A Review Article: The Relationship of Nutrient Status with Chemotherapy Frequency in Cancer Sufferers

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Abstract: Cancer is a disease caused by an irregular hormonal pathway that results in the growth of flesh in normal body tissues, often known as malignant tumors. In addition, these symptoms are also known as malignant neoplasms. They are often characterized by characteristic cell cycle abnormalities that give rise to the ability of cells to grow uncontrollably, invading nearby biological tissues. These cells migrate to other body tissues through the blood circulation or lymphatic system, called metastasis. This study aimed to analyse the relationship between nutritional status and the frequency of chemotherapy in cancer patients. This study uses a literature review method based on references from ten national journals sourced from Google Scholar for the last five years. It uses the keywords frequency of chemotherapy, cancer patients, and nutritional status. From this study, the frequency of chemotherapy given to cancer patients is quite influential on the nutritional status of chemotherapy patients depending on the patient's immune system. Many patients are malnourished due to decreased appetite while energy needs in the body increase.

1 INTRODUCTION

Cancer is the most feared health problem because cancer is the second largest cause of death, estimated at around 9.6 million deaths, or one in six deaths, in 2018. According to WHO data, Asia is the first in the world's most cancer problems recorded. They reached 9,503,710 cases. The incidence of cancer in Indonesia (136.2/100,000 population) is number 8 in Southeast Asia at 23. According to the Global Burden of Cancer Study (Globocan) report from the World Health Organization (WHO), the number of deaths from cancer in Indonesia reached 234,511 people in 2020.

Meanwhile, based on Riskesdas data, the incidence of cancer in Indonesia increased from 1.4 per 1000 population in 2013 to 1.79 per 1000 population in 2018. The highest cancer prevalence was in DI Yogyakarta province, with 4.86 per 1000. 1000 population, followed by West Sumatra at 2.47 79 per 1000 population and Gorontalo at 2.44 per 1000 population.

Cancer can occur due to a condition in which cells have lost their normal control and mechanism, resulting in abnormal, uncontrolled, and rapid growth. Along withthe growth and proliferation, cancer cells can spread throughout the body by forming a mass of tissue that infiltrates the surrounding tissue (invasive). Therefore, cancer must be treated quickly to stop the spread of cancer cells. There are various treatment methods, but the method most often applied is chemotherapy. Chemotherapy itself is done more than once or twice. In general, chemotherapy is done five to six times depending on the patient's condition and cancer's level of malignancy. Serial chemotherapy destroys not only cancer cells but also normal body cells (Hidayattullah, 2015). Therefore, the absorption of nutrients in the gastrointestinal tract can be hampered due to chemotherapy. The side effects that arise in cancer patients receiving chemotherapy. Nutrition is a process that includes introducing food or drink to distribution throughout the body (Sutandyo, 2010). Good nutrition can help increase immunity, accelerate cell repair, form body tissues, and reduce the risk of infection (Khairina, 2009).

According to the Indonesian Ministry of Health and WHO, nutritional status is a condition caused by a balance between nutrient intake from food and the nutritional needs needed. Body for metabolism. Nutritional status in cancer patients can be influenced by internal factors (age, physical activity, infection, type of cancer, side effects of therapy) and external factors (knowledge, occupation, income,

and culture). Cancer can occur due to less energy intake and increased energy use. Therefore, paying attention to nutritional intake in patients is very important because nutritional problems faced by cancer patients are generally caused by the difficulty of accepting food as a side effect of chemotherapy. Cancer patients are more susceptible to infection, which slows the healing process, so proper nutritional

therapy is needed for cancer patients to reduce the risk of other co-morbidities. It can reduce symptoms caused by side effects of chemotherapy. In addition, if the nutritional status improves, the patient will feel better and speed up the recovery process.

The purpose of this article is to analyze the relationship between nutritional status and the frequency of chemotherapy in cancer patients.

2 METHODS

This study includes ten national journals sourced from Google Scholar published in the last five years, using the keywords frequency of

chemotherapy, cancer patients, and nutritional status. The research method is a literature review using secondary data collected by documentation techniques. This research shows that the frequency of chemotherapy given to cancer patients is quite influential on the nutritional status of chemotherapy patients depending on the patient's immune system. Many patients are malnourished due to decreased appetite while energy needs in the body increase.

The reason for choosing this journal as a research reference is because the journal strongly supports the arguments that will be raised and will become a strong foundation for this research. In addition, this journal has a broad and detailed discussion, compiles appropriate procedures following existing regulations, and uses simple language. However, some terms are difficult to understand, especially for the general public so that they are difficult to understand.

3 RESULTS

Based on the results of the analysis of related references, they will be described in the following table:

Table 1. Analysis of Articles on The Relationship of Nutrient Status with Chemotherapy Frequency in Cancer Sufferers

Writer	Title	Year	Results	Conclusion
Ni Made Ayu Puspa Dewi, Putu Oka Yuli Nurhesti, Made RiniDamayanti	Hubungan Antara Frekuensi Kemoterapi dan Status Nutrisi Pasien Kanker yang Menjalani Kemoterapi di Ruang Sanjiwani RSUP Sanglah Denpasar	2020	There is a significant link between the frequency of chemotherapy and the nutritional status of the cancer patients undergoing chemotherapy in RSUP Sanjuwati Denpasar	There is a strong, meaningful negative correlation between the frequency of chemotherapy and the nutritional status of a cancer patient expressed with the increasing frequency of chemotherapy, the lower the nutritional status of the patient and the opposite.
Christina Ruslany, Tengku Muhammad Fauzi,Irene Damanik	Analisis Faktor-Faktor yang Mempengaruhi Kecemasan Pada Pasien Ca Mammae yang Sedang Melakukan Tindakan Kemoterapi	2019	The frequency of chemotherapy is closely related to anxiety in patients with ca mammae undergoing chemotherapy. And also had the most impact on the first chemotherapy frequency because	There is a link between exposure to cigarette smoke and nutrition status and the occurrence of pneumonia in toddlers.

138

			patients imagined the chemotherapy effect they had received from theinformation.	
Dian Ayu Juita, Almahdy, Rizka Afdila	Penilaian Kualitas Hidup Terkait Kesehatan Pasien Kanker Payudara di RSUP Dr. M. Djamil Padang, Indonesia	2019	Patients would not suffer a significant decline in their general health status if they had previously received information about what to expect during chemotherapy.	Health-related life quality (HRQO) patients with breast cancer who undergo chemotherapy in RSUPDr. M. Djamil Padang are medium. The domains that impact high in the quality of life for breast cancer patientsare cognitive functionand diarrhea symptoms, while the domains that lead to low quality of life are the domains of social function and nausea and vomiting.
Hendrayati, Chaerunni mah, Mustamin, Ahmad Dinul Islam	Dampak Kemoterapi terhadap Status Gizi Berdasarkan Subjective Global Assesment (SGA) pada Pasien Kanker Payudara (Ca.Mamae)	2022	Data analysis shows that there is no real correlation between chemotherapy to the nutritional status using SGA. (value p-value 0.605) this suggeststhat chemotherapy does not affect nutrition status based on SGA.	The study has shown that some elements rated in SGA such as food intake, bb changes risk conditions for a malnourished disorder in which average intake is underdeveloped and abnormal nutrition status is still high.
Erma Galuh Sofiani, Setyaningrum Rahmawaty	Tingkat Pengetahuan Gizi Asupn Energi-Protein dan Status Gizi Pasien Kanker Nasofaring yang Mendapatkan	2018	The resulting correlation with rank spearman indicates that there is a connection between energy intake and the patient's nutritional status (p= 0036), but not to a level of nutrition knowledge and protein intake with nutritional status (p= 0,036).	There is a link between energy intake and nutrition status, and there is nolink between knowledge and protein intake and carbon-neophyte cancer patients who receive chemotherapyin RSUD Dr Moewardi Surakarta.
Endang Sri Wahyuni	Hubungan Karakteristik dan Asupan Zat Gizi dengan Status Gizi Penderita Kanker yang Menjalani Kemoterapi	2020	The type of cancer is associated with IMT, but the age, the frequency of chemotherapy, the duration of chemotherapy, the status of nutrition counseling, and the intake of nutrients are not related to IMS.	There is a meaningful correlation between a type of cancer and nutritional status and no meaningful relation between the age, frequency of chemotherapy, duration of chemotherapy, duration of chemotherapy, nutrition

139

				counseling status, energy intake, protein, fat, carbohydrate, zinc, and vitamin c with nutritional status.
Agus Santosa, Sri Mulatsih, Susetyowati	Identifikasi Risiko Malnutrisi dan Evaluasi StatusNutrisi Pasien Kanker Anak dengan Pengobatan Kemoterapi	2019	The risk of malnutrition affects less energy intake, less protein intake, less weight loss >2%, lower nutrition status based on IMT/u, and longer hospitality. patients with the risk of malnutrition are at 15.5 times greater to less energy intake; 6.12 times greater in less protein intake; and 45.3 times more affected by weight loss >2% compared with the group of patients not at risk of malnutrition.	Patients with a significant risk of malnutrition have less energy and protein intake, more than 2% weight loss, less nutrition status based on IMT/u, and more hospitalization.
Ni Nyoman Astika Dewi, I Made Dony Aryawan	Frekuensi Kemoterapi dapat Menurunkan Asupan Zat Gizi dan Status Gizi pada Pasien Kanker Payudara di Ruang Perawatan KelasIII RSUP Sanglah Denpasar	2017	There is no meaningful correlation between the frequency of chemotherapy and the nutritional status of breast cancer patients	The frequency of chemotherapy has nothing to do with the sample's nutritional status.
Feliks Hendrikja yanto Laoli, Tri Wahyuni Ismoyowa ti	Kondisi Fisik Post Kemoterapi dan Self Efficacy Pasien Kanker di Rumah Sakit Bethesda Yogyakarta	2022	P-value (0,301) > > application (0.05) and h0 accepted means no physical condition of the post of chemotherapy with a self-prescription on a cancer patient at Bethesda Yogyakarta arta hospital in 2021.	There's no link between the chemotherapy post-doc's physical condition and self- literacy.
Niken Yunia Rifqi, Nur Rahman, Endang Widajati	Pemberian Konseling Gizi Terhadap Tingkat Pengetahuan Diet Kanker, Tingkat Konsumsi (Energi, Protein, Vitamin C) PadaPasien Kanker Payudara Dengan Kemoterapi Di Kota Malang	2022	Administering nutrition counseling can significantly affect the knowledge level of the cancer diet, energy consumption levels, proteins, and vitamin c.	There are significant effects between administering nutrition counseling on cancer diet knowledge, energy consumption levels, protein consumption levels, and vitamin c consumption levels of breast cancer patients.

4   DISCUSSIONS

This literature review describes the published evidence on the associated factors between nutritional status and chemotherapy patients. In summary, the results of our analysis show that the frequency of chemotherapy significantly impacts the nutritional status of cancer patients, which is closely related to the patient's physical condition and food intake. Other factors affect the nutritional status of the patient. Treatment, anxiety level, income, occupation, culture, and other factors.

The Relationship between Chemotherapy Frequency and Nutritional Status

The frequency of chemotherapy is also very influential on the nutritional status of cancer patients because of the side effects that make a patient experience no appetite, nausea, and vomiting. From the research results, two's results found that the respondents given were mostly women (60%) with an average age of 40-60 years (63.7%). According to the Ministry of Health, the most common cancer in women is breast cancer, and the most common in men is lung cancer. In addition, most cancer respondents were mostly at stage III (53.8%). A lack of awareness about early-stage cancer knowledge, so most people realize it when they enter an advanced stage.

The Relationship between Anxiety in Cancer Patients and Chemotherapy

The results of this study3 refer to the relationship between anxiety in cancer patients and chemotherapy in cancer patients. Age greatly affects a person's level of anxiety, especially in the elderly, where at that age, a psychological decline creates excessive anxiety in cancer patients. Furthermore, the relationship between a person's work and education is also very influential on a person's level of anxiety because of the lack of knowledge of chemotherapy itself. In addition, the frequency and level of the stage also affect the patient's anxiety because the higher the stage of a person's cancer, the more the frequency of chemotherapy, which affects the anxiety level of cancer patients.

Relationship between Quality of Life of Cancer Patients and Nutritional Status

Quality of life can be related to one's role in life in the surrounding environment. a problem that until now is feared by many people, especially cancer

patients with chemotherapy, because after a series of chemotherapy, the body experiences a decrease in body and social functions. The significantly relates to a person's role in the surrounding environment. When a person has experienced a decrease in body function will decrease endurance, memory loss, and post-chemotherapy effects such as nausea, vomiting, and diarrhea. Judging from diarrhea itself can reduce a person's nutritional status. a decrease in bowel function in patients undergoing chemotherapy, so patients need additional fiber to recover.

The Relationship of Nutritional Status Research Using SGA Indicators

Data processing from the results of this study used the Fisher's Exact test intending to know the relationship between chemotherapy and nutritional status based on the Global Subjective Assessment (SGA) in cancer patients. This study found that the frequency of chemotherapy had no impact on nutritional status with SGA indicators but had a significant relationship with weight loss.

Relationship between Nutrient Intake and Nutritional Status

The results of this test indicate that BMI has nothing to do with the intake of energy, protein, fat, carbohydrates, zinc, and protein. Some nutritional disorders can arise in cancer patients due to lack of food intake, medical action, psychological effects, and the influence of the cancer stage. The type and stage of cancer can cause metabolic and physiological changes that can affect nutritional needs. Another factor that can affect nutritional deficiencies in cancer patients with chemotherapy is the side effects of chemotherapy itself, such as reduced appetite, early satiety, nausea, vomiting, and intestinal tract disorders. The exacerbated when the patient is malnourished so that it can affect the immune system and slow down the recovery period.

According to the researcher's assumptions, based on the description of the initial response of the patient who was happy, friendly, eager to recover, and believed in treatment, it could be a factor that had no relationship to the results of this study. Then there are respondents with different levels of education who may hide their feelings when taking data. The amount of chemotherapy different respondents has undergone can also be another factor that has no relationship because it makes respondents not homogeneous. Another assumption from the researcher is that the post-chemotherapy

physical condition experienced by most respondents is in the mild category, which makes respondents still able to tolerate the side effects that are felt after chemotherapy and are only felt for three to five days. Then respondents who have often undergone chemotherapy will consider this physical condition normal without disturbing their self-efficacy. Evidenced by the fact that there is no relationship between post-chemotherapy physical condition and self-efficacy in cancer patients.

The researchers hypothesized that this might be a factor unrelated to the results of this study, based on the initial reactions of patients being happy, kind, cured, and trusting in treatment. We then had respondents with varying education levels who could hide their emotions when collecting data. The amount of chemotherapy received by different respondents did not homogenize the respondents and, therefore, may not depend on other factors. Another assumption the researcher made was that the patient's physical condition after chemotherapy, most of the respondents were in the mild category, and the respondents reported side effects that were felt after chemotherapy, with three only one that could be felt but five were tolerable—day to day. Respondents who often undergo chemotherapy view this physical condition as normal without affecting their self- efficacy. This is evidenced by the fact that there is no relationship between well-being after chemotherapy and self-efficacy in cancer patients.

5 CONCLUSIONS

This study shows that chemotherapy significantly impacts the nutritional status of cancer patients, seen from several factors such as the type of cancer, stage of cancer, the frequency of chemotherapy, and the side effects of chemotherapy that cause a decrease in the nutritional status of cancer patients. In addition, other factors do not affect the decline in nutritional status, namely age, gender, and energy intake.

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