A Study on the Diffusion of Knowledge from Professional Circles to the General Public and Its Media Effects-An Analysis Based on Health and Science Communication

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Abstract: Short-video platforms have become a key channel through which the general public accesses health and scientific knowledge. The spillover of specialist knowledge into the public sphere, whilst lowering the barriers to science communication and health education, may also give rise to oversimplification, a lack of evidence and misleading information due to fragmented presentation, emotional narratives and algorithmic recommendations. This paper takes health and science communication as its subject of analysis. Building upon existing research in communication studies, health communication and science communication, it explores the complete five-stage chain of production–adaptation–distribution–reception–feedback through which expert knowledge spreads from professional circles into the public sphere, the pathways of content reconstruction, and the media effects generated throughout the whole process. Within the short-video environment, the dissemination of knowledge cannot simply be viewed as the 'translation of specialist content for a general audience', but should instead be regarded as a circular process jointly constructed by production-adaptation-distribution-reception-feedback. Social feedback from user comments, likes, complaints and platform correction mechanisms will reversely drive creators to adjust content adaptation logic, push platforms to optimise algorithm distribution rules, and even prompt professional institutions to supplement or revise original knowledge production materials, forming a closed-loop iterative communication system. The key to enhancing communication effectiveness lies not in focusing solely on chasing traffic, but in striking a balance between accuracy, comprehensibility, credibility and actionability. Platforms, professional organisations and content creators need to jointly establish mechanisms encompassing evidence labelling, source verification, comment moderation and the enhancement of users' media literacy, thereby facilitating the more robust integration of sound and scientific knowledge into public life.

Keywords: Short Videos; Health Communication; Science Communication; Knowledge Diffusion; Media Effects

1. Introduction

The mobile internet has transformed the way the general public accesses knowledge. According to the 57th 'Statistical Report on the Development of China's Internet' published by the China Internet Network Information Centre, as of December 2025, the number of online video users in China had reached 1.093 billion, of whom 1.074 billion were short-video users, accounting for 95.4 per cent of all internet users [1]. This implies that short videos are no longer merely a medium for entertainment; they have also become a key source of information for health advice, scientific explanations, risk warnings and life decisions.

In this context, specialist knowledge from many fields-including medicine, public health and the natural sciences-continues to flow from professional circles into the daily information streams of the general public. The boundaries of knowledge dissemination have been significantly expanded, with doctors, researchers, media organisations, science communicators and the general public all having the potential to become content creators. Compared to traditional science communication, short videos feature a low barrier to entry, wide reach, high interactivity and algorithmic recommendations, enabling them to rapidly broaden the scope of

knowledge dissemination. However, it must not be overlooked that knowledge in the fields of health and science is highly specialised and heavily reliant on evidence. If content is oversimplified in an attempt to maximise its viral potential, there is a high risk of information being taken out of context, the emergence of pseudoscience, and even the encouragement of risky behaviour.

Consequently, this paper does not seek to propose highly novel concepts, but rather focuses on a relatively well-established question: how does specialist knowledge diffusion from professional circles to the public sphere on short-video platforms, and what media effects arise during this process? Employing a combination of literature analysis and normative argumentation, this paper examines four key aspects-knowledge translation, user trust, algorithmic distribution, and impact assessment-with the aim of providing insights for the production of health and science-related short-video content and platform governance.

2. Definition of Core Concept and Application of Diffusion Theory

This paper uniformly adopts the term knowledge diffusion to describe the whole process that specialist professional knowledge flows, reconstructs and spreads to ordinary public audiences, replacing scattered synonyms including permeation, penetration and transition used in preliminary analysis. Knowledge diffusion in short-video health science communication refers to the full-cycle flow of professional medical and scientific knowledge from institutional expert circles to the public information ecosystem, covering content reconstruction, platform distribution and user cognitive reshaping.

Rooted in classic diffusion of innovations theory, this paper analyses knowledge diffusion from four dimensions: actors, channels, time and social systems.

Actors: The diffusion system includes multi-stakeholder actors: knowledge producers (medical institutions, researchers), content adaptors (science popularisation creators), distribution gatekeepers (short-video platform algorithms), receiving publics, and feedback providers (comment users, regulatory authorities). Different actors hold different goals in the diffusion process-professionals prioritise knowledge accuracy, creators pursue communication readability, platforms emphasise user stickiness, and the public focus on practical life guidance.

Channels: Short videos become the core diffusion channel, distinguished from traditional offline lectures, paper popular science and TV documentaries by low access threshold, algorithmic targeted push and high real-time interactivity, which accelerates the diffusion speed while increasing the risk of distorted knowledge transmission.

Time: Knowledge diffusion presents obvious time-phase characteristics: the initial diffusion stage relies on authoritative professional accounts to release standard content; the rapid expansion stage is driven by emotional, simplified derivative secondary creation; the correction and standardisation stage relies on user feedback and platform rectification to revise biased diffusion content.

Social systems: Knowledge diffusion operates within the whole social health public service system. Public health cognition, residents' media literacy, industry content supervision rules and internet cultural context jointly restrict the final media effects of diffusion; unequal information acquisition under algorithmic operation also creates new stratification within the social system during knowledge diffusion.

3. Literature Review

Firstly, research in both health communication and science communication emphasises the tension between 'accurate knowledge' and 'effective understanding'. In Effective Science Communication: A Research Agenda, the National Academy of Sciences, Engineering and Medicine notes that science communication is not merely the transmission of facts; it is also shaped and influenced by a range of factors, including the audience's values, socio-cultural context and the media environment [3]. Research in the field of health communication also indicates that the public is not a passive recipient of information, but rather evaluates information based on a range of factors, including personal experiences, perceptions of risk and social relationships. The concept of an 'information pandemic', proposed by the World Health Organisation, further alerts us to the fact that, in the digital environment, there is an excessive volume of information of varying quality; such information can cause confusion, lead to risky behaviour and result in a loss of trust in

authoritative bodies [2].

Secondly, research on short videos in the context of health and science communication is becoming increasingly prevalent. A study by Basch and colleagues on COVID-19 vaccine-related content on the TikTok platform indicates that misinformation and satirical expressions may spread through the platform's popular culture [6]. Kong et al.'s study of Chinese-language TikTok short videos on diabetes found that the quality of videos varied depending on their source; content published by non-profit organisations, health professionals and news organisations was generally of a higher standard, but these videos fell short in covering basic information such as disease definitions, symptoms and risk factors [7]. A survey conducted by Kirkpatrick and Lawrie among young women in the United States similarly indicated that many users, for conscious or unconscious reasons, obtain health-related information from TikTok, and that content on the platform has influenced their health perceptions and subsequent actions [8].

Thirdly, media effects research provides an analytical framework for understanding the dissemination of knowledge via short videos. The classic knowledge gap theory posits that as the volume of information disseminated through the media increases, groups with relatively higher levels of education and socio-economic status tend to acquire knowledge more rapidly, whilst the gap between these groups is highly likely to widen as a result [4]. Whilst short videos appear to lower the barrier to access, differences in algorithmic recommendations and user interests may lead to the emergence of new forms of knowledge stratification. The Elaboration Likelihood Model suggests that when users lack specialist expertise or exhibit low levels of engagement, peripheral cues-such as the source's identity, the emotional tone of the message, and likes and comments-are highly likely to exert a significant influence on their judgements [5]. Consequently, the impact of scientific short videos in the health sector is not determined solely by whether the content is 'correct', but is also closely linked to various factors such as how it is presented, recommended and understood.

Fourthly, whilst many domestic studies focus on platforms such as Douyin and Kuaishou, with themes centred on medical popularisation, health education and the operation of knowledge-based accounts, these studies offer valuable insights in that they generally recognise the strong contextual nature of local platforms. Compared to YouTube or traditional portal websites, health and science-related content on Douyin is often integrated into everyday contexts such as family meals, childcare, exercise, chronic disease management and emergency preparedness. Whilst such contextualised presentation can, to some extent, reduce the difficulty of comprehension, it also carries a high risk of oversimplifying complex issues into so-called 'empirical rules of thumb'. Therefore, research conducted in the local context should place greater emphasis on managing the boundaries of knowledge once it has been integrated into everyday life.

Existing research has already demonstrated that short-video platforms possess potential for science communication, whilst also harbouring risks of misinformation. However, some studies still focus solely on assessing content quality, with very few examining professional production, content adaptation, algorithmic distribution and user reception as an integrated process. Consequently, this paper regards the spread of professional knowledge to the public as a circular continuous process covering production–adaptation–distribution–reception–feedback, and does not equate communication effectiveness solely with view counts, likes or shares. User feedback acts as a reverse regulating factor that reshapes the prior three links of knowledge production, content adaptation and algorithm distribution.

4. Argumentative Analysis

4.1 The Closed-Loop Diffusion Chain of Professional Knowledge: Production-Adaptation-Distribution-Reception-Feedback

Knowledge from the health and scientific fields generally undergoes five interrelated, circular stages before stably spreading among short-video users: Firstly, professional production, whereby knowledge originates from medical guidelines, research findings, experts' experience and public health institutions. Secondly, content adaptation, in which creators rewrite complex concepts into expressions that are relatable to users' daily lives. Thirdly, content distribution via the platform, where algorithms push relevant content based on tags,

engagement rates, completion rates and user profiles. Fourthly, user reception, whereby users construct their understanding and form judgements based on their own experiences, feedback in the comments section, and existing beliefs. Fifthly, social feedback, including comment discussions, user complaints, platform correction reminders, click/complete data and official authoritative rebuttals. This feedback link forms a reverse loop: negative user feedback about incomprehensible content pushes creators to adjust adaptation strategies; widespread misinformation feedback prompts platforms to revise algorithm distribution weights; large-scale public cognitive confusion may drive professional institutions to supplement and update original knowledge production standards. This five-stage closed-loop pathway demonstrates that the dissemination of knowledge is not a one-way process of indoctrination, but rather a continuous iterative process of reconstruction shaped by forward knowledge transmission and reverse social feedback.

This pathway demonstrates that this five-stage closed-loop pathway demonstrates that the dissemination of knowledge is not a one-way linear process of indoctrination, but rather a continuous iterative reconstruction process driven by production-adaptation-distribution-reception-feedback. When specialist knowledge enters the public sphere, it is inevitably condensed, subject to selection and requires interpretation. The focus is not on whether translation takes place, but rather on whether the boundaries of evidence are upheld during the translation process. To take an example, nutritional knowledge can be explained through the context of daily meals, but correlations must never be mistaken for causation; as for knowledge on disease prevention, case studies can be used to reinforce understanding, but individual cases must not be used to replace medical advice. Accuracy is the cornerstone of health and science communication, whilst comprehensibility determines whether knowledge can be effectively integrated into public discourse.

4.2 A Reasonable Approach to Content Reconstruction: Making It Relatable to Everyday Life Rather Than Dumbing It Down

The strength of short videos lies in their ability to transform abstract knowledge into segments that can be watched, listened to and perceived. Effective educational short videos generally possess three characteristics: firstly, they have a clear problem-oriented focus, addressing genuine public concerns; secondly, their structure is clear and straightforward, typically following a sequence of posing a question, explaining the underlying principles, setting out limitations, and providing practical advice; thirdly, they make the evidence transparent, for example by citing the sources of guidelines, specifying the target audience, and advising when to seek medical attention or consult authoritative sources.

It is important to be wary of the fact that some creators interpret ‘shareability’ as the use of sensational headlines, the presentation of alarmist risk narratives, or the presentation of a single conclusion. Whilst such content may boost click-through rates, it undermines the conditional nature and complexity of knowledge. Communication in the fields of health and science is particularly ill-suited to ‘absolutist statements’, such as ‘a certain food will definitely cause cancer’ or ‘‘a particular method can completely reverse a disease’-are examples of inappropriate absolutist statements. A more prudent communication strategy would be to: explain relevant mechanisms in plain language; relate them to real-life experiences through specific scenarios; maintain the boundaries of the professional field by applying necessary qualifications; and ensure that the actions users can take remain within safe parameters.

4.3 User Trust Mechanisms: A Combination of Authoritative Endorsement and Empirical Resonance

Users’ trust in health and science-related short videos often stems from a variety of cues. Cognitive trust encompasses professional credentials, institutional accreditation and cited sources, all of which enhance the credibility of the content; relational trust encompasses case narratives, emotional resonance and interactions in the comments section, which help lower the barrier to understanding. The two are not inherently at odds. On issues such as vaccines, chronic disease management and food safety, professional endorsements can provide a baseline of reliability, whilst relatable narratives help users understand the connection between the information and their own circumstances.

However, relational trust can also lead users astray. Ordinary users are often more easily moved by 'personal experiences' and 'wisdom gained from those who have been there', yet may overlook the hierarchy of evidence. Contributions, questions and rebuttals in the comments section also influence judgement; constructive comments can serve to expand on the information, whilst emotional comments may trigger panic or lead to conspiracy-theory-style interpretations. Consequently, platforms must not merely view comment sections as metrics for user engagement, but should also manage them as spaces that facilitate the healthy and scientific dissemination of knowledge. For highly upvoted comments that contain obvious errors, soft advertising designed to induce purchases, and pseudo-expert rhetoric, clearer and more explicit warning and correction mechanisms should be established.

It is also worth emphasising that algorithmic distribution does not operate within a neutral technological context. Short-video platforms often treat watch time, engagement rates and user interests as key signals; whilst this facilitates the rapid dissemination of high-quality content, it may also grant additional visibility to content that is controversial, emotive or sensationalised. When it comes to topics such as health and science, the optimisation objectives set by algorithms do not always align with the goals of public knowledge: platforms are focused on maximising viewing time, whilst public communication prioritises accurate understanding and safe action. The tension between these two approaches in the process of knowledge dissemination is the institutional issue that requires the most attention.

4.4 Media Effect Evaluation: Shifting from Traffic Metrics to Cognition, Attitudes and Behaviour

When evaluating health and science short videos, focusing solely on view counts and 'likes' is far from sufficient. Although high-traffic explanatory content is seen by many, this does not confirm that users have accurately understood it, adopted rational attitudes, or engaged in safe behaviour. A more appropriate evaluation should encompass three dimensions: firstly, cognitive effects-that is, whether users have acquired correct knowledge, grasped key concepts and understood the applicable boundaries; secondly, attitudinal effects-that is, whether users' trust in scientific evidence, public health advice or professional bodies has been enhanced; and thirdly, behavioural effects-that is, whether users are willing to verify information further, consult professionals or take safe actions.

Within these three dimensions, the effects arising from behaviour require particularly careful consideration. Health communication does not always aim to prompt users to take immediate action. Appropriate outcomes for some content include 'do not self-medicate', 'seek medical attention as soon as possible' and 'do not share information whose accuracy has not been verified'. Therefore, the media effects of short videos need to be categorised into different outcome types, such as positive acceptance, deferred consideration and risk avoidance. In the context of science communication, its impact should not only focus on whether users remember the conclusions, but also consider whether they understand that scientific knowledge involves levels of evidence, is subject to certain limitations, and is subject to revision.

4.5 Platform Governance and Creator Responsibility

For specialist knowledge to extend from specific professional circles to the wider public, platforms, relevant organisations and content creators must collectively shoulder their respective responsibilities. At the platform level, mechanisms for identifying and recommending authoritative sources must be optimised, so that high-quality content produced by public bodies, professional associations, hospitals and universities is more easily discovered by audiences; simultaneously, mechanisms for alerts, source tracing and manual verification must be established for content posing higher health risks. At the institutional level, on the one hand, professionals should be actively encouraged to participate in science communication via short videos; on the other hand, they should be provided with communication training to prevent their expressions from being overly obscure or stiff and formulaic. At the creator level, the most fundamental standards should be that evidence is verifiable, boundaries are clearly defined, and recommended actions are safe and reliable.

Furthermore, the public's media literacy remains

indispensable. As platform governance cannot completely eradicate misinformation, users must develop the ability to make basic judgements: checking whether the publisher has relevant professional expertise, whether the content provides reliable sources, whether conclusions are overly absolute, whether there are attempts to induce product purchases, and whether the comments section contains a significant amount of emotional rhetoric. For the dissemination of knowledge via short videos to evolve from a 'bustling traffic arena' into a 'reliable public knowledge service', this can only be achieved when improvements are made in tandem across the three areas of content production, platform distribution and user judgement.

5. Conclusion

Short-video platforms have created an entirely new infrastructure for the mass dissemination of health and scientific knowledge. They are capable of conveying knowledge-previously confined to specialist circles-into the news feeds of ordinary users, thereby lowering the threshold for accessing knowledge and expanding the reach of public science communication. However, this process will not automatically yield the desired results. When specialised knowledge is adapted into short-video formats, it is essential to strike a careful balance between accuracy and comprehensibility, as well as between communication efficiency and the boundaries of evidence, and the relationship between emotional resonance and rational judgement.

This study argues that the diffusion of knowledge from professional circles into the public sphere should be viewed as a coherent closed-loop process comprising production-adaptation-distribution-reception-fee dback. Rather than a one-way linear transmission, social feedback continuously feeds back to adjust knowledge production standards, content adaptation styles and platform distribution mechanisms, and optimises the overall quality of public science communication over iterations. The key objective of health and science communication via short videos is not to create a one-off viral sensation, but to construct a reliable, easily understandable, actionable and amendable knowledge environment across a broader field. Future research could build upon the analytical framework established in this paper to conduct further content analysis, questionnaire surveys or experimental studies, thereby comparatively investigating the impact of different sources, narrative styles and evidence labelling strategies on users' cognition, attitudes and behaviour. At the practical level, a sound approach would be to encourage professional organisations to actively engage with platforms, enhance creators' awareness of evidence, improve platforms' error-correction mechanisms, and raise the public's ability to discern health and scientific information.

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