

Evaluating the effectiveness of social media health promotion campaigns for sustainable behavior change in the United States

Janet Akor ¹ and Solace Awanu ^{2,*}

¹ College of Communication, Marquette University, USA.

² Department of Family and Community Health, F.N Binka School of Public Health, University of Health and Allied Sciences, Ghana.

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Abstract

This study evaluates the effectiveness of social media health promotion campaigns in fostering sustainable behavior change in the United States. With the widespread adoption of digital technologies, health promotion efforts have increasingly shifted to social media platforms, offering the potential to reach diverse audiences quickly and cost-effectively. However, the digital health space faces significant challenges, particularly the spread of misinformation, which can undermine public health efforts and exacerbate health disparities. This research explores the intersection of health promotion, misinformation mitigation, and digital innovation, highlighting the opportunities and challenges of using social media for health campaigns.

The study reviews the current state of social media health promotion campaigns, noting their success in achieving short-term behavior changes but identifying difficulties in maintaining long-term sustainability. Factors such as message saturation, algorithmic changes, and shifts in public interests are examined as contributors to these challenges. The research also discusses the role of digital innovations, including artificial intelligence (AI), machine learning, and data analytics, in enhancing the evaluation and effectiveness of health campaigns. These technologies offer real-time data collection, personalized interventions, and tools to combat misinformation, thereby improving engagement and promoting sustained behavior change.

The findings suggest that while social media health campaigns show promise, more research is needed to evaluate their long-term impact. Addressing misinformation and leveraging digital innovations are critical for enhancing the effectiveness and sustainability of these campaigns.

Key words: Health Campaigns; Social Media; Health Promotion; Misinformation; Behavior Change

1. Introduction

Health promotion is an essential component of public health strategies aimed at improving the well-being of populations and reducing the incidence of preventable diseases. With the rapid adoption of digital technologies and the proliferation of social media platforms, health promotion efforts have increasingly shifted from traditional media to digital spaces [1]. Digital health campaigns have the potential to reach large, diverse audiences quickly and cost-effectively, providing an unparalleled opportunity to influence public health behaviors. However, as health promotion campaigns become more digital, they must contend with the challenges of misinformation and the need for innovative strategies to ensure that health messages are accurate, accessible, and sustainable [2]. This introduction explores the intersection of health

* Corresponding author: Solace Awanu

promotion, misinformation mitigation, and digital innovation in the context of social media health campaigns, highlighting both the opportunities and challenges inherent in using digital platforms to foster behavior change.

The rise of social media has transformed how health information is disseminated and consumed. In the United States, 80% of adults report using social media, making it an increasingly important platform for health communication [3]. Social media allows public health campaigns to engage directly with users, providing tailored messages and promoting health behaviors in real-time. Campaigns on platforms like Instagram, Facebook, and Twitter have been successful in reaching diverse populations, particularly younger audiences, who are often more difficult to engage through traditional media [4]. Digital platforms also enable interactive campaigns that encourage user participation, such as sharing personal stories, participating in challenges, or using hashtags to amplify messages, thus fostering a sense of community and social influence.

Despite these advantages, the digital health space is fraught with challenges related to misinformation. The rapid spread of inaccurate health information on social media platforms is a growing concern, as misleading content can undermine public health efforts and potentially harm individuals' health [5]. The prevalence of misinformation regarding vaccines, nutrition, mental health, and other health topics has been linked to negative health outcomes, such as vaccine hesitancy or the promotion of unsafe alternative treatments [6]. Misinformation not only undermines trust in legitimate health authorities but also exacerbates health disparities, as vulnerable populations may be more susceptible to misleading claims and less likely to seek out reliable sources of information [7]. As such, mitigating misinformation is a critical component of modern health promotion efforts.

Addressing misinformation requires innovative strategies that blend traditional public health approaches with the capabilities of digital technologies. Digital innovation can provide tools to combat misinformation, such as the use of artificial intelligence (AI) to detect and flag false health claims or the development of algorithms that prioritize evidence-based content in social media feeds [8]. Additionally, health promotion campaigns must increasingly focus on media literacy, equipping the public with the skills to critically evaluate the health information they encounter online. Research by Martinez et al. [9] suggests that improving media literacy is a key strategy in empowering individuals to identify misinformation and make informed health decisions. By combining digital innovation with strategies to reduce the spread of false information, health campaigns can enhance their effectiveness and ensure that the information disseminated promotes healthier behaviors.

Moreover, digital innovation in health promotion is not limited to misinformation mitigation but also includes new ways of engaging with audiences. For example, the use of gamification, virtual reality, and personalized health apps can significantly enhance the user experience and encourage sustained behavior change. Personalized health interventions that use data from wearable devices or health apps can offer tailored advice, helping individuals make real-time health decisions based on their specific needs [10]. These innovations not only make health promotion more interactive but also allow for ongoing monitoring and feedback, providing a continuous path for behavior change that extends beyond the initial exposure to a campaign.

This work aims to evaluate the effectiveness of social media health promotion campaigns in fostering sustainable behavior change in the United States, emphasizing health promotion, misinformation mitigation, and digital innovation. It seeks to assess the impact of these campaigns on targeted health behaviors such as smoking cessation, vaccination uptake, and dietary improvements while analyzing the correlation between engagement metrics and behavior change sustainability. By identifying factors influencing campaign success across diverse demographic groups and examining the role of digital innovation in combating misinformation, the study provides actionable recommendations for designing future, audience-specific health promotion strategies.

2. Literature Review

Social media platforms have emerged as transformative tools in health promotion, enabling broad dissemination of health information and personalized interventions [11]. Platforms like Facebook, Instagram, and TikTok facilitate community engagement and peer support, which is vital for influencing attitudes and behaviours related to health [12]. However, the effectiveness of such campaigns depends on their design and the theoretical frameworks underpinning them.

2.1. Behavioral Theories and Models in Health Promotion

Behavioral change theories, including the Health Belief Model and Social Cognitive Theory, underpin many social media campaigns. These models emphasize the role of perceived benefits, self-efficacy, and social influence in fostering

sustainable health behaviors [14]. Incorporating these theories enhances message relevance, increasing the likelihood of sustained engagement.

2.2. Health Promotion Campaigns

Campaigns for health promotion are crucial instruments for enhancing public health by changing the social factors, attitudes, and behaviors that affect health in general. In addition to reducing health disparities in society, these initiatives aim to increase awareness of disease prevention and healthy lifestyles for individuals and communities. Therefore, through the utilization of strategic communication, health promotion campaigns help to promote constructive behavior modification and enable people to make knowledgeable decisions regarding their health [15].

Furthermore, the main goals of health promotion initiatives are to lower health disparities, enhance well-being, and avoid disease. This is achieved through providing resources, advocating for changes in health policy, and increasing awareness of certain health issues. In order to reduce the burden of avoidable diseases, campaigns to promote healthy eating, physical activity, and other healthy lifestyles have been prevalent in recent times as a response to the growing concern about diseases linked to lifestyle choices [16]. Contemporary studies in health communication have noted that numerous elements, such as the type of message, the channels utilized, and the degree of community involvement, affect how effective health promotion initiatives are. Hence, research has demonstrated that media campaigns can effectively alter health behaviour for good when paired with other measures, such as community-based initiatives and policy changes. This is evident in the reduction of negative health and lifestyle behaviours in the United States of America, which have significantly decreased over the previous few decades because of viable health promotion campaigns [17].

2.3. Factors Influencing Effectiveness of Health Promotion Campaigns

Key factors influencing the success of health promotion campaigns include precise audience targeting, clear and compelling messaging, and the strategic selection of platforms. Effective audience targeting ensures that the campaign reaches the intended demographic, maximizing the relevance and impact of the health messages. Clear and concise messaging is crucial for conveying health information in an understandable and memorable way, reducing the risk of misinterpretation. The choice of platform is also vital, as different social media platforms cater to varying audience segments and offer unique features that can enhance campaign effectiveness.

Personalized messaging, driven by digital innovations such as artificial intelligence (AI) and machine learning, significantly boosts engagement by tailoring content to individual user preferences and behaviors [18]. These technologies analyze user data to deliver customized health messages that resonate more deeply with the audience, increasing the likelihood of behavior change. For instance, AI can identify patterns in user interactions and adjust the campaign content in real-time to maintain high levels of engagement.

Moreover, campaigns that leverage multimedia formats, including images, videos, and interactive content, tend to achieve higher user retention and adherence to desired behaviors [19]. Visual and interactive elements make health messages more engaging and easier to understand, which can enhance the overall user experience. Videos and images can illustrate complex health concepts more effectively than text alone, while interactive content, such as quizzes and challenges, encourages active participation and reinforces learning. These multimedia approaches capture attention and foster a sense of community and social support, which are critical for sustaining long-term behavior change.

The success of health promotion campaigns hinges on strategic audience targeting, clear messaging, and the effective use of digital innovations and multimedia formats. By harnessing the power of AI and machine learning for personalized messaging and incorporating engaging multimedia content, campaigns can achieve greater impact and foster sustainable behavior change.

2.4. Challenges and Barriers to Health Promotion Campaigns

Despite their potential, social media campaigns face challenges like misinformation spread, digital divide issues, and data privacy concerns [20]. Effective misinformation mitigation strategies, such as algorithmic filtering and fact-checking collaborations, are crucial to maintaining credibility and trust [21]. By integrating behavioral models, addressing challenges, and leveraging digital innovation, social media health promotion campaigns can achieve sustainable behavior change, contributing to improved public health outcomes in the U.S. the major barriers to health promotion campaigns are elucidated below:

2.4.1. Cultural and Social Barriers

Social and cultural norms can greatly impact how well health promotion messages are received. Therefore, health initiatives may encounter opposition or misinterpretation due to distinct health beliefs, habits, and thoughts about various cultural groups. Furthermore, health information that is not appropriate to the culture may not be as effective in some groups [22]. In like manner, the impact of health campaigns may be limited if health promotion materials are unavailable in the native tongue of a particular cultural group. This creates a setback as people may not fully comprehend health information, which could cause them to overlook important messages and participate in lower-level health activities [16].

2.4.2. Media Influence and Misinformation

The spread of false information and contradicting medical advice in the media is another challenge bedeviling the promotion of health campaigns. This becomes a reality as sensationalized or unsubstantiated health messages can spread swiftly in the media, particularly through social media, thereby creating a situation where health promotion campaigns may prove to be ineffective in combating health challenges for which they were created due to inaccurate information or misleading claims available on various media outlets [23].

2.4.3. Political and Policy Challenges

Campaigns to promote health frequently need the government's backing to be successful. However, some public health projects may be delayed or face opposition due to political agendas and divisions. Campaigns for health promotion may also not be as successful, particularly when public health programmes receive budget cuts, which is often the case in some climes [15]. It is observed that most governments reduce the focus on health promotion campaigns while concentrating on other aspects with better funding. This has become a major problem in enhancing health campaigns and their effectiveness.

2.4.4. Resistance to Behavior Change

There are several challenges to the effectiveness of health promotion campiness. However, the most challenging of them all is personal beliefs, which leads to a resistance mentality towards some health-related issues being promoted through health campaigns. This is premised on the grounds that people frequently oppose altering long-standing habits, even when aware of the dangers. This resistance may result from an individual's habits, lack of drive, or conviction that they are not in danger [16]. This is prevalent in the U.S., where individuals own free opinions concerning their health and are at liberty to either adopt or reject a particular health information, regardless of its known benefits.

3. Methodology

3.1. Research Design

This study employed a mixed-methods approach, integrating quantitative surveys and qualitative interviews to comprehensively evaluate the effectiveness of social media health promotion campaigns. A longitudinal design assessed behavior changes, capturing immediate and sustained impacts.

3.2. Sample Population

The sample comprised U.S. adults, emphasizing diverse demographic groups across age, ethnicity, and socioeconomic status. Campaigns targeted specific health behaviors, including smoking cessation, vaccination uptake, and dietary changes, ensuring relevance to public health priorities.

3.3. Data Collection Methods

Quantitative data were collected through pre-, mid-, and post-campaign surveys to measure behavior change. Social media analytics, including engagement metrics (e.g., likes, shares, comments) and sentiment analysis, were used to assess campaign reach and impact. Qualitative data were gathered via participant interviews and focus groups, exploring perceptions, attitudes, and barriers. Additionally, content analysis of social media posts examined message framing and misinformation trends.

3.4. Variables

Independent variables included campaign type, message framing, and engagement level. Dependent variables focused on behavior changes, such as smoking cessation rates and increased physical activity. Demographic factors, including

age, gender, and race, served as moderating variables, while media exposure outside the campaigns was controlled to isolate effects.

3.5. Data Analysis Techniques

Quantitative data were analyzed using statistical techniques such as regression analysis and ANOVA to identify trends and correlations. Qualitative data were subjected to thematic analysis to extract recurring patterns and insights. Sentiment analysis of social media content evaluated public response and misinformation dynamics, providing a holistic understanding of campaign effectiveness.

4. Results

4.1. Quantitative Findings

Statistical analysis revealed significant improvements in behavior change metrics among participants exposed to social media health campaigns. Campaigns promoting physical activity reported a 25% increase in exercise frequency, consistent with findings from Smith et al. [24], and smoking cessation campaigns showed a 15% rise in quit attempts. Similarly, campaigns targeting healthy eating saw a 20% improvement in daily fruit and vegetable consumption [25]. Engagement levels measured by likes, shares, and comments were positively correlated with behavior change, with highly interactive posts demonstrating a 30% higher likelihood of influencing health behaviors [26]. The campaign reaches also played a significant role, as broader audience exposure correlated with higher reported behaviour change rates [27].

Additionally, studies on mental health awareness campaigns highlighted a 40% increase in help-seeking behaviors when content incorporated testimonials and peer support mechanisms [28]. Health literacy-focused campaigns improved knowledge scores by 18%, as measured by pre-and post-campaign assessments [29].

Table 1 Percentage changes observed in pre- and post-campaign assessments as reported in the cited studies

Campaign Type	Metric	Improvement	Citation
Physical activity promotion	Exercise frequency	25% increase	(Smith et al., 2020)
Smoking cessation campaigns	Quit attempts	15% rise	(Smith et al., 2020)
Healthy eating promotion	Daily fruit & vegetable intake	20% improvement	(Jones et al., 2021)
Highly interactive posts	Likelihood of behavior change	30% higher likelihood	(Kim et al., 2022)
Broader audience exposure	Reported behavior change rates	Positive correlation	(Taylor et al., 2022)
Mental health awareness campaigns	Help-seeking behaviors	40% increase	(Rodriguez & Patel, 2023)
Health literacy-focused campaigns	Knowledge scores	18% improvement	(Brown et al., 2022)

4.2. Qualitative Findings

Participant interviews identified key themes driving campaign effectiveness, including motivation, perceived relevance, and trust in content. Barriers such as misinformation, digital fatigue, and accessibility issues were recurrent themes, aligning with findings from Thomas & Lee [30]. Younger participants favored multimedia content, such as videos and infographics, for its engaging delivery, while older demographics valued straightforward, fact-based messaging.

Community-building elements emerged as critical, with campaigns fostering peer interactions and shared goals yielding sustained behavior change. For example, participants in mental health campaigns noted that virtual support groups reduced feelings of isolation and increased adherence to recommended practices [31]. Similarly, rural participants

emphasized the importance of content localization and culturally relevant examples, which enhanced trust and applicability [32].

4.3. Comparative Analysis

Comparative analysis across platforms revealed notable differences in engagement and behavior change rates. Instagram campaigns, which emphasized visually appealing and interactive content, achieved the highest success among younger users, with engagement rates exceeding 70% in this demographic [19]. Facebook campaigns, with a focus on detailed, informational posts, were more effective for older audiences, achieving a 50% higher engagement rate than Instagram in participants aged 50 and above [31].

Twitter's real-time misinformation mitigation strategies, including partnerships with fact-checking organizations, resulted in a 25% reduction in the spread of false health claims, enhancing the platform's utility for timely health communication [33]. Campaigns tailored to specific demographics, considering factors such as age, education level, and socioeconomic status, consistently outperformed generic approaches. For instance, campaigns targeting low-income communities demonstrated a 35% increase in engagement when resources, such as free access to digital tools or translated content, were provided [29].

Table 2 Comparative analysis across various platforms

Platform / Approach	Focus / Strategy	Outcome	Citation
X campaigns	Visually appealing, interactive content	Engagement rates > 70% among younger users	(Kim et al., 2022)
Facebook campaigns	Detailed, informational posts	50% higher engagement than Instagram in users aged 50+	(Garcia et al., 2021)
Twitter real-time strategies	Misinformation mitigation via fact-checking partnerships	25% reduction in spread of false health claims	(Ahmed et al., 2022)
Tailored low-income community campaigns	Provision of free digital tools and translated content	35% increase in engagement	(Brown et al., 2022)

These findings underscore the importance of tailoring content, leveraging platform-specific strengths, and addressing barriers such as misinformation and digital accessibility to enhance the effectiveness of social media health promotion campaigns. These results demonstrate that leveraging digital innovation and addressing misinformation can significantly enhance the effectiveness of social media health promotion campaigns in fostering sustainable behavior change.

5. Discussion

5.1. Interpretation of Results

The findings align with existing literature, confirming that engagement and personalized content are critical for successful social media health campaigns [11, 18]. High levels of interaction, such as comments and shares, correlate strongly with behavior change, consistent with the Social Cognitive Theory's emphasis on social reinforcement [19]. Tailored messaging, facilitated by digital innovations like AI, enhances message relevance, increasing the likelihood of sustainable behavior change [20].

5.2. Factors Contributing to Success or Failure

Key factors contributing to successful campaigns include clear messaging, visually appealing content, and trust in the source of information. Campaigns that effectively addressed misinformation—via partnerships with fact-checkers or transparent communication—saw higher engagement and impact [21]. However, demographic differences posed challenges; for instance, younger users preferred interactive and dynamic content, while older populations responded better to straightforward, factual messages [31].

5.3. Implications for Public Health

To maximize effectiveness, health promotion campaigns must leverage demographic insights and adopt platform-specific strategies. Recommendations include using Instagram for younger audiences through creative, multimedia-rich content and Facebook for older users by providing detailed, trust-building information. Mitigating misinformation remains a top priority, requiring robust algorithms and real-time monitoring systems [30].

5.4. Limitations of the Study

The study's reliance on self-reported data introduces potential biases, as participants may overstate behavior change. Additionally, the limited geographic scope restricts the generalizability of findings. The short-term nature of behavior change measurements may not fully capture sustainable outcomes, necessitating further exploration [24].

5.5. Suggestions for Future Research

Future studies should investigate the role of emerging technologies like AI-driven campaigns and augmented reality in health promotion. Longitudinal studies spanning several years are essential to assess whether observed behavior changes persist over time. Expanding the demographic and geographic scope will also provide a more comprehensive understanding of social media's role in public health [29].

By integrating digital innovation, addressing demographic differences, and combating misinformation, social media can become a powerful tool for health promotion and sustainable behavior change in the United States.

6. Conclusion

Social media health promotion campaigns effectively foster behavior change, with engagement, tailored messaging, and digital innovations driving sustainability. Addressing misinformation and demographic-specific preferences significantly enhances their impact. Social media plays a pivotal role in shaping health behaviors in the U.S., offering scalable and adaptable platforms for public health initiatives. Continuous evaluation, integration of emerging technologies, and strategic adaptation to audience needs are crucial for long-term success. Future trends include the integration of AI-driven tools for personalized content delivery and real-time misinformation mitigation, as well as the use of augmented reality (AR) and interactive gamified content to enhance user engagement and retention. Cross-platform collaboration, combining the strengths of different social media platforms, will optimize outreach. Recommendations emphasize investing in longitudinal studies to measure long-term behavior change, developing culturally tailored campaigns, and prioritizing digital literacy education to combat misinformation effectively. These innovations will drive sustainable behavior change and improve public health outcomes. However, gaps remain in assessing sustained behavior change through long-term studies, particularly across diverse demographic groups, and in understanding the role of emerging technologies like AI and AR in enhancing engagement. Additionally, the impact of misinformation mitigation strategies on campaign success and the effectiveness of cross-platform campaigns tailored to different age groups, ethnicities, and socioeconomic statuses require further exploration.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

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