



The Effect of Tiktok-Based Nutrition Education on Knowledge and Intake of Nutrients Among Female Cancer Patients at RSI Siti Khadijah Palembang

Pengaruh Edukasi Gizi Menggunakan Tiktok Terhadap Pengetahuan, Asupan Zat Gizi Pada Wanita Penderita Kanker Di RSI Siti Khadijah Palembang

Maulidya Rosevia Rizki Utami¹, Afriyana Siregar^{1*}, Eliza¹, Susyani¹, Muzzakar¹, Sakinah Harith²

¹Poltekkes Kemenkes Palembang, Palembang, Sumatera Selatan, Indonesia.

²Nutrition & Dietetics Programme, Faculty of Health Sciences, Universiti Sultan Zainal Abidin, Kuala Nerus, Terengganu, Malaysia.

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***Correspondent:**

Afriyana Siregar

afriyana@poltekkespalembang.ac.id

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ABSTRACT

Background: Cancer patients are at high risk of malnutrition due to metabolic changes, decreased food intake, and side effects of cancer treatment. Nutrition education through social media such as TikTok may improve patients' knowledge and dietary intake. **Objective:** To analyze the effect of nutrition education through TikTok media on changes in knowledge and intake of macronutrients among cancer patients. **Methods:** This study was a quantitative study with a quasi-experimental design using a two-group pretest-posttest approach. A total of 60 subjects were divided into an intervention group and a control group, with 30 subjects in each group. The intervention group received nutrition education through TikTok videos. Normality was tested with Shapiro–Wilk. Knowledge, energy, and carbohydrate intakes were analyzed with the Wilcoxon test; protein and fat with Paired t-tests. Multivariable analysis used multiple linear regression. **Results:** The intervention produced significant increases in knowledge, energy, carbohydrate, and protein intake ($p < 0.001$) and in fat intake ($p = 0.032$). Vitamin A, C, and E intakes showed no significant change. Multivariate analysis confirmed significant effects of the TikTok intervention on knowledge, protein intake, and carbohydrate intake. **Conclusion:** TikTok-based nutrition education shows potential in supporting improvements in nutritional knowledge and macronutrient (protein and carbohydrate intake) among cancer patients

INTRODUCTION

Cancer is a disease characterized by uncontrolled growth of abnormal cells that can invade and spread to other tissues or organs of the body (Ningrum & Rahayu, 2021). As one of the non-communicable diseases, cancer typically develops slowly over a relatively long period and is generally chronic in nature (Rifqi et al., 2022). The global burden of cancer continues to increase; according to the World Health Organization, cancer-related deaths

rose from 7.6 million in 2008 to 9.6 million in 2018. Although cancer remains a major public health challenge, approximately 30%–50% of cases are considered preventable. In Indonesia, the Global Cancer Observatory (GLOBOCAN) 2022 reported 408,661 new cancer cases, 242,988 cancer-related deaths, and 1,018,110 prevalent cases within the past five years. At the local level, cancer remains an important health problem in South Sumatra. Hospital records from RSI Siti Khadijah Palembang also



indicate a substantial number of cancer cases, with 973 cases in 2015, 465 cases in 2016, and 529 cases in 2017.

Nutritional problems are common among cancer patients, particularly those undergoing chemotherapy. Gastrointestinal disturbances and taste changes often reduce appetite and make it difficult for patients to meet their nutritional needs (Regyna et al., 2021). Reduced appetite caused by chemotherapy effects and inflammation may lower macronutrient intake and, if prolonged, contribute to poor nutritional status (Regyna et al., 2021). Weight loss and appetite decline often appear at diagnosis and become more frequent in advanced cancer stages, especially stages III and IV (Molfino et al., 2023). More recent observations in the oncology outpatient clinic of RSI Siti Khadijah showed that most cancer patients experienced inadequate macronutrient intake, and more than half also had insufficient intake of vitamins A, C, and E during December 2025 to January 2026.

Nutrition education is therefore an important component of cancer care. Patients with cancer need not only a high-energy, high-protein diet, but also sufficient vitamins A, C, and E intake, as antioxidants may help inhibit cancer cell growth and proliferation (Annistri et al., 2024). Limited nutritional knowledge may also contribute to reduced dietary intake, even when high-energy, high-protein recommendations are provided (Alifa & Ahmi, 2025). For this reason, effective educational strategies are needed to improve patients' understanding of nutrition and support better dietary practices during treatment.

One modern approach to nutrition education is the use of social media, particularly TikTok. TikTok is a popular audio-visual platform across age groups because it delivers messages in engaging and memorable formats through content that can be seen and heard (Pamilasari et al., 2022). Although it is commonly associated with adolescents, many adults also use Tiktok (Yusdi et al., 2021). Previous research has shown that TikTok-based nutrition education can improve nutritional knowledge significantly after intervention, suggesting that the platform may be an

effective medium for health promotion (Pamilasari et al., 2022).

Based on this background, the present study aims to determine "The effect of TikTok-based education on cancer patients' nutritional knowledge as well as their macro- and vitamins A, C and E intake at RSI Siti Khadijah Palembang." By utilizing a widely accessible and engaging social media platform, this intervention is expected to improve patients' understanding of nutrition and support better dietary intake during treatment and recovery.

METHODS

This study was a quantitative study using a quasi-experimental design with a two-group pretest-posttest approach. It involved two groups, namely an intervention group that received nutrition education through TikTok and a comparison group that did not receive the intervention. This design was used to determine the effect of TikTok-based nutrition education on changes in knowledge and intake of macronutrients and vitamins A, C, and E among cancer patients.

The population of this study consisted of all adult (age 19-72 years old) cancer patients receiving treatment at the oncology outpatient clinic of RSI Siti Khadijah Palembang, and the study was conducted under Research Ethics Approval No. 117/KEPK/Adm2/VII/2025. The sample size was determined using a sample size calculation performed prior to the study. The sample was selected using purposive sampling from cancer patients who met the predetermined criteria. The inclusion criteria were cancer patients receiving treatment at the oncology outpatient clinic of RSI Siti Khadijah Palembang, patients who were able to use a smartphone and had access to the TikTok application, and patients who were willing to participate and signed informed consent. The exclusion criteria were patients with impaired cognitive function or severe psychological conditions, patients in critical condition or unable to participate in the education session, and patients who refused to participate in the study. Patients who owned a smartphone and had a TikTok account were

assigned to the intervention group, whereas those who did not were assigned to the control group.

The study was conducted from December 2025 to January 2026 at RSI Siti Khadijah Palembang, specifically among cancer patients receiving treatment at the oncology outpatient clinic. Data were collected using a pretest and posttest knowledge questionnaire on cancer and nutrition that had been validated by a nutrition expert, a 24-hour food recall form for non-consecutive 3 days, validated by a nutrition expert to measure intake of energy, protein, fat, carbohydrates, and vitamins A, C, and E, nutrition education videos delivered through TikTok that were developed based on effective visual communication principles and health promotion theory and validated by an IT expert and a nutrition expert, a participation form to record the number and duration of videos watched by the subjects, and the NutriSurvey application to analyze dietary intake data. The instrument achieved a score of 0,96 based on expert evaluation, indicating excellent results. A video with a duration of 3 minutes and 19 seconds was administered twice weekly over a two-week period, whereas the control group received no intervention.

The data (Knowledge, Intake of Energy, Protein, Fat, Carbohydrate, Vitamin A, Vitamin C, and Vitamin E) were first tested for normality using the Shapiro-Wilk test. Protein and fat intake were analyzed using the paired-sample t-test, while knowledge, energy intake, carbohydrate intake, and vitamins A, C, and E intake were analyzed using the Wilcoxon test. Variables that showed significant results after the paired-sample t-test and Wilcoxon test were then further analyzed using multiple linear regression to examine the association between TikTok-based nutrition education and outcome changes, while adjusting for baseline scores and prior exposure to nutrition education. The level of significance was set at $p < 0.05$.

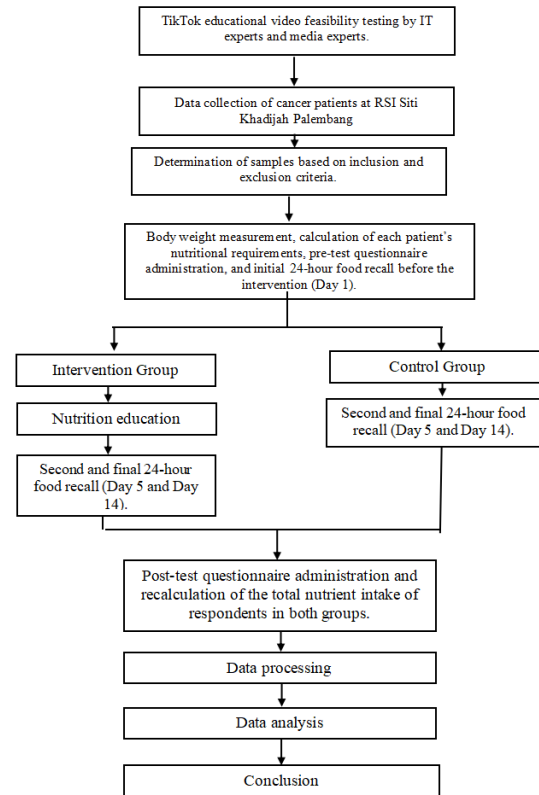


Figure 1. Research Procedure

RESULTS AND DISCUSSION

A. Characteristic of Subjects

The following table presents the frequency distribution of subjects' characteristics in this study.

Based on Table 1, most subjects were in the 45–59 years age range, with 27 individuals (45%), indicating that the majority of subjects were classified as pre-elderly, although this finding differs from Sulviana & Kurniasari, (2021) who found a higher proportion of cases in the 18–40 years age group ($p = 0.003$), possibly due to differences in sample characteristics and cancer types. The higher risk of cancer in older age is associated with cumulative exposure to carcinogens and decreased immune function over time (Cempaka et al., 2024).



Table 1. Frequency Distribution Based on Subjects' Characteristics.

Characteristic of Subjects		Group			
		Intervention (n=30)		Control (n=30)	
		n	%	n	%
Age	Adults	10	33.3	7	23.3
	Pre-elderly	12	40	15	50
	Elderly	8	26.7	8	26.7
Sex	Woman	30	100	30	100
Education Level	Low	7	23.3	11	36.7
	Medium	11	36.7	11	36.7
	High	12	40	8	26.7
Access to Education through Printed Media	Ever	1	3.3	7	23.3
	Never	29	96.7	23	76.7
Access to Education through Electronic Media	Ever	13	43.3	15	50
	Never	17	56.7	15	50
Access to Education through Social Media	Ever	11	36.7	15	50
	Never	19	63.3	15	50
Access to Education through other people	Ever	22	73.3	20	66.7
	Never	8	26.7	10	33.3
Nutritional Status	Mild Thinness	1	3.3	1	3.3
	Severe Thinness	3	10	1	3.3
	Normal	16	53.3	18	60
	Overweight	6	20	3	10
	Obesity	4	13.3	7	23.3
Type of Cancer	Anorectal	0	0	1	3.3
	Anal	0	0	1	3.3
	Leukemia	0	0	3	10
	Breast	28	93.3	18	60
	Nasopharyngeal	0	0	1	3.3
	Lung	0	0	1	3.3
	Cervical	0	0	3	10
	Thyroid	1	3.3	0	0
	Colon	1	3.3	2	6.7

Based on Table 1, most subjects were in the 45–59 years age range, with 27 individuals (45%), indicating that the majority of subjects were classified as pre-elderly, although this finding differs from Sulviana & Kurniasari, (2021) who found a higher proportion of cases in the 18–40 years age group ($p = 0.003$), possibly due to differences in sample characteristics and cancer types. The higher risk of cancer in older age is associated with cumulative exposure to carcinogens and decreased immune function over time (Cempaka et al., 2024).

Based on the sex distribution, all subjects were female, with 60 individuals (100%). The dominance of female subjects is likely due to most participants being breast cancer patients, which is more commonly found in women, and this is also supported by Wahyuni et al., (2021), who reported a similar female-dominated sample. The higher susceptibility of women to cancer may be associated with lifestyle factors such as unhealthy dietary patterns, high-fat intake, and elevated levels of estrogen and progesterone, which may promote cancer development (Indrati, 2005 in Wahyuni et al., 2021). The inclusion of only female participants represents a limitation of this study, as the findings may not be generalizable to male cancer patients.

Based on Table 1, the intervention group was dominated by higher education (12 individuals, 40%), while the control group was mainly composed of low to middle education levels (11 individuals, 36.7% each). This indicates differences in respondent characteristics that may influence the ability to understand the intervention. Overall, both groups were mostly in the middle to higher education category, which is consistent with Cempaka et al., (2024) stating that higher education is associated with better access to screening and early cancer detection. However, this finding differs from Husnah et al., (2024) and Sulviana & Kurniasari, (2021), who reported that most cancer patients had low education levels, which may contribute to delayed diagnosis due to limited symptom awareness.

Based on the findings, most subjects had never been exposed to nutrition education through media sources. For printed media, almost all subjects (52 individuals, 86.6%) had never received nutrition education through printed media. For electronic media, the majority of had never been exposed (32 individuals, 53.3%). For social media, 34 individuals (56.6%) had never been exposed to nutrition education. Overall, most subjects had limited access to nutrition education from printed, electronic, and social media, likely due to limited access, with information more commonly obtained from family, peers, and health workers. This finding is consistent with Pratamawati, (2024) who stated that digital literacy plays an important role in cancer outcomes through improved knowledge and healthy dietary practices, while limited exposure to nutrition education may reduce nutritional literacy and contribute to unbalanced dietary intake, potentially worsening cancer conditions.

Based on the findings, most subjects (42 individuals, 70%) had previously received nutrition education from other people, including family members, peers, or health workers. This finding is consistent with Pertiwi et al., (2025) who reported that most cancer patients had received nutrition education from health professionals, friends, or relatives.

Based on the findings, 34 individuals (56,6%) had a normal nutritional status. The study also found that subjects were predominantly in the normal BMI category (18.5–25.0 kg/m²), which is consistent with E. S. Wahyuni et al., (2022) who reported that 36 subjects (56.25%) had normal nutritional status within the same BMI range. The higher proportion of normal nutritional status compared to other categories may be attributed to early-stage cancer diagnosis, where significant body mass loss has not yet occurred, as weight loss is more commonly observed in advanced stages (E. S. Wahyuni et al., (2022) and may also be influenced by chemotherapy effects. However, these findings differ from Tenderenda et al., (2024) who reported that 88% (n = 176) of cancer patients were diagnosed with malnutrition based on the Global Leadership Initiative on Malnutrition (GLIM) criteria upon hospital admission.

Based on the findings, breast cancer was the most common type, with 46 individuals (76,6%). This is consistent with global data showing breast cancer as the most frequently diagnosed cancer worldwide Hero, (2021), and similar to E. S. Wahyuni et al., (2022) who reported 56.25% of subjects had breast cancer. The high proportion is likely due to all subjects being female, as breast cancer is the most common cancer in women, and its multifactorial nature, including age, genetic, hormonal, and lifestyle factors, as well as early detection through triple diagnostics, contributes to higher identification rates (Ketut & Kartika, 2022).

B. Distribution and Mean Values

The following table presents the distribution and mean values of knowledge and intake of macronutrients and vitamin A, vitamin C, and vitamin E before and after the intervention in both groups.

Table 2. Distribution and mean values of knowledge and intake of macronutrients and vitamins A, C, and E before and after the intervention in both groups

Group	Variable		Pre-Intervention		Post-Intervention	
			n	%	n	%
Intervention	Knowledge	Poor	7	23,3	4	13,3
		Good	23	76,7	26	86,7
	Energy Intake	Inadequate	28	93,3	27	90
		Adequate	1	3,3	3	10
		High Intake	1	3,3	0	0
	Protein Intake	Inadequate	30	100	25	83,3
		Adequate	0	0	4	13,3
		High Intake	0	0	1	3,3
	Fat Intake	Inadequate	16	53,3	11	36,7
		Adequate	9	30	6	20
		High Intake	5	16,7	13	43,3
	Carbohydrate Intake	Inadequate	30	100	30	100
	Vitamin A Intake	Inadequate	5	16,7	2	6,7
		Adequate	2	6,7	0	0
		High Intake	23	76,7	28	93,3
Vitamin C Intake	Inadequate	19	63,3	22	73,3	
	Adequate	3	10	4	13,3	
	High Intake	8	26,7	4	13,3	
Vitamin E Intake	Inadequate	27	90	30	100	
	High Intake	3	10	0	0	
Control	Knowledge	Poor	17	56,7	16	53,3
		Good	13	43,3	14	46,7
	Energy Intake	Inadequate	27	90	27	90
		Adequate	3	10	2	6,7
		High Intake	0	0	1	3,3
	Protein Intake	Inadequate	28	93,3	28	93,3
		Adequate	2	6,7	1	3,3
		High Intake	0	0	1	3,3
	Fat Intake	Inadequate	18	60	13	43,3
		Adequate	1	3,3	5	16,7
		High Intake	11	36,7	12	40
	Carbohydrate Intake	Inadequate	28	93,3	30	100
	Adequate	2	6,7	0	0	
	Vitamin A Intake	Inadequate	4	13,3	2	6,7
		High Intake	26	86,7	28	93,3
Vitamin C Intake	Inadequate	17	56,7	24	80	
	Adequate	3	10	5	16,7	
	High Intake	10	33,3	1	3,3	
Vitamin E Intake	Inadequate	30	100	30	100	

Based on Table 2, before the intervention, 7 individuals (23,3%) in the intervention group had poor knowledge with a score range of 45–95, while in the control group 17 individuals (56,7%) had poor knowledge with a score range of 25–90. After the intervention, 26 individuals (86,7%) in the intervention group achieved good knowledge with a score range of 50–100, while only 14 individuals (46,7%) in the control group met the same criterion with a score range of 45–95. These findings are consistent with Aniarti, (2024) who reported that 33 subjects (57,90%) had low initial knowledge, likely because most had never been exposed to nutrition education through print, electronic, or social media. In contrast, Adinda, (2022) found that the majority of subjects had good knowledge levels, totaling 24 people (58,5%).

Based on Table 2, before the intervention, 28 individuals (93,3%) in the intervention group and 27 individuals (90%) in



the control group had energy intake below their requirements, with intake ranges of 234–1882 kcal and 263–1651 kcal, respectively. After the intervention, 3 individuals (10%) in the intervention group achieved adequate energy intake with a range of 373–1591 kcal, while only 2 individuals (6,7%) in the control group met the same criterion with a range of 403–1394 kcal. Interviews with patients using a non-consecutive three-time dietary recall showed that patients tended to experience decreased appetite and nausea, particularly after completing routine chemotherapy. Nausea, vomiting, and fatigue are the most common side effects experienced by chemotherapy patients. According to Cahyono & Martiana, (2024) nausea and vomiting are very critical side effects for patients' conditions.

Based on Table 2, before the intervention, all subjects in the intervention group (30 individuals, 100%) had protein intake below their requirements with an intake range of 8,30–42,90 g, while in the control group 28 individuals (93,3%) were also in the low category with a range of 8,10–69,80 g. After the intervention, 4 individuals (13,3%) in the intervention group achieved adequate protein intake with a range of 13,85–56,25 g, whereas only 1 individual (3,3%) in the control group met the protein requirement with a range of 11,40–56,90 g. During dietary recall interviews, most subjects reported eating small portions of side dishes 1–2 times per day and consuming only one type of protein per meal, leading to low protein intake. This is compounded by nausea and vomiting after chemotherapy, which typically last 3–4 days. However, subjects may compensate by increasing intake in subsequent days and improving food presentation to help stimulate appetite. These results are contrary to the study by Hidayah *et al.*, (2024) which found that the majority of subjects (13 people, 41,9%) had normal protein intake levels.

Based on Table 2, before the intervention, 16 individuals (53,3%) in the intervention group had fat intake below their requirements with a range of 0.80–72,80 g, while in the control group 18 individuals (60%)

were also in the low category with a range of 2,20–84,30 g. In addition, 6 individuals (20%) in the intervention group had adequate fat intake with a range of 13,10–86 g, while in the control group 5 individuals (16,7%) met the fat intake requirement with a range of 5,80–64,50 g. This condition is caused by differences in food intake, preferences, and chemotherapy side effects such as nausea and anorexia, which reduce appetite. Consistent with these findings Sukmadewi *et al.*, (2022) reported that 7 subjects (70%) had low fat intake. In contrast Pramenisa *et al.*, (2025) found that most subjects had excessive fat intake accounting for 15 people (45,5%).

Based on Table 2, before the intervention, all subjects in the intervention group (100%) had carbohydrate intake below their requirements with a range of 39,50–185,90 g, while in the control group 28 individuals (93,3%) were also in the low category with a range of 30,30–254,30 g. No subjects in either the intervention or control group (0%) had adequate carbohydrate intake, with ranges of 53,75–205,50 g in the intervention group and 44,60–176,70 g in the control group. This condition is caused by skipping proper meals, replacing breakfast with snacks or fried foods, and not eating three main meals per day. It is also worsened by chemotherapy side effects such as mouth sores that reduce swallowing ability, leading to low carbohydrate intake Rizqiyah *et al.*, (2021). These findings are consistent with Pramenisa *et al.*, (2025), where most subjects experienced carbohydrate intake deficits in both intervention groups.

Based to Table 2, before the intervention, 5 individuals (16,7%) in the intervention group had vitamin A intake below their requirements with a range of 32,70–3586 IU, while in the control group 4 individuals (13,3%) were also in the low category with a range of 23,90–3564,80 IU. Both groups had no subjects (0%) with adequate vitamin A intake. The intake range in the intervention group was 397,80–4279,45 IU, while in the control group it was 185,45–3752,80 IU. Some subjects consumed vegetables and fruits as sources of vitamin A and also frequently ate oily or fried



foods, which may contain vitamin A fortification in cooking oil. Vitamin A is also reported to have potential chemotherapeutic and chemopreventive effects due to its antioxidant and anti-cancer properties (Kusuma & Kholifatudin, 2023). These findings are not in line with Musllikhatun *et al.*, (2025) who reported that 20 subjects (60,6%) experienced vitamin A deficiency.

Based on Table 2, before the intervention, 19 individuals (63,3%) in the intervention group had vitamin C intake below their requirements with a range of 0–337 mg, while in the control group 17 individuals (56,7%) were also in the low category with a range of 1,20–205,10 mg. In addition, 4 individuals (13,3%) in the intervention group had adequate vitamin C intake with a range of 8,10–242,90 mg, while in the control group 5 individuals (16,7%) had adequate intake with a range of 7,35–95,30 mg. Dietary recall interviews showed that many subjects rarely consumed vitamin C-rich foods such as spinach, oranges, and mangoes. Vitamin C acts as an antioxidant that helps protect cells and tissues from free radical damage and radiation-induced oxidation (Dianatasya, 2020 in Safnowandi, 2022). Similar findings were reported by Rifqi *et al.*, (2022) where most subjects experienced moderate to severe vitamin C deficiency.

Based on Table 2, pre-intervention, 27 individuals (90%) in the intervention group had vitamin E intake below their requirements with a range of 0,10–27,4 mg, while all 30 individuals (100%) in the control group were also deficient with a range of 0–10 mg. Both groups had no subjects (0%) with adequate vitamin E intake. The intake range in the intervention group was 0,60–8,10 mg, while in the control group it was 0,80–5,70 mg. Low vitamin E intake was caused by subjects' dietary patterns and limited knowledge of vitamin E-rich foods such as almonds, peanuts, and shrimp. Vitamin E, especially alpha-tocopherol, plays an important role in protecting cells from oxidative stress and free radical damage (Djuwarno *et al.*, 2023). Similar findings were reported by Nurahmatika *et al.*,

(2022), where all subjects experienced vitamin E deficiency.

C. The Effect of Tiktok-Based Education on Knowledge and Macronutrient and Vitamins A, C and E Intake

The following is a table showing the effect of TikTok-based education on knowledge and the intake of macronutrients and vitamins A, C and E in both group:

Table 3. The Effect of Tiktok-Based Education on Knowledge and Macronutrient and vitamins A, C and E Intake in The Intervention and Control Groups

Group	Variable	Before	After	<i>p</i>
		Mean ± SD	Mean ± SD	
Intervention	Knowledge	77,17 ± 12,225	85,17 ± 11,780	<0,001*
	Energy Intake	794,43 ± 338,079	949,63 ± 270,373	<0,001*
	Protein Intake	27,33 ± 9,080	37,43 ± 10,608	<0,001*
	Fat Intake	33,60 ± 17,295	40,87 ± 17,816	0,032*
	Carbohydrate Intake	93,23 ± 36,614	116,22 ± 35,024	<0,001*
	Vitamin A Intake	1404,73 ± 903,998	1693,82 ± 871,666	0,185
	Vitamin C Intake	58,55 ± 74,691	52,84 ± 46,292	0,658
Control	Vitamin E Intake	5,26 ± 6,564	3,85 ± 2,045	0,894
	Knowledge	68,00 ± 14,420	69,33 ± 14,126	0,974
	Energy Intake	886,50 ± 357,000	855,51 ± 275,163	0,926
	Protein Intake	32,34 ± 14,025	31,29 ± 11,589	0,654
	Fat Intake	37,27 ± 18,982	37,57 ± 15,644	0,921
	Carbohydrate Intake	110,22 ± 52,740	100,88 ± 30,656	0,453
	Vitamin A Intake	1517,12 ± 919,820	1442,28 ± 772,463	0,593
	Vitamin C Intake	63,64 ± 57,925	42,34 ± 20,952	0,153
	Vitamin E Intake	3,61 ± 2,195	2,63 ± 1,189	0,017*

Knowledge is the result of a process of seeking information, involving a change from not understanding to understanding and from not being able to being able, which is obtained through various methods, concepts, education, and experiences (Ridwan *et al.*, 2021). The Wilcoxon test on 30 participants in the intervention group showed a significant effect of nutrition education on knowledge ($p < 0,001$), while the control group showed no effect ($p = 0,974$). Similar findings were reported by Anggraini *et al.*, (2021), where the intervention group showed a significant increase in knowledge ($p = 0,000$), whereas the



control group showed no meaningful change ($p = 0,095$). Andriani *et al.*, (2024) also reported a significant improvement in knowledge ($p = 0,000$), indicating that short-term health education can effectively increase patients' knowledge.

Inadequate intake of energy and macronutrients can lead to conditions such as underweight or overweight, which negatively affect overall health and reduce patients' resistance to radiation exposure, temperature changes, and pain (Hidayah *et al.*, 2024). The Wilcoxon test showed a significant difference in energy and carbohydrate intake ($p < 0,05$) in the intervention group, while protein and fat intake analyzed using a paired t-test were also significant ($p < 0,05$). In contrast, the control group showed no significant changes in all macronutrient variables ($p > 0,05$). Similar findings were reported by Pramenisa *et al.*, (2025), where educational videos significantly affected energy and macronutrient intake ($p < 0,05$), indicating that nutrition education can improve dietary intake.

Antioxidants play an important role in preventing free radical formation, supporting immunity, and reducing complications during recovery in cancer patients, making high-antioxidant foods highly recommended (Hidayah *et al.*, 2024). In this study, the intervention group showed no significant changes in all vitamins C and E as antioxidant intakes ($p > 0,05$) tending to decrease and vitamin A increasing (+289 IU) but not significantly due to uneven data distribution, while the control group showed a significant change in vitamin E ($p < 0,05$). The lack of improvement and the tendency for a decline in vitamins A, C, and E may be explained by several factors. Insufficient dietary intake, particularly low consumption of fruits and vegetables, may contribute to inadequate vitamin intake among patients. Furthermore, the non-normal distribution of the data suggests high inter-individual variability, which may have contributed to increased variance in vitamins A, C and E levels among patients. These findings align with Musllikhatun *et al.*, (2025), who also reported no significant association between nutrition counseling and

vitamin A ($p = 0,392$) and vitamin C intake ($p = 0,148$).

D. Comparison of The Effects of Tiktok Education and Educational Experience

The following table presents a comparison of the significance of knowledge and macronutrient intake variables, whether influenced by the TikTok-based education provided during the study or by subjects' previous educational experiences. The analysis was conducted using multiple linear regression, and prior assumption tests confirmed that all requirements for the analysis were met.

Table 4. Comparison of The Effects of Tiktok

Variable Dependent	Variable Independent	Unstandardized Coefficients	t	p-value	R ²
Knowledge	Education through Tiktok	15,309	4,251	0,000	0,314
	Acces Education through Printed Media	-1,773	-0,327	0,745	
	Acces Education through Electronic Media	9,287	1,344	0,185	
	Acces Education through Social Media	-5,137	-0,735	0,465	
	Acces Education through Other People	1,558	0,408	0,685	
Energy Intake	Education through Tiktok	134,329	1,790	0,079	0,092
	Acces Education through Printed Media	113,784	1,008	0,318	
	Acces Education through Electronic Media	-10,271	-0,071	0,943	
	Acces Education through Social Media	110,475	0,759	0,451	
	Acces Education through Other People	-51,149	-0,644	0,523	
Protein Intake	Education through Tiktok	6,845	2,241	0,029	0,123
	Acces Education through Printed Media	1,602	0,349	0,729	
	Acces Education through Electronic Media	-3,073	0,524	0,602	
	Acces Education through Social Media	2,005	0,338	0,736	
	Acces Education through Other People	1,320	0,408	0,685	
Fat Intake	Education through Tiktok	4,635	0,996	0,324	0,057
	Acces Education through Printed Media	2,138	0,306	0,761	
	Acces Education through Electronic Media	-1,349	-0,151	0,880	
	Acces Education through Social Media	7,890	0,875	0,386	
	Acces Education through Other People	0,748	0,152	0,880	
Carbohydrate Intake	Education through Tiktok	22,571	2,578	0,013	0,171
	Acces Education through Printed Media	21,266	1,615	0,112	
	Acces Education through Electronic Media	-3,711	-0,221	0,826	
	Acces Education through Social Media	16,460	0,969	0,337	
	Acces Education through Other People	-15,354	-1,655	0,104	

Multiple linear regression analysis showed that TikTok-based nutrition education had a significant association with knowledge, protein intake, and carbohydrate intake. The relatively low R² values (0,314, 0,123, and 0,171) indicate that the regression models explained only a limited proportion of the



variability in the outcomes. This suggests that although TikTok-based nutrition education may contribute to changes in outcomes, a substantial proportion of the variation is likely influenced by other unmeasured factors.

The regression results indicated that TikTok nutrition education significantly influenced knowledge ($\beta = 15,309$; $p = 0,000 < 0,05$). These findings are consistent with Nabila *et al.*, (2023) who also reported a significant increase in subjects' knowledge scores after TikTok-based nutrition education. The beta coefficient for TikTok nutrition education was positive and had the highest value among other variables, suggesting that it was the most dominant factor associated with the increase in knowledge scores.

TikTok-based nutrition education also showed a significant positive effect on knowledge, protein, and carbohydrate intake ($p < 0.05$), indicating that greater exposure to nutrition education was associated with higher intake of these nutrients. However, these findings differ from Suaib *et al.*, (2025) who reported no significant effect of TikTok-based nutrition education on protein and carbohydrate intake ($p = 0,176$ and $p = 0,282$). Protein plays an important role in cell regeneration, muscle maintenance, tissue development, and immune resistance in cancer patients Hidayah *et al.*, (2024) while excessive intake of simple carbohydrates such as sugar, syrup, and sucrose may increase the risk of overweight and negatively affect patients' prognosis.

Meanwhile, TikTok-based nutrition education did not show a significant effect on energy, fat, and antioxidant intake ($p > 0,05$). This may be because some patients did not fully pay attention to or apply the educational material in daily life. These results are in line with Suaib *et al.*, (2025) who also found no significant effect of TikTok-based nutrition education on energy and fat intake.

CONCLUSION

This study concluded that TikTok-based education had a significant effect on knowledge, protein intake, and carbohydrate

intake, although it did not show a significant improvement in energy intake, fat intake, and Vitamin A, Vitamin C, and Vitamin E intake. However, several limitations should be acknowledged, including the relatively small sample size, the inclusion of only female participants, the short duration of the intervention, and incomplete measurement of participants' exposure and adherence to TikTok-based education. Future studies are recommended to involve larger and more diverse samples, include both male and female participants, extend the intervention period, and use more objective measures of educational exposure and adherence.

REFERENCES

- Adinda, A. (2022). Pengaruh Edukasi Pantau Kanker Berbasis M-Health terhadap Pengetahuan Pasien Kanker Payudara di RSUD Yogyakarta. *Media Farmasi : Jurnal Ilmu Farmasi (Journal of Pharmaceutical Science)*, 19(1).
- Alifa, S., & Ahmi, W. (2025). Salwa Alifa B & Wildan Ahmi A. Peran Diet dalam Mikrobiota Saluran Cerna pada Pasien Kanker Kolon : Systematic Review. *Jurnal Kesehatan Dan Pembangunan*, 15(1).
- Andriani, F. G., Fitriyanti, D., & Suryani, M. (2024). Pengaruh Pendidikan Kesehatan Perawatan Post Kemoterapi terhadap Tingkat Pengetahuan pada Pasien Kanker di SMC RS Telogorejo. *Jurnal Studi Multidisipliner*, 8(9), 89–98.
- Anggraini, D., Marfuah, D., Nurdina, G., & Zharifah, D. (2021). Pengaruh Edukasi Informasi Berbasis Media Sosial Terhadap Pengetahuan Kanker Payudara Pada Wanita Usia Subur. *Risenologi*, September, 14–23.
- Aniarti, R. P. (2024). Pengetahuan dan Efikasi Diri terhadap Pengendalian Nyeri pada Pasien Kanker Serviks. *Jurnal Keperawatan Muhammadiyah*, 9(1).
- Annistri, S., Sandra, F., & Roeslan, B. O. (2024). Potensi ekstrak daun gamal sebagai bahan antikanker terhadap sel kanker rongga mulut. *Jurnal Kedokteran Gigi Terpadu*, 6(1), 57–60.



- <https://doi.org/10.25105/jkgt.v6i1.2088>
8
- Cahyono, H. D., & Martiana, I. (2024). Faktor-Faktor yang Mempengaruhi Self Management Efek Samping Kemoterapi pada Pasien Kanker. *Jurnal Ilmiah Kesehatan Rustida*, 11(01), 8–15.
- Cempaka, A. A., Werdani, Y. D. W., & Sakoikoi, M. Y. P. (2024). Hubungan Usia dan Tingkat Pendidikan Terhadap Stadium Pasien Kanker. *Jurnal Penelitian Kesehatan*, 100–105.
- Djuwarno, E. N., Marhaba, Z., Abdullah, R., Baharuddin, R., Usuli, T. C., Ismail, N. H., & Tonde, N. A. (2023). Gambaran Pengobatan Pasca Kemoterapi Pasien Kanker Payudara Pada Rumah Sakit di Provinsi Gorontalo. *Jurnal Mandala Pharmacon Indonesia*, 9(2), 374–382.
- Hero, S. K. (2021). Faktor Risiko Kanker Payudara. *Jurnal Medika Utama*, 03(01), 3–8.
- Hidayah, A. N., Bintanah, S., Nadia, F. S., & Latrobdiba, Z. M. (2024). Pola Makan dan Status Gizi Pasien Kanker Payudara Dengan Kemoterapi. *Prosiding Seminar Nasional UNIMUS*, 2018, 691–702.
- Husnah, A., Yanti, A. K. E., Arifin, A. F., Hasbi, B. E., & Ikram, D. (2024). Karakteristik Penderita Kanker Kolorektal di Rumah Sakit Pendidikan Ibnu Sina Makassar Tahun 2022. *Fakumi Medical Journal*, 04(01), 19–28.
- Ketut, S., & Kartika, S. L. M. K. (2022). Kanker Payudara : Diagnostik, Faktor Risiko, dan Stadium. *Ganesha Medicina Journal*, 2(1), 42–48.
- Kusuma, H. S., & Kholifatudin, Y. (2023). Profile Lymphocytes Based on Intake of Vitamin A in Patients with Breast Cancer. *Jurnal Gizi Dan Kesehatan*, 5, 192–195.
- Molfino, A., Gallicchio, C., Imbimbo, G., Melena, M., Antonini, S., Gigante, A., & Muscaritoli, M. (2023). Evaluation of Anorexia in Cancer and Its Association with Autonomic Nervous System Activity Assessed by Heart Rate Variability. *Nutrients*, 15(23).
<https://doi.org/10.3390/nu15234936>
- Musllikhatun, S., Bintanah, S., Ulvie, Y. N. S., & Purwaningsih, S. (2025). Hubungan Konseling Gizi dengan Asupan Protein, Vitamin (C, A) dan Kadar Limfosit pada Pasien Kanker Paru dengan Kemoterapi di RSP Ario Wirawan Salatiga. *Prosiding Seminar Nasional UNIMUS*, 8, 370–381.
- Nabila, P. S., Triyanto, E., & Swasti, K. G. (2023). Edukasi menggunakan Media Tiktok Meningkatkan Pengetahuan dan Sikap Pencegahan Anemia pada Remaja Putri. *Jurnal Sains Kebidanan*, 5(2), 43–49.
- Ningrum, M. P., & Rahayu, S. R. (2021). Determinan Kejadian Kanker Payudara pada Wanita Usia Subur (15-49 Tahun). *Indonesian Journal of Public Health and Nutrition*, 1(3), 362–370.
- Nurahmatika, P., Bintanah, S., & Kusuma, H. S. (2022). Hubungan Asupan Protein, Vitamin A, Vitamin E, dan Zink dengan Kadar Albumin pada Pasien Kanker Payudara di Rumah Sakit Tugurejo Semarang. *Prosiding Semnar Nasional Publikasi Hasil-Hasil Penelitian Dan Pengabdian Masyarakat*, September, 286–296.
- Pamilasari, T., Desi, & Purba, J. S. R. (2022). Pengaruh Edukasi Gizi Media Tik Tok Terhadap Pengetahuan Gizi Seimbang Pada Remaja Putri. *Pontianak Nutrition Journal*, 5, 141–145.
- Pertiwi, C. D., Ratnayani, & Afrizal, S. H. (2025). Efektivitas Media Edukasi Gizi terhadap Pengetahuan Pasien Pascabedah Tumor dan Kanker: Literatur Review. *Binawan Student Journal (BSJ)*, 7(3), 177–185.
- Pramenisa, W. S., Susyani, Sihite, N. W., Siregar, A., & Muzakar. (2025). Efektivitas Pemanfaatan Konten Edukatif sebagai Media Edukasi Gizi terhadap Perubahan Perilaku Asupan Gizi Pasien Kanker di RSI Siti Khadijah Palembang. *Journal of Nutrition College*, 14(November 2024), 322–332.
<https://doi.org/10.14710/jnc.v14i4.4712>
1
- Pratamawati, D. A. (2024). Peran Literasi Digital Keberagaman Pangan dalam Pencegahan Kanker The Role of Digital Literacy of Food Diversity in Cancer Prevention. *Jurnal Gizi Dan Kesehatan (JGK)*, 4(2), 55–66.



- Regyna, S. D., Adriani, M., & Rachmah, Q. (2021). A Systematic Review: Asupan Zat Gizi Makro dan Status Gizi Pasien Kanker yang Menjalani Kemoterapi
 A Systematic Review: Macro Nutrient Intake and Nutritional Status of Cancer Patients Undergoing Chemotherapy </br>. *Media Gizi Indonesia*, 16(2), 182. <https://doi.org/10.20473/mgi.v16i2.182-193>
- Ridwan, M., Syukri, A., & Badarussyamsi. (2021). Studi Analisis Tentang Makna Pengetahuan dan Ilmu Pengetahuan serta Jenis dan Sumbernya. *Jurnal Geuthee : Penelitian Multidisiplin*, 04(01), 31–54.
- Rifqi, N. Y., Rahman, N., & Widajati, E. (2022). Pemberian Konseling Gizi Terhadap Tingkat Pengetahuan Diet Kanker, Tingkat Konsumsi (Energi, Protein, Vitamin C) Pada Pasien Kanker Payudara Dengan Kemoterapi Di Kota Malang. *Nutriture Journal*, 1(1), 9. <https://doi.org/10.31290/nj.v1i1.3528>
- Rizqiyah, A., Abdurrachim, R., & Anwar, R. (2021). Hubungan Asupan Makanan , Status Gizi , Lama Menjalani Kemoterapi dan Dukungan Keluarga dengan Kualitas Hidup Pasien Kanker Payudara. *Jurnal Riset Pangan Dan Gizi*, 3(1), 33–42.
- Safnowandi. (2022). Pemanfaatan Vitamin C Alami sebagai Antioksidan pada Tubuh Manusia. *Biocaster : Jurnal Kajian Biologi*, 2(1), 6–13.
- Suaib, F., Rauf, S., Mas'ud, H., & Ramadhani, N. (2025). Edukasi Gizi melalui Tiktok dan Penyuluhan terhadap Citra Tubuh dan Asupan Zat Gizi Makro Remaja Gizi Lebih. *Media Gizi Pangan*, 32, 107–117.
- Sukmadewi, N. P. A. O., Cintari, L., & Wiardani, N. K. (2022). Pola Konsumsi Protein Hewani dan Lemak sebagai Faktor Risiko Kejadian Kanker Serviks. *Jurnal Ilmu Gizi: Journal of Nutrition Science*, 11(1), 52–59.
- Sulviana, E. R., & Kurniasari, L. (2021). Hubungan Antara Usia , Pendidikan , dan Pekerjaan dengan Kejadian Kanker Payudara pada Wanita di Kalimantan Timur. *Borneo Student Research*, 2(3), 1937–1943.
- Tenderenda, K., Gierczak, A., Panczyk, M., Sobocki, J., & Zaczek, Z. (2024). Nutritional Status as a Prognostic Factor for Survival in Palliative Care: A Retrospective Observational Analysis of Home Parenteral Nutrition in Cancer Patients with Inoperable Maligant Bowel Obstruction. *Nutrients*, 1–14.
- Wahyuni, E. S., Sutrio, J, Y. N., Indriyani, R., Mulyani, R., & Upiana, M. (2022). Pola Makan, Status Gizi, Asupan Gizi dan Anemia pada Pasien Kanker yang Menjalani Kemoterapi. *Jurnal Kesehatan Masyarakat*, 6, 1864–1875.
- Wahyuni, F. A., Supadmi, W., & Yuniarti, E. (2021). Hubungan Karakteristik Pasien dan Regimen Kemoterapi terhadap Kualitas Hidup Pasien Kanker di RS PKU Muhammadiyah Yogyakarta. *Jurnal Sains Dan Kesehatan*, 3(2), 310–316.
- Yusdi, faza Y., Rahmy, H. A., & Helmizar. (2021). Pengaruh edukasi gizi menggunakan instagram terhadap perubahan perilaku gizi seimbang untuk pencegahan anemia pada remaja putri di sman 2 padang. *Journal of Nutrition College*, 10(April), 31–38.