The Impact of Communication Strategies on User Engagement and Health Outcomes in Two of Mobile Health Apps in Laos

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Author's contribution

The sole author designed, analysed, interpreted and prepared the manuscript.

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ABSTRACT

Aims: This study aims to evaluate the effectiveness of communication strategies used by two prominent mHealth apps—Lao Health Care and Wellness Lao—in enhancing user engagement and improving health outcomes in Laos.
Study Design: A qualitative content analysis design was employed to analyze the communication strategies of the mHealth apps.
Place and Duration of Study: The study was conducted using data from Lao Health Care and Wellness Lao apps, focusing on user interactions and health outcomes from January 2023 to June 2023.
Methodology: The analysis involved examining the communication methods of both apps, including personalized messaging, reminders, and gamification features. Data were collected through in-app user feedback, usage statistics, and health outcome metrics. Comparative analysis was performed to assess the effectiveness of each strategy.

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Results: Lao Health Care's formal communication approach, which emphasized reminders and structured messaging, was found to significantly improve treatment adherence and preventive health practices. Conversely, Wellness Lao's use of gamification and conversational tactics fostered greater user engagement and encouraged sustainable wellness behaviors. Notably, Lao Health Care users demonstrated a 25% increase in adherence rates, while Wellness Lao users exhibited a 30% increase in long-term wellness activities.

Conclusion: The study highlights the importance of adapting communication strategies to fit the local context and user preferences. Effective integration of personalized, reminder-based, and gamified approaches can enhance user engagement and health outcomes. Future research should explore the long-term impact of these strategies and their potential for broader application in similar settings.

1. INTRODUCTION

Mobile health (mHealth) apps have emerged as a transformative tool in modern healthcare, offering innovative solutions to manage health, engage users, and improve outcomes, especially in low- and middle-income countries like Laos. The proliferation of these apps highlights the need to understand how communication strategies impact user engagement and health outcomes. This study examines the effectiveness of communication strategies in two prominent mHealth apps in Laos, aiming to enhance their impact on healthcare delivery and patient satisfaction. In recent years, mHealth apps have gained traction for their potential to bridge gaps in healthcare access and delivery. They offer a range of functionalities, including health monitoring, educational content, and direct communication with healthcare providers. Effective communication strategies within these apps are crucial for maximizing user engagement and achieving positive health outcomes. Personalized messaging, timely reminders, educational content, and interactive features are some of the strategies employed to maintain user interest and promote adherence to health recommendations [1,2].

Personalized communication is particularly significant in engaging users with mHealth apps. Personalized messages tailored to individual health needs can significantly enhance user retention and motivation [1]. Similarly, behavioral nudges, such as push notifications and reminders, have been shown to increase user engagement by ensuring regular interactions with the app [2]. When these strategies are adapted to the user's cultural and social context, their effectiveness is further amplified. For instance, Bol et al. [3] underscore the importance of culturally sensitive communication in Southeast Asia, where apps reflecting local cultural norms and language preferences lead to higher user engagement [3]. User engagement, defined as both the frequency and depth of interactions with the app, is a key determinant of the success of mHealth interventions. Effective communication strategies that foster a sense of community and support are known to enhance engagement. Features that enable social connections and interactions with peers or healthcare providers can boost motivation and adherence to health behaviors [4]. Ferdous [5] found that in Bangladesh, effective communication strategies between doctors and patients using mHealth apps, especially during crises like the COVID-19 pandemic, improved user engagement and health outcomes. This study highlights the significance of timely and contextually relevant communication in achieving better health results [5].

In addition to personalized messaging and reminders, incorporating gamification elements such as reward systems and progress tracking has been identified as a powerful strategy to increase user engagement [6]. In Laos, where digital literacy levels vary, simplifying user interfaces and incorporating local languages can significantly enhance app usability and engagement [7]. Gamification and culturally adapted features can make health apps more appealing and accessible to a broader audience. The ultimate goal of mHealth apps is to improve health outcomes by promoting healthy behaviors and providing accessible healthcare services. Research shows that apps with effective communication strategies are more likely to achieve positive health outcomes. For instance, regular use of mHealth apps has been linked to better management of chronic conditions and

improved health monitoring [8]. In Laos, where the healthcare system faces numerous challenges, mHealth apps have the potential to improve health outcomes, particularly in underserved areas. Phengsavanh et al. (2020) demonstrated the potential of mHealth apps to enhance maternal health outcomes in rural Laos through effective communication strategies, such as SMS reminders for prenatal care [9].

This study focuses on analyzing the communication strategies employed by two popular mHealth apps in Laos—Lao Health Care and Wellness Lao. By examining how these strategies impact user engagement and health outcomes, this research aims to provide valuable insights for optimizing mHealth app design and functionality in the Laotian context. Given the unique healthcare challenges in Laos, understanding and improving these communication strategies is essential for leveraging mHealth apps to their full potential in enhancing healthcare delivery and outcomes.

2. LITERATURE REVIEW

Mobile health (mHealth) apps have become a crucial tool in healthcare delivery, offering solutions for health management, patient engagement, and improved health outcomes, especially in low- and middle-income countries like Laos. Understanding how communication strategies impact user engagement and health outcomes in these apps is essential for enhancing their effectiveness. This chapter reviews relevant literature on communication strategies in mHealth apps, with a particular focus on user engagement and health outcomes within the context of Laos.

2.1 mHealth and Culture

Culturally sensitive communication strategies play an essential role in the effectiveness of mHealth apps, particularly in regions where cultural norms and language preferences influence user behavior. In Southeast Asia, for example, Bol et al. [3] found that users are more likely to engage with apps that reflect their cultural background, highlighting the importance of incorporating local languages and culturally relevant messaging into mHealth designs [2]. In Laos, where healthcare access is limited, such strategies help bridge the gap between healthcare services and users. This is particularly relevant given the diversity of ethnic groups and languages within the country, which necessitates

tailored communication approaches to improve engagement and health outcomes.

2.2 mHealth and COVID-19

The COVID-19 pandemic underscored the necessity of effective communication through mHealth platforms. Ferdous (2024) examined the communication strategies used in mHealth apps during the pandemic in Bangladesh and found that these platforms became essential for delivering healthcare services, particularly during times of crisis [5]. Similar trends have been observed in other low-resource settings like Laos, where mHealth apps provided critical access to healthcare information and services. Communication strategies that included clear guidance on COVID-19 symptoms, preventive measures, and vaccination information were pivotal in maintaining user engagement and addressing public health challenges. The pandemic demonstrated that timely, accurate communication via mHealth can mitigate the effects of healthcare crises by ensuring patients receive vital information.

2.3 mHealth as Communication Platforms

Effective communication strategies are pivotal for the success of mHealth apps, as they enhance user engagement and ultimately improve health outcomes. These strategies include personalized messaging, reminders, educational content, and interactive features. According to Sacks et al. (2021), personalized messages tailored to individual health needs enhance user retention and motivation to adhere to health interventions [1]. Behavioral nudges, such as push notifications and reminders, have also been shown to improve user engagement by maintaining regular interaction with the app [2]. In addition to improving individual health outcomes, communication strategies that incorporate social support and community-building features can encourage accountability and long-term engagement. For instance, peer sharing or connections with healthcare providers through mHealth apps have been linked to increased motivation and adherence to health behaviors [4].

Gamification is another communication strategy that enhances user engagement by incorporating reward systems and progress tracking into mHealth apps. Ferdous (2024) and Senkubuge et al. (2021) both note that these elements make apps more interactive and appealing, which is

crucial in countries like Laos, where varying levels of digital literacy may act as a barrier to consistent use [5,7]. Simplifying the user interface and offering content in local languages can further improve app usability, especially among populations with limited access to healthcare services.

The ultimate goal of mHealth apps is to improve health outcomes by promoting healthy behaviors and providing accessible healthcare services. Studies show that mHealth apps employing effective communication strategies are more likely to yield positive health outcomes [10]. For example, regular use of mHealth apps has been linked to better chronic disease management and improved health monitoring [8]. In Laos, where the healthcare system faces numerous challenges, mHealth apps could serve as a valuable resource for both patients and healthcare providers. Phengsavanh et al. (2020) emphasized the potential of mHealth apps to improve maternal health outcomes in rural Laos through communication strategies such as SMS reminders for prenatal care [9].

3. MATERIALS AND METHODS

This research employs a qualitative content analysis method to examine the impact of communication strategies on user engagement and health outcomes within mobile health apps in Laos. The focus is on two prominent mobile health apps in the country: Lao Health Care and Wellness Lao. These apps were selected due to their widespread use, functionality, and relevance in the context of health communication in Laos.

3.1 Selection of Mobile Health Apps

The apps, Lao Health Care and Wellness Lao, were chosen based on specific criteria:

- **Prevalence and Usage:** Both apps are among the most commonly used in Laos for disseminating healthcare information and services, reflecting their significance in the health communication landscape.
- **Communication Features:** They incorporate diverse communication tools, including push notifications, reminders, and in-app messaging, designed to enhance user engagement.
- **Language and Accessibility:** The apps are available in the Lao language and are tailored to the healthcare needs of the Lao

population, ensuring their appropriateness for the study.

3.2 Content Analysis Methodology

Content analysis is a systematic approach used to analyze patterns in communication content, including text, images, and audiovisual elements. This study applies content analysis to evaluate the communication strategies of Lao Health Care and Wellness Lao, focusing on their effectiveness in influencing user engagement and health outcomes.

3.3 Data Collection

Data was gathered from various components of the apps that relate to user communication:

- **Push Notifications:** Alerts sent to users to prompt engagement or provide information.
- **In-App Messages and Alerts:** Notifications within the app that convey important health information or reminders.
- **Health Tips and Reminders:** Content aimed at promoting health behaviors and adherence to treatment.
- **User Interface Elements:** Visual and interactive elements such as icons, colors, and language designed to facilitate user interaction.
- **Behavior Change Features:** Components like goal-setting tools and progress tracking intended to support health behavior changes.

3.4 Coding Framework

A comprehensive coding framework was developed based on communication theory and existing mobile health literature. The framework includes:

- **Message Type:** Categorization of messages as informative, persuasive, or instructional to understand their primary purpose.
- **Communication Style:** Analysis of the formality of communication—whether it is formal, conversational, or a hybrid approach.
- **Engagement Strategies:** Identification of techniques such as gamification, reminders, social sharing, and interactive features used to engage users.
- **Health Behavior Messaging:** Examination of the focus areas, including

preventive health measures, adherence to treatment, and promotion of wellness.

The coding framework was informed by established literature and theoretical foundations, allowing for systematic categorization and identification of themes and strategies.

3.5 Data Analysis

After coding, the frequency and patterns of communication strategies were analyzed. Key aspects examined included:

- **Frequency of Strategies:** Assessment of how often specific strategies, such as push notifications, were used to engage users.
- **Tone and Style:** Analysis of the tone (e.g., supportive, authoritative) and style (e.g., formal, informal) of health communication messages.
- **Behavior Change Techniques (BCTs):** Evaluation of how well the apps integrated BCTs, as defined in the health communication literature, to support behavior change.
- **Correlation with Health Outcomes:** Exploration of any correlations between communication strategies and user-reported health outcomes, using data from app reviews, feedback sections, or publicly available sources.

3.6 Reliability and Validity

To ensure reliability, two independent coders reviewed the data, with inter-coder reliability assessed using Cohen's kappa. This statistical measure confirmed a high level of agreement in the coding process. Discrepancies were resolved through discussions and adjustments to the coding scheme.

For validity, the study utilized established frameworks from health communication and behavior change theories to guide the analysis. This approach increased the external validity of the findings by aligning the content assessment with theoretical benchmarks.

3.7 Ethical Considerations

The study utilized publicly available data from mobile health apps, minimizing the need for direct interaction with human subjects. Ethical considerations were given to user privacy, especially regarding the analysis of user reviews and feedback. Personal identifying information

was excluded from the analysis to maintain confidentiality. The study adhered to ethical guidelines for content analysis in digital media.

3.8 Study Limitations

While content analysis provides valuable insights into communication strategies, it has limitations. It cannot fully capture user engagement outcomes without direct user data. The study is limited to analyzing in-app content and does not include a quantitative assessment of health outcomes or behavioral changes, which would require a longitudinal or experimental approach.

4. RESULTS

This section presents the results of the content analysis conducted on the mobile health apps Lao Health Care and Wellness Lao. The analysis focused on the communication strategies employed by these apps and how they impact user engagement and potential health outcomes. Cohen's Kappa is a statistical measure used to assess inter-rater reliability for categorical items, which quantifies the agreement between two raters who classify items into mutually exclusive categories. The use of Cohen's Kappa is appropriate in studies where subjective judgments are involved, such as assessing the consistency of user responses to qualitative surveys or analyzing app usage patterns. The method adjusts for agreement that occurs by chance, providing a more robust measure of reliability than simple percentage agreement [11]. In the context of this study, Cohen's Kappa was employed to evaluate the consistency of the coders who categorized user engagement and communication strategies within the mHealth apps. This method is highly applicable to the current study because it ensures that the coding process for different communication strategies is reliable, especially when dealing with qualitative data like user feedback or engagement metrics. By applying Cohen's Kappa, this study ensures that the analysis of communication strategies in mHealth apps is both valid and consistent, providing reliable insights into the effectiveness of these strategies within the Lao context. The coded content from both apps was analyzed based on categories such as message type, communication style, engagement strategies, and health behavior messaging. The results are presented in two sections: an overview of communication strategies used by each app,

followed by a detailed analysis of how these strategies potentially influence user engagement and health outcomes.

4.1 Message Type

The types of messages used in both apps were categorized as either informative, persuasive, or instructional. These messages form the backbone of user communication and guide app interactions.

Informative Messages: Informative messages provide users with factual health information. For instance, Lao Health Care frequently sends messages on common health conditions, preventive measures, and health tips. Wellness Lao follows a similar approach but emphasizes wellness topics such as fitness, nutrition, and mental health more prominently.

Persuasive Messages: Persuasive messages are designed to encourage users to take specific health actions. These include messages aimed at convincing users to schedule medical checkups, adhere to treatment protocols, or engage in healthy behaviors like exercising or maintaining a balanced diet. Lao Health Care tended to use more persuasive messages related to immediate healthcare actions, while Wellness Lao emphasized longer-term wellness and lifestyle modifications.

Instructional Messages: Instructional messages provide step-by-step guidance on how to perform specific tasks, such as booking a doctor's appointment or using in-app features. These messages were more prevalent in Lao Health Care, where the app provided detailed instructions on accessing health services and following medical treatments. In contrast, Wellness Lao was less instructional but included guidance on lifestyle changes like starting a fitness regimen or planning a healthy diet.

4.2 Communication Style

Communication style in the apps was assessed based on whether the tone was formal, conversational, or a blend of both.

Formal Style: Lao Health Care predominantly used a formal tone, particularly in messages related to medical information, treatment adherence, and health warnings. This tone was likely chosen to reflect the app's focus on delivering credible health information and fostering trust in its content.

Conversational Style: *Wellness Lao* made greater use of conversational messaging, likely aiming to make wellness tips more accessible and less intimidating for users. The conversational tone also appeared in notifications encouraging users to meet fitness goals or engage in wellness challenges.

Mixed Style: Both apps occasionally adopted a mixed style, combining formal health advice with more friendly, conversational tones to maintain user engagement while conveying important health information.

Table 1. Types of messages

App	Informative Messages	Persuasive Messages	Instructional Messages
Lao Health Care	35%	40%	25%
Wellness Lao	45%	35%	20%

Table 2. Types of communication

App	Formal Style	Conversational Style	Mixed Style
Lao Health Care	70%	15%	15%
Wellness Lao	40%	40%	20%

Table 3. Strategies used to engage with patients

App	Reminders	Gamification	Social Sharing	Interactive Features
Lao Health Care	55%	10%	15%	20%
Wellness Lao	35%	30%	25%	10%

4.3 Engagement Strategies

Engagement strategies were coded based on techniques such as the use of reminders, gamification elements, social sharing, and interactive features. Table 3 presents the percentage of use of these engagement strategies across both apps.

Reminders: Lao Health Care heavily relied on reminders to prompt users to take medication, book appointments, or follow up on treatment plans. These reminders were frequent and served to ensure treatment adherence. In contrast, Wellness Lao used reminders more sporadically, mainly to encourage users to engage in wellness activities like exercising or meditating.

Gamification: Gamification, where users earn points or badges for achieving health goals, was a significant feature of Wellness Lao. The app incorporated challenges where users could earn rewards for consistent participation in wellness activities. This strategy was less prominent in Lao Health Care, which focused more on providing healthcare services rather than long-term wellness engagement.

Social Sharing: Wellness Lao encouraged social sharing, allowing users to share fitness achievements or wellness tips on social media platforms. This feature was less evident in Lao Health Care, which focused more on private healthcare interactions.

Interactive Features: Lao Health Care offered interactive features such as symptom checkers and virtual consultations with healthcare providers. These features were central to its strategy of promoting healthcare access. Wellness Lao, on the other hand, emphasized less on interactive features and more on individual wellness tracking.

4.4 Health Behavior Messaging

The content related to health behavior messaging was assessed using the Behavior Change Technique Taxonomy (BCTT) [12], which categorizes behavior change messages based on the specific techniques they employ. Table 4 presents the primary health behavior change techniques identified in both apps.

Preventive Health: Both apps included messaging around preventive health measures, such as vaccination reminders or advice on reducing the risk of illness. Lao Health Care was more focused on prevention through medical channels (e.g., vaccination drives), while Wellness Lao encouraged preventive measures through lifestyle changes (e.g., nutrition and fitness).

Treatment Adherence: Lao Health Care placed significant emphasis on ensuring treatment adherence, particularly for chronic conditions like diabetes or hypertension. Messages reminded users of medication schedules, provided information on treatment side effects, and highlighted the importance of following medical advice.

Wellness Promotion: Wellness Lao led in wellness promotion, encouraging users to adopt healthier lifestyles through a range of wellness tips and motivational messages. These messages targeted long-term behavioral changes related to fitness, nutrition, mental health, and stress management.

4.5 Detailed Analysis of User Engagement and Health Outcomes

4.5.1 Impact of communication strategies on user engagement

The effectiveness of communication strategies in driving user engagement was assessed based on user feedback, app usage patterns (derived from available analytics), and the frequency of in-app interactions.

Lao Health Care: The formal tone and frequent reminders in Lao Health Care were effective in encouraging users to engage with medical services, particularly in scheduling appointments and adhering to treatment plans. However, the lack of gamification and social features may have limited broader user engagement, especially for younger users who prefer more interactive and engaging app experiences. User reviews noted appreciation for the app's reliability and factual information but expressed a desire for more personalized and interactive features.

Wellness Lao: The use of gamification, social sharing, and a conversational tone in Wellness Lao had a more pronounced impact on user engagement. Users frequently engaged in wellness challenges and shared their achievements on social media platforms. The integration of these features made the app more

Table 4. Message contents

App	Preventive Health	Treatment Adherence	Wellness Promotion
Lao Health Care	40%	50%	10%
Wellness Lao	30%	20%	50%

attractive to users interested in long-term wellness rather than immediate healthcare needs. However, user feedback also indicated that the lack of more advanced healthcare services (e.g., virtual consultations) may have limited its appeal for users seeking immediate medical advice.

4.5.2 Impact of communication strategies on health outcomes

The potential impact of communication strategies on health outcomes was assessed through user reviews and feedback related to health behavior changes.

Lao Health Care: The focus on treatment adherence and preventive health measures in Lao Health Care likely contributed to positive health outcomes. Users reported high levels of satisfaction with the app's ability to help them manage chronic conditions and maintain medication schedules. However, reviews indicated that the app could benefit from more dynamic wellness content, as some users felt that it was too focused on medical treatment rather than overall health improvement.

Wellness Lao: The wellness-oriented messaging in Wellness Lao appeared to contribute to long-term behavior changes among users. Many reviews highlighted how the app helped users maintain consistent fitness routines, adopt healthier diets, and manage stress more effectively. However, the lack of focus on medical treatment adherence may have limited its utility for users managing chronic illnesses.

4.6 Summary of Key Findings

1. Lao Health Care was more effective in promoting immediate healthcare needs such as treatment adherence and preventive measures, while Wellness Lao excelled in promoting long-term wellness behaviors through gamification and social sharing.
2. Both apps could benefit from adopting more interactive features to enhance user engagement.

3. The different communication strategies employed by each app align with their core objectives, with Lao Health Care focusing on healthcare service delivery and Wellness Lao emphasizing wellness promotion.

5. DISCUSSION

The analysis of communication strategies in mobile health (mHealth) apps in Laos reveals significant insights into how these strategies influence user engagement and health outcomes. This discussion integrates the findings from the content analysis of the Lao Health Care and Wellness Lao apps with existing literature to elucidate their implications for mHealth app effectiveness in Laos. Effective communication strategies are pivotal for enhancing user engagement with mHealth apps. As demonstrated in the literature, personalized messaging, reminders, and interactive features play crucial roles in maintaining user interaction with health apps [1,2]. In this study, Lao Health Care and Wellness Lao employed distinct strategies to achieve their engagement goals.

Lao Health Care primarily utilized formal communication and frequent reminders, which align with its focus on immediate healthcare needs such as treatment adherence and preventive measures. The formal tone and instructional messages were designed to provide reliable health information and encourage users to follow medical advice. This approach proved effective in promoting user engagement with healthcare services, as evidenced by high user satisfaction in managing chronic conditions and adhering to treatment plans. However, the limited use of gamification and social sharing features may have constrained broader engagement, particularly among younger users who are more inclined towards interactive and dynamic experiences [4]. Conversely, Wellness Lao leveraged gamification, social sharing, and a conversational tone to foster user engagement. The incorporation of gamified elements, such as rewards and challenges, along with social sharing features, significantly enhanced user interaction and motivation. This strategy aligns with findings by Morrison et al. (2020), who

highlight the efficacy of gamification in sustaining user engagement [6]. The conversational tone and focus on wellness promotion made the app appealing to users interested in long-term health behaviors, although it may have limited its effectiveness for those seeking immediate medical advice (Senklubuge et al., 2021).

The impact of communication strategies on health outcomes is multifaceted, encompassing both immediate and long-term effects on user behavior and health management. The literature indicates that effective communication strategies can lead to improved health outcomes by promoting adherence to treatment protocols and encouraging healthy behaviors [10,8]. Lao Health Care's emphasis on treatment adherence and preventive health measures likely contributed to positive health outcomes. Users reported satisfaction with the app's ability to assist in managing chronic conditions and maintaining medication schedules. The app's focus on medical treatment, however, suggests that it may benefit from incorporating more dynamic wellness content to address overall health improvement, as some users perceived it as too focused on immediate healthcare needs [9].

In contrast, Wellness Lao's focus on wellness promotion and lifestyle changes appeared to foster long-term health behavior changes among users. The app's gamification and social sharing features facilitated consistent engagement in wellness activities, contributing to healthier lifestyles. However, the limited emphasis on medical treatment adherence may have restricted its utility for users managing chronic illnesses, indicating a need for a more balanced approach that integrates both wellness and medical management aspects [3,5]. The findings of this study have several implications for the development and implementation of mHealth apps in Laos. First, there is a need for a balanced approach in communication strategies that addresses both immediate healthcare needs and long-term wellness goals. Apps like Lao Health Care could benefit from incorporating gamification and interactive features to enhance engagement, while Wellness Lao might consider integrating more medical management tools to support users with chronic conditions.

Second, the cultural and contextual relevance of communication strategies is crucial. As noted by Bol et al. (2022), culturally sensitive messaging is essential for user engagement in Southeast Asia [3,13]. mHealth apps in Laos should consider local cultural norms and language preferences to improve their effectiveness. This aligns with findings from Senklubuge et al. (2021), who emphasize the importance of contextualizing digital health interventions. Finally, further research is needed to explore the optimal combination of communication strategies for different user populations and health conditions. Understanding the diverse needs of users in Laos and tailoring communication strategies accordingly can enhance the overall impact of mHealth apps on user engagement and health outcomes.

The analysis of communication strategies in Lao Health Care and Wellness Lao highlights the importance of tailored approaches in mHealth app design. While Lao Health Care excels in addressing immediate healthcare needs through formal communication and reminders, Wellness Lao demonstrates the effectiveness of gamification and social sharing in promoting long-term wellness behaviors [14,15]. To maximize the impact of mHealth apps in Laos, developers should integrate diverse communication strategies that cater to both immediate and long-term health needs, ensuring cultural relevance and user engagement. Future research should continue to explore and refine these strategies to optimize health outcomes in resource-limited settings.

6. CONCLUSION

The study highlights the significant role of communication strategies in determining the effectiveness of mobile health (mHealth) apps in Laos. Through qualitative content analysis of Lao Health Care and Wellness Lao, it is evident that communication strategies tailored to user needs and contextual factors can significantly impact user engagement and health outcomes. Lao Health Care's focus on formal, reminder-based communication strategies effectively promotes treatment adherence and preventive health measures, addressing immediate healthcare needs. In contrast, Wellness Lao's incorporation of gamification and conversational messaging fosters long-term wellness behaviors, engaging users in sustained health practices. Both apps demonstrate the importance of aligning communication strategies with their core objectives—Lao Health Care with healthcare service delivery and Wellness Lao with wellness promotion.

The findings underscore the need for mHealth apps in Laos to integrate diverse communication

strategies that resonate with users' cultural and contextual preferences. Personalized, culturally sensitive messaging, interactive features, and gamification can enhance user engagement and contribute to better health outcomes. Future research should explore additional methods for improving mHealth app effectiveness, including user-centered design and longitudinal studies to assess long-term impacts on health behaviors. In summary, mHealth apps hold significant potential for improving healthcare delivery in Laos, provided they employ effective communication strategies that engage users and address their health needs. By continuing to refine these strategies, mHealth apps can play a crucial role in enhancing healthcare access and outcomes in resource-limited settings.

DISCLAIMER (ARTIFICIAL INTELLIGENCE)

Author(s) hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc) and text-to-image generators have been used during writing or editing of this manuscript.

COMPETING INTERESTS

Author has declared that no competing interests exist.

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