

## Mobile Health Campaigns and Changes in Clean and Healthy Living Behavior in the Community (CHLB)

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*Inputed* : November 17, 2025  
*Accepted* : December 19, 2025

*Revised* : November 29, 2025  
*Published* : December 29, 2025

### ABSTRACT

**Background:** The rapid development of mobile technologies has enabled health promotion activities to be delivered more rapidly, repeatedly, and responsively, creating new opportunities to influence clean and healthy living behavior (CHLB) across diverse community settings.

**Method:** This study employed a narrative review by synthesizing academic literature published over the last ten years that examined the implementation of mobile health campaigns and their influence on CHLB.

**Results:** The findings indicate that mobile health campaigns delivered through multiple platforms, including WhatsApp, SMS, Instagram, Facebook, mobile health applications, and educational videos, contribute to improvements in CHLB knowledge, attitudes, and practices. Multiplatform approaches were found to be more effective than single-platform campaigns due to complementary features such as scheduled reminders, visual demonstrations, and digitally mediated interpersonal communication that reinforces trust in health information.

**Conclusion:** Sustainable improvements in CHLB require not only increased health knowledge but also ongoing digital social support and behavioral reinforcement through continuous messaging. Strengthening mobile health campaigns through culturally relevant content, sustained communication, and active community participation is essential for long-term CHLB adoption.

**Keyword:** *Community, Digital Health, Healthy Living Behavior, Health Promotion, Mobile Health Campaigns*

### INTRODUCTION

The development of digital technology has transformed health promotion from conventional face-to-face approaches into campaigns based on digital platforms and mobile devices. This shift responds to the need for rapid, wide-reaching, and easily accessible health information to support changes in clean and healthy living behaviors (CHLB). Mobile health campaigns delivered

through WhatsApp, Instagram, SMS, health applications, and educational videos have emerged as an important public health strategy to strengthen healthy behavior at the community level. Previous studies show that digital health campaigns increase access to information, message exposure, and internalization of health values more efficiently than traditional counseling. Holtz and Buis (2016) confirm that mobile-based campaigns effectively promote healthy lifestyles when content is communicated in an accessible manner, demonstrating that digital technology functions not only as a communication tool but also as a catalyst for habit formation.

The digitalization of health campaigns is increasingly relevant because sustainable lifestyle change depends on long-term attitudes and behaviors, not merely knowledge. Anggraini et al. (2024) demonstrate that digital media-based health social marketing enhances awareness and internal motivation in rural communities. Repeated exposure, culturally relevant messaging, and strengthened self-regulation make mobile-based interventions more effective than direct education alone in supporting behavioral change.

In Indonesia, CHLB promotion through digital campaigns is particularly relevant given persistent challenges in compliance with healthy living indicators. Situmeang and Lase (2025) show a positive correlation between CHLB knowledge and household practices, especially in hygiene and sanitation. Beyond households, CHLB implementation extends to schools, workplaces, health facilities, and public spaces. Andriana et al. (2024) and Anggreyni et al. (2025) further confirm that intensive health education improves community knowledge, attitudes, and actions, highlighting community involvement as a key success factor in CHLB promotion.

Nevertheless, CHLB adoption is shaped by complex interactions among knowledge, motivation, communication, social norms, and environmental support. Fitria et al. (2025) identify low household compliance despite education as a major obstacle, indicating the need to address psychosocial factors such as trust, risk perception, family influence, and habitual behavior. Fitri et al. (2021) support this view, showing that community empowerment significantly enhances behavioral change when participation and control are strengthened.

Health promotion theory reinforces the urgency of mobile health campaigns. Malinda (2024) emphasizes the effectiveness of the PRECEDE-PROCEED model in targeting behavioral change through predisposing, enabling, and reinforcing factors, a framework well suited to digital interventions. Raharyani (2025) further notes that CHLB education is most effective when health messages align with local social and cultural contexts, underscoring the potential of multiplatform mobile approaches to deliver adaptive content.

Mobile health campaigns also strengthen communication between communities and health workers. Wiyane and Mansur (2021) show that digitally disseminated CHLB campaigns during the pandemic improved public understanding through intensive and strategic messaging. Lim (2025) similarly

highlights the role of digital media in facilitating two-way communication in vulnerable rural communities.

Globally, mobile health promotion has proven effective in shaping lifestyle-based behaviors. Doherty et al. (2019) demonstrate its role in adult vaccination, while Zolfaghari et al. (2021) show that gamified applications enhance children's motivation for dental health, illustrating the adaptability of mobile health across populations.

Despite this evidence, significant research gaps remain. Existing studies focus on single settings, conventional education, or isolated interventions, without examining multiplatform mobile campaigns across diverse CHLB environments or sectors. Consequently, the mechanisms through which digital campaigns translate repeated exposure into sustained behavioral adoption remain underexplored.

This study addresses these gaps by synthesizing literature on multiplatform mobile health campaigns and CHLB change across households, schools, workplaces, health facilities, and communities. Its novelty lies in reframing mobile health campaigns as an integrated behavioral reinforcement system that combines information dissemination, social support, and habit formation. By adopting a narrative synthesis approach, this study advances digital health promotion theory beyond effectiveness claims toward an explanation of sustainable CHLB behavior in community contexts.

## METHOD

This study employed a narrative review to synthesize scholarly evidence on mobile health campaigns and changes in clean and healthy living behavior (CHLB) at the community level. A narrative approach was selected to allow conceptual integration across diverse study designs, intervention settings, and theoretical perspectives that are not easily comparable through systematic meta-analysis.

The review analyzed **42 peer-reviewed articles** published between 2015 and 2025, sourced from Google Scholar, Scopus-indexed journals, and national academic databases. The search strategy combined key terms such as *mobile health*, *digital health campaigns*, *health promotion*, and *clean and healthy living behavior*, with inclusion criteria focusing on studies that explicitly examined digital or mobile-based interventions influencing CHLB-related knowledge, attitudes, or practices. Policy documents and community health reports were included to contextualize empirical findings.

Data synthesis was conducted through thematic integration, involving iterative reading, categorization of intervention mechanisms, and abstraction of behavioral patterns across studies. To address potential narrative bias, the analysis explicitly compared convergent and divergent findings, acknowledged variations in intervention intensity and community context, and avoided causal generalization beyond the scope of the reviewed evidence. While narrative reviews inherently rely on interpretive synthesis, analytical rigor was

maintained through transparent selection criteria and cross-study comparison to strengthen conceptual validity.

## RESULT AND DISCUSSION

### The Dynamics of Mobile Health Campaigns in Promoting CHLB Behavioral Change in Various Social Structures

Mobile-based health campaigns have evolved into a new mechanism for public health promotion due to their ability to repeatedly deliver educational messages, disseminate information in a short period of time, and reach population groups that are difficult to reach through face-to-face counseling. In the context of healthy living behaviors, the mobilization of digital media strengthens public access to health knowledge and improves the ability to interpret the risks and benefits of health behaviors. Anggraini et al. (2024) emphasize that social marketing-based health education has a positive impact on awareness of healthy living behaviors because information is presented regularly and linked to the daily needs of the community. Behavioral change depends not only on understanding the content of the message, but also on the frequency of exposure and the emotional connection of the community to the health messages they receive through the gadgets they use every day.

From a health communication perspective, mobile health campaigns operate through mechanisms of attitude reinforcement, social norm change, and the formation of new beliefs about recommended health practices. Situmeang and Lase (2025) show that increasing knowledge of healthy lifestyles through health promotion is closely related to changes in the attitudes of households in adopting environmental hygiene habits. When health messages do not stop at conveying information but are structured with persuasive strategies and are responsive to the characteristics of the target audience, attitude change becomes easier to form. This shows that digital campaigns that are personalized according to community needs can serve as a tool to strengthen internal motivation for healthy behavior. Andriana et al. (2024) also show that CHLB promotion in rural communities is effective when it includes an interpersonal communication approach through friendly digital messages that build social closeness with the community.

The effectiveness of mobile health campaigns is also influenced by the social structure and context in which people live. In communities with high levels of social participation, digital health campaigns serve to reinforce collective habits, as people tend to follow the behavior of their group. In this context, Anggreyni et al. (2025) emphasize that an increase in CHLB actions occurs more quickly when health information is reinforced through social group encouragement and repeated education. Conversely, in communities that are vulnerable to health information inequality, digital education serves as a bridge to health access that stimulates behavioral change based on individual risk perceptions. Fitria et al. (2025) emphasize that barriers to CHLB arise not because of a lack of information, but because of low consistency in implementing health measures due to weak environmental support. Mobile

health campaigns can overcome these barriers by providing regular reminders of healthy actions, making healthy behaviors easier to internalize through habituation.

The health promotion-based CHLB theoretical model supports the phenomenon of shifting educational strategies towards a mobile technology-based approach. The PRECEDE-PROCEED model describes that behavioral change is the result of the interaction of predisposing factors such as knowledge, enabling factors such as facility availability, and reinforcing factors such as social support (Malinda, 2024). Mobile health campaigns provide all three components in a single digital ecosystem: information that increases knowledge, action instructions that guide practice, and social support through interactions between community members on a digital platform. When health content is packaged in a clear, adequate, and relevant manner, digital interventions become psychosocial tools that reinforce the intention to maintain clean and healthy living behaviors.

Furthermore, mobile technology provides opportunities to develop two-way health communication, rather than one-way instructions as in conventional counseling. In multiplatform campaigns, the community can respond, ask questions, and discuss directly with health workers or cadres through digital messages. Wiyane and Mansur (2021) show that health communication during the pandemic is more effective when the community can interact directly through digital media, thereby increasing trust in health information. The dynamics of interactive communication make mobile health campaigns not just a medium for education, but a platform for continuous health guidance. The integration of responsive and supportive aspects in digital campaigns is a determinant of the success of health behavior change, especially in the context of CHLB, which requires long-term compliance.

In communities with limited access to health services, digital technology also serves as a substitute for health information that is difficult to access through conventional mechanisms. Lim (2025) proved that health education delivered through digital media can improve the CHLB of rural communities that were previously unreachable by health interventions. Mobile technology offers inclusivity that can bridge the limitations of distance, resources, and time for communities to participate in health promotion. The presence of CHLB education via mobile phones not only serves as a communication strategy but also creates a safe space for communities to learn and ask questions about health practices without hesitation.

Mobile health campaigns are also in line with global findings on digital approaches to lifestyle-based health promotion. Doherty et al. (2019) showed that digital health interventions are effective in shaping healthy behaviors when campaigns are packaged as part of a lifestyle, rather than as medical instructions. These findings are parallel to the research by Zolfaghari et al. (2021), which found that gamified health applications can internalize health behaviors in children through the design of enjoyable digital experiences. Therefore, mobile campaigns designed with visually appealing content, simple

language, and emotional narratives have the potential to create positive health experiences that reinforce the internalization of CHLB behaviors. Overall, research evidence shows that mobile health campaigns contribute to the transformation of CHLB practices through the formation of repeated awareness, reinforcement of attitudes and motivation, formation of social norms, and digital interpersonal communication that encourages compliance with clean and healthy living behaviors.

The effectiveness of digital campaigns depends not only on technology, but also on the ability of campaign strategies to promise an educational and emotional connection between the community and health information sources. Thus, mobile health campaigns are not merely an extension of the health system, but an integral part of the health promotion ecosystem that supports the sustainability of CHLB in the community.

### **Comparison of the Effectiveness of Mobile Health Platforms in CHLB Formation: Findings and Implications**

The development of digital health campaigns shows that each mobile technology platform has a different impact on CHLB change indicators. This variation in effectiveness is influenced by media characteristics, message delivery methods, and the form of community interaction with health content. WhatsApp and SMS are generally effective in disseminating reminders about CHLB activities, while Instagram and Facebook excel in disseminating visual content that increases the appeal of health education. Mobile applications offer experience-based educational approaches, such as gamification and module-based training. The combination of various mobile media allows for the utilization of each platform's strengths so that health campaigns have a broader and more varied message delivery coverage. Anggraini et al. (2024) emphasize that health education strategies combined with social media can increase public awareness of healthy lifestyles. Furthermore, Situmeang and Lase (2025) show that digital campaigns with structured and easy-to-understand content increase changes in attitudes and CHLB actions at the household level. This pattern shows that multiplatform mobile health campaigns maximize opportunities for behavioral change by combining visual education, scheduled reminders, and social interaction. To understand the differences in effectiveness between platforms, a synthesis of research findings is presented in the following table to compare platform focus, strengths, and impact on CHLB.

**Table 1. Effects of Multiplatform Mobile Health Campaigns on CHLB**

<b>Platform</b>	<b>Main Strength</b>	<b>Mechanism of Influence</b>	<b>Impact on CHLB</b>
WhatsApp / SMS	Scheduled reminder messages	Repeated exposure	Increased compliance with routine CHLB actions
Instagram / Facebook	Visual education and storytelling	Emotional appeal and role modeling	Strengthened positive attitudes and motivation to

Mobile health applications	Gamification and module-based learning	Experience-based learning	practice CHLB Improved internalization and skills in applying CHLB
Educational videos	Demonstration of step-by-step actions	Observation and imitation	Improved quality and accuracy of CHLB practices
Multiplatform campaigns	Combination of strengths from all platforms	Multi-dimensional reinforcement	Comprehensive and sustainable CHLB behavioral change

Although multiplatform mobile health campaigns demonstrate broader reach and stronger behavioral reinforcement, their effectiveness is not uniform across population groups. Platform-based differences interact with contextual factors such as age, digital literacy, and geographical access. For instance, WhatsApp and SMS-based interventions appear more effective in rural and older populations due to their low technological complexity, whereas visually driven platforms such as Instagram and educational videos tend to yield stronger engagement among younger and urban audiences. This suggests a trade-off between accessibility and depth of behavioral engagement, where simpler platforms ensure reach but may offer limited experiential learning.

Moreover, the reliance on digital platforms introduces structural limitations related to information overload, unequal access to smartphones, and varying levels of trust in online health information. In communities with low digital literacy, frequent messaging may lead to message fatigue rather than reinforcement, potentially reducing campaign effectiveness. These findings indicate that the success of mobile health campaigns depends not solely on technological diversity, but on the alignment between platform characteristics, community capacity, and behavioral readiness.

Therefore, multiplatform strategies should not be interpreted as universally superior, but as context-dependent interventions that require careful calibration based on demographic and social conditions. Integrating digital campaigns with offline community engagement remains essential to mitigate digital exclusion and to ensure that CHLB adoption evolves from individual compliance into a shared community norm.

The research by Andriana et al. (2024) reinforces that the use of visual media has a stronger effect on public understanding and motivation in adopting CHLB compared to conventional verbal counseling. This is in line with the findings of Anggreyni et al. (2025), which prove that improvements in CHLB attitudes and behaviors are closely related to the clarity of instructions presented in digital educational media. In addition, Lim's (2025) study shows that the use of application-based educational media significantly improves CHLB in rural communities because the delivery of messages is more consistent and accepted in the context of local needs. This pattern shows that visual,

demonstrative, and interactive educational content is more effective than single textual messages, especially in forming clean and healthy living habits.

The effectiveness of multiplatform mobile health campaigns is also reflected in their ability to reach various demographics and social structures. Wiyane and Mansur (2021) show that multiplatform health campaigns can increase understanding of health protocols during a pandemic because the messages are tailored to the age, information needs, and media preferences of the community. When digital health campaigns are directed at various environments such as households, schools, workplaces, or health facilities, the internalization of CHLB values becomes stronger because individuals receive the same message in various social contexts. Raharyani (2025) emphasizes that health behavior change is more effective when health education is combined with social participation that allows the community to build a sense of ownership of the recommended healthy behaviors.

However, the effectiveness of multiplatform does not mean it is without challenges. Obstacles such as digital information overload, low digital literacy, competition with entertainment content, and the level of public trust in information sources are important factors that influence the success of digital campaigns. In the PRECEDE-PROCEED model, behavioral change requires adequate support from the physical and social environment for health education to be meaningful and encourage action (Malinda, 2024). When digital messages are not followed by environmental support, CHLB changes can stop at increasing knowledge without producing real action. Thus, a mixed strategy of digital campaigns and community-based health interactions remains necessary to maintain consistency in CHLB practices in the long term.

Consistent research findings show that multiplatform mobile health campaigns are most effective because they combine three core components of behavior change: reminders, visualization, and interpersonal communication. WhatsApp, SMS, and app reminders serve as reinforcers of routine CHLB actions, while Instagram, Facebook, and educational videos shape positive attitudes and reinforce the image of healthy behavior as a social norm. Mobile applications provide practice-based learning experiences that strengthen people's skills and confidence in implementing CHLB. When these three mechanisms are used simultaneously, behavioral change develops not only because of instruction but also because of social identification and health habits. This pattern is in line with Doherty et al.'s (2019) explanation that health interventions are effective when packaged as a lifestyle rather than a medical requirement.

Thus, this discussion confirms that multiplatform mobile health campaigns have the potential to improve CHLB comprehensively when accompanied by quality educational content, supportive digital interpersonal communication, and the sustainability of health message delivery. The effectiveness of digital campaigns will be even stronger if the messages are not only informative but also capable of shaping values, motivation, and health habits that are in line with the cultural context of the community.

## **Challenges and Strategic Implications of Strengthening Mobile Health Campaigns in CHLB Sustainability**

The success of CHLB behavior change through mobile health campaigns is not only determined by the quality of digital content, but also by the community's ability to maintain healthy behaviors in the long term. In many community contexts, especially in rural areas, behavioral change can decline if health promotion interventions are temporary or not supported by an environment that facilitates CHLB practices. This is in line with the findings of Fitria et al. (2025), which show that household compliance with CHLB indicators often declines with the loss of social support and intensive health education.

Therefore, digital campaigns need to be designed not only as a means of delivering health information, but also as a system for continuous behavior reinforcement. The complexity of CHLB, which encompasses various social structures, also requires digital campaign strategies that are capable of delivering health messages in various contexts of community activities. Wiyane and Mansur (2021) show that the effectiveness of digital communication increases when health messages are tailored to the information needs of each social group.

This means that HBS messages for the household environment cannot be completely equated with HBS messages for schools or workplaces. Multiplatform mobile campaigns provide space for differentiating health messages based on target characteristics, thereby increasing the chances of internalizing healthy behaviors. Raharyani (2025) emphasizes that health education that is in line with the social context of the community will increase emotional identification and motivation to maintain healthy behaviors.

The results of a narrative review show that the sustainability of CHLB changes requires three core reinforcements: continuous exposure to messages, community-based social support, and the community's ability to implement CHLB independently. Andriana et al. (2024) prove that CHLB promotion supported by community social interaction strengthens the consistency of health behaviors because changes occur collectively, not individually. In the context of digital campaigns, this means that the delivery of health information needs to be combined with two-way communication mechanisms that allow the community to interact with health information sources and share experiences among community members. When community participation occurs, digital campaigns function as a space for sharing healthy behaviors and not just as a medium for distributing information.

In addition to communication aspects, the sustainability of CHLB requires an emphasis on repeated behavioral habits. Anggreyni et al. (2025) assert that changes in CHLB actions increase when the community has the means to directly apply health skills. Mobile health applications that facilitate step-by-step training or gamification become intervention tools that combine education and practical experience, thereby encouraging the formation of stable habits.

Long-term change is more likely to occur when health messages, health practices, and social support go hand in hand through digital interaction.

Thus, this discussion reinforces that the effectiveness of multiplatform mobile health campaigns in changing CHLB is not only in increasing knowledge, but in its success in converting information into motivation, motivation into habits, and habits into a community health culture. These findings answer the research objectives by showing patterns of behavioral change, reinforcing and inhibiting factors, and the implications of digital campaign strategies to strengthen CHLB collectively and sustainably.

## CONCLUSION

This narrative review shows that multiplatform mobile health campaigns have a strategic role in encouraging changes in clean and healthy living behaviors (CHLB) in the community. Mobile-based health campaigns work through mechanisms of consistent message exposure, digital interpersonal communication, and visualization of health practices that facilitate public understanding of CHLB actions. Repeated digital exposure increases awareness and attitudes, while experience-based educational content and social models strengthen the internalization of motivation to adopt healthy behaviors. The effectiveness of multiplatform campaigns is evident not only in increased knowledge but also in behavioral transformation formed through emotional, social, and cognitive reinforcement in various social settings.

The results of the literature synthesis also show that the effectiveness of digital campaigns requires sustainability and community support as prerequisites for achieving long-term CHLB. Campaigns that are able to integrate visual education, digital reminders, and two-way interaction have the strongest impact in strengthening the consistency of healthy behaviors. Therefore, public health intervention strategies need to optimize multiplatform mobile health campaigns by ensuring the sustainability of message delivery, the preparation of content in accordance with the socio-cultural context, and community participation mechanisms as key supporting factors. This approach is expected to strengthen community independence in implementing CHLB in a stable and sustainable manner, so that digital campaigns are not only a medium for health information, but also the foundation of a culture of public health.

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