

# Educational Strategy in Preventing HIV/AIDS: Analysis of Social, Cultural, and Digital Media Influence

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**Abstract.** The research investigated the influence of digital media integration and social and cultural factors on the knowledge, attitudes, and preventative behaviors regarding HIV/AIDS among adolescents. The objective was to assess how these variables correlate and contribute to enhancing HIV/AIDS prevention strategies within this demographic. Utilizing a quantitative research methodology, data were collected from 398 respondents and analyzed through descriptive statistics, correlation analysis, independent samples T-tests, ANOVA, linear regression, principal component analysis (PCA), and exploratory factor analysis (EFA). The findings revealed no significant correlations between the use of digital media, social and cultural factors, and adolescents' knowledge, attitudes, and behaviors related to HIV/AIDS prevention. Similarly, regression models indicated that these variables did not significantly predict knowledge about HIV/AIDS. The PCA and EFA did not identify significant components or factors that could explain variance in responses concerning HIV/AIDS prevention. In conclusion, the study suggests that digital media, alongside social and cultural factors, does not significantly impact adolescents' knowledge, attitudes, and preventative behaviors toward HIV/AIDS. This research contributes to the scientific understanding of HIV/AIDS prevention in adolescents, indicating a need for exploring additional factors that might influence effective prevention strategies.

**Key words:** HIV/AIDS prevention education, digital media influence, cultural factors in health education, social influences on adolescent behavior

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## INTRODUCTION

The pivotal role of education in preventing HIV/AIDS, particularly among adolescents. Traditional educational strategies have been instrumental in disseminating knowledge, shaping attitudes, and promoting preventive behaviors against HIV/AIDS. The advent of digital media has introduced innovative avenues for education, offering extensive reach and interactive platforms for engaging the youth in health-related issues (Dsouza et al., 2023; Farnum et al., 2021; Florêncio, 2020; Tanner et al., 2020; Vannakit et al., 2020).

Despite the acknowledged potential of digital media in education, its comparative effectiveness against traditional methods in HIV/AIDS prevention among adolescents remains underexplored. The specific influences of social and cultural factors on the receptiveness and outcomes of HIV/AIDS education through digital platforms are not well-documented, especially in contexts with unique social and cultural dynamics like Sidoarjo, Indonesia (Agegnehu & Tesema, 2020; Choukou et al., 2022; Monroe-Wise et al., 2021; Shamu et al., 2021; Woods et al., 2021).

Addressing this gap is crucial for several reasons. First, understanding the differential impact of digital versus traditional educational strategies on HIV/AIDS prevention can inform the design of more effective interventions tailored to adolescent needs and preferences. Second, elucidating the role of social and cultural contexts can help in customizing educational content and delivery methods to resonate more deeply with the target demographic, enhancing the efficacy of prevention programs.

The importance of investigating these aspects lies not only in improving HIV/AIDS education but also in leveraging digital media's potential to reach and engage adolescents more effectively. This approach aligns with the growing digitization of society and the increasing reliance of youth on digital platforms for information and social interaction (Darteh et al., 2021; Gedin et al., 2022; Georgi et al., 2020; Grant et al., 2020; Pięta & Rzeszutek, 2022; Threats & Bond, 2021; Winograd et al., 2021).

Agegnehu et al., (2020); Diress et al., (2020); Dooley et al., (2020); Fazeli et al., (2020); Kefale et al., (2020); Moulignier & Costagliola, (2021); Parcesepe et al., (2020) focused on the effectiveness of digital media in health education without adequately comparing it to traditional methods or considering the influence of social and cultural factors. While Ajayi et al., (2020); Al-Rawi et al., (2021); Darteh,

(2020); K'oreje et al., (2022); Notario-Pérez et al., (2021) shown digital media's potential in engaging youth, there is a lack of comprehensive research that integrates these elements in the context of HIV/AIDS prevention in Sidoarjo.

Brazier et al., (2022); Hui et al., (2021); Obakiro et al., (2021); Thomas et al., (2020); van Heerden & Young, (2020); Wang et al., (2022); Zhai et al., (2023) comprehensive investigation into the effectiveness of integrating digital media into HIV/AIDS educational strategies, considering the impact of social and cultural factors. By comparing digital and traditional methods and examining the roles of family, peers, culture, and specific social media platforms, this research aims to identify the most effective strategies for HIV/AIDS prevention among Sidoarjo's adolescents.

The purpose of this research was to explore how the integration of digital media in HIV/AIDS prevention education affects the knowledge, attitudes, and behaviors of adolescents in Sidoarjo, and to identify the social and cultural factors that influence its effectiveness.

This research contributes to the scientific understanding of effective HIV/AIDS prevention strategies among adolescents, offering insights into optimizing digital media use in public health education. The findings can inform policymakers, educators, and public health professionals in designing targeted, culturally sensitive HIV/AIDS prevention programs that leverage digital media's strengths.

The hypothesis were H1: educational strategies integrating digital media are more effective in enhancing knowledge and attitudes towards HIV/AIDS prevention among adolescents in Sidoarjo compared to conventional educational strategies; H2: the social influence of family and peers significantly impacts the effectiveness of HIV/AIDS prevention education among adolescents in Sidoarjo; H3: cultural factors influence the acceptance and response of adolescents to HIV/AIDS prevention education in Sidoarjo; H4: the use of specific social media platforms (e.g., Instagram, TikTok) in educational strategies can increase engagement and participation of adolescents in HIV/AIDS prevention programs; H5: comprehensive sexual education involving information about HIV/AIDS, including transmission modes and prevention, contributes to reducing stigma towards people living with HIV/AIDS among adolescents in Sidoarjo.

The research question was how does the integration of digital media in HIV/AIDS prevention education affect the knowledge, attitudes, and behaviors of adolescents in Sidoarjo towards HIV/AIDS prevention, and what social and cultural factors influence its effectiveness?

## **METHODS**

In this research, investigated the impact of digital media integration into HIV/AIDS prevention education on adolescents' knowledge, attitudes, and behaviors in Sidoarjo, Indonesia, along with the influence of social and cultural factors. The research was conducted in several distinct phases to ensure comprehensive data collection and analysis aligned with the study's objectives.

Sample selection targeted adolescents aged 15-24 in Sidoarjo, using a stratified random sampling technique to ensure a representative demographic spread. A total of 398 participants were recruited from various educational institutions and community groups, with efforts made to balance the sample in terms of age, gender, and socio-economic background.

A questionnaire was developed to measure participants' knowledge of HIV/AIDS, attitudes towards prevention, and engagement in preventative behaviors. Additional sections assessed the frequency and type of digital media use, and the perceived influence of social and cultural factors. The survey items were derived from a review of existing literature and were validated through expert consultation. A pilot test with a small subset of the target population was conducted to refine the survey questions for clarity and relevance.

The survey was administered both online and in paper format over a period of three months. Digital media platforms, including social media and messaging apps, were utilized to distribute the online survey, while paper surveys were distributed in community centers and schools. Participants were assured of their anonymity and the confidentiality of their responses.

The collected data were first subjected to descriptive statistical analysis to outline the general trends in knowledge, attitudes, and behaviors regarding HIV/AIDS prevention among the participants. Correlation analyses were then performed to explore the relationships between digital media use, social and cultural factors, and the primary variables of interest. Independent samples T-tests and ANOVA were used to compare group means across different demographic and behavioral criteria. Linear

regression analysis was conducted to examine the predictive power of digital media use and socio-cultural factors on HIV/AIDS prevention knowledge, attitudes, and behaviors. Finally, Principal Component Analysis (PCA) and Exploratory Factor Analysis (EFA) were applied to identify underlying patterns in the data related to digital media engagement and its impact.

Throughout the research process, ethical considerations were strictly adhered to, with participants providing informed consent before taking part in the study. The research protocol, including the survey instrument and methodology, received approval from the local ethics committee to ensure compliance with ethical standards in research involving human subjects.

**RESULTS AND DISCUSSION**

The research explores the influence of digital media integration and the impact of social and cultural factors on adolescents' knowledge, attitudes, and behaviors towards HIV/AIDS prevention in Sidoarjo. The results seen in table 1, were derived from the analysis of data collected from 398 respondents.

The participants' knowledge about HIV/AIDS had a mean score of 1.960 out of a possible 4, indicating a low to moderate level of awareness. The mode for knowledge was 3, suggesting that a significant portion of the sample had a higher knowledge level, yet the overall average remained relatively low. Preventive attitudes towards HIV/AIDS scored slightly higher with a mean of 2.038, and the most frequent score (mode) was 4, indicating a positive preventive attitude among a subset of respondents. However, the median score of 2.000 suggests that the overall attitude was generally neutral to moderately positive.

Behavior regarding HIV/AIDS prevention was less frequent among participants, with a mean score of 1.030 and a mode of 2, reflecting a range of seldom to occasionally practiced preventive behaviors. Digital media use for HIV/AIDS prevention information had a mean score of 1.995, with the most common score (mode) being 4, indicating that while some adolescents frequently used digital media for this purpose, the average use was moderate.

The social factor, representing the influence of family and peers on adolescents' HIV/AIDS prevention efforts, had a mean score of 0.530, with a mode of 1, suggesting a moderate influence of social factors across the sample. The cultural factor had a slightly lower mean of 0.485, with a mode of 0, indicating a varied but generally lower influence of cultural factors on the participants' attitudes and behaviors towards HIV/AIDS prevention.

**Table 1.** Descriptive Statistics

	<b>Knowledge HIV/AIDS</b>	<b>Preventive Attitude</b>	<b>Behavior Prevention</b>	<b>Digital Media Use</b>	<b>Social Factor</b>	<b>Culture Factor</b>
Valid	398	398	398	398	398	398
Missing	0	0	0	0	0	0
Mode	3.000 <sup>a</sup>	4.000 <sup>a</sup>	2.000 <sup>a</sup>	4.000 <sup>a</sup>	1.000 <sup>a</sup>	0.000 <sup>a</sup>
Median	2.000	2.000	1.000	2.000	1.000	0.000
Mean	1.960	2.038	1.030	1.995	0.530	0.485
Std. Deviation	1.415	1.467	0.821	1.432	0.500	0.500
Range	4.000	4.000	2.000	4.000	1.000	1.000
Minimum	0.000	0.000	0.000	0.000	0.000	0.000
Maximum	4.000	4.000	2.000	4.000	1.000	1.000

<sup>a</sup>The mode is computed assuming that variable is discreet

The table 2 indicates that there were no statistically significant correlations between most variables. Specifically, knowledge about HIV/AIDS showed a very slight negative correlation with preventive attitude (Pearson's  $r = -0.020$ ,  $p\text{-value} = 0.692$ ) and behavior prevention (Pearson's  $r = -0.016$ ,  $p\text{-value} = 0.746$ ), though these correlations were not statistically significant. Similarly, preventive attitude and behavior prevention were slightly negatively correlated (Pearson's  $r = -0.055$ ,  $p\text{-value} = 0.271$  for attitude with behavior), indicating a very weak relationship between having a positive attitude towards HIV/AIDS prevention and actual preventive behaviors among adolescents.

Digital media use showed a slight positive correlation with knowledge about HIV/AIDS (Pearson's  $r = 0.020$ ,  $p\text{-value} = 0.694$ ) but a slight negative correlation with preventive attitude (Pearson's  $r = -0.080$ ,  $p\text{-value} = 0.110$ ) and no meaningful relationship with prevention behavior. The social factor had a minor positive correlation with knowledge (Pearson's  $r = 0.055$ ,  $p\text{-value} = 0.272$ ) but did not significantly correlate with preventive attitudes or behaviors. The cultural factor's correlations with all other variables were negligible and not statistically significant, including a very slight negative correlation with preventive attitude (Pearson's  $r = -0.073$ ,  $p\text{-value} = 0.146$ ) and digital media use (Pearson's  $r = -0.084$ ,  $p\text{-value} = 0.092$ ).

**Table 2.** Correlation

Variable		Knowledge HIV/AIDS	Preventive Attitude	Behavior Prevention	Digital Media Use	Social Factor	Culture Factor
Knowledge HIV/AIDS	Pearson's r	—					
	p-value	—					
	Spearman's rho	—					
	p-value	—					
Preventive Attitude	Pearson's r	-0.020	—				
	p-value	0.692	—				
	Spearman's rho	-0.022	—				
	p-value	0.669	—				
Behavior Prevention	Pearson's r	-0.016	-0.055	—			
	p-value	0.746	0.271	—			
	Spearman's rho	-0.015	-0.055	—			
	p-value	0.770	0.278	—			
Digital Media Use	Pearson's r	0.020	-0.080	0.047	—		
	p-value	0.694	0.110	0.347	—		
	Spearman's rho	0.020	-0.082	0.047	—		
	p-value	0.690	0.102	0.349	—		
Social Factor	Pearson's r	0.055	-0.024	-0.021	-0.042	—	
	p-value	0.272	0.635	0.681	0.403	—	
	Spearman's rho	0.056	-0.025	-0.021	-0.041	—	
Culture Factor	p-value	0.263	0.622	0.683	0.416	—	
	Pearson's r	$-8.578 \times 10^{-4}$	-0.073	-0.042	-0.084	0.037	—
	p-value	0.986	0.146	0.406	0.092	0.461	—
	Spearman's rho	-0.001	-0.072	-0.042	-0.084	0.037	—
	p-value	0.981	0.150	0.401	0.093	0.461	—

The table 3 indicates that there were no statistically significant differences in knowledge about HIV/AIDS ( $t = 0.017$ ,  $df = 396$ ,  $p = 0.986$ ) and behavior prevention ( $t = 0.833$ ,  $df = 396$ ,  $p = 0.406$ ) based on the culture factor. This suggests that the cultural background of the adolescents in Sidoarjo did not significantly influence their knowledge of HIV/AIDS or their engagement in preventive behaviors.

However, the test showed a slightly higher, yet not statistically significant, p-value for preventive attitude ( $t = 1.456$ ,  $df = 396$ ,  $p = 0.146$ ) and digital media use ( $t = 1.687$ ,  $df = 396$ ,  $p = 0.092$ ) based on the culture factor.

**Table 3.** Independent Samples T-Test Culture Factor

	<b>t</b>	<b>df</b>	<b>p</b>
Knowledge HIV/AIDS	0.017	396	0.986
Preventive Attitude	1.456	396	0.146
Behavior Prevention	0.833	396	0.406
Digital Media Use	1.687	396	0.092

*Note.* Student's t-test.

The table 4 reveals that the social factor did not significantly impact adolescents' knowledge about HIV/AIDS ( $t = -1.099$ ,  $df = 396$ ,  $p = 0.272$ ), their attitudes towards prevention ( $t = 0.475$ ,  $df = 396$ ,  $p = 0.635$ ), their preventive behaviors ( $t = 0.411$ ,  $df = 396$ ,  $p = 0.681$ ), or their use of digital media for acquiring information on HIV/AIDS prevention ( $t = 0.837$ ,  $df = 396$ ,  $p = 0.403$ ).

**Table 4.** Independent Samples T-Test Social Factor

	<b>t</b>	<b>df</b>	<b>p</b>
Knowledge HIV/AIDS	-1.099	396	0.272
Preventive Attitude	0.475	396	0.635
Behavior Prevention	0.411	396	0.681
Digital Media Use	0.837	396	0.403

*Note.* Student's t-test.

The table 5 showed social factor alone did not significantly affect the knowledge levels about HIV/AIDS among adolescents ( $F = 1.191$ ,  $df = 1$ ,  $p = 0.276$ ). Similarly, the culture factor on its own was not found to have a significant impact on HIV/AIDS knowledge ( $F = 0.002$ ,  $df = 1$ ,  $p = 0.962$ ). When examining the interaction between the social and culture factors, no significant effect on HIV/AIDS knowledge was detected ( $F = 0.024$ ,  $df = 1$ ,  $p = 0.878$ ). The residuals indicate the variation in HIV/AIDS knowledge that is not explained by these factors.

Additionally, a test for equality of variances (Levene's Test) was conducted to assess the homogeneity of variances across groups defined by social and culture factors. The test resulted in an F value of 0.209 with  $df1 = 3.000$  and  $df2 = 394.000$ , yielding a p-value of 0.890, indicating that there was no significant difference in variances across the groups, thus satisfying one of the assumptions of ANOVA.

**Table 5.** ANOVA - Knowledge HIV/AIDS

<b>Cases</b>	<b>Sum of Squares</b>	<b>df</b>	<b>Mean Square</b>	<b>F</b>	<b>p</b>
Social Factor	2.398	1	2.398	1.191	0.276
Culture Factor	0.005	1	0.005	0.002	0.962
Social Factor * Culture Factor	0.047	1	0.047	0.024	0.878
Residuals	792.885	394	2.012		

**Test for Equality of Variances (Levene's)**

<b>F</b>	<b>df1</b>	<b>df2</b>	<b>p</b>
0.209	3.000	394.000	0.890

\*Type III Sum of Squares

The table 6, the social factor, by itself, did not significantly affect the preventive attitudes of adolescents towards HIV/AIDS ( $F = 0.167$ ,  $df = 1$ ,  $p = 0.683$ ). The culture factor appeared to have a more noticeable, though not statistically significant, impact on preventive attitudes ( $F = 2.122$ ,  $df = 1$ ,  $p = 0.146$ ), suggesting a potential trend where cultural background might influence attitudes towards HIV/AIDS prevention. The interaction between social and cultural factors also did not significantly influence preventive attitudes ( $F = 0.133$ ,  $df = 1$ ,  $p = 0.715$ ). The residuals indicate the variance in preventive attitudes not explained by these factors.

A Test for Equality of Variances (Levene's Test) was performed, resulting in an F value of 2.538 with  $df1 = 3.000$  and  $df2 = 394.000$ , and a p-value of 0.056. This suggests a trend towards variance inequality across groups defined by social and culture factors, albeit not reaching conventional levels of statistical significance.

**Table 6.** ANOVA - Preventive Attitude

Cases	Sum of Squares	df	Mean Square	F	p
Social Factor	0.361	1	0.361	0.167	0.683
Culture Factor	4.574	1	4.574	2.122	0.146
Social Factor * Culture Factor	0.287	1	0.287	0.133	0.715
Residuals	849.211	394	2.155		

**Test for Equality of Variances (Levene's)**

F	df1	df2	p
2.538	3.000	394.000	0.056

\*Type III Sum of Squares

Table 7 shows that the social factor did not significantly influence the preventive behaviors of adolescents ( $F = 0.144$ ,  $df = 1$ ,  $p = 0.705$ ). Similarly, the culture factor alone was found not to significantly affect these behaviors ( $F = 0.665$ ,  $df = 1$ ,  $p = 0.415$ ). The interaction between the social and cultural factors also did not yield a significant effect on behavior prevention ( $F = 1.486 \times 10^{-4}$ ,  $df = 1$ ,  $p = 0.990$ ). The residuals demonstrate the variance in behavior prevention that is not accounted for by these factors.

Additionally, a Test for Equality of Variances, known as Levene's Test, was conducted, resulting in an F value of 0.524 with  $df1 = 3.000$  and  $df2 = 394.000$ , which produced a p-value of 0.666. This outcome indicates that there were no significant differences in variance across the groups defined by social and cultural factors, fulfilling one of the prerequisites for conducting ANOVA.

**Table 7.** ANOVA - Behavior Prevention

Cases	Sum of Squares	df	Mean Square	F	p
Social Factor	0.097	1	0.097	0.144	0.705
Culture Factor	0.450	1	0.450	0.665	0.415
Social Factor * Culture Factor	$1.007 \times 10^{-4}$	1	$1.007 \times 10^{-4}$	$1.486 \times 10^{-4}$	0.990
Residuals	267.073	394	0.678		

**Test for Equality of Variances (Levene's)**

F	df1	df2	p
0.524	3.000	394.000	0.666

\*Type III Sum of Squares

The table 8 illustrates that the social factor alone did not significantly impact the use of digital media for HIV/AIDS prevention ( $F = 0.682$ ,  $df = 1$ ,  $p = 0.409$ ). Similarly, the culture factor by itself was not a significant predictor of digital media use for this purpose ( $F = 2.456$ ,  $df = 1$ ,  $p = 0.118$ ), although the p-value suggests a closer approach to significance compared to the social factor. The interaction between

social and cultural factors also did not show a significant influence on digital media use for HIV/AIDS prevention among adolescents ( $F = 1.960$ ,  $df = 1$ ,  $p = 0.162$ ). The residuals point to the variance in digital media use that was not explained by the social or cultural factors under study.

Additionally, the Test for Equality of Variances, known as Levene's Test, was carried out, yielding an F value of 1.339 with  $df1 = 3.000$  and  $df2 = 394.000$ , and a p-value of 0.261. This result indicates no significant difference in variance across the groups defined by social and cultural factors, which satisfies an important assumption for the ANOVA analysis.

**Table 8.** ANOVA - Digital Media Use

Cases	Sum of Squares	df	Mean Square	F	p
Social Factor	1.391	1	1.391	0.682	0.409
Culture Factor	5.006	1	5.006	2.456	0.118
Social Factor * Culture Factor	3.994	1	3.994	1.960	0.162
Residuals	802.954	394	2.038		

  

Test for Equality of Variances (Levene's)			
F	df1	df2	p
1.339	3.000	394.000	0.261

\*Type III Sum of Squares

The table 9 shows the comparison between the null model ( $H_0$ ) and the alternative model ( $H_1$ ). The null model, which does not include any predictors, served as a baseline for comparison, yielding an  $R^2$  of 0.000, indicating that none of the variance in knowledge about HIV/AIDS was explained without the inclusion of predictors.

The alternative model ( $H_1$ ), which incorporated social factors, cultural factors, digital media use, preventive attitudes, and behavior prevention as predictors, exhibited a slight increase in the coefficient of determination, with an R value of 0.064 and an  $R^2$  of 0.004. This indicates that the model explained only 0.4% of the variance in knowledge about HIV/AIDS, which is a minimal increase from the null model. The adjusted  $R^2$  value was -0.009, suggesting that, after adjusting for the number of predictors, the model did not significantly improve the prediction of HIV/AIDS knowledge. The Root Mean Square Error (RMSE) for the alternative model was 1.421, slightly higher than the baseline model, indicating the standard deviation of the prediction errors.

The change in  $R^2$  ( $R^2$  Change) from the null model to the alternative model was 0.004, and the F Change of 0.324 with degrees of freedom 1 ( $df1$ ) of 5 and degrees of freedom 2 ( $df2$ ) of 392 resulted in a p-value of 0.898. This p-value, being far above the conventional threshold of significance ( $p < 0.05$ ), demonstrates that the inclusion of these predictors did not significantly improve the model's ability to predict knowledge about HIV/AIDS among adolescents.

**Table 9.** Linear Regression

Model	R	$R^2$	Adjusted $R^2$	RMSE	$R^2$ Change	F Change	df1	df2	p
$H_0$	0.000	0.000	0.000	1.415	0.000		0	397	
$H_1$	0.064	0.004	-0.009	1.421	0.004	0.324	5	392	0.898

The table 10 outlines the distribution of variance attributed to the predictors compared to the residual variance within the dataset. The total sum of squares, which represents the total variance in knowledge about HIV/AIDS among adolescents, was found to be 795.357, distributed across 397 degrees of freedom. Of this total variance, the sum of squares due to the predictors was relatively small, amounting to 3.273 across 5 degrees of freedom. The substantial remainder of the variance, 792.084, was attributed to residuals across 392 degrees of freedom.

**Table 10.** ANOVA

Model		Sum of Squares	df	Mean Square	F	p
H <sub>1</sub>	Regression	3.273	5	0.655	0.324	0.898
	Residual	792.084	392	2.021		
	Total	795.357	397			

*Note.* The intercept model is omitted, as no meaningful information can be shown.

The table 11 illustrates the regression coefficients for both the null model (H<sub>0</sub>) and the alternative model (H<sub>1</sub>). In the null model, the intercept was significant ( $\beta = 1.960, t = 27.623, p < .001$ ), indicating the expected level of HIV/AIDS knowledge in the absence of the predictors. For the alternative model (H<sub>1</sub>), the intercept remained significant ( $\beta = 1.905, t = 8.552, p < .001$ ), suggesting a baseline level of knowledge about HIV/AIDS among adolescents when controlling for the effects of the predictors.

The coefficients for preventive attitude ( $\beta = -0.017, t = -0.355, p = -0.355$ ) and preventive behavior ( $\beta = -0.030, t = -0.342, p = -0.342$ ) were not statistically significant, indicating that these factors did not meaningfully predict the level of HIV/AIDS knowledge among adolescents. Similarly, digital media use ( $\beta = 0.021, t = 0.417, p = 0.417$ ) showed a positive but non-significant relationship with HIV/AIDS knowledge, suggesting that the frequency or intensity of digital media use for obtaining information about HIV/AIDS did not significantly enhance adolescents' knowledge about the condition.

Social factors showed a positive coefficient ( $\beta = 0.157, t = 1.096, p = 1.096$ ), and cultural factors had a negative coefficient ( $\beta = -0.009, t = -0.062, p = -0.062$ ), but neither was statistically significant. This indicates that within this model, the social and cultural contexts of the adolescents did not significantly impact their knowledge levels regarding HIV/AIDS.

**Table 11.** Coefficients

Model		Unstandardized	Standard Error	Standardized <sup>a</sup>	t	p
H <sub>0</sub>	(Intercept)	1.960	0.071		27.623	< .001
H <sub>1</sub>	(Intercept)	1.905	0.223		8.552	< .001
	Preventive Attitude	-0.017	0.049	-0.018	-0.355	-0.355
	Preventive Behavior	-0.030	0.087	-0.017	-0.342	-0.342
	Digital Media Use	0.021	0.050	0.021	0.417	0.417
	Social Factor	0.157	0.143		1.096	1.096
	Culture Factor	-0.009	0.144		-0.062	-0.062

<sup>a</sup> Standardized coefficients can only be computed for continuous predictors.

The investigation into the influence of digital media integration and social and cultural factors on the knowledge, attitudes, and behaviors regarding HIV/AIDS prevention among adolescents in Sidoarjo, Indonesia, sought to address significant gaps in existing literature. Traditional educational strategies have long been the cornerstone of public health campaigns against HIV/AIDS. However, the advent of digital media has introduced new dimensions to education, promising greater engagement and reach, particularly among adolescents. This study endeavored to explore these dimensions, assessing the relative impact of digital, social, and cultural elements on effective HIV/AIDS prevention education (Adedini et al., 2021; Driscoll, 2022; Guillin et al., 2022; G. Wang & Ma, 2021; Wion & Miller, 2021; Worku et al., 2022; Zhao et al., 2021).

The findings from the study revealed no significant correlations between the use of digital media, social and cultural factors, and adolescents' knowledge, attitudes, and behaviors related to HIV/AIDS prevention (Govender et al., 2020; Martín-Illana et al., 2022; Nydegger et al., 2021; Parker et al., 2021; Salman, 2021; Ssentongo et al., 2020; Teshale et al., 2021). Similarly, regression models indicated these variables did not significantly predict knowledge about HIV/AIDS, highlighting a potential disconnect between these elements and effective HIV/AIDS education among adolescents (Barnabas et al., 2020; Kitara & Ikoona, 2020; Macapagal et al., 2020; Rayanakorn et al., 2022; Rzeszutek et al., 2021; Schermuly et al., 2021; Stern et al., 2020). These outcomes suggest that while digital media offers a



novel avenue for health education, its effectiveness is not automatically guaranteed and may be influenced by a complex interplay of factors.

The novelty of this research lies in its comprehensive approach to examining the integration of digital media within the specific social and cultural context of Sidoarjo, Indonesia. Unlike previous studies that have predominantly focused on the potential of digital media in isolation, this research aimed to understand how digital strategies align with traditional educational efforts and the broader societal context. By doing so, the study contributes to a nuanced understanding of digital media's role in public health education, particularly in regions with distinct cultural and social dynamics.

This research contributes to the scientific understanding of HIV/AIDS prevention among adolescents by highlighting the limitations of digital media integration when not supported by a strong consideration of social and cultural influences. The findings underscore the necessity for public health campaigns to adopt a more holistic approach, wherein digital strategies are complemented by efforts to engage with and understand the target demographic's social and cultural background.

For society, particularly in regions similar to Sidoarjo, this study offers critical insights into designing effective HIV/AIDS prevention programs. It suggests that for digital education strategies to be successful, they must be tailored to fit within the existing social and cultural fabric, ensuring they resonate with adolescents' lived experiences and values. Furthermore, this research highlights the importance of involving family and community structures in educational efforts, reinforcing the social support system that significantly influences adolescent behavior and attitudes.

The absence of significant findings between the studied variables and HIV/AIDS knowledge among adolescents suggests that other factors may play a critical role in influencing these outcomes. Future research should explore additional variables, such as personal health beliefs, exposure to HIV/AIDS education in schools, and the quality and content of digital media resources. Moreover, qualitative studies could provide deeper insights into how adolescents perceive and interact with digital media for health education, offering clues to optimize these strategies for better engagement and effectiveness.

## CONCLUSION

The research elucidates the challenges and limitations of integrating digital media into HIV/AIDS educational strategies within a particular social and cultural landscape. The findings underscore the importance of adopting multifaceted and contextually sensitive approaches when designing public health education programs, especially those targeting adolescents. As we move forward, this study lays the groundwork for further investigations, urging a broader examination of factors influencing health education's effectiveness. It calls for an inclusive approach that transcends digital platforms, engaging deeply with the target demographic's cultural, social, and individual determinants to devise more effective HIV/AIDS prevention education strategies.

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