribution as the group size was larger than 50.The Mann-Whitney U test was used to determine whether there was a difference between the depression symptom levels and self-concept of children with cancer and healthy children while their relationship was evaluated with Spearman-Brown's Correlation Coefficient as parametric conditions were not met and the distribution was not normal ($p < 0.05$). [25]

Results

Demographic Characteristics

Characteristics of children with cancer and healthy children are presented in Table 1. Children with cancer and healthy children were matched for age and gender and no statistically significant difference was found between the groups in terms of these characteristics ($p > 0.05$).No statistically significant difference was found between the children with cancer and the healthy children in terms of characteristics such as birth order, number of siblings, school attendance and academic achievement status, place of residence, family type, income, and the parents' age, education, employment status, and profession ($p > 0.05$).

Table 1. Characteristics of children with cancer and healthy children

Features	Children with cancer		Healthy children		Total	
	n	%	n	%	n	%
Age (years)						
9-12	27	40.9	27	40.9	54	40.9
13-16	39	59.1		59.1	78	59.1
Gender						
Female	31	47	31	47	62	47
Male	35	53	35	53	70	53
Educational status						
Attending school	54	81.8	66	100	120	90.9
Not attending school	12	18.2			12	9.1

The mean age of the children with cancer and healthy children was 13.14 ± 2.39 with 53% males and 47% females. The subject was the first child of the family in 39.4%, 27.3% had two siblings, 81.8% continued to attend school, 51.5% could not achieve academic success, all lived with their family, 18.2% could not go to school due to illness, 53% were from a medium-income family, and 83.3% had a core family type. The majority of the mothers were 31-40 years old, primary school graduates, not working, alive and the birth mother while the majority of the fathers were 41 years old or older, primary school graduates, working, alive and the birth father.48.5% of healthy children were the first child, 33.3% had one sibling, all continued to go to school, 68.2% achieved academic success, all lived with their family, 69.7% were from a medium-income family, 92.4% had a core family type. The majority of the mothers were 31-40 years old, not working, primary school graduate, alive and the birth mother, while the majority of the fathers were 41 years old or older, working, university graduate, alive and the birth father.

The most common diagnosis of the children with cancer was ALL(31.8%), 57.6% had been hospitalized for at least twelve days, 48.5% were aged 13 to 16, 33.3% had been diagnosed six to twelve months ago, 89.4% had no cancerous sibling, 86.4% had no physical disability, and 63.6% suffered from alopecia (Table 2).

Self-concept Levels

A significant difference was found between the self-concept of children with cancer and healthy children (U=1731.5, p<0.05).When the order and the mean scores were examined, self-concepts of children with cancer were seen to be lower than healthy children as presented in Table 3.The minimum scale score for the children with cancer was 38 and the maximum was 77, while the respective scores for healthy children were 50 and 79.

Table 2. Distribution of ill children's cancer characteristics

Features		**Children with cancer**
		%
Diagnosis		
Acute lymphoblastic leukemia		31.8
Osteosarcoma	1	24.2
Acute myeoblastic leukemia		16.7
Ewing sarcoma	6	12.1
Lymphoma/Rhabdomyosarcom/Retinoblastoma		15.1
	1	
	0	
Length of stay in hospital (days)		
1-12		57.6
13-24	8	27.3
25 and over		15.1
	8	
	0	
Diagnosis at age (years)		
1-7		13.6
8-12		37.9
13-16	5	48.5
	2	
Time of diagnosis (months)		
1-6		36.4
6-12	4	33.3
13 and over		30.3
	2	
	0	
Patient sibling		
Yes		10.6
No		89.4
	9	
Physical disability		

Yes		13.6
No		86.4
	7	
Alopecia		
Yes		63.6
No	2	36.4
	4	

Table 3. U-Test Results of self-concepts scores of children with cancer and healthy children

Groups	n	Min	Max	Mean±SD	Median	U	p
Cancer	66	38	77	64.02±8.10	66.00	1731.50	0.04
Healthy	66	50	79	67.00±7.34	70.00		

Depressive Symptom Levels

Table 4 shows depressive symptom levels of children with cancer and healthy children. No significant difference was found between the depressive symptom levels of children with cancer and healthy children (U=2124.0, p>0.05).However, the depressive symptom levels of children with cancer were found to be higher than healthy children when the mean scale scores and mean order of the children on the scale were considered. Only two of the children with cancer obtained a score over 19 which is the scale cut-off point, and the scores of other children remained below the cut-off point score in the study. The number of healthy children who passed the cut-off score was three. The maximum/highest point obtained was 25 for the children with cancer and 21 for the healthy children.

Table 4. U-Test results of depressive symptom levels in children with cancer and healthy children

Groups	n	Min	Max	Mean±SD	Median	U	p
Cancer	66	1	25	7.20±4.91	7,00	2124,000	0.8
Healthy	66	0	21	7.26±5.41	6,00		

The Relationship between Self-Concept and Depressive Symptom Levels

Table 5 data indicate a moderate, negative and significant relationship between the children with cancer (r=0577) and healthy children's (r=0.693) self-concept and depressive symptom levels. Taking the determination coefficient (r2) into account, we can say that 33% of the total variance in children with cancer's (r2 = 0.332929) and 48% of the total variance in healthy children's (r2 = 0.480249) depressive symptom levels was associated from self-concept.

Table 5. The correlation between self-concept score and depressive symptom levels in children with cancer and healthy children

Groups		Self-concept score	
		Depressive symptom levels	
	n	r	p
Children with cancer	66	-0.577	0.0001
Healthy children	66	-0.693	0.0001

Discussion

Physical and psychosocial side effects of cancer treatment negatively influence children's cognitive and behavioral development. The self-concept of the children with cancer in our study was lower than the healthy children. This indicates that cancer is an influential factor in the decrease of children's self-concept. Some studies similar to our study have found the self-concept of children with cancer to be lower than their healthy peers.[26-28] Tunaboylu-İkiz et al (2004) found the self-esteem of adolescents treated with a bone marrow transplantation to be much lower than healthy adolescents.[29]However, some studies report no difference between the self-concept of children with cancer and healthy adolescents.[26,30]This difference between the studies is thought to be due to the different patients, treatment stages and socio-demographic characteristics. In general, problems such as physical integrity being threatened, hair loss due to the treatment, physical inadequacies, being apart from social life, family / school / work life, adjustment problems, and excessive worry are the factors that affect the psychology and psychosocial adjustment of the child diagnosed with cancer.[10,31,32] These factors have negative effects on the child's self-concept

Cancer is a seriously disruptive and stressful experience in physical, emotional and psychological terms for children.[3]Our study found depressive symptom levels of children with cancer to be higher than healthy children but the difference was not statistically significant. Toros et al (2007) found the depression scores of children with cancer to be significantly higher than children with other chronic diseases and healthy children.[33] Sezgin and Ekinci (2006) also found the mean depression scores of children with cancer to be higher than healthy children.[34]However, there are also studies that found children with cancer not to be depressed in psychosocial terms when compared to their healthy peers.[18,30,35]

A moderate, negative and significant relationship was found between self-concept and depressive symptom levels of children with cancer and healthy children. Accordingly, we can say. The higher self-concept was associated with the lower depressive symptoms Low self-concept in patients with cancer is the initial risk factor for depression. Low self-concept is one of the best-known associated variables of depressive symptoms or disorders. [29,36-38] Maccaffrey (2006) found self-concept to be the most important factor affecting stress in children with cancer.[12]It will be useful to consider psychosocial factors in addition to the physical care of the child to decrease the negative effects of the disorder and its treatment.

Conclusions

In conclusion, childhood cancer affects all aspects of the patient's life. Our study found higher self-concept was associated with the lower depressive symptoms in children with cancer. Determination of low self-concept and high depressive symptom level scores is considered to be an important clue in diagnosing the children and adolescents who need psychological help. We believe providing psychological assistance according to the results of studies on issues such as depressive symptom levels and self-concept will have a positive effect on the treatment of children and adolescents with cancer. The observation of self-concept and depression symptoms of the children with cancer for a holistic approach as physically, psychologically and emotionally is important.

Strengths and Limitations

This is the first study that is determine and compare the depressive symptom levels and self-concepts and their relationship in children with cancer between 9 and 16 years of age. Study is a relatively small sample size, all were hospitalized and all from Turkey. The age and genders of sick and healthy children were equalized in our study and our criterion for children with cancer was receiving at least two cycles of chemotherapy. Studies based on national and international cooperation and conducted with wider and more homogenous groups in terms of treatment duration, type of cancer, diagnosis duration, and severity of disease are required. It may be best to perform repeated test for comparison at different times such as after the diagnosis, during the treatment and after treatment.

Yazarların Katkıları

Çalışma tasarımı : N A, E D

Veri toplama ve/ veya analizi : N A, E D

Makalenin hazırlanması : N A, E D

References

1. Boyle P., Levin B (Eds:). *World cancer report* 2008. Switzerland. WHO Press. pp; 482
2. Dowling JS, Hockenberry M. Sense of humor, childhood cancer stressors, and outcomes of psychosocial adjustment, immune function, and infection. *Journal of Pediatric Oncology Nursing* 2003; 20:271-292.
3. Enskar K, Von Essen L. Physical problems and psychosocial function in children with cancer. *Pediatric Nursing* 2008; 20(3): 37-41.
4. Barakat LP, Hetzke JD, Foley B, Carey ME, et al.. Evaluation of a social-skills training group intervention with children treated for brain tumors: a pilot study. *Journal of Pediatric Psychology* 2003:28 (5):299-307.
5. Lahteenmaki PM, Huostila J, Hinkka S, Salmi TT. Childhood cancer patients at school. *European Journal of Cancer* 2002; 38(9): 1227-1240.
6. Melnyk BM, Small L, Morrison-Beedy D, Strasser A, et al. Mental health correlates of healthy life style attitudes, beliefs, choices, and behaviors in overweight adolescents. *Journal of Pediatric Health Care* 2006; 20(6):401-406.
7. Trzesniewski KH, Donnellan MB, Moffitt TE, Robins RW, et al. Low self-esteem during adolescence predicts poo rhealth, criminal behavior, and limited economic prospects during adulthood. *Developmental Psycholog* 2006;42: 381-390.
8. Byrne B. Relationship between anxiety, fear, selfesteem and coping strategies in adolescence. *Adolescence* 2000; 35:215-301.
9. Kim YH. Correlation of mental health problems with psychological constructs in adolescence: Final results from a 2-year study. International *Journal of Nursing Studies*2003; 40: 115-124.

10. Giannakopoulos G, Kazantzi M, Dimitrakaki C, Tsianti SJ, et al. Screening for children's depression symptoms in Greece: The use of the Children's Depression Inventory in a nation-wide school-based sample. *European Child Adolescent Psychiatry* 2009; 18: 485-492.
11. İnal-Emiroğlu N, Pekcanlar-Akay A. Chronic illness, hospitalization and child. *Dokuz Eylül University Journal of Medicine*2008; 22:99-105.
12. McCaffrey CN. Major stressors and their effects on thewell-being of children withcancer. *Journal of Pediatric Nursing* 2006; 21(1): 59-66.
13. Prevatt F, Heffer RW, Lowe PA. A review of school reintegration programs for children with cancer. *Journal of School Psychology* 2000; 38 (5):447-467.
14. Tamar M, Özbaran B. Depression on child and adolescent. *Clinical Psychiatry* 2004; 2: 84-92.
15. Cihangir N, Kılıçarslan-Törüner E. Determination of emotional conditions of schoolage children with chronic and acute diseases by means of human figure drawings. *Journal of Hacettepe Universty Scholl of Nursing* 2007; 14 (1):1-11.
16. Arabiat DH, Elliot B, Draper P. Theprevalence of depression in pediatric oncology patients undergoing chemotherapy treatment in Jordan. *Journal of Pediatric Oncology Nursing* 2012; 29(5): 283-288.
17. DeJong M, Fombonne E. Depression in paediatric cancer: An overview. *Psycho-Oncology* 2006; 15(7):553-566.
18. Matzıou V, Perdıkarıs P, Galanıs P, Dousıs E, et al. Evaluating depression in a sample of children and adolescents with cancer in Greece. *International Nursing Review*2008; 55: 314–319.
19. Hay I, Ashman AF, Van Kraayenoord, CE. Educational characteristics of students with high or low self-concept. *Psychology in the Sch*ools1998; 35(4): 391-400.
20. Baumeister RF, Campbell JD, Krueger JI, Vohs KD. Does high self-esteem cause beter performance, interpersonal success, happiness, or healthier lifestyles? *Psychological Science in the Public Interest* 2003; 4(1):1-44.
21. Kovacs M. Rating scales to assess depression in schoolage children. *Acta Paedopsychiatrica* 1980;46: 305-315.
22. Öy B. Depression scale for children: The validity and reliability study. *Turkish Journal of Psychiatry* 1999; 2(2): 132-136.
23. Çataklı M. *Transliterale quivalence and reliability of the Piers- Harris Children's Self Concept Scale*. Unpublished Master Dissertation 1985 Boğaziçi University, İstanbul, Turkey.
24. Öner N. *Piers-Harris Self-Concept Scale for children handbook*. 1996 Ankara, Turkey: Turkish Psychological Association Publications.
25. Büyüköztürk Ş. *Data analysis handbook for socialsciences* (16th ed.). 2012 Ankara, Turkey: Pegem Academy Bookstore. pp:31-37, pp:155-158
26. Gülen H, Kaygusuz A, Kazancı E, Erbay A, et al.Self-concept in young people with cancer. *Bulletin of the Ege Pediatrics* 2005; 12(2): 95-98.
27. Ritchie MA. Self-esteem and hopefulness in adolescents with cancer. *Journal of Pediatric Nursing* 2001; 16(1): 35-42.
28. Von-Essen L, Enskar K, Kreuger A, Larsson B, Sjoden PO. Self-esteem, depressionand anxiety among Swedish children and adolescents on and off cancer treatment. *Acta Pediatric* 2000; 89:229-236
29. Tunaboylu-İkiz, T, Peykerli G, Anak S, Gedikoğlu G. Short-term and long- term psychological effects of bone marrow transplantation on adolescents. *Archives of Neuropsychiatry* 2004; 41:25-32.
30. Eiser C, Hill JJ, Vance YH. Examining the psychological consequences of surviving childhood cancer: Systematic review as a research method in pediatric psychology. *Journal of Pediatric Psychology* 2000; 25(6):449-460.
31. Li HC, Chung OKJ, Chiu SY. The impact of cancer on children's physical, emotional and psychosocial well-being. *Cancer Nursing* 2010; 33(1):47-54.
32. Hokkanen E, Eriksson O, Ahonen S, Salantera A. Adolescents with cancer experience of life and how it could be made easier. *Cancer Nursing* 2004; 27: 325-335.
33. Toros F, Tot P, Düzovalı Ö. Children with chronic illness, depression and anxiety levels in mothers and fathers. *Clinical Psychiatry* 2002; 5: 240-247.
34. Sezgin S, Ekinci M. Comparing depression levels of the children with cancer andhealthy children. O. M. U. *Journal of Medicine*2006;23:52-58
35. Wechsler AM, Sánchez-Iglesias I. Psychological adjustment of children with cancer as compared with healthy children: a meta-analysis. *European Journal of Cancer Care* 2013;22(3):314-325
36. Elbi-Mete H, Önen Ö. Depression in patients with cancer. *Mood Series* 2001;4: 184-191.
37. Yılmaz F, Arkan D. The relation between the self-concept and the levels symptom of depression in adolescents with hearing impaired. *Journal of Anatolia Nursing and Health Sciences* 2008; 11(4):67-75.
38. Bragado C, Hernandez-Lloreda MJ, Sanchez-Bernardos ML, Urbano S.Physical self-concept, anxiety, depression, and self-esteem in children with cancer and healthy children without cancer history. *Psicothema* 2008; 20 (3):413-419