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The Development of Medical Science Popularization in China: A Narrative Review of Health Communication Research on Social Media

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Abstract:

Medical science popularization — known in Chinese scholarship as yixue kepu (医学科普) and closely aligned with the field of health communication — has undergone rapid transformation in China over the past decade. This shift has been propelled by the "Healthy China 2030" agenda, the proliferation of social media platforms such as Sina Weibo, WeChat, Douyin, and Xiaohongshu, and the exigencies of public-health emergencies, most notably the COVID-19 pandemic, which laid bare both the efficacy and the vulnerabilities of large-scale health information dissemination. This paper presents a narrative review synthesizing English-language, peer-reviewed empirical studies on the evolution of health communication in mainland China. Following a structured search of PubMed/PMC, JMIR, Frontiers, PLOS ONE, and ScienceDirect for studies published between 2019 and 2025, ten empirical studies were selected for synthesis. The review is organized around five themes: institutional communication channels and governmental social media adoption; crisis communication during COVID-19; the diversification of communication actors, particularly the rise of medical social influencers; vaccine communication as a distinct sub-field; and the governance of health-related misinformation via platform-specific mechanisms. Key findings indicate that institutional adoption of social media has outpaced genuine interactivity, that narrative and affective framing consistently outperform purely informational messaging in eliciting engagement, that source credibility remains a pivotal driver of positive audience sentiment even within an influencer-saturated environment, and that the structural disparities between platforms — notably the weak-tie network of Weibo versus the strong-tie network of WeChat — produce measurably distinct dynamics for both the diffusion and the correction of misinformation. The review concludes by identifying critical research gaps, including the paucity of cross-platform and longitudinal designs and insufficient theoretical integration across source-credibility, dialogic-communication, and social-network-analysis traditions, and draws out implications for journalism, communication practice, and pedagogy in China.

Keywords:

health communication; medical science popularization; social media; China; misinformation

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1. Introduction

Medical science popularization refers to the dissemination of medical knowledge, disease-prevention guidance, and health-related scientific reasoning to the general public in an accessible form. In China, the field has moved, within roughly a decade, from a print- and broadcast-dominated model of expert-to-public communication toward a diversified, multi-platform, multi-actor ecosystem. Three converging forces account for this shift. First, the state's "Healthy China 2030" strategy has placed public health literacy at the center of national policy, creating strong institutional incentives for government health agencies to communicate directly with citizens. Second, the rapid rise of social media platforms — Sina Weibo from around 2010, WeChat shortly thereafter, the short-video platform Douyin from 2016 onward, and, most recently, the lifestyle-and-shopping platform Xiaohongshu — has repeatedly reshaped the channels through which health information reaches the public. Third, a sequence of public-health emergencies, culminating in the COVID-19 pandemic, has placed enormous and sudden pressure on China's health communication infrastructure, exposing both its considerable strengths and its persistent vulnerabilities, particularly with respect to the rapid spread of rumor and misinformation.

Despite the scale and significance of this transformation, much of the primary empirical literature documenting it is scattered across biomedical informatics, public health, and communication-studies journals, and has not yet been synthesized into a single, focused narrative account written for a journalism and communication-studies audience. This paper addresses that gap. It presents a narrative literature review of English-language, peer-reviewed empirical research on medical science popularization and health communication in mainland China, with particular attention to how communicating actors, platform structures, and message strategies interact to shape public engagement and public trust. The review is guided by the following overarching questions: (a) how has institutional health communication evolved across successive social media platforms; (b) how did China's health communication system perform under the acute stress of the COVID-19 pandemic; (c) what role do individual medical social influencers and patient-generated content play alongside institutional communicators; and (d) how is health-related misinformation governed, and does that governance differ across platforms with different structural properties. The remainder of the paper is organized as follows: Section 2 describes the literature search and selection methodology; Section 3 presents the results of the review organized thematically, with discussion integrated throughout; Section 4 offers conclusions and implications for practice and pedagogy.

The significance of this synthesis extends beyond public health administration into the core concerns of journalism and communication scholarship. Medical science popularization in China raises classic communication-studies questions in a distinctively contemporary setting: questions of source credibility, in an environment where institutional authority increasingly competes with individually branded influencers; questions of framing and narrative, in an environment where emotionally resonant storytelling appears to consistently outcompete purely informational messaging; and questions of network structure, in an environment where the same message can behave very differently depending on whether it circulates through Weibo's loosely connected, interest-based network or WeChat's tightly bound, relationship-based one. Because much of the empirical evidence bearing on these questions is published in biomedical informatics and public health venues such as the Journal of Medical Internet Research and Frontiers in Public Health, rather than in communica-

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tion-studies journals proper, it has remained comparatively underused within journalism and communication scholarship — a gap this review seeks to help close.

2. Materials and Methods

This paper adopts a narrative literature review design rather than a systematic review or meta-analysis, since the aim is to synthesize thematic patterns across a heterogeneous body of empirical studies employing diverse methods (content analysis, topic modeling, sentiment analysis, and social network analysis) rather than to pool comparable quantitative effect sizes. The following subsection describes the search strategy and selection criteria used to identify the studies included in this review.

2.1 Search Strategy and Selection Criteria

Relevant literature was identified through structured searches of PubMed/PMC, the Journal of Medical Internet Research (JMIR) site, Frontiers journals (including Frontiers in Public Health and Frontiers in Psychology), PLOS ONE, and ScienceDirect, using combinations of the search terms "health communication," "medical science popularization," "China," "Weibo," "WeChat," "Douyin," "TikTok," "Xiaohongshu," "misinformation," "rumor," and "vaccine." Searches were restricted to English-language, peer-reviewed empirical studies published between 2019 and 2025 that reported original data collected from mainland Chinese social media platforms or Chinese government health communication accounts. Studies were excluded if they were not empirical (e.g., purely theoretical or opinion pieces), if they focused on health communication outside the Chinese context, or if they addressed clinical or biomedical topics without a substantial communication-studies component. Reference lists of retrieved articles were also examined to identify additional relevant studies not captured by the initial keyword searches.

Applying these criteria yielded a final corpus of ten empirical studies, spanning the period from 2020 to 2025 and covering four major platforms (Weibo, WeChat, Douyin, and Xiaohongshu) and five thematic areas: institutional communication, COVID-19 crisis communication, medical social influencers, vaccine communication, and misinformation governance. These ten studies form the basis of the thematic synthesis presented in Section 3. Because the number of qualifying English-language studies meeting these criteria remains relatively limited compared to the much larger body of Chinese-language scholarship on the same topic, this review should be read as a focused synthesis of the English-language empirical literature rather than an exhaustive account of all scholarship on Chinese medical science popularization.

Each retrieved study was screened first by title and abstract, and then, where relevant, by full text, against the inclusion and exclusion criteria described above. For each of the ten studies ultimately included, the following information was extracted: the platform(s) studied, the sample or corpus size, the analytic method employed (e.g., content analysis, topic modeling, sentiment analysis, or social network analysis), and the principal substantive finding relevant to medical science popularization. This extracted information was then grouped inductively into the five thematic categories that structure Section 3 of this review: institutional communication channels, COVID-19 crisis communication, medical social influencers, vaccine communication, and misinformation governance. Because several of the retrieved studies addressed more than one of these themes — for instance, studies of COVID-19 crisis communication that also analyzed rumor propagation —

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some studies are discussed under more than one thematic heading in Section 3, with cross-references provided to avoid redundant description of methods.

3. Results and Discussion

This section presents the findings of the reviewed literature organized into six thematic subsections, integrating discussion of each theme's significance as it is introduced. A summary of all ten studies, including platform, focus, and key finding, is provided in Table 1 at the end of this section.

3.1 Institutional Communication: From Government Weibo to Short-Video Platforms

Early scholarly attention to institutional health communication in China concentrated on government-run microblogging accounts. Zeng and Li [1] conducted a national survey of Center for Disease Control and Prevention (CDC) Weibo accounts across provincial- and prefecture-level administrative regions in mainland China, analyzing more than a thousand posts to assess patterns of adoption, operational practice, and interactivity. Their findings indicated that although government health agencies had widely adopted Weibo as a channel for public communication, especially during periods of public-health crisis, the interactive dimension of these accounts — genuine two-way engagement with citizens rather than one-way announcement — remained comparatively underdeveloped. This asymmetry between adoption and interaction has since been identified as a recurring pattern in Chinese institutional health communication, one that later studies of short-video platforms would confirm and extend.

As short-video platforms rose to prominence, provincial health authorities began to migrate their communication efforts accordingly. Zhu et al. [2] examined official Douyin accounts operated by provincial health committees across mainland China, finding that fewer than half of the provincial committees surveyed had established an official account by the time of data collection, and that adoption rates did not straightforwardly track regional economic development — provinces with well-established Weibo and WeChat communication infrastructures were, in some cases, slower to adopt the newer short-video format. Their content analysis of the one hundred most-liked micro-videos, coded according to quantified impact, video content, and video form, further revealed a marked disparity in audience response across accounts. This finding suggests that platform migration in institutional health communication is shaped less by resource availability than by the perceived marginal benefit of a new channel relative to existing, already-effective ones, and that mere presence on a popular platform does not guarantee public reach; engagement instead appears contingent on stylistic and content choices that align with the platform's entertainment-oriented affordances.

3.2 Crisis Communication During the COVID-19 Pandemic

The COVID-19 pandemic served as a formative stress test for China's health communication infrastructure, and it accordingly produced the largest single cluster of English-language research on the subject. Ngai et al. [3] analyzed 608 COVID-19-related posts published by People's Daily, China's most-read state-owned newspaper, on its Sina Weibo account, coding each post along three dimensions: content (action, new evidence, reassurance, disease prevention, health care services, and uncertainty), message style (narrative versus non-narrative), and interactive features. Their integrated framework demonstrated that posts combining a narrative

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style with interactive elements such as links, hashtags, and multimedia achieved measurably higher rates of both "likes" and "comments" than purely informational, non-narrative posts. Because a comment requires a reader to process a post and formulate a response, the authors treated commenting as an indicator of a deeper form of engagement than passive liking, and their results suggested that emotionally resonant, story-driven communication was particularly effective at generating this deeper engagement during a period of acute public anxiety.

Complementing this content-analytic account of communication strategy, Ning et al. [4] turned attention to the darker side of the same crisis: the proliferation of rumor. Their descriptive study tracked COVID-19-related rumors circulating in China between December 2019 and April 2020, documenting sharp fluctuations in rumor volume over time and identifying Hubei, Zhejiang, and Guangxi as provinces with disproportionately high rumor activity. Critically, the study also evaluated the effectiveness of official government correction announcements, concluding that the timing and clarity of authoritative clarification played a measurable role in curbing the spread of specific rumors. Read together, these two studies suggest that the same crisis conditions that made narrative, emotionally engaging official communication especially effective also created fertile ground for the rapid circulation of misinformation, implying that effective crisis communication and effective rumor governance are best understood as two sides of a single communicative challenge rather than as separate problems.

3.3 Medical Social Influencers and the Diversification of Communicating Actors

A defining feature of the Chinese medical science popularization landscape beyond the institutional sphere is the emergence of what Ngai et al. [5] term "medical social influencers" (MSIs)—individually branded health communicators operating on social networking sites who function as credible, socially present sources of health information distinct from both official institutional accounts and traditional mass media. In their content analysis of MSI communication on Sina Weibo, Ngai et al. [5] developed a conceptual framework integrating health communication with dialogic and interpersonal communication theory, identifying five dimensions that drive public engagement: the perceived usefulness of the information provided, the presence of an interactive dialogic loop between communicator and audience, affective expression, a sense of connectivity, and a sense of collectivity or community. Their analysis showed that multimedia presentation increased the likelihood of audience "likes," that the expression of emotion by MSIs generated both likes and comments, and that the public's desire to belong to an online community was reflected in high rates of content sharing. Notably, this positive association between multimedia use and engagement on Weibo contrasts with patterns observed on platforms like Xiaohongshu, where information-focused text often outperforms visually dense content [9]. This work reframes medical science popularization not merely as a matter of accurate content delivery, but as a communicative relationship in which trust and engagement are actively constructed through dialogic and affective means.

Extending this perspective to audience reception across both individual and institutional sources, Chen et al. [6] applied topic modeling to cancer-related discourse on Weibo to identify which categories of cancer information generated the greatest user engagement, measured through retweets, comments, and likes. Their study found substantial variation in engagement across topic categories, underscoring that the popularity of medical science content on Chinese social media is unevenly distributed across disease types and framing

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strategies—a pattern with direct implications for how health communicators prioritize content in a resource- and attention-constrained environment. Collectively, these findings suggest that the credibility once presumed to inhere automatically in institutional or expert sources must now be actively cultivated on Chinese social media through strategic dialogic engagement, emotional resonance, and judicious topic selection.

3.4 Vaccine Communication as a Distinct Sub-Field

Vaccine-related communication has developed into a distinct and closely studied sub-field within Chinese health communication research, owing to its unusually high public-health stakes and its close entanglement with both scientific uncertainty and political messaging during the COVID-19 pandemic. Sun et al. [7] examined the forwarding behavior of Weibo users toward posts about COVID-19 vaccines, collecting more than one hundred thousand vaccine-related posts and analyzing a filtered sample using sentiment analysis and social network analysis. Their results indicated that both the emotional tone of a post's text and the structural characteristics of the poster's social network were significantly correlated with the likelihood that the post would be reposted, suggesting that the diffusion of vaccine information on Chinese social media is governed by an interaction between affective content and network position rather than by informational content alone.

Building on this line of inquiry, Xu et al. [8] analyzed Weibo posts specifically labeled as "vaccine science popularization" during the COVID-19 pandemic, classifying publishers into five categories — individuals, organizations, media, government, and scientists — and coding communication strategies along the dimensions of issue, topic, frame, and position. Using natural language processing to assess the sentiment of audience comments, the authors found that posts originating from publishers with higher perceived scientific authority were associated with more positive audience sentiment, providing empirical support for the intuitive but previously under-tested proposition that source credibility functions as a significant amplifier of vaccine-related science communication on Chinese social media. Considered alongside the broader MSI literature discussed in Section 3.3, this finding suggests that the credibility-engagement relationship identified for general medical social influencers extends, with some specificity, to the especially sensitive domain of vaccine communication.

3.5 Post-Pandemic Shifts: Patient-Generated Content and New Platforms

A notable trend in the most recent literature is a shift in research attention away from institutional and expert-driven communication and toward user-generated content shared on newer platforms. Yu and Zhao [9] examined 1,824 posts related to emerging infectious diseases—including influenza, mycoplasma pneumonia, and COVID-19—published on Xiaohongshu after China lifted its strict pandemic control measures in late 2023. Their content analysis found that textual strategies emphasizing information-focused language and source-credibility cues positively predicted audience engagement, while, counterintuitively, visually rich content was associated with lower engagement, likely reflecting the platform's preference for rapid information scanning over aesthetic complexity. The study further found that affective, interactive, and cohesive textual cues, together with the use of warm visual colors, positively predicted engagement. Given that Xiaohongshu is characterized by peer-to-peer sharing of everyday health experiences, this study signals an important evolution in the Chinese medical science popularization ecosystem: audiences appear increasingly drawn to health information framed through relatable, experiential narratives rather than top-down authoritative announce-

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ments, a shift with significant implications for how future health communicators might most effectively reach the public.

3.6 Misinformation, Rumor, and the Governance of Health Information

The rapid expansion of health-related content on Chinese social media has been accompanied by a parallel and extensively studied problem: the proliferation of health misinformation and rumor, already introduced in Section 3.2 through the case of COVID-19. Li et al. [10] extended this line of inquiry beyond the acute pandemic period, applying Latent Dirichlet Allocation topic modeling to nearly ten thousand rumor-debunking articles published on WeChat official accounts between 2016 and 2022. Their analysis classified health-related misinformation into distinct thematic categories, including rumors concerning the prevention and treatment of infectious disease and rumors concerning diet and general health practices, and tracked how the prevalence of each category shifted over time. The study also highlighted a structural feature of WeChat as a platform: because WeChat functions as a "strong-tie" network built around pre-existing relationships among relatives, friends, and colleagues, rumors circulating there tend to be more readily believed and more difficult to correct than equivalent content on the more loosely connected, interest-based network of Weibo. This platform-dependent asymmetry in the persuasiveness and correctability of misinformation represents an important theoretical contribution to the broader health communication literature, suggesting that governance strategies effective on one platform cannot simply be transplanted to another.

Together with the study by Ning et al. [4] discussed in Section 3.2, this body of research indicates that the governance of medical misinformation in China has evolved from crisis-driven, reactive correction during the early pandemic period toward a more systematic, continuously operating infrastructure of rumor identification and refutation embedded within the platforms themselves — a trajectory that mirrors, and in some respects anticipates, global efforts to combat health-related "infodemics."

3.7 Synthesis and Research Gaps

Table 1 summarizes the ten studies discussed above, organized by platform, focus, and key finding, to provide a consolidated overview of the current state of English-language research on medical science popularization in China.

Study (Ref. no.)	Platform(s)	Focus	Key Finding
Zeng & Li [1]	Weibo	CDC institutional adoption	Wide adoption of Weibo by CDC accounts but limited two-way interactivity
Zhu et al. [2]	Douyin	Provincial health committee accounts	Fewer than half of committees had accounts; adoption unrelated to regional wealth
Ngai et al. [3]	Weibo	People's Daily COVID-19 crisis communication	Narrative style and interactive features increased public engagement
Ning et al. [4]	Social media (general)	COVID-19 rumor propagation	Rumor volume fluctuated sharply; timely official clarification reduced spread
Ngai et al. [5]	Weibo	Medical social influencers	Usefulness, dialogue, and affect drove audience engagement
Chen et al. [6]	Weibo	Cancer-related discourse	Engagement varied sharply across cancer topic categories

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Study (Ref. no.)	Platform(s)	Focus	Key Finding
Sun et al. [7]	Weibo	Vaccine post forwarding	Sentiment and network features predicted repost behavior
Xu et al. [8]	Weibo	Vaccine science popularization	Higher publisher scientific authority linked to more positive audience sentiment
Yu & Zhao [9]	Xiaohongshu	Post-pandemic patient-generated content	Information-focused, affective, and interactive text cues raised engagement
Li et al. [10]	WeChat	Health rumor topic modeling	WeChat's strong-tie structure makes rumors harder to correct than on Weibo

Several patterns emerge from this synthesis that merit further scholarly attention. First, existing studies tend to examine platforms in isolation — Weibo, WeChat, Douyin, or Xiaohongshu — rather than tracing how the same health topic or the same communicating actor migrates across platforms with different audience compositions and affordances. Second, while considerable attention has been paid to engagement metrics such as likes, shares, and comments, comparatively little research has assessed the accuracy, completeness, or long-term behavioral impact of highly engaging content, leaving open the possibility that the most "successful" medical science communication by engagement metrics is not necessarily the most informative or medically sound. Third, most available English-language studies concentrate on the 2019–2024 period, coinciding with the COVID-19 pandemic and its immediate aftermath; there is a corresponding need for research examining whether the communicative norms, institutional practices, and audience trust patterns that emerged during the pandemic have persisted, weakened, or evolved further as China moves into an endemic phase. Fourth, current studies tend to draw on distinct theoretical traditions — source credibility theory, dialogic communication theory, narrative persuasion, and social network analysis — without a unifying framework that would allow findings to be compared cumulatively across studies. Finally, cross-cultural and comparative studies situating Chinese medical science popularization alongside health communication practices in other national and platform contexts remain relatively scarce, representing a promising avenue for future research.

A further methodological observation concerns the heavy reliance, across nearly all ten studies, on engagement metrics native to each platform — likes, comments, shares, and reposts — as the primary dependent variable of interest. While these metrics are readily available and computationally tractable, they are proxies for audience attention rather than direct measures of comprehension, attitude change, or health behavior. Only a minority of the reviewed studies, such as Ning et al. [4] and Li et al. [10], moved beyond engagement metrics to assess the substantive accuracy or correction of health content itself. Future work that pairs platform-native engagement data with independent measures of message accuracy, audience comprehension, or downstream health behavior would substantially strengthen the evidentiary basis for claims about what constitutes "effective" medical science popularization in the Chinese context, as opposed to merely "popular" content.

4. Conclusions

This narrative review has traced the development of medical science popularization in China across five interrelated themes: the evolution of institutional communication channels, crisis communication during COVID-19, the rise of medical social influencers, the distinct dynamics of vaccine communication, and the

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persistent challenge of misinformation governance. The reviewed literature indicates that the development of medical science popularization in China reflects a broader transformation of the country's media ecology: a movement from centralized, institution-led communication on early social media platforms toward a diversified, multi-actor ecosystem encompassing government agencies, credentialed medical professionals, individually branded health influencers, and, increasingly, ordinary users sharing experiential health narratives, across Weibo, WeChat, Douyin, and Xiaohongshu.

This expansion has considerably broadened public access to health information, but it has simultaneously created fertile ground for the rapid circulation of health misinformation, prompting the development of platform-specific rumor-monitoring and correction mechanisms. The effectiveness of medical science communication in China appears to depend not merely on the accuracy of the information conveyed, but on the interactive, affective, narrative, and platform-specific dynamics through which that information reaches, and is trusted by, its intended audience. For journalism and communication practice, these findings imply that health-communication training should place at least as much emphasis on narrative craft, dialogic engagement, and platform-specific strategy as on the accurate transmission of medical fact, since accuracy alone appears rarely sufficient to secure public attention or trust. Future research grounded in journalism and communication theory—particularly research that is comparative, longitudinal, and theoretically integrative—is well positioned to deepen understanding of these dynamics as China's health-information ecosystem continues to evolve beyond the acute conditions of the COVID-19 pandemic that shaped much of the existing literature.

Looking ahead, three developments are likely to shape the next phase of research in this area. The first is the continued platform turnover that has characterized the past decade of Chinese social media—from Weibo, to WeChat, to Douyin, to Xiaohongshu—which suggests that whatever platform dominates public health communication five years from now may not yet be the object of sustained scholarly attention today, underscoring the value of theoretical frameworks—such as dialogic engagement and source credibility—that can travel across platforms rather than remaining tethered to the affordances of any single one. The second is the increasing role of generative artificial intelligence in both producing and detecting health-related content, which raises new questions about authorship, credibility, and misinformation that the studies reviewed here, all predating widespread generative-AI adoption, could not address. The third is the gradual normalization of health communication research as a recognized sub-field within Chinese journalism and communication scholarship, which should, over time, help close the current disciplinary gap between the medical and public health journals where most of the extant literature resides and the communication-studies journals in which these findings are theoretically grounded.

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