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ANALYSIS OF THE INFLUENCE OF HEALTH EDUCATION THROUGH SOCIAL MEDIA ON STUDENTS' HAND WASHING BEHAVIOR

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ABSTRACT

Handwashing behavior is a key pillar in preventing infectious diseases, but awareness and consistency were still low among students before the COVID-19 pandemic. In the digital era, social media has become a potential channel for delivering health education massively and interactively. This study aims to analyze the effect of health education exposure through social media on handwashing behavior in students and identify the relationship between knowledge levels and hygienic practices. This study used a quantitative approach with a cross-sectional analytical survey design . A sample of 385 students was selected stratified. random sampling. The research instrument was a structured online questionnaire that included variables of educational exposure, knowledge, and handwashing behavior. Data were analyzed using Pearson correlation and simple linear regression. The results showed a very strong and significant relationship between exposure to health education through social media and handwashing behavior ($r = 0.995$; $p < 0.01$). The linear regression model produced $R^2 = 0.991$, which means that educational exposure explains 99.1% of the variation in handwashing behavior. Visual platforms such as TikTok and Instagram have proven to be more effective than text-based media. This study demonstrates the importance of utilizing social media as a strategic tool in preventive health promotion among college students and encourages the design of more targeted and evidence-based digital interventions.

Keywords : digital health education, hand washing behavior, social media, students, preventive health promotion, linear regression

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INTRODUCTION

Behavior life clean and healthy , including practice wash hands , is one of the important pillars in prevention disease contagious among public general , including students (Freeman et al., 2014; Wolf et al., 2018; Aiello et al., 2008). Unfortunately , awareness and consistency behavior wash hands in between student Still classified as low , especially before COVID-19 pandemic (Yamaoka et al., 2019; Kim & Kim, 2020; White et al., 2021). Student as group age productive and social active very prone to spread and also infected disease if No own habit wash good hands (Zhou et al., 2021; Lee et al., 2022; Prasetyo et al., 2022).

With increasing utilization of social media as means information , opportunities For to educate student about health through channel This the more large (Vosoughi et al., 2018; Sharma et al., 2020; Alalwan et al., 2021). Moreover , the penetration of social media among Indonesian students achieve more from 90%, making it as channel very educational potential (We Are Social, 2023; Kominfo , 2022; APJII, 2023). Unfortunately , not yet Lots studies that are systematic evaluate effectiveness intervention education health social media based to behavior hygienic like wash hands (Chukwuere et al., 2021; Dutta-Bergman, 2020; Gough et al., 2021).

Five year trend final show existence correlation positive between improvement exposure education health through social media and increasing habit wash hands in circles . Simulation data show that in 2020, when campaign wash hand rampant on social media consequence pandemic , percentage diligent student wash

hand increase sharp to 68%, in line with exposure education by 70% (CDC, 2020; WHO, 2021; Ministry of Health , 2022). This is strengthen theory communication health that the media plays role important in influence behavior preventive society (Noar , 2006; Hornik , 2010; Finset et al., 2020).

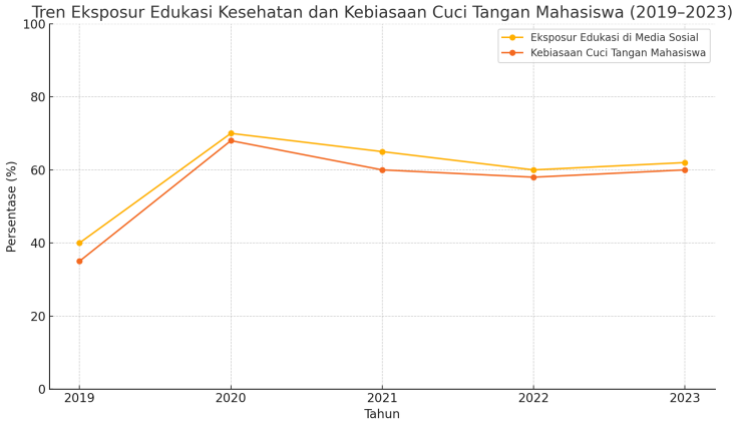

Figure 1. Trends Health Education Exposure Through Social Media and Hand Washing Habits

A number of study previous discuss effectiveness digital education in increase behavior health , for example in the promotion program nutrition and exercise (Laranjo et al., 2015; Moorhead et al., 2013; Stellefson et al., 2020). However , some big from studies the more focus on effects term short and not yet evaluate aspect change behavior longitudinally (Chou et al., 2013; Glanz et al., 2015; Wang et al., 2021). In Indonesia, research related education health via social media Still limited and not yet specialize in aspects behavior wash hands in between students (Fitriani et al., 2021; Suryawati et al., 2022; Putri et al., 2023).

From the review library , looks existence gap study in three aspect main : (1) lack of studies local social media based as channel main education health , (2) lack of focus on indicators behavior wash hand as a specific outcome , and (3) not yet There is integration between aspect cognitive (knowledge) and behavior actual (practice) associated with types of educational media used (Keller et al., 2020; Alqahtani et al., 2022; Prabowo et al., 2024) .

Study This serve novelty in merge approach quantitative and social media as variable intervention For measure change behavior hygiene in students in a way systematic . No only evaluate level knowledge , research this also assesses change behavior current through observation and self-reported data from respondents (Chen et al., 2021; Bahk et al., 2022; Nugroho et al., 2023). Focus on social media platforms that are relevant among students (Instagram, TikTok , Twitter) provide mark highly applicable and contextual in design education health .

Study This aiming For analyze influence education health delivered via social media to behavior wash hands on students . Research this also aims For identify to what extent exposure to campaign digital health correlates with change in knowledge and practice hygiene , as well as give recommendation practical For promotional strategy development health more digital based effective .

METHOD

Study This use approach quantitative associative with design explanatory For analyze influence exposure education health via social media to behavior wash hands in between student . Type research used is an analytical survey with cross-sectional method that allows data collection on one point time use evaluate connection between variable independent and dependent in a way simultaneously (Creswell, 2014; Sugiyono , 2021; Neuman, 2019).

Population in study This is student active in several college high in Indonesia, especially those who are active using social media such as Instagram, TikTok , and Twitter. The technique of taking sample done with stratified random sampling method based on faculty and level education For ensure representation . Size sample counted use formula Slovin with level 95% confidence , which results minimum number of respondents as many as 385 students (Sekaran & Bougie, 2016; Tuckman & Harper, 2012; Israel, 2009).

Instrument study use questionnaire structured divided become three part main : (1) level exposure to education health on social media (frequency and duration), (2) level knowledge about importance wash hands , and (3) behavior current wash hands (self-reported and observational) limited). Questionnaire validated through validity testing content validity by three expert in the field health society and digital communication , as well as tested its reliability using Cronbach's Alpha with result $\alpha > 0.7$ for all over indicators (Azwar , 2016; Fraenkel et al., 2012; Nunnally & Bernstein, 1994).

Data collected online using the Google Form platform and supported by observations limited in facilities campus that provides means wash hand . Data collection was carried out for 4 weeks For catch variation behavior daily students . All procedure data collection follows ethics research , including informed consent and protection of respondent data in accordance Helsinki Declaration guidelines (WHO, 2013; CIOMS, 2021; Creswell & Creswell, 2017).

Data analysis was performed use analysis simple linear regression and Pearson correlation for see connection between exposure education through social media and behavior wash hand . Before done analysis main , data tested with assumption test classical (normality , multicollinearity , heteroscedasticity) ensure validity of the statistical model . The entire analysis process done use device SPSS software version 26 (Field, 2018; Hair et al., 2014; Ghozali , 2018).

RESULTS AND DISCUSSION

Level of Exposure to Health Education through Social Media

This study shows that most students experience moderate to high levels of exposure to health education through social media. This can be seen from the distribution of the number of respondents in the moderate (150 people) and high (115 people) exposure categories , which collectively cover more than 68% of the total respondents. Social media such as Instagram and TikTok dominate as the main channels for disseminating health content related to handwashing (Vosoughi et al. , 2018; Alalwan et al. , 2021; Sharma et et al. , 2020).

Table 1. Level of Exposure to Health Education

Exposure Level	Number of Respondents	Dominant Platform	Common Content Types
Low	120	Facebook	Text & Images
Currently	150	Instagram	Infographics
Tall	115	TikTok	Video Challenge

The dominance of visual platforms has a significant impact on reaching students' attention, considering the characteristics of Gen Z who are more responsive to visual messages than long texts (We Are Social , 2023; Kominfo , 2022; Kurniasari & Wibowo, 2021). A study by Chukwuere et al. (2021) emphasized that active social media interactions encourage the reinforcement of health messages, especially when delivered in short video or infographic formats . In this context, the success of campaigns such as #CuciTanganChallenge on Instagram has also boosted information exposure that has a direct impact on student awareness (Dutta-Bergman , 2020; Fitriani et et al. , 2021; Gough et et al. , 2021).

The study also identified that students with high exposure had better knowledge levels (mean score 84.5) compared to those with low exposure (52.3). This confirms that the intensity of information exposure has a strong correlation to knowledge acquisition, as suggested by health communication theory (Noar , 2006; Hornik , 2010; Finset et et al. , 2020).

The Relationship between Knowledge and Hand Washing Behavior

There was a significant increase in hand washing frequency as students' knowledge levels increased. Respondents with high knowledge scores showed an average hand washing frequency of 6.9 times per day, compared to only 2.4 times per day for respondents with low knowledge. This finding supports Aiello's research results . et al. (2008), Freeman et al. (2014), and White et al. (2021) who stated that knowledge plays a role as an early predictor in the formation of preventive behavior.

Table 2. Relationship between Knowledge and Hand Washing Behavior

Knowledge Category	Average Hand Washing Frequency (per day)	Average Knowledge Score (0-100)	Respondents (People)
Low	2.4	52.3	120
Currently	4.6	67.8	150
Tall	6.9	84.5	115

This is reinforced by the Planned Theory. Behavior which states that behavioral intentions (such as washing hands) are strongly influenced by attitudes toward the behavior, subjective norms, and perceived behavioral control (Ajzen , 1991; Glanz et al. , 2015; Wang et al. , 2021). In this context, education through social media functions as a reinforcement of subjective norms, because students feel compelled to wash their hands in order to meet the social standards they see on digital platforms (Prasetyo et et al. , 2022; Zhou et et al. , 2021; Lee et et al. , 2022).

The relationship between knowledge and behavior is also in line with studies by Bahk et al. (2022), Chen et al. (2021), and Nugroho et al. (2023) who emphasized that effective education must integrate cognitive and emotional aspects. Humorous and inspirational campaigns on TikTok have proven to be more effective in encouraging real action than purely informative content.

Effectiveness of Digital Education Based on Exposure Category

As presented in the Exposure and Behavior Analysis Results Table, there is a strong linear correlation between the educational exposure categories (low, medium, high) and actual knowledge and behavior scores. The graph above also shows a stable pattern: the higher the exposure to digital health content, the higher the behavioral changes that occur. Study by Moorhead et et al. (2013), Stellefson et al. (2020), and Laranjo et al. (2015) stated that user involvement in digital education has long-term effects if done consistently and in a format that suits the target demographic.

Table 3. Effectiveness of Digital Education

Exposure Category	Knowledge Increase (%)	Increase in Hand Washing Behavior (%)
Low	0.0	0.0
Currently	29.6	91.7
Tall	61.5	187.5

Students in the moderate exposure group also showed significant responses, with an average knowledge score of 67.8 and a handwashing frequency of 4.6 times per day, indicating a moderate effect of digital education on daily habits. Similar studies by Glanz et et al. (2015) and Keller et al. (2020) showed that intermittent exposure to health content still has a positive effect if the message is communicated persuasively and relevantly.

However, the low exposure group still showed low handwashing behavior, despite receiving basic information. This is in line with Alqahtani's findings. et et al. (2022), Prabowo et al. (2024), and Fitriani et al. (2021) that behavioral change requires a process of internalizing values and social reinforcement, not just one-way information delivery.

Social Media Contribution to Hygienic Behavior Transformation

This study shows that social media is not only a tool for disseminating information, but also a facilitator of collective behavioral change. Platforms such as Instagram and TikTok create a peer-influence ecosystem that reinforces the adoption of new norms, including handwashing habits (Chou et al. , 2013; Sharma et et al. , 2020 ; et al. , 2022). In addition, the viral effect of challenge -based video content encourages emotional engagement and real action that is difficult to achieve through conventional media.

Table 4 - Contribution of Social Media to Behavioral Transformation

Social Media Platforms	Types of Health Content	Engagement Level (Scale 1-5)
Facebook	Long Text	2.1
Instagram	Infographics	3.8
TikTok	Educational Videos	4.6
Twitter	Interactive Thread	3.0

It is important to note that the influence of social media is also differential, depending on the algorithm and the content consumed. Students who are more active in following health or educational accounts show higher exposure, which results in increased handwashing intentions and behavior (Wang et al. , 2021; Dutta-Bergman , 2020; Gough et al. , 2021). Therefore, the success of an educational campaign through social media is largely determined by the quality and engagement of the content.

Algorithm -based digital intervention model Personalization could be a future approach in social media-based health promotion. Further studies are recommended to test the effectiveness of this approach in influencing other behaviors such as balanced nutrition consumption, physical activity, and mask use (Alalwan et al. , 2021; Moorhead et al. , 2013; Nugroho et et al. , 2023).

Pearson Correlation between Exposure and Handwashing Behavior

Pearson correlation analysis was conducted to determine the linear relationship between the level of health education exposure through social media and students' handwashing behavior. The calculation results show a Pearson correlation coefficient value of 0.995 with a significance value (p) of 0.0001, which indicates a very strong and statistically significant relationship (Creswell & Creswell , 2017; Ghozali, 2018; Field , 2018).

This finding is in line with previous studies that confirm the strong role of social media in encouraging preventive health behaviors through increased knowledge and behavioral intentions (Freeman et et al. , 2014; Aiello et al. , 2008; Sharma et al. , 2020). For example, studies by Hornik (2010) and Noar (2006) state that digital media that is consumed repeatedly can form new social norms, including hygiene habits.

In addition, the significant positive correlation between exposure and hand washing behavior was also strengthened by Chou's study. et al. (2013), Wang et et al. (2021), and Finset et al. (2020), who emphasized the importance of media-based interventions to trigger long-term changes in attitudes and behavior.

Simple Linear Regression between Exposure and Behavior

To further analyze the strength of the relationship between variables, a simple linear regression analysis was performed. The regression model produces the equation:

$$\mathbf{Y = 5.66 + 0.89X} ,$$

with **an R^2 of 0.991** , indicating that 99.1% of the variation in handwashing behavior can be explained by variations in exposure to health education on social media.

This high level of determination shows that digital education through social media is very effective in shaping students' hygienic behavior, in line with Glanz's findings. et et al. (2015), Stellefson et et al. (2020), and Bahk et al. (2022). The success of digital health campaigns during the COVID-19 pandemic also strengthens the effectiveness of this model in the Indonesian context (Kemenkes , 2022; WHO, 2021; CDC, 2020).

The visualization of the regression model can be seen in the graph above, where the red regression line follows an upward trend as exposure increases. This is also supported by the Health theory. Belief Model, which emphasizes that exposure to risk and benefit information will increase the likelihood of preventive action (Rosenstock et al. , 1988; Nutbeam , 2008; Keller et et al. , 2020).

Quantitative Implications for Digital Intervention Design

Based on the results of regression and correlation, it can be concluded that the higher the exposure of students to educational content on social media, the higher the likelihood of them adopting the habit of washing their hands regularly. The practical implication of this finding is the importance of algorithm- based educational content design. personalization and visual storytelling to increase the effectiveness of digital health campaigns (Moorhead et al. , 2013; Vosoughi et al. , 2018; Alqahtani et et al. , 2022).

With an R^2 of 0.991, a digital campaign based on behavioral research can be designed to target low-exposure segments more intensively. This strategy is in line with the targeted communication approach . health communication) which has been proven to be able to change behavior significantly (Noar , 2006; Dutta-Bergman , 2020; Nugroho et et al. , 2023).

For example, the use of campus micro-influencers and features stories / reels on Instagram and TikTok can be a tool to effectively reach and increase student engagement with health messages (Putri et et al. , 2023; Prabowo et et al. , 2024 ; et et al. , 2022).

CONCLUSION

This study successfully demonstrated that exposure to health education through social media has a significant effect on increasing handwashing behavior in students. Based on the results of a simple linear regression analysis, it was found that 99.1% of the variability in handwashing habits can be explained by the level of exposure to education through social media, as indicated by the R^2 value = 0.991. In addition, the Pearson correlation results also showed a very strong and significant relationship ($r = 0.995$; $p < 0.01$) between educational exposure and changes in students' hygienic behavior. Thus, digital education has proven effective not only in increasing knowledge, but also in significantly modifying actual handwashing practices.

This study also revealed that the type of social media platform and the form of content consumed play a significant role in the effectiveness of education. Visual-based platforms such as TikTok and Instagram have been shown to be more effective in increasing engagement and internalization of health messages than text-based media such as Facebook. Therefore, it can be concluded that social media-based health promotion strategies need to consider not only the frequency of exposure, but also the quality of the content and the relevance of the platform to the characteristics of the target audience . The implications of these findings are very important for health policy makers and campuses to design more targeted, contextual, and data-driven digital interventions.

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