

The Influence of Motivational English Anti-Smoking Messages, EFL Communication Self-Efficacy, and Health Communication Motivation on Smoking Refusal Intention Among Senior High School Students in Pekanbaru City

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Adolescent smoking remains a critical school health issue because refusal of smoking invitations is shaped by health messages, communication beliefs, and peer social pressure. This study examined the influence of motivational English anti-smoking messages, EFL communication self-efficacy, and health communication motivation on smoking refusal intention among senior high school students in Pekanbaru City. A quantitative correlational-explanatory approach with a cross-sectional survey was applied to 100 students using a four-point Likert questionnaire. The instrument consisted of four constructs, each comprising 16 items. Validity was tested using Pearson Product Moment correlation, reliability was assessed using Cronbach's Alpha, and hypotheses were examined through multiple linear regression. All items were valid, with r values greater than 0.197, and very high reliability was obtained for all constructs, namely $X_1 = 0.968$, $X_2 = 0.970$, $X_3 = 0.972$, and $Y = 0.973$. The model was significant, $F(3,96) = 75.818$, $p < 0.001$, $R = 0.839$, and $R^2 = 0.703$. Health communication motivation was the only significant partial predictor of smoking refusal intention ($B = 0.588$, $\beta = 0.585$, $p < 0.001$), whereas motivational English anti-smoking messages and EFL communication self-efficacy showed positive but non-significant effects. These findings highlight the importance of strengthening health communication motivation so that health messages and language competence can be transformed into actual refusal readiness.

INTRODUCTION

Adolescent smoking is still regarded as a public health concern because secondary school age is a period in which peer norms, advertising, and risk perceptions begin to shape health-related decisions. In Indonesia, exposure to cigarette advertising, promotion, and sponsorship has been associated with students' smoking behavior, whereas anti-smoking messages have not always been received as effective and protective messages (Megatsari et al., 2023). Evidence from Indonesian adolescents also shows that cigarette advertising and peer influence are associated with smoking intention, indicating that smoking refusal cannot be separated from social pressure in adolescent environments (Sutrisno & Melinda, 2021). Within a social cognitive framework, adolescent smoking behavior is influenced by social norms, outcome expectations, anti-smoking efficacy, and attitudes toward tobacco control policies (Lin et al., 2023). Therefore, school-based smoking prevention needs to be directed toward the formation of reasons, language, and confidence that can be used by adolescents to refuse smoking invitations in real situations.

Recent studies have shown that the effectiveness of cigarette and vape prevention messages is strongly determined by message design, delivery medium, and the recipient's cognitive engagement. Social media messages can improve adolescents' knowledge and beliefs about the dangers of e-cigarettes when visual formats, quizzes, and text are selected appropriately (Lazard, 2021). Prevention messages that emphasize negative consequences, evidence of harm, and strong imagery tend to be perceived as more effective by adolescents than messages that excessively imitate youth popular styles, as reported by (Boynton et al., 2023) and (Stalgaitis et al., 2023). In addition, vaping media literacy is related to perceived harm and susceptibility to e-cigarette use, indicating that prevention messages need to be understood as critical literacy practices rather than mere information exposure (Dai et al., 2022). Thus, motivational anti-smoking messages should be developed as informative, credible, contextual, and persuasive communication capable of transforming risk perception into readiness to act.

In the context of English as a foreign language learning, health communication can be expanded as a learning space that connects language competence with healthy behavior issues. Speaking self-efficacy and perceived communicative competence have been reported to be related to second-language oral task production through willingness to communicate (Leeming et al., 2024). Social media-based and flipped EFL learning have also been shown to support willingness to communicate and self-efficacy because students are given more opportunities to access, process, and use language independently (Fan, 2022). Self-regulation strategies in EFL learning can improve motivation, self-efficacy, willingness to communicate, and language creativity (Zhang, 2024). However, language competence does not automatically become the ability to refuse smoking when health goals, peer contexts, and communication courage are not developed simultaneously. Accordingly, EFL communication self-efficacy needs to be positioned as an expressive resource that must be connected to health message content and adolescent social situations.

Health communication motivation is an important construct because health literacy is not only understood as the ability to read information, but also as knowledge, motivation, and competence to access, understand, appraise, and use health information. (Nutbeam & Lloyd, 2021) emphasized that health literacy functions as a social determinant that influences individuals' ability to make healthy decisions. A meta-analysis showed that inadequate health literacy is associated with higher odds of smoking, making the strengthening of health communication relevant to smoking prevention (Li et al., 2022). Among adolescents, health information orientation and health literacy have also been shown to be determinants of health-promoting behaviors (You & Ahn, 2025). A similar relationship was found among school adolescents, in which better health literacy was associated with more positive health behavior (Sukys et al., 2024). Thus, health communication motivation can be positioned as a bridge between risk knowledge, language use, and readiness to refuse smoking invitations.

The available research landscape can be grouped into four main streams, namely adolescent smoking risk factors, prevention message effectiveness, EFL communication efficacy, and health literacy. Intervention reviews have shown that e-cigarette prevention among children and adolescents has been implemented through schools, communities, families, and digital media, although its effectiveness remains varied (Mylocopos et al., 2024). Reviews of vaping message strategies have also emphasized that message effects are influenced by theory, framing, channel, and audience characteristics (Wu et al., 2025). Participatory approaches highlight the need for culturally and linguistically appropriate messages so that adolescents feel addressed as intended recipients (Cartujano-Barrera et al., 2021). Meanwhile, social factors, risk perception, curiosity, and access have been identified as important determinants of adolescent e-cigarette use (Villanueva-Blasco et al., 2025). The remaining gap lies in the limited integration of motivational English anti-smoking messages, EFL communication self-efficacy, and health communication motivation within a single predictive model of smoking refusal intention among Indonesian senior high school students.

This study was therefore conducted to examine the influence of motivational English anti-smoking messages, EFL communication self-efficacy, and health communication motivation on smoking refusal intention among senior high school students in Pekanbaru City. Its urgency is supported by evidence that cigarette refusal efficacy can be strengthened through digital health interventions, whereas interactive message support can also facilitate behavior change related to vaping among adolescents (Graham et al., 2024; Nyman et al., 2024). A recent systematic review showed that vaping intention is influenced by psychological, social, environmental, and tobacco-related cognitive factors that need to be addressed in an integrated manner (Saruddin et al., 2025). Moreover, anti-smoking messages tailored to audience characteristics can strengthen the relevance and persuasive power of health communication (Tan et al., 2024). The research question addressed in this study is the extent to which the three variables influence smoking refusal intention both simultaneously and partially.

The contribution of this study lies in the integration of language education, health communication, and smoking prevention within a regression model that can be used to strengthen school-based programs.

METHODOLOGY

Study Design and Participants

A quantitative correlational-explanatory design with a cross-sectional survey was applied in this study. This design was selected to examine the simultaneous and partial effects of three predictor variables on one criterion variable. The independent variables consisted of Motivational English Anti-Smoking Messages (X1), EFL Communication Self-Efficacy (X2), and Health Communication Motivation (X3). The dependent variable was Smoking Refusal Intention (Y). Data were collected from February to June 2026 without treatment manipulation.

The participants consisted of 100 senior high school students in Pekanbaru City, Riau. Because the exact size of the target population could not be determined, non-probability sampling with a purposive approach was used. The inclusion criteria comprised active senior high school student status and willingness to complete the questionnaire. The respondents consisted of 43 male students and 57 female students. Based on age, 3 respondents were 15 years old, 22 respondents were 16 years old, 68 respondents were 17 years old, and 7 respondents were 18 years old. A total of 99 respondents had taken English as a senior high school subject, whereas 1 respondent had not. Regarding experience in receiving English anti-smoking messages, 68 respondents answered "Yes", 18 respondents answered "No", and 14 respondents answered "Not Sure".

Variables and Instruments

The research instrument was a closed-ended questionnaire using a four-point Likert scale, namely 4 = Strongly Agree, 3 = Agree, 2 = Disagree, and 1 = Strongly Disagree. Each variable consisted of 16 items, resulting in 64 main questionnaire items. The score of each construct was obtained by summing all valid items, with a theoretical range of 16 to 64.

Motivational English Anti-Smoking Messages (X1) measured the experience of reading, hearing, paying attention to, understanding, and assessing the relevance of English anti-smoking messages. EFL Communication Self-Efficacy (X2) measured respondents' confidence in understanding, responding to, explaining, refusing smoking invitations, and composing simple English anti-smoking messages. Health Communication Motivation (X3) measured respondents' motivation to discuss the dangers of smoking, use positive language, deliver health messages politely, and maintain smoke-free communication. Smoking Refusal Intention (Y) measured respondents' intention, plan, commitment, and readiness to refuse smoking invitations politely and consistently. Higher scores indicated stronger levels of each construct.

Validity and Reliability

Item validity was tested using Pearson Product Moment correlation between item scores and corrected total scores. With $N = 100$, $df = 98$, and a two-

tailed $\alpha = 0.05$, the r table value was 0.197. All 64 items were declared valid because their calculated r values exceeded the r table value. The validity correlation ranges were 0.674 to 0.860 for X1, 0.704 to 0.872 for X2, 0.734 to 0.873 for X3, and 0.642 to 0.909 for Y. All item correlations were significant at $p < 0.001$.

Reliability was tested using Cronbach's Alpha. The results showed very high internal consistency for all constructs, namely X1 = 0.968, X2 = 0.970, X3 = 0.972, and Y = 0.973. Because all alpha values were above 0.70, the instrument was considered reliable for the main analysis.

Data Collection and Quality Control

The questionnaire was distributed to senior high school students in Pekanbaru City from February to June 2026. Before completing the questionnaire, the respondents received information about the research purpose, response confidentiality, and completion procedures. All responses were examined to ensure completeness, score range suitability, and total score consistency for each construct. No missing values were found in the main variables. All item scores were within the range of 1 to 4, and the total scores of X1, X2, X3, and Y were consistent with the sum of the 16 items in each construct. Therefore, data imputation was not performed.

Statistical Analysis

Data analysis was conducted using descriptive statistics, validity testing, reliability testing, classical assumption testing, and multiple linear regression. Descriptive statistics were used to present minimum, maximum, sum, mean, and standard deviation values. Classical assumption testing included residual normality using Kolmogorov-Smirnov, multicollinearity using tolerance and variance inflation factor (VIF), and heteroscedasticity using the Glejser test. Multiple linear regression was used to examine the simultaneous effect through the F test and the partial effects through the t test. The significance level was set at $\alpha = 0.05$. The reported coefficients included B, standard error, Beta, t, significance, R, R^2 , Adjusted R^2 , and standard error of the estimate.

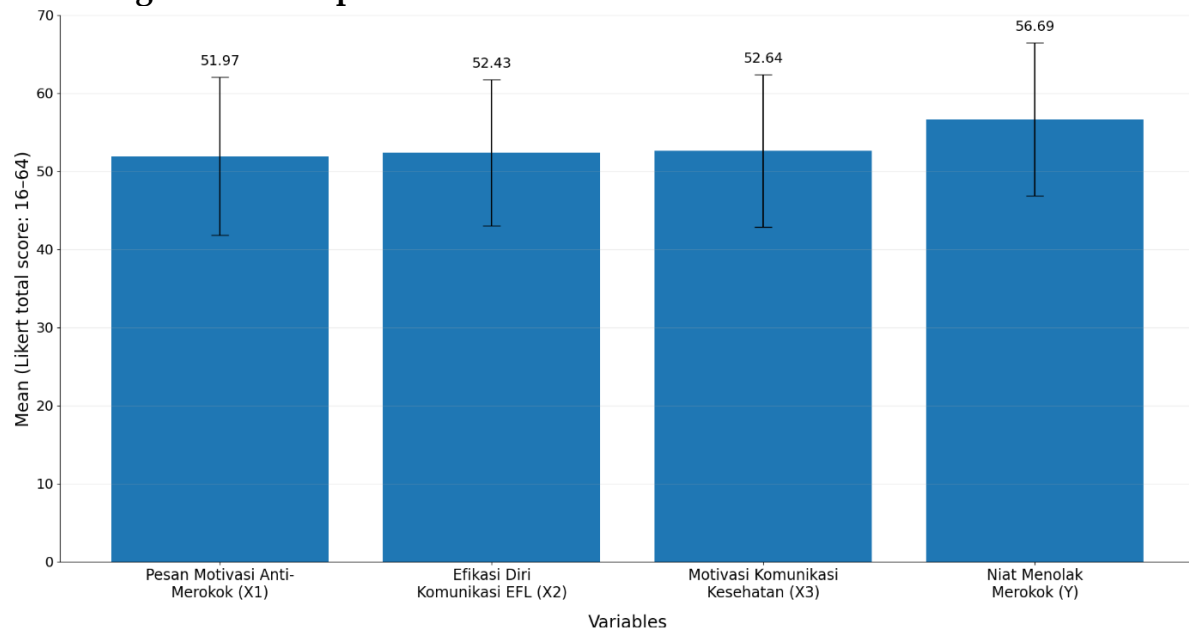
RESEARCH RESULT

Descriptive Statistics

The descriptive statistics showed that Smoking Refusal Intention had the highest mean score ($M = 56.69$, $SD = 9.82$). Health Communication Motivation obtained $M = 52.64$ and $SD = 9.77$, EFL Communication Self-Efficacy obtained $M = 52.43$ and $SD = 9.37$, and Motivational English Anti-Smoking Messages obtained $M = 51.97$ and $SD = 10.11$. The actual score ranges were 16 to 64 for X1, 20 to 64 for X2, 18 to 64 for X3, and 16 to 64 for Y. This pattern indicates that all constructs tended to be at a high level within the theoretical range of 16 to 64.

Table 1. Descriptive statistics (N = 100)

Variable	Min	Max	Sum	Mean	Std. Dev
Motivational English Anti-Smoking Messages (X1)	16.00	64.00	5197.00	51.97	10.11
EFL Communication Self-Efficacy (X2)	20.00	64.00	5243.00	52.43	9.37
Health Communication Motivation (X3)	18.00	64.00	5264.00	52.64	9.77
Smoking Refusal Intention (Y)	16.00	64.00	5669.00	56.69	9.82

Figure 1. Descriptive Statistics: Means with Standard Deviations

Classical Assumption Testing

The residual normality test using Kolmogorov-Smirnov produced a statistic value of 0.135, $df = 100$, and $Sig. = 0.048$. This result indicates that residual normality was not fully met at the 0.05 significance level.

Table 2. Residual normality test

Residual	Statistic	df	Sig.
Standardized Residual	0.135	100	0.048

The multicollinearity test showed that all tolerance values were above 0.10 and all VIF values were below 10. The tolerance and VIF values were 0.326 and 3.072 for X1, 0.242 and 4.127 for X2, and 0.190 and 5.251 for X3. Thus, no serious multicollinearity was found in the model.

Table 3. Multicollinearity test

Predictor	Tolerance	VIF
Motivational English Anti-Smoking Messages (X1)	0.326	3.072
EFL Communication Self-Efficacy (X2)	0.242	4.127
Health Communication Motivation (X3)	0.190	5.251

The Glejser test showed that X1 and X2 were not significant predictors of the absolute residual, with Sig. values of 0.594 and 0.959, respectively. In contrast, X3 showed Sig. = 0.033, indicating heteroscedasticity. Therefore, coefficient interpretation was strengthened using robust standard error examination.

Table 4. Glejser test

Model	B	Std. Error	t	Sig.
(Constant)	12.893	1.626	7.929	0.000
Motivational English Anti-Smoking Messages (X1)	-0.026	0.048	-0.535	0.594
EFL Communication Self-Efficacy (X2)	0.003	0.060	0.051	0.959
Health Communication Motivation (X3)	-0.141	0.065	-2.164	0.033

Multiple Regression Analysis

Multiple linear regression showed a strong relationship between the three predictors and Smoking Refusal Intention. The R value of 0.839 indicated a high multiple correlation. The R² value of 0.703 showed that 70.3% of the variation in Smoking Refusal Intention was explained simultaneously by Motivational English Anti-Smoking Messages, EFL Communication Self-Efficacy, and Health Communication Motivation. The Adjusted R² value was 0.694, and the standard error of the estimate was 5.435.

Table 5. Model summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.839	0.703	0.694	5.435

The ANOVA test showed that the regression model was simultaneously significant, $F(3,96) = 75.818$, $p < 0.001$. Thus, X1, X2, and X3 jointly had a significant effect on Smoking Refusal Intention. The regression sum of squares was 6717.973, which was greater than the residual sum of squares of 2835.417, indicating that the variance explained by the model was greater than the unexplained variance.

Table 6. ANOVA

Source	Sum of Squares	df	Mean Square	F	Sig.
Regression	6717.973	3	2239.324	75.818	0.000
Residual	2835.417	96	29.536		
Total	9553.390	99			

The coefficient results showed that the constant was 10.381 and significant ($p = 0.002$). Motivational English Anti-Smoking Messages had a positive but non-significant partial coefficient ($B = 0.151$, $SE = 0.095$, $\beta = 0.156$, $t = 1.597$, $p = 0.114$). EFL Communication Self-Efficacy also showed a positive but non-significant

effect ($B = 0.143$, $SE = 0.118$, $\beta = 0.136$, $t = 1.204$, $p = 0.231$). Health Communication Motivation was the strongest and significant predictor of Smoking Refusal Intention ($B = 0.588$, $SE = 0.128$, $\beta = 0.585$, $t = 4.591$, $p < 0.001$).

Table 7. Regression coefficients

Predictor	B	Std. Error	Beta	t	Sig.
(Constant)	10.381	3.206	—	3.238	0.002
Motivational English Anti-Smoking Messages (X1)	0.151	0.095	0.156	1.597	0.114
EFL Communication Self-Efficacy (X2)	0.143	0.118	0.136	1.204	0.231
Health Communication Motivation (X3)	0.588	0.128	0.585	4.591	0.000

The regression equation was formulated as follows:

$$Y = 10.381 + 0.151X1 + 0.143X2 + 0.588X3 \dots (1)$$

The HC3-type robust standard error examination showed that the main model decision remained unchanged. Health Communication Motivation remained significant as a predictor of Smoking Refusal Intention ($B = 0.588$, robust $SE = 0.144$, $t = 4.087$, $p < 0.001$), whereas Motivational English Anti-Smoking Messages and EFL Communication Self-Efficacy remained non-significant partial predictors.

DISCUSSION

The main finding indicates that the model explained 70.3% of the variation in smoking refusal intention, although only health communication motivation was found to be a significant partial predictor. This pattern suggests that smoking refusal among students is driven more strongly by communicative orientation toward health issues than by message exposure or English communication confidence alone. Theoretically, smoking refusal intention is related to anti-smoking efficacy, social norms, and psychosocial factors that shape readiness to act, as shown by (East et al., 2021) and (Lin et al., 2023). However, when several predictors are correlated, their partial contributions can become narrower because shared variance has already been explained jointly by other constructs (Tate et al., 2021). Therefore, the non-significance of X1 and X2 should not be interpreted as the absence of relevance, but rather as the dominance of the health communication mechanism in the model. This finding positions health communication motivation as the most direct bridge between risk awareness and readiness to refuse smoking invitations in adolescent school contexts.

The coefficient of X1 was positive but not significant, indicating that motivational English anti-smoking messages were not strong enough as an independent predictor after X2 and X3 were controlled. One possible explanation is that prevention messages become effective only when visual elements, credibility, emotional relevance, and clarity of consequences are appropriately designed (Boynton et al., 2023). Adolescents also tend to reject messages that feel patronizing, overly adult-made, or inconsistent with their everyday language

(Popova et al., 2021). In digital contexts, social media messages can increase knowledge and risk beliefs, but their influence on behavioral intention depends on engagement, willingness to share, and thematic resonance (Lazard, 2021). Therefore, exposure to English messages needs to be distinguished from message internalization. The impact of messages appears to emerge only when health meanings are processed as personal, social, and relevant reasons. This finding confirms that anti-smoking messages should not merely be received, but also understood and trusted.

EFL communication self-efficacy also showed a positive direction, but its partial effect was not significant. This means that students with linguistic confidence do not necessarily transform that confidence directly into refusal readiness in peer interactions involving pressure. This finding does not eliminate the role of language competence, because communication self-efficacy usually strengthens speaking courage, willingness to express ideas, and second-language oral production (Fan, 2022; Leeming et al., 2024). Language self-regulation strategies can also strengthen motivation, creativity, and EFL communication confidence (Zhang, 2024). However, smoking refusal intention is not only a matter of being able to construct English sentences, but also a matter of moral courage, social position, and health-related reasons perceived as meaningful. In this model, variation in EFL self-efficacy may overlap substantially with health communication motivation, causing its contribution to decrease when both constructs are entered together. English language ability remains important as a medium of expression, but its effectiveness depends on the health purpose defended by students.

The significance of X3 shows that smoking refusal intention is more closely linked to motivation to communicate health than to information exposure alone. This finding is consistent with evidence that low health literacy is associated with higher smoking, indicating that risk understanding needs to be translated into communicative capacity that can be used in social life (Li et al., 2022). (Nutbeam & Lloyd, 2021) emphasized that health literacy is not only related to information access, but also to the ability to use information to change healthy choices. Among adolescents, good health literacy is associated with more adaptive health behavior, although the relationship is influenced by family, school, and peer contexts (Sukys et al., 2024). Therefore, health communication motivation functions as an active mechanism that connects knowledge, attitudes, and refusal action. The strength of this construct was reflected in the largest Beta coefficient in the regression model. Smoking prevention needs to cultivate health-related reasons that can be spoken, defended, and negotiated by adolescents in real situations.

The weak partial effect of X1 can also be explained by the issue of message fit with recipient identity. Prevention messages developed through participatory approaches tend to be stronger because adolescents are involved in determining language, symbols, and reasons considered convincing (Cartujano-Barrera et al., 2021). Feedback from adolescents in various states shows that vape or cigarette campaigns need to present real consequences, avoid demeaning tones, and represent experiences close to adolescents' lives (Stalgaitis et al., 2023).

Experimental evidence on culturally tailored anti-smoking messages also shows that identity relevance can strengthen message effects on beliefs and intentions (Tan et al., 2024). In this study, English messages may have been understood as academic information rather than communication rooted in the identity of Pekanbaru adolescents. This condition is relevant when foreign-language messages are received in limited formal learning spaces at school. Cultural and linguistic adaptation should be treated as a condition for effectiveness rather than a mere ornament in prevention message design.

The regression results also imply that smoking prevention pathways cannot rely on a single type of message. Vaping media literacy is related to perceived harm and susceptibility to e-cigarette use, meaning that students need to be trained to read the persuasive intent of commercial messages (Dai et al., 2022). Public misunderstanding of the Tobacco 21 policy shows that unclear communication can weaken regulatory goals even when a policy has been implemented (Dobbs et al., 2023). Interactive text-message programs for adolescent vape users have shown that structured digital support can assist behavior change when messages are repeated and personalized (Graham et al., 2024). Therefore, the significance of health communication motivation in this model can be interpreted as the need for dialogic learning rather than purely informative learning. A single approach appears insufficient when students are influenced by multiple sources. School-based smoking prevention should combine media literacy, policy communication, and consistent digital support so that refusal becomes students' communicative habit.

The high mean score of smoking refusal intention indicates that respondents had a protective tendency. However, such intention needs to be converted into refusal skills because smoking invitation situations often occur spontaneously and are influenced by peer relationships. Digital health game interventions have been shown to maintain smoking refusal self-efficacy among early adolescents, especially when materials are presented interactively and are close to users' experiences (Nyman et al., 2024). Schools are also positioned as strategic spaces for shaping knowledge, attitudes, and practices related to tobacco because classroom norms can strengthen or weaken healthy behavior (Kedar & Gupta, 2021). In Indonesia, perception of image messages on cigarette packaging has been associated with adolescents' intention to quit smoking, indicating that visual aspects remain relevant in risk communication (Siregar et al., 2021). This is important because high scores do not guarantee consistent action when social pressure emerges in real peer interaction. Refusal intention should be trained through simulation, dialogue, and visual media so that refusal responses feel realistic in school settings.

The simultaneous finding needs to be interpreted within the ecology of adolescent influence in Indonesia, where health messages compete with advertising, peer influence, and smoking normalization. Studies on Indonesian adolescents have shown that anti-smoking and pro-smoking messages can be present simultaneously, meaning that prevention effects depend on the dominance, credibility, and closeness of message sources (Megatsari et al., 2023). Cigarette advertising exposure and peer influence are also related to adolescent

smoking intention, indicating that refusal decisions are not always formed through purely individual consideration (Sutrisno & Melinda, 2021). A systematic review of vaping intention confirmed that attitudes, norms, risk perception, and access are interrelated in shaping intention (Saruddin et al., 2025). Therefore, the R^2 value of 70.3% can be understood as the result of a dense psychological-communicative configuration. This is consistent with the high inter-predictor correlations in the analysis, meaning that partial interpretation should be conducted carefully. The main implication is that prevention should target messages, norms, and social opportunities simultaneously in school environments.

The scientific debate emerging from these findings concerns whether interventions should focus on persuasive messages or on strengthening adolescent capacity. A review of vaping message strategies showed that communication effects depend on themes, frames, sources, and delivery channels, meaning that no single message formula applies universally (Wu et al., 2025). A review of e-cigarette prevention interventions among children and adolescents also found variation in effectiveness, with schools, families, communities, and digital platforms functioning as complementary arenas (Mylocopos et al., 2024). Message-framing experiments have shown that exchange-based message formats can produce different responses compared with individual messages because adolescents process risk through social conversation (Zhao et al., 2023). The findings of this study support the position that messages should be followed by the strengthening of health communication motivation. This approach is consistent with the needs of adolescents who face repeated social pressure. The most promising strategy is a layered intervention that combines convincing messages, dialogic practice, and stable environmental support.

Methodological caution is required. Residual normality was not fully met and the Glejser test indicated heteroscedasticity in X3, although robust examination did not change the main decision. Therefore, the findings should be positioned as evidence of strong association rather than causal claims. A qualitative study on e-cigarette prevention videos showed that understanding message features should be explored directly from adolescents' perspectives rather than solely through questionnaire scores (Chen et al., 2025). Evaluation of e-cigarette regulations also shows that adolescent behavior change is influenced by policy, access, and environmental monitoring (Lyu et al., 2024). A socio-ecological framework reminds that smoking behavior and smoking cessation are shaped by individual, interpersonal, institutional, and social layers (Obieche et al., 2021). In addition, the sample size of 100 respondents and the cross-sectional design limit generalization across schools, gender, age, and smoking status in more diverse populations. Future studies should test longitudinal, mediation, and school-based intervention models so that the direction of influence can be explained more strongly.

CONCLUSIONS AND RECOMMENDATIONS

This study showed that motivational English anti-smoking messages, EFL communication self-efficacy, and health communication motivation simultaneously contributed strongly to smoking refusal intention among senior high school students in Pekanbaru City. The regression model explained 70.3% of the variation in smoking refusal intention, indicating that the three constructs can be considered important components of communication-based smoking prevention. However, partially, only health communication motivation was proven to be a significant predictor. Motivational English anti-smoking messages and EFL communication self-efficacy showed positive directions, but they did not provide significant independent effects after health communication motivation was controlled.

These findings confirm that adolescent smoking prevention cannot rely solely on message delivery or the strengthening of English language ability. Messages and communication competence need to be directed toward the development of health motivation that students can use to explain reasons, maintain attitudes, and refuse smoking invitations in real social situations. Practically, schools need to integrate health literacy, refusal communication practice, visual media, and contextual English learning into smoking prevention programs. Future studies are recommended to use longitudinal designs, mediation testing, and experimental interventions so that causal relationships among constructs can be explained more strongly.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

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