JOURNAL OF MEDICINE, HUMANITY AND MEDIA
https://doi.org/ 10.62787/mhm.v3i3.231

Science Communication in the Era of Intelligent Media – Public Cognition and Opinion Guidance: A Review of the Peking University Panel Session at the MHM 2025

Journal of Medicine, Humanity and Media
2025, Vol. 3(3)

ISSN: 2817-5166
mhmjournal.net

Jiachen Yan

School of Communication, Xiamen University Malaysia, Sepang, Malaysia

Abstract

Six studies presented at the MHM 2025 session "Science communication in the era of intelligent media" examine how algorithm-driven platforms, participatory cultures, and evolving policy logics are reshaping health communication in East Asia. One mixed methods investigation of 25,000 Weibo posts and 100,000 images from fitness bloggers shows that visibility incentives foster suggestive self-presentation—especially among men—and that users adopt a "like but not repost" stance that weakens as follower counts rise. A separate content–engagement analysis of the Chaoski Mailbox sexual health column (2,000 posts, >1 million comments) finds that discussions of violence prevention and sexual dysfunction generate highly polarised comment streams, confirming comments as the most sensitive barometer of audience sentiment. Another study introduces a prototype multi-agent system that merges large language models with burst term detection to deliver real-time emotion monitoring and automated "golden hour" bulletins for municipal risk communication. At the policy level, a corpus analysis of 49 national documents (2007–2023) identifies a post-COVID shift toward multimedia platforms, primary care hubs, and minority inclusion, signalling a convergence of "normal" and "emergency" governance. A quota sampled survey of 1,001 Singapore residents links conspiracy beliefs to heightened secondary-

Corresponding author:
Jiachen Yan, School of Communication, Xiamen University Malaysia, Jalan Sunsuria, Bandar Sunsuria, 43900 Sepang, Selangor, Malaysia.
Email: luhua7280@126.com

risk perceptions and conditional dengue-vaccine acceptance, with the relationship shaped non-linearly by memories of COVID-19 side-effects. A discursive-institutional analysis of 5,372 pandemic press-conference transcripts charts four phases in China's news-release system and documents the mainstreaming of expert–official joint messaging and short-video formats. Taken together, these studies offer complementary evidence that visibility algorithms, comment-driven feedback, AI-assisted governance, and psychosocial spill-overs are transforming the production, regulation, and reception of public-health information.

Keywords

Health communication, Algorithmic visibility, Social media engagement, Secondary risk perception, Emergency science communication, AI-assisted public opinion guidance

Introduction

Health communication is undergoing a profound transformation under the influence of intelligent media—a spectrum encompassing algorithm-driven platforms, participatory feedback mechanisms, and hybrid policy logics that increasingly shape the circulation of public health information. In East Asia, where digital ecosystems such as Weibo, Douyin, and LINE intersect with state-led governance models, this transformation reflects not only technological affordances but also the region's distinctive regulatory frameworks and cultural expectations. These evolving dynamics raise urgent questions about how health communication strategies—traditionally built on linear message dissemination—can adapt to an environment in which algorithms curate visibility, users act as co-producers of meaning, and governments must navigate the delicate balance between rapid crisis response and sustained public trust.

On the afternoon of July 7, 2025, as part of the MHM 2025: Medicine, Humanity, and Media international health communication symposium and doctoral forum, the panel session "Science communication in the era of intelligent media: Public cognition and opinion guidance" was convened at the School of Journalism and Communication, Peking University. Speakers included Assistant Professors Zhuo Chen and Luye Bao from Peking University HSBC Business School, Lecturer Zhijun Gao from the School of Software and Microelectronics, doctoral students Zining Wang and Rong Gao from the School of Journalism and Communication, and Assistant Professor Mengxue Ou, also from the School of Journalism and Communication, each of whom delivered thematic presentations.

Suggestive content strategies of Weibo fitness bloggers

Chen presented a paper titled "The price of visibility: A study on suggestive content strategies among fitness bloggers on Weibo." This study explores the behavioural mechanisms by which fitness bloggers strategically create "suggestive content" to enhance their visibility in platform-driven economies. Chen observed that while fitness Key Opinion Leaders (KOLs) can positively influence the promotion of health concepts, algorithm-driven traffic allocation often pressures creators to commodify their bodies as tools for attracting attention. This visibility-centered logic pushes bloggers to edge closer to the soft-pornographic boundary in their visual expression, resulting in a form of "self-exploitative performance" that embodies the politics of the body.

To systematically analyse the prevalence of "suggestive strategies," their gender differences, and how they evolve across different stages of account development, the research team collected approximately 25,000 posts and 100,000 images from 50 Weibo fitness bloggers between 2020 and 2024. Using this dataset, the study applied a three-class image recognition method based on the Google Vision Transformer model, combined with manual annotation, to identify and model images exhibiting soft pornographic features. The findings revealed that most bloggers had posted images with such characteristics at some point in their account development, and—unexpectedly—male bloggers showed a significantly higher proportion of "suggestive" content than their female counterparts. This discrepancy may be linked to stricter content regulation applied to female-oriented accounts on the platform.

Regarding interaction effects, when "suggestive or not" was treated as a binary variable, there was no significant difference in the number of likes. However, when the "number of suggestive images" was introduced into a regression model as a continuous variable, the analysis showed that the more suggestive images a blogger posted, the higher the number of likes, while repost counts remained relatively stable. This indicates that users display a "like but not repost" attitude toward such content. The study also found that suggestive behaviour was concentrated mainly in the early stages of account development. As follower counts increased, the proportion of such content steadily declined, showing a clear negative correlation. This self-regulation reflects bloggers' strategic efforts to balance the rules of platform algorithms with the demands of personal brand building.

Based on these findings, Chen argued that fitness bloggers' practice of "exchanging visibility for traffic" represents a passive adaptation to the logic of algorithmic governance, effectively amounting to the disciplining of bodily display by the platform. Notably, as bloggers become more professionalized, soft pornographic strategies are often replaced by more professional and value-oriented content—an evolution that offers important insights into the developmental trajectory of health communication content.

User engagement with sexual health content on Weibo

Bao presented her research titled "When sexual health education becomes the breeding ground of stigma, discrimination, and sexual humour: An analysis of engagement with sexual health content on Weibo. "This study integrates macro-level social context with the platform's micro-level mechanisms to examine how sexual health knowledge is disseminated on Chinese social media and how public opinion feedback mechanisms function in this environment. In framing the research problem, the study noted that, on one hand, China's school-based sex education system remains underdeveloped, leaving adolescents with limited formal channels for acquiring sexual knowledge. On the other hand, the proliferation of popular science content on platforms such as Weibo—often driven by doctors and health bloggers—has partly filled this information gap while simultaneously creating new risks for public opinion management.

Using the well-known Weibo column "Chaoski Mailbox," hosted by physician Chao Xu, as a case study, the research team collected more than 2,000 sexual health Q&A posts and over one million user comments published between May 2020 and May 2024. A mixed methods approach was used to construct a "content–engagement" analytical framework that captured both information dissemination and audience response. On the content side, the study applied the ten dimension model of sexuality education to classify post themes, revealing that "prevention of sexual violence" and "sexual dysfunction" appeared most frequently, followed by "sexually transmitted infections" (STIs); in contrast, topics such as "reproductive health" and "sexual pleasure" were notably absent. Meanwhile, the comment sections displayed a highly diverse emotional and semantic structure: positive responses, such as self-disclosure and rational supplementation, coexisted with negative expressions, including gender discrimination and mocking humiliation, with stigmatizing tendencies particularly pronounced in comments on STI-related content. Methodologically, the study combined manual annotation with a fine-tuned Large Language Model (LLM) to label comments, greatly improving the efficiency and accuracy of large-scale harmful speech detection.

The study identified a strong association between post themes and comment types. For example, topics such as "violence prevention" and "sexual dysfunction" were more likely to trigger polarized interactions, in which sympathetic responses and malicious harassment coexisted, whereas "reproductive" content mainly provoked scepticism regarding the scientific validity of online medical advice. Moreover, although likes and reposts remain the dominant interaction modes on the platform, their low engagement cost makes them unreliable indicators of users' true attitudes. In contrast, comments offer richer cognitive and emotional insights into audience reactions. Therefore, the comment section should be regarded as a vital window for understanding public receptivity to and attitudes toward sexual health communication.

Intelligent agents for emergency public opinion guidance

Z. Gao presented the latest progress of his study titled "Building intelligent agents for public opinion guidance in emergencies." The study is grounded in the National Social Science Fund key project "Mechanisms, pathways, and methods of public opinion guidance in emergencies" (Project No. 23AXW008) and the Humanities and social sciences project cluster of the Peking University–Donghu High Tech Zone National Experimental Base for Intelligent Social Governance, specifically the sub project "Research on integrated regional health governance and public opinion guidance mechanisms for emergencies based on large language models and data intelligence: A case study of Donghu High Tech Zone, Wuhan." The project seeks to integrate large language models with communication theories of public opinion guidance to develop a multi-agent system with the capacity for emergency detection, opinion analysis, and intervention. Currently, the study remains in the prototype development stage.

Z. Gao noted that in recent years, public crises such as environmental pollution, industrial accidents, and sudden epidemics have occurred with increasing frequency. Delays in information disclosure and the pacing of official responses have often triggered the rapid spread of rumours and the escalation of public emotions, exposing weaknesses in existing emergency mechanisms for addressing online public opinion. To respond to these challenges, the research team has prioritized "mechanism reconstruction" and "prototype development," aiming to design a multi module intelligent system operating on a perception–evaluation–intervention logic chain to strengthen local governments' responsiveness to public opinion during the early stages of emergencies.

Regarding system architecture, the team has initially developed a Weibo-based keyword data collection module and is experimenting with burst term detection and heat level fluctuation modelling to enable the early identification of emerging online public opinion. For emotion analysis and risk assessment, the system employs a fine tuned LLM for semantic analysis and sets response thresholds by combining parameters such as communication intensity and societal impact. To address the "golden hour" information gap that frequently follows emergencies, the team designed an information generation module that can automatically produce initial public notices (about 120 characters), frequently asked questions (FAQs), and accompanying text and image content when high-risk public opinion is detected. The current system demo has already achieved Weibo data collection, emotion classification, and public opinion summary generation, and it can track emotional trends and the dissemination scale of key topics in real time through a visualization interface.

He emphasized that the system currently still operates on an "expert system + human–machine collaboration" model, with its "intelligence" primarily reflected in modular coordination and automated content generation, rather than in fully autonomous planning or independent decision making. In the future, the research team plans to develop multiple specialized agent modules to create intelligent linkages across opinion sensing, risk assessment, content generation, intervention implementation, and impact monitoring. This would advance the system from semi-automation

toward weak autonomy, ultimately enhancing its capacity for dynamic perception and rapid response to online public opinion during emergencies.

Policy evolution of emergency public health science communication in China

Wang presented the interim findings of his study titled "A policy text analysis of the history and context of China's public health emergency science communication." As an integral component of the National Social Science Fund key project "Mechanisms, pathways, and methods of public opinion guidance in emergencies" (Project No. 23AXW008), this research examines the evolution of China's emergency science communication system at the levels of institutional construction and communication mechanisms within the context of public health emergencies. He found that during crises such as epidemics and natural disasters, the simultaneous spread of rumours and delays in information disclosure have revealed structural shortcomings in China's emergency science communication—particularly in timeliness, inter-channel coordination, and content targeting. Against this backdrop, the study underscores the urgent need to systematically map the developmental trajectory and institutional logic of this system from a policy perspective.

The study searched the PKULaw legal database using "emergency science communication" as the keyword and identified 49 national-level laws, regulations, institutional documents, group rules, and industry standards issued between 2007 and 2023. These documents were categorized into three time periods: 2007–2009, 2012–2018, and 2020–2023. Using keyword co-occurrence analysis and semantic network analysis, the study explored the evolution of institutional hierarchies, thematic clustering structures, and changes in communication mechanisms. To clarify policy orientation differences before and after the pandemic, the research team set January 20, 2020, as the dividing line and conducted semantic slicing analysis on 140 paragraphs referencing "emergency science communication" across the 49 documents. He also applied LLM to extract policy terms and key actors, constructing a semantic network.

The findings indicate that the institutional effectiveness of China's public health emergency science communication policies has generally strengthened over time. Before the pandemic, policy content primarily focused on traditional emergency domains such as earthquakes, disaster prevention and mitigation, and workplace safety. The keyword network showed low density and distinct clustering, with terms like "enterprise" occupying intermediary positions—reflecting the institutional inertia of an early socialized science communication path. After the pandemic, the keyword network became more interconnected, and digital platforms such as Douyin, Weibo, and WeChat appeared frequently, signalling that emerging media have become key nodes in emergency communication. At the same time, the clustering of terms such as "science communication videos" and "mobile broadcasts" reflected the initial formation of a multimedia-integrated communication mechanism. Notably, in the post-pandemic policy network, keywords such as "community hospitals" and "urban–rural community service centres" moved significantly closer to the network core, underscoring the pivotal role of primary-level medical

institutions in emergency science communication. Meanwhile, the emergence of concepts like "persons with disabilities" and "emergency literacy" suggests that policy attention is expanding toward protecting minority rights and enhancing citizens' emergency awareness. This shift signals that China is moving toward a public science communication governance framework that integrates "normalcy" and "emergency" development.

Conspiracy beliefs and conditional dengue vaccine acceptance

Ou presented the findings of her study titled "Conspiracy beliefs, secondary risk perceptions and conditional acceptance of dengue vaccine: A multigroup comparison based on prior COVID-19 vaccination experiences". The study examines the global decline in vaccine trust following the COVID-19 pandemic and uses Qdenga—a dengue vaccine developed by Takeda Pharmaceutical Company and slated for rollout in Singapore—as a case study to investigate how conspiracy beliefs indirectly shape public attitudes and willingness to vaccinate through "secondary risk perception."

She explained that, compared with "primary risk" (the health threat posed by the disease itself), "secondary risk" refers to individuals' perceptions of potential side effects, uncertainties, or long-term consequences associated with preventive measures. For example, rather than fearing dengue itself, some members of the public are more concerned about the vaccine potentially causing physical harm. Within this framework, conspiracy theories are understood as cognitive shortcuts for coping with uncertainty. When people accept conspiracy narratives such as "pharmaceutical companies are hiding the truth" or "vaccines alter DNA," they tend to overestimate the potential harms of vaccines, weaken positive evaluations of vaccine efficacy, and ultimately reduce their willingness to vaccinate.

The study employed a quota sampling method to collect 1,001 valid responses in Singapore between August and September 2024. Four core variables—conspiracy beliefs, secondary risk perception, overall vaccine attitude, and conditional willingness to vaccinate—were measured using localized scales. Analytically, Structural Equation Modeling (SEM) was used to construct the variable pathways, and a multi-group SEM approach was introduced to test whether individuals' subjective memories of COVID-19 vaccine side effects moderated these pathways.

The findings revealed that conspiracy beliefs significantly and positively predicted individuals' secondary risk perception of vaccines, which in turn negatively influenced their overall attitudes toward the dengue vaccine. This shift in attitude ultimately affected their conditional willingness to vaccinate under specific circumstances (e.g., "if approved by the WHO" or "if mandated by the government"). Further multi-group analysis showed that subjective memory of the severity of COVID-19 vaccine side effects exerted a significant moderating effect, with a nonlinear pattern: individuals who experienced either very mild or very severe side effects demonstrated heightened sensitivity when evaluating the risks of the dengue vaccine, whereas those who experienced moderate side effects exhibited weaker risk perceptions. This phenomenon

can be explained by Expectation Violation Theory, which posits that prior positive or negative experiences shape risk expectations for a new vaccine, and when reality deviates from those expectations, it can amplify risk responses.

This study makes two key contributions. First, it provides empirical evidence that conspiracy beliefs do not influence vaccine hesitancy by directly shaping vaccination behaviour but instead exert an indirect effect through the mediating mechanism of "secondary risk perception," thereby expanding theoretical explanations of the psychological mechanisms linking conspiracy beliefs and health communication. Second, it identifies an "emotional spillover effect" in vaccination experiences, showing that risk assessment is neither static nor purely rational but is continuously shaped by prior experiences and demonstrates significant contextual dependence. This finding challenges the conventional research paradigm that treats risk perception as a stable response variable.

News releases and public opinion guidance in emergencies in China

R. Gao presented her study titled "News releases and public opinion guidance in emergencies: A discursive institutional and corpus-based analysis". The research is grounded in the theoretical framework of Discursive Institutionalism, which posits that discourse is not only a product of institutions but also a critical force driving institutional change. She argued that the evolution of China's news release system has not been a linear, one-way process driven solely by administrative logic. Instead, against the backdrop of a value shift from "stability first" to "people first, life first," continuous discursive practices have gradually reshaped the institutional functions and role positioning of news releases. The study suggests that there is a bidirectional, co-constructive relationship between discursive pathways and institutional rules: news releases are transitioning from a traditional information control model toward a more collaborative and publicly interactive mechanism. This transformation is evident not only in the style of expression but also in the routinization and proceduralization of institutional practices, reflected in the participation of experts, interdepartmental coordination, and platform adaptation.

Methodologically, the study adopted an Institutionalized Discourse Analysis framework, comparing policy documents and press conference transcripts from 1949 to 2023. This analysis identified four stages in the evolution of China's news release system: the political dominance stage, the media embeddedness stage, the crisis-driven stage, and the collaborative governance stage. Focusing on news release practices during the COVID-19 pandemic, the study highlighted how arrangements such as "joint messaging by experts and officials," multi-level interdepartmental coordination mechanisms, and public participation formats—including initiatives like "cloud supervisors" and "courier spokespersons"—collectively shaped a system that embodies both technical rationality and political authority. Based on a corpus analysis of 5,372 pandemic-related press conference transcripts, the study found a significant increase in the frequency of appearances by top officials. It also revealed that the strong involvement of short video platforms in content presentation created feedback effects on press release styles,

demonstrating the embedded and dynamic interaction between communication modes and institutional logic.

She concluded that news releases should be understood as a process of mutual construction between institutional functioning and discursive practice, rather than as a one-way information output mechanism. Crises should not be regarded merely as external disruptive variables but as important triggers for internal adjustments and the evolution of institutional discursive mechanisms. The research also observed that the emergency press release mechanisms developed during the pandemic are showing signs of becoming normalized, with some cities establishing regular press briefing systems and operational protocols. Certain arrangements that were initially adopted as temporary measures are gradually transforming into routine practices. However, their sustainability ultimately depends on whether these mechanisms can effectively respond to public concerns and form a relatively open and evaluable discursive institutional structure.

Conclusion

Health communication and intelligent media have been updated to reflect the interconnected advances and challenges. Incorporating evidence from several recent studies—from algorithm-steered content production on Weibo to discursive shifts in China's pandemic press briefings—it demonstrates how public health messaging has been forged through the collective influences of platform logics, participatory feedback, and developing policy frameworks rather than operating within any single institutional silo. Visibility algorithms do more than rank posts; they silently renegotiate the standards of "acceptable" self-presentation, ushering even fitness advocacy toward quasi-commercial exhibitionism. Comments have become an indispensable barometer of public sentiment; the fierce debates around sexual-health topics reveal that audience engagement can be both an invaluable pedagogical resource and a significant reputational risk. Governments are testing solutions that combine rapid digital responses with long-term trust-building strategies—such as AI-generated "golden-hour" notices and routine expert official briefings—yet the success of these innovations still hinges on clear accountability, data transparency, and local relevance. For practitioners and scholars, these findings translate into four priorities: cultivating algorithmic literacy in campaign design; integrating systematic comment analysis into risk monitoring routines; pairing AI tools with human oversight and post-hoc audits; and subjecting hybrid governance models to rigorous, longitudinal evaluation.

Declaration of conflicting interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

ORCID iD

Jiachen Yan https://orcid.org/0009-0007-1966-1115

Note

This article collates and analyses six independent studies presented in the panel session "Science communication in the era of intelligent media: public cognition and opinion guidance," held on 7 July 2025 during the "MHM 2025: Medicine, Humanity and Media" International Health Communication Symposium at Peking University. It summarises each speaker's data sets, methodologies, and principal findings as introduced in the session, and all interpretive links and forward-looking recommendations represent the author's synthesis rather than the individual presenters' positions.