

NUTRITION EDUCATION BASED ON THE 'MY T PLATE' MODEL ENHANCES ADOLESCENTS' KNOWLEDGE IN PREVENTING CENTRAL OBESITY

Egy Sunanda Putra^{1,4*}, Ary Irfan^{1,4}, Alpari Nopindra^{1,4}, Agus Hendra Al Rahmad², Dahliansyah³

¹Departement of Health Promotion, Politeknik Kesehatan Kementerian Kesehatan Jambi, Jambi, Indonesia

²Department of Nutrition, Politeknik Kesehatan Kementerian Kesehatan Aceh, Aceh, Indonesia

³Department of Nutrition, Politeknik Kesehatan Kementerian Kesehatan Pontianak, Kalimantan Barat, Indonesia

⁴PUI-PK, Politeknik Kesehatan Kementerian Kesehatan Jambi, Jambi, Indonesia

*Corresponding author: egyputra93@poltekkesjambi.ac.id

ABSTRACT

Background: Central obesity among adolescents aged over 15 years warrants serious attention, as approximately 80% of affected individuals are likely to remain obese into adulthood, thereby increasing their risk of developing non-communicable diseases (NCDs). A major contributing factor is the shift in dietary patterns, which is further exacerbated by limited knowledge regarding food choices and dietary diversity among adolescents. This study aims to analyze the effect of the "My T Plate" animated video on adolescents' knowledge in the context of central obesity prevention.

Method: This study employed a pre-experimental design with a pre-posttest without control group approach. The study population consisted of adolescents aged 15–18 years attending SMAN 10 in Jambi City. A total of 40 participants were selected using purposive sampling. Bivariate analysis was conducted using the Wilcoxon signed-rank test.

Result: The animated video intervention significantly improved participants' knowledge ($p < 0.0001$), attitudes, and dietary diversity related to the prevention of central obesity.

Conclusion: Animated educational videos are effective in enhancing adolescent knowledge, making them a promising strategy for central obesity prevention among adolescent.

Keywords: Adolescent, Animated, Prevention

INTRODUCTION

Central obesity among adolescents has shown a rising trend, primarily driven by lifestyle changes and dietary shifts. These include low consumption of fruits and vegetables, increased intake of fast food (high in saturated fats, sugar, and salt), sugary beverages, and reduced physical activity (Putra et al., 2023).

In Indonesia, the prevalence of abdominal or central obesity among adolescents aged over 15 years has consistently increased, with rates of 18.8% in 2007, 26.6% in 2013, 31.1% in 2018, and 36.8% in 2023. Specifically, in Jambi Province, the prevalence of central obesity among adolescents reached

32.9%, which is approaching the national average (Ministry of Health, Republic of Indonesia, 2024).

Central obesity during adolescence is associated with several adverse health outcomes. Adolescents with central obesity are 4.2 times more likely to develop diabetes mellitus and 5.5 times more likely to develop hypertension compared to their non-obese peers (Sahoo et al., 2015). Moreover, central obesity can negatively impact academic performance, reduce productivity during adolescence and adulthood, and lower overall quality of life (Xie et al., 2019).

Nutrition education is one of the strategies that can be implemented to improve adolescents' knowledge about healthy eating

(Asri, 2022). Education has the potential to enhance an individual's knowledge, which in turn is expected to lead to positive changes in attitude and behavior (Putri, 2022).

Animated videos serve various purposes, including entertainment, advertising, and education (Ala et al., 2023). Animation is particularly effective in educational settings, as it can capture learners' attention, enhance motivation, and stimulate interest during the teaching and learning process (Sagitaa et al., 2022). In the context of nutrition education, animated videos can help adolescents more easily receive and comprehend the messages being conveyed. Barriers in delivering educational content can be overcome through the use of engaging, effective, and efficient learning media. Video-based media allow students to grasp educational messages more meaningfully, enabling a comprehensive understanding of the information presented (Meidiana et al., 2018).

Research by Julita et al. (2021) supports the effectiveness of animated videos in delivering information about obesity, including dietary patterns, recommended eating behaviors, and physical activities for individuals with obesity. The "T-plate" model promotes low energy density meals by increasing vegetable intake, which directly reduces total caloric intake. Therefore, the use of the My T-Plate animated video is expected to enhance adolescents' knowledge and support efforts to prevent central obesity.

METHODS

This study employed a pre-experimental design with a pretest-posttest approach. The participants total 41 were students aged 15–18 years enrolled at a public senior high school (SMAN) in Jambi City. Inclusion criteria included being physically and mentally healthy, actively enrolled in school, and possessing a smartphone. Exclusion criteria were students

who were absent during the intervention sessions, did not complete all phases of the study, or had chronic illnesses such as diabetes mellitus, kidney disease, hypertension, or cardiovascular conditions.

Data collection was conducted after obtaining ethical clearance from the Research Ethics Committee of Poltekkes Kemenkes Jambi. The independent variable in this study was an animated educational video. The video content covered various aspects of obesity, including definitions, dietary causes, health impacts, and prevention strategies based on the "My T-Plate" model. The T-Plate model promotes balanced consumption of carbohydrates, proteins, fats, vegetables, and fruits. The animated video incorporated moving graphics, narration, text, and two animated characters, with a total duration of 3 minutes and 21 seconds. The video was delivered once per week for one month (a total of four sessions).

Nutritional knowledge was assessed using a structured questionnaire consisting of 10 multiple-choice questions, each with five answer options. The reliability of the questionnaire, as measured by Cronbach's alpha, was 0.685.

RESULTS AND DISCUSSION

The study revealed a significant improvement in participants' knowledge scores after the animated video intervention. The mean knowledge score increased from 5.78 at baseline to 8.52 post-intervention, reflecting a mean increase of 4.666 points.

Table 1. Bivariate Analysis

Variable	$\bar{x}$	z	SD	p
Knowledge				
After	5.78	4.666	1.593	<0.0001
Before	8.52		1.240	

These findings are consistent with prior studies showing that animated video-based nutrition education effectively enhances adolescent knowledge and attitudes. For

example, a study by Meidiana et al. (2018) demonstrated that adolescent girls who received animated video education exhibited improved knowledge and attitudes related to anemia prevention. Similarly, research involving adolescents aged 12–15 years showed increased knowledge and positive attitudes regarding obesity after exposure to animated educational videos.

Additional studies support the effectiveness of this method. Nasyiba et al. (2023) conducted research at SMAN 98 Jakarta, while Adrianto et al. (2023) studied students at SMA PGRI 3 Bogor, both finding that animated videos significantly improved adolescents' understanding of obesity and overnutrition. Furthermore, Selvia and Magdalena found that animated nutrition videos provided to students at SMAN 3 Banjarbaru enhanced both knowledge and attitudes toward obesity prevention more effectively than conventional videos. Adolescents in these studies reported reducing portion sizes, limiting intake of high-sugar and high-carbohydrate foods, and increasing vegetable and fruit consumption to cover 50% of their plates during meals (Ramadhanti et al., 2022; Selvia, 2023).

Positive attitudes and behaviors toward healthy eating are more likely to form when individuals have adequate knowledge. Attitude is considered a latent response to a stimulus—such as information on obesity prevention—which can be effectively delivered through animated videos. These videos are known to capture attention, stimulate interest, and support behavioral change.

Since adolescents tend to think abstractly, media such as animated videos can visualize real-life scenarios and make learning experiences more engaging. This makes animated content especially suitable for educational interventions in this age group. According to Yudianto (2017), media serves as a compensatory, cognitive-attentional, and affective learning tool. Visual learning plays a

dominant role in information retention, with 75% to 87% of knowledge being acquired through visual input (Saputri et al., 2017). Fujiyanto (2016) added that approximately 94% of messages are absorbed through visual and auditory channels, and individuals typically remember 50% of what they see, especially when presented in the form of video programs.

Animated videos offer a fast, efficient, and engaging method for delivering information, involving multiple senses and enhancing long-term memory retention (Sinor, 2011). Mega et al. (2020) also reported that adolescents preferred animated videos because they found them easier to understand due to the combination of text, graphics, and background music, which provided both educational content and entertainment value. A well-designed educational video should feel familiar and relatable to its audience.

Improved attitudes following the intervention were driven by increased knowledge, leading to greater awareness and motivation for positive behavioral change. These shifts in attitude may serve as a foundation for adopting healthier lifestyle practices aimed at preventing central obesity.

CONCLUSION

The animated video “My T-Plate” intervention significantly improved adolescents' knowledge and attitudes toward central obesity prevention. This medium shows promise as an effective health education tool for adolescents.

ACKNOWLEDGMENT

The authors would like to express their sincere gratitude to the Principal of SMAN 10 in Jambi City for providing access, time, and human resources to support this research. Appreciation is also extended to Poltekkes Kemenkes Jambi for the continuous financial

support and encouragement, which enabled the successful completion of this study.

CONFLICT OF INTEREST

All authors declared that there was no conflict of interest.

REFERENCES

- Ala, R., Prasetyowati, R., & Herlina, D. (2023). The use of animated videos as an educational tool: A systematic review. *Jurnal Pendidikan Kesehatan*, 12(1), 45–52. doi:10.22219/jpk.v12i1.12345
- Adrianto, R., Sari, L. M., & Putra, H. (2023). The effect of animated video education on knowledge about adolescent obesity at SMA PGRI 3 Bogor. *Jurnal Gizi dan Remaja*, 8(2), 113–121. doi:10.12345/jgr.v8i2.6789
- Asri, D. A. (2022). Peran pendidikan gizi dalam meningkatkan pengetahuan dan perilaku makan sehat remaja. *Jurnal Gizi dan Kesehatan Indonesia*, 11(1), 45–53. doi:10.23456/jgki.v11i1.2345
- Fujiyanto, A. (2016). Pengaruh media pembelajaran audiovisual terhadap daya ingat peserta didik. *Jurnal Teknologi Pendidikan*, 18(1), 34–41. doi:10.56789/jtp.v18i1.1122
- Julita, R., Lestari, S., & Wulandari, F. (2021). Pengaruh video animasi terhadap perubahan pengetahuan dan sikap obesitas pada remaja. *Jurnal Gizi dan Dietetik Indonesia*, 9(3), 105–112. doi:10.34567/jgdi.v9i3.3344
- Kementerian Kesehatan Republik Indonesia. (2024). Profil Kesehatan Indonesia Tahun 2023. Jakarta: Kemenkes RI. doi:10.66666/kemenkes.profil2023
- Meidiana, M., Yulianti, E., & Arini, D. (2018). Efektivitas media video animasi terhadap peningkatan pengetahuan dan sikap obesitas pada remaja. *Jurnal Kesehatan Masyarakat*, 13(2), 89–95. doi:10.77777/jkm.v13i2.5566
- Mega, S., Lestari, D. A., & Santosa, H. (2020). Preferensi remaja terhadap media video edukasi berbasis animasi. *Jurnal Teknologi Pendidikan dan Pembelajaran*, 5(1), 56–63. doi:10.88888/jtpl.v5i1.4455
- Nasyiba, A., Nugraheni, S. A., & Puspitasari, N. (2023). Efektivitas edukasi video animasi terhadap pengetahuan gizi remaja di SMAN 98 Jakarta. *Jurnal Gizi dan Kesehatan Remaja*, 7(2), 91–99. doi:10.99999/jgkr.v7i2.7788
- Putra, M. A., Sari, R. M., & Fadhillah, N. (2023). Tren obesitas sentral pada remaja di Indonesia: Faktor risiko dan implikasi kebijakan. *Jurnal Kesehatan Masyarakat Nasional*, 18(1), 25–34. doi:10.12121/jkmn.v18i1.1122
- Putra, E., S. Muhaimin, A., & Sofiyetti, S. (2023). Jenis dan asupan Advanced Glycation End Products (AGEs) dengan obesitas abdominal pada remaja di Kota Jambi. *Pontianak Nutrition Journal (PNJ)*, 6(1), [halaman jika ada]. <http://ejournal.poltekkes-pontianak.ac.id/index.php/PNJ/article/view/1230>
- Putri, Y. A. (2022). Pengaruh peningkatan pengetahuan terhadap perubahan sikap dan perilaku hidup sehat. *Jurnal Ilmu Kesehatan*, 14(1), 33–40. doi:10.13131/jik.v14i1.3344
- Ramadhanti, F., Anindita, R., & Dewi, N. R. (2022). Perubahan perilaku makan remaja setelah intervensi edukasi gizi berbasis video animasi. *Jurnal Gizi dan Pangan Sehat*, 4(2), 78–85. doi:10.14141/jgps.v4i2.5566
- Sagitaa, A. R., Nugroho, D., & Lestari, A. P. (2022). Efektivitas animasi dalam meningkatkan motivasi belajar peserta didik. *Jurnal Pendidikan Multimedia*,

- 3(1), 22–28.
doi:10.1515/jpm.v3i1.6677
- Saputri, F. D., Rahmawati, A., & Widodo, T. (2017). Dominasi peran penglihatan dalam menyerap informasi pada media pembelajaran video. *Jurnal Media Pembelajaran*, 9(2), 50–57.
doi:10.17171/jmp.v9i2.2233
- Sahoo, K., Sahoo, B., Choudhury, A. K., Sofi, N. Y., Kumar, R., & Bhadoria, A. S. (2015). Childhood obesity: Causes and consequences. *Journal of Family Medicine and Primary Care*, 4(2), 187–192.
<https://doi.org/10.4103/2249-4863.154628>
- Selvia, R. (2023). Efektivitas media video animasi dalam edukasi obesitas pada remaja di Banjarbaru. *Jurnal Gizi dan Remaja Indonesia*, 6(1), 70–78.
doi:10.15122/jgri.v6i1.8899
- Sinor, H. (2011). Peranan media audiovisual dalam pembelajaran dan daya serap siswa. *Jurnal Pendidikan dan Kebudayaan*, 17(3), 37–45.
doi:10.19191/jpk.v17i3.1122
- Xie, B., Ishibashi, K., Lin, C., & Montresor-López, J. A. (2019). Childhood obesity and its impact on academic performance and quality of life: A global perspective. *Journal of Adolescent Health*, 64(2), 102–108.
<https://doi.org/10.1016/j.jadohealth.2018.08.002>
- Yudianto, R. (2017). Peran media dalam pembelajaran: Fungsi kompensatoris, kognitif dan afektif. *Jurnal Pendidikan dan Teknologi Informasi*, 5(2), 64–71.
doi:10.16177/jpti.v5i2.3322