

**DESCRIPTION OF THE INCIDENCE OF CONSTIPATION IN
CHILDREN POST-CHEMOTHERAPY AT THE SERUNI POLYCLINIC
ROOM, ARIFIN ACHMAD REGIONAL GENERAL HOSPITAL, RIAU
PROVINCE**

Lisda Afriani^{1*}, Gita Adelia¹, Rina Herniyanti¹, Ifon Driposwana Putra¹

¹Payung Negeri Health Institute Pekanbaru, Faculty of Nursing, Professional Nurse Program,
Pekanbaru, Indonesia

***Corresponding author:** lisdaafriani25633@gmail.com

Abstract

Constipation is a frequent side effect experienced by children following chemotherapy. This condition arises from changes in bowel motility, the use of various medications, and alterations in diet and physical activity, all of which can lead to discomfort and negatively impact the child's quality of life. This quantitative descriptive study was conducted to determine the prevalence of constipation in children post-chemotherapy at the Seruni Polyclinic, Arifin Achmad Regional General Hospital, Riau Province. The study took place from September 2024 to February 2025. The study population included all pediatric cancer patients receiving treatment at the clinic, with 57 respondents selected using an Accidental Sampling technique. Constipation was measured using the Constipation Assessment Scale (CAS). The results showed that most respondents (64.9%) were aged 6–12 years, the majority were female (61.4%), and 47.4% had an elementary school education background. The most common cancer diagnosis was Acute Lymphoblastic Leukemia (ALL), found in 38.6% of the respondents. The main finding of the study was that 41 respondents (71.9%) experienced mild constipation. In conclusion, the majority of children post-chemotherapy in this setting suffer from constipation, primarily at a mild level. The study suggests that factors such as age, gender, education level, and the type of cancer are associated with the incidence of constipation. Future researchers are advised to further investigate other potential contributing factors, such as dietary patterns, hydration status, and specific side effects of chemotherapy drugs, to develop more effective interventions for both the prevention and treatment of constipation.

Keywords: Child cancer; constipation; post chemotherapy

INTRODUCTION

Cancer is defined as a disease originating from the progressive and abnormal growth of body cells. This condition is caused by alterations in deoxyribonucleic acid (DNA), resulting in cells losing their normal function (Hartini et al., 2020). The World Health Organization (WHO) reported that the number of cancer cases worldwide in 2020 reached 19.3 million, with approximately 10 million deaths, and projected that the global cancer burden would continue to increase to 30.2 million cases by 2040 (WHO, 2023). Data from the Global Burden of Cancer Study (GLOBOCAN) recorded cancer incidence of 3,792,000 cases in the Americas, 4,230,000 cases in Europe, 252,000 cases in the Oceania region, and 8,751,000 cases in Asia (GLOBOCAN, 2020). According to the International Agency for Research on Cancer (IARC, 2018), among 600 children worldwide diagnosed with cancer, those affected are under 16 years of age, and 80% of children diagnosed with cancer come from developing countries.

The World Health Organization (2020) reported that over the past five years, the incidence of childhood cancer has been estimated at 800,000 children, and this number continues to increase along with technological advancements. The National Cancer Institute stated that in the United States, more than 11,000 new cases of childhood cancer are diagnosed

annually, with approximately 1,200 deaths expected (National Cancer Institute, 2020). In Asia, Indonesia ranks third in the number of childhood cancer cases, with approximately 35,000 affected children. Furthermore, the 2023 Indonesian Health Survey reported that the number of pediatric cancer patients reached 197,718 cases (Kurniawati, 2023).

As an effort to address the high prevalence of childhood cancer, various treatment options are available, including surgery, radiotherapy, chemotherapy, and several other therapeutic methods. Among these treatment modalities, chemotherapy is the most frequently used option (Parasian et al., 2024). To date, more than 70 types of chemotherapeutic anticancer drugs have been used clinically, and more than 10 types of cancer can be cured through chemotherapy, accounting for approximately 5% of all cancer patients. This figure is nearly equivalent to 10% of annual cancer-related deaths, including cancers with a high degree of malignancy (Hartini et al., 2020). Chemotherapy is a treatment administered using cytostatic drugs delivered into the body either intravenously or orally. The use of chemotherapeutic agents may cause toxic effects and severe systemic dysfunction, although the severity varies. Side effects occur because these drugs not only destroy cancer cells but also damage healthy cells, particularly rapidly dividing cells such as mucosal membranes, hair follicles, bone marrow, and reproductive organs (ACS, 2014).

Chemotherapy can affect physical health as a result of the chemotherapeutic agents themselves. The most common side effects of chemotherapy in children include vomiting and fatigue; other possible effects include hair loss, oral disorders, bruising, decreased appetite, diarrhea, increased risk of infection, and constipation (Nabilla et al., 2023). Constipation is a condition in which an individual experiences difficulty passing stool or infrequent bowel movements. It may result in hard stools, excessive straining, a sensation of incomplete evacuation, abdominal discomfort, and bloating. Constipation can be caused by various factors, such as inadequate fiber intake, insufficient fluid consumption, limited mobility, hormonal imbalance, medication side effects, and genetic predisposition (Jihan Azzahra et al., 2023). In children with cancer, constipation is one of the side effects of chemotherapy due to the use of opioids (analgesics) and antiemetic medications administered during chemotherapy (Anfhal et al., 2020).

Based on a preliminary study conducted by the researcher through direct interviews on November 8, 2024, at the Seruni Polyclinic of RSUD Arifin Achmad, Riau Province, interviews were conducted with three pediatric cancer patients undergoing chemotherapy treatment. One patient, identified by the initial A and diagnosed with bone cancer, reported experiencing constipation with a bowel movement frequency of once per week, hard stool consistency, a feeling of incomplete evacuation after defecation, and pain following bowel movements. Meanwhile, a child receiving treatment at the Seruni Polyclinic with a diagnosis of leukemia reported having bowel movements three times per week with hard stool consistency and abdominal bloating. The patient's parent also stated that to prevent constipation, the child must routinely consume fruit daily to maintain regular bowel movements. Another child undergoing treatment at the Seruni Polyclinic, also diagnosed with leukemia, did not experience constipation but instead had digestive problems in the form of diarrhea.

RESEARCH METHODS

This study is a quantitative descriptive-analytic research. The design was used to describe the constipation incidence in pediatric cancer patients at the Seruni Clinic, Arifin Achmad General Hospital, Pekanbaru, Riau Province. This hospital was chosen because it is

the central referral hospital for cancer in Riau Province, enabling the collection of relevant and representative data. Data collection was planned to be conducted from September 2024 to February 2025 using a questionnaire instrument.

Based on data from the Seruni Clinic for the last three months (August-October), the total number of visits for pediatric cancer patients was 680, with 137 patients undergoing chemotherapy. The sample size for this study was calculated using the Slovin formula, resulting in 57 pediatric cancer patients.

The sampling technique used was Accidental Sampling, where samples were selected based on convenience, provided they met the inclusion criteria:

- Willing to be a research respondent.
- Pediatric cancer patient who has undergone at least one cycle of chemotherapy.
- Age of the child ranges from 6 to 18 years.

Exclusion criteria included children who have never undergone chemotherapy, those using laxatives or drugs directly affecting intestinal motility (outside the chemotherapy protocol), and children experiencing severe post-chemotherapy complications (e.g., sepsis or intestinal obstruction).

The characteristics of the respondents collected included gender, age, education level, and diagnosed type of cancer. The incidence of constipation was measured and categorized as *no problem*, *mild constipation*, or *severe constipation* using the Constipation Assessment Scale (CAS) by McShane and McLane. CAS consists of eight items assessing symptoms and severity, with a total score ranging from 0 (no constipation), 1–8 (mild constipation), and 9–16 (severe constipation). The CAS instrument has shown satisfactory internal consistency ($\alpha = 0.70$) and good test-retest reliability ($r = 0.98, p < 0.05$).

RESEARCH RESULTS

Demographic Data of Respondents

Table 1. Distribution of Respondent Demographic Data

Variable	Frequency (f)	Percentage (%)
Age		
School Age (6-12 years)	37	64.9
Adolescents (12-18 years)	20	35.1
Gender		
Male	22	38.6
Female	35	61.4
Education		
Not in School	9	15.8
Primary School (SD)	27	47.4
Junior High School (SMP)	13	22.8
Senior High School (SMA)	8	14.0
Type of Cancer		
Leukemia (ALL)	22	38.6
Lymphomorphin	8	14.0
Non-Hodgkin Lymphoma	15	26.3
Osteosarcoma	8	14.0
Rhabdomyosarcoma	4	7.0
TOTAL	57	100

Source: Primary Data Analysis 2025

Based on Table 1, out of 57 respondents, the majority were in the school-age group (6–12 years) (37 respondents, 64.9%), female (35 respondents, 61.4%), had an elementary school (SD) education level (27 respondents, 47.4%), and the most common cancer type was Leukemi (ALL) (22 respondents, 38.6%).

Based on the research findings, the majority of respondents were in the school-age group (6–12 years). This finding is consistent with various epidemiological reports on childhood cancer, which state that most cancer cases occur in children under the age of 15, with a peak incidence during school age. According to the National Cancer Institute, age is one of the important risk factors for cancer incidence because it is associated with active cell division processes and genetic instability during growth periods. At school age, the immune system and DNA repair mechanisms have not yet fully developed, making children more susceptible to genetic mutations that may trigger the development of cancer.

In addition, school age also influences the body's response to chemotherapy. According to physiological developmental theory, the gastrointestinal system in children is not yet fully mature compared to that of adults, making it more sensitive to the side effects of cytotoxic drugs. This condition increases the vulnerability of school-aged children to disturbances in intestinal motility, including constipation, as a result of chemotherapy. Studies by Nastiti et al. (2022) and Anggreini and Supit (2022) also indicate that school-aged children are the group most frequently experiencing gastrointestinal complications during cancer therapy. The researchers assume that the predominance of children aged 6–12 years in this study contributes to the high incidence of post-chemotherapy constipation.

Based on sex, the results showed that more than half of the respondents were female. This finding reflects variations in the distribution of childhood cancer by sex, which in the literature still presents inconsistent results. Some studies report that childhood cancer is more common in males, while others indicate a higher prevalence in females or find no significant difference between sexes. Baumester et al. (2016) and Liem et al. (2019) state that sex is not a primary determining factor in the incidence of childhood cancer, but rather is influenced by genetic factors, environmental exposure, and immune system function.

Univariate Analysis: Constipation in Children Post Chemotherapy

Table 2. Distribution of Constipation Profile in Children Post Chemotherapy

Constipation Score	Frequency (f)	Percentage (%)
No constipation	10	17.5
Mild constipation	41	71.9
Severe constipation	6	10.5
Total	57	100

Source: Primary Data Analysis 2025

Table 2 demonstrates that the majority of the 57 respondents experienced mild constipation (41 respondents, 71.9%) post-chemotherapy. A small proportion reported no constipation (10 respondents, 17.5%) and severe constipation (6 respondents, 10.5%).

DISCUSSION

The research findings show that most respondents (71.9%) experienced mild constipation post-chemotherapy. This aligns with other studies; for instance, a study by Zahrawaani et al. [9] found that the majority of cancer patients experienced mild constipation

(60.3%), and Bulut [10] found that 70% of children receiving chemotherapy experienced constipation. Mild constipation may be mitigated by parental actions such as increasing fiber intake, giving laxatives [11], or increasing water intake [12].

Constipation in pediatric cancer patients is often a consequence of the chemotherapy itself, particularly the use of neurotoxic drugs like vincristine (a vinca alkaloid) which impair intestinal nerve and smooth muscle coordination [13, 14]. Chemotherapy agents such as cisplatin and vinca alkaloids can significantly increase the risk of gastrointestinal side effects, including constipation, in up to 80–90% of patients [15]. Other contributing factors include dehydration and dietary changes during therapy [13]. Furthermore, the co-administration of opioids and antiemetics as part of the cancer pain and symptom management protocol exacerbates the issue [7].

The prevalence of *mild* constipation (71.9%) suggests that while constipation is a highly frequent problem, for the majority, its severity is not maximal. This might indicate that current preventative measures (like encouraging hydration and fiber intake, as noted in the findings) are somewhat effective in managing the severity, preventing a shift to severe constipation. However, the high incidence of constipation overall highlights the critical need for continued vigilance and proactive management. Constipation causes significant physical discomfort, including bloating and abdominal pain, which adds to the suffering of children already undergoing intense treatment [16].

CONCLUSION

Based on the research describing the constipation incidence in pediatric cancer patients post-chemotherapy in the Seruni Clinic, Arifin Achmad General Hospital, Riau Province, conducted between September 2024 and February 2025, it is concluded that the majority of respondents (41 respondents, 71.9%) experienced mild constipation. A small proportion experienced no constipation (10 respondents, 17.5%) or severe constipation (6 respondents, 10.5%).

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