Available online on 15.04.2023 at http://jddtonline.info

Journal of Drug Delivery and Therapeutics

Open Access to Pharmaceutical and Medical Research

Open Access Full Text Article

Research Article

Analysis of Factors Causing Anxiety in Children with Cancer Experiencing Hospitalization

Fenti Hasnani*

Department of Nursing, Health Polytechnic of Jakarta I, Indonesia

Article Info:

Article History:

Received 17 Feb 2023
Reviewed 21 March 2023
Accepted 02 April 2023
Published 15 April 2023

Cite this article as:

Hasnani F, Analysis of Factors Causing Anxiety in Children with Cancer Experiencing Hospitalization, Journal of Drug Delivery and Therapeutics. 2023; 13(4):65-70

DOI: http://dx.doi.org/10.22270/jddt.v13i4.5797

*Address for Correspondence:

Fenti Hasnani, Department of Nursing, Health Polytechnic of Jakarta I, Indonesia

Abstract

Hospitalization is a stressful experience, both for the child and his parents. Stress in children can cause sleep disturbances, decreased appetite, and developmental disorders so that this can delay the healing process of the disease. Stressors that children receive while being treated can be in the form of a foreign hospital environment, physical conditions such as pain and illness that children experience, treatment procedures and medical examinations at the hospital. The many stressors experienced by children while undergoing hospitalization have negative impacts that interfere with children's development. The purpose of this study was to determine the dominant of the six factors that cause anxiety in children with cancer who experience hospitalization. This study used an analytic descriptive design with a cross sectional study approach. Samples that met the inclusion criteria amounted to 165 people. The results of the six factors that cause anxiety in children with cancer who experience hospitalization, it was found that those with a p value <0.05 were complaints of pain and physical weakness. In complaints of pain, 163 children with cancer were found with an average anxiety score of 21.34. The statistical test produces a p value of 0.001 which is smaller than α (0.05), meaning that there is a significant relationship between pain and anxiety in children with cancer.

Keywords: Anxiety, childhood cancer, hospitalization

INTRODUCTION

The Central Statistics Agency (BPS) noted that there were 24.33 million students in Indonesia in the 2021/2022 academic year. About 30 percent of children have experienced hospitalization at least once and about 5 percent several times. Children hospitalized in the last two decades have experienced a rapid increase. There is an increasing population of children hospitalized, where hospitalization in children is a stressful experience, both for the children themselves and their parents. Stress in children can cause sleep disturbances, decreased appetite, and developmental disorders so that this can delay the healing process of the disease.[1,2]

The hospital environment can be a cause of stress and anxiety in children. Stressors that children receive while being treated can be in the form of a foreign hospital environment, physical conditions such as pain and illness that children experience, treatment procedures and medical examinations at the hospital. The many stressors experienced by children while undergoing hospitalization have negative impacts that interfere with children's development. Hospitalization is considered as an event that causes stress in children, especially if the child requires long-term treatment and care, such as cancer.

Cancer in children is a disease that can be treated and a cure can be sought, although it is not uncommon to have to sacrifice a portion of the body's organs in children with cancer. Childhood cancer is cancer that affects children under 18 years of age, including children who are still in the womb. WHO estimates that in 2005-2015 there were 84 million people who died from cancer.[3]

According to WHO data 2015, the prevalence of cancer in children is around 4% and 90,000 child deaths in the world are caused by cancer. Every year, the number of cancers in children increases by around 110 to 130 cases per one million children, and 80% of children diagnosed with cancer are in developing countries. According to data from the Union for International Cancer Control (UICC), there are around 176,000 children diagnosed with cancer each year and the majority come from low- and middle-income countries. According to data from the Indonesian Hospital Association, the incidence of childhood cancer in Indonesia is around 2-4%. Every year there are 11,000 cases of cancer in children, and 10% of them cause death. The problem of childhood cancer in Indonesia is currently a big problem.[3,4] There are 6 types of cancer that often attack children. These cancers are leukemia, retinoblastoma, osteosarcoma, neuroblastoma, malignant lymphoma, and nasopharyngeal carcinoma. Leukemia is the highest cancer in children (2.8 per 100,000), followed by retinoblastoma (2.4 per 100,000), osteosarcoma (0.97 per 100,000), malignant lymphoma (0.75 per 100,000), nasopharyngeal carcinoma (0.43 per 100,000), and neuroblastoma (10.5 per 1,000,000). Currently, cancer is the top ten main diseases that cause child death in Indonesia.

Unlike cancer in adults, cancer in children is more difficult to detect because children are generally not able to express what they feel. Therefore, it is very important to recognize the signs and symptoms of cancer in children, so that immediate

treatment can be carried out and the cure rate becomes greater.[5,6] The number of childhood cancers is around 3% -5% of all cancers, but it is the second largest cause of death in children in the age range of 5-14 years. Every year more than 175,000 children in the world are diagnosed with cancer, and an estimated 90,000 of them die. The death rate from childhood cancer reaches 50-60 percent because generally sufferers arrive late or are already in an advanced stage due to cancer symptoms that are difficult to detect.

Early detection of childhood cancer cases is the key to successful cancer control in children. Psychosocial support is very important for children with cancer and their families. The family and community environment must jointly provide positive support for children with cancer so they can live a better life.[7]

Both parents and health workers are expected to be able to diagnose cancer at an early stage, so that further treatment can be carried out according to the level of referral health facilities. If a child is suspected of having cancer, parents must immediately take the child to a health center, hospital or other health facility. The goal is to confirm whether the symptoms found are true cancer or not. Until now, the risk factors and causes of cancer in children are not known with certainty. This is thought to be an interaction of 4 factors, namely genetics, chemicals, viruses, and radiation. Not all types of cancer in children have methods for early detection, besides that cancer in children cannot be prevented. But it's good for parents to teach SMART behavior to children from childhood so that they avoid various types of cancer that arise in adulthood. CERDIK namely periodic health checks; Get rid of cigarette smoke by avoiding exposure to cigarette smoke; Diligent physical activity; Healthy and balanced diet; get enough rest; and Manage stress.[8,9]

Cancer chemotherapy treatment requires children to be hospitalized for quite a long time, so that children experience hospitalization which makes children have to adapt to the environment of the Hospital Inpatient Room and the health workers who provide services to them, and children also experience separation from family, peers and unable to carry out normal activities or lose independence. This will cause anxiety in children and feelings of fatigue and boredom in children. In addition, children also undergo various procedures for treatment and diagnosis, procedures such as infusion, administration of drugs by injection, taking blood samples which cause pain and increase anxiety in. Anxiety in children can be prevented by playing therapy which consists of social affective play, sense pleasure play, games, dramatic play and cooperative play.[10–12]

METHODS AND MATERIALS

In this study using a descriptive analytic design with a cross sectional study approach. Data collection was carried out on pediatric cancer patients from February to October 2022. Sampling was carried out by recruiting pediatric cancer patients aged 6-11 years who met the inclusion criteria, namely children with cancer who were hospitalized, children who were conscious, parents willing to be respondents and signed an informed consent, parents can read and write. Samples that met the inclusion criteria and became research respondents totaled 165 people. The technique for determining the sample in this study was a consecutive sampling technique, that is, each patient who met the research criteria was included in the study for a certain period of time so that the required number of patients was met. In the early stages of the study, the researcher gave an explanation of the aims and objectives of the study to the patient's parents. Furthermore, parents signed an informed consent as a form of consent to participate in the study.

The second stage the researcher distributed questionnaires to collect data on patient characteristics and data on separation from family, separation from friends, lessons at school, activity restrictions, physical weakness, and pain. Data on anxiety in children was measured using a child anxiety instrument, namely the short form of CSAS – C (Chinese version of the State Anxiety Scale for Children) questionnaire. The short form of CSAS – C anxiety instrument is the Indonesian version which has been tested for validity and reliability by Desak (2013) with valid results (r results > 0.514) and reliable with r Alpha 0.888. The CSAS-C Questionnaire has 10 statement items. Five items are statements about the absence of anxiety and the other five items are statements about the presence of anxiety. The ten statement items are confused, happy, nervous, fresh, relaxed, worried, scared, happy, sad, and excited. The score for each item is 1 – 3. In statements about the presence of anxiety, score 1 = not, score 2 = sufficient, score 3 = very much, while in statements about the absence of anxiety, score 1 = very, score 2 = enough, and score 3 = no. The total score on all items is in the range of 10-30. A score of 10 is the total minimum anxiety score and 30 is the maximum anxiety score.

Data analysis went through three stages, namely univariate, bivariate and multivariate analysis. The research variables that were carried out by univariate analysis were separation from family, separation from friends, studies at school, activity restrictions, physical weakness, and the pain and anxiety of school-age children who were hospitalized. Bivariate analysis was carried out to determine the relationship between the independent variables and the dependent variable. Bivariate analysis used the independent t test because the data were normally distributed with a 95% confidence interval (CI) or $\alpha = 0.05$. Multivariate analysis using multiple linear regression.

RESULTS

Table 1: Frequency Distribution of Respondent Characteristics of Children with Cancer Experiencing Hospitalization

Children with Cancer	Total (n=165)	Percentage
Gender		
Male	127	76.9
Female	38	23
Age		
6 years	34	20.6
7 years	12	7.2
8 years	22	13.3
9 years	46	27.8
10 years	13	7.8
11 years	38	23

Table 1 shows that of the 165 children as respondents in this study, 127 (76.9%) were male and 38 (23%) were female. Based on the highest age, there were 46 (27.8%) 9 year olds, 38 (23%) 11 year olds and followed by 6 year olds with 34 (20.6%) children.

Table 2: Average Anxiety in Children with Cancer Experiencing Hospitalization

Variable	Total(n=165)	Percentage (%)	Mean	SD	p-value
Farewell to family					
Problem	152	92,1	23,37	2,791	0,974
No	13	78,7	23,21	2,413	
Farewell to friends					
Problem	142	86	23,46	3,112	0,637
No	23	13,9	23,17	3,043	
Lessons at school					
Problem	147	89	23,67	2,403	0,623
No	18	10,9	23,21	2,554	
Activity restrictions					
Problem	143	86,6	23,43	2,232	0,394
No	22	13,3	23,12	2,012	
Weak physique					
Problem	159	96,3	21,67	2,234	0.001
No	6	3,6	21,14	2,431	
Pain					
Problem	163	98,7	21,34	2,332	0.001
No	2	12,1	21,01	2,471	

Table 2 Shows that as many as 163 (98.7%) children with cancer complain of anxiety due to pain, 159 (96.3%) children with cancer feel anxious because they experience weak physical disorders. Anxiety due to separation from family was complained by 152 (92.1%) children with cancer. There were 147 (0.89) children with cancer who complained of anxiety because they were behind on lessons at school. Cancer children who complained of anxiety due to activity restrictions totaled 143 (86.6%) children and lastly cancer children who complained of anxiety due to separation from friends amounted to 142 (86%) children. Of the six causes of anxiety in children with cancer who experience hospitalization, it was found that those with a p value <0.05 were complaints of pain and physical weakness. In complaints of pain, 163 children with cancer were found with an average anxiety score of 21.34. The statistical test produced a p value of 0.001 which was smaller than α (0.05), meaning that there was a significant relationship between pain and anxiety in children with cancer. Furthermore, for weak physical complaints, there were 159 children with cancer with an average anxiety score of 21.67. The statistical test produced a p value of 0.001 which was smaller than α (0.05), meaning that there was a significant relationship between physical weakness and children's anxiety with cancer.

Table 3: Distribution of Respondents According to Anxiety Values

Variable	Mean	Median	SD	Min – Max
Anxiety in children with cancer	27,3	26	2,75	17 - 27

Table 3 shows that the mean anxiety score is 27.3 and the median is 26 at a standard deviation of 2.75. From the range of anxiety assessment scores in children with cancer, 10-30, the anxiety score for children with cancer is obtained, the lowest score is 17 and the highest score is 27.

Table 4: Variables Associated with Child Anxiety

Variable	B	R Square	SE	p-value
Pain	1,457	-	0,623	0,033
Weak Physique	1,117	-	0,426	0,048
Constant	16,54	0,221	1,342	-

Table 4 shows the coefficient of determination (R square) of 0.221, meaning that the regression model obtained can explain the anxiety of children with cancer who experience hospitalization. Based on the value of B, it shows that the variables that have the greatest influence on the determination of anxiety in children who experience hospitalization are complaints of pain and physical weakness, and the regression equation obtained is anxiety for school-age children who are hospitalized = 16.54 + 1.457 pain + 1.117 physical weak.

DISCUSSION

The results of the study found that the majority of children with cancer were 127 male (76.9%) while 38 female (23%). This study is in line with research conducted in the United States of America which showed that the incidence and mortality of childhood cancer in boys is higher than in girls, while the survival rate is the same for both sexes. The same is true in India, where the incidence of cancer in Indian boys is higher than that of girls. The incidence of children with cancer is 235.30 per million in boys and 152.30 per million in girls in Delhi.[13] The same opinion was also found by the results of research conducted by Marcdante, Kliegman, Jenson & Behrman and Wolley, Gunawan, & Warouw who found that male patients who were diagnosed with cancer were more dominant than girls. This opinion is different from several previous studies, which proved that there is no relationship between the incidence of cancer in children and.[14–16]

Hospitalization is considered as an event that can be stressful for children. Stressors that children receive while being treated can be in the form of a foreign hospital environment, physical conditions such as pain and illness that children experience, treatment procedures and medical examinations at the hospital. Stress in children can cause sleep disturbances, decreased appetite, and developmental disorders so that this can delay the healing process of the disease.[2]. Another opinion states that hospitalization is a common event in children and can be a traumatic experience for children, which can cause tension and fear and can cause emotional or behavioral disturbances several weeks or months after the child is discharged from the hospital.[1]

This study showed that out of 165 respondents who were children with cancer who experienced hospitalization, 163 (98.7%) complained of anxiety due to pain. Pain and anxiety among critically ill patients in the ICU are closely correlated. Pain and anxiety affect the dose of anxiolytic given. Therefore, proper evaluation and a comprehensive approach to the management of pain and anxiety are important for treating ICU patients. It was found that 27% of patients usually had pain before admission, and 77% had pain on admission. Of these, 23% had moderate or severe pain at the time of interview and 64% had moderate or severe pain in the previous 24 hours. The most commonly reported somatic problem by children is pain (58%) (Lewandowska, 2021). In addition, the pain that children receive during chemotherapy through the intravenous route has a major influence on the child's psychology so that it makes children feel afraid.[17,18]

Anxiety is a response to certain conditions that can threaten oneself. The results of the study found that 159 (96.3%) children with cancer felt anxious because they were physically weak. Physical weakness is one of the potential after being diagnosed and undergoing treatment for childhood cancer. Physical weakness prevalent in childhood cancer survivors may increase with age. Risk factors for a diagnosis such as physical disability include a diagnosis of bone tumor, brain tumor or Hodgkin's disease. Risk factors due to treatment include radiation and medication. Setiawan's research explains that chemotherapy can have negative effects such as worry, anxiety, and fear due to the experience of injecting drugs that cause discomfort. This is also supported by Arslann, Basbakkal & Kantar which states that symptoms after chemotherapy are also one of the things that cause anxiety in children before undergoing chemotherapy.[19–21]

Anxiety due to separation from family was complained by 152 (92.1%) children with cancer. Family, especially parents, is the most important element for children. Family support also has a significant influence on anxiety. When parents feel the anxiety experienced by their children, this indirectly affects parenting patterns, causing a decrease in emotional support for children.[22] Besides that, sick children need social support. This support is believed to reduce anxiety experienced in children because children feel protected. Kohi et al showed that children are affected emotionally, feel separated from family members and have negative feelings regarding a cancer diagnosis.[23,24]

There were 147 (89%) children with cancer who complained of anxiety because they were behind on lessons at school. Hospitalization conditions cause children to be absent from school. This causes children to worry about being left behind in school lessons. The gap in learning problems during the transition period after being hospitalized by starting to return to school can be overcome by collaboration between schools, families and hospitals related to learning in schools. However, in conditions of hospitalization that are not long, children feel that they are not too behind in lessons and can catch up after entering school again. Another opinion shows high anxiety of being left behind in school lessons. Nearly 40% of children stated that they could not talk to their teacher about their situation.[25]

There were 143 (86.6%) children with cancer who complained of anxiety due to activity restrictions. This problem is in accordance with Sloan's opinion that many cancer sufferers face psychosocial and physical problems during and after cancer treatment, such as fatigue, increased risk of distress and reduced physical activity and physical function. The long-term consequences of these problems can affect the patient's health related quality of life. Physical activity can affect the health of cancer patients after being diagnosed, recent data shows that physical activity can prevent death from cancer. A number of previous studies have found that physical activity will benefit the quality of life of cancer patients. In previous studies of cancer patients it is also known that physical activity has a beneficial effect on fatigue and distress. Physical activity can increase feelings of happiness, improve quality of life and survival among patients with cancer.

There were 142 (86%) children with cancer who complained of anxiety due to separation from friends. Anxiety due to separation from friends is the lowest score of the other five assessments. This happens because the child has received support from the family, especially parents. This opinion is supported by Hauken et al who did not find a significant reduction in anxiety in children and being with friends due to their illness. It is important for parents to maintain their children's self-esteem in spite of their disease situation, the parents in this study have also been successful in maintaining family functioning.[25]

The results showed that the mean anxiety score was 27.3 and the median was 26 at a standard deviation of 2.75. From the range of anxiety assessment scores in children with cancer, 10-30, the anxiety value of children with cancer was obtained, the lowest score was 17 and the highest score was 27. Solikhah, et al showed that the average anxiety value of school-age children during hospitalization was 15.27 from range 0-28. Rofiqoh's research, concluded that there were two

factors related to the anxiety of children who were hospitalized, namely physical weakness with a p value of 0.001 and pain with a p value of 0.001, while the most related were weak physical factors with a p value of 0.033. These two studies show that the anxiety rate for school-age children who experience hospitalization is still quite high. Children's anxiety that is high enough is at risk for children to react irritability and aggression towards parents, withdraw from health workers, anxiety and physical tension. The further impact is interfering with the effectiveness of treatment and care programs, such as refusing treatment procedures.[26,27]

Factors causing anxiety in research such as separation from family, separation from friends, studies at school, limited activity, physical weakness and complaints of pain are associated with anxiety in children with cancer who experience hospitalization. Of the six causes of anxiety in children with cancer who experience hospitalization, it was found that those with a p value <0.05 were complaints of pain and physical weakness. In complaints of pain, 163 children with cancer were found with an average anxiety score of 21.34. The statistical test produced a p value of 0.001 which was smaller than α (0.05), meaning that there was a significant relationship between pain and anxiety in children with cancer.

Furthermore, for weak physical complaints, there were 159 children with cancer with an average anxiety score of 21.67. The statistical test produced a p value of 0.001 which was smaller than α (0.05), meaning that there was a significant relationship between physical weakness and children's anxiety with cancer. Respondents are attended by other relatives such as grandmothers, aunts or older siblings. These results indicate that the condition is good, that the children who are hospitalized are all waiting for their families. This situation shows that child care at the hospital is in accordance with the principles of child care, namely not separating children from their families during hospitalization so as to minimize the child's physical weakness.

CONCLUSION

Children with cancer are psychologically no different from adults with cancer, such as experiencing anxiety, anxiety, anger, fear, depression and so on. Factors that cause anxiety such as separation from family, separation from friends, studies at school, activity limitations, physical weakness and complaints of pain are associated with anxiety in children with cancer who experience hospitalization. Of the six causes of anxiety in children with cancer who experience hospitalization in this study, it was found that the biggest cause of anxiety in children with cancer is pain. The next cause of anxiety in children with cancer who experience hospitalization is physical impairment due to weakness, separation from family, falling behind in school, activity restrictions and separation from friends.

It is very important for the pediatric cancer care team to understand the risk of anxiety and trauma in pediatric patients related to hospitalization and the effects of cancer medical treatment. Treatment protocols for pediatric cancer should be developed to build trust, reduce the risk of anxiety and trauma in pediatric patients when receiving medical care.

Furthermore, school teachers are expected to have sufficient knowledge and skills to support children with cancer who experience hospitalization. Parents and families of children with cancer can understand the trauma experienced by children, accompany and communicate and always be present for children

CONFLICT OF INTEREST

The authors declare that they have no conflict interests.

REFERENCES

1. Bsiri-Moghaddam K, Basiri-Moghaddam M, Sadeghmoghaddam L, Ahmadi F. The concept of hospitalization of children from the view point of parents and children. Iran J Pediatr. 2011; 21(2):201.
2. Kazemi S, Ghazimoghaddam K, Besharat S, Kashani L. Music and anxiety in hospitalized children. J Clin Diagnostic Res. 2012; 6(1):94-6.
3. Kemenkes RI. Situasi penyakit kanker. Pus Data dan Inf Kesehat. 2015;
4. Organization WH. CureAll framework: WHO global initiative for childhood cancer: increasing access, advancing quality, saving lives. 2021;
5. Ward E, DeSantis C, Robbins A, Kohler B, Jemal A. Childhood and adolescent cancer statistics, 2014. CA Cancer J Clin. 2014; 64(2):83-103. https://doi.org/10.3322/caac.21219
6. Gibson F, Aldiss S, Horstman M, Kumpunen S, Richardson A. Children and young people's experiences of cancer care: a qualitative research study using participatory methods. Int J Nurs Stud. 2010; 47(11):1397-407. https://doi.org/10.1016/j.ijnurstu.2010.03.019
7. Hasnani F. Asian Journal of Pharmaceutical Research and Development. Asian J Pharm Res Dev. 2022; 10(2):59-76. https://doi.org/10.22270/ajprd.v10i2.1108
8. Handayani LT. Pemberdayaan Kader dalam Deteksi Dini Kanker Payudara di Kabupaten Jember Propinsi Jawa Timur. In: PROSIDING SEMINAR NASIONAL 2018 "PERAN DAN TANGGUNG JAWAB TENAGA KESEHATAN DALAM MENDUKUNG PROGRAM KESEHATAN NASIONAL." 2019. p. 249-56. https://doi.org/10.32528/psn.v0i0.1753
9. Masitha IS, Wulandari N, Tohari MA. Sosialisasi Pencegahan Dan Pengendalian Penyakit Tidak Menular Di Kampung Tidar. In: Prosiding Seminar Nasional Pengabdian Masyarakat LPPM UMJ. 2021.
10. Ibrahim HA, Amal AA. The Effectiveness of Play Therapy in Hospitalized Children with Cancer: Systematic Review. J Nurs Pract. 2020; 3(2):233-43. https://doi.org/10.30994/jnp.v3i2.92
11. Sadruddin MM, Hameed-ur-Rehman M. Understanding the perceptions of children battling cancer about self and others through drawing. South Asian J cancer. 2013; 2(3):113. https://doi.org/10.4103/2278-330X.114100
12. Putri NL, Kep M, Iskandar NS. Buku Ajar Keperawatan Anak. Insan Cendekia Mandiri; 2021.
13. Bashar MDA, Thakur JS. Incidence and pattern of childhood cancers in India: findings from population-based cancer registries. Indian J Med Paediatr Oncol. 2017; 38(02):240-1.
14. Marcdante KJ, Kliegman R, Jenson HB, Behrman RE. Nelson ilmu kesehatan anak esensial. Elsevier; 2014.
15. Wolley NGA, Gunawan S, Warouw SM. Perubahan status gizi pada anak dengan leukemia limfoblastik akut selama pengobatan. e-CliniC. 2016; 4(1). https://doi.org/10.35790/ecl.4.1.2016.11693
16. Pei J-S, Hsu P-C, Chou A-K, Tsai C-W, Chang W-S, Hsiao C-L, et al. Matrix metalloproteinase-1 genotype contributes to the risk of non-solid tumor in childhood leukemia. Anticancer Res. 2016; 36(10):5127-32. https://doi.org/10.21873/anticanres.11082
17. Bennett M. Pain management for chemotherapy-induced oral mucositis. Nurs Child Young People. 2016; 28(10). https://doi.org/10.7748/ncyp.2016.e695
18. Rata NS, Basit M, Anggraini S. Hubungan dukungan emosional keluarga dengan tingkat nyeri pada anak acute lymphoblastic leukemia akibat kemoterapi. J Keperawatan Suaka Insa. 2018; 3(1):1-13.
19. Sadock BJ. Kaplan & Sadock's synopsis of psychiatry: behavioral sciences/clinical psychiatry. Vol. 2015. Wolters Kluwer Philadelphia, PA; 2015.

20. Setiawan SD. The effect of chemotherapy in cancer patient to anxiety. J Major. 2015; 4(4).

21. Arslan FT, Basbakkal Z, Kantar M. Quality of life and chemotherapy-related symptoms of Turkish cancer children undergoing chemotherapy. Asian Pacific J cancer Prev. 2013; 14(3):1761-8. https://doi.org/10.7314/APJCP.2013.14.3.1761

22. Huang I, Brinkman TM, Mullins L, Pui C, Robison LL, Hudson MM, et al. Child symptoms, parent behaviors, and family strain in long-term survivors of childhood acute lymphoblastic leukemia. Psycho-Oncology. 2018; 27(8):2031-8. https://doi.org/10.1002/pon.4769

23. Kohi TW, von Essen L, Masika GM, Gottvall M, Dol J. Cancer-related concerns and needs among young adults and children on cancer treatment in Tanzania: a qualitative study. BMC Cancer. 2019; 19:1-9. https://doi.org/10.1186/s12885-019-5279-z

24. Putranti E, Susilaningsih EZ, Kp S, Kep M. Pengaruh Dukungan Keluarga terhadap Tingkat Kecemasan Anak Sakit Kanker di RSUD Dr. Moewardi Surakarta. Universitas Muhammadiyah Surakarta; 2016.

25. Hauken MA, Senneseth M, Dyregrov A, Dyregrov K. Anxiety and the quality of life of children living with parental cancer. Cancer Nurs. 2018; 41(1):E19-27. https://doi.org/10.1097/NCC.0000000000000467

26. Solikhah U. Therapeutic peer play sebagai upaya menurunkan kecemasan anak usia sekolah selama hospitalisasi. J Keperawatan Soedirman. 2011; 6(1).

27. Rofiqoh S. Prediktor kecemasan anak usia sekolah yang dirawat di rumah sakit kabupaten pekalongan. Pena Med J Kesehat. 2016; 6(2).