

RESEARCH ARTICLE

Effect of Video-Based Health Education on Knowledge of Smoking Hazards Among Junior High School Students in Cirebon

Nuniek Tri Wahyuni^{1*}, Lisa Amaliya², Popi Ovtapiana³, Cucu Herawati⁴, Suzana Indragiri⁵, Maretalinia⁶

¹Program Studi Ilmu Keperawatan, Sekolah Tinggi Ilmu Kesehatan Cirebon, Jawa Barat, Indonesia

²Program Studi Ilmu Keperawatan, Sekolah Tinggi Ilmu Kesehatan Cirebon, Jawa Barat, Indonesia

³Program Studi Ilmu Keperawatan, Sekolah Tinggi Ilmu Kesehatan Cirebon, Jawa Barat, Indonesia

⁴Program Studi Magister Kesehatan Masyarakat, Sekolah Tinggi Ilmu Kesehatan Cirebon, Jawa Barat, Indonesia

⁵Program Studi Kesehatan Masyarakat, Sekolah Tinggi Ilmu Kesehatan Cirebon, Jawa Barat, Indonesia

⁶Program Studi Magister Kesehatan Masyarakat, Sekolah Tinggi Ilmu Kesehatan Cirebon, Jawa Barat, Indonesia

Correspondence: Nuniek Tri Wahyuni. Email: nuniek.triwahyuni@yahoo.com

ARTICLE HISTORY

Received: 06 December 2025

Revised: 03 June 2026

Accepted: 10 September 2026

Published: 25 September 2026

ARTICLE IDENTIFIERS

Volume 9 - **Issue** 9 - 2026

Pages: 1736-1741

DOI: [10.56338/mppki.v9i9.9476](https://doi.org/10.56338/mppki.v9i9.9476)

ABSTRACT

Introduction: Adolescents are particularly vulnerable to smoking initiation, and limited knowledge of smoking-related health risks may contribute to early smoking. Video-based health education may improve students' understanding of smoking hazards. This study assessed changes in eighth-grade students' knowledge following a video-based health education session.

Methods: This quasi-experimental study used a one-group pretest–posttest design involving 75 eighth-grade students at SMPN 1 Kaliwedi, Cirebon. Students' knowledge of smoking hazards was measured using a 19-item questionnaire adapted and translated from a previously validated instrument. The intervention consisted of a video-based health education session, after which knowledge was reassessed using the same questionnaire. Normality was assessed using the Kolmogorov–Smirnov test, and pretest and posttest scores were compared using the Wilcoxon signed-rank test.

Results: At pretest, 53.3% of students had low knowledge, 45.4% had moderate knowledge, and 1.3% had high knowledge of smoking hazards. At posttest, 98.7% had high knowledge, 1.3% had moderate knowledge, and none had low knowledge. The Wilcoxon signed-rank test showed higher posttest than pretest knowledge scores (pretest mean = 9.51, SD = 2.617; posttest mean = 18.13, SD = 0.920; $p < 0.001$), representing an immediate within-group increase following the intervention.

Conclusion: Participation in a single video-based health education session was associated with an immediate increase in students' knowledge of smoking hazards. These findings provide preliminary support for the potential utility of audiovisual educational media in school health programmes. Future research should assess long-term knowledge retention, attitudinal changes, and behavioural outcomes.

Keywords: Video-Based Health Education; Smoking Hazards; Adolescent Knowledge; School Health; Health Education

INTRODUCTION

Tobacco use remains a major public-health concern worldwide (1). In Indonesia, national school-based surveys document substantial tobacco use among adolescents, including students aged 13–15 years (2,3). At the population and youth levels, socioeconomic context and exposure to anti-smoking messages have been examined in relation to tobacco consumption and smoking behaviour (4,5), and e-cigarette use has been documented among Indonesian adolescents (6). Together, these findings support continued prevention efforts during adolescence.

Studies in Indonesia have identified sociodemographic and contextual factors associated with adolescent smoking (7). Smoking-related beliefs and Health Belief Model constructs have also been associated with smoking behaviour among school-age adolescents (8). Peer influence and social acceptance are additional factors associated with smoking among school students (9). Qualitative research with Indonesian adolescents has identified peer pressure, parental smoking, masculinity, and curiosity as smoking-related factors, while recent repeated GYTS analyses found that lack of knowledge about the dangers of tobacco smoke and secondhand smoke was associated with adolescent tobacco use (10,11). Related Indonesian studies have also examined e-cigarette use, smokeless tobacco use, and social-capital-based smoking cessation among adolescents (12–14). These findings provide a rationale for school-based prevention approaches that address modifiable knowledge and social influences.

Indonesian research indicates that adolescent smoking is associated with factors such as parental smoking, age, and sex (15). Peer and parental tobacco use are also associated with adolescents' intention to smoke in other settings (16). A systematic review of school-based smoking-prevention interventions in low- and middle-income countries found that programmes use multiple intervention functions, theoretical constructs, and culturally adapted components (17). More broadly, a systematic review and meta-analysis found that video-based approaches in health education can improve knowledge acquisition and attitudes, although effects vary across contexts and outcomes (18). This evidence supports evaluating engaging, school-based media approaches in specific local settings.

Digital and media-based approaches may be relevant to adolescent smoking prevention, particularly because access to e-cigarette information and adolescents' knowledge and attitudes have been associated with e-cigarette use (6). Smoking-related beliefs and media literacy have also been associated with smoking behaviour, attitudes, and susceptibility among adolescents (8,19). In intervention studies, WhatsApp-based smoking education has been evaluated among Indonesian high-school students, while a mixed-methods programme using the co-production of anti-smoking videos reported improved psychological empowerment and supported smoking-prevention engagement (20,21). The Cognitive Theory of Multimedia Learning provides a framework for designing multimedia lessons that integrate verbal and visual information (22).

Although video-based health education has shown promise in other settings, its implementation in Indonesian junior high schools remains limited, and evidence on its effectiveness within local school contexts is scarce. Preliminary classroom observation at SMPN 1 Kaliwedi, Cirebon District, suggested that students' knowledge of smoking hazards was low and that health education at the school has generally relied on lecture-based delivery. While prior studies have established that video-based education can improve smoking-related knowledge, it remains unclear whether this approach yields comparable gains among junior high school students in similar regional school settings. This study therefore contributes context-specific evidence on the effect of video-based health education on students' knowledge of smoking hazards at SMPN 1 Kaliwedi, within the framework of an already-established intervention model.

METHODS

Research Type

This study used a quantitative, quasi-experimental, one-group pretest–posttest design to assess changes in students' knowledge of smoking hazards before and after video-based health education. The independent variable was the video-based health education programme, and the dependent variable was students' knowledge of smoking hazards at SMPN 1 Kaliwedi.

Population and Sample/Informants

The sampling frame comprised 244 eighth-grade students aged 13–14 years who were enrolled at SMPN 1 Kaliwedi on 17 October 2024. The minimum sample size of 75 was calculated using Slovin's formula with a 10% margin of error. This population-based calculation did not use an expected effect size or statistical power for the paired pretest–posttest comparison. Students were selected using simple random sampling: all 244 eighth-grade students on the school roster were assigned sequential numbers, and 75 were selected using a computer-generated random-number sequence. Inclusion criteria were enrolment in grade VIII and willingness to participate; exclusion criteria were non-cooperation during data collection or incomplete questionnaire responses. All 75 selected students were invited to participate; written parental/guardian consent and student assent were obtained for all 75. None declined, was excluded, or was replaced before data collection, and all completed both the pretest and posttest, yielding a final analytical sample of 75.

Research Location

This study was conducted at SMPN 1 Kaliwedi, located in Desa Prajawinangun Kulon, Kecamatan Kaliwedi, Kabupaten Cirebon, Indonesia. The intervention and data-collection activities took place in the school auditorium, which provided a controlled and conducive environment for the educational sessions. The study was conducted on 17 October 2024 and was implemented separately for three eighth-grade classes to accommodate their respective class schedules. Each class

participated in a single intervention session consisting of a 30-minute pretest, a 30-minute educational video, a 15-minute discussion, and a 30-minute posttest, resulting in a total duration of approximately 105 minutes per class. The intervention was conducted sequentially for classes 8A, 8B, and 8C according to the school schedule. The location was selected because of its accessibility, availability of facilities for video projection, and the presence of a relatively homogeneous sample of eighth-grade students. Conducting the study on the school premises provided a familiar setting, minimised external distractions, and allowed the researchers to monitor student engagement during the video-based health education sessions.

Instrumentation or Tools

Students' knowledge of smoking hazards was measured using a 19-item questionnaire adapted from the instrument developed by Ilyati Syarfa (23). The original instrument was translated into Bahasa Indonesia and adapted to reflect the local curriculum context and the educational content delivered in this study. The adaptation involved reviewing the wording and relevance of each item to ensure that the questions were understandable and appropriate for the study population. The adapted questionnaire assessed general knowledge of smoking and its immediate and long-term health consequences. Each correct response received a score of 1, whereas incorrect or unanswered items received a score of 0. Total scores were categorised as low, moderate, or high knowledge according to the percentage of correct responses (<56% = low, 56–75% = moderate, >75% = high). The adapted questionnaire demonstrated high internal consistency in the current study sample ($n = 75$), with a Cronbach's alpha coefficient of 0.912. The instrument was administered before and after the intervention. The educational programme was delivered through an interactive video presentation using a projector, incorporating visual and auditory elements to present the educational content.

Data Collection Procedures

Data collection was conducted in several structured stages. First, the researchers obtained formal permission from the school administration and coordinated with teachers to explain the purpose and procedures of the study. After approval was secured, written informed consent was obtained from the students' parents or guardians, and student assent was obtained before participation. Students were informed that participation was voluntary and that they could decline or withdraw from the study at any time.

Before the intervention, a pretest questionnaire was administered to assess students' baseline knowledge of the hazards of smoking. The video-based health education programme was then implemented. The programme involved the presentation of an interactive 30-minute educational video using a projector, accompanied by explanations and discussions facilitated by the research team.

The intervention was delivered across three class sessions at SMPN 1 Kaliwedi using an identical protocol. All three classes received the same content, a single 30-minute educational video, and the same facilitation team. Each session followed a fixed sequence: (1) pretest (19 items, 30 min); (2) the educational video (30 min in total, in Bahasa Indonesia) via projector, with the explicit learning objective of increasing students' knowledge of the short- and long-term health effects of smoking; (3) facilitated discussion (15 min); and (4) posttest (the same instrument, 30 min). The total session duration was approximately 105 minutes. "Interactive" refers to embedded pause points, live Q&A, and discussion prompts during and after the video. The five research team members who facilitated the sessions completed standardised training on the discussion guide and delivery protocol before data collection to support consistency across sessions. Delivery fidelity across the three sessions was assessed using an observer checklist and review of audio recordings; this qualitative review did not identify substantial deviations from the protocol, although fidelity was not quantified using a formal adherence score.

After the educational sessions, a posttest questionnaire identical to the pretest was administered to assess changes in students' knowledge. The entire data-collection process was conducted in the school auditorium on a single day across three class sessions corresponding to the three classes. Throughout the sessions, the researchers monitored student participation and engagement to support consistency in intervention delivery.

All collected data were securely stored and handled in a manner intended to maintain participant confidentiality and anonymity. The structured sequence of pretest, intervention, and posttest enabled within-participant changes in knowledge of smoking hazards to be measured.

Data Analysis

Data were managed in SPSS for Windows. Univariate analysis summarised each variable using frequencies and percentages. For bivariate analysis, the Wilcoxon signed-rank test was used as a non-parametric paired-sample test based on the normality assessment. Normality was evaluated using the Kolmogorov–Smirnov test, with statistical significance set at $p < 0.05$.

Ethical Approval

Ethical approval for the study was granted by the Ethics Committee of STIKES Cirebon (approval number 078/B/STIKesCrb/IX/2024) on 14 September 2024. Because the participants were minors aged 13–14 years, written informed consent was obtained from their parents or legal guardians before recruitment, and written assent was obtained from each participant before data collection. Participation was voluntary, and participants were informed that they could withdraw at any time without penalty. Participant confidentiality was protected by recording initials rather than full names, and all information collected was used exclusively for research purposes. A small token of appreciation was provided in recognition of participants' time and cooperation, with measures taken to minimise coercion or undue influence. The data supporting the findings of this study are not publicly available because they contain information from minor participants and are subject to ethical and confidentiality restrictions. De-identified data may be made available from the corresponding author upon

reasonable request and subject to appropriate ethical and institutional approval. This study was not prospectively registered as a clinical trial or research protocol.

RESULTS

The study assessed changes in knowledge of smoking hazards following video-based health education among 75 eighth-grade students at SMPN 1 Kaliwedi on 17 October 2024. Before the intervention, 53.3% ($n = 40$) of students were classified as having low knowledge, 45.4% ($n = 34$) as moderate, and 1.3% ($n = 1$) as high (Table 1). After the intervention, 98.7% ($n = 74$) were classified as having high knowledge, 1.3% ($n = 1$) as moderate, and none as low (Table 2).

Table 1. Pretest Knowledge of Smoking Hazards

Knowledge Level	Frequency (n)	Percentage (%)
Low	40	53.3
Moderate	34	45.4
High	1	1.3
Total	75	100

At pretest, 53.3% of students had low knowledge, 45.4% had moderate knowledge, and 1.3% had high knowledge.

Table 2. Posttest Knowledge of Smoking Hazards

Knowledge Level	Frequency (n)	Percentage (%)
Low	0	0
Moderate	1	1.3
High	74	98.7
Total	75	100

At posttest, 98.7% of students were classified as having high knowledge, 1.3% as moderate knowledge, and none as low knowledge.

Bivariate Analysis

Before the paired analysis, the normality of the score distributions was examined. Pretest scores were non-normally distributed ($p = 0.003$), and the paired differences between posttest and pretest scores also deviated from normality ($p < 0.001$). Given the non-normal distribution of the paired differences and the within-participant design, the Wilcoxon signed-rank test was used to compare pretest and posttest scores.

Table 3. Wilcoxon Test of Knowledge Before and After Intervention

Test	n	Median (IQR)	Mean $\pm$ SD	Min–Max	Normality test	P-value
Pretest	75	10 (8–11)	9.51 $\pm$ 2.617	3–16	K–S: $p = 0.003$	—
Posttest	75	18 (18–19)	18.13 $\pm$ 0.920	15–19	K–S: $p = 0.001$	—
Paired difference (Post – Pre)	75	8 (7–9)	8.62 $\pm$ 2.70	2–16	K–S: $p < 0.001$	<0.001*

Note: *Wilcoxon signed-rank test for paired comparison.

The Wilcoxon signed-rank test indicated a statistically significant difference between pretest and posttest scores ($p < 0.001$). Knowledge scores increased following the intervention. The median score increased from 10 (IQR: 8–11) at pretest to 18 (IQR: 18–19) at posttest, with a median paired difference of 8 points (IQR: 7–9).

DISCUSSION

This study examined changes in students' knowledge of smoking hazards following video-based health education at SMPN 1 Kaliwedi. The direction of the observed change is consistent with a broader literature on multimedia and health education. Multimedia tools have been widely examined in teaching and learning (24), and students' perceptions of multimedia learning have been reported in health-professions education (25). In school-based settings, animation-based education has been associated with changes in knowledge and attitudes (26), while smoking-specific studies have reported improvements in knowledge or attitudes after video or audiovisual education (27,28). Broader reviews of school-based health interventions and video-based education in other adolescent health topics likewise suggest potential benefits while highlighting variation in intervention design and outcomes (29,30). The use of visual imagery, narration, and facilitated discussion in the present study is compatible with the multimedia-learning framework described in the Introduction; however, the study did not directly measure cognitive processing, engagement, motivation, or knowledge retention. Because knowledge was assessed immediately after a single session in a one-group pretest–posttest design, the observed score increase should be interpreted as an immediate within-group change rather than evidence that the video format was superior to alternative approaches or that learning was sustained over time.

Despite the observed increase in knowledge scores, this study has several important limitations that constrain causal interpretation and generalisability. First, the study did not include a comparison or control group; therefore, the observed pretest-to-posttest change cannot be attributed uniquely to the video intervention, as it may partly reflect testing effects (improved performance from having already encountered the same questionnaire at pretest) or other uncontrolled influences. Second, the same 19-item questionnaire was administered at pretest and posttest, which may have introduced practice or recall effects independent of learning attributable to the intervention. Third, because the posttest was administered

immediately after the intervention, the results reflect an immediate within-group score difference rather than durable learning and do not capture retention over time. Fourth, the intervention was delivered by research-team facilitators who were not blinded to the study aims, raising the possibility of facilitator or demand effects, whereby students' responses may have been influenced by cues about the expected outcome rather than by knowledge gain alone. Fifth, students were assessed within intact class sessions rather than individually, introducing the possibility of clustering effects (e.g., shared classroom dynamics or peer influence during the discussion component) that were not accounted for in the analysis. Sixth, external factors such as students' prior exposure to anti-smoking campaigns, peer influence, and individual motivation were not measured or controlled and may have contributed to the results. Finally, the study assessed only factual knowledge and did not evaluate attitudes or behavioural outcomes related to smoking. Taken together, these limitations mean that the observed change should be interpreted as an immediate within-group score difference rather than evidence of a causal effect of the video intervention specifically, or of a durable or behaviourally meaningful impact. Future research using a controlled design, alternate-form or delayed testing, blinded facilitation, and longer-term follow-up would help address these constraints.

A further limitation is that delivery fidelity was assessed qualitatively through an observer checklist and review of audio recordings rather than through a formal quantitative adherence score. Although the intervention components, duration, learning objective, and facilitator training are described, the absence of a quantitative fidelity measure limits precise conclusions about consistency across the three sessions and the extent to which observed knowledge gains can be attributed to specific programme components (e.g., video content versus facilitated discussion). Future studies should report a quantitative fidelity index to strengthen reproducibility and support clearer causal interpretation.

CONCLUSION

This study found that participation in a single video-based health education session was associated with an immediate increase in students' knowledge of smoking hazards at SMPN 1 Kaliwedi. These findings provide preliminary evidence of the potential utility of audiovisual educational media in school-based health promotion. However, given the one-group pretest–posttest design, broader claims regarding intervention effectiveness, behavioural impact, or curricular efficiency cannot be substantiated. Future research using controlled designs, longitudinal follow-up, and behavioural outcome measures is recommended before broader policy or curricular implications are drawn.

DECLARATIONS

Author contributions: N.T.W. (Nuniek Tri Wahyuni): Conceptualization, Methodology, Investigation, Data Curation, Formal Analysis, Writing – Original Draft, and Project Administration. L.A. (Lisa Amaliya): Investigation, Data Curation, and Writing – Review & Editing. P.O. (Popi Ovtapiana): Investigation, Data Curation, Formal Analysis, and Writing – Review & Editing. C.H. (Cucu Herawati): Methodology, Formal Analysis, and Writing – Review & Editing. S.I. (Suzana Indragiri): Investigation, Data Curation, and Writing – Review & Editing. M. (Maretalinia): Methodology, Formal Analysis, and Writing – Review & Editing. N.T.W. served as the corresponding author. All authors approved the final version of the manuscript and agreed to be accountable for all aspects of the work.

Conflicts of interest: The authors declare that they have no conflicts of interest. There are no financial or personal relationships that could have influenced the research outcomes or the impartiality of this study.

Declaration of Generative AI And AI-Assisted Technologies in the Writing Process: During the preparation and revision of this manuscript, the authors used OpenAI's ChatGPT (GPT-5.6) for language editing, grammatical improvement, clarification of scientific writing, and assistance in refining the organisation and presentation of the manuscript. The authors critically reviewed, verified, and edited all AI-assisted outputs and take full responsibility for the accuracy, originality, and integrity of the final manuscript.

Source of Funding Statements: This research received no specific grant or financial support from any funding agency. The study was conducted independently, and no external entity was involved in the design, execution, analysis, interpretation, or preparation of the manuscript.

Acknowledgments: The authors would like to express their sincere gratitude to the students of SMPN 1 Kaliwedi in Prajawanangun Kulon, Kecamatan Kaliwedi, Kabupaten Cirebon, for their participation and cooperation in this study. Their willingness to engage in the educational programme and complete the questionnaires made this research possible.

REFERENCES

1. World Health Organization. WHO global report on trends in prevalence of tobacco use 2000–2025. 4th ed. Geneva: World Health Organization; 2021 [cited 2025 Mar 12]. Available from: <https://iris.who.int/bitstream/handle/10665/348537/9789240039322-eng.pdf>
2. World Health Organization. Global Youth Tobacco Survey (GYTS): Indonesia 2019 fact sheet. Geneva: World Health Organization; 2019. [cited 2026 Sep 22]. Available from: <https://www.who.int/publications/m/item/2019-gyts-fact-sheet-indonesia>
3. Ihyauddin Z, Putri DAD, Teng kawan J, Ekawati FM, Sitaresmi MN. Tobacco use among school-age adolescents in Indonesia: findings from the 2015 Indonesia Global School-Based Student Health Survey. Korean J Fam Med. 2023;44(6):327–334. <https://doi.org/10.4082/kjfm.23.0010>
4. Dartanto T, Moelis FR, Can CK, Ratih SP, Nurhasana R, Satrya A, et al. Good intentions, unintended outcomes: Impact of social assistance on tobacco consumption in Indonesia. Tob Induc Dis. 2021; 19:29. <https://doi.org/10.18332/tid/132966>
5. Megatsari H, Damayanti R, Kusuma D, Warouw TS, Nadhiroh SR, Astutik E, et al. The influence of anti-smoking messages to Indonesian youth smoking behavior: the Indonesian 2019 Global Youth Tobacco Survey (GYTS). BMC Public Health. 2023 May 19;23(1):907. <https://doi.org/10.1186/s12889-023-15830-5>
6. Hafidah F, Apriningsih, Simanjorang C, Hanifah L. Determinants of Electronic Smoking Behavior among Adolescents in Indonesia (Analysis of Global Youth Tobacco Survey 2019). Public Health of Indonesia. 2024 Jun 25;10(2):133–42. <https://doi.org/10.36685/phi.v10i2.787>

7. Lucia SS, Yetiani N, Suwarni L, Rusmitasari H, Maretalinia M, Suyitno S. The determinants of adolescent smokers in Indonesia. *International Journal of Public Health Science (IJPHS)*. 2022 Sep 1;11(3):808. <https://doi.org/10.11591/ijphs.v11i3.21510>
8. Vionalita G, Kusumaningtiar DA, Angkasa D. Relationship between Health Belief Model constructs and smoking behavior among school-age adolescents in Indonesia: A cross-sectional study. *Public Health of Indonesia*. 2023 Dec 30;9(4):140–6. <https://doi.org/10.36685/phi.v9i4.717>
9. Mbongwe B, Tapera R, Phaladze N, Lord A, Zetola NM. Predictors of smoking among primary and secondary school students in Botswana. *PLoS One*. 2017;12(4):e0175640. <https://doi.org/10.1371/journal.pone.0175640>
10. Fithria F, Adlim M, Jannah SR, Tahlil T. Indonesian adolescents' perspectives on smoking habits: a qualitative study. *BMC Public Health*. 2021 Jan 7;21(1):82. <https://doi.org/10.1186/s12889-020-10090-z>
11. Suryadarma AY, Saputro SA, Isnwardana R, Destiwi M, Bassey PE, Martini S, Sebayang SK. Changes in the prevalence of adolescent tobacco use and its associated factors in Indonesia: analysis of repeated cross-sectional survey 2009–2019. *BMJ Open*. 2026 Mar;16(3): e105035. <https://doi.org/10.1136/bmjopen-2025-105035>
12. Marice M, Kaseger H, Hariyanti Y, Hafid W, Purnamasari ND, Supetran IW, et al. Use of e-cigarettes and associated factors among adolescent smokers in Indonesia: Analysis of the Global Youth Tobacco Survey (GYTS) Indonesia 2019. *Public Health of Indonesia*. 2022 Jun 27;8(2):31–8. <https://doi.org/10.36685/phi.v8i2.580>
13. Syamsuriansyah S, Salman S, Rusmitasari H, Sari MHN, Maretalinia M. Prevalence and associated factors of Smokeless Tobacco (SLT) use among adolescents in Indonesia: GYTS 2019 data analysis. *Public Health of Indonesia*. 2022 Mar 29;8(1):9–15. <https://doi.org/10.36685/phi.v8i1.569>
14. Riyadi S, Utami KD, Al Madury S, Farid M. Empowerment Model on Adolescent Social Capital for Smoking Cessation Behavior in Sumenep, East Java. *Public Health of Indonesia*. 2025 Jun 12;11(2):141–7. <https://doi.org/10.36685/phi.v11i2.984>
15. Ilmaskal R, Wati L, Hamdanesti R, Alkafi A, Suci H. Adolescent smoking behavior in indonesia; a longitudinal study. *Eduvest-Journal of Universal Studies*. 2022 Jan 20;2(1):41-7. <https://doi.org/10.59188/eduvest.v2i1.346>
16. Zhou A, Li X, Song Y, Hu B, Chen Y, Cui P, et al. Academic Performance and Peer or Parental Tobacco Use among Non-Smoking Adolescents: Influence of Smoking Interactions on Intention to Smoke. *Int J Environ Res Public Health*. 2023 Jan 6;20(2):1048. <https://doi.org/10.3390/ijerph20021048>
17. Ba-Break M, Bewick B, Huss R, Ensor T, Abahussin A, Alhakimi H, Elseiy H. Systematic review of intervention functions, theoretical constructs and cultural adaptations of school-based smoking prevention interventions in low-income and middle-income countries. *BMJ Open*. 2023 Feb;13(2):e066613. <https://doi.org/10.1136/bmjopen-2022-066613>
18. Morgado M, Botelho J, Machado V, Mendes JJ, Adesope O, Proença L. Video-based approaches in health education: a systematic review and meta-analysis. *Scientific Reports*. 2024 Oct 10;14(1):23651. <https://doi.org/10.1038/s41598-024-73671-7>
19. Park S, Kim J. Relationships of Smoking Media Literacy with Smoking Behavior, Attitudes, and Susceptibility among Adolescents in the Republic of Korea. *J Health Commun*. 2021 Dec 2;26(12):809–17. <https://doi.org/10.1080/10810730.2021.2015643>
20. Yusriani Y, Acob JR. Effect of Education through WhatsApp Media in Changing of Smoking Behavior among Senior High School Students. *Kesmas: National Public Health Journal*. 2020 Aug 1;15(3). <https://doi.org/10.21109/kesmas.v15i3.3270>
21. Park E, Chang YP. Using Digital Media to Empower Adolescents in Smoking Prevention: Mixed Methods Study. *JMIR Pediatr Parent*. 2020 Mar 31;3(1): e13031. <https://doi.org/10.2196/13031>
22. Cavanagh TM, Kiersch C. Using commonly-available technologies to create online multimedia lessons through the application of the Cognitive Theory of Multimedia Learning. *Educ Technol Res Dev*. 2023;71(3):1033–1053. <https://doi.org/10.1007/s11423-022-101811>
23. Syarfa I. Gambaran tingkat pengetahuan, perilaku merokok dan nikotin dependen mahasiswa UIN Syarif Hidayatullah Jakarta [undergraduate thesis]. Jakarta: Universitas Islam Negeri Syarif Hidayatullah Jakarta; 2015. Available from: <https://repository.uinjkt.ac.id/dspace/handle/123456789/28878>
24. Abdulrahman MD, Faruk N, Oloyede AA, Surajudeen-Bakinde NT, Olawoyin LA, Mejabi OV, et al. Multimedia tools in the teaching and learning processes: A systematic review. *Heliyon*. 2020 Nov;6(11):e05312. <https://doi.org/10.1016/j.heliyon.2020.e05312>
25. Vagg T, Balta JY, Bolger A, Lone M. Multimedia in Education: What do the Students Think? *Health Professions Education*. 2020 Sep;6(3):325-33. <https://doi.org/10.1016/j.hpe.2020.04.011>
26. Malinda J, Jalandri I, Agusanty SF. The Role of Education through Animation Media on Knowledge and Attitudes Towards Balanced Nutrition in Elementary School Students. *MEDICA (International Medical Scientific Journal)*. 2023 May 30;5(2):67-73. <https://doi.org/10.53770/medica.v5i2.500>
27. Anggraeni Y, Tresno NRIA, Susanti IH, Mangkunegara IS. The Effectiveness of Health Education Using Leaflet and Video on Students' Knowledge About the Dangers of Smoking in Vocational High School 2 Purwokerto. In: *Proceedings of the 1st International Conference on Community Health (ICCH 2019)*. Paris, France: Atlantis Press; 2020. <https://doi.org/10.2991/ahsr.k.200204.076>
28. Prasetya RD, Etrawati F, Yeni Y, Lionita W. Effect of Audiovisual Media Based Education on Changes in Adolescent's Attitudes Related to Cigarette Advertising. *Jurnal Ilmu Kesehatan Masyarakat*. 2021 Mar 31;12(1):38–49. <https://doi.org/10.26553/jikm.2021.12.1.38-49>
29. Suto M, Miyazaki C, Yanagawa Y, Takehara K, Kato T, Gai R, et al. Overview of Evidence Concerning School-Based Interventions for Improving the Health of School-Aged Children and Adolescents. *Journal of School Health*. 2021 Jun 5;91(6):499–517. <https://doi.org/10.1111/josh.13021>
30. Sari RT, Wulandari N, Siregar N, Amelia R, Supriatin S. The influence of video media on improving knowledge and attitudes of adolescent girls regarding chronic energy deficiency. *Ahmar Metastasis Health Journal*. 2025;5(1):19–25. <https://doi.org/10.53770/amhj.v5i1.547>



COPYRIGHT & LICENSING

Copyright © 2026 Media Publikasi Promosi Kesehatan Indonesia

This work is licensed under a [Creative Commons Attribution-ShareAlike 4.0 International License](https://creativecommons.org/licenses/by-sa/4.0/).