

Application of the AISAS Model in Testing the Effectiveness of Smoking Prevention Knowledge Through TikTok Media on Adolescents

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Abstract: Data from the Global Youth Tobacco Survey shows that although 78.9% of students received information about the dangers of smoking, high smoking prevalence remains among adolescents. This study aims to evaluate the effectiveness of the AISAS model in improving adolescent knowledge about smoking prevention through the social media platform TikTok. Using a one-group pre-test-post-test design in a quantitative approach, this study involved 54 seventh-grade students as sample using a proportionate stratified random sampling method. Data collection was conducted through questionnaires distributed before and after the intervention. Data analysis involved univariate and bivariate approaches, including the Paired Sample T-Test and Wilcoxon Signed Rank Test. The main finding was a significant increase in respondents' knowledge from pre-test (0%) to post-test (100%) after the intervention. Analysis using the Wilcoxon test showed a p-value of 0.000 ($p < 0.05$), indicating a significant effect of the intervention. Activities such as liking, commenting, and posting twibbons had a significant positive correlation with increased knowledge, with the activity of posting twibbons showing a B coefficient of 1.025 ($p = 0.025$). The results of this study indicate the importance of active involvement in social media as a key factor in increasing adolescent knowledge regarding smoking prevention.

Keywords: AISAS; Smoking Prevention; Teenagers; Social Media; TikTok

Introduction

The increasing smoking rate among teenagers demands serious attention. Existing data shows that even though many teenagers have received education about the dangers of smoking, smoking rates remain high. In Indonesia, the Global Youth Tobacco Survey (GYTS) showed that although 78.9% of students received information about the dangers of smoking at school, smoking among teenagers remains a significant problem (Megatsari et al., 2023). This situation highlights the need for a new approach to health education that is more engaging and impactful. Social media, particularly TikTok, has emerged as an effective platform for conveying health messages to the younger generation. One reason for its effectiveness is its ability to capture attention and generate interest through interactive and visual content (Maretalinia et al., 2021).

Research shows that anti-smoking campaigns delivered through social media can influence adolescent smoking attitudes and behaviors. By optimizing content to suit the characteristics of the TikTok platform, information about the dangers of smoking can be conveyed in a more engaging manner (Fithria et al., 2023; Grant-Alfieri et al., 2022). The AISAS model is relevant in this context, as it encourages adolescents not only to become interested in and learn more about smoking but also to take preventative action.

Knowledge conveyed through social media plays a significant role in shaping adolescents' attitudes toward smoking. Research shows that education about the dangers of smoking can significantly reduce smoking habits among adolescents. A study by Suwanwong et al. found that anti-smoking messages through social media can help raise awareness of the risks of smoking among adolescents (Suwanwong et al., 2021). In addition,

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Swastika et al. reported that using Instagram for health education can increase knowledge regarding the dangers of smoking and motivate teenagers to avoid the habit (Swastika et al., 2021). Furthermore, Sari et al. showed that cigarette advertisements appearing on social media correlated with increased smoking behavior among adolescents, which emphasizes the need for a more effective approach in health campaigns (Sella Puspita Sari et al., 2024). The AISAS model offers a systematic approach to measuring the impact of intervention programs on social media. By observing the stages from attention to sharing, researchers can evaluate the extent to which adolescents engage with the content they consume and how this influences their knowledge and attitudes toward smoking (Havizoh et al., 2022). The results of this study are expected to provide a better understanding of the effectiveness of social media use in smoking prevention programs and provide recommendations for the development of more effective future health campaigns.

The importance of social media in preventing smoking among adolescents, especially in the era of the dominance of platforms like TikTok, cannot be overstated. Social media has proven effective as a tool for health education and promotion, leveraging its proximity to the younger generation to convey relevant information about the dangers of smoking (Alawiyah et al., 2023; Asmadina et al., 2024). Through an engaging and informative educational approach, the content presented on TikTok can increase adolescents' awareness and knowledge about the risks of smoking, which were previously easily overlooked (Asmadina et al., 2024).

The purpose of this study was to analyze the effectiveness of the AISAS (Attention, Interest, Search, Action, and Share) model in increasing adolescents' knowledge about smoking prevention through the TikTok platform. This study also aimed to evaluate the extent to which educational content delivered through TikTok can attract attention and foster adolescents' interest in health information. By identifying elements that successfully attract attention and create interest, this study is expected to provide recommendations for creating more effective content in smoking prevention campaigns among adolescents, especially through the use of popular social media.

The novelty was this study introduces the application of the AISAS model – comprising Attention, Interest, Search, Action, and Share – within the context of smoking prevention among adolescents via TikTok. While previous research has examined the efficacy of social media in health education, this investigation uniquely focuses on TikTok's specific features, such as its visual and interactive content, to enhance adolescent engagement and knowledge retention regarding

smoking dangers. Unlike traditional educational approaches, the AISAS model facilitates a framework for evaluating both cognitive and behavioral changes through a modern digital platform. Notably, the study reports a dramatic shift in knowledge levels from 0% to 100% post-intervention, highlighting TikTok's potential as a transformative tool for public health messaging. This work not only underscores the strategic role of social media in combating adolescent smoking but also provides empirical evidence to inform future health communication strategies that resonate with young audiences in an increasingly digital era.

Method

Types of research

This research is a quantitative study using a pre-experimental approach with a one-group pre-test-post-test design. This study aims to evaluate the effect of health promotion media presented in the form of TikTok videos on smoking prevention among adolescents. The data collection process was carried out using a questionnaire instrument filled out by the subjects before and after the intervention treatment. Measurements were taken before (O0) and after the intervention (O1). The intervention (X) was recorded on a social media platform, namely TikTok, and researchers will compare the measurement results between the pre-test and post-test to determine the effectiveness of the treatment.

Time and Location of Research

The planned study period is July–August 2025 at SMP 27 Samarinda City. 54 students in grades VII, VIII, and IX who were chosen as the class most susceptible to changes in healthy behaviour during their developmental stage serve as the study's subjects.

Population and Sample

All 537 seventh, eighth, and ninth grade students at SMP 27 Samarinda made up the study's population. Based on specific characteristics that the study subjects possessed, this population was identified. 54 individuals were included in the sample, which represents roughly 10% of the total population. The proportionate stratified random sampling method was used for the sampling process, in which equal numbers of samples were drawn from each stratum while taking into account a number of predefined criteria, as previously mentioned.

Research Variables

The independent variable in this study is TikTok social media, while the dependent variable is the AISAS model approach related to smoking prevention knowledge.

Research Activity Framework

This research activity was divided into three systematic stages to evaluate the effectiveness of TikTok videos as an intervention medium in the school environment. The first stage involved obtaining permission from the school and creating the TikTok videos to be used in the study. Next, in the second stage, the research implementation was carried out, including conducting a pre-test, presenting the intervention videos to students, and administering a post-test to measure changes. The data collection process was carried out through questionnaires distributed to students. Finally, the third stage focused on evaluating the results, where students were required to complete a post-test and the results were analyzed to determine the impact of the intervention. With this structured approach, the research is expected to provide strong evidence regarding the effectiveness of TikTok videos in an educational context.

Intervention Timeline

The intervention was conducted for one day consisting of a pre-test, TikTok video viewing, and a post-test on a predetermined date to obtain data effectively.

Intervention Procedure

The steps in the process include getting consent, playing the video, and having students fill out the questionnaire. Care must be taken at every stage to guarantee the accuracy of the data collected.

Data collection

Data collection includes primary data obtained by filling out questionnaires, as well as secondary data accessed from relevant agencies to complete the information required in the research.

Research Instruments

Research instruments were developed to measure students' knowledge about smoking prevention and to gauge the effectiveness of the intervention. The instruments were tested for validity and reliability before implementation.

Data analysis

Data analysis in research can be categorized into three types: univariate, bivariate, and multivariate. Univariate analysis focuses on processing and describing the characteristics of research variables using frequency distribution tables and percentages. Meanwhile, bivariate analysis aims to determine the influence of variables before and after the intervention, with the initial step of normality testing using the Kolmogorov-Smirnov test. If the data is normally

distributed, the Paired Sample T-Test is used, and if not, the Wilcoxon Signed Rank test is used. To test the effectiveness of AISAS, further bivariate analysis is conducted using the Pearson and Spearman tests according to the data distribution. Furthermore, multivariate analysis through multiple linear regression tests the relationship between one dependent variable and two or more independent variables simultaneously, with model feasibility evaluated using the ANOVA test and the coefficient of determination (R^2). The partial regression test assesses the significance of the contribution of each independent variable to the dependent variable, with a p-value criterion of 0.05 as the significance limit.

Validity and Reliability Test

The results of the knowledge item validity test involving 30 respondents. Each item, from B.2 to B.14, showed a calculated R value above the R Table value of 0.361. This indicates that all tested items are valid, so they can be used to measure knowledge. Items B.5 and B.11 obtained the highest calculated R values, each 0.655, indicating a significant contribution to the validity of the instrument. The reliability test showed a Cronbach's Alpha value of 0.613 for the knowledge variable consisting of 14 items. This value indicates that the instrument has a fairly good level of internal consistency, although it is still below the ideal threshold of 0.70. Therefore, although this instrument is valid, there is potential for further improvement in the reliability aspect to achieve higher standards.

Ethical Clearance

All research using human subjects has been approved by the Health Research Ethics Commission (KEPK) at Atma Husada Mahakam Regional Mental Hospital with letter number 000.9.2/401/RSJD-AH/3/IV.

Result and Discussion

Based on table 1, this study involved 54 research subjects with a gender that shows that women dominate, namely 31 respondents (57.4%). Regarding pocket money, the majority of research subjects received a daily pocket money of IDR 15,000, namely 29 people (53.7%), this pocket money provides an illustration of the relatively moderate level of daily expenditure of research subjects. The majority of respondents' monthly internet quota usage was in the range of 11 GB to 15 GB, namely 30 people (55.6%), this high quota consumption indicates that the majority of respondents have quite large internet access and needs.

Table 1. Frequency Distribution of Research Subject Characteristics

Respondent Characteristics		
Gender	n=54	(%)
Woman	31	57.40
Man	23	42.60
Amount of pocket money		
Rp. 10,000	15	27.80
Rp. 15,000	29	53.70
Rp. 20,000	10	18.50
Number of quotas/month		
5 GB - 10 GB	7	13.00
11 GB - 15 GB	30	55.60
16 GB - 19 GB	11	20.40
> 20 GB	6	11.10

The duration of the search stage, namely comments on TikTok videos, was 41 people who did it in 10 minutes with a difference of 6 people who did not continue the search stage. The next stage is action, at this stage the duration of time is longer because teenagers use the twibonize application to download the twibbon template, the number of teenagers who installed twibbon about smoking prevention through the twibonize application for 15 minutes was 36 people out of a total of 41 people with a difference of 5 people. For those who did not follow the share stage, the twibbon was sent via WhatsApp researchers. And the final stage is share, after installing the twibbon there were 20 teenagers who uploaded the twibbon on TikTok posts, and there was a difference of 16 people who did not follow the final stage or share.

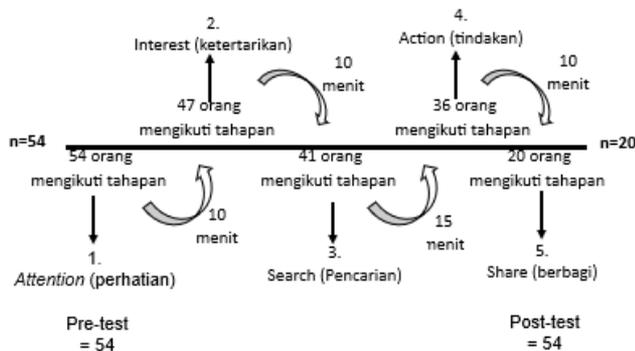


Figure 1. Frequency Distribution of AISAS Model Indicators

Based on table 2, it explains that the level of knowledge is categorized as good if the research subject is able to answer questions correctly by (76%) - (100%), the level of knowledge in the sufficient category is (56%) - (75%), and for the level of knowledge in the poor category, it is < (56%). It is known that at the time of the pre-test, the level of knowledge in the good category was 0 people (0%), but there was an increase in the post-test to 54 people (100%). There were 8 people (14.8%) with a sufficient level of knowledge in the pre-test, the level of

knowledge in the post-test decreased to 0 people (0%). Meanwhile, the frequency of the level of knowledge in the poor category occurred in the pre-test as many as 46 people (85.2%).

Table 2. Frequency Distribution of Knowledge

Knowledge	Pre-test		Post-test	
	n	%	n	%
Good	0	0	54	100
Enough	8	14.8	0	0
Not enough	46	85.2	0	0
Total	54	100	54	100

Based on Table 3, it can be seen that after analysis using the Wilcoxon signed ranks test, the mean rank score after the intervention (27.50) was higher than the score before the intervention (0.00). The results of the Wilcoxon signed ranks test showed a significance value (p-value) of 0.000 ($p < 0.05$), so it can be concluded that H_a is accepted. This means there is a significant influence between the knowledge scores before and after the intervention.

Table 3. Increase in Knowledge Pre-test and Post-test

Measurement Time	n	Mean Rank	P-value
Score before intervention	54	0.000	0.001
Score after intervention		27.50	

Based on Table 4, using the Spearman correlation test, a significant relationship was found between several social media activities and increased respondent knowledge. The number of research subjects who engaged in viewing activities was equal to the total number of research subjects, so the viewing activity variable showed a constant value. This condition resulted in the data not varying, thus preventing statistical testing, as most statistical methods require variability to produce valid inferences.

The activity of liking shows a significant positive correlation with increased knowledge, with a correlation coefficient of 0.326 and a p-value of 0.016. The activity of commenting also shows a significant positive correlation ($r = 0.312$; $p = 0.022$), as does the activity of posting twibbons with the highest correlation ($r = 0.405$; $p = 0.002$). This positive correlation indicates that the higher the frequency or intensity of respondents in carrying out the activities of liking, commenting, and posting twibbons, the greater the increase in knowledge they experienced. This means that active involvement in these activities is related to a greater increase in knowledge. Meanwhile, the activity of uploading twibbons shows a low correlation value and is not statistically significant ($r = 0.135$; $p = 0.329$), which means there is no significant relationship between these activities and increased knowledge.

Table 4. Results of the Correlation Test of the AISAS Model and Knowledge Improvement

Variables	n	Coefficient Correlation	p-value	Information
Watching activities and knowledge enhancement	-	-	-	Constant
Like activities and Increase knowledge	54	0.326	0.016	Significant
Comment activity and Knowledge enhancement	54	0.312	0.022	Significant
Twibbon posting activities and increasing knowledge	54	0.405	0.002	Significant
Twibbon upload activity and knowledge improvement	54	0.135	0.329	Not significant

Table 5 shows that the ANOVA model significance test showed that the overall regression model was significant, with an F-value of 3.335 and a

p-value of 0.017 ($p < 0.05$). This indicates that all five stages significantly influenced knowledge improvement.

Table 5. ANOVA test

Model	df	Mean Square	F	Sig (P-value)
Regression	4	2,481		
Residual	49	0.744	3,335	0.017
Total	53			

Table 6 shows that there is a variable of twibbon posting activity that has a statistically significant influence on increasing knowledge, with a coefficient value of B of 1.025 and a significance value of 0.025. This means that every increase in the score of twibbon posting activity will increase the knowledge score by 1.025 points, assuming other variables remain constant. Meanwhile, the activity variables like ($p = 0.130$), comments ($p = 0.283$), and upload twibbon ($p = 0.548$) do not show a significant influence on increasing knowledge individually. There is a positive correlation indicating that there is a significance between twibbon posting activity and increasing knowledge, as indicated

by a coefficient value of B of 1.025 and a significance value of $p = 0.025$. This indicates that every one unit increase in the score of twibbon posting activity will have an impact on increasing the knowledge score by 1.025 points, assuming other variables remain constant. In contrast, the activity variables of likes ($p = 0.130$), comments ($p = 0.283$), and twibbon uploads ($p = 0.548$) did not show a significant effect individually on knowledge improvement. This finding emphasizes the importance of active engagement in the action phase of the AISAS model as a key factor in improving adolescent knowledge regarding smoking prevention.

Table 6. Partial regression coefficient test

Independent Variables	Coefficient (B)	Sig (P-value)	Information
(Constant)	4,429	0.000	Significant
Like Activity	0.734	0.130	Not Significant
Comment Activity	-0.567	0.283	Not Significant
Twibbon Installation Activity	1,025	0.025	Significant
Twibbon Upload Activity	-0.175	0.548	Not Significant

The ability of teenagers to mention smoking prevention in adolescents, such as "smoking prevention is creating a smoke-free environment," indicates their level of knowledge and comprehension. According to this study, whereas 40.7% of adolescents correctly answered the pre-test, 54% of adolescents correctly answered the post-test following the TikTok video intervention. According to a different study published in the Journal of Nutrition, TikTok is a more effective educational tool than PowerPoint at raising teenage awareness of nutritional problem prevention. This

demonstrates its potential as a useful teaching tool (Berlian et al., 2024). The suggestion in this study is that the school creates an official TikTok account in the name of SMP Negeri 27 Samarinda by uploading several contents, namely health education such as smoking prevention, this account will be mandatory for all students of SMP Negeri 27 Samarinda with this account is expected to increase students' knowledge regarding the messages conveyed.

Based on the primordial and primary phases, the pre-test results showed that adolescents' most common

knowledge was about smoking prevention. Specifically, 59.3% of respondents correctly answered the question about "preventive efforts, including health education about the dangers of smoking." This is due to the fact that Smoke-Free Area signs placed in key locations, like fields and next to mosques, offer tangible guidelines and visual support for the health education message.

With this policy, teenagers experience firsthand an environment that supports healthy lifestyles and discourages smoking. Various other studies have shown that health education combined with environmental policies such as the KTR can significantly increase students' awareness and knowledge of the dangers of smoking, thereby helping to prevent early smoking behavior (Suratmini et al., 2024). Although most adolescents demonstrated knowledge about smoking prevention during the pre-test, the study results showed that 7.4% of adolescents still gave incorrect answers on the post-test. Although guidance and counseling teachers had provided information related to smoking prevention, these activities were not carried out in a scheduled and specifically allocated manner, but rather delivered during free time or during free classes. Therefore, a more structured and consistent provision of smoking prevention information is needed, for example through a special schedule by BK teachers every week.

As a result, constant material delivery can improve comprehension and reduce misunderstandings among teenagers. A related study from a junior high school in Beureunuen, Banda Aceh, highlighted the value of guidance counselors in offering structured guidance services to support teen smoking prevention initiatives (Rizki, 2023). The research suggestion is that it is necessary to provide more structured and scheduled smoking prevention information every week by BK teachers in order to strengthen understanding and minimize misunderstandings in adolescents and there is a policy to strengthen health education in schools that is more interactive and integrated, involving teachers, parents, and the community to create an environment that supports healthy living behavior and awareness of the risks of smoking.

The low level of knowledge that adolescents knew during the pre-test was smoking prevention in adolescents, namely "not avoiding friends who smoke is one way to prevent smoking in adolescents" and as many as 40.7% answered incorrectly. The majority of adolescents think that friends who smoke is not one way to prevent smoking. There are factors that influence knowledge, one of which is external factors such as family, relatives or society. Adolescents tend to imitate or follow the behavior of friends and close relatives because they want to be accepted, feel comfortable, or do not want to be ostracized from their social group so that it becomes one of the factors that influence the low pre-

test knowledge answers. Research in line at SMP Dawan Klungkung concluded that peer interaction greatly influences smoking behavior in ninth grade adolescents. Peer smoking is a dominant factor in encouraging the same behavior in other individuals in order to gain acceptance in the group (Pratama et al., 2021).

According to the research, in order for prevention messages to be communicated more successfully through peer education mechanisms (peer to peer), it is necessary to establish extracurricular activities like the Youth Information and Counseling Center (PIK-R) as an official forum in schools that serves as a means of exchanging information and education interactively and in accordance with their communication styles. Additionally, learning more about smoking prevention can be facilitated by receiving encouragement and social support from peers who share similar health goals.

A significant increase in knowledge during the post-test regarding smoking prevention based on the secondary and tertiary phases of "Treatment, rehabilitation, and recovery for individuals who have experienced the effects of smoking, including smoking prevention," rose from 38.9% to 100%. This is because the phrase "smoking prevention" frequently appears in various health campaigns, both in the mass media, seminars, and educational materials in schools and other health facilities. This is in line with research. Morissan (2020) which states that continuous health campaigns in various media as well as educational materials in schools and health facilities can increase public knowledge and awareness of the dangers of smoking and the importance of prevention and rehabilitation for affected individuals (Morissan, 2020).

Smoking prevention phrases are also easy to understand, highly relevant, and health organizations such as the WHO (World Health Organization), the Ministry of Health, and anti-smoking agencies consistently emphasize the importance of treatment and rehabilitation as part of a comprehensive prevention strategy. Other research indicates that smoking prevention campaigns supported by health organizations such as the WHO and the Ministry of Health have significantly contributed to increasing public awareness of rehabilitation and recovery efforts as part of a comprehensive prevention strategy (Nurmidin, 2024).

The average knowledge increased by 4.42 before (pre-test) and 9.68 after (post-test) the intervention in the form of TikTok video media, according to the results of the Wilcoxon signed rank test. With a p-value of $0.001 < 0.05$, it can be said that adolescents at SMP Negeri 27 Samarinda knew more about smoking prevention before and after receiving a TikTok video media intervention. This is consistent with the study's finding Wiksuarini et al (2024) said that there was a significant increase in

knowledge after education was given to teenagers at SMAN 3 (Wiksuarani et al., 2024). The same thing is done by Muslim et al (2023) explains that knowledge and attitudes are significantly related to adolescent smoking behavior (Muslim et al., 2023). Research in Jambi City demonstrated a significant increase in junior high school students' knowledge about the dangers of e-cigarettes after an intervention using TikTok (Raihan & Varid, 2025).

Based on the research results, there was an increase in the knowledge of the research subjects after the intervention was given for the better, this was also proven by the difference in pre-test and post-test scores with a p-value <0.05 so that there was a difference in adolescent knowledge before (pre-test) and after (post-test) intervention through TikTok video media. The increase in knowledge about smoking prevention was caused by adolescents having been stimulated by the intervention using TikTok video media, where the intervention can add information and insight to adolescents so that they can improve their knowledge. Through the educational process, adolescents will learn and try to understand what was initially unknown to become knowledgeable so that there is a change in the category of knowledge to be good. This is in accordance with the statement Mirawati (2019) namely education is a learning process carried out to obtain information or knowledge from not knowing to knowing (Mirawati, 2019).

It is possible to draw the conclusion that the test results following the most recent intervention showed an increase in both pre- and post-test knowledge about smoking prevention. Since it is evident that TikTok has been successful in raising awareness of health issues, the school developed interactive media like TikTok. It is suggested that the school set up a TikTok account for SMP Negeri 27 Samarinda with a variety of content, including health education like smoking cessation. All students at SMP Negeri 27 Samarinda are required to have this account, which should help them learn more about the messages being taught.

Therefore, health promotion efforts are needed to increase knowledge about smoking prevention through social media widely used by teenagers today, such as TikTok. The TikTok application also has a positive impact, namely the large amount of new and broad education that can be obtained. Teenagers who use TikTok will learn a lot of new things from content originating from short videos and text displays. So teenagers who are lazy to read long texts will be more interested in watching because the text display is attractive and concise. TikTok media is able to present information visually and audio simultaneously, which has proven to be more effective in increasing knowledge compared to conventional learning methods (Asmadina,

2024). This is in line with research Pamilasari et al (2022) which states that videos added to verbal messages can increase motivation to receive messages and remember them better because video media offers more interesting and non-monotonous counseling by displaying movement, images and sound so that teenagers have curiosity about the contents of the video which is expected to be able to absorb information and implement it (Pamilasari et al., 2022).

The first stage of the AISAS model, attention, counts the number of teenagers who watched the intervention video. Knowledge is the outcome of a person's perception of an object through their senses (eyes, nose, ears, etc.). As a result, the adolescents' level of attention and perception during the video viewing significantly affects the amount of time that passes between sensing and knowledge production (Isnaniar et al., 2023).

According to Everett Rogers in 1964, diffusion theory explains the process by which an innovation, namely an idea, practice, or object that is considered new, is communicated through certain channels over a certain period of time (Mulyati et al., 2023). In the context of TikTok, a video's high number of views indicates that the content has undergone an effective diffusion process. This diffusion process means that the smoking prevention message has been successfully disseminated widely and received by many users. The more a video is adopted and viewed by audiences, the greater the likelihood that the educational message will influence their knowledge and awareness of the dangers of smoking. Furthermore, high viewership strengthens the virality mechanism, where smoking prevention content can be shared and recommended organically through the TikTok algorithm, increasing the reach and sustainability of the message's spread.

Thus, the large number of viewers not only reflects the popularity of the video but also contributes to the effectiveness of social media-based educational interventions in changing social norms and reducing smoking behavior, particularly among adolescents, the primary users of these platforms. This is also in line with Aprilia & Sari (2024) which states that the greater the intensity of watching TikTok, the greater the ability of Generation Z to understand the political conditions occurring in Indonesia. (Aprilia & Sari, 2024). Research result Brilliantia et al., (2022) shows that promotional videos uploaded on TikTok bring in more viewers than on YouTube (Brilliantia et al., 2022).

The second stage in the AISAS model, interest, refers to the number of adolescents who liked the intervention video. There was a significant relationship between liking and increased knowledge, with a correlation coefficient of 0.326 and a p-value of 0.016 ($p < 0.05$). Liking was able to build adolescent interest, driven by the engaging visual content in the digital

marketing strategy, which included health information on smoking prevention.

Content attractiveness explains that content that is visually attractive, informative, and relevant can increase the audience's attention and interest in a message (Veronika & Aulia, 2022). Referring to the number of teens who like a video, this indicates that the video content has a strong appeal, triggering interest and a positive response from teens. Likes reflect not only interest but also emotional and cognitive engagement, which are important in reinforcing the message.

Thus, the more engaging the content, the more likely it is to receive likes and interactions, which is an indicator of the effectiveness of message dissemination and reception among teenagers through social media like TikTok. This aligns with research conducted by Semuel & Setiawan (2018) that promotion has a very significant influence on consumers' interest or passion for something or a product (Semuel & Setiawan, 2018).

The third stage in the AISAS model, search, measured the number of adolescents who commented on the intervention video. Commenting activity and increased knowledge were found to be significantly related, with a correlation coefficient of -0.312 and a p-value of 0.022 ($p < 0.05$). The level of adolescent engagement in the intervention video was quite high, as evidenced by their activity in searching and exploring other videos about smoking prevention, as seen in the comments section.

This can also affect the recommendation algorithm and content personalization that is developing in the field of computer science and data science, meaning how the algorithm system works as the "brain" behind social media platforms that adjust content to the unique interests of users based on their interaction data, so that the content that appears is more personal and relevant (Andini, 2023). When users actively engage with similar content, for example by commenting on and sharing links to smoking prevention videos, the algorithm identifies these interests and recommends more similar content to their Forward-Looking Page (FYP). This is an application of recommendation system theory, which uses user behavior data to present the most relevant and engaging content to each individual on a personalized basis.

With this strategy, searching for and sharing smoking prevention videos indirectly directs TikTok's algorithm to show more smoking prevention content to those users, increasing the effectiveness of educational messaging across the digital platform. This is in line with research by Asmadina (2024) which shows that interaction with video content on TikTok increases adolescents' awareness and positive attitudes towards smoking prevention, supporting the role of social media

algorithms in strengthening the spread of educational messages (Asmadina, 2024).

In the AISAS model, the fourth stage, action, can be assessed by how enthusiastic teenagers are about posting twibbons. There is a significant correlation between posting twibbons and increased knowledge, indicated by a correlation coefficient of 0.405 and a p-value of 0.002 ($p < 0.05$). Action encourages teenagers to post twibbons with calls for action to prevent smoking. Teenagers can visually demonstrate support and participation in online campaigns and spread awareness about smoking prevention issues to other online friends. When many people use the same twibbon, this can spark conversations and encourage other teenagers to find out more about a smoking prevention issue. Therefore, twibbons are an effective strategy for disseminating information about the benefits and urgency of smoking prevention issues. Based on research by Muzammil et al (2023) concluded that the use of twibbon learning media has a positive impact on the physics learning process in schools (Muzammil et al., 2023).

Although the results in the action phase were significant, there was a decrease in the number of participants, or loss to follow-up, at this stage. A total of 25 teenagers out of a total of 54 teenagers participated, meaning only half of the total number of teenagers participated. Several reasons were cited: some teenagers felt embarrassed, awkward, or feared ridicule if they displayed a photo of themselves combined with a twibbon, with their faces clearly visible. According to Giawa & Nurrachman (2018) that psychologically, shame arises from discomfort in social situations that involve the judgment of others, so that teenagers who feel ashamed tend to avoid actions that make them feel exposed (Giawa & Nurrachman, 2018).

In self-disclosure theory, a psychological concept that explains the process by which a person voluntarily reveals personal information such as feelings, thoughts, and experiences to others, which helps build trust and closeness in social relationships. This level of openness is influenced by trust and familiarity and generally helps individuals share things that are not normally known to others (Fitri et al., 2018). So there are suggestions in carrying out the stages in a way that involves interactive elements through fun activities using visual methods such as role-play related to smoking prevention. Role-play helps adolescents practice communicating, reducing nervousness, and managing emotions in social or public situations so that they become more prepared and comfortable in carrying out the stages in the study. Therefore, there is a suggestion in this study that interventions are needed that involve interactive methods such as role-play so that they can help adolescents practice communication and manage

emotions in social situations to increase participation in the action and share stages in the AISAS model.

There is a lack of expert review from adolescent psychologists in designing and evaluating interventions. This is because the psychosocial and emotional aspects of adolescents require more in-depth attention. Self-disclosure theory emphasizes the importance of building trust and intimacy to encourage adolescent openness, which is a key factor in reducing shame and increasing active participation. Therefore, the research suggests that review and input from adolescent psychologists is essential to strengthen intervention design, address existing psychosocial barriers, and ensure that the approach is appropriate to adolescents' psychological needs and characteristics, thus optimally achieving the targets of smoking prevention campaigns.

The final stage in the AISAS model is sharing, as seen from the number of teenagers who campaigned by uploading twibbons to the TikTok accounts of all teenagers participating in the study. Based on the test results, the activity of uploading twibbons had an insignificant relationship with increased knowledge, with a correlation coefficient of 0.329. The p-value of 0.329 indicates that this relationship is not statistically significant (because $p > 0.05$). Only 17 teenagers out of a total of 54 teenagers completed the final stage.

Several factors contributed to these insignificant results, including the research location, located on the outskirts of Samarinda City, which presented challenges in the form of unstable Wi-Fi network access. This situation led most teenagers to choose to use their personal internet quotas rather than rely on inadequate Wi-Fi networks. Although the average teenager has an internet quota of around 11 to 15 GB per month, the majority of them used Axis cards. These cards are popular among teenagers due to their affordability and good network coverage at home. However, the Axis network at school was considered inadequate. Technical constraints such as limited network access and limited personal internet quotas significantly contributed to the participation rate, preventing them from continuing the research process to the final stage.

Many adolescents experienced limited remaining internet data during the study, while the TikTok app used in the research process required a large data quota for optimal access. This condition caused adolescents to be reluctant to use their data quota to open the app, resulting in low participation rates until the end of the study. Technical constraints such as inadequate network connectivity and limited internet data significantly impacted the smoothness and results of the study. This condition can be linked to the Stages of Change Theory or Transtheoretical Model developed by Prochaska and DiClemente, which states that behavioral change occurs gradually through several stages, starting from

precontemplation, contemplation, preparation, action, maintenance, and termination. In the contemplation stage, individuals begin to recognize problems with their behavior and consider the possibility of change, but have not yet committed to concrete action (Yati, 2021).

Limited internet access and personal data quotas act as practical barriers that disrupt adolescents' contemplation process. These technical barriers prevent adolescents from consistently accessing TikTok-based intervention media, thus hindering the process of reflection and strengthening intentions to change, which are key characteristics of the contemplation stage. Thus, constraints in technological infrastructure hinder adolescents' progress from the contemplation stage to the preparation and action stages, which are necessary for achieving effective behavior change.

Based on the findings of this study, using the TikTok app as a research medium is less appropriate in locations with inadequate internet access. Therefore, researchers are advised to consider the local information and communication technology infrastructure before selecting a digital platform for interventions or data collection.

Respondents' characteristics based on pocket money categories: 29 out of 54 adolescents received pocket money of Rp 15,000. Adolescents with excess pocket money tend to increase their consumer behavior and use their money for personal needs or desires, which does not necessarily support the active participation phase of the AISAS model. Adolescents with excess pocket money may be more tempted to spend time and resources on entertainment, shopping, or other activities less relevant to smoking prevention efforts. This can decrease their interest and motivation to participate in each phase.

Furthermore, a large allowance can make adolescents feel more independent and less dependent on educational programs or interventions provided by institutions, thus demotivating them to consistently follow all stages of the AISAS model. Uncontrolled consumerist tendencies can lead to their activity priorities shifting toward consumer and social pursuits that do not support the desired behavioral change process.

Conclusion

The analysis of the data reveals significant findings regarding the influence of social media engagement on knowledge improvement related to smoking prevention among adolescents. A predominance of female respondents (57.4%) participated in the study, with a notable majority (53.7%) receiving daily pocket money of IDR 15,000, indicating a moderate financial capacity for internet engagement. Post-intervention, a dramatic

shift in knowledge levels was observed, transitioning from 0% in the "good" category pre-test to 100% post-test, confirmed by the Wilcoxon signed ranks test ($p < 0.05$). Furthermore, a positive correlation was established between social media activities, specifically liking, commenting, and twibbon posting, with knowledge enhancement. In particular, twibbon posting emerged as a critical factor, significantly affecting knowledge increment with a coefficient of $B = 1.025$ ($p = 0.025$). These findings underscore the efficacy of active participation in social media as a vital strategy for improving adolescent health literacy.

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Author Contributions

Conceptualization, methodology, software, validation, formal analysis, investigation, resources, data curation, writing—original draft preparation, writing—review and editing, visualization, supervision, project administration, funding acquisition; JA, NR, AN. All authors have read and agreed to the published version of the manuscript.

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The authors declare no conflict of interest

References

- Alawiyah, W. A., Budi Musthofa, S., & Nugraheni, S. A. (2023). Penggunaan Media Sosial Sebagai Media Edukasi Guna Meningkatkan Niat Berhenti Merokok. *Syntax Literate; Jurnal Ilmiah Indonesia*, 8(4), 2442–2455. <https://doi.org/10.36418/syntax-literate.v8i4.11632>
- Andini, A. T. (2023). Analisis Algoritma Pemrograman Dalam Media Sosial Terhadap Pola Konsumsi Konten. *Jurnal Arjuna: Publikasi Ilmu Pendidikan, Bahasa Dan Matematika*, 2(1), 286–296. <https://doi.org/10.61132/arjuna.v2i1.526>
- Aprilia, A. N. D., & Sari, M. M. K. (2024). Hubungan Intensitas Menonton Tiktok Narasi Dengan Tingkat Pengetahuan Politik Generasi Z. *Kajian Moral Dan Kewarganegaraan*, 12, 476–485.
- Asmadina, S. L. (2024). Pengaruh Media Video Tiktok Terhadap Pengetahuan Dan Sikap Mengenai Bahaya Merokok Pada Remaja SMK Negeri 1 Samarinda. Poltekkes Kalimantan Timur.
- Asmadina, S. L., Hendriani, D., & Rahayu, E. P. (2024). Pengaruh Edukasi Promosi Kesehatan Bahaya Merokok dengan Konten Tiktok terhadap Pengetahuan Siswa SMKN 1 Samarinda. *Jurnal Ayurveda Medistra*, 6(1), 1–12. <https://doi.org/10.51690/medistra-jurnal123.v6i1.117>
- Berlian, S., Mahmudah, U., Suparman, & Rahmat, M. (2024). Efektivitas Media Sosial Tiktok Sebagai Media Edukasi Pencegahan Kekurangan Energi Kronis di SMAN 6 Cimahi. *Jurnal Gizi Dan Dietetik*, 3(2), 114–131.
- Brilliantia, N., Abdul Fathah, A. H., & Hadi R, R. J. (2022). Promosi Digital Wisata Kuliner Peneleh Melalui Pendekatan AISAS dan Word-Of-Mouth. *Jurnal Pengabdian Kepada Masyarakat Nusantara*, 3(1), 102–116. <https://doi.org/10.55338/jpkmn.v3i1.291>
- Fithria, F., Hartaty, N., & Susanti, S. (2023). The Effectiveness of Self-Help Group (SHG) Intervention on Smoking Prevention of Adolescents in Aceh, Indonesia: A Controlled Field Trail. *Asian Pacific Journal of Cancer Prevention*, 24(3), 991–997. <https://doi.org/10.31557/APJCP.2023.24.3.991>
- Fitri, E., Zola, N., & Ifdil, I. (2018). Profil Kepercayaan Diri Remaja serta Faktor-Faktor yang Mempengaruhi. *JPPi (Jurnal Penelitian Pendidikan Indonesia)*, 4(1), 1–5. <https://doi.org/10.29210/02017182>
- Giawa, E. C., & Nurrachman, N. (2018). Representasi Sosial Tentang Makna Malu Pada Generasi Muda Di Jakarta. *Jurnal Psikologi*, 17(1), 77. <https://doi.org/10.14710/jp.17.1.77-86>
- Grant-Alfieri, A., Burke, K., Zeinomar, N., Delgado, M.-L., & Terry, M. B. (2022). Cancer Education Interventions in Adolescents: A Systematic Review of Scope and Content. *Health Education & Behavior*, 49(6), 993–1003. <https://doi.org/10.1177/10901981221109142>
- Havizoh, H., Widyatuti, W., & Mulyono, S. (2022). Implications of video game-based education for adolescents' smoking knowledge and perceptions. *Sri Lanka Journal of Child Health*, 51(1), 62–72. <https://doi.org/10.4038/sljch.v51i1.9997>
- Isnaniar, Norlita, W., & Novrianti, E. (2023). Pengetahuan Ibu Tentang Kartu Menuju Sehat (KMS) di Posyandu Wilayah Kerja Puskesmas

- Rawat Inap Sidomulyo Pekanbaru. *Jurnal Kesehatan As-Shiha*, 23-38.
- Maretalina, M., Juliansyah, E., Suyitno, S., Yulianto, A., & Suryani, D. (2021). Association of Smoking Related to Knowledge, Attitude, and Practice (KAP) with Tobacco Use in Community Health Center Working Area of Sungai Durian, Sintang Regency, West Kalimantan Province. *Buletin Penelitian Sistem Kesehatan*, 24(1), 38-45. <https://doi.org/10.22435/hsr.v24i1.3544>
- Megatsari, H., Damayanti, R., Kusuma, D., Warouw, T. S., Nadhiroh, S. R., Astutik, E., Dewi, D. M. S. K., & Sebayang, S. K. (2023). The influence of anti-smoking messages to Indonesian youth smoking behavior: the Indonesian 2019 Global Youth Tobacco Survey (GYTS). *BMC Public Health*, 23(1), 907-1007. <https://doi.org/10.1186/s12889-023-15830-5>
- Mirawati, W. (2019). *Edukasi Gizi Konsumsi Makanan Dan Aktivitas Fisik Melalui Media Video Terhadap Pengetahuan, Sikap, Dan Perilaku Mahasiswa Obesitas Di Poltekkes KemenkesNo Title*. Poltekkes Yogyakarta.
- Morissan. (2020). The Influence Of Anti-Smoking Campaign On Desire To Quit Smoking In Indonesia. *Profetik Jurnal Komunikasi*, 13(1), 5-24.
- Mulyati, I., Mansyuruddin, M., Adrianus, A., Bahari, Y., & Warneri, W. (2023). Proses Difusi Inovasi dalam Penerapan Metode Pengajaran Baru. *Edukatif: Jurnal Ilmu Pendidikan*, 5(6), 2425-2433. <https://doi.org/10.31004/edukatif.v5i6.5769>
- Muslim, N. A., Adi, S., Ratih, S. P., & Ulfah, N. H. (2023). Determinan Perilaku Merokok Remaja SMA/Sederajat di Kecamatan Lowokwaru Kota Malang. *Perilaku Dan Promosi Kesehatan: Indonesian Journal of Health Promotion and Behavior*, 5(1), 20. <https://doi.org/10.47034/ppk.v5i1.6781>
- Muzammil, A., Andi, H. J., Pravitasari, T., Alim, M. C., & ... (2023). Pengembangan Media Pembelajaran E-Poster Berbasis Web Berbantuan Twibbon untuk Meningkatkan Hasil Belajar Siswa pada Materi Gerak Lurus di SMA. *Jurnal Penelitian Pendidikan Fisika*, 8(4), 250-255.
- Nurmidin, M. F. (2024). Kampanye Anti-Rokok di Media Online: Tinjauan Literatur. *Jurnal Lentera Sehat Indonesia*, 3(2), 60-63. <https://doi.org/10.57207/vnwkny90>
- Pamilasari, T., Desi, & Purba, J. S. R. (2022). Pengaruh Edukasi Gizi Media TikTok terhadap Pengetahuan Gizi Seimbang pada Remaja Putri. *Pontianak Nutrition Journal (PNJ)*, 5(1), 141-145.
- Pratama, Triana, K. Y., & Martini, N. M. D. A. (2021). Interaksi Teman Sebaya Berpengaruh Terhadap Perilaku Merokok Remaja Kelas Ix Di Smp Dawan Klungkung. *Jurnal Keperawatan Dan Kesehatan Masyarakat Cendekia Utama*, 10(2), 152. <https://doi.org/10.31596/jcu.v10i2.761>
- Raihan, M., & Varid, O. (2025). *The Influence of TikTok Media on the Knowledge of the Dangers of E-Cigarettes Among Junior High School 7 Students in Jambi City*. 4(March), 132-139.
- Rizki, R. (2023). *Upaya Guru Bimbingan Konseling dalam Menerapkan Konseling Kelompok Untuk Mengatasi Perilaku Merokok Siswa di SMP Negeri 1 Mutiara Beureunuen*. Universitas Islam Negeri Ar-Raniry.
- Sella Puspita Sari, Swatitis Kurnia Saputri, M., Budi Mustofa, S., & Nurjazuli. (2024). Social Media Exposure towards Asian Youth Smoking Behaviour: A Scoping Review. *Jurnal Promkes*, 12(SI2), 214-221. <https://doi.org/10.20473/jpk.V12.ISI2.2024.214-221>
- Semuel, H., & Setiawan, K. Y. (2018). Promosi Melalui Sosial Media, Brand Awareness, Purchase Intention Pada Produk Sepatu Olahraga. *Jurnal Manajemen Pemasaran*, 12(1), 47-52. <https://doi.org/10.9744/pemasaran.12.1.47>
- Suratmini, D., Firmansyah, R., & Salsabila, A. (2024). Pendidikan Kesehatan Bahaya Merokok Sebagai Pencegahan Perilaku Adiksi Anak Usia Sekolah di Madrasah Ibtidaiyah Hayatul Islamiah: Pendidikan Kesehatan Bahaya Merokok Sebagai Pencegahan Perilaku Adiksi Anak Usia Sekolah di Madrasah Ibtidaiyah Hayatul Islam. *Jurnal Pengabdian Masyarakat Kesehatan Terkini*, 3(2), 53-62.
- Suwanwong, C., Kalapat, R., Pitayangsarit, S., & Chaayasong, S. (2021). Factors Related to Adolescent Smoking: A Nationally Representative Cross-Sectional Study in Thailand. *Open Access Macedonian Journal of Medical Sciences*, 9(E), 1267-1272. <https://doi.org/10.3889/oamjms.2021.7453>
- Swastika, D. P. A., Shaluhayah, Z., & Musthofa, S. H. B. (2021). The Effect on Education of Cigaretteâ€™s Danger Through Instagram on the Knowledge, Attitudes, and Practices of Female Student Smokers. *Journal of Health Education*, 6(1), 16-26. <https://doi.org/10.15294/jhe.v6i1.45484>
- Veronika, R., & Aulia, S. (2022). Pengaruh Daya Tarik Konten Media Sosial @akutahu terhadap Minat Baca Generasi Milenial. *Lintar*, 6(2), 295-304. <https://doi.org/10.24912/kn.v6i2.15677>
- Wiksuarini, E., Halimatunnisa, M., Pa'ni, D. M. Q., & Aoladulmuqarrob. (2024). *Edukasi Tentang Bahaya Merokok Terhadap Tingkat Pengetahuan Remaja di SMAN 3 lembar*. 5(6), 11720-11723.
- Yati, W. (2021). *Pengertian Transtheoretical Model*. Scribd. <https://id.scribd.com/document/492437944/Pengertian-Transtheoretical-model>