AHMAR METASTASIS HEALTH JOURNAL
Available online at: http://journal.ahmareduc.or.id/index.php/AMHJ
Vol. 5. No. 1. June 2025, Page 19-25
P-ISSN: 2797-6483 E-ISSN: 2797-4952

The Influence of Video Media on Improving Knowledge and Attitudes of Adolescent Girls Regarding Chronic Energy Deficiency

Riana Trinovita Sari[1*], Nadya Wulandari[1], Nursyahid Siregar[1], Rizki Amelia[1], Supriatin[2,3]

[1] Department of Midwifery, Politeknik Kesehatan Kementerian Kesehatan Kalimantan Timur, Samarinda, East Kalimantan, Indonesia
[2] Department of Nursing Science, Cirebon College of Health Sciences, Cirebon, West Java, Indonesia
[3] Ph.D Program in Nursing, Lincoln University College, Petaling Jaya, Selangor Darul Ehsan, Malaysia

ARTICLE INFO

Article Type:
Research

Article History:
Received: 18 March 2025
Accepted: 29 June 2025
Published: 30 June 2025

[*]***Corresponding author***
Email: *rianats@gmail.com*

ORIGINAL ARTICLE

ABSTRACT
Adolescent girls are a vulnerable group to nutritional problems, particularly Chronic Energy Deficiency (CED), which can affect reproductive health and the quality of future generations. One of the main contributing factors to CED is the lack of knowledge and attitude toward nutrition. Video media is considered an effective educational tool as it combines engaging visual and audio elements. This study aimed to determine the effect of video media on improving the knowledge and attitudes of adolescent girls regarding CED at SMAN 4 Samarinda. The study employed a pre-experimental one-group pre-test post-test design with a sample of 39 eleventh-grade students selected through purposive sampling. The intervention consisted of a ±10-minute educational video on CED shown twice a week. Data were collected using questionnaires and analyzed using univariate and bivariate analysis with the Wilcoxon test. Results showed that most respondents were 16 years old (64.1%) and had a below-normal Body Mass Index (84.6%), indicating a risk of CED. The most common physical activity was participation in scouting (35.9%), followed by dance and volleyball. After the intervention, there was a significant increase in knowledge, from a median score of 10.00 to 13.00 (p = 0.002), and in attitude, from a median score of 31.00 to 33.00 (p = 0.001). These findings indicate that video media is effective in improving adolescents' understanding of CED. However, its effectiveness may also be influenced by age and prior access to information. Therefore, video media is highly recommended as a nutritional education tool in adolescent health programs.

Keywords: Chronic Energy Deficiency, Adolescent Girls, Video Media, Knowledge, Attitude.

ABSTRAK
Remaja putri merupakan kelompok yang rentan mengalami masalah gizi, khususnya Kekurangan Energi Kronik (KEK), yang dapat berdampak pada kesehatan reproduksi dan kualitas generasi mendatang. Rendahnya pengetahuan dan sikap terkait gizi menjadi salah satu faktor penyebab utama. Media video sebagai sarana edukasi dinilai efektif karena menggabungkan elemen visual dan audio yang menarik. Penelitian ini bertujuan untuk mengetahui pengaruh media video terhadap peningkatan pengetahuan dan sikap remaja putri tentang KEK di SMAN 4 Samarinda. Penelitian menggunakan desain pre-eksperimental one-group pre-test post-test dengan sampel sebanyak 39 siswi kelas XI yang dipilih melalui teknik purposive sampling. Intervensi berupa pemutaran video edukatif berdurasi ±10 menit yang ditayangkan dua kali dalam seminggu. Data dikumpulkan menggunakan kuesioner dan dianalisis secara univariat dan bivariat menggunakan uji Wilcoxon. Hasil menunjukkan sebagian besar responden berusia 16 tahun (64,1%) dan memiliki IMT kurang (84,6%), yang mengindikasikan risiko KEK. Aktivitas fisik tertinggi diperoleh dari kegiatan Pramuka (35,9%), diikuti tari dan voli. Setelah intervensi, terjadi peningkatan signifikan pada pengetahuan, dari median 10,00 menjadi 13,00 (p = 0,002), dan pada sikap, dari median 31,00 menjadi 33,00 (p = 0,001). Hasil ini menunjukkan bahwa media video efektif dalam meningkatkan pemahaman remaja tentang KEK. Namun, efektivitas ini juga dipengaruhi oleh faktor usia dan akses informasi sebelumnya. Oleh karena itu, penggunaan media video sebagai alat edukasi gizi sangat disarankan dalam program kesehatan remaja.

Kata kunci: Kekurangan Energi Kronis, Remaja Putri, Media Video, Pengetahuan, Sikap.

INTRODUCTION

Adolescence is defined by the World Health Organization as a transitional phase from childhood to adulthood and is widely recognized as a critical period for nutrition (WHO, 2018). The increasing adolescent population demands more attention to the nutritional needs of this age group, especially as concerns over physical appearance can lead to harmful dietary behaviors (Putri & Ariastuti, 2018). The 2018 Basic Health Research (Riskesdas) highlighted that 8.7% of adolescents aged 13–15 were undernourished based on height-for-age (HFA), with 1.9% severely thin and 6.8% thin (Badan Penelitian dan Pengembangan Kesehatan, 2019). Similarly, among 16–18-year-olds, 8.1% were undernourished based on BMI-for-age, including 1.4% severely thin and 6.7% thin (Badan Penelitian dan Pengembangan Kesehatan, 2019).

The Indonesian Ministry of Health has emphasized the urgency of addressing adolescent malnutrition due to its multifactorial causes (Kemenkes RI, 2019). Girls are especially vulnerable, as nutritional issues like Chronic Energy Deficiency (CED) can affect their health during adolescence and future reproductive outcomes. CED, defined by a mid-upper arm circumference (MUAC) below 23.5 cm, can persist into pregnancy and lead to complications such as low birth weight (LBW), anemia in infants, birth defects, stillbirths, and impaired fetal development (Ramadhanti & Virawati, 2023). These consequences also include short-term effects such as stunted growth and anemia, ultimately reducing productivity and quality of life.

In Samarinda, the 2019 health screening data from junior and senior high schools recorded 761 adolescents as severely thin and 1,873 as thin (Dinas Kesehatan Kalimantan Timur, 2020). Schools like SMPN 8, SMPN 36, and MTs Labbaika showed the highest malnutrition rates among junior high schools, while SMAN 4, SMK TI Labbaika, and SMKN 8 led among high schools (Mulyana & Nugroho, 2020). Nutritional status, often measured by BMI and MUAC, reflects the balance between nutrient intake and bodily needs over time. Studies show that CED is influenced by socioeconomic and behavioral factors such as parental education and income, poor dietary habits, adolescent activity levels, and infectious diseases (Juliantara & Nugroho, 2021; Suarjana & Nursanyoto, 2020).

Previous research has shown that nutritional knowledge among adolescents remains low, despite various health campaigns. The 2012 Demographic and Health Survey (SDKI) reported that over 70% of Indonesian adolescents aged 15–19 lack adequate nutritional knowledge. Interventions, including nutrition education programs, have been proven effective in improving knowledge and health outcomes (Zaki & Sari, 2019). A study by Juliantara and Nugroho (2021) revealed that while 89.3% of adolescents at SMP N 8 Samarinda Seberang had good nutritional knowledge post-intervention, a significant portion initially had poor understanding. This highlights a critical opportunity for education to fill knowledge gaps, especially through engaging formats that align with adolescent preferences.

This study introduces the use of video media as a novel approach to nutrition education, aiming to enhance adolescents' knowledge and attitudes regarding CED. According to Fakhriyah (2021), the majority of human knowledge is acquired through visual input (75–87%), suggesting that videos—combining visual and auditory stimuli—are more effective than traditional print or lecture-based methods. Research supports that animated, interactive video content boosts engagement and comprehension (Parlindungan & Mahardika, 2020). A preliminary survey involving 300 adolescent girls found that 174 exhibited symptoms of CED, and interviews showed a lack of understanding about CED's causes and effects. This study aims to investigate the effect of video media on improving the knowledge and attitudes of adolescent girls regarding Chronic Energy Deficiency (CED) at SMAN 4 Samarinda.

RESEARCH METHODS

This study employed a quantitative research approach using a pre-experimental design, specifically the one-group pre-test post-test design. In this type of design, no control or comparison group is used; however, an initial observation (pre-test) is conducted before the intervention, allowing the researcher to assess any measurable changes that occur after the treatment. The dependent variable was measured both before and after the intervention to evaluate its effect (Sahir, 2021).

The population in this study included all 11th-grade female students at SMAN 4 Samarinda, totaling 174 individuals. A sample of 39 students was selected through purposive sampling,

based on specific inclusion criteria relevant to the research objectives. The study was conducted over a period of three months, from January to March 2024, at SMAN 4 Samarinda, located in Loa Janan Ilir District, Samarinda City, East Kalimantan Province.

Data collection techniques included pre-test and post-test questionnaires, along with the use of a 10-minute educational video about Chronic Energy Deficiency (CED), which was shown twice a week to the participants. The pre-test was administered prior to the educational video, and the post-test followed the completion of the intervention. A total of 14 questions were used to assess participants' knowledge and attitudes, specifically among those diagnosed with or exhibiting signs of CED who participated until the end of the program.

The research instruments consisted of a questionnaire containing 14 items, each with two answer choices. The items included both positively (favorable) and negatively (unfavorable) worded statements related to CED. For each item, a correct answer was given a score of 1, and an incorrect answer a score of 0, with the same scoring method applied to both types of questions. This structure allowed the researchers to accurately measure levels of understanding while reducing response bias.

To ensure the validity and reliability of the instruments, preliminary testing was carried out among 30 tenth-grade female students at SMAN Samarinda Seberang using the same knowledge and attitude questionnaires. For data analysis, both univariate and bivariate analyses were employed. Univariate analysis was used to describe individual variables, while bivariate analysis explored the relationships between the independent and dependent variables. To assess the effectiveness of the video intervention, particularly changes in knowledge and attitude before and after the treatment, the Wilcoxon signed-rank test was applied.

RESULTS

Table 1. Distribution of Respondents Based on Age, BMI, and Physical Activity of Female Students at SMAN 4 Samarinda Seberang.

Variable	Frequency	Percentage (%)
Age		
15 Year	11	28.2
16 Year	25	64.1
17 Year	3	7.7
Total	39	100.0
BMI Classification		
Underweight (≤18,5)	33	84.6
Normal (18,5)	6	15.4
Total	39	100.0
Physical Activity		
Scouting	14	35.9
Flag Hoisting Troop (Paskibra)	4	10.3
Dance	8	20.5
Volleyball	6	15.4
Girls's Futsal	4	10.3
Tennis	2	5.1
Horkay	1	2.8
Total	39	100.0

Table 1 indicates that the majority of respondents were 16 years old, accounting for 26 students (68.4%), while the smallest age group comprised 15-year-olds, with only 2 students (5.3%). In terms of nutritional status, most respondents were classified as having a low Body Mass Index (BMI), totaling 33 students (84.6%), whereas only 6 students (15.4%) fell within the normal BMI range.

Regarding participation in extracurricular activities, most respondents were actively involved in school programs. The Scout activity had the highest participation, with 14 students (35.9%), followed by dance (8 students or 20.5%), volleyball (6 students or 15.4%), and the flag-hoisting troop (Paskibra) with 4 students (10.3%). These groups were categorized as high-activity extracurriculars due to their physically engaging nature.

In contrast, low-activity extracurriculars included girls' futsal (4 students or 10.3%), tennis (2 students or 5.1%), and Horkay, which had the lowest participation with only 1 student (2.8%). The distribution of extracurricular involvement reflects a generally active student population, though with varying degrees of physical intensity across different activity types.

Table 2. Knowledge Scores on Chronic Energy Deficiency (CED) Before and After Health Education Using Video Media at SMAN 4 Samarinda Seberang

Knowledge	Intervensi	
	Pretest	Posttest
Mean	10.36	12.41
Median	10.00	13.00
Standard Deviation	1.224	1.069
Minimum	7	10
Maximum	12	14

Table 2 shows that the knowledge scores on CED before the intervention using video media had a mean of 10.36, a median of 10.00, a standard deviation of 1.224, a minimum score of 7, and a maximum score of 12. After the intervention, the mean increased to 12.41, the median to 13.00, the standard deviation was 1.069, with scores ranging from a minimum of 10 to a maximum of 14.

Table 3. Attitude Scores on CED Before and After Health Education Using Video Media at SMAN 4 Samarinda Seberang

Attitude	Intervention	
	Pretest	Posttest
Mean	29.28	33.15
Median	31.00	33.00
Standard Deviation	4.489	2.334
Minimum	23	28
Maximum	38	37

Table 3 shows that the attitude scores on CED before the intervention had a mean of 29.28, a median of 31.00, a standard deviation of 4.489, a minimum score of 23, and a maximum of 38. After the intervention, the mean increased to 33.15, the median to 33.00, the standard deviation was 2.334, with a minimum score of 28 and a maximum of 37.

Table 4. Respondents' Knowledge Scores Between Pre-test and Post-test

Knowledge	Median		p-value
	Pretest	Posttest	0,002
Median	10,00	13,00	

Table 4 shows that the difference in median scores between the pre-test and post-test was 3.00. Based on the analysis using the Wilcoxon test to compare pre- and post-intervention scores, the p-value obtained was 0.002 (< alpha = 0.05), and the Z-score was 3.162 (> Z-table = 1.96), indicating that the null hypothesis (Ho) is rejected. This means that video media had a significant effect on the knowledge of adolescents at SMAN 4 Samarinda.

Table 5. Respondents' Attitude Scores Between Pre-test and Post-test

Attitude Scores	Median		p-value
	Pretest	Posttest	0,000
Median	31,00	33,00	

Table 5 shows that the difference in median scores between the pre-test and post-test was 2.00. Based on the analysis using the Wilcoxon test to compare scores before and after the intervention, the p-value obtained was 0.001 (< alpha = 0.05), and the Z-score was 4.123 (> Z-

table = 1.96), indicating that the null hypothesis (Ho) is rejected. This means that video media had a significant effect on the attitudes of adolescents at SMAN 4 Samarinda.

DISCUSSION

Based on the study findings related to age, the majority of respondents were 16 years old, comprising 25 female students (64.1%). This result aligns with the study by Mulyana and Nugroho (2020), which also reported that most respondents were 16 years old (71.4%). According to Wawan and Dewi (2020), age is a factor that influences an individual's level of knowledge; the older a person is, the more mature their thinking and behavior become. This notion is further supported by Sinaga, Khasanah, & Suyatmi, (2021), who states that increasing age enhances cognitive maturity and one's ability to process information and act accordingly. The researcher assumes that age not only influences knowledge but also shapes attitudes and decision-making processes. From a social standpoint, older adolescents are often considered more experienced and emotionally mature, which may lead to increased community trust.

In terms of nutritional status, the majority of respondents had a Body Mass Index (BMI) below 18.5, indicating underweight status. A total of 33 students (84.6%) were found to have low BMI, while only 6 students (15.4%) had a normal BMI. These findings suggest that most respondents were at risk of Chronic Energy Deficiency (CED). This result supports the findings of Aprianti et al. (2021) at Suela Health Center, where a significant number of adolescents had a BMI ≥18.5–24.9 and an upper arm circumference (UAC) ≥23.5 cm. BMI is a widely accepted, simple indicator for monitoring nutritional status and identifying undernutrition. Undernutrition is defined as a BMI between 17.0–18.5 or below 17.0. Nutritional deficiencies below recommended levels can lead to growth impairments, weakened immunity, poor concentration, and altered brain function (Fatimah, 2018).

The researcher assumes that sufficient nutritional intake significantly affects knowledge and attitudes. Access to nutritional information—whether from health professionals, family members, peers, or mass media—can improve decision-making related to health and nutrition. Individuals who are well-informed are more likely to consider the benefits and risks of their actions, especially regarding dietary habits. The study also showed that among the 39 adolescent girls with signs of CED, 32 (82.1%) engaged in high levels of extracurricular physical activity, while only 7 (17.9%) had low activity levels. This result is consistent with findings from Kisworo, Theresia, & Kurniati (2019), which indicated that highly active adolescents may neglect meal times or substitute balanced meals with instant food, contributing to nutritional imbalances.

In terms of knowledge improvement, the median score of respondents before the intervention was 10.00 and increased to 13.00 after the video-based health education. The Wilcoxon signed-rank test showed a p-value of 0.002 ($p < 0.05$), indicating a statistically significant difference in knowledge before and after the intervention. This result is consistent with findings by Waryana and Almira (2019), who reported that video-based nutrition education significantly improved adolescents' knowledge in preventing CED. Similarly, Mentari et al. (2022) also observed a significant increase in knowledge following video media intervention, with a Wilcoxon p-value of 0.000. The increase in median score by 2.00 points suggests that video media is an effective and engaging tool for delivering health information. The researcher assumes that video media is both efficient and scalable, as it allows for repeated viewing and broad dissemination through digital platforms. However, knowledge gains may also be influenced by age, prior information exposure, or existing interest in the topic.

In terms of attitude, the median score increased from 31.00 to 33.00 after the intervention, with a Wilcoxon p-value of 0.001, indicating a significant improvement. This finding is supported by Norhasanah and Dewi (2021), who found a significant increase in attitudes toward balanced nutrition following video-based education among adolescent girls with CED. Similarly, Oktari et al., (2021) reported a significant increase in the knowledge and attitudes of women of childbearing age after counseling through video media. Rizma and Sudiyat (2021) emphasized that video-based learning effectively accelerates understanding and strengthens memory by stimulating both visual and auditory senses. The researcher assumes that changes in respondents' attitudes were not solely driven by the intervention but also by external factors such as previous exposure to health information.

This study has several limitations. First, the lack of a control group limits the ability to isolate the effects of the intervention from other potential influencing factors. Second, the use of purposive sampling and a relatively small sample size may affect the generalizability of the findings. Lastly, self-reported data may introduce bias, particularly in knowledge and attitude assessments. Future research is recommended to include a control group, a larger and more diverse sample, and a longer follow-up period to assess the sustainability of behavior changes.

CONCLUSION

There was a significant effect of health education using video media on the improvement of knowledge and attitudes regarding Chronic Energy Deficiency (CED) among students of SMAN 4 Samarinda Seberang. Future researchers are encouraged to develop combined or alternative methods to create innovative approaches for delivering CED-related material that can be well-received by respondents.

REFERENCES

Aprianti, N. F., Ilmiyani, S. N., Yusuf, N. N., & Sari, A. S. (2021). Faktor-Faktor Yang Berhubungan Dengan Kekurangan Energi Kronik (Kek) Pada Ibu Hamil Di Puskesmas Suela Tahun 2020. *Jurnal Rumpun Ilmu Kesehatan*, 1(2), 20-30. https://doi.org/10.55606/jrik.v1i2.1039

Badan Penelitian dan Pengembangan Kesehatan. (2019). *Laporan Nasional RISKESDAS 2018.* Jakarta: Badan Penelitian dan Pengembangan Kesehatan, Kementerian Kesehatan Republik Indonesia.

Dinas Kesehatan Kalimantan Timur. (2020). *Profil Kesehatan Dinas Kesehatan Provinsi Kalimantan Timur 2019*. Dinas Kesehatan Kalimantan Timur.

Fakhriyah, F., Isnaini, I., Noor, M. S., Putri, A. O., Fitriani, L., Abdurrahman, M. H., & Qadrinnisa, R. (2021). Edukasi Remaja Sadar Gizi untuk Pencegahan Kekurangan Energi Kronik (Kek) dalam Menurunkan Angka Kematian Ibu (Aki) di Wilayah Lahan Basah. *SELAPARANG: Jurnal Pengabdian Masyarakat Berkemajuan,* 5(1), 499-503. https://doi.org/10.31764/jpmb.v5i1.5764

Fatimah, H. R., Meilani, N., & Maryani, T. (2018). Faktor-faktor yang mempengaruhi perilaku deteksi dini kanker payudara dengan SADARI pada wanita di Kecamatan Tegalrejo Kota Yogyakarta. *Skripsi.* Poltekkes Kemenkes Yogyakarta. Retrieved from: https://eprints.poltekkesjogja.ac.id/1697/

Juliantara, R., & Nugroho, P. S. (2021). Hubungan Tingkat Pendidikan Orang Tua dan Status Pekerjaan Orang Tua Terhadap Gizi Kurang Pada Remaja di SMPN 8 Samarinda. *Borneo Studies and Research,* 2(3), 2031-2037.

Kementerian Kesehatan Republik Indonesia. (2019). *Laporan Akuntabilitas Kinerja 2018*. Kementerian Kesehatan Republik Indonesia.

Kisworo, N. A., Theresia, N. M., & Kurniati, A. (2019). Peningkatan Pengetahuan Tentang Higiene Menstruasi Pada Remaja Putri Dengan Media Audiovisual Di SMPN 3 Sleman Tahun 2019. *Skripsi*. Poltekkes Kemenkes Yogyakarta. Retrieved from: https://eprints.poltekkesjogja.ac.id/2253/

Mentari, R. N., Arum, P., Permadi, M. R., & Jannah, M. (2022). Pengaruh Edukasi Gizi Menggunakan Media Video terhadap Perubahan Pengetahuan dan Asupan Makan Remaja Putri Kurang Energi Kronik (KEK). *HARENA: Jurnal Gizi,* 3(1), 53-60. https://doi.org/10.25047/harena.v3i1.3481

Mulyana, D. A., & Nugroho, P. S. (2020). Hubungan antara Pengetahuan Gizi dan Gejala Stres dengan Gizi Kurang pada Remaja. *Borneo Studies and Research*, 2(1), 474-479.

Norhasanah, N., & Dewi, A. P. (2021). Pendidikan Gizi Berpengaruh Terhadap Pengetahuan dan Sikap Mengenai Gizi Seimbang pada Remaja Putri Kurang Energi Kronik di Madrasah Aliyah Negeri 2 Banjar. *Jurnal Kesehatan Indonesia*, 11(3), 111-115. Retrieved from: https://www.journal.stikeshb.ac.id/index.php/jurkessia/article/view/452

Oktari, R., Rizal, A., Jumiyati, J., Wahyu, T., & Natan, O. (2021). Pengaruh Penyuluhan Melalui Media Video Terhadap Pengetahuan Dan Sikap Wanita Usia Subur Dalam Mencegah Kekurangan Energi Kronik Di Wilayah Kerja Puskesmas Tunas Harapan Kabupaten

Rejang Lebong. *Skripsi*. Poltekkes Kemenkes Bengkulu. Retrieved from: https://repository.poltekkesbengkulu.ac.id/611/

Parlindungan, D. P., Mahardika, G. P., & Yulinar, D. (2020, October). Efektivitas media pembelajaran berbasis video pembelajaran dalam pembelajaran jarak jauh (PJJ) di SD Islam An-Nuriyah. *Prosiding Seminar Nasional Penelitian LPPM UMJ, 1-8*. Retrieved from: https://jurnal.umj.ac.id/index.php/semnaslit/article/view/8793

Putri, N.M.D.P., & Ani, L.S. (2018). Persepsi Body Image Berhubungan Dengan Status Gizi Pada Pelajar SMA Negeri 1 Gianyar. *E-Jurnal Medika Udayana*, 7(11), 1-5. Retrieved from: https://ojs.unud.ac.id/index.php/eum/article/view/44089

Ramadhanti, S. C., Satriani, Amiruddin, & Dini Indo Virawati. (2023). Effectiveness of the Booklet on Knowledge and Attitudes Regarding Prevention of Chronic Energy Deficiency. *Formosa Journal of Multidisciplinary Research*, *2*(10), 1683–1698. https://doi.org/10.55927/fjmr.v2i10.6449

Rizma, S. A., & Sudiyat, R. (2021). Pengembangan Media Promosi Kesehatan Video Animasi Mengenai Gizi Seimbang Pada Remaja Putri Tahun 2021. *Jurnal Kesehatan Siliwangi*, 2(1), 8-15. Retrieved from: https://jks.juriskes.com/index.php/jks/article/view/1799

Sahir, S. H. (2021). *Metodologi penelitian*. Yogyakarta: Penerbit KBM Indonesia.

Sinaga, A. B., Khasanah, F., & Suyatmi, D. (2021). Hubungan Pengetahuan Tentang Karies Gigi dengan Motivasi untuk Melakukan Penambalan Gigi pada Ibu Rumah Tangga. *Journal of Oral Health Care*, 9(1), 22-36. Retrieved from: https://e-journal.poltekkesjogja.ac.id/index.php/JGM/article/view/1092

Suarjana, I. (2020). Kurang energi kronik (KEK) remaja putri pelajar SMU/SMK dI Kabupaten Karangasem Propinsi Bali. *Jurnal Sehat Mandiri*, 15(1), 41-51. https://doi.org/10.33761/jsm.v15i1.106

Waryana, W., Sitasari, A., & Febritasanti, D. W. (2019). Intervensi media video berpengaruh pada pengetahuan dan sikap remaja putri dalam mencegah kurang energi kronik. *AcTion: Aceh Nutrition Journal*, 4(1), 58-62. http://dx.doi.org/10.30867/action.v4i1.154

Wawan, A., & Dewi, M. (2010). *Teori dan pengukuran pengetahuan, sikap dan perilaku manusia*. Yogyakarta: Nuha Medika.

WHO. (2018). *Adolescent Health*. World Health Organization. Retrieved from: https://www.who.int/health-topics/adolescent-health#tab=tab_1

Zaki, I., & Sari, H. P. (2019). Edukasi gizi berbasis media sosial meningkatkan pengetahuan dan asupan energi-protein remaja putri dengan kurang energi kronik (KEK). *Gizi indonesia*, 42(2), 111-122.