ORIGINAL ARTICLE

Playing Performance Among Children With Cancer in Indonesia Undergoing Chemotherapy

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ABSTRACT

Introduction: Cancer causes problems in children both physically and psychologically. Therefore, it is necessary to assess the quality of life by looking at the playing ability of children with cancer that are receiving chemotherapy. **Methods:** This is a descriptive study design that was carried out by observing the playing abilities of children with cancer before, during, and after chemotherapy was carried out between the ages of 1 to 16 years. The Lansky play performance is an instrument used in assessing the quality of life of children based on their daily play activities. **Results:** The total number of samples used in this study were 100 patients, however, 2 dropped out because they died during the treatment process, most of them were between the ages of 7 to 12 years (31.6%). In addition, there were 69.4% more males than females. Almost all the patients received chemotherapy, while most of them that came to the hospital were able to carry out normal activities and no special treatment was needed (60.2%). while 9.2% that were able to move preferred to play relaxed games. In addition, there were differences in the abilities of children suffering from cancer before, during, and after chemotherapy. **Conclusion:** There were differences in the level of the children's playing activities before, during, and after chemotherapy. Supports from families, peers, and the environment are needed by children with cancer during chemotherapy. In addition, the performance level is very helpful in determining the kind of treatment to give.

Keywords: Ability to play, Children with cancer, Chemotherapy

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INTRODUCTION

According to the National Cancer Institute (NCI) in the United States, 25% of cancer cases occur in children between the ages 2 to 3 years with 90 cases per 1 million / year (1). Furthermore, the number of cancer patients in America reached about 1,685,210 cases in 2016 (2). This disease is the leading cause of death in children under the age of 15 years, and its incidence in this age group is about 18.8 cases per 100,000 children (3). The incidence of cancer in Indonesia in 2018, especially in Jakarta was 2.33% or 40,210 cases, and in the 5-14-year age range was 0.31% (182,338) (4).

Cancer causes problems in children, both physically and psychologically and affects their quality of life which consists of several interrelated aspects, including physical, social, emotional, psychological, and cognitive. Cancer causes problems in children both physically and psychologically. The impact of cancer on children's physical health is shown by the number of children complaining of pain, lack of appetite, weakness, nausea, fever, hair changes and weight loss (5,6). Pain and lack of appetite are the physical effects that are felt the most by children (> 50) (6). In addition, children experience emotional problems, children experience high anxiety and more than half feel some symptoms of depression during treatment, in addition, almost all children express high levels of sadness and worry (5). different, where the level of depressive symptoms in children with cancer was significantly higher than in healthy children. Disappointment, distrust, and anger were

significantly more common in children with cancer ($P < 0.05$) (7).

53% of cancer children experience a poor quality of life (8). The lowest score for children's quality of life is on school functioning and children's concerns in dealing with treatment and illness. Poor quality of life of children can affect physical, emotional, social, psychological, school and cognitive functions so that children's growth and development is disrupted. There are several instruments used to assess the quality of life in children with cancer, and an example is the Lansky Play Performance Scale for children between the ages of 1 to 16 years (5). The aim of this study is to determine the changes in the playing abilities of children before, during, and after chemotherapy. The benefit of this study is that since it determines the child's playing ability, nurses and parents could maintain the quality of their children's lives when they have to undergo chemotherapy.

MATERIALS AND METHODS

Subjects

This study was conducted on pediatric patients with cancer that were treated in a non-infectious children's room. Furthermore, the baseline data was collected from the records of patients that were admitted. The number of samples were 100 patients, however, 2 dropped out because they died on the third and fifth day of observation. The inclusion criteria in this study were children between the ages of 1 to 16 years with cancer diagnosis, and have received chemotherapy. While the exclusion criteria were children that experienced hemodynamic instability such as decreased consciousness and incompatibilities of vital signs.

Instrument

Data was collected using 2 questionnaires, the Lansky play performance is an instrument used in assessing the quality of life of children based on their daily play activities. The game was rated with an increase in the value of 10, starting from fully active/normal (100) to fully inactive (10)(9).The assessed play activities include active and calm plays, physical limitations and independence levels. The assessment was carried out frequently to assess changes in their performance status. The evaluations ranged from fully active / normal (value = 100), moderately limited (value = 50–60), to completely disabled (value = 10 or less)(10). The advantage of the Lansky instrument is that it is easy to use, and evaluates the improvement of a patient's life in terms of playing activities and independence(10). Lansky could be used for children between the ages of 1 to 16 years (11).

The Lansky Play Performance Status is an instrument used in evaluating the performance of children with cancer, by observing their playing activities. This could be used on children that are less than 16 years, and are either an outpatient or hospitalized (10). Furthermore, the Lansky instrument is used for children between the ages of 1 to 16 years for long-term follow-up and in patients with malignancy(10). The assessed play activities include active and quiet play, physical limitations and independence levels, and its assessments are made frequently to assess changes in their performance status. Furthermore, the evaluations ranges from fully active / normal (value = 100), fairly limited (value = 50–60), to completely disabled (value = 10 or less) (10).

Statistical analysis

Data were analyzed using deskriptif analitik

Ethical approval

This study was approved by the Ethics Committee of the University of Indonesia, Faculty of Nursing (SK-229 / UN2.F12.D1.2.1 / ETIK 2020).

RESULTS

A total of 100 patients that were diagnosed of cancer were used as samples. However, 2 died during the treatment process leaving a total of 98 patients of which they all agreed to participated in this study. Most of them were between the ages of 7 to 12 years (31.6%). In addition, there were 69.4% more males than females. 44 patients had leukemia (44.9%), 11 had retinoblastoma (11.2%), 9 had osteosarcoma (9.2%), 7 had neuroblastoma (7.1%), 4 had KNF (4.1%), 4 had lymphoma (4.1%), 3 had Hepatoblastoma (93.1%), 4 had Ewing sarcoma (4.1%), while the rest had other types of cancer (Table I).

Almost all the patients received chemotherapy, while most of them that came to the hospital were able to carry out normal activities and no special treatment was needed (60.2%). 17.3% of the children had more barriers when playing and less time for other activities, while 9.2% that were able to move preferred to play relaxed games. During chemotherapy, 39.8% of the children were active but easily got tired, 17.3% of the children experienced greater obstacles when playing therefore they had less time to play, and 5.1% children lay down every day, and were not active in all games. After chemotherapy, 29 children (29.6%) experienced obstacles while playing, therefore their playing activities were reduced and there were also 46 (46.9%) children that were active but easily got tired (Table II).

DISCUSSION

The cause of cancer in children is not certain, however based on several studies, it is oocurs due to genetic changes in cell proliferation. Lifestyle-related behavior is a major factor in increasing the risk of cancer in adults, however it is different in children, where the

Table I : Characteristics of Children with Cancer who underwent Chemotherapy (n=98)

Characteristic	n(%)
Sex	
Male	68 (69,4)
Female	30 (30,6)
Age Group	
1-3 years	20 (20,4)
4-6 years	22 (22,4)
7-12 years	31 (31,6)
13-16 years	25 (25,5)
Diagnosis	
ALL	44 (44,9)
Retinoblastoma	11 (11,2)
Osteosarcoma	9 (9,2)
Neuroblastoma	7 (7,1)
Wing sarcoma	4 (4,1)
Lymphoma	4 (4,1)
KNF	4(4,1)
Hepatoblastoma	3(3,1)

risk factors that causes cancer are radiation exposure, carcinogenic drugs, immunosuppressive therapy, race, and genetics (3).

Children may experience various problems related to this disease and the treatment they are undergoing. This is because cancer and its treatment causes physical and psychological problems. Physical problems related to chemotherapy are fatigue, pain, cachexia, anemia, and infections (12). Furthermore, children are prone to physical problems such as infections, bleeding, fatigue, lethargy, hair loss, mucositis, nausea, vomiting, diarrhea, constipation, decreased appetite, neuropathy, hemorrhagic cystitis, urinary retention, a round and chubby face (moon face), sleep disorders (2). Apart from physical problems, children that undergo chemotherapy experience psychosocial problems, such as mood disorders, anxiety, loss of self-confidence, decreased self-perception, depression, and behavior changes that makes them not feel like going to school. (12).

Symptoms that occurred during the 3 days of cancer treatment include pain, sleep disturbances, and fatigue. Furthermore, changes in the children's physiological conditions affected their storage and increased use of energy reserves and changes in oxygenation due to this disease (13). Fatigue symptoms are often caused by anemia, electrolyte imbalance such as sodium, potassium, calcium, iron, and magnesium. Furthermore, nutritional fulfillment could be affected by nausea, vomiting, loss of appetite, mucositis, odynophagia, diarrhea, and constipation (14).

Table II : The Activity Value of the Lansky Play Performance of Children with Cancer who underwent Chemotherapy (n=98)

Lansky Activity Values	The first day of treatment n = 98	During chemotherapy n=98	After chemotherapy n=98
	n (%)	n(%)	n(%)
Able to carry out normal activities, no special care is required			
100	1 (1,0)		
90	30 (30,6)	18 (18,4)	13 (13,3)
80	29 (29,6)	39 (39,8)	46 (46,9)
Mild to moderate restriction			
70	17 (17,3)	17 (17,3)	29 (29,6)
60	9 (9,2)	12 (12,2)	3 (3,1)
50	6 (6,1)	5 (5,1)	3 93,1)
Medium to severe restrictions			
40	2 (2,0)	3 (3,1)	3 (3,1)
30	4 (4,1)	4 (40,1)	1 (1,0)

Most of the children's activities involves playing which is an important aspect and a necessity in their life. Furthermore, playing activities could be used to assess therapy outcomes, rehabilitation program progress, long-term survival, and functional status evaluation (12,15). The performance change assessment provide an overview of changes in the children's quality of life due to cancer therapy and its side effects (16). In addition, playing activities in children with cancer could be assessed using Lansky Play Performance Status.

The Lansky Play Performance Scale contains measurable and meaningful data that is needed in monitoring the quality of life of children with cancer (11). According to a research that was conducted on children with leukemia, it was showed that there were significant results on the quality of life of the children that received chemotherapy (P = 0.014), and a combination of both chemotherapy and surgery (P = 0.048) (11). However, the results of other studies in children with ALL showed a significant reduction in their activities during the day for 5 consecutive days of administering dexamethasone in the maintenance phase (17).

The girls fatigue scores had a higher subjective level, while the boys' activity during the day was greater than the girls (18). Children with ALL in the maintenance phase showed a light to moderate play activity which is a form of adaptation from previous chemotherapy. Supports from families, friends, and interaction with the surrounding environment could be a supporting resource for children with cancer (18).

Children with cancer that undergo chemotherapy usually have problems with their daily lives. They experience difficulty in interacting and forming relationships with their peers, because of the limitations on peer social rules and their frequent absence in these relationships (19).Furthermore, it is better they do not attend school either during or after completing the treatment due to the difficulties they encounter (19). The main determinants of decreasing the quality of life in children with cancer are painful clinical measures, surgery, intensive chemotherapy, and hospitalization. Based on several studies, the quality of life was better for children with adolescent cancer, and that of girls was lower than boys, especially in the cognitive and emotional aspects (20).

Limitations

This study was conducted during the Covid 19 pandemic, therefore the patients that were treated for chemotherapy were limited.

CONCLUSION

There were differences in the level of the children's playing activities before, during, and after chemotherapy, which affected their quality of life. Supports from families, peers, and the environment are needed by children with cancer during chemotherapy. In addition, the performance level is very helpful in determining the kind of treatment to give.

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