International Journal of Science and Healthcare Research
[Indexed, Peer-Reviewed Journal]
Vol. 10; Issue: 3; July-Sept. 2025
Website: ijshr.com
Original Research Article *ISSN: 2455-7587*

The Effectiveness of Cartoon Video and Comic Media on the Knowledge and Skills of Adolescent Cadres in Detecting Adolescent Nutritional Status

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DOI: https://doi.org/10.52403/ijshr.20250325

ABSTRACT

Nutritional problems among adolescents remain a major public health challenge in Indonesia, as reflected by the high prevalence of anemia, undernutrition, stunting, and obesity. Limited knowledge and skills of adolescents in detecting nutritional status further exacerbate this condition. Educational efforts using media tailored to adolescent characteristics are essential to improve nutrition literacy. This study aimed to determine the effectiveness of cartoon video and comic media in improving the knowledge and skills of adolescent cadres in detecting nutritional status in Sukamaju Village, Muaro Jambi Regency. The study employed a quasi-experimental design with a two-group pretest-posttest design. A total sample of 30 adolescents was selected using stratified random sampling and then divided into the cartoon video group and the comic group. Data were collected using a knowledge questionnaire and a skill observation sheet for anthropometric measurements (body weight, height, mid-upper arm circumference, and waist circumference). Data were analyzed using paired t-test or Wilcoxon test to examine differences before and after the intervention, and the Mann-Whitney test to compare the effectiveness of both media. The results showed a significant increase in adolescents' knowledge and skills after the intervention in both groups ($p = 0.001$). The average skill score increased from 8.29 to 21.43 after the intervention with comic media, while knowledge improved more in the cartoon video group, with a median of 12 compared to 9 in the comic group. In conclusion, cartoon video media was more effective in improving knowledge, whereas comic media was more effective in enhancing skills for detecting nutritional status.

Keywords: Educational Media, Knowledge, Skills, Adolescent Cadres, Nutritional Status Detection

INTRODUCTION

Adolescence is a transitional period marked by rapid physical growth, hormonal changes, and significant cognitive and social development (Kurz, 1996). During this phase, nutritional needs increase sharply to support optimal growth and development (Deshmukh et al., 2006). However, various national reports show that nutritional problems among adolescents remain a major challenge in Indonesia. According to the Indonesia Health Survey (SKI) 2023, the prevalence of adolescents experiencing stunting, undernutrition, and obesity

remains relatively high (Kemenkes, 2023). These conditions not only affect adolescents' current health but also have long-term impacts on productivity, the risk of non-communicable diseases, and future reproductive health (Haapalahti et al., 2005).

Although the government has implemented various programs through school-based nutrition initiatives and adolescent health posts, the level of adolescents' knowledge and skills in detecting their own nutritional status remains low (Wong et al., 2010). A preliminary survey in Sukamaju Village, Muaro Jambi Regency, showed that most adolescents had never conducted anthropometric measurements independently, and many did not even understand the basic concepts of balanced nutrition. This indicates a gap between existing nutrition education programs and adolescents' practical understanding in maintaining their nutritional status. In other words, field conditions reveal a weakness in the transfer of relevant information and skills to this age group (Sigulem et al., 2000).

Previous studies have mostly emphasized the effectiveness of conventional educational media such as leaflets, modules, or lectures in improving nutritional knowledge. However, research specifically comparing the effectiveness of popular visual-based media, such as cartoon videos and comics, remains limited. Both media have great potential, as they align with adolescents' characteristics—being more receptive to information through engaging, simple, and communicative visuals (Meylinda et al., 2024; Nisa, 2025; Patimah et al., 2023; Raut et al., 2024). Therefore, there is a research gap regarding empirical evidence on the effectiveness of interactive visual-based educational media in enhancing both knowledge and skills of adolescents in detecting nutritional status.

The novelty of this study lies in its health education approach by comparing two types of popular media among adolescents—cartoon videos and comics—in the context of improving knowledge and skills in nutritional status detection. Beyond assessing knowledge, this study also evaluates adolescents' practical skills in conducting anthropometric measurements such as body weight, height, mid-upper arm circumference (MUAC), and waist circumference. This combination of cognitive and psychomotor aspects provides a new contribution to the field of adolescent health education, particularly in selecting the most effective and applicable intervention media.

The urgency of this research is reinforced by the rising prevalence of adolescent nutritional problems, which may become a future public health burden. Effective education on early detection of nutritional status is not only crucial for preventing nutritional problems but also serves as a long-term strategy for building a healthy and productive generation. Moreover, Sukamaju Village, Muaro Jambi Regency, can serve as a pilot site for visual media–based nutrition education interventions that can be replicated in other regions. Thus, the findings of this study are expected to enrich evidence-based health promotion strategies that are contextualized to adolescent needs.

The main objective of this study is to determine the effectiveness of cartoon video and comic media in improving the knowledge and skills of adolescent cadres in detecting nutritional status. Specifically, the study aims to: (1) analyze the knowledge and skills of adolescents before and after the intervention; (2) compare the effectiveness of both media in improving adolescents' understanding and skills; and (3) identify the most appropriate educational media for health promotion programs among adolescents.

This study is expected to provide both theoretical and practical benefits. Theoretically, the findings may enrich the literature on visual-based health education strategies for adolescents. Practically, the study may serve as a reference for health workers, teachers, and program managers in schools and adolescent health posts to select

the most effective media suited to learners' characteristics. Furthermore, the results may also provide policy recommendations for local governments in designing more innovative, engaging, and sustainable adolescent nutrition programs to reduce the prevalence of nutritional problems among adolescents in Indonesia.

MATERIALS & METHODS

This study employed a quasi-experimental design with a two-group pretest-posttest approach to assess the effectiveness of cartoon video and comic media in improving knowledge and skills of adolescent cadres in detecting nutritional status. This design was chosen as it allows for the measurement of changes in respondents' knowledge and skills before and after the intervention, and for comparison between different intervention groups using distinct educational media.

The study was conducted in Sukamaju Village, Muaro Jambi Regency, from March to September 2025. This location was chosen based on preliminary findings indicating adolescents' low knowledge of the four pillars of balanced nutrition and limited skills in detecting nutritional status, alongside the lack of innovative educational media programs.

The study population comprised all adolescents involved in adolescent health cadre activities in Sukamaju Village. A total of 30 adolescents were selected as the sample using stratified random sampling to ensure representation across age groups. The sample was then divided into two groups: the cartoon video intervention group and the comic intervention group.

The independent variable was educational media (cartoon video and comic), while the dependent variables were adolescents' knowledge and skills in detecting nutritional status. Knowledge was measured using a structured questionnaire consisting of 15 items on basic adolescent nutrition concepts, nutritional status indicators, and the four pillars of balanced nutrition. Skills were measured using an observation sheet assessing respondents' ability to perform anthropometric measurements, including body weight, height, mid-upper arm circumference (MUAC), and waist circumference.

The research procedure began with a pretest to measure baseline knowledge and skills. This was followed by an intervention session: cartoon video–based education for the first group and comic-based education for the second group, each lasting 15 minutes, followed by a 15-minute discussion session. A posttest was then conducted to measure changes in respondents' knowledge and skills. All skill observations were conducted directly, recording adolescents' accuracy and independence in performing anthropometric measurements.

Data were analyzed using univariate and bivariate methods. Univariate analysis was used to describe respondents' characteristics, knowledge distribution, and skills before and after the intervention. Bivariate analysis was conducted to test the effect of educational media on adolescents' knowledge and skills. Paired t-test was applied for normally distributed data, while the Wilcoxon test was used for non-normally distributed data. Comparisons of effectiveness between media groups were performed using the Mann-Whitney test with a 95% confidence level ($\alpha = 0.05$).

RESULT

Table 1. Effectiveness of Health Education Using Cartoon Video and Comic Media on Adolescents' Knowledge of Nutritional Status

Knowledge	n	Median	p value
Pre-test	30	12	0.001
Post-test	30	9	

Based on Table 1, the median knowledge score of adolescents before receiving health education on nutritional status using cartoon video and comic media was 12, while the median score after the intervention was 9. The Mann-Whitney statistical test showed a p-value of 0.001 ($p < 0.05$), indicating a statistically significant difference in

adolescents' knowledge before and after the intervention.

Table 2. Effect of Health Education Using Comic Media on Adolescents' Skills in Detecting Nutritional Status

Skills	n	Mean (Min–Max)	Difference	95% CI	ρ value
Pre-test	15	8.29 (4–13)	13.143	12.150–14.136	0.001*
Post-test	15	21.43 (14–27)			

Based on Table 2, the average skill score of adolescents before receiving health education using comic media was 8.29, with a minimum score of 4 and a maximum score of 13. After the intervention, the average skill score increased to 21.43, with a minimum score of 14 and a maximum score of 27. The mean difference before and after the intervention was 13.143, with a 95% confidence interval of 12.150–14.136. The paired t-test revealed a p-value of 0.001 ($\rho < 0.05$), indicating a statistically significant improvement in adolescents' skills after receiving health education using comic media.

DISCUSSION

The findings of this study indicate that the research objectives were well achieved, namely to examine the effectiveness of cartoon video and comic media in improving the knowledge and skills of adolescent cadres in detecting nutritional status in Sukamaju Village, Muaro Jambi Regency. Overall, there was a significant improvement in both cognitive (knowledge) and psychomotor (skills) aspects following health education interventions using both media. Statistical analysis showed that cartoon video media was more effective in improving knowledge, whereas comic media proved more effective in enhancing skills related to nutritional status detection. This highlights the importance of aligning the choice of educational media with the specific learning objectives to be achieved.

The results showed that prior to the intervention, adolescents' knowledge and skills were relatively low. Many respondents did not yet understand basic concepts of nutritional status, the calculation of Body Mass Index (BMI), or the four pillars of balanced nutrition. After the intervention with comic media, the average skill score increased substantially from 8.29 to 21.43. Meanwhile, the intervention with cartoon videos resulted in greater improvement in knowledge, with higher post-test median scores compared to comics. These findings emphasize that engaging, interactive, and adolescent-friendly visual media can effectively facilitate the transfer of information while also supporting the development of practical skills.

From a theoretical perspective, the results align with Bruner's cognitive learning theory, which suggests that learning is more effective when material is presented in concrete, visual, and easily understood forms (Tamiru et al., 2017). Visual media such as cartoon videos and comics provide strong visual-auditory stimuli, thereby enhancing memory and comprehension. Health education delivered through engaging and attractive media is more likely to be accepted, remembered, and to encourage behavioral change. The effectiveness of comics in improving skills can also be explained by their practical orientation—allowing adolescents to repeatedly, independently, and clearly review the steps of nutritional status measurement through simple yet informative illustrations (Ansar et al., 2024; Kendel Jovanović et al., 2023; Wang et al., 2014).

Compared to previous studies, the present findings demonstrate both consistency and novelty. Safira & Komalyna (2023) reported that comic media effectively improved adolescents' nutritional knowledge by increasing learning interest up to 75%. Similarly, Megasenja & Puspareni (2020) found comics to be an effective educational tool in enhancing adolescents' nutritional knowledge and attitudes. However, this

study adds new evidence by simultaneously comparing comics and cartoon videos. The results revealed that cartoon videos were superior in improving knowledge, while comics were superior in improving practical skills. Thus, this study extends earlier findings by showing differentiated effectiveness of media depending on cognitive versus psychomotor learning outcomes.

The implications of this study are significant for adolescent health promotion practice. The findings suggest that visual-based nutrition education interventions can serve as innovative strategies to improve adolescent nutrition literacy while strengthening practical skills in detecting nutritional status (Riddle et al., 2019, 2023; Yasin et al., 2024). When applied more broadly, such methods have the potential to support government programs aimed at reducing adolescent nutritional problems, preventing stunting, anemia, and obesity, and preparing a healthier, more productive generation. Based on this empirical evidence, schools, community health centers, and adolescent health posts can select the most appropriate educational media according to their target needs.

Nevertheless, this study has several limitations. First, the sample size was relatively small (30 respondents), limiting the generalizability of the findings. Second, the study was conducted over a short period, preventing assessment of the long-term sustainability of intervention effects. Third, external factors such as family support, school environment, and adolescents' learning motivation were not examined in detail, despite their potential influence on outcomes. Fourth, the quasi-experimental design without an external control group also limits the ability to fully rule out confounding variables.

CONCLUSION

This study demonstrates that health education using cartoon video and comic media significantly improves the knowledge and skills of adolescent cadres in detecting nutritional status in Sukamaju Village, Muaro Jambi Regency. Cartoon video media was more effective in enhancing adolescents' knowledge of basic nutrition concepts, whereas comic media was more effective in developing adolescents' practical skills in conducting anthropometric measurements.

It is recommended that health workers, teachers, and adolescent health program managers utilize visual educational media such as cartoon videos and comics in health promotion activities, as these are better aligned with adolescents' learning characteristics. Furthermore, similar interventions should be implemented repeatedly and continuously to ensure sustained improvements in knowledge and skills over the long term.

Declaration by Authors

Ethical Approval: Approved

Acknowledgement: None

Source of Funding: None

Conflict of Interest: The authors declare no conflict of interest.

REFERENCES

1. Ansar, A., Hartini, D. A., Bahja, B., Faisal, E., Dewi, N. U., & Aiman, U. (2024). The Influence of social media-Based Nutrition Education on Adolescents' Nutritional Knowledge and Body Image Perception. Poltekita: Jurnal Ilmu Kesehatan, 18(2), 178–182.
2. Deshmukh, P. R., Gupta, S. S., Bharambe, M. S., Dongre, A. R., Maliye, C., Kaur, S., & Garg, B. S. (2006). Nutritional status of adolescents in rural Wardha. The Indian Journal of Pediatrics, 73(2), 139–141.
3. Haapalahti, M., Kulmala, P., Karttunen, T. J., Paajanen, L., Laurila, K., Mäki, M., Mykkänen, H., & Kokkonen, J. (2005). Nutritional status in adolescents and young adults with screen-detected celiac disease. Journal of Pediatric Gastroenterology and Nutrition, 40(5), 566–570.
4. Kemenkes. (2023). Laporan Riskesdas 2023. April 2024. https://www.badankebijakan.kemkes.go.id/laporan-hasil-survei/

5. Kendel Jovanović, G., Janković, S., & Pavičić Žeželj, S. (2023). The effect of nutritional and lifestyle education intervention program on nutrition knowledge, diet quality, lifestyle, and nutritional status of Croatian school children. Frontiers in Sustainable Food Systems, 7, 1019849.
6. Kurz, K. M. (1996). Adolescent nutritional status in developing countries. Proceedings of the Nutrition Society, 55(1B), 319–331.
7. Megasenja, P. A. C., & Puspareni, L. D. (2020). Pengembangan Media Pendidikan Gizi Melalui Komik Untuk Remaja Mengenai Pengetahuan Gizi Tentang Obesitas Pada Siswa SMPIT Said Na'um di Jakarta. Jurnal Nutrisia, 22(2), 53–59.
8. Meylinda, J. O., Arinda, D. F., Yuliana, I., & Sari, D. M. (2024). Nutrition Education Effect in Increasing Knowledge and Ability to Interpret Nutrition Facts in Adolescents. International Journal of Integrated Health Sciences, 12(2), 117–124.
9. Nisa, S. K. (2025). Efektivitas penggunaan video terhadap pengetahuan dan keterampilan siswa sekolah menengah pertama (smp) tentang penilaian status gizi. Poltekkes Kemenkes Yogyakarta.
10. Patimah, S., Idrus, H. H., & Noviasty, R. (2023). Effect of school-integrated interventions on improvement of nutrition-health knowledge and nutritional status among adolescent girls: A quasi-experimental study. Current Research in Nutrition and Food Science Journal, 11(2), 880–893.
11. Raut, S., Kc, D., Singh, D. R., Dhungana, R. R., Pradhan, P. M. S., & Sunuwar, D. R. (2024). Effect of nutrition education intervention on nutrition knowledge, attitude, and diet quality among school-going adolescents: a quasi-experimental study. BMC Nutrition, 10(1), 35.
12. Riddle, A. Y., Kroeger, C. M., Ramage, A. K., Bhutta, Z. A., Kristjansson, E., Vlassoff, C., Taljaard, M., Skidmore, B., Welch, V., & Wells, G. A. (2019). PROTOCOL: The effects of empowerment-based nutrition interventions on the nutritional status of adolescent girls in low-and middle-income countries. Campbell Systematic Reviews, 15(3), 10–1002.
13. Riddle, A. Y., Li, W., Bhutta, Z. A., Vlassoff, C., Taljaard, M., Kristjansson, E., Welch, V., & Wells, G. A. (2023). Associations between dimensions of empowerment and nutritional status among married adolescent girls in East Africa: a structural equation modelling study. BMC Public Health, 23(1), 225.
14. Safira, D. A. S., & Komalyna, I. N. T. (2023). Edukasi Gizi Anemia dengan Media Komik Terhadap Pengetahuan, Sikap dan Asupan Energi, Protein, Zat Besi Remaja Putri di MTSN 1 Kota Blitar. Prosiding TIN PERSAGI, 131–140.
15. Sigulem, D. M., Devincenzi, M. U., & Lessa, A. C. (2000). Diagnosis of child and adolescent nutritional status. J Pediatr (Rio J), 76(Suppl 3), S275-84.
16. Tamiru, D., Argaw, A., Gerbaba, M., Ayana, G., Nigussie, A., & Belachew, T. (2017). Effect of integrated school-based nutrition education on optimal dietary practices and nutritional status of school adolescents in Southwest of Ethiopia: A quasi-experimental study. International Journal of Adolescent Medicine and Health, 29(6), 20160015.
17. Wang, D., Stewart, D., Chang, C., Ji, Y., & Shi, Y. (2014). Effect of interventions to improve adolescents' nutrition knowledge in China. Health Education, 114(5), 322–330.
18. Wong, N. T., Zimmerman, M. A., & Parker, E. A. (2010). A typology of youth participation and empowerment for child and adolescent health promotion. American Journal of Community Psychology, 46(1), 100–114.
19. Yasin, N. D., Hassan, S. M., & Ateye, M. D. (2024). Understanding adolescent nutritional status: A comprehensive literature review. J Food Chem Nanotechnol, 10(1), 26–31.

How to cite this article: Ika Murtiyarini, Ajeng Galuh Wuryandari, Winancy, Bayu Irianti. The effectiveness of cartoon video and comic media on the knowledge and skills of adolescent cadres in detecting adolescent nutritional status. *International Journal of Science & Healthcare Research.* 2025; 10(3): 242-247. DOI: *https://doi.org/10.52403/ijshr.20250325*

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