

Analysis of Factors Influencing the Quality of Information Disclosure in Major Public Health Emergencies in the Post-Pandemic Era—A Post-print from the Public Perspective

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Abstract

[Purpose/Significance] Information openness and transparency constitute the most effective approach to combating infodemics, with quality being their life-line. This study examines the effectiveness of information disclosure quality during the COVID-19 pandemic response as a starting point to explore the influencing factors of information disclosure quality in major public health emergencies, thereby providing references for its improvement. [Method/Process] Grounded in user experience, raw data were collected through semi-structured interviews. Based on information ecology and crisis management theories, an exploratory qualitative research approach was employed to analyze the relationships among factors influencing information disclosure quality in major public health emergencies from a public perspective in the post-pandemic era, and to construct a theoretical model. [Results/Conclusion] The study clarifies the impact and mechanisms of core factors across four dimensions—disclosure subjects, information itself, information technology, and environment—on information disclosure quality in major public health emergencies in the post-pandemic era. It identifies that the comforting nature of pre-event information, the narrative quality of relevant professional knowledge during events, the summarizing nature of post-event information, the application of information technology to enhance the knowledge content of disclosed information, and the intelligentization of disclosure methods constitute unique elements of information disclosure quality in the post-pandemic era, aiming to provide theoretical and practical guidance for improving information disclosure quality in major public health emergencies.

Full Text

Analysis of Factors Influencing Information Disclosure Quality in Major Public Health Emergencies in the Post-Pandemic Era: From the Public Perspective

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Abstract

[Purpose/Significance] Transparent information disclosure is the most effective approach to combating an “infodemic,” and quality is its lifeline. Starting from an examination of information disclosure quality during the COVID-19 pandemic response, this study explores the factors influencing information disclosure quality in major public health emergencies to provide references for improving such disclosure. **[Method/Process]** Grounded in user experience, this study collected raw data through semi-structured interviews. Based on information ecology and crisis management theories, it employed exploratory qualitative research methods to systematically examine the relationships among factors influencing information disclosure quality in major public health emergencies from the public perspective in the post-pandemic era, and constructed a theoretical model. **[Result/Conclusion]** The study elucidates the influence and mechanisms of four core dimensions—disclosure subjects, information itself, information technology, and environment—on information disclosure quality in major public health emergencies in the post-pandemic era. It identifies unique elements of disclosure quality in this context, including the reassuring nature of pre-event information, the narrative quality of professional knowledge during events, the summarizing function of post-event information, and the use of information technology to enhance knowledge content and intelligentize disclosure methods. These findings provide theoretical and practical guidance for improving information disclosure quality in major public health emergencies.

Keywords: post-pandemic era; major public health emergencies; grounded theory; influencing factors

Once a major public health emergency erupts, it rapidly generates enormous social impact and becomes the focus of public attention, while the public urgently demands information about the truth of the event, emergency response measures, and effectiveness. On February 23, 2020, General Secretary Xi Jinping emphasized at the meeting on coordinating COVID-19 prevention and control with economic and social development that we must adapt to changes in public information access channels and accelerate the enhancement of mainstream media’s online communication capabilities. COVID-19 has brought both opportunities and challenges for improving information disclosure quality in major

public health emergencies. Current information disclosure concepts, systems, and capabilities have been forced to adjust and improve rapidly under emergency conditions, achieving due effectiveness. However, the existing information disclosure system struggles to respond to public needs under current drastic changes, necessitating the construction of a more comprehensive system. As the post-pandemic era approaches, we must solve these emerging challenges. Therefore, starting from examining the effectiveness of information disclosure quality during this pandemic, we must deeply explore the factors influencing information disclosure quality in major public health emergencies in the post-pandemic era.

Related Research

2.1 Research on Information Disclosure in Major Emergencies

Current academic research on information disclosure in major emergencies has examined principles, characteristics, government-media relations, public demands, and case studies. Yuan Weihai [2] proposed that emergency information disclosure is a government responsibility that must adhere to principles of lawful disclosure, accurate release, timely dissemination, and appropriate feedback. He Jun et al. [3] found that government information disclosure in emergencies features timeliness, proactivity, authority, sufficiency, and guidance. T. A. Maxwell [4] and Wang Yilin et al. [5] respectively pointed out that in crisis events, media, government, and the public should form a triangular interaction model of mutual influence. Han Wei et al. [6] identified basic needs, expected needs, attractive needs, and indifferent needs as public information demands in public health emergencies. Tu Xiaofang et al. [7] analyzed government response characteristics during the COVID-19 pandemic and proposed strategies for strengthening information transmission in major public health emergencies.

2.2 Research on Information Disclosure Quality and Influencing Factors

Zhu Xiaofeng et al. [8] argued that factors influencing information disclosure quality include disclosure quality (scope, timing, cost tasks) and information quality (content tasks). Mo Zuying et al. [9] identified government and user dimensions as influencing factors, with the government dimension covering disclosure scope, methods, and efficiency, and the user dimension covering timeliness, accuracy, consistency, completeness, orderliness, and reliability. S. S. Daves et al. [10] suggested that organizational capacity, data characteristics, and users are dimensions to consider for information disclosure quality. The U.S. Information Quality Act defines government information quality as utility, objectivity, and integrity. Tang Qiong et al. [11] proposed that Chinese government information quality standards mainly include timeliness, accuracy, completeness, utility, and accessibility. Wang Yundi [12] identified timeliness, comprehensiveness, accuracy, convenience, and security as primary factors affecting government information quality. M. Riesener et al. [13] used LDA algorithms

to identify six dimensions affecting emergency information quality: timeliness, reliability, credibility, interpretability, operability, and comprehensiveness. Xu Wenqiang et al. [14] argued that factors affecting emergency information quality in big data environments include accuracy, timeliness, applicability, consistency, interpretability, and effectiveness.

In summary, scholars have conducted valuable theoretical and practical explorations of information disclosure and quality influencing factors in major public health emergencies. While previous information disclosure in China had existing problems, their severity was not fully exposed. However, the initial COVID-19 outbreak completely revealed serious deficiencies in information disclosure quality, amplifying the gap between public demand and supply. This pandemic has profoundly impacted cognitive models of information disclosure quality work. Under existing problems and new post-pandemic conditions, defining information disclosure quality in major public health emergencies has become a hot social issue. Therefore, this paper constructs a model of factors influencing information disclosure quality in major public health emergencies to explore influencing factors and their relationships in the post-pandemic era, providing theoretical and practical guidance.

Concept Definition and Theoretical Basis

3.1 Public-Perspective Definition of Information Disclosure Quality in Major Public Health Emergencies

Mo Zuying et al. [15] conceptualized government information disclosure quality as comprising both information quality and disclosure quality, which are related yet distinct. They defined public-perspective disclosure quality as “the degree to which government information can meet or exceed public expectations and satisfy public information needs.” Li Hanke et al. [16] selected “objectivity,” “standardization,” and “convenience” as primary measurement dimensions, noting that for information recipients, disclosure must serve users themselves, and only responsive information achieves reception efficiency. Building on this analysis, this paper defines information disclosure quality in major public health emergencies from the public perspective as the degree to which disclosure can meet or exceed public expectations and effectively satisfy public needs for preventing, managing, and mitigating crises.

3.2 Theoretical Basis

Existing research on information disclosure quality influencing factors primarily focuses on disclosure quality and information quality itself, without considering the information ecology, crisis management, and user experience characteristics of major public health emergencies. Information ecology theory views information processing as an ecosystem, explaining information generation, organization, and utilization, providing a foundation for constructing our model. However, it fails to adequately consider public demand differences across cri-

sis stages (pre-crisis, during crisis, post-crisis) or the user-centered nature of disclosure quality. Therefore, this paper integrates information ecology theory (viewing information processing as an ecosystem), crisis management theory (pre-crisis, during crisis, and post-crisis control), and user experience theory (user-perceived satisfaction of needs) to deeply explore influencing factors and their interrelationships, constructing a quality influencing factors model.

3.2.1 Information Ecology Theory Information ecology theory [18] provides a methodology for observing, analyzing, and processing information generation, organization, and utilization within and between organizations. An information ecosystem comprises information actors, information itself, information environment, and information technology. Information actors are the subjects—in major public health emergencies, these are disclosure subjects (government departments at all levels responsible for disclosure) and service targets (citizens, legal persons, and other organizations), with this paper focusing specifically on the public. Information itself refers to content that governments must proactively disclose or release upon request. The information environment constitutes the context and setting for disclosure. Information technology serves as the carrier for information organization and dissemination. The ecosystem also includes information behaviors and relationships among these elements [19].

3.2.2 Crisis Management Theory Crisis management involves control actions across pre-crisis, during-crisis, and post-crisis stages to effectively prevent, manage, and mitigate crises [20]. Any public crisis caused by major public health emergencies is simultaneously an information crisis or even an “infodemic,” making information disclosure the most effective response. Information disclosure in major public health emergencies should focus on prediction, prevention, and early warning pre-crisis; efficiency and effectiveness during the event; and outcome analysis and experience summarization post-crisis.

3.2.3 User Experience Theory User experience refers to the experience generated when people interact with products, including perceived satisfaction of needs, meaning attributed to products, and resulting feelings and emotions [21]. User experience comprises desirability, reliability, usability, ubiquity, guidance, and interactivity [22], directly affecting public satisfaction with information disclosure in major public health emergencies. The COVID-19 pandemic has transformed public perceptions of disclosure quality, making user experience perspective essential for defining quality elements in the post-pandemic era.

Research Design on Factors Influencing Information Disclosure Quality

4.1 Research Method

This study aims to deeply analyze factors influencing information disclosure quality in public health emergencies and their interrelationships from the pub-

lic perspective in the post-pandemic era. This both supplements and improves public crisis information management and provides preliminary construction of an influencing factors model. Grounded theory is an exploratory qualitative research method that collects original data to identify corresponding connections and gradually codes to expand theoretical frameworks conceptually, showing good adaptability for social phenomena without mature variable categories, measurement scales, or theoretical hypotheses [23]. Therefore, grounded theory is appropriate for exploring influencing factors and their relationships from the public perspective.

4.2 Data Collection

Grounded theory requires semi-structured in-depth interviews with representative public members. Researchers understand public perceptions and feelings about current information disclosure quality through conversations lasting approximately 45 minutes, examining which factors affect disclosure quality, then constructing social theory reflecting real life through data collection and analysis. This study's interview outline was developed based on relevant literature and adjusted during interviews according to respondent feedback, with further in-depth interviews conducted based on content. The interview outline is shown in .

Given the specialized nature of the research question, this study selected educated young and middle-aged individuals as respondents. Thirty respondents were interviewed, including Wuhan residents and volunteers during the 2020 COVID-19 outbreak who had direct experience with information disclosure quality. Interviews centered on “factors influencing information disclosure quality in major public health emergencies,” continuing depth interviews based on theoretical saturation principles. From respondents' words and sentences, perspectives on disclosure quality elements were derived, examining causal relationships, contextual conditions, and intervening conditions. This yielded 36 open codes, 11 axial codes, and 4 selective codes. Ten respondents were randomly selected for theoretical saturation testing. Respondent demographics are shown in .

4.3 Information Disclosure Quality Factor Extraction

4.3.1 Open Coding Open coding is the first step in grounded theory research, requiring researchers to set aside personal biases and analyze collected data in its original state. It is a process of “mixing,” “disrupting,” and re-composing data with conceptual labels, yielding 36 initial concepts and several categories, as shown in .

4.3.2 Axial Coding Axial coding identifies common concepts among open codes to extract axial codes by examining how the public views influencing factors and considering their perspectives. By studying relationships and logical sequences among different concepts and based on information ecology theory,

this research derived four main categories: disclosure subject, disclosed information, information technology, and social environment, as shown in .

4.3.3 Selective Coding Selective coding further processes and summarizes axial coding concepts to derive more comprehensive core categories through abstract description of previous processes and categories based on theoretical models. This study systematically identified selective codes from the four main categories, finding that disclosure subject, information itself, information technology, and social environment all significantly influence information disclosure quality. Additionally, information technology and social environment affect disclosure quality indirectly by influencing disclosure subjects and disclosed information, as shown in .

Based on this coding analysis, the theoretical model of factors influencing information disclosure quality in major public health emergencies from the public perspective in the post-pandemic era is shown in [Figure 1: see original paper].

4.3.4 Saturation Testing Another researcher conducted saturation testing on raw interview data from 10 randomly selected respondents. New codes did not exceed the four main categories of factors influencing information disclosure quality, with no important concepts, categories, or relationships omitted, indicating theoretical saturation.

Interpretation of the Influencing Factors Model

5.1 Impact of Disclosure Subject on Information Disclosure Quality

In the process of information disclosure for major public health emergencies in the post-pandemic era, disclosure subjects' behaviors, methods, and personnel characteristics may all affect disclosure quality.

5.1.1 Disclosure Behavior Adherence to crisis management theory with different focuses pre-crisis, during crisis, and post-crisis directly affects disclosure quality. Proactive disclosure and early warning pre-crisis are crucial—respondents noted that initial failure to promptly disclose COVID-19 information caused insufficient attention from government and public, severely affecting quality. During the crisis, effective guidance and control of public opinion and rumors, privacy protection, and standardized disclosure procedures demonstrate disclosure value.

5.1.2 Disclosure Methods The form, timing, and channel selection of information disclosure directly affect quality. To improve readability, disclosure forms should be diversified, combining text with images, videos, and audio rather than text-only formats. Major public health emergency information differs from general information and requires cautious handling due to its significant social impact. The information formation process is complex, with both

the event's development and public understanding evolving over time, which determines disclosure timing. Information should be timely—dynamic, intelligent, and prompt disclosure is essential during emergencies. Once information misses its window of effectiveness, it becomes useless, as respondents noted regarding the late announcement of Wuhan's lockdown when people lacked preparation time. Disclosure channels should combine new media (Weibo, WeChat, mini-programs) with traditional channels (community announcements) to meet both intelligent information needs and elderly access requirements.

5.1.3 Personnel Characteristics Personnel characteristics refer to work attributes of grassroots government staff handling disclosure. Staff attitudes, professional skills, leaders' discretionary power, and burnout from prolonged stress directly affect quality. Respondents noted cases where staff released patients' personal information without redaction, causing severe distress through repeated forwarding and improper disclosure. Some grassroots leaders may conceal, underreport, or omit information to evade responsibility, resulting in incomplete disclosure.

5.2 Impact of Information Itself on Information Disclosure Quality

Information itself is the core of disclosure quality—the source without which quality cannot exist. During major public health emergencies, people need trustworthy resources and reliable guidance through disclosure. Information focused differently across pre-crisis, during-crisis, and post-crisis stages directly affects quality.

5.2.1 Pre-Crisis Information: Predictability and Reassurance In the initial outbreak stage, high-quality information must be both predictive and reassuring to effectively guide response, reduce initial chaos and rumor spread, and mitigate group polarization and social imbalance. Predictive information from CDC, like earthquake forecasts, prepares people psychologically and behaviorally for major epidemics, while information about government preparedness can soothe public anxiety.

5.2.2 During-Crisis Information: Completeness, Timeliness, Guidance, Repair, and Narrative Professional Knowledge Information with completeness, timeliness, and guidance correctly directs response departments and the public while ensuring authority and eliminating rumors. Narrativizing complex, obscure epidemic response knowledge into engaging detective-story formats makes it accessible and effective for improving public knowledge, as respondents found CDC epidemiological investigations particularly engaging and informative.

5.2.3 Post-Crisis Information: Summarization Post-crisis information summarization supplements high-quality disclosure by organizing experiences

into standardized, complete response protocols for similar emergencies, effectively improving public epidemic response knowledge.

5.3 Impact of Information Technology on Information Disclosure Quality

Information technology permeates the entire disclosure process, from acquisition to organization to dissemination. It must ensure information security throughout, preventing malicious tampering while protecting close contacts' privacy and preventing online human flesh searches and cyber violence. It must also enable precise and timely delivery. In the post-pandemic era, emerging technologies like intelligent analysis and big data are particularly important.

5.3.1 Pre-Crisis: Predictive Analysis Precise pre-crisis predictive information is prerequisite for effective response. Using information technology to comprehensively analyze data for accurate prediction provides various contingency plans. During the global COVID-19 pandemic in 2021, China's effective control and Shanghai's precise prediction and prevention of local cases in late January through timely disclosure prevented nationwide panic, with response protocols later promoted in other regions.

5.3.2 During-Crisis: Mining and Precision Services Using information technology for precise and timely delivery effectively improves disclosure quality. During the 2021 pandemic, technology located close contacts of sporadic local cases for timely announcement and prevention, effectively controlling transmission. The red-yellow-green health code system was particularly effective for COVID-19 prevention.

5.3.3 Post-Crisis: Statistics and Monitoring Using information technology to summarize epidemic information forms response protocols for future use. Monitoring key regions and time nodes for potential major epidemics enables timely preventive measures.

5.4 Impact of Social Environment on Information Disclosure Quality

From the social environment perspective, disclosure quality development is closely related to supervision systems, policies and regulations, public opinion pressure, and regional differences.

5.4.1 Policies and Regulations Relevant policies and regulations standardize government disclosure behavior and guarantee quality. The Law of the People's Republic of China on the Prevention and Treatment of Infectious Diseases (passed 1989, revised 2013) and Regulations of the People's Republic of China on Open Government Information (implemented 2008, revised 2019) standardize epidemic information management and disclosure. However, respondents

noted that while complaint hotlines are provided, the absence of designated responsible persons means errors cannot be traced to accountable individuals.

5.4.2 Supervision System Government self-supervision and public supervision ensure efficient disclosure completion. However, respondents believe the public rarely exercises supervision rights over information disclosure, lacking participation channels, making it difficult to verify authenticity and control supervision effectiveness.

5.4.3 Public Opinion Pressure During COVID-19, the international public opinion environment was unfriendly to China. Transparent, fair information disclosure about China's response countered malicious slander. Increased pressure in the post-pandemic era undoubtedly drives disclosure quality improvement.

5.4.4 Regional Differences Significant quality differences exist between developed and underdeveloped regions. Underdeveloped regions lag in infrastructure, technology investment, skilled personnel, and disclosure awareness, resulting in poorer timeliness, richness, and knowledge content. Respondents noted that during Tonghua's outbreak, disclosure speed and quality clearly lagged behind developed regions like Shanghai and Beijing.

5.5 Relationships Among Influencing Factors

The four dimensions—disclosure subject, disclosed information, social environment, and information technology—are closely interconnected, jointly constructing the framework of factors influencing information disclosure quality from the public perspective. Social environment conditions and information technology quality affect both disclosed information and disclosure subjects, thereby influencing overall quality. Sound social environments and policies guarantee quality, affecting both subjects' behaviors and information organization. Information technology applications provide technical guarantees for every stage of information acquisition, storage, and disclosure while enhancing knowledge content and improving subjects' guidance and control capabilities. These four dimensions are not independent but intimately interconnected. When analyzing influencing factors, we must understand both individual impacts and inter-factor relationships.

Compared with previous research, public-perspective factors in the post-pandemic era show differences, including pre-event information reassurance, during-event public opinion/rumor control and guidance, narrative professional knowledge, post-event information summarization, and using information technology to enhance knowledge content and intelligentize disclosure methods. These are unique quality elements not fully explored in existing literature.

This study reveals influencing factors and their relationships by integrating information ecology and crisis management theories, exploring direct and mediating

impacts on disclosure quality. Limitations include: first, only considering four dimensions based on information ecology theory—other variables may exist requiring further research; second, using qualitative methods without quantitative analysis, which will be addressed in future empirical studies.

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Note: Figure translations are in progress. See original paper for figures.

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