Journal of Health Promotion and Behavior (2025), 10(03): 333-343
Master's Program in Public Health, Universitas Sebelas Maret

Original article
Open Access

Effectiveness of Health Promotion Model-Based Educational Video on Adolescent Knowledge and Attitude Regarding Stunting Prevention: A Case Study in Ponorogo, Indonesia

Denis Khorudin[1)], Sajidan[2)], Ratih Puspita Febrinasari[3)], Revi Gama Hatta Novika[1,4)], Hari Wahyu Nugroho[5)]

[1)]Master's Program in Public Health, Faculty of Medicine, Universitas Sebelas Maret, Indonesia
[2)]Faculty of Teacher Training and Education, Universitas Sebelas Maret, Indonesia
[3)]Department of Pharmacology, Faculty of Medicine, Universitas Sebelas Maret, Indonesia
[4)]Department of Midwifery, Faculty of Medicine, Universitas Sebelas Maret, Indonesia
[5)]Faculty of Medicine, Universitas Sebelas Maret, Indonesia

Received: June 17, 2026; Accepted: July 8, 2026; Available online: July 16, 2026

ABSTRACT

Background: Indonesia's stunting prevalence stands at 19.8%, far above the national target of 14%. Adolescents, as future mothers, represent a critical yet underutilized upstream prevention target. No study has previously integrated all constructs of the Health Promotion Model (HPM) into an educational video for adolescent stunting prevention. This study aimed to develop a valid HPM-based reproductive health education video and evaluate its effectiveness on adolescent knowledge and attitudes.

Subjects and Method: A sequential exploratory mixed-method study applied the Analysis, Design, Development, Implementation, and Evaluation in Research and Development (ADDIE R&D) framework combined with a quasi-experimental with control group design, was conducted at two High Schools in Ponorogo, Indonesia. The intervention group consisted of 55 senior high school students, while the control group consisted of 55 vocational high school students. Study was carried out from September 2025 to March 2026. Content validity was assessed by two experts: a health promotion specialist and a visual media specialist. Quantitative data were analyzed using the Wilcoxon signed-rank test (within-group) and Mann-Whitney test (between-group).

Results: Expert validation demonstrated excellent content validity, with a perfect Scale-Level Content Validity Index based on the average method (S-CVI/Ave = 1.00), and no revisions were required. Knowledge scores increased significantly in the intervention group ($p < 0.001$). Attitude scores also improved significantly in the control group ($p<0.001$). However, the post-test comparison between the intervention and control groups showed a statistically significant difference ($p <0.001$), with the intervention group achieving superior outcomes.

Conclusion: The Health Promotion Model (HPM)-based reproductive health educational video demonstrated excellent content validity and significantly improved adolescents' reproductive health outcomes. Therefore, its integration into school-based health promotion programs is recommended to enhance reproductive health education among adolescents.

Keywords: educational video, health promotion model, reproductive health, stunting prevention, adolescents

Correspondence:
Ratih Puspita Febrinasari. Faculty of Medicine, Universitas Sebelas Maret. Jl. Ir. Sutami 36A, Surakarta, Central Java, Indonesia 57126. Email: ratihpuspita@staff.uns.ac.id.

Cite this as:
Khorudin D, Sajidan, Febrinasari RP, Novika RGH, Nugroho HW (2026). Effectiveness of Health Promotion Model-Based Educational Video on Adolescent Knowledge and Attitude Regarding Stunting Prevention: A Case Study in Ponorogo, Indonesia. *J Health Promot Behav*. 11(03): 333-343. https://doi.org/10.26911-/thejhpb.2026.11.03.03.

BACKGROUND

Stunting defined as a height-for-age z-score below −2 standard deviations is the most persistent nutritional public health challenge in Indonesia. The 2024 Indonesian Nutrition Status Survey (SSGI) recorded a national prevalence of 19.8%, a slow decline from 21.5% in 2023 but still well above the 14% target mandated by Presidential Regulation No. 72 of 2021 (Ministry of Health of the Republic of Indonesia, 2024). Globally, Indonesia ranks fifth in absolute stunting burden (Miranda et al., 2023; Agushybana et al., 2022), with consequences extending beyond linear growth failure to encompass lifelong cognitive deficits, reduced economic productivity, and intergenerational nutritional insecurity (Ardiana et al., 2020).

Ponorogo Regency, East Java, illustrates this challenge vividly: despite a decline from 20% in 2018 to 14.2% in 2022, Badegan and Sampung Community Health Centers recorded 109 and 229 stunted children under five, respectively, in 2023 (Ponorogo District Health Office, 2023), against a regional target of only 4% by 2025. These figures reflect inter-sub-district heterogeneity masked by aggregate statistics, driven by determinants such as maternal height, body mass index, and nutritional status during pregnancy all products of adolescent reproductive health status.

Adolescent girls as future mothers represent the most strategically upstream target for stunting prevention. Government Regulation No. 28 of 2024 formally mandates adolescent reproductive health education, yet implementation remains theory-poor: fewer than 15% of school-based reproductive health programs use validated behavioral theory (Kumalasari et al., 2021). In Ponorogo, this gap is palpable conventional classroom methods fail to generate the cognitive and attitudinal shifts needed for sustainable reproductive health behaviors among Indonesia's approximately 46 million adolescents (Ministry of Health of the Republic of Indonesia, 2024).

The Health Promotion Model (HPM), developed by Nola J. Pender and revised in 2015, addresses this gap through a framework of perceived benefit, perceived barrier, self-efficacy, activity-related affect, interpersonal influences, and situational influences (Pender et al., 2015). Video media operationalizes HPM through Mayer's (2009) Cognitive Theory of Multimedia Learning (CTML), leveraging dual-channel visual-auditory processing to yield up to 50% higher retention compared with verbal instruction alone (Dale, 1969). With 91.2% of Indonesian adolescents owning smartphones (APJII, 2023), video distribution offers unparalleled scalability.

To the best of our knowledge, this study is the first to develop a reproductive health educational video integrating all HPM constructs into a single validated media artifact for adolescent stunting prevention, validated by two domain-specific experts (a health promotion specialist and a visual media specialist) achieving a perfect S-CVI/Ave of 1.00 with no revisions surpassing previous HPM-based interventions in Indonesia that employed workshops (Sallis & Owen, 2002), leaflets (Sari & Pratiwi, 2020), or app-based approaches (Resnicow & McCarty, 2023) with CVI values ≤0.91 and the first to test its effectiveness using Wilcoxon signed-rank and Mann-Whitney U tests in a controlled school-based comparison within a high-

burden Indonesian district. This study aimed to analyze adolescent characteristics and needs related to reproductive health information for stunting prevention, design an HPM-based reproductive health educational video, and evaluate its effectiveness in improving adolescent knowledge and shifting attitudes toward stunting prevention.

SUBJECTS AND METHOD

1. Study Design

This study employed a sequential exploratory mixed-method design in two phases. Phase I applied the Analysis, Design, Development, Implementation, and Evaluation in Research and Development (ADDIE R&D) framework to develop the educational video. Phase II used a quasi-experimental with control group design to test its effectiveness. Students from the senior high school (SMA) served as the intervention group, whereas students from the vocational high school (SMKN) served as the control group. The schools were purposively selected based on the documented stunting burden in their respective sub-districts, socioeconomic comparability, and the absence of any previously implemented structured reproductive health video program. The study was conducted in Ponorogo Regency, East Java, from September 2025 to March 2026.

The intervention group received the HPM-based video combined with peer group education sessions, while the control group received peer group education with a conventional Power Point presentation. Each group comprised 55 respondents. The HPM video was shown in one live screening session, then distributed four times over one month via social media, consistent with CTML recommendations of 2–3 viewings per module (Mayer, 2009).

2. Population and Sample

The target population comprised adolescents aged 15–19 years. The accessible population included all students enrolled at the selected senior high school (SMAN) and vocational high school (SMKN) in Ponorogo, East Java, Indonesia, totaling 2,462 students. The required sample size was calculated using the two-means hypothesis testing formula described by Lemeshow et al. (1990), yielding a minimum of 50 participants per group. After accounting for an anticipated 10% attrition rate, the final sample size was increased to 55 participants per group (N= 110). Participants were selected using simple random sampling from each school's student roster.

3. Study Variables

The dependent variables were knowledge and attitude regarding reproductive health and stunting prevention. The independent variable was HPM-based reproductive health and stunting prevention educational video.

4. Operational Definition of Variables

Knowledge defined Students' level of understanding of reproductive health and its link to stunting prevention.

Attitude defined Students' internal response toward reproductive health and stunting prevention.

Educational video defined An audio-visual medium developed based on Mayer's Multimedia Learning principles and incorporating reproductive health and stunting prevention messages aligned with HPM constructs, delivered to the intervention group.

5. Study Instruments

Knowledge Questionnaire: A 20-item questionnaire adapted from the World Health Organization (WHO) reproductive health indicators (2020) and previously validated questionnaires assessing adolescent reproductive health knowledge (Fildza et al.,

2020; Tiara and Mariyani, 2019). Attitude Scale: 10-item 4-point Likert scale, adapted from HPM constructs (Pender, 2015). HPM-based educational video was validated by two domain experts—a health promotion specialist and an audiovisual media specialist from Institut Seni Indonesia (ISI) Surakarta, Indonesia, using a structured Content Validity Index (CVI) checklist.

6. Data analysis

Descriptive statistics (mean, standard deviation, median, minimum–maximum; frequency and percentage) described sample characteristics and variable distributions. Within-group differences were analyzed using the Wilcoxon signed-rank test. Between-group post-test differences were analyzed using the Mann-Whitney U test. All analyses were performed using SPSS version 26. Statistical significance was set at $p < 0.05$.

7. Research Ethics

Ethical approval was obtained from the Health Research Ethics Committee (KEPK) of Universitas Sebelas Maret, Surakarta, Indonesia, No. KEPK/UNS/2025/247, 18 August 2025.

RESULTS

1. Sample Characteristics

A total of 110 adolescents participated, distributed equally between the intervention group (n= 55) and the control group (n= 55). Female participants predominated at 61.8%, consistent with school enrollment profiles. Age distribution showed a majority aged 16 years (50%), representative of the late-adolescent reproductive health demographic target.

Table 1. Sample characteristics (n = 110)

Characteristics	Category	n	%
Sex	Female	68	61.8%
	Male	42	38.2%
Age	15 years old	6	5.5%
	16 years old	55	50.0%
	17 years old	49	44.5%

2. Univariate Analysis

A total of 110 adolescents participated in the study, with a mean age of 16.39 years (SD = 0.57; range, 15–17 years). Descriptive analysis showed that the mean knowledge score increased from 64.68 (SD = 11.63; range, 40–90) at pre-test to 70.59 (SD= 13.74; range, 40–100) at post-test. The increase in the maximum score to 100 indicated that some participants achieved complete mastery of the assessed knowledge following the intervention. Similarly, the mean attitude score increased from 29.75 (SD = 5.21; range, 14–38) at pre-test to 33.17 (SD = 4.78; range, 28–40) at post-test, suggesting an overall improvement in participants' attitudes after the intervention.

Table 2. Descriptive statistics of continous variables

Variable	N	Mean	SD	Min.	Max.
Age (years)	110	16.39	0.57	15	17
Knowledge score – Pre-test	110	64.68	11.63	40	90
Knowledge score – Post-test	110	70.59	13.74	40	100
Attitude score – Pre-test	110	29.75	5.21	14	38
Attitude score – Post-test	110	33.17	4.78	28	40

3. Bivariate Analysis

Between-group comparisons showed that, at baseline, the intervention group had significantly lower knowledge scores (Mean= 58.73, SD= 8.88) than the control group (Mean= 70.64, SD= 10.47; p <0.001), indicating pre-existing differences between the two schools before the intervention. Because of this baseline imbalance, intervention effectiveness was evaluated using change scores (Δ= post-test – pre-test). Following the intervention, the intervention group demonstrated a substantially greater improvement in knowledge than the control group (Δ= +17.73 vs. +3.00 points). Post-test knowledge scores also differed significantly between groups (intervention: Mean= 76.45; control: Mean= 73.64; p < 0.001).

A similar pattern was observed for attitude scores. At baseline, the intervention group had significantly lower attitude scores (Mean= 28.91, SD= 5.46) than the control group (Mean= 32.09, SD= 4.88; p <0.001). After the intervention, the intervention group showed a greater improvement in attitude than the control group (Δ= +5.18 vs. +4.15 points). Although the control group had a higher absolute post-test mean score (36.24 vs. 34.09), the difference between groups remained statistically significant (p < 0.001). The larger improvement in the intervention group despite its lower baseline scores suggests a beneficial effect of the HPM-based educational video.

Overall, the intervention group achieved a nearly six-fold greater increase in knowledge than the control group (Δ = +17.73 vs. +3.00 points), supporting the effectiveness of the HPM-based educational video in improving adolescents' knowledge of stunting prevention.

Table 3. Comparison of knowledge and attitude scores between intervention and control groups

Variables	Intervention Group			Control Group			p
	n	Mean	SD	n	Mean	SD	
Knowledge							
Pre-test	55	58.73	8.88	55	70.64	10.47	<0.001
Post-test	55	76.45	12.42	55	73.64	8.43	<0.001
Δ (Post–Pre)	55	+17.73	—	55	+3.00	—	
Attitude							
Pre-test	55	28.91	5.46	55	32.09	4.88	<0.001
Post-test	55	34.09	3.42	55	36.24	2.13	<0.001
Δ (Post–Pre)	55	+5.18	—	55	+4.15	—	

4. Qualitative FGD Findings

A total of 60 adolescents were included in the study. The distribution by sex was equal, with 30 males (50.0%) and 30 females (50.0%). Participants were also evenly distributed by grade level, consisting of 30 students in Grade X (50.0%) and 30 students in Grade XI (50.0%). Regarding academic major, respondents were equally distributed among Science (IPA), Social Studies (IPS), and Language (Bahasa) streams, each comprising 20 participants (33.3%). Age distribution showed that 30 participants (50.0%) were aged 15–16 years and 30 participants (50.0%) were aged 17–19 years.

Table 5. Characteristics of Focus Group Discussion (FGD) Respondents (n = 60)

Characteristics	n	%
Sex		
Male	30	50.00
Female	30	50.00
Year Grade Level		
Grade X	30	50.00
Grade XI	30	50.00
Major		
Science (IPA)	20	33.33
Social Studies (IPS)	20	33.33
Language (Bahasa)	20	33.33
Age Group		
15–16 years	30	50.00
17–19 years	30	50.00

DISCUSSION

Quantitative FGD Findings: Contens Gaps as the Development Bias

The perfect validation score did not stand alone; it was the product of a rigorous needs analysis in Phase 1. FGD identified five systemic content gaps that formed the video curriculum's foundation:

First, misconceptions about stunting etiology were widespread across all groups. Most participants reduced stunting to a genetic condition rather than the product of chronic malnutrition:

> *"K2-L07: I thought stunting was hereditary, not about food. Some of my friends eat poorly but are tall, while others eat well but are still short."*

Second, all groups were unaware of stunting's relevance to their own lives as adolescents, and ignorance of the intergenerational cycle was nearly universal:

> *"K1-L03: Stunting is a short child, malnourished as a baby. If you're already a teenager, it doesn't apply anymore."*

> *"K4-L05: Seriously? So if I eat poorly now, my future child could be stunted? And I'm still in high school."*

Third, reproductive health knowledge was confined to the physical aspects of puberty, with no connection to reproductive nutrition:

> *"K2-P01: What has never been taught is the link between reproductive health and nutrition how iron deficiency affects our future. That is never discussed."*

Fourth, non-adherence to iron supplementation (TTD) due to an educational deficit:

> *"K3-P06: We get iron tablets from school, but not many take them regularly. They cause nausea and no one explains why they are so important."*

Fifth, barriers to accessing valid reproductive health information:

> *"K4-P07: I once read an article about reproduction on Instagram, but the comments were so judgmental. In the end I was confused about what was true. I trust doctors or official sources more."*

This study employed a *sequential exploratory mixed-method* design integrating Phase 1 qualitative data (FGD, n = 60 adolescents, 6 groups) with Phase 2 quantitative data (quasi-experimental, n = 110). The discussion presents an integrated analysis of both data streams in parallel, following the QUAN → QUAL triangulation

logic recommended by Creswell & Plano Clark (2018). Three core findings are addressed: (1) perfect content validity of the HPM video (S-CVI/Ave = 1.00); (2) significant knowledge improvement in the intervention group ($p<0.001$); and (3) significant attitude improvement in the control group ($p<0.001$) with comparative superiority of the intervention group at post-test ($p <0.001$).

These five qualitative findings directly informed the seven content domains of the video that experts then validated with a perfect score. This process is consistent with the ADDIE principle that the depth of needs analysis is directly proportional to the quality of the final product (Dick et al., 2015). Theoretically, the FGD verified the relevance of all six HPM constructs (Pender et al., 2015) in the Ponorogo adolescent context: low perceived benefits, multi-layered perceived barriers (economic, environmental, social norms), labile but responsive self-efficacy, and interpersonal influences dominated by peers. It is precisely this accurate mapping of HPM constructs into video content that explains why two qualitatively distinct domain experts an academic health promotion specialist and an ISI Surakarta audiovisual specialist awarded the highest rating simultaneously.

Effectiveness of the HPM-Based Video on Adolescent Knowledge: Quantitative Analysis and Qualitative Confirmation

This study found that the intervention group has significantly higher knowledge scores than the control group. FGD data explain why the shallow baseline knowledge could shift significantly following HPM video intervention. Two mechanisms were identified:

The first mechanism is the cognitive surprise effect produced by information about the intergenerational cycle. Nearly all FGD participants stated they had never connected their current nutritional status with the risk of stunting in their offspring:

> *"K3-P05: Oh... really? I just found out. So what we eat now matters for our future children?"*
>
> *"K4-P02: [Surprised] I never knew that. That's what should have been taught from the beginning. It makes more sense this way."*

This cognitive surprise effect represents an ideal condition for new knowledge acquisition. Festinger's (1957) Cognitive Dissonance Theory (in Glanz *et al.*, 2015) posits that the mismatch between existing knowledge and new reality drives active reconstruction of cognitive schemas. This explains why exposure to the HPM video which explicitly incorporated information on the intergenerational cycle yielded substantial rank-based knowledge gains.

The second mechanism is information fragmentation, leaving participants with scattered and incoherent knowledge:

> *"K4-P08: Biology class covers nutrition, but it's never directly linked to stunting. The information is fragmented."*

The HPM video, which integrates all constructs in a single structured media artifact, directly addresses this fragmentation consistent with CTML's principles of coherence and signaling that enhance information retention (Mayer, 2009).

The effectiveness of the HPM-based video in improving adolescent knowledge about stunting prevention is consistent with earlier studies. Kumalasari et al. (2021) found in a systematic review that video-based educational interventions produced knowledge score improvements 1.4 until 2.3 times greater than conventional lecture methods. Fildza et al. (2020) reported significant knowledge gains among female adolescents on stunting prevention after an

animated video intervention (p = <0.001). What distinguishes this study is the integration of all HPM constructs rather than merely factual information into a single media artifact, which Pender et al. (2015) predict will generate more contextual and durable learning because it simultaneously engages cognitive, affective, and situational dimensions.

Effectiveness of the Intervention on Adolescent Attitudes: Cross-Validation of Quantitative and Qualitative Data

Our study found that the intervention group has higher attitude score than control group. This is consistent with Glanz et al. (2015), who found HPM-based interventions yielded 55% greater attitude improvements than conventional educational approaches.

FGD identified five HPM constructs directly influencing adolescent attitude formation toward healthy behaviors:

First, perceived benefits were too abstract. Most participants knew that eating healthily was beneficial, but perceived benefits were long-term and non-concrete:

> *"K1-P06: I know the benefits of eating healthy, but they seem very long-term to be healthy in old age. If there were benefits felt immediately now, I might be more willing."*

This finding confirms the HPM proposition that concrete, proximal perceived benefits are more effective in driving behavioral change than abstract, long-term benefits (Pender et al., 2015). The HPM video explicitly integrated short-term benefits — concentration, energy, and appearance as recommended by the FGD.

Second, perceived barriers were multi-layered and structural, not merely individual:

> *"K3-L07: What stops us from eating healthy is price. In our canteen, the cheap options are fried foods. Items with fruit are expensive. It's not that we don't want to, it's the situation."*
>
> *"K5-P05: Almost all my friends like junk food. If I bring my own healthy lunch, I'll get comments. Peer pressure is real, not just in my head."*

These multi-layered barriers indicate that attitudinal change alone is insufficient without environmental change support consistent with Green & Kreuter's (2005) PRECEDE-PROCEED ecological framework emphasizing enabling factors (availability of healthy canteen options) and reinforcing factors (peer norms) as critical simultaneous determinants.

Third, *interpersonal influences* were dominated by peers and social media:

> *"K4-L08: If a celebrity or YouTuber explains nutrition in a fun way, many will watch. We now trust people we follow more than teachers."*

This finding has direct practical implications: the HPM video's design using relatable adolescent peer characters rather than medical authority figures accurately operationalizes HPM's interpersonal influences construct. Bandura (2012) states that social modeling using peer models produces stronger attitudinal change through more active vicarious reinforcement mechanisms.

Fourth, *self-efficacy* was responsive to appropriate information:

> *"K6-P01: I actually want to change, but I don't know where to start. If there were simple step-by-step guidance, I think I could try."*
>
> *"K5-P07: I know eating healthy is important, but I didn't know the impact was that great. If there were a video explaining this, I would definitely watch it."*

This 'low but responsive' self-efficacy profile is ideal for HPM video intervention, as adolescents possess latent motivation

but require information and practical guidance to activate it consistent with Bandura's (2012) Social Cognitive Theory, which identifies self-efficacy as the strongest predictor of behavioral intention, improvable through mastery experiences and vicarious learning, both mediatable by educational video.

A notable finding is that the control group, receiving only conventional peer education, also showed significant attitude improvement ($p < 0.001$). FGD data provide a mechanistic explanation: adolescent health attitudes are more plastic and responsive to social influence, being shaped by peers and group norms operating continuously in daily life. Nevertheless, the intervention group's superiority at post-test confirms that the HPM video provides meaningful added value beyond peer discussion alone. This is consistent with Ajzen's (1991) Theory of Planned Behavior, which posits that strong attitudes those supported simultaneously by solid factual knowledge and positive subjective norms are more predictive of behavioral intention.

Operationalization of HPM Constructs in the Adolescent Context: Empirical Confirmation from Mixed Data

One of the most important theoretical contributions of this study is the empirical confirmation that all six HPM constructs are relevant and identifiably operational in the urban-rural adolescent population of Ponorogo. FGD provided qualitative evidence mapping each HPM construct to participants' everyday realities, while quantitative data confirmed the behavioral shifts predicted by those constructs.

Regarding activity-related affect, FGD identified that positive emotions consistently emerged when discussions were linked to personal, immediate impact. This affective response underpinned the recommendation to use a storytelling approach in the video:

> *"K3-P08: I like content with character development the character starts not knowing, then learns, then changes. So we feel the process with them."*

Regarding *situational influences*, school canteen barriers were the most consistent finding across all groups:

> *"K2-L08: In our school canteen, what's available is fried foods and noodles. Healthy options like fruit salad exist but are much more expensive. So we choose what's cheap."*

This finding has policy implications beyond the scope of educational videos. HPM interventions focused solely on individual cognitive and affective change without addressing structural situational barriers will face limited effectiveness ceilings. This aligns with Siagian et al. (2024), who emphasize that accelerating stunting reduction in Indonesia requires a multi-level approach involving school policy changes (availability of healthy nutritional options in canteens) alongside individual educational interventions.

ACKNOWLEDGEMENTS

The authors thank the principals, teachers, and students of Senior and Vocational High Schools in Ponorogo, East Java, Indonesia, for their participation. Gratitude is extended to the expert validators the health promotion specialist from Universitas Sebelas Maret and the audiovisual media specialist from *Institute Seni Indonesia*, Surakarta, Indonesia, for their meticulous validation work, and to the Ponorogo District Health Office for epidemiological data.

FINANCIAL SUPPORT AND SPONSORSHIP

None. This study was independently funded by the researchers.

CONFLICT OF INTEREST

The authors declare no commercial or financial relationships that constitute a potential conflict of interest.

REFERENCES

Agushybana F, Setyawan A, Pamamudiajati A, Shaluhiyah Z, Husodo BT, Siasari N (2022). Predictors of stunting among children under five years in Indonesia. J Prev Med Public Health. 55(1): 22–29. Doi: 10.3961/jpmph.21.304

Asosiasi Penyelenggara Jasa Internet Indonesia (2023). Laporan survei pengguna internet Indonesia 2023. Jakarta: Asosiasi Penyelenggara Jasa Internet Indonesia.

Ardiana M, Mulyadi E, Rustam R (2020). Impact of childhood stunting on cognitive development and economic productivity: A systematic review. Indones J Public Health Nutr. 5(2): 77–86.

Bandura A (2012). Social cognitive theory of self-regulation. Organ Behav Hum Decis Process. 50(2): 248–287.

Dale E (1969). Audiovisual methods in teaching. 3rd ed. New York: Dryden Press.

Dick W, Carey L, Carey JO (2015). The systematic design of instruction. 8th ed. Boston: Pearson.

Fildza N, Handayani OWK, Prameswari GN (2020). Pengembangan media video animasi untuk meningkatkan pengetahuan remaja putri tentang pencegahan stunting. Unnes J Public Health. 9(2): 113–121.

Friska D, Yulizawati Y, Dewi YI (2022). Stunting risk factors among children under five years in low-middle income countries: A systematic review. J Matern Child Health. 7(1): 48–58. Doi: 10.26911/thejmch.2022.07.01.06

Glanz K, Rimer BK, Viswanath K (2015). Health behavior: Theory, research, and practice. 5th ed. San Francisco (CA): Jossey-Bass.

Green LW, Kreuter MW (2005). Health program planning: An educational and ecological approach. 4th ed. New York: McGraw-Hill.

Indah L, Pratama Y (2022). Mobile-based video education for adolescents on stunting prevention through reproductive health and nutrition: A pre-post intervention study. J Community Health Nurs. 9(3): 140–151. Doi: 10.1080/07370016.2022.2088345

Julianti R, Elni E (2023). Factors associated with stunting prevalence in Indonesia: A narrative review. J Kesehat Masy Nas. 18(1): 44–52. Doi: 10.21109/kesmas.v18i1.6241

Kementerian Kesehatan Republik Indonesia (2024). Hasil survei status gizi Indonesia (SSGI) 2024. Jakarta: Kementerian Kesehatan Republik Indonesia.

Kumalasari F, Susilo AH, Mulyani S (2021). The effectiveness of video-based reproductive health education for adolescents: A systematic review. J Promosi Kesehat Indones. 16(2): 88–97. Doi: 10.14710/jpki.16.2.88-97

Lemeshow S, Hosmer DW Jr, Klar J, Lwanga SK (1990). Adequacy of sample size in health studies. Chichester: John Wiley & Sons.

Lynn MR (1986). Determination and quantification of content validity. Nurs Res. 35(6): 382–385. Doi: 10.1097/00006199-198611000-00017

Mayer RE (2009). Multimedia learning. 2nd ed. New York: Cambridge University Press.

Miranda AS, Andrade LO, Vilella JC (2023). Global stunting burden and trends in low-middle income countries: An updated analysis. Nutr Rev. 81(4): 410–422. Doi: 10.1093/nutrit/nuac078

Nugroho E, Setiawan A (2018). Effectiveness of video-based reproductive health education for female adolescents in preventing anemia contributing to stunting. J Keperawatan Komunitas. 6(2): 55–64.

Pender NJ, Murdaugh CL, Parsons MA (2015). Health promotion in nursing practice. 7th ed. Boston: Pearson Education.

Polit DF, Beck CT (2006). The content validity index: Are you sure you know what's being reported? Critique and recommendations. Res Nurs Health. 29(5): 489–497. Doi: 10.1002/nur.20147

Ponorogo District Health Office (2023). Laporan tahunan prevalensi stunting Kabupaten Ponorogo tahun 2023 (Annual report on the prevalence of stunting in Ponorogo Regency, 2023).

Resnicow K, McCarty F (2023). Application of health promotion model in digital health programs for adolescents at risk of stunting: A quasi-experimental study. J Adolesc Health. 72(4): 589–598. Doi: 10.1016/j.jadohealth.2022.11.031

Ribka Putri M (2019). Faktor yang berhubungan dengan pencegahan stunting berdasarkan teori Health Promotion Model (HPM). J Kesehat Ibu Anak. 13(2): 71–80.

Sallis JF, Owen N (2002). Ecological models of health behavior. In: Glanz K, Rimer BK, Lewis FM (eds). Health behavior and health education. 3rd ed. San Francisco (CA): Jossey-Bass. p. 462–484.

Sari N, Pratiwi D (2020). Effect of reproductive health education on knowledge of stunting prevention among female adolescents in Jakarta: A quasi-experimental study. J Gizi Klin Indones. 17(1): 1–9. Doi: 10.22146/ijcn.45812

Siagian TH, Susanto A, Fauzi AR (2024). Acceleration of stunting reduction in Indonesia: Policy analysis and community-based intervention strategies. BMC Public Health. 24(1): 387. Doi: 10.1186/s12889-024-17990-0

Soviyati E, Hendrawati S, Nugraha GI (2023). Stunting prevalence disparities between Indonesia and neighboring ASEAN countries: Determinants and lessons learned. Asia Pac J Public Health. 35(3): 211–219.

Yuliam TH, Mariyani (2019). Pengaruh edukasi gizi terhadap pengetahuan dan sikap remaja putri tentang pencegahan anemia dan stunting. J Gizi Pangan. 14(3): 125–132.

Tiyas DW, Hasanbasri M (2023). Progress and challenges in achieving the national stunting reduction target in Indonesia: A policy analysis. J Adm Kesehat Indones. 11(1): 39–48.

World Health Organization (2020). WHO consolidated guideline on self-care interventions for health: Sexual and reproductive health and rights. Geneva: World Health Organization.

World Health Organization (2022). World health statistics 2022: Monitoring health for the SDGs. Geneva: World Health Organization.