




## Optimizing nutritional education to improve quality of life in cancer patients

Tintin Sukartini, Asroful Hulam Zamroni<sup>✉</sup>, Navy Sealsi Adinda Prisca Marina, Alfi Syahri, Fachril Ismail, Tadi, Azka Qothrunnadaa, Yulmira Maria Tisel, Albertina Dete Tabik, Johaness Eban B. Dorman, Elvi Kurnia Damayanti  
Universitas Airlangga, Surabaya, Indonesia

<sup>✉</sup> asrofulzamroni@gmail.com

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### Abstract

Cancer remains a major contributor to morbidity and mortality globally. The disease itself and its treatments often lead to significant challenges that negatively impact patients' quality of life. The objective of this community service initiative was to enhance the knowledge and understanding of cancer patients regarding their nutritional needs through a focused educational program. The method employed was a health education approach that included demonstrations. The activity involved 30 cancer patients, all over 18 years of age, who were undergoing radiotherapy or chemotherapy. The results showed a significant improvement in the participants' quality of life, specifically in their knowledge and understanding of nutrition. The pre-intervention score of 50% increased to 87.3% post-intervention, representing a 37.3% improvement. This demonstrates that the application of education on nutritional management can effectively improve patients' nutritional status. A good nutritional status is expected to enhance the overall quality of life for cancer patients undergoing medical treatment, as they are better equipped to implement nutritional management strategies in line with their health conditions and medical recommendations.

**Keywords:** Cancer; Health education; Nutritional status; Quality of life

## Optimizing nutrition status management education to improve the quality of life of cancer patients

### Abstrak

Kanker menjadi penyebab utama morbiditas dan mortalitas di seluruh dunia. Prognosis dan pengobatan kanker sering kali menimbulkan masalah yang berdampak negatif pada kualitas hidup pasien. Tujuan dari kegiatan pengabdian masyarakat ini adalah untuk meningkatkan pengetahuan dan pemahaman pasien kanker mengenai kebutuhan gizi melalui edukasi. Metode yang digunakan dalam kegiatan ini adalah pendekatan edukasi kesehatan melalui demonstrasi. Kegiatan ini diikuti oleh 30 pasien kanker berusia di atas 18 tahun yang sedang menjalani pengobatan radioterapi atau kemoterapi. Hasil yang diperoleh menunjukkan adanya peningkatan kualitas hidup, khususnya dalam aspek pengetahuan dan pemahaman terkait edukasi yang diberikan. Peningkatan ini mencapai 37,3%, dari skor awal 50% menjadi 87,3%. Hal ini membuktikan bahwa penerapan edukasi mengenai manajemen gizi dan status gizi dapat secara efektif meningkatkan status gizi pasien. Dengan demikian, status gizi yang baik diharapkan dapat meningkatkan kualitas hidup pasien kanker yang sedang menjalani pengobatan medis dan memungkinkan mereka untuk mengimplementasikan manajemen status gizi sesuai dengan kondisi serta rekomendasi medis.

**Kata Kunci:** Kanker; Edukasi kesehatan; Status gizi; Kualitas hidup

Contributions to  
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# 1. Introduction

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Cancer is the leading cause of death worldwide, characterized by abnormal and pathological cell growth (Takoli & Carannante, 2021). Based on the Global Cancer Observatory (GLOBOCAN) 2020 data, there were more than 19 million new cancer cases with a death rate of 10 million cases. According to data from the World Health Organization, the number of cases is estimated to reach 20 million worldwide, with a death toll of 9.7 million (Global Cancer Observatory, 2022). Basic Health Research in 2018 stated that the cancer prevalence rate in Indonesia continues to increase until it reaches 1. per 1000 population in 2013 to 1.8 per 100 population in 2018. East Java is ranked 6th in the case of death due to Cancer, Heart, Stroke, and Uronefro (KJSU) in Indonesia. Although specific data for 2024 are not yet available, the trend of increasing cancer prevalence in East Java from previous years indicates the need for special attention to cancer prevention, early detection and treatment efforts (Andinata et al., 2023). In addition to the physical impact of cancer itself, cancer treatments such as chemotherapy, radiotherapy, and surgery often disturb the nutritional status of patients (Sari & Nurafriani, 2024).

The partners in this community service activity are cancer patients undergoing treatment, such as chemotherapy and radiotherapy, and their accompanying families. Most of these patients come from out of town and stay temporarily in a shelter provided by the Indonesian Cancer Foundation during the therapy process in Surabaya. During treatment, patients often experience various physical problems as side effects of therapy, such as nausea, vomiting, decreased appetite, and fatigue. This condition has a direct impact on decreased nutritional intake and is at risk of causing malnutrition, which, in turn, can reduce the effectiveness of treatment and the patient's quality of life. The results of the observations showed that the knowledge of patients and companions regarding nutritional management during therapy was still low. Therefore, collaboration is needed in the form of community service activities through a nutritional management education program that aims to increase the knowledge, awareness, and skills of patients and companions in meeting nutritional needs appropriately to support the success of therapy and improve the quality of life.

Cancer remains a major contributor to morbidity and mortality worldwide (Bray et al., 2024). The most common types of cancer include lung, breast, colorectal, and prostate cancers, which often require comprehensive and integrated treatment approaches (Schaefer et al., 2022). Cancer is often diagnosed when it has spread or is already in an advanced state (metastasis) and involves a complex system between molecules and organs, causing several manifestations or complex nursing problems due to the effects of the disease or therapeutic treatment (Rinninella et al., 2020).

Various treatment methods have been developed to treat cancer, including surgery, chemotherapy, radiotherapy, targeted therapy, and immunotherapy (Liu et al., 2024). Chemotherapy uses drugs to kill or inhibit the growth of cancer cells, whereas radiotherapy uses radiation to destroy cancer cells (Kaur et al., 2023). The combination of these two methods is often used to improve the effectiveness of treatment, especially in cases of cancer that have reached an advanced stage. However, cancer treatment is not without its challenges, including significant side effects (Rock et al., 2020).

One of the physical impacts on cancer patients is disruption of the gastrointestinal system, such as nausea, vomiting, mucositis, diarrhea, and constipation, which can reduce food intake/malnutrition (Matos et al., 2024). Chemotherapy and nutritional status in cancer patients have a positive reciprocal relationship (Sato et al., 2022). Antitumor substances produced during chemotherapy stimulate nausea and vomiting receptors in the hypothalamus. Chemotherapy in cancer patients causes nausea and vomiting. In contrast, chemotherapy works well with good nutrition (Sheas et al., 2023). Nutritional status is an indispensable part of cancer patients in preparation for the next chemotherapy and can reduce the risk of complications due to cancer treatment. However, it is not uncommon for patients with cancer and adequate nutritional intake to experience weight loss due to hypermetabolism (Nguyen et al., 2023). Cancer patients require good nutrition to help increase body nutrition which affects cancer patients, thereby helping to improve the quality of life, reduce fatigue, improve appearance status, increase body mass, help the success of subsequent treatment, and increase the immune system in the body (Rahmawati et al., 2024).

In addition to pain, nutritional issues are an important concern in the management of patients with cancer. Side effects of treatment, such as nausea, vomiting, loss of appetite, and dysphagia, can lead to a significant decrease in nutritional intake (Katta et al., 2022). Malnutrition in patients with cancer not only worsens their physical condition but can also reduce the effectiveness of treatment and increase the risk of complications. Drastic weight loss and deficiencies in essential nutrients often negatively impact the body's ability to fight cancer, necessitating appropriate nutritional interventions (Cancer Council Australia, 2022).

Therefore, the implementation of community service activities at cancer foundations that focus on nutritional management and education plays a very important role in supporting the recovery and welfare of cancer patients. Nutrition education and counselling (NEC) programs have been shown to reduce malnutrition rates in patients with cancer. In a study (Zhang et al., 2022), patients who received NEC had lower malnutrition rates and better nutritional status than those who received usual care. By providing a comprehensive understanding of proper nutrition information education, patients are expected to be able to implement a better healthy lifestyle independently, so that their quality of life improves and the opportunity to achieve more optimal treatment results increases (De Felice et al., 2025). This activity not only impacts the physical health aspect but also significantly improves the psychological and emotional state of the patient, which is indispensable in the long journey of fighting cancer (Salas et al., 2022).

## 2. Method

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This community service is an agenda carried out from the mandatory activities of Master of Nursing students specializing in medical surgical nursing. The lecture was held at the Indonesian Cancer Foundation East Java Branch Shelter House, along with role-play pain management, autogenic relaxation, and nutritional education. It will be held on Wednesday, 13 November 2024 from 15.30 to 17.00 WIB. This community service was attended by 30 cancer patients who were undergoing chemotherapy and radiation. Education and roleplay were carried out with two presenters and one person as a committee to become a model in roleplay activities. This activity was also opened directly by representatives of officers from the shelter and continued with the provision

of a pre-test before the education took place and post-test work after the role play. The session was completed in 50 minutes using PPT media and educational media leaflets that could be read directly by patients and caregivers.

### 3. Results and Discussion

Community service includes health education on pain management and nutritional status in cancer patients undergoing chemotherapy and radiotherapy. This community service was conducted at the Indonesian Cancer Foundation's Shelter House. Cancer patients who participated in this educational activity received pain management materials in the form of autogenic and bright relaxation related to the nutritional management of cancer patients. Nutrition management is provided through health promotion in the form of education using the lecture method.

Education was provided through the presentation of material using PowerPoint and leaflets containing materials. Nutrition management is provided with material in the form of nutritional needs, how to fulfil nutrition, and how to store and manage safe meals for cancer patients who are undergoing therapy or medical treatment. The material was provided by representatives of medical surgical nursing students through literature study and supervisor consultation.



Figure 1. Community service activities

Figure 1 illustrates the educational activities conducted for the community service participants. On the left side of the image, there is a session for delivering material on nutrition management delivered in the form of a lecture by a student representative, namely, AHZ, Asroful Hulam Zamroni, as the speaker. This session was followed enthusiastically by the participants, who appeared to be seriously paying attention to the explanations given. Meanwhile, on the right side of Figure 1, there is a question-and-answer session, which was guided and answered directly by the speaker. The enthusiasm of the participants was high, as evidenced by the number of questions asked; 10 participants actively asked questions during the session.

Figure 2 shows the implementation of the pre-test given to participants before the educational session began, as well as the post-test conducted after the entire series of education was completed. The pre-test aimed to measure participants' initial knowledge of nutritional management, while the post-test was used to evaluate the increase in participants' understanding after attending the educational session, role play, and Q&A.

Participants in educational activities take a pre-test that must be done first. Education was provided by the presenters in parallel, after which the lecture continued with roleplay and a question-and-answer session. Educational participants are also required to fill out a post-test at the end of the activity session. Based on this community service activity, it was found that the results of the pre-test before being educated were 50% knowledgeable, and after being educated, the community service participants experienced an increase in knowledge to 87.3% related to nutrition and nutrition status management.

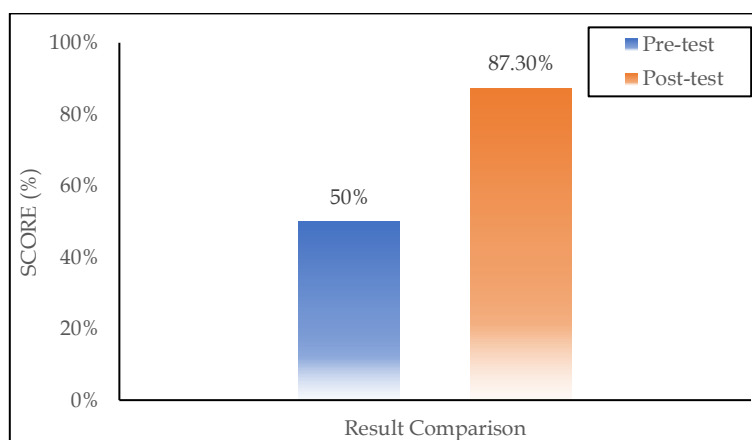


Figure 2. Participant knowledge improvement diagram

Education on nutritional management is a very important and strategic aspect of efforts to improve the quality of life of patients with cancer during therapy. The physical condition of patients with cancer often experiences significant changes due to the side effects of treatments such as chemotherapy and radiotherapy, which can cause appetite disorders, nausea, vomiting, and weight loss, which are at risk of malnutrition. With proper and structured education, patients are expected to understand their specific nutritional needs according to their condition so that they can manage their nutritional intake optimally to support the healing process and reduce the risk of complications. [Rahmwati et al. \(2024\)](#) showed that the implementation of health education focused on nutritional management can significantly increase the knowledge of cancer patients, from an initial low level of knowledge of 40% to a good category with a value of  $\geq 75\%$ . This increase in knowledge is crucial for patients to implement appropriate dietary and nutritional management, which ultimately plays an important role in preventing nutritional complications, minimizing the side effects of therapy, and improving their quality of life during and after cancer therapy.

Lecture-based education is an effective method for improving knowledge of nutrition management in patients with cancer because of its systematic and structured delivery ([Mengesha et al., 2024](#)). The lecture method allows for a comprehensive presentation of materials so that all important aspects related to nutritional needs and management can be conveyed consistently to participants. This consistency of delivery is crucial in ensuring that the information provided is accurate and uniform, considering the vulnerability of cancer patients to malnutrition during therapy. In addition, the use of supporting media, such as presentations and leaflets, improves understanding and makes it easier for participants to remember the material. The implementation of interactive elements during lectures, such as question-and-answer sessions, also plays an important role in increasing participant engagement and deepening their



understanding of proper nutrition management. Lectures can accommodate the various learning styles of patients and caregivers, both those who are more active in seeking information and those who require direct explanation. Furthermore, the combination of lectures with active learning methods and nutritional counselling support can strengthen participants' practical skills in managing a diet appropriate for the condition of cancer patients. Thus, lecture-based education supported by an interactive approach and relevant materials is very effective in increasing participants' knowledge and awareness, which ultimately contributes to improving the nutritional status and quality of life of cancer patients during therapy.

Cancer patients who undergo chemotherapy generally experience a significant decrease in appetite and weight, primarily due to the adverse effects of chemotherapeutic agents on the gastrointestinal system and metabolic processes (Dan et al., 2024). These physiological changes often result in symptoms such as nausea, vomiting, mucositis, dysgeusia (altered taste), and early satiety, which collectively contribute to reduced food intake and an increased risk of malnutrition. Moreover, the catabolic state induced by cancer itself, coupled with the metabolic demands of treatment, places patients at a higher risk of experiencing progressive nutritional deficiency (Kiani et al., 2022).

Adequate nutritional status plays a vital role in maintaining physiological resilience, enhancing immune function, and improving overall health and treatment outcomes in patients with cancer. Patients with optimal nutritional intake are better equipped to tolerate therapy, recover from treatment-related side effects, and maintain physical strength and psychological well-being. Conversely, malnutrition is associated with a cascade of adverse outcomes. It exacerbates the risk of opportunistic infections due to impaired immune response, delays wound healing post-surgery, increases the toxicity of chemotherapeutic drugs, and necessitates dose reductions or treatment interruptions, thereby compromising the efficacy of cancer therapy. Furthermore, malnourished patients tend to experience longer hospital stays, more frequent readmissions, and higher overall health care costs (Hadiyati et al., 2021).

The challenges faced by cancer patients in maintaining nutritional status are complex (Ghias et al., 2023). Patients undergoing chemotherapy generally experience decreased appetite and weight due to the side effects of treatment and metabolic disorders that occur during the disease process and therapy. Nutritional deficiencies experienced by patients are a combination of disease and treatment factors that can worsen their overall health. Malnutrition negatively impacts various aspects of a patient's life, including an increased risk of infection, slow wound healing, and increased drug toxicity, which directly prolongs hospitalization and increases healthcare costs. Therefore, these challenges must be addressed with the right nutritional approach and adequate educational support.

Community service focused on nutrition management education has a positive impact on the quality of life of patients undergoing chemotherapy by helping them cope with various side effects of treatment, such as decreased appetite, nausea, and fatigue (Wang et al., 2022). Through counselling on the importance of a healthy diet and choosing nutritious foods, patients can understand how to increase their energy and endurance, which greatly supports the recovery process (Ceylan, 2023). In addition, this education helps prevent malnutrition, strengthens adherence to treatment, and provides psychological support that can reduce anxiety, so that patients feel more in control and are more involved in their care (Tang et al., 2023). Thus, this service contributes to

improving the physical and mental conditions of patients and their quality of life during chemotherapy.

## 4. Conclusion

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Educational activities related to nutritional status have been proven to increase knowledge in patients with cancer undergoing treatment. It is hoped that with increased patient knowledge and understanding, the nutritional needs of cancer patients can be met. Nutrition and nutritional status education has a wide impact on the quality of life of patients with cancer, both physically, psychologically, and socially. A better understanding of nutrition allows patients and their families to support the treatment process more effectively, reduce complications, and improve overall well-being. Therefore, nutrition education programs must be an integrated part of the care of patients with cancer, tailored to individual needs, and supported by competent health professionals. Thus, good nutritional status is expected to improve the quality of life of cancer patients undergoing medical treatment and can implement nutritional status management in accordance with medical conditions and recommendations.

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## Author Contribution

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Supervisor: TS; Preparation of articles and presentation of service results: AHZ, NSAPM; Implementers of activity documentation: AQ, YMT; Education implementers: AHZ, T, FI, AS; Pre- and post-test implementers: ADT, JEBD, EKD.

## Conflict of Interest

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All authors declare that there are no financial or non-financial conflicts of interest related to this study.

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