

THE EFFECT OF TIK TOK VIDEO ON KNOWLEDGE AND BEHAVIOUR OF LOW CARBOHYDRATE DIET BEHAVIOUR IN FEMALE COLLEGE STUDENTS

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Abstract

Overweight among adolescents continues to rise globally, including in Indonesia, primarily due to unhealthy lifestyles and fast-food consumption. One weight-loss strategy is a low-carbohydrate diet, yet knowledge and behavior regarding this diet among young women remain limited. This study aimed to examine the effect of educational videos on TikTok on knowledge and behavior related to low-carbohydrate diets among female students. A quasi-experimental study with a one-group pre-test and post-test design was conducted. A total of 17 female students aged 18-25 years from Satya Wacana Christian University were selected using purposive sampling. Over the course of one week, participants watched educational videos daily and were monitored through online sessions. There was an increase in knowledge (from 1 to 1.71) and dietary behavior (from 1.12 to 2.29) after the TikTok educational intervention. Before the intervention, 100% of participants had poor knowledge of the diet, which decreased to 76%, with 25% achieving good knowledge. Dietary behavior also improved, with the proportion of participants in the moderate category increasing from 23% to 35%, although low behavior still predominated. TikTok educational media effectively improved knowledge; however, additional support is needed to achieve significant behavioral changes. More intensive interventions and social support may help optimize outcomes.

Background

In developing countries, especially in Asia, 60% or 10.6 million adolescents are overweight, and in Indonesia in 2010, the prevalence of overweight in people over 18 years was also relatively high (Resky et al., 2019). The habit of consuming fast food and unhealthy food among students can lead to obesity, which is a high risk of cardiovascular and metabolic diseases, such as type 2 diabetes mellitus, dyslipidemia, atherosclerosis, and certain types of cancer (Gotera et al., 2023). The easy lifestyle causes the body to move rarely, so that calories from food that are not burned accumulate into fat and eventually make the body size continue to grow (Resky et al., 2019)

When entering adolescence, women experience an increase in body fat so that the bodies of adolescent girls become less ideal and eventually make them feel dissatisfied with their bodies (Khalishah, 2021). Another study, published in the Journal of Recreational Health Education, showed that healthy dietary behavior was classified as high in only 3.3%, while unhealthy dietary behavior classified as high reached 23.3%. In adolescents, unhealthy dietary behaviors are more prevalent (Syarifullah & Pranata, 2024). Therefore, it is essential to understand the factors that contribute to the development of obesity to develop effective prevention strategies.

One way to prevent obesity is through a healthy diet, which can be achieved by consuming a balanced diet of healthy foods and engaging in regular physical activity (Khalishah, 2021). Although the results of a healthy diet cannot be felt instantly, as with diet pills that promise quick weight loss, the impact is much better and more sustainable for the body. A healthy diet, which involves a balanced diet and an active lifestyle, helps the body get the nutrients it needs to function optimally (Laurentina et al., 2024). A low-carbohydrate diet

is one strategy to help individuals with obesity, diabetes, or other medical conditions lose weight (Aliyah et al, 2024). The small amount of carbohydrates in the diet prompts the liver to convert fat into fatty acids and ketone bodies, which then replace glucose as the body's primary source of energy (Tan et al., 2019). One such ketogenic diet aims to push the body into a metabolic state called ketosis, where fat is converted into the body's primary energy source instead of carbohydrates (Aliyah et al., 2024)

Along with the times, social media platforms like TikTok have changed how teenagers communicate and access information, featuring a wide range of content, including health education. TikTok makes it easier for humans to disseminate information quickly and interestingly through short videos. Many doctors and health experts are now utilizing this digital platform to provide education about health, including healthy diet education for women (Apriyana & Pane, 2023) According to research conducted by Apriyana & Pane, 73% of respondents strongly agreed that they get the latest information about healthy diet and maintaining body metabolism from Dr. Clarin Hayes' (@clahayes) TikTok videos, which are recognized as a trusted source of information on dietary health.

Numerous studies have examined the positive impact of social media education on adolescent girls' knowledge and behavior, including the influence of social media platforms like TikTok on food consumption and health habits (Fatmi et al., 2023). However, no one has measured the specific effectiveness of platforms such as TikTok in changing the knowledge and behavior of adolescent girls regarding low-carbohydrate diets. This study examines the effectiveness of TikTok education on low-carbohydrate diet knowledge and behavior among female university students. Thus, the results of this study are expected to contribute to the development of nursing education strategies aimed at preventing obesity in adolescent girls and enhancing the effectiveness of dietary interventions.

Methods

This study employed a quasi-experimental method with a one-group pre-test and post-test design to evaluate the impact of education through TikTok on the knowledge and behavior of female college students regarding a low-carbohydrate diet. The research was conducted at Satya Wacana Christian University (UKSW) from July to August 2024. The study sample consisted of 17 students using a purposive sampling technique based on predetermined inclusion and exclusion criteria. Inclusion criteria: 1) female students with BMI above normal, 2) aged 18-30 years, and 3) female students who actively use TikTok. Exclusion Criteria: 1) female students not actively using TikTok, and 2) female students with medical conditions that prohibit a low-carb diet will be excluded from this study. 3) Measurement of Body Mass Index (BMI) at the beginning and end of intervention implementation. This study utilized a questionnaire modified from Kusumo et al. (2021) to assess knowledge and behavior related to a low-carbohydrate diet. The reliability and validity of the questionnaire were tested, with the results showing satisfactory Cronbach Alpha values, namely knowledge (0.6) and action (0.82), a TikTok educational video focusing on low-carbohydrate diet introduction and tips.

The data collection process included measuring BMI at the start and conclusion of the study to evaluate physical changes. Daily online interviews and observations were conducted over seven days using Google Meet to gather insights on eating habits, exercise routines, and adherence to dietary guidelines. The first meeting was conducted offline to explain the study's mechanism to respondents and obtain their informed consent signatures. Respondents were asked to watch a 2-minute, 53-second educational video sent through a TikTok link about the low-carb diet, including its goals, benefits, and steps or tips. After one week, respondents completed a post-test questionnaire to measure changes in knowledge and behavior related to the low-carb diet. During the intervention, the researcher monitored the implementation of the diet by asking questions related to the respondent's progress in following the low-carb diet

program, obstacles encountered, and influencing factors such as mood and the supportive environment, while also providing motivation and advice on the importance of adhering to the diet.

After implementing the intervention for one week, the researcher asked the respondent to evaluate this study. The respondent felt that the dietary guidelines provided were relatively straightforward to follow, and the support and motivation from the researcher during the implementation process made the respondent feel more enthusiastic about undergoing the diet. Data analysis was conducted by collecting pre-test and post-test results, which were analyzed using descriptive statistical methods in Microsoft Excel to describe changes in knowledge and low-carbohydrate diet behavior.

Result and Discussion

Based on Table 1, the respondents consisted of 17 female students aged 17 to 30. Most of the respondents were between 18 and 22 years old. The majority came from the class of 2021 (35%), followed by the class of 2020 (18%) and the class of 2024 (18%).

Table 1. Respondent Profile

	Category	Frequency (%)
Age	17-19	35
	20-30	65
Batch	2017	6
	2020	18
	2021	35
	2022	12
	2023	12
	2024	18
Gender	Women	100

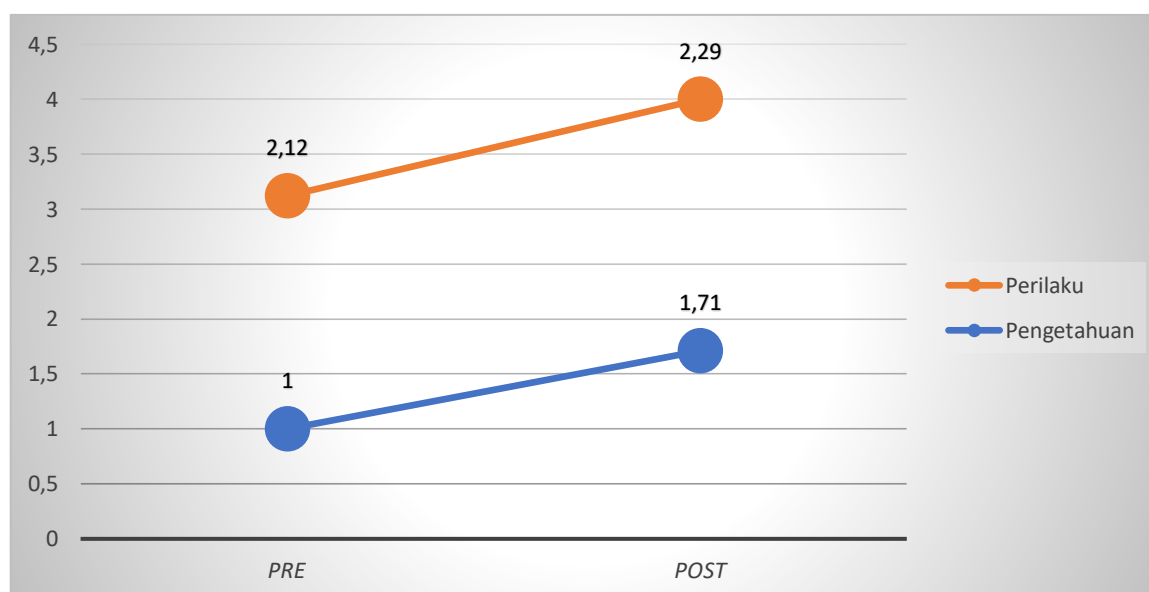
Table 2 shows significant changes between the pre-test and post-test regarding participants' knowledge and behavior after the intervention, which was delivered through TikTok videos. At the pre-test stage, 100% of participants had poor knowledge. Following the intervention, the post-test results indicated an improvement, with 24% of participants demonstrating good knowledge, while 76% were still classified as having poor knowledge. Regarding behavior, before the intervention, participants' behavior fell into the moderate (23%), low (65%), and very low (12%) categories, with no participants showing high behavior. After the intervention, there was an increase in the moderate category to 35%, a decrease in the low category to 59%, and a decrease in the very low category to 6%.

Furthermore, Figure 1 shows an increase in the level of knowledge and behavior regarding the Low-Carbohydrate Diet, based on the mean score, specifically knowledge, which increased from a mean of 1 at pre-intervention to 1.71 after treatment. Meanwhile, the mean score for the level of dietary behavior increased from pre-treatment (2.12) to post-treatment (2.29). These results indicate an increase in respondents' knowledge and behavior regarding the carbohydrate diet after viewing TikTok educational videos.

Table 2. Pre-Test & Post Test Results

Variable	Pre	%	Post	%
Knowledge	Bad	100%	Bad	76%
	Good	0%	Good	24%
Behaviour	Very Low	12%	Very Low	6%
	Low	65%	Low	59%
	Medium	23%	Medium	35%
	High	0%	High	0%

One factor influencing poor dietary behavior is mass media; mass media often promotes unrealistic ideal body standards, encouraging individuals to follow unhealthy extreme diets (Firi, 2018). The use of diet pills, appetite suppressants, or laxatives, intentional vomiting or bulimia, and binge eating are some examples of unhealthy diets that can negatively affect eating habits and health (Laurentina et al., 2024). During the delivery of the intervention, several educational challenges arose; one of the main challenges encountered was the difficulty in organizing the schedule for the joint viewing sessions via Google Meet. Many respondents were unable to fully attend due to various personal commitments, such as busy class schedules, organizational activities, or other responsibilities. The participation target of 30 respondents could not be achieved, and only a small number consistently attended all sessions, which affected the number of respondents and hampered the effectiveness of the material delivery, as the planned discussions and Q&A sessions were limited. Despite these obstacles affecting dietary behavior, the results showed an improvement in knowledge and behavior following the educational intervention through TikTok videos.

**Figure 1. Effectiveness of Low-Carb Diet TikTok Educational Video**

Nowadays, various fast foods attract the attention of young people, causing them to consume them excessively. This habit is one of the causes of failure in following a low-carbohydrate diet. Fast food consumption is significantly associated with an increased risk of obesity in adolescents (Hafid & Hanapi, 2019). Moreover, online food ordering platforms tempt many to order fast food at night. However, one respondent expressed an optimistic view, choosing to sleep to avoid the temptation of eating at night. Aside from unhealthy eating habits, lifestyle factors such as screen time also influenced participants' dietary behavior.

Based on Pender's health promotion theory, which emphasizes empowering individuals to change health behaviors, this intervention was not fully optimal in influencing participants' behavior. According to Pender, health promotion focuses on increasing knowledge and developing intrinsic motivation, as well as environmental support, to facilitate behavior change (Saba & Nursanti, 2024). Although there was a slight improvement in behavior, with the moderate category increasing from 23% to 35%, the results were still insufficient to be categorized as significant behavior change. The low and very low categories still dominated, at 59% and 6% respectively. Although knowledge has increased, behavior change requires more time and intensive effort. According to Pender's theory, to maximize the effectiveness of the intervention, external factors such as social support, an environment that supports behavior change, and renewed motivation are needed (Purwatyningsih & Nursanti, 2024). This study's results align with journal findings showing that education through social media can significantly improve knowledge. However, behavior change often requires additional interventions, as seen in this study's results, where participants' knowledge increased, but behavior change required further time and effort (Rahayu, 2022). Although TikTok is an effective medium for conveying information, further reinforcement through face-to-face sessions or more in-depth discussions may be necessary to enable students to share experiences and solutions related to low-carbohydrate diets, thereby making behavior change more tangible and sustainable.

Conclusion

The educational intervention delivered through TikTok improved participants' knowledge and behaviors regarding low-carbohydrate diets. However, challenges were encountered, including difficulties coordinating shared viewing times and limited participation due to respondents' busy schedules, which impacted engagement. A key limitation of this study is that it utilizes a small, localized sample consisting solely of students from Satya Wacana Christian University, thereby restricting the generalizability of the findings to a broader population. Additionally, the small sample size may have reduced the statistical power and accuracy of the results. Future research should incorporate mentoring programs to enhance respondent participation and integrate interactive components, such as face-to-face discussions or consultations, to further support behavior change.

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