



Research Article

Digital Health Promotion Effectiveness on Metro City Health Office Instagram: EPIC Model Analysis

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Abstract

This study aims to analyze the effectiveness of digital health promotion messages delivered through the Metro City Health Office's Instagram account using the EPIC Model framework—Empathy, Persuasion, Impact, and Communication—and to identify which EPIC dimension most strongly influences perceived message effectiveness. This study employed a quantitative, cross-sectional design. Respondents were 110 Instagram users who met predefined inclusion criteria and were selected using purposive sampling. Data were collected through an online questionnaire. Bivariate analysis showed all EPIC dimensions had positive and statistically significant correlations with message effectiveness ($p < 0.05$), with the strongest correlation observed for Impact. Multivariate regression revealed that EPIC dimensions simultaneously had a significant effect on message effectiveness, with $R^2 = 0.968$, indicating that the model explained 96.8% of the variance in perceived effectiveness. When tested simultaneously, only Impact remained statistically significant and emerged as the dominant predictor (standardized Beta $\approx 0.891-0.905$, $p = 0.000$), while Empathy, Persuasion, and Communication did not show significant unique contributions in the full model. Digital health promotion through the Metro City Health Office Instagram account is perceived as effective, primarily driven by the Impact dimension.

Keywords: digital health promotion, EPIC model, instagram, message effectiveness, metro city

Introduction

Digital transformation has significantly reshaped how people access, interpret, and respond to health information. In recent years, health communication has moved beyond conventional channels such as face-to-face counseling, posters, and broadcast announcements toward more interactive digital environments, particularly social media (Baiquni et al., 2025; Koh et al., 2021; Duffy et al., 2026).

In this context, the effectiveness of health promotion is no longer determined solely by the scientific accuracy of the message, but also by its ability to attract attention, remain relevant, and encourage action within a highly competitive digital information environment.

Indonesia is among the countries with high social media usage, and Instagram has become one of the most widely used platforms for sharing and seeking information, including health-related content (DataReportal, 2025). Its visual-oriented features, such as infographics, short videos, reels, carousels, and stories, allow health information to be delivered in a more engaging, concise, and accessible form. This has encouraged public institutions, including government health

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agencies, to use Instagram as a strategic medium for digital health promotion.

In Metro City, the Health Office has utilized Instagram as an official communication channel to disseminate health education, provide public service information, and promote health programs. The account has been active since September 2022 and, based on the study's preliminary observation, had approximately 5,034 followers, with a posting frequency of two to three posts per week. The content consists of educational posts, service information, and documentation of health-related activities. In addition, the account showed moderate audience engagement, with an engagement rate of around 2–3%, while non-follower reach increased from 61% to 70% between September and October 2025. These conditions indicate that the account has succeeded in expanding audience exposure, yet high exposure has not necessarily been followed by proportional growth in participation or follower conversion. This highlights the empirical urgency of evaluating whether digital health messages delivered by the Metro City Health Office are truly effective from the audience perspective.

The need for such evaluation is particularly relevant in the context of public health communication, where digital messages are expected not only to inform but also to support health literacy, shape attitudes, and encourage preventive behavior. In this regard, the EPIC Model, consisting of Empathy, Persuasion, Impact, and Communication, provides a useful framework for assessing the effectiveness of digital health promotion messages. Although originally developed in the field of advertising, the EPIC Model can be adapted to public health communication. In this study, empathy refers to the relevance of health messages to audience needs and experiences, persuasion refers to the ability of messages to motivate behavioral change, impact reflects memorability and message salience, and communication concerns the clarity and comprehensibility of health information (Nielsen, 2021; Baiquni et al., 2025).

EPIC offers a practical analytical lens because it breaks down message effectiveness into dimensions that are highly relevant to digital health promotion. Empathy refers to the extent to which messages create emotional connection, relevance, and audience identification, which are essential for attracting attention and encouraging initial engagement. Persuasion concerns the ability of messages to influence attitudes and stimulate intention to act, including the strength of the call-to-action. Impact refers to the extent to which messages are memorable, attention-grabbing, and capable of leaving a strong impression that supports retention and later recall. Communication reflects the clarity, comprehensibility, structure, and completeness of information, ensuring that audiences are able to understand and follow the recommended health messages.

Previous studies on digital health promotion have often focused on exposure and engagement metrics, while less attention has been given to how audiences cognitively and emotionally assess the quality of health messages delivered through social media. This gap is particularly important in local government settings, where the effectiveness of communication directly influences community participation in health programs. Therefore, this study aims to evaluate the effectiveness of digital health promotion messages on the Metro City Health Office Instagram account using the EPIC Model.

Method

This study employed a quantitative approach with a cross-sectional design. The research was conducted in the context of digital health promotion activities delivered through the official Instagram account of the Metro City Health Office. A cross-sectional design was selected because it enables the measurement of multiple variables at a single point in time and captures audience perceptions of message quality and perceived effectiveness without introducing intervention effects (Glanz et al., 2024).



The target population consisted of Instagram users who followed or had been exposed to content posted by the official Instagram account of the Metro City Health Office. Based on preliminary observation during the data collection period, the account had approximately 5,034 followers. This figure was used to describe the sampling frame and the potential audience exposed to the institution's digital health promotion messages. The study applied purposive sampling to ensure that respondents had sufficient exposure and experience to evaluate the content.

The inclusion criteria were: (1) aged 18 years or older; (2) following the official Instagram account of the Metro City Health Office or having viewed at least three of its posts; and (3) willing to complete the questionnaire in full. The exclusion criteria included inactive or suspicious accounts, duplicate entries, and incomplete or inconsistent questionnaire responses. The final sample consisted of 110 respondents. The sample size was considered adequate based on the rule of thumb for multiple regression analysis, which recommends at least 10–20 observations for each predictor variable. Since this study involved four independent variables, the minimum recommended sample ranged from 40 to 80 respondents; therefore, 110 respondents were considered sufficient to support regression analysis and improve statistical stability.

To minimize bias arising from variations in content exposure, the study used a standardized stimulus. All respondents were asked to evaluate the same stimulus, namely a screenshot of an educational Instagram post on dengue fever prevention through the 3M Plus approach (Maulida et al., 2024). This procedure was intended to ensure that differences in responses were more likely attributable to perceived message quality across the EPIC dimensions rather than to differences in topic, format, or posting context.

Data were collected using an online questionnaire with a five-point Likert scale ranging from strongly disagree (1) to strongly agree (5). The questionnaire link was distributed

online through direct messages sent via respondents' social media accounts, and the survey was administered using Google Forms. This approach was intended to reach Instagram users who had relevant exposure to the Metro City Health Office's digital health promotion content and met the predefined inclusion criteria. The instrument measured Empathy (X1), Persuasion (X2), Impact (X3), Communication (X4), and perceived message effectiveness (Y). Empathy referred to emotional connection, personal relevance, and audience identification; Persuasion referred to attitudinal influence, motivational strength, and clarity of invitation to act; Impact referred to attention capture, memorability, and impression strength; Communication referred to clarity, completeness, and ease of understanding; and perceived message effectiveness referred to perceived improvement in understanding, attitude orientation, and intention or likelihood to act. Each construct was measured by multiple items developed in accordance with the operational definitions of the EPIC-based evaluation.

Instrument quality was ensured through a two-stage procedure. A pilot test was conducted prior to the main survey to evaluate item clarity and psychometric performance. Item validity was assessed using corrected item-total correlation with an accepted threshold (Widiasih et al., 2022). Reliability was assessed using Cronbach's Alpha, and all constructs met the accepted reliability standard, indicating internal consistency across items (Chhetri & Khanal, 2024).

Before analysis, data screening was carried out to remove duplicate entries, incomplete responses, and non-eligible respondents. The data analysis consisted of univariate, bivariate, and multivariate analyses. Univariate analysis was used to describe respondent characteristics and the mean scores of each EPIC dimension and perceived effectiveness. Bivariate analysis used Pearson correlation to assess the relationships between each EPIC dimension and perceived message effectiveness. Multivariate analysis used multiple linear regression to examine the simultaneous and partial effects of Empathy,

Persuasion, Impact, and Communication on perceived message effectiveness, including the evaluation of R^2 and standardized beta coefficients.

To ensure the validity of the regression model, several diagnostic tests were performed, including tests of normality, multicollinearity, heteroscedasticity, and linearity. These diagnostic checks were conducted to confirm that the assumptions of multiple regression analysis were adequately met and to support careful interpretation of the findings. This study received ethical approval from the Health Research Ethics Committee of Universitas Mitra Indonesia No. 031/KEPK-UMITRA/II/2026. Respondents

provided informed consent electronically before completing the questionnaire. Anonymity and confidentiality were maintained, and all data were analyzed in aggregate form.

Results

Respondent Characteristics

A total of 110 respondents participated in this study. Most respondents were in productive age groups and were largely followers of the official Instagram account. This indicates that the participants represented the intended audience of Instagram-based health promotion. The demographic characteristics of respondents are presented in table 1.

Table 1. Characteristics of Subjects (n=110)

Characteristics	Frequency (n)	Percentage (%)
Male	56	50.9%
Female	54	49.1%
17-25 years	19	17.3%
26-35 years	43	39.1%
36-45 years	35	31.8%
≥46 years	13	11.8%
Yes	108	98.2%
No	2	1.8%
Private sector	46	41.8%
Civil servant	41	37.3%
Housewife	12	10.9%
Student	11	10.0%

Descriptive Scores of EPIC Dimensions and Message Effectiveness

Table 2. Multiple Linear Regression Results (n = 110)

Variable	Unstandardized B	Standardized Beta	t-value	Sig.
(Constant)	-0.058		-0.504	0.615
Empathy (X1)	0.092	0.092	0.759	0.450
Persuasion (X2)	-0.024	-0.028	-1.296	0.198
Impact (X3)	0.905	0.891	7.650	0.0
Communication (X4)	0.042	0.032	1.420	0.159
R-Square (R^2)	0.968			

Across all EPIC dimensions, respondents tended to provide high scores, indicating positive perceptions of the stimulus message. Communication showed the highest score,

followed by Impact and Empathy, while Persuasion had the lowest mean although it remained in a positive range.



Bivariate Correlation

Bivariate analysis showed that all EPIC dimensions were positively and significantly correlated with perceived message effectiveness ($p < 0.05$). The strongest relationship was found between Impact and perceived message effectiveness.

Multiple Linear Regression

Multiple linear regression analysis showed that the four EPIC dimensions simultaneously influenced perceived message effectiveness. The model produced an R^2 value of 0.968, indicating that 96.8% of the variance in perceived effectiveness was explained by Empathy, Persuasion, Impact, and Communication. Among the four predictors, only Impact remained statistically significant in the full model. Model Summary: $R^2 = 0.968$, indicating that 96.8% of the variance in perceived effectiveness was explained by Empathy, Persuasion, Impact, and Communication. The results of the multivariate analysis to determine the dominant factor are presented in table 2.

Discussion

The findings of this study indicate that digital health promotion messages delivered through the Instagram account of the Metro City Health Office were generally perceived positively by respondents. High scores across the EPIC dimensions suggest that Instagram can function not only as a dissemination platform but also as a relevant medium for public health communication. This finding is consistent with previous literature showing that digital health promotion enables broader outreach, faster dissemination, and stronger audience interaction, although its effectiveness depends heavily on message design and audience interpretation (Koh et al., 2021; Leal Neto & von Wyl, 2024).

Among the four EPIC dimensions, Impact emerged as the strongest predictor of perceived message effectiveness. This indicates that memorability, visual salience, and the ability of a message to attract attention play a central role in

shaping audience evaluations of effectiveness. In the context of Instagram, which is highly visual and fast-paced, this result is understandable because users often decide quickly whether a post is worth attending to. This finding is in line with previous studies showing that visually strong and strategically designed social media content tends to generate better engagement and stronger message retention (Yip et al., 2024; Xin et al., 2024).

The dominance of Impact in this study is also supported by previous evidence that social media can strengthen public attention and acceptance of health information when messages are delivered in attractive and salient forms. Research on vaccine communication in social media environments found that online platforms can increase confidence and public responsiveness when communication strategies are framed appropriately, even though the substantive topic differs from the present study (Jia et al., 2024; Xin et al., 2024). Thus, the mechanism appears comparable, namely that message salience and strategic presentation affect how audiences receive and respond to health information.

Although Empathy, Persuasion, and Communication showed positive associations with perceived effectiveness at the bivariate level, these dimensions did not remain statistically significant in the multivariate model. One possible explanation is that the EPIC dimensions are conceptually interrelated, so that when examined simultaneously, the strongest dimension becomes dominant while the others lose their unique contribution. This pattern suggests that audience judgments about relevance, clarity, and motivational appeal may overlap substantially with judgments about message impact. Similar overlap between communication elements has also been noted in prior digital health communication studies, where message appeal, clarity, and audience engagement often operate together rather than independently (Koh et al., 2021; Yip et al., 2024).

The relatively weaker role of Persuasion indicates that although the Metro City Health



Office's Instagram messages were perceived as clear and memorable, their direct motivational strength may still be limited. This partly differs from the ideal expectation of digital health communication, where messages are expected not only to inform and attract attention, but also to encourage audiences to adopt recommended actions. Previous studies have emphasized that social media health communication tends to be more effective when informational value is combined with persuasive framing, audience relevance, and actionable prompts (Koh et al., 2021; Alhaimer, 2022). Therefore, future content from the Metro City Health Office should place stronger emphasis on explicit call-to-action elements and practical behavioral cues.

The findings of this study also align with Indonesian evidence showing that Instagram is increasingly used by health institutions not only for education but also for institutional branding and trust-building. Research on hospital Instagram use in Indonesia found that Instagram serves both educational and image-strengthening functions, which supports the present finding that audiences may perceive health messages positively even when institutional communication goals are embedded in the content (Rahmadini & Ayuningtyas, 2025). In this sense, the Metro City Health Office's Instagram account appears to function not merely as an information board, but as a public-facing health communication channel that shapes both understanding and institutional credibility.

The very high R^2 value indicates that the EPIC dimensions collectively explained a substantial proportion of perceived message effectiveness. This result should still be interpreted carefully, because it may reflect conceptual proximity among the dimensions as well as the relatively focused nature of the standardized stimulus used in the study. Even so, this finding remains important because it shows that audience evaluations of digital health messages are strongly shaped by message quality, particularly in relation to attention, memorability, and clarity. Similar observations have been made in prior studies

showing that message design and audience-oriented framing strongly influence perceived effectiveness in digital communication settings (Leal Neto & von Wyl, 2024; Yip et al., 2024).

Overall, this study supports the relevance of the EPIC Model as an evaluative framework for public health communication in digital settings. The present study also adds empirical evidence from a local government health institution, which is still less frequently discussed compared with studies on commercial communication or hospital branding. Thus, this study contributes by showing that in the context of public-sector Instagram communication, perceived effectiveness is influenced most strongly by message impact, while the other EPIC dimensions remain supportive but less dominant in the full model.

Conclusion

This study concludes that digital health promotion messages delivered through the Instagram account of the Metro City Health Office were perceived as effective by respondents. The multiple regression analysis showed that the EPIC dimensions jointly explained 96.8% of the variance in perceived message effectiveness ($R^2 = 0.968$). Among the four dimensions, Impact emerged as the dominant predictor, while Empathy, Persuasion, and Communication did not show significant unique effects in the full model.

These findings indicate that the effectiveness identified in this study refers to perceived effectiveness, namely how respondents evaluated the relevance, clarity, memorability, and persuasive quality of the health messages, rather than direct measurement of actual behavioral change. In the context of Instagram-based health communication, visual salience and memorability appear to be the primary gateway for attracting audience attention and supporting message retention.

This study contributes academically by extending the application of the EPIC Model to the field of digital health communication and by providing empirical evidence from the context of a local government health institution. Practically,



the findings suggest that the Metro City Health Office should prioritize visually engaging, memorable, and action-oriented message design to strengthen the effectiveness of future digital health promotion efforts.

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