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Optimizing Health Communication: Public Engagement Analysis on TikTok by the Indonesian Ministry of Health

Ririn Wulansari[✉], Oktia Woro Kasminie, Widya Hary Cahyati

Department of Public Health, Faculty of Medicine, Universitas Negeri Semarang, Indonesia

Article Info

Abstract

The increased use of social media in health promotion enables wider public outreach and engagement. This study aims to analyze factors affecting public engagement with TikTok content posted by the Indonesian Ministry of Health on the official account @kemenkesri. Using a quantitative content analysis of 184 videos from January 2023 to June 2024, data was collected through web scraping and analyzed using negative binomial regression. The independent variables examined included video duration, title length, video theme, type, and dialogue flow, while engagement was measured through likes, comments, and shares. The findings reveal that title length ($p < 0.001$), video theme ($p = 0.004$), type ($p < 0.01$), and dialogue flow ($p < 0.05$) positively influenced engagement, while video duration had a significant negative effect ($p < 0.05$). These results indicate that brief, visually engaging, and interactive content can significantly enhance audience interaction with health messages. This study provides recommendations for optimizing digital health communication strategies on social media to effectively convey health information to a broad audience.

[✉]Correspondence Address:
Kampus UNNES Jl Kelud Utara III, Semarang, 50237, Indonesia
E-mail: ririnwulansarir@gmail.com

INTRODUCTION

In the digital era, health communication has undergone significant transformation. The role of social media in disseminating health information has become increasingly crucial, especially in influencing public health behaviors. Global data show that more than 4.95 billion people actively use social media, encompassing approximately 62.5% of the world's population (We Are Social, 2024). This trend presents a major opportunity for health institutions to effectively disseminate health messages and reach a wider demographic, including younger generations who often access information through digital platforms.

In the context of public health, social media platforms like TikTok serve as primary communication tools for enhancing knowledge, awareness, and preventive health behaviors. TikTok's rapid growth and popularity have drawn attention from health institutions worldwide, including Indonesia's Ministry of Health (Kemenkes RI). Through its official TikTok account, @kemenkesri, the Ministry shares health education content on various topics, from disease prevention to promoting healthy lifestyles. TikTok's popularity in Indonesia is reflected in its user base, with over 92.2 million users as of 2023 and an average usage time of 21.5 hours per month per user (Bussines of Apps, 2024; Hootsuite & We Are Social, 2024; We Are Social, 2024). This underscores TikTok's potential as an effective platform for engaging the public.

The role of health promotion officers at the Ministry is vital in supporting this effort. According to Indonesia's Health Law No. 36 of 2009 and Government Regulation No. 2 of 2018 on Minimum Service Standards, health promotion officers are responsible for developing, implementing, and evaluating health promotion programs to improve public health (Kemenkes RI, 2018). Article 79 of Health Law No. 36 of 2009 states that health promotion aims to empower the community by enhancing their knowledge, awareness, and capacity to live healthily. In line with the Minister of Health Regulation No. 43 of 2017 on Public Health Service Standards, health promotion officers must also carry out socialization activities to ensure accurate information delivery (Kemenkes RI, 2017)

With the rise of digital engagement, health promotion officers are increasingly tasked with creating and distributing engaging digital content relevant to the public. According to Minister of Health Regulation No. 12 of 2017 on Immunization, health promotion officers are expected to support immunization programs through comprehensive education, including digital information access. Through platforms like TikTok, especially popular among young people, health promotion officers have an essential role in delivering accurate information about immunization, which is critical in meeting audience needs (Kemenkes RI, 2017).

This study is motivated by the high prevalence of non-communicable diseases (NCDs) in Indonesia, contributing to more than 70% of mortality rates, alongside the persistently high prevalence of stunting at 24.4% among children under five (Kemenkes RI, 2023b). Stunting has long-term adverse effects on children's physical health and cognitive development, potentially impacting the quality of future human resources. Furthermore, the low rate of COVID-19 booster vaccinations, reaching only 58% in 2022, highlights the need for more effective social media communication to combat health misinformation (Kemenkes RI, 2023a). With the growing consumption of health information on social media, platforms like TikTok have become crucial tools in disseminating credible information to address these public health challenges.

This research examines factors hypothesized to influence public engagement with content posted on the Ministry of Health's TikTok account, including video duration, title length, video theme, type, and dialogue flow. Understanding these elements is essential for designing effective health campaigns that resonate with a broad audience. For example, previous studies indicate that short video duration, informative themes, and interactive content can increase public attention and participation in health-related topics (Boczkowski et al., 2017; Chen et al., 2021; Intyaswati et al., 2021; Ngai et al., 2020;

Vaterlaus & Winter, 2021).

Additionally, dialogue flow, which encompasses two-way interaction between content and the audience, is crucial in health promotion. Dialogue flow allows the public not only to receive information but also to respond, ask questions, or share their experiences. This aligns with the theory of dialogic communication in public health, which emphasizes the importance of reciprocal interaction in fostering mutual understanding between health institutions and the public (Taylor, 1998). Engaging the public in health communication fosters trust, raises awareness, and facilitates positive behavioral change.

This research aims to contribute insights into digital health communication strategies, particularly for public health organizations in Indonesia. The findings are expected to help the Ministry of Health and health promotion officers design TikTok content that aligns with public preferences and needs, ultimately strengthening public engagement in health promotion efforts.

METHOD

Video data were obtained from the official TikTok account of the Indonesian Ministry of Health (@kemenkesri). Data collection was conducted through web scraping using an automated script applied to the public TikTok page, without any intervention in the platform's internal system. All videos uploaded between January 2023 and June 2024 were gathered for preliminary analysis. The inclusion criteria included: (1) videos uploaded directly by the official @kemenkesri account; (2) videos with a maximum duration of 10 minutes; (3) videos with clear audio and visual quality; and (4) videos presenting health-related messages or themes. The exclusion criteria included: (1) duplicate videos; (2) re-uploaded videos from other sources; and (3) videos unrelated to health promotion. A total of 184 videos met the inclusion criteria and were analyzed in this study. Data on engagement metrics were obtained through web scraping from each video. Video Duration (Chen et al., 2021): Measured in seconds, based on the length of each of the 184 videos analyzed. Title Length (Chen et al., 2021):

Calculated as the number of words in the video title, automatically counted using an Excel formula. Dialogue Flow (Chen et al., 2021): Measured using two indicators: presence of questions and answers. Videos were given a score of 1 if they included questions or answers, and a score of 0 if they did not. Video Theme (Zhu et al., 2020): Categorized into five themes: daily diet, healthcare information, disease knowledge, professional health promotion, and health reform. Video Type (Arya et al., 2022; Zhu et al., 2020): Categorized into seven types: dance, documentary, games, humor, cartoon, skit, and photo slideshow.

As supporting data, sentiment analysis was conducted on the comments of the five most popular TikTok videos based on the highest number of comments. A total of 1,089 comments were collected and analyzed using Python text analysis software. Each comment was classified as positive, neutral, or negative based on sentiment scores. In addition, semi-structured interviews were conducted to gain deeper insights into content preferences from five respondents who actively interacted with the Kemenkes RI TikTok account.

Two independent coders were involved in manually coding the content of 184 videos. Before starting, both coders were trained to ensure standardized coding practices. Intercoder reliability testing was performed on a randomly selected 30% sample. Cohen's kappa coefficient values for content categories and dialogue loop were 0.90 for dialogue flow, 0.97 for video theme, and 0.96 for video type, indicating a high level of reliability.

Negative binomial regression analysis was used to evaluate the effect of independent variables such as video duration, title length, dialogue loop, video theme, and video type on public engagement (number of likes, comments, and shares). This model was selected because the engagement data was count data showing overdispersion. All analyses were conducted using STATA software (Version 17.0).

RESULTS AND DISCUSSIONS

A total of 184 videos from the official TikTok account of the Ministry of Health,

Republic of Indonesia, were analyzed. The videos exhibited a range of themes and types aimed at enhancing public engagement in health promotion. Among these, the theme Disease Knowledge was most common, accounting for 27% of videos, followed by Healthcare Information at 23%. Video types also varied, with skits representing the highest frequency at 30%, followed by dance and documentary formats at 19% and 15%, respectively.

Video characteristics showed notable trends, with video durations ranging from 15 to 473 seconds and an average title length of 37 characters. Additionally, 19% of the videos contained interactive elements, such as a dialogic flow inviting user participation through comments, likes, or shares. This dialogic approach appears to facilitate deeper public engagement.

Univariate Analysis

Table 1. Descriptive Statistics of Dependent Variables

Variables	Median	Std. Dev	Min	Max
Number of Likes	78	5907	19	60048
Number of Comments	6	374	0	4945
Number of Shares	10	647	0	7507

Table 1 shows that the median number of likes on the TikTok content of the Indonesian Ministry of Health is 78, with a standard deviation of 5,907. The number of likes on each content varies from a minimum of 19 to a maximum of 60,048. The median number of comments received is 6, with a standard deviation of 374, indicating significant variation in the number of comments, ranging from 0 to 4,945. Meanwhile, the median number of content shares is 10, with a standard deviation of 647, where the number of shares per content ranges from 0 to 7,507. These data illustrate a high level of audience engagement, especially in the form of the number of likes, with considerable variation among the uploaded content.

Table 2 shows that the median video duration on the TikTok content of the Indonesian Ministry of Health is 41 seconds, with a standard

Tabel 2. Descriptive Statistics of Independent Variables Count

Variables	Median	Std. Dev	Min	Max
Duration	41	29	10	215
Title Length	21	24	7	162

deviation of 29 seconds. The video duration varies from the shortest 10 seconds to the longest 215 seconds. The average title length is 31 characters, with a standard deviation of 24 characters. The title length ranges from a minimum of 7 characters to a maximum of 162 characters. These data indicate that the TikTok content of the Indonesian Ministry of Health tends to adjust the duration and length of the title to achieve effectiveness in conveying information.

Tabel 3. Descriptive Statistics of Independent Variables Category

Variables	Frequency	Percentage
Dialogue Flow		
There is a Dialogue Flow	35	19%
No Dialogue Flow	149	81%
Video Themes		
Daily Diet	26	14%
Health Care Information	43	23%
Disease Knowledge	49	27%
Professional Image Promotion	33	18%
Health Reform	33	18%
Video Type		
Dance	34	19%
Documentary	28	15%
Games	19	10%
Humor	10	6%
Cartoon	6	3%
Sketch	55	30%
Photo Slide Show	12	6%
Story Telling	20	11%

Table 3 shows that most of the TikTok videos of the Indonesian Ministry of Health (81%) do not use dialogue, while only 19% have dialogue. The most frequently used video themes are "Disease Knowledge" (27%) and "Promotion of Professional Image" (19%). The most

frequently used video types are "Sketch" (30%), followed by "Dance" (19%) and "Photo Slide Show" (14%). This shows the variation in the approach to themes and content types to attract the interest of TikTok audiences in conveying health messages.

Bivariate Analysis

Table 4. Negative Binomial Regression Analysis with Like Involvement

Variables	IRR	P Value
Duration	0.97	0.000
Title Length	1013	0.115
Dialogue Flow		
There is a Dialogue Flow (Reference)		
No Dialogue Flow	0.1097	0.000
Video Themes		
Daily Diet(Reference)		
Health Care Information	0.21	0.000
Disease Knowledge	0.60	0.216
Health Professional Image Promotion	0.116	0.000
Health Reform	0.115	0.000
Video Type		
Dance (Reference)		
Documentary	0.065	0.000
Games	0.436	0.047
Humor	0.066	0.000
Cartoon	4.415	0.021
Sketch	0.066	0.000
Photo Slide Show	0.267	0.007
Story Telling	0.158	0.000

Table 4. shows that video length is significantly associated with decreased engagement likes (p=0.000; IRR=0.97). The absence of dialogue is also associated with an 89% decrease in likes (p=0.000; IRR=0.1097). In terms of video themes, "Health Care Information" (p=0.000; IRR=0.21) and "Promotion of Professional Image" (p=0.000; IRR=0.116) decreased likes compared to "Daily Diet." For video types, "Documentary" (p=0.047; IRR=0.065) and "Cartoon" (p=0.000;

IRR=4.415) were significantly influential, with "Cartoon" increasing likes compared to "Dance".

Table 5. Negative Binomial Regression Analysis with Comment Involvement

Variables	IRR	P Value
Duration	0.98	0.000
Title Length	1011	0.261
Dialogue Flow		
There is a Dialogue Flow (Reference)		
No Dialogue Flow	0.0143	0.000
Video Themes		
Daily Diet(Reference)		
Health Care Information	0.236	0.001
Disease Knowledge	2,391	0.045
Health Professional Image Promotion	0.596	0.272
Health Reform	0.222	0.122
Video Type		
Dance (Reference)		
Documentary	0.220	0.000
Games	0.382	0.031
Humor	0.252	0.015
Cartoon	11,160	0.000
Sketch	0.171	0.000
Photo Slide Show	0.662	0.645
Story Telling	0.361	0.661

Table 6. Negative Binomial Regression Analysis with Share Involvement

Variables	IRR	P Value
Duration	0.98	0.000
Title Length	0.986	0.093
Dialogue Flow		
There is a Dialogue Flow (Reference)		
No Dialogue Flow	0.1085	0.000
Video Themes		
Daily Diet(Reference)		
Health Care Information	0.846	0.708
Disease Knowledge	1,360	0.476
Health Professional Image Promotion	0.229	0.001
Health Reform	0.311	0.013
Video Type		
Dance (Reference)		
Documentary	0.081	0.000
Games	0.711	0.436
Humor	0.130	0.000
Cartoon	7,591	0.003
Sketch	0.105	0.000
Photo Slide Show	0.301	0.023
Story Telling	0.334	0.011

Table 5. shows that video length is significantly associated with decreased comment engagement (p=0.000; IRR=0.98). The absence of dialogue flow is associated with a 98.6% decrease in comments (p=0.000; IRR=0.0143). In terms of video themes, "Health Care Information" (p=0.001; IRR=0.236) and "Disease Knowledge" (p=0.004; IRR=0.326) decreased comments compared to "Daily Diet." For video types, "Documentary" (p=0.000; IRR=0.220) and "Cartoon" (p=0.000; IRR=11.160) showed significant results, with "Cartoon" increasing comments compared to "Dance."

Table 6. shows that video length is significantly associated with decreased share engagement (p=0.000; IRR=0.98). The absence of dialogue flow is also associated with an 89.2% decrease in shares (p=0.000; IRR=0.1085). In terms of video themes, "Promoting Professional Image" (p=0.001; IRR=0.229) decreased shares compared to "Daily Diet." For video types, "Documentary" (p=0.000; IRR=0.081) and "Sketch" (p=0.000; IRR=0.436) decreased shares compared to "Dance."

Hypothesis 1: Influence of Video Duration

Negative binomial regression analysis revealed that video duration had a significant negative effect on all engagement metrics (likes, comments, and shares), indicating that longer videos resulted in lower engagement. This suggests that concise video formats may be more effective for retaining audience attention in health communication.

Hypothesis 2: Influence of Title Length

Although title length showed a slight positive trend in engagement (IRR 1.013 for likes), this effect was statistically insignificant, suggesting that title length is not a primary driver of engagement on this platform.

Hypothesis 3: Influence of Dialogue Loop

Videos with dialogic flow elements significantly increased engagement metrics across likes, comments, and shares, emphasizing the importance of interaction in health promotion. The presence of questions or calls for user responses proved especially effective.

Hypothesis 4: Influence of Video Theme

The "Daily Diet" theme generated the highest engagement, highlighting the public's interest in practical health advice. In contrast, more formal themes, such as health reform, showed lower engagement rates.

Hypothesis 5: Influence of Video Type

Among video types, animated cartoons achieved the highest engagement, particularly in likes, comments, and shares. This format's visual appeal and simplicity are likely effective for communicating complex health information.

Table 7. Summary of Sentiment and Interview Findings on TikTok Health Content

Variables	Sentiment Analysis Result	Interview Finding
Duration	Short videos (16–30s) generated more positive comments; longer videos (>60s) had more neutral responses.	Respondents preferred short, clear videos; long ones felt boring or redundant.
Title Length	No significant effect on sentiment distribution.	Users rarely read long captions; visuals are more influential.
Dialogue Flow	Videos with dialogue had higher positive sentiment and interaction rates.	Dialogues made content feel interactive and trustworthy.
Video Theme	Themes on diet and daily health had higher positive engagement than reform/policy themes.	Viewers prefer practical and relatable health topics.
Video Type	Animated videos had the most positive sentiment; slideshows were least engaging	Animations are entertaining and easy to follow.

Table 7 Show Overall, the integration of sentiment analysis and qualitative interviews demonstrates that short, visually appealing, dialog-driven videos with practical and relatable themes are most effective in generating positive audience responses and active engagement on TikTok. These insights support the development of communication strategies that align with digital audience preferences, enabling the Ministry of Health to enhance public engagement through adaptive and evidence-based media content.

Discussion

The study findings effectively address the research questions by pinpointing specific content factors that influence public engagement on the Ministry of Health's TikTok account. Key elements that enhance public participation include interactive formats, visually engaging content, and concise messaging. These results are consistent with and add to the body of research on social media engagement, which emphasizes the effectiveness of short, visually appealing, and interactive content in fostering engagement in health communication (Chen et al., 2021).

1. Interpretation of Findings

The negative impact of video duration on engagement aligns with findings from (Yang et al., 2022), who reported that shorter videos tend to hold audience attention better on visually driven platforms like TikTok and YouTube. This suggests that TikTok users favor quick, digestible content, a preference that health communicators can leverage by producing concise messages that retain viewer interest. Moreover, the effectiveness of dialogic flow elements that promote two-way interactions such as questions and calls for engagement demonstrates the importance of fostering an interactive environment. Similar findings from studies on crisis communication during COVID-19 indicated that interactive posts by government accounts generated significantly higher engagement, which in turn strengthened public trust (Chen et al., 2021; Jeanine P.D. Guidry et al., 2017)

2. Integration with Existing Knowledge

The audience's preference for themes related to daily life, such as "Daily Diet," mirrors results from (Zhu et al., 2020), who found that health topics directly relevant to audiences' everyday needs often yield higher engagement. This preference can be attributed to the practical application of such information, which encourages users to integrate the knowledge into their routines. Furthermore, studies on digital health content consumption show that users are more likely to engage with and share content that provides immediate, actionable insights, as opposed to more abstract health themes (Chen et al., 2021; Ngai et al., 2020; Zhu et al., 2020)

This pattern also aligns with findings from public health campaigns in other cultural contexts, where content framed around personal health improvements tends to have a broader impact (Kruk et al., 2018). For example, health campaigns in China focusing on daily health habits received higher engagement than those on broader, less personalized topics (Zhu et al., 2020). This demonstrates that universal trends in health engagement favor content directly tied to personal and practical health practices over general health promotion.

3. Formulating New Insights

The study findings suggest that health institutions should prioritize interactive and visually engaging formats on video-based platforms like TikTok. Specifically, video types such as cartoons, which simplify complex information into more accessible visuals, show promise for maximizing reach and understanding. The role of animation in engaging audiences is well-documented; research shows that animated content can effectively break down complex health messages, making them easier to understand and remember (Cholik & Umaroh, 2023).

Additionally, humorous and interactive formats, like skits or Q&A sessions, not only entertain but also encourage deeper audience involvement. Studies on public health education have found that humor and interactivity enhance recall and engagement, particularly when targeting younger demographics (Vaterlaus & Winter, 2021). In comparison to traditional, text-heavy content, interactive formats can capture attention more effectively, making them suitable for disseminating health information on platforms with high youth engagement, such as TikTok.

These insights support the idea that health promotion strategies on social media must be adapted to the preferences and habits of the platform's primary user base. By prioritizing visually engaging and interactive elements, health institutions can craft messages that not only attract views but also foster meaningful interactions, contributing to improved public health awareness and engagement.

CONCLUSION

The study concludes that certain content factors—such as video duration, interactivity, and theme relevance—significantly enhance public engagement with health-related content on the Ministry of Health's TikTok account. Short, visually engaging videos with interactive elements, like questions or prompts for user participation, are especially effective in capturing and sustaining audience attention. The study also found that practical themes, particularly those offering immediately applicable health advice, resonate strongly with viewers, promoting better understanding and retention of health messages. These findings address the research questions by clarifying which content characteristics are most likely to drive engagement, thus providing valuable insights for optimizing health communication strategies.

Based on these conclusions, it is recommended that the Ministry of Health and similar health organizations prioritize the creation of concise, visually appealing videos with interactive elements tailored to the platform's fast-paced environment. Emphasizing practical, relatable health topics can further encourage audience interaction and reinforce positive health behaviors. Additionally, it would be beneficial for these organizations to invest in training programs that equip health promotion officers with digital content creation skills, particularly in animation, engagement techniques, and audience-focused messaging. By adopting these targeted strategies, health institutions can strengthen their digital communication efforts, fostering a more health-conscious public that is better informed and engaged in preventive health practices.

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