



Effect Of Instagram Reels-Based Nutrition Education On Nutritional Knowledge And Junk Food Consumption Among Adolescent Girls

Baiq Dwiva Desilia¹, Lalu Khairul Abdi^{1✉}, Lalu Juntra Utama¹, I Nyoman Adiyasa¹

¹ Poltekkes Kemenkes Mataram, Indonesia

✉ khairulabdilalu@gmail.com, Phone: +6281805232666

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Abstract

Breast cancer is a growing public health concern, with its incidence steadily increasing each year, including in East Lombok. Data from Indonesia's Health Profile indicate that in 2018, there were 16,956 breast tumor cases, with 2,253 suspected to be breast cancer. This figure rose in 2019, reporting 28,910 breast tumor cases, of which 2,910 were suspected cancers. The upward trend persisted into 2020, with 26,550 cases of breast lumps or tumors documented and 4,685 cases suspected to be breast cancer, highlighting the urgency of preventive efforts. This study aimed to assess the effectiveness of nutrition education delivered through Instagram Reels in enhancing knowledge and reducing fast food consumption among adolescents. We used a quasi-experimental design with a non-equivalent control group and pretest-post-test assessments. The sample consisted of 70 11th-grade science students at SMAN 3 Selong, divided equally into intervention and control groups. The intervention group received educational content emphasizing the Four Pillars of Balanced Nutrition through short-form Instagram Reels videos. Post-intervention results showed significant improvements in nutritional knowledge and reduced junk food intake among participants in the intervention group compared with the control group. The statistical analysis yielded a two-tailed asymptotic significance value of <0.001 and a p-value <0.05 , confirming the intervention's effectiveness. The findings suggest that Instagram Reels-based nutrition education may improve nutritional knowledge and influence junk food consumption among adolescent girls. The combination of concise content, engaging visuals, and social media accessibility contributed to positive behavioral outcomes. This method offers a promising approach to supporting cancer prevention efforts by promoting healthier lifestyle habits through youth-oriented media. Future programs should optimize visual quality and segment content into digestible formats to maximize comprehension and long-term impact.

Keywords: Breast Cancer; Four Pillars of Balanced Nutrition; Instagram Reels Media

INTRODUCTION

Breast cancer poses a significant health risk to women, ranking as the second most prevalent cancer after cervical cancer and thus demanding focused attention. Data from Indonesia's Health Profile indicate that in 2018, there were 16,956 breast tumor cases, with 2,253 suspected to be breast cancer. This figure rose in 2019, reporting 28,910 breast tumor cases, of which 2,910 were suspected cancers. The upward trend persisted into 2020, with 26,550 cases of breast lumps or tumors documented and 4,685 cases suspected to be breast cancer (Kemenkes, 2021).

According to the 2021 report from the West

Nusa Tenggara (NTB) Provincial Health Office, breast cancer cases accounted for 34 instances, representing 0.1% of the total population of 803,884. A total of 36,084 women of reproductive age participated in breast screening programs, with the following distribution: West Lombok (601; 1.7%), Central Lombok (309; 0.9%), East Lombok (3,492; 9.7%), Sumbawa (1,346; 3.7%), Dompu (276; 0.8%), Bima (1,576; 4.4%), West South Lombok (2,595; 7.2%), North Lombok (24,053; 66.7%), Mataram City (794; 2.2%), and Bima City (1,040; 2.9%).

In recent years, East Lombok has experienced a significant increase in the number of cancer cases—data from RSUD dr. R. Soedjono Selong shows that

breast cancer cases reached 93 in 2021 and rose to 103 cases in 2022, marking a 10% increase. Between January and July 2023, 61,351 cervical cancer screenings were conducted, with 58 positive results. Additionally, out of 65,361 breast cancer screenings performed, 13 cases (0.01%) were diagnosed as positive for breast cancer (Dinas Kesehatan Lombok Timur).

Breast cancer was initially more prevalent among women aged over 30. However, in recent times, it has increasingly affected younger individuals, including teenagers. This rising incidence of breast cancer in younger populations is alarming, exemplified by a case involving a 14-year-old girl diagnosed with a brain tumor that, if not treated promptly, could evolve into a malignant growth and elevate breast cancer risk (Pramesti et al., 2020). Additionally, breast cancer is strongly associated with unhealthy lifestyle choices. Foods commonly consumed by those with breast cancer often include items fried in large quantities of oil (76.7%), broiler chicken (53.3%), sugary treats (46.7%), and high-sodium foods (43.3%). According to research by Maria et al. (2017), obese women face a 2.872-fold greater likelihood of developing breast cancer compared to women maintaining a healthy weight.

Media or information delivery channels are essential elements that influence an individual's level of knowledge. Media plays a significant role in helping people understand complex or difficult concepts. One effective way to convey information is through counseling, which is multifaceted and can now be delivered via various digital platforms, including social media such as Instagram. As reported by We Are Social in January 2023, Instagram had approximately 1.32 billion users globally, with 89.15 million users in Indonesia, which ranked fourth among countries with the highest number of Instagram users.

One of Instagram's latest features, Reels, allows users to create videos up to 3 minutes long. This feature can be used to deliver counseling

materials digitally. To make information delivery through educational videos on Instagram more effective, the content should be designed around a simple concept that the target audience can easily understand. Additionally, engaging visual editing is necessary to increase the audience's interest and comprehension of the material presented.

According to Latifa et al. (2022), using Instagram as a learning tool contributes to increased awareness of balanced nutrition. The research revealed a notable disparity in knowledge levels between participants who received nutritional education through Instagram and those in the control group who did not engage with the platform. Instagram has proven an effective medium for delivering educational content, particularly in improving adolescent girls' understanding of balanced nutrition. This success is largely due to the visually stimulating format of the content, featuring attractive imagery and colors that capture attention and enhance the appeal and comprehension for young female audiences.

Based on the points discussed, the researcher decided to conduct a study titled "Effect of Instagram Reels-Based Nutrition Education on Nutritional Knowledge and Junk Food Consumption Among Adolescent Girls". This study differs from the previous one in that it measures not only changes in knowledge levels before and after the intervention but also adolescents' junk food consumption habits.

METHOD

This study used a quasi-experimental design with a non-equivalent control group and pretest-posttest assessments. The independent variable was nutrition education on the Four Pillars of Balanced Nutrition delivered via Instagram Reels. The dependent variables were students' knowledge levels and their frequency of junk food consumption at SMAN 3 Selong.

The research took place within the jurisdiction

of the Selong Community Health Center, with SMAN 3 Selong designated as the experimental group and SMAN 1 Selong serving as the control group. The data collection was carried out between August and September 2024. The study population at SMAN 3 Selong comprised 44 female students enrolled in Grade XI Science, distributed across three classes for the 2023/2024 school year. Meanwhile, the control group at SMAN 1 Selong comprised 141 female students from the same class and program, spread across six classes. A total of 35 participants were obtained based on calculations using the Slovin formula.

Univariate analysis examines each research variable (Tessler, 2022). This analysis generates descriptive statistics, including the mean, standard deviation, minimum and maximum values, along with pretest and post-test results. The variables to be analyzed and presented in the frequency distribution table are knowledge and the frequency of junk food consumption among adolescent girls.

Before bivariate analysis, a homogeneity test was conducted to determine whether the two groups could be analyzed jointly, with homogeneity established when the significance value exceeded 0.05. This test examines variability within and between groups to verify whether the samples are drawn from populations with equal variances, using Levene's test.

The intervention in the form of video playback in class via Instagram Reels was carried out 2 times over 2 weeks (1 time a week) with different materials. Samples could play back the video at home, monitored by the researcher. The post-test assessment of knowledge and eating habits was carried out 7 days (1 week) after the last intervention.

RESULT AND DISCUSSION

To determine the effect of Instagram Reels on nutrition education, we compared knowledge scores between a control group receiving conventional counseling and an experimental group. The

experimental group viewed short videos, each lasting no more than three minutes, covering breast cancer, its risk factors, symptoms, and the Four Pillars of Balanced Nutrition. This approach aimed to improve engagement through enhanced visualization and interaction.

The experimental group received nutrition education on the Four Pillars of Balanced Nutrition through Instagram Reels videos. The control group did not receive education through Instagram Reels videos; instead, they received counseling through traditional lecture methods. During implementation, the experimental group showed greater enthusiasm for participating in the educational sessions.

The effect of nutrition education provided via Instagram Reels was evaluated by comparing the post-test results between the experimental and control groups. Table 1 and Table 2 detail the knowledge scores and frequencies of junk food consumption for both groups after the intervention.

Table 1. Results of Independent t-Test on Post-test Knowledge Scores of Treatment and Control Groups

	Group	n	Mean	Asymp Sig. (2-tailed)
Post-test Treatment and Post- test Control	Treatment	35	91,09	
	Control	35	86,06	
	Total	70		0,000

According to Table 1, the two-tailed significance value is < 0.001 , which is below the 0.05 threshold. This indicates a significant difference in the average knowledge scores between students exposed to nutrition education via Instagram Reels and those who received traditional lecture-based instruction.

Table 2. Results of Independent t-Test on Post-test FFQ Scores for Treatment and Control Groups

	Group	n	Mean	Asymp Sig. (2- tailed)
Post-test Treatment and Post- test	Treatment	35	42,80	
	Control	35	42,14	
	Total	70		0,037

test
Control

According to Table 2, the two-tailed significance value is 0.037, which falls below the 0.05 threshold. This signifies a statistically significant difference in the average junk food consumption between students educated through Instagram Reels videos and those who received traditional lecture-based instruction.

Table 3. Results of Paired T-test on Knowledge Scores Before and After Intervention in the Treatment Group

Treatment group	n	Mean	Asymp. Sig. (2-tailed)
Pretest and Posttest	35 35	76,54 91,09	
Total	70		0,000

According to Table 3, the treatment group's pretest and post-test knowledge scores yielded a p-value of < 0.001 , which is below the 0.05 significance level. This indicates a statistically significant improvement from pretest to posttest. Consequently, the Instagram Reels videos on the Four Pillars of Balanced Nutrition positively influenced the participants' post-test knowledge scores.

Table 4. Results of Paired T-test on Knowledge Scores Before and After Intervention in the Control Group.

Control group	n	Mean	Asymp. Sig. (2-tailed)
Pretest and Posttest	35 35	74,80 86,06	
Total	70		0,000

According to Table 4, the control group's pretest and post-test knowledge scores yielded a p-value of < 0.001 , which is below the 0.05 threshold. This shows a significant difference between the pretest and post-test results, suggesting improved knowledge without using Instagram Reels videos. Therefore, a comparative analysis of the post-test scores between the two groups is warranted.

Table 5. Results of Paired T-test on FFQ Scores

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Before and After Intervention in the Treatment Group

Treatment group	n	Mean	Asymp. Sig. (2-tailed)
Pretest and Post-test	35 35	36,63 42,80	
Total	70		0,000

According to Table 5, the pretest and post-test FFQ scores in the treatment group produced a p-value of < 0.001 , which is below the 0.05 significance level. This indicates a statistically significant difference between the pre- and post-test results, suggesting that the Instagram Reels videos on the Four Pillars of Balanced Nutrition effectively influenced the participants' post-test FFQ outcomes.

Table 6. Results of Paired T-test on FFQ Scores Before and After Intervention in the Control Group

Control group	n	Mean	Asymp. Sig. (2-tailed)
Pretest and Posttest	35 35	40,09 42,14	
Total	70		0,001

According to Table 6, the control group's pretest and post-test FFQ scores yielded a p-value of 0.001, indicating a statistically significant difference between the two assessments. This suggests improvement in food frequency behaviors without using Instagram Reels video media. Therefore, a comparative analysis of the post-test results between the treatment and control groups is necessary.

The post-test questionnaire results showed a notable improvement in knowledge scores in the experimental group. The analysis showed that participants exposed to education via Instagram Video Reels generally performed better than those who received traditional lecture-based counseling. The concise format of the video reels made the information easier to understand and improved retention. Supporting this, the study by Femyliati, Fikri, and Andriani (2023) confirms that social media platforms

positively impact knowledge acquisition and help individuals make healthier dietary choices. Moreover, the video reels combine verbal explanations with relevant visuals, graphics, and animations, clarifying the concepts more effectively.

The counseling approach delivered through digital platforms gives respondents the flexibility to access materials at their convenience. Interactive elements on Instagram, such as the comment feature, allow adolescents to seek clarification and engage in discussions, improving their comprehension of the content. Video reels have proven effective in capturing attention and maintaining audience engagement, fostering active participation and a personal connection with the presented information. According to Suryana et al. (2023), incorporating social media into nutrition education effectively fosters behavioral changes and encourages balanced dietary habits.

Further analysis of the respondents' knowledge improvement revealed that the participants not only memorized basic facts but also understood how to lead a healthy lifestyle to reduce risks. Video reels significantly influenced adolescents' perceptions of the importance of reducing junk food consumption and adopting healthy eating habits. These results align with the research conducted by Yunieswati, Kushargina, and Rizqiya (2022), which emphasizes the importance of technology-based nutrition education in improving knowledge and awareness.

In the experimental group, the increase in knowledge scores indicated that counseling using digital media can be effectively utilized as part of technology-based health education programs. This strategy not only delivers information but also shapes perspectives and mindsets that encourage adopting a healthy lifestyle. Furthermore, evidence suggests that participants began to support and implement the information they received, even influencing those around them. This suggests that the counseling's positive impact extends beyond the participants directly involved in the study.

Another significant aspect of digital

technology is its capability to facilitate more meaningful two-way interactions and dialogue between users and information providers (Falco & Kleinhans, 2018). Features such as comment sections and other interactive tools enable in-depth discussions, allowing respondents to analyze and debate diverse, often conflicting viewpoints and deepen their understanding of health-related issues. This suggests that digitally mediated counseling can foster an active, productive learning community that greatly improves health knowledge and awareness, particularly among adolescents (Haddock et al., 2022).

The analysis of Instagram Video Reels as a medium for nutrition counseling revealed a significant improvement in knowledge and changes in consumption patterns among adolescent girls. Moreover, strong support from previous studies such as those by Amaliah et al. (2020), Cholik et al. (2024), Femyliati et al. (2023), Handayani et al. (2021), Hutasuhut (2022), Rusdi et al. (2021), Suryana et al. (2023), and Yunieswati et al. (2022) reinforces the effectiveness of technology-based approaches in addressing health and nutrition issues in adolescents.

Therefore, the findings indicate that nutrition education delivered through Instagram video reels can positively influence the knowledge and eating habits of adolescent girls. This innovative approach holds great potential as a model for designing future health education programs. The insights gained from this research provide a strong foundation for developing more comprehensive, adaptable, and youth-centered strategies. Leveraging digital technology, with its many advantages, offers opportunities to create more engaging and immersive learning experiences that can promote sustained and meaningful behavior change.

A limitation of using Instagram Reels for counseling about the "4 Pillars of Balanced Nutrition" to prevent breast cancer risk is that the short length of the videos may make it difficult for viewers to fully understand the information. To overcome this, researchers can create brief but clear videos supported by helpful images and animations to make the content

easier to grasp. Additionally, split the counseling material into several related videos so the information is not too dense in one short clip.

CONCLUSION

The study results revealed a significant difference between the control and intervention groups regarding knowledge levels and fast food consumption frequency after receiving nutrition counseling via Instagram Reels focused on the Four Pillars of Balanced Nutrition.

At pretest, the intervention group's average knowledge score was categorized as "good," while the control group was in the "moderate" range. After the intervention, the intervention group's mean score rose to 14.54, compared to 11.25 in the control group. The Asymp. Sig. (2-tailed) value of 0.00 (< 0.05) confirms that this difference is statistically significant.

Furthermore, although junk food consumption was generally low in both the intervention and control groups, the intervention group's mean rank (6.17) was markedly higher than the control group's (2.05). This substantial difference indicates that nutrition counseling delivered via Instagram Reels significantly increased students' awareness of the negative effects of junk food and contributed to reduced consumption among 11th-grade science students at SMAN 3 Selong.

In conclusion, nutrition counseling delivered through video Reels effectively enhances knowledge and reduces unhealthy food consumption among adolescents. To further support this effectiveness, it is crucial to optimize content development, particularly by incorporating high-quality animations that can clarify the material presented in the videos.

DECLARATIONS

Author Contributions

BDS and INA conceived and designed the study, coordinated data collection, performed the data analysis, interpreted the results, and drafted the manuscript. LKA and LJA contributed to the study

design, data collection, interpretation of the findings, and critical revision of the manuscript. All authors reviewed and approved the final manuscript and agreed to be accountable for all aspects of the work.

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Ethical Considerations

This study followed ethical principles for research involving human participants. Poltekkes Kemenkes Mataram granted ethical approval under approval number DP.04.03/F.6.VIII.14/479/2024. Permission to conduct the study was obtained from the relevant institutions and schools. We obtained written informed consent from participants and/or their parents or legal guardians, as applicable, before participation. Participants were informed about the study's purpose and procedures, the voluntary nature of participation, the confidentiality of their information, and their right to withdraw at any time.

Competing Interests

The authors declare no competing interests.

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Availability of Data and Materials

The datasets generated and analyzed during the current study are not publicly available because they contain information obtained from adolescent participants and are subject to privacy and confidentiality considerations. De-identified data may be made available by the corresponding author upon reasonable request and subject to applicable ethical and institutional approval.

Generative AI:

During the preparation and revision of this

manuscript, the authors used AI-assisted technology solely for language editing, including improving grammar, spelling, sentence structure, and English-language clarity. The authors critically reviewed and verified all AI-assisted revisions and take full responsibility for the manuscript's accuracy, integrity, and originality. AI-assisted technology was not used for participant recruitment, data collection, statistical analysis, interpretation of the findings, or scientific decision-making.

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