



The Social Health Marketing Mix Model on Social Media and Its Influence on Tuberculosis Case Detection Behaviour

***Ence Ihlasuyandi**

<https://orcid.org/0000-0002-6298-1188>

*Corresponding author: ihlasuyandi@student.uns.ac.id

Endang Sutisna Sulaeman

<https://orcid.org/0000-0002-3009-9529>

Eti Poncorini Pamungkasari

<https://orcid.org/0000-0002-4197-3226>

Emi Widiyanti

<https://orcid.org/0000-0001-8175-1292>

Universitas Sebelas Maret, Indonesia

Abstract

Background: Tuberculosis (TB) remains a significant health burden in Indonesia. Despite early detection initiatives, stigma, misinformation, and access barriers persist. Social media presents a promising platform for health promotion, yet its use within a structured social marketing framework for TB remains limited.

Objective of the Study: To explore how the health social marketing mix, such as product, price, place, and promotion, on social media influenced TB case detection behaviour, particularly among young adults.

Methodology: This qualitative study employed semi-structured interviews with eight Instagram followers of TB-related health accounts, and a focus group discussion (FGD) with four health communication professionals selected using a purposive sampling technique. Thematic analysis was applied, guided by the social marketing mix and the Theory of Planned Behaviour.

Results: Four key themes emerged based on the marketing mix (4 Ps) framework, highlighting factors that influenced TB communication and engagement. A Successful product involved emotional and informative content that improved motivation. Price created significant access barriers due to misperceptions about treatment costs and limited internet access. The place relied heavily on social media for broad but uneven access. Finally, Promotion success was driven by utilising culturally resonant formats, such as edutainment, to enhance message receptivity.

Unique Contribution: The study offers a contextualised social health marketing mix model that links digital communication with behavioural intent in TB detection, addressing psychological and structural barriers.

Conclusion: Social media-based health marketing, when aligned with behavioural science and audience needs, can positively influence TB detection behaviours. Integrating this approach into public health campaigns may enhance outreach and facilitate early diagnosis, particularly among digitally active populations.

Key Recommendation: Public health campaigns should utilise a structured social marketing mix on social media, including engaging content, clear messaging about free treatment, broad platform utilisation, and culturally resonant promotion, to enhance TB case detection. Aligning these efforts with behavioural science and community support will strengthen early diagnosis.

Keywords: detection behaviour, health communication, social marketing mix, social media campaign, tuberculosis case detection

Introduction

Tuberculosis (TB) is the world's second deadliest infectious disease after COVID-19 and the 13th leading cause of death globally. Southeast Asia bears the highest burden, with Indonesia ranking second only to India in TB cases (WHO, 2022). To address this situation, the Indonesian government follows WHO strategies emphasising early detection through systematic screening of the general population, close contacts, and high-risk groups such as people with HIV, diabetes, children, and the elderly. Health promotion also engages community leaders and influencers to spread TB information via mass and digital media. Social media has become a cost-effective tool for health communication, enabling targeted outreach based on user demographics and behaviour. Platforms like Instagram and WhatsApp facilitate the delivery of tailored content (e.g., videos, infographics, and chatbots) adapted to specific cultural contexts (Al-Ansi & Hazaimah, 2023). Collaborations with influencers improve credibility, while strategies such as myth-busting, real-time feedback, and campaign evaluation enhance effectiveness.

Social marketing, which applies commercial marketing principles for public benefit, integrates behavioural science with communication strategies to promote knowledge, reshape attitudes, and encourage healthy practices. It has effectively addressed various health issues (Paek & Hove, 2023). However, research on its application in TB detection is limited, especially in low- and middle-income countries. Despite national interventions, Indonesia still struggles with high TB rates, particularly among individuals aged 15–35. Contributing factors include poverty, undernutrition, unemployment, and low education (Bhatia & Rijal, 2023). Limited funding and weak engagement strategies further hinder impact.

Although previous studies have highlighted social media's role in health promotion, few have examined its use in TB campaigns through theory-driven frameworks. Many interventions lacked empirical analysis linking campaign components with behavioural outcomes, such as the intention to seek a diagnosis or encourage others. Integrating the Theory of Planned Behaviour (TPB) with the social marketing mix (product, price, place, promotion) could provide a structured model for campaign design and evaluation (Ajzen & Fishbein, 2005). Early evidence from @stoptbindonesia suggests social media campaigns can influence TPB constructs. However, systematic research is

lacking, especially among young Indonesians, who are both highly affected by TB and highly active online. This study addressed that gap by examining how TB-related social media campaigns influenced behavioural intentions, offering insights for culturally tailored, more effective health communication strategies.

Theoretical Framework

The application of social marketing is inherently more complex than business marketing, as it unfolds within dynamic economic, social, and political environments. Unlike commercial marketing, which primarily promotes goods and services, social marketing seeks to influence behaviours that improve the quality of life. To achieve this, the marketing mix must apply the four elements: product, price, place, and promotion (Lee & Kotler, 2019). In the context of TB detection, the “product” is the behaviour of seeking screening or encouraging others to do so. “Price” represents the psychological, social, and economic costs associated with this action. “Place” denotes the channels through which information and services are accessed. “Promotion” concerns communication strategies designed to increase awareness, reduce stigma, and motivate engagement. These elements highlight what campaign components should be developed, but they do not fully explain how such components shape individual decision-making. The Theory of Planned Behaviour (TPB) explains how attitudes, subjective norms, and perceived behavioural control shape behavioural intention (Ajzen & Fishbein, 2005). Applied to social marketing for TB case detection, integrating the marketing mix with TPB offers a multi-level view. Product (emotional and informational content) can build positive attitudes by reducing stigma. Price (including misperceptions about treatment costs and digital barriers) influences perceived control over screening. Place (information on social media) shapes subjective norms through peer endorsement and accessibility. Promotion (edutainment, influencers) reinforces subjective norms by driving social approval and community support for screening behaviour.

The marketing mix identifies the strategic levers of intervention, while TPB clarifies the psychological pathways through which these levers influence behavioural intention and action. This integrated framework guided the formulation of research questions and thematic analysis, which explored how different marketing mix elements, when delivered via social media, shaped TB detection behaviour through their influence on attitudes, norms, and perceived control among Indonesian youth. Within social marketing, the marketing mix warrants closer attention. The “product” typically comprises a social idea or behaviour, operating at three levels: the core product (the benefit of the promoted behaviour), the actual product (the behaviour itself), and the augmented product (supporting goods or services that facilitate adoption) (Lee & Kotler, 2019). “Price” encompasses monetary and non-monetary costs, such as time, effort, psychological discomfort, or physical inconvenience. “Place” refers to the distribution channels through which the product reaches the target audience, ranging from direct delivery to multi-tiered intermediaries (Donovan & Henley, 2010). Finally, “promotion” must align with the other three elements and be tailored to the audience’s characteristics for maximum effectiveness (Hastings & Domegan, 2013). Digital health interventions have become central to global health promotion, offering scalable and cost-effective alternatives to traditional campaigns. Tools such as mobile health (mHealth) apps, social media, and telemedicine support disease prevention, treatment, and health literacy (Causio et al., 2024). Social media is particularly important for conditions affected by stigma and

misinformation, as it facilitates peer support, community engagement, and the sharing of real-time information. Evidence demonstrates the success of digital platforms in smoking cessation, vaccination uptake, sexual health education, and chronic disease management, highlighting the value of interactive, personalised, and culturally adapted content in building trust and promoting preventive action (Castillo & Cano, 2024).

In low- and middle-income countries, digital health helps overcome barriers to resources and access. Mobile reminders enhance adherence among patients with HIV and diabetes, while WhatsApp groups facilitate maternal health education (Hailemariam et al., 2024). The WHO highlights its potential to reduce inequities among young, digitally active populations, though misinformation, privacy issues, and limited connectivity remain challenges (Jafar et al., 2024). Within this context, social media presents a promising yet underutilised channel for TB case detection. This study applied a theory-driven social marketing mix to explore how tailored, interactive, and culturally resonant content could reduce stigma, counter misinformation, and foster health-seeking behaviours among young adults in Indonesia.

Social media has become a powerful tool in health-related social marketing, enabling information-seeking, entertainment, communication, and transactions. When designed strategically, social media content can shape public health behaviour by allowing rapid, wide-reaching message dissemination without requiring face-to-face interaction. This immediacy is particularly valuable in TB prevention, where early detection and timely response are essential. However, challenges such as information overload, screen fatigue, and potential digital addiction may reduce credibility and trust in health messages. Health behaviour is generally classified into three categories (Baum et al., 2012): 1) Preventive behaviour refers to actions to avoid or detect disease early, such as vaccinations or health screenings; 2) Illness behaviour involves recognising symptoms and seeking medical advice or diagnosis; and 3) Sick-role behaviour focuses on following prescribed treatments and recovery practices. Beyond these categories, health behaviour can be understood more broadly as intentional activities influenced by social determinants, personal characteristics, emotions, and cognition. It includes any action to maintain, promote, or restore health, regardless of whether illness is present (Bishoge et al., 2022).

TB case detection illustrates health behaviour in practice. Individuals may undergo active case detection by voluntarily seeking screening, often when experiencing symptoms such as persistent coughing. Alternatively, passive case detection occurs when health authorities or community-based campaigns identify potential cases. Such systematic initiatives are critical to controlling TB, as they enable faster intervention and treatment. The effectiveness of TB prevention and control is commonly measured through four indicators (Chen et al., 2017): 1) Case Detection Rate (CDR) reflects the proportion of diagnosed cases compared to the estimated total; 2) Case Notification Rate (CNR) measures newly reported TB cases per 100,000 population; 3) Treatment Coverage (TC) indicates the proportion of cases receiving treatment relative to incidence; and 4) Success Rate (SR) measures the share of patients cured or completing treatment. Together, these indicators provide a comprehensive picture of TB control efforts.

Methods

Research design

This qualitative study explored how the social health marketing mix influenced TB case detection behaviour through social media. A qualitative design was selected to capture the complex perceptions, emotions, and behavioural intentions around TB detection that quantitative surveys cannot fully understand. Because TB is highly stigmatised, participants' willingness to share their thoughts and behaviours required flexible, open-ended, and context-sensitive methods. Semi-structured interviews and focus group discussions enabled participants to describe their experiences in their own words, yielding nuanced insights into how social media content shapes attitudes, social norms, and perceived behavioural control. Such depth of understanding is crucial for examining stigma, misinformation, and motivation, which are influenced more by cultural meanings and personal narratives than by measurable variables.

Sampling and data collection

A purposive sampling strategy was employed to select participants who could provide the most relevant insights into the research objectives. This approach was appropriate for a qualitative study to capture depth and nuance rather than generalise findings. Participants were deliberately chosen to represent diverse characteristics and experiences, ensuring that the sample reflected different ways TB-related social media content might influence detection behaviour. The sample comprised eight Instagram followers and four FGD participants (see Table 1 and Table 2). Although small, the sample size was sufficient to reach data saturation, the point at which no new information emerged. Moreover, qualitative research typically relies on smaller, focused samples, allowing in-depth exploration of the phenomena under study.

The eight Instagram followers were selected based on three criteria: 1) Active Engagement: They followed TB-related accounts (@stoptbindonesia and @tbc.indonesia) and interacted with health promotion content; 2) Demographic Diversity: Participants represented varied ages (24–48), genders, and educational backgrounds (senior high school to bachelor's degrees); and 3) Relevant Experience: One informant was a TB survivor, offering first-hand insights into lived experiences and barriers to care. Meanwhile, the four FGD participants were chosen for their professional expertise in health promotion, TB control, and communication. They included practitioners and advocates with hands-on experience in social marketing. Their varied professional backgrounds ensured multiple perspectives on the effectiveness of TB-related campaigns and on the role of social media in shaping health behaviour. Overall, purposive sampling enabled the study to capture personal experiences of TB and professional insights into health communication, providing a comprehensive understanding of how social media influenced TB case detection behaviour.

Table 1. Characteristics of Interview Informants

No	Informant Code	Age	Gender	Occupation	Education	Instagram Account Followed
1	I-1-1/NF	32	Female	Administrative Staff at Kindergarten	Senior High School	@stoptbindonesia
2	I-2-1/BM	25	Male	Teacher	Bachelor's Degree	@stoptbindonesia
3	I-3-1/AT	28	Male	Entrepreneur	Senior High School	@stoptbindonesia
4	I-4-1/RH	24	Male	Nurse	Diploma III	@tbc.indonesia

5	I-5-1/TR	24	Female	Student	Bachelor's Degree	@stoptbindonesia
6	I-6-1/NR	43	Female	Nurse	Bachelor's Degree	@tbc.indonesia
7	I-7-1/MT	48	Male	Lecturer	Bachelor's Degree	@tbc.indonesia
8	I-8-1/MH	25	Male	Hospital Health Promoter	Bachelor's Degree	@stoptbindonesia

Table 2. Characteristics of FGD Participants

No	Participant Code	Age	Gender	Occupation	Education
1	N-1/ZT	32	Male	- TB Control Program Practitioner - Chairman of TB Care Program Foundation - Advisor for the TB Survivor Organization (OPT) - TB Cluster Mentor and Researcher	Master's Degree
2	N-2/MS	32	Male	- TB NGO Staff - Lecturer in Health Promotion	Master's Degree
3	N-3/MST	25	Female	- Civil Servant - Health Promoter at a Hospital	Applied Bachelor's Degree (Diploma IV)
4	N-4/DH	32	Male	- Lecturer in Health Promotion	Master's Degree

All interviews and the focus group discussions were conducted online using digital platforms, a choice shaped by the Indonesian context. In this regard, online methods enabled a wider geographical reach without logistical or financial constraints. They leveraged Indonesia's large, digitally engaged population, particularly among younger users, which was central to this study. Conducting interviews virtually also created a safer, more flexible space to discuss sensitive issues like TB, reducing stigma and fostering openness. Moreover, online data collection aligned with the study's focus on digital health communication, ensuring consistency between method and subject matter.

Data analysis

The data were analysed using thematic analysis to identify patterns and themes within the qualitative data. This method enables researchers to explore interrelated elements of a phenomenon and assess its scope from their perspective. It is a widely used approach in qualitative research. The first step involved familiarisation with the data through repeated reading of interview transcripts and, when necessary, reviewing audio or video recordings. The second step was coding, where relevant segments were labelled and grouped into categories based on shared meaning. Once all meaningful data had been coded, themes were developed to represent key aspects of the research questions. These themes reflect recurring patterns within the phenomenon under study.

In this study, the themes focused on the health social marketing mix on social media and its influence on TB case detection behaviours.

Results

Product: Informational value and emotional relevance

In the present study context, the “product” refers to the health-related message content delivered via social media. Informants consistently emphasised the need for reliable, engaging, and emotionally resonant messages to reduce fear and stigma associated with TB. Content featuring recovery stories, spiritual support, and expert-led education was seen as more credible and actionable. As one participant (I-3-1/AT) noted:

“Q&A sessions or consultations with doctors, as well as testimonials from former TB patients, would generate curiosity and interest.” (I-3-1/AT)

Another participant highlighted the appeal of family-supported recovery narratives, stating as follows:

“The experience of TB treatment supported by family is one of the contents I look forward to on social media discussing TB.” (I-6-1/NR)

This finding highlights a preference for interactive and empathetic communication that could inform and provide emotional support. Recovery stories, particularly those involving families, made TB information more effective by presenting relatable narratives combining factual knowledge with coping strategies, social acceptance, and encouragement. Centring patients’ and families’ voices could move the message beyond clinical advice to convey hope and solidarity, thereby reducing fear and stigma. This highlights the role of social marketing in disseminating information and providing psychological benefits, such as reassurance, clarity in treatment, resilience, and a sense of community. The FGD similarly underscored the value of step-by-step guidance following diagnosis. One participant (N-1/ZT) remarked:

“Social media needs to guide that perception so people are no longer confused. It should also inform families about the steps they must take when someone is ill.” (N-1/ZT)

This reflects a demand for behavioural scaffolding that goes beyond raising awareness to empowering individuals with clear action plans and enhancing self-efficacy, which are key constructs in the Theory of Planned Behaviour.

Price: Psychological and access barriers

“Price” encompasses monetary and non-monetary costs of adopting health behaviours. Informants frequently cited limited internet access, data costs, and misperceptions about high medical expenses as deterrents to engaging with TB content or seeking screening. As noted by I-2-1/BM:

“Not everyone can access information on social media.” (I-2-1/BM)

This excerpt highlights digital inequality, particularly in rural areas, which increases the “cost” of accessing life-saving information. However, for some participants, social media was seen as a facilitator rather than a barrier. One informant shared:

“Information about TB on social media makes it easier for me to understand the disease.” (I-7-1/MT)

This suggests that while access and cost barriers exist, the availability of simple and relatable information online can reduce knowledge gaps. Additionally, the mistaken belief that TB treatment

is expensive can discourage screening, despite national policies providing free care. An FGD participant (N-2/MS) explained:

“People need to be informed that TB treatment is actually free, because if you seek treatment outside, you have to pay a certain amount.” (N-2/MS)

Based on the findings, perceived cost consistently emerged as a barrier to TB engagement. Informants noted tangible expenses (e.g., internet data and consultation fees) and intangible concerns (e.g., fears of hidden charges or misconceptions about treatment costs) that shaped health-seeking behaviour. Their narratives reveal a tension: digital inequality can limit access to reliable TB information, yet social media provides a low-cost and convenient channel. This suggests that cost barriers are shaped not only by financial constraints but also by perceptions of affordability and accessibility. Hence, targeted social media campaigns that emphasise TB treatment as free, government-supported, and accessible may help reduce resistance and promote greater participation in case detection efforts.

Place: Accessibility and distribution networks

“Place” refers to how and where messages are delivered. Social media was consistently praised for its wide reach, ease of access, and user-driven sharing mechanisms. Informants noted its potential for virality and peer reinforcement, making it a powerful tool for health promotion. However, its limitations were also acknowledged as follows.

“This is very positive in the current digital era, especially if the information is distributed across all social media platforms, not just Instagram. However, the limitation is that it only reaches those already active on social media.” (I-2-1/BM)

Similarly, another informant emphasised an additional perspective as follows:

“Community access to TB information on social media is generally easy, except in remote or rural areas where challenges persist due to the lack of mobile devices or internet connectivity.” (I-8-1/MH)

These insights highlight the need for multi-platform strategies and offline outreach to ensure that less digitally engaged populations are not left behind. Nevertheless, the ability of users to share TB information organically with family and friends enhances the spread of the message through interpersonal trust networks.

Promotion: Engagement through empathy and entertainment

“Promotion” was identified as key to message effectiveness. Informants stressed the importance of capturing attention within the first few seconds of content:

“The first ten seconds must be made very engaging. Only then will people immediately watch or become curious to learn more.” (I-5-1/TR)

They also emphasized that messages should be short, simple, and attractive, especially on social media:

“Short and appealing messages, for example short videos on social media, especially about TB treatment experiences until recovery.” (I-8-1/MH)

Furthermore, participants advised avoiding overly fear-based approaches. Instead, communication should empower individuals and boost their confidence to act. Effective health promotion requires visually appealing, emotionally engaging, and entertaining designs. Formats such as humorous

skits, music videos, or dramatised scenarios were considered especially impactful. As an FGD participant noted:

“The content could involve dancing, videos accompanied by music with TB-related messages in text, or humorous clips that integrate TB messages, like what we often see on TikTok.” (N-3/MT)

This reflects a shift towards edutainment, a blend of education and entertainment, where visual appeal and cultural cues drive engagement. Such strategies align with the media habits of Indonesian youth and exemplify effective behavioural design in health campaigns.

Discussion

The social marketing mix approach on social media, comprising product, price, place, and promotion, could significantly influence TB case detection behaviours by broadening outreach and engagement. This aligns with Kotler and Roberto’s (1989) foundational theory, which posits that long-term public behaviour can be shaped by effectively applying the marketing mix’s four elements (4Ps). Under “product”, followers assessed TB-related messages based on clarity, appeal, and shareability. Positive evaluations are vital for establishing credibility, a key driver of behavioural change. Young people prioritise trustworthy content when interpreting health messages. Hence, Chen et al. (2022) highlighted the dangers of misinformation, stressing the importance of credibility for informed behaviour, and further demonstrated that information credibility significantly influences adoption, reinforcing the importance of clear and appealing content.

The “price” domain highlights financial and psychological barriers to TB care. McAllister et al. (2020) found that Indonesian patients often incur substantial out-of-pocket costs before diagnosis, which discourages early care-seeking. Misperceptions about treatment expenses, compounded by internet data costs and fears of stigma or hidden fees, persist despite TB treatment being free under national policy. This information gap undermines timely care, but targeted social media campaigns emphasising that TB treatment is free, government-supported, and accessible could help reduce misconceptions and strengthen perceived behavioural control. Beyond financial concerns, Saini and Garg (2020) emphasised that emotional stress, time constraints, and competing responsibilities also deter early diagnosis, though these barriers are less visible. Such challenges delay detection and heighten community transmission, underscoring the need for supportive measures such as community assistance, patient counselling, workplace-sensitive initiatives, and stigma-reduction campaigns.

In the “place” domain, access to TB services and information was shaped by convenience and connectivity. Čábelková et al. (2021) observed that while urban areas often have better healthcare availability, outcomes remain weaker in dense, low-income zones, particularly for previously treated patients, suggesting availability alone is insufficient. Likewise, although social media extends reach, connectivity gaps risk excluding rural or poorer communities. To address this, health organisations can integrate online and offline strategies, including community radio, posters in health centres, and SMS reminders requiring minimal data. Partnerships with schools, religious groups, and local organisations could expand reach through trusted networks. Hybrid approaches,

where online campaigns direct audiences to offline activities such as health fairs or peer sessions, can strike a balance between digital scalability and inclusivity.

For “promotion,” communication style significantly influenced engagement. Engebretsen (2023) highlighted the effectiveness of infographics, short videos, and interactive formats on social media, though sustaining attention remains a challenge. This study found that culturally resonant and entertaining content (e.g., humorous TikTok skits, music-backed dances, dramatised recovery stories, and testimonial reels) was particularly impactful among Indonesian youth. Leveraging local cultural elements, including traditional songs remixed with health messages, memes, and micro-influencer storytelling, can reduce stigma and normalise positive health behaviours. For example, an Instagram mini-series following a young person’s diagnosis and recovery from TB could present clinical information as an emotionally engaging narrative, fostering solidarity and empowering action.

The findings confirm that social media marketing influenced awareness, behavioural intention, and action. For TB, this included encouraging individuals to seek screening, share information with families, and normalise conversations about diagnosis and treatment. According to the Theory of Planned Behaviour, attitudes, subjective norms, and self-efficacy are shaped by how marketing mix elements are designed and delivered. Kwon and Choi (2020) found that knowledge and positive attitudes among young people increased preventive behaviours, underscoring education’s role in building intention and confidence. Social media health promotion is further strengthened by supportive systems such as accessible services, policy alignment, and peer or familial encouragement. Baptista (2022) highlights that community participation and co-created content foster trust and reduce uncertainty, suggesting that collaboration can transform digital campaigns into community-driven efforts for TB screening and early detection.

Despite the provided insights, the present study has several limitations. The small qualitative sample (five interviews and one FGD) restricts generalisability. Focusing solely on Instagram limits applicability to platforms with different user behaviours, such as TikTok or Facebook. Reliance on self-reported data may introduce recall or social desirability bias. The absence of quantitative data also prevents statistical validation, and findings are specific to Indonesia’s socio-digital context in 2024. Future research should broaden participant demographics across Indonesian regions to enhance generalisability, and comparative studies across platforms could identify engagement strategies unique to each. Combining qualitative and quantitative analysis, mixed-methods approaches would deepen understanding of how marketing elements influence constructs like attitude, norms, and self-efficacy, while validating frameworks such as the Theory of Planned Behaviour. Longitudinal designs are also needed to assess the long-term impact of digital campaigns on TB awareness and detection. Additionally, future studies should examine factors such as stigma, trust, and digital literacy, as well as systemic support through health infrastructure and community initiatives, to reveal how structural conditions shape the success of digital health communication for TB control.

Conclusion

This study introduces a contextualised social health marketing mix model, integrating the 4Ps (product, price, place, and promotion) with the Theory of Planned Behaviour to influence TB case detection. The model shows how emotionally resonant and credible content (product), efforts to address financial and psychological barriers (price), accessible multi-platform distribution (place),

and culturally relevant promotional strategies (promotion) could shape public attitudes, norms, and self-efficacy toward TB screening. Theoretically, it contributes to social marketing scholarship by adapting the 4Ps into a digital, health-specific framework that links message design with behavioural intention. Practically, it provides guidance for public health officials, recommending campaigns that emphasise free treatment, use edutainment to reduce stigma, and adopt hybrid online–offline strategies to reach underserved populations. However, the study’s qualitative design and small, non-probability sample constrain generalisability, so findings remain exploratory. Future research should test the model with larger, more diverse samples, examine platform-specific dynamics (e.g., TikTok vs. Instagram), and apply longitudinal or mixed-methods approaches to assess long-term behavioural and policy impacts. Overall, the study offers a novel framework for leveraging social media in TB control by promoting screening, improving access, and reducing stigma.

Conflict of Interest

The authors declare no potential conflict of interest concerning the research, authorship, and publication of this article.

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