Why Do Citizens Engage With the TikTok Accounts of Public Hospitals in China?

Wei Zhang¹, Jie Mei¹, Weifang Song², Richard Evans³, and Yaqian Xiang⁴

Abstract
Chinese public hospitals have increased usage of TikTok to communicate with citizens on health-related matters. This study aims to investigate the engagement of citizens with the official TikTok accounts of public hospitals, and identify the major characters of the videos with the highest public engagement level, as well as underlying factors that make them successful. A comprehensive search on TikTok, a video-sharing social networking service, was completed to identify all official accounts of public hospitals in Mainland China. Data was collected from 40 public hospitals with the top 100 TikTok videos being identified for content analysis. The majority of them were created by public hospitals located in the Central and Western regions of China. The common features of the top 100 identified videos include: low message sensation value and short video length, and are typically accompanied by background music, subtitles, and an introduction at the beginning of the video. The most frequently viewed video type is film clips which are used to disseminate knowledge of diseases and promote healthcare professionals. Health communication via the official TikTok accounts of public hospitals in China offers significant potential. Hospitals are encouraged to engage citizens in health-related conversations to build their credibility and professional image online. Among the popular short-videos, the message sensation value is not largely connected to video popularity, while the content of videos seems more important. This requires skills in video creation or procurement, and editing, while rhetoric should be cautiously applied. The content of videos should provide education and positive energy.

Keywords
health communication, public hospitals, healthcare delivery, social media, China

Introduction
Hospitals’ Use of Social Media
Since their inception in the late 1990s, social media platforms have become an essential part of our daily lives, changing the way we communicate and stay connected. Their rapid growth has provided users with new forms of networking with friends and family, and for receiving information from public and private organizations. In Mainland China, WeChat, Sina Weibo, and TikTok, have become the dominant platforms for personal connection. However, in the public sector, hospitals have also started to adopt social media to engage with citizens on health-related matters. For hospitals, the benefits of engagement include: more straightforward building of hospital images, improved patient-physician relationships, and easier recruitment of patients for medical studies. In the United States, the majority of hospitals use at least one social media platform, with 70% of them having a Facebook account (Griffis et al., 2014; Richter et al., 2014). Similarly, in the Netherlands and the United Kingdom, there is a high adoption rate, with preferred platforms being YouTube, LinkedIn, and Facebook (Van de Belt et al., 2012). By exploring the highest regarded tertiary hospitals in China, Zhang et al. (2018). found that social media rates had increased drastically in recent years, presenting a shift from purely health information provision to service orientation. Following this effort, Shen et al. (2019). identified that Wechat service accounts were more prevalent than Wechat subscription accounts through an examination of 688 public hospitals’ services provided via Wechat. They summarized the functionality of Wechat-based services into four

¹Huazhong University of Science and Technology, Wuhan, Hubei, China
²Chenggong Hospital Affiliated to Xiamen University, Xiamen, Fujian, China
³Brunel University, London, UK
⁴Guizhou University of Finance and Economics, Guiyang, China

Corresponding Author:
Yaqian Xiang, School of Public Administration, Guizhou University of Finance and Economics, Guiyang, Guizhou, 550025, China.
Email: 201801160@mail.gufe.edu.cn

Creative Commons CC BY: This article is distributed under the terms of the Creative Commons Attribution 4.0 License (https://creativecommons.org/licenses/by/4.0/) which permits any use, reproduction and distribution of the work without further permission provided the original work is attributed as specified on the SAGE and Open Access pages (https://us.sagepub.com/en-us/nam/open-access-at-sage).
Despite the prosperity of social media use among hospitals, researchers have noted challenges in their use for public engagement (Sugawara et al., 2020; Zhang et al., 2018). An Italian study claimed that although social media has saved the decreasing level of engagement with hospital websites, their management requires sustained effort for fostering public participation, that is, creation of informational content is required with citizens expecting speedier exchanges of communication (Vanzetta et al., 2014). Similarly, scholars have identified the existing failure of hospital social media in terms of patient engagement with content analysis. Several studies have revealed that there is too little interaction between hospitals and the public on social media, with much of the content being related to organizational information (Gonçalves, 2020; Wong et al., 2016). With the evolving landscape of social media, researchers have noted several considerations, including the management of content across channels, the discontinuing of redundant accounts, and the financial support required for the management and creation of novel strategies for engagement (Zhang et al., 2018).

### Health-Related Use of TikTok in China and Around the World

According to the latest report of the China Internet Network Information Center (CNNIC, 2021), the number of mobile internet users has reached 1.07 billion, with the number of micro-video users now exceeding 888 million, representing a penetration rate of 87.8% by June 2021. TikTok, or Douyin as it is known in China, is the most popular short video-based social media platform. It is a short video-based sharing platform that enables users to create and share videos ranging from a few seconds to several minutes. It is distinguished from other social media platforms by its video editing features and templates which allow users to easily add music and special effects to their created videos. Since its creation in 2016, many healthcare departments in China have engaged with the platform. Zhu et al. (2020) examined the status quo of TikTok among provincial healthcare departments in China, and found that its development was still in its infancy with many departments presenting insufficient ability to create engaging short videos.

With the emergence of TikTok, scholars have started to explore the use of the platform for health-related purposes (Chen & Wang, 2021; Kong et al., 2021; Song et al., 2021; Wang et al., 2020). Initially, researchers mainly concentrated on user adoption of TikTok as a health information source and its determining factors. Later, researchers shifted their attention to the content of TikTok videos and their effectiveness. Kong et al. (2021) found that the overall quality of diabetes-related videos was acceptable, while non-profit organizations offered the best quality videos. Because of the COVID-19 pandemic, and imposed lock-down policy around the world, the number of TikTok users has increased drastically. Numerous scholars have noted the critical role that TikTok has played in conveying health-related information during the pandemic (Li et al., 2021; Southwick et al., 2021). For example, scholars revealed that in the early stage of the pandemic, TikTok videos frequently featured preventive measures that are, face masks and hand sanitizers, while most evoked humor/parody emotion (Southwick et al., 2021). Another study that investigated 331 TikTok videos published during the COVID-19 pandemic found that videos with subtitles, hashtags, and dancing content, received greater public engagement, as well as videos with alarm emotions, COVID-19 susceptibility/severity, and precaution response efficacy information (Li et al., 2021). To reap the benefits of newly emerged platforms, some hospitals in China have created official TikTok accounts to engage with patients, and to improve hospital branding and health education. This pioneering study presents the status quo of the use of TikTok sharing platforms by public hospitals in China to deploy the national health strategy and improve engagement with citizens.

### Theoretical Foundations and Hypotheses

#### Message Sensation Value and Public Engagement

Palmgreen et al. (1991) developed the concept of Message Sensation Value (MSV) to describe individuals’ perception toward a series of features of a message, as well as their quick response. In their conception, the message sensation value is manifested in an array of attributes of the message content, form, and the emotions triggered by these message features, such as sensory, affective, and arousal responses. In general, information with high MSV provides the greatest stimulus in a fast-paced, novel and dramatic style, reducing the chance of seeking alternative forms of stimulation (Morgan et al., 2003; Xu, 2008). Evidence shows that MSV contributes greatly to attracting attention and making effective communication (Donohew et al., 1994, 2018; Harrington et al., 2006; Monaci, 2020). With the emergence and continued growth in video-based social media platforms, health organizations have adopted this type of media for health-related campaigns. For example, a recent study into the TikTok accounts of provincial health departments in China revealed that videos with original music, formal mandarin language, subtitles, and a video length of less than 60 seconds, were likely to engage citizens (Zhu et al., 2020). Another study into college students’ responses to drink driving advertisements found that advertisements with high MSV, that included edits, cuts, visual effects, and speed changes, increased persuasion, while mild language was observed to be more attractive to low sensation value seekers (Xu, 2015). In this study, we investigate the official TikTok accounts of public hospitals in China and, thus, hypothesize that MSV positively predicts public engagement with TikTok videos.
Media Characters and Public Engagement

Para-social interaction refers to the one-way relationship between audiences and characters in media, regarded as guides, companions, and friends (Horton & Richard Wohl, 1956). It is defined as an illusory user experience that occurs in an exposed situation (Hartmann & Goldhoorn, 2011). From their perspective, a gaze or any body language by media performers can effectively stimulate audiences’ thinking activities, thereby generating a para-social experience to form a para-social relationship. Para-social relationships explain why and how audiences seek these relationships, and how media characters strive to establish these relationships with their audiences (Fercaud et al., 2018). In this sense, para-social interaction can facilitate public engagement, while typical engagement includes interaction with others, discussing favorite characters, reading tweets, sharing tweets, and sending private messages. A survey of 400 fans of Korean fashion revealed that the para-social interaction of celebrities was likely to make them feel cordial and increase their frequency of using Facebook and Twitter for communication (Chung & Cho, 2017). A similar study on Facebook users found that the stronger the para-social participation felt by users, and the more trust they have in the company, the higher the frequency of Facebook usage that is, reading posts and comments, asking and answering questions, and participating in conversations (Men & Tsai, 2015). An exploration into health-related videos concluded that animated content and the presence of healthcare professionals received more likes, comments, and reposts (Zhu et al., 2020). This study, therefore, hypothesizes that different media characters have significantly differentiated effects on public engagement on hospital TikTok videos.

Although many other factors (e.g., content type and the number of fans) have been evidenced to have a possible connection with public engagement on social media, this study pays special attention to the message sensation value and media characters contained in TikTok videos for an initial exploration considering the underdeveloped hospital TikTok video operation, as well as scant relevant research. Since the adoption of TikTok by public hospitals is a recent phenomenon, the sampling process employed in this study is concentrated on the most popular TikTok videos to identify their unique characters for simplicity. This study reviews the 100 most popular videos uploaded by public hospitals to identify how Chinese netizens engage with TikTok and their corresponding features and communication strategies. The specific research questions answered in this study are as follows:

Q1: What level of engagement do citizens have with the official TikTok accounts of public hospitals, particularly those videos with the highest public engagement level?
Q2: What characters are included in the TikTok videos with the highest public engagement level, and what makes them attractive to citizens?
Q3: What role does message sensation value and media characters play in increasing the level of engagement of citizens?

Material and Methods

Data Collection

In this study, data was collected from the 100 most popular short videos uploaded to TikTok by the official accounts of public hospitals in China. A rigorous search for the official TikTok accounts of public hospitals in China was completed through a manual search on 20 July 2019. The search terms used in the user column were “hospital,” “healthcare.” Then, a complete list of public hospitals with official TikTok accounts was generated after eliminating all private and pet hospitals. In considering expected differences between specialized hospitals and comprehensive hospitals, this study focused on public-managed comprehensive hospitals. The 100 most popular short videos from the pools of videos uploaded by pre-determined public hospitals' TikTok accounts were collected. The posted time of the 100 most popular short videos ranged from October 2018 to July 2019 with the vast majority of them being uploaded in 2019.

Data Analysis

For all the identified public hospitals, relevant data was extracted from their official TikTok accounts. The data was cross-sectional in nature and included: (1) established time of the account that is, date since the first uploaded video, (2) the number of videos posted, (3) number of likes received, (4) the number of videos reposts, and (5) number of comments received. To further analyze the content of uploaded short videos, content analysis was completed on the 100 most liked videos. The coding consisted three components, namely: public engagement level, message sensation value, video content, and video format. Figure 1 presents these details.

Specifically, the measurement of public engagement was built on various social media research, where the number of reviews, likes, reposts, and comments were highlighted frequently (Chen et al., 2020; Zhang et al., 2018; Zhu et al., 2020). For message sensation value, the manifested value of video/images, audio/music, and content, and the higher message sensation value denoted a higher possibility of attracting public engagement (Palmgreen et al., 2002; Xu, 2017). The measurement of message sensation value is widely adopted to analyze videos containing health-related messages, including health campaigns and health advertisements (Everett & Palmgreen, 1995; Morgan et al., 2003; Paek et al., 2010; Wei & Zhou, 2010; Xu, 2015). In this study, several items were adjusted for compliance and Table 1 presents these details.
For video content, we focused on video type, theme, and the characters included. Video type refers to the genre of TikTok videos, and is assigned as film clips, situation comedy, documentary, lecturer, and cartoon. Film clips refer to any form of self-made film or clips from released films, and their editing is delicate with high humanistic value. Situation comedy features indoor scenarios with easily understood plots, and their styles are generally humor-dominated. Documentary records things that happen in reality, including records of surgery and clips from surveillance cameras. Lecturer type concerns the introduction of specific health knowledge, and the number of speakers in this type is always one character. Cartoon type includes cartoon characters or comics. For the theme, we followed the recent study by Zhu et al. (2020) on the most popular video content of local health departments. In their study, they divided the theme as disease knowledge, daily diet, HP campaign, healthcare information, and medical reform. In addition, since their typology featured on local health departments, we also looked into other classifications focused on hospital settings, exclusively. For example, Zhang et al. (2018) identified five types of hospital microblogging content themes, including hospital news, health education, medical consultation information, patient engagement, and official declaration. Finally, we defined four types in the theme, namely health professional promotion, disease knowledge, healthy eating and activities, and hospital promotion.

Among them, health professional promotion centers on the healthcare providers, including their professional spirit and daily narratives. Disease knowledge aims to deliver disease-related information, such as disease symptoms, causes, diagnosis, treatment, and complications. Healthy eating and activities focuses on healthy lifestyles, including health initiatives and the promotion of healthy activities. For example, stopping smoking is responsible for yourself and for others’ health. Hospital promotion demonstrates hospital capacity for medication, teaching, research, and reputation. As for video character, we identified five types, including health professionals, non-medical staff, patient/public, no or animated characters, and others. Since each video may involve more than one type of character, the final character type is determined by the dominated character. Meanwhile, the health professionals are health service providers, such as physicians or nurses in clinical fields. Non-medical staff refers to administrators, managers or other supporting staff, other than the hospital. As for video type, we considered the background music, video length, whether accompanied subtitles and the introduction in the beginning part. To make the coders fit into the scenarios of hospital settings, necessary changes were made with each coder being presented with an example/explanation in Table 2.

In total, eight main codes with 33 sub-coders emerged. Specifically, the Public Engagement dimension had three sub-dimensions: Number of Likes, Number of Reposts, and Number of Comments. The Message Sensation Value dimension had three sub-dimensions: Video/Images, Audio/Music, and Content. The video content dimension included video type, theme, and characters. The video format included four sub-dimensions: background music, video length, subtitles, and with an introduction at the beginning of the video. Two graduate students studying Health Informatics were trained before coding the short videos separately, with their overall inter-reliability rate being .82 (Brennan & Prediger, 1981; Zhang et al., 2016), denoting an acceptable range. Specifically, the inter-reliability rate of public engagement and video format were 1.00, while message sensation value and video content were .77 and .86, respectively.

Results

The rigorous search identified 40 public hospitals in China with official TikTok accounts. The majority were tertiary hospitals except for two secondary hospitals. Among them, 17 (42.5%) were from the Central region of China, 14 from the East and 9 from the West. Meanwhile, public hospitals in Hunan and Sichuan outnumbered their counterparts. More than half (62.5%) of public hospitals created their official accounts in 2019; the first being Yingkou City Central Hospital, located in the East region of China, who established their account on 12 May 2018. The most recent hospital to create an account was Jiangxi Provincial TCM Hospital, located in the Central region of China, who created its account in July 2019. The number of videos uploaded show...
Table 1. Coder Scheme for Message Sensation Value.

| Variable         | Measurement                                                                 | Code                        |
|------------------|-----------------------------------------------------------------------------|-----------------------------|
| Video/images     | Number of cuts                                                              | The number of times the camera cuts from one visual scene to the next. Convert to low (0–6), moderate (7–14), and high (more than 15) levels, and code as 0, 1, 2. |
|                  | Visual effects                                                              | Anything beyond the range of human ability involving special visual effects. |
|                  | Slow motion                                                                 | The slowing of real-life action through technical intervention.           |
|                  | Bold/unusual colors                                                          | Unusual colors outside the range of colors normally perceived in real life. |
|                  | Intense images                                                              | Intense or horrifying images, including needles entering arms, surgery operation, or disaster scenes. |
| Audio/music      | Sound saturation                                                             | Background sound throughout the video clip, including street noise or other sounds, rather than simply a person narrating over the video clip. |
|                  | Background music                                                            | Music to accompany the dialog or action of the video clip.                |
|                  | Loud/fast music                                                             | The use of loud (relative to other sounds in the video clip) and fast (more than 120 beats/minute) music throughout the video clip. |
|                  | Sound effects                                                                | Unusual sounds (those that could not have occurred in real life) heard in the video clip, including gongs and other noises. |
| Content          | Acted out                                                                   | The videos call for actions, such as leading a healthier lifestyle, stopping smoking, showing respect to healthcare professionals. |
|                  | Unexpected format                                                            | If images and message are interchangeable with those in other hospital videos, the format is expected. |
|                  | Surprise/twist ending                                                        | The presence of a climactic, shocking end in the video clip.             |

Table 2. Coder Scheme of Video Content and Video Format.

| Variables       | Measurement                                                                 | Example/Explanation                                       |
|-----------------|-----------------------------------------------------------------------------|-----------------------------------------------------------|
| Type            | Film clips                                                                   | Episode 8/Wish the Sierra Leone medical team return in triumph |
|                  | Situation comedy                                                            | Mold on the wall, not to be ignored, eliminate hidden dangers and stay away from a disease |
|                  | Documentary                                                                  | Does not it magical? After the craniotomy, he used three languages to talk to the doctor |
|                  | Lecture                                                                      | I am pregnant and afraid of contracting Toxoplasma gondii; can I still raise a dog? |
| Theme           | Health professional promotion                                                | The working people are up! I don’t care if others are happy or not. |
|                  | Disease knowledge                                                           | Pray for love                                             |
|                  | Healthy eating and activities                                                | Episode 6 | Symptoms of Early Lung Cancer? Understand, prevent, and stay away from lung cancer |
|                  | Hospital promotion                                                           | Stop smoking is responsible for yourself and for others’ health. |
|                  |                                                                             | the Peking Union Medical College Hospital has complete disciplines and strong technical forces. |
| Character        | Health professionals                                                         | We are doctors like this #All hidden dangers shake out safety |
|                  | Non-medical hospital staff                                                    | Demystify the most mysterious department in the hospital, the disinfection department |
|                  | Patients and the public                                                      | A nurse’s husband’s confession                             |
|                  | No character/animated character                                              | The red envelopes that were temporarily accepted were finally paid in the hospitalization deposit! |
|                  | Others                                                                       | For the 10th day in the disaster area, we will always remember to thank you, soldiers! |
| Background music |                                                                             | Whether the video is accompanied by no background music, ordinary music, popular TikTok music or adapted music by the hospitals. |
| Video length     |                                                                             | The duration of the short video.                           |
| Subtitles        |                                                                             | Whether the video accompanied with subtitles or not.      |
| Introduction in the beginning part |                                                                             | Whether the video has a brief introduction about the content in the beginning part or not. |
significant variation (Average = 127.4, SD = 92), as well as the number of fans (Average = 57,056.8, SD = 148,104) and likes received (Average = 372,205.1, SD = 460,310.7).

In terms of the 100 most liked short videos, we outlined the characters of selected hospitals that contributed at least three videos to the top 100 list. None of the 11 hospitals from the East region of China were included. Instead, seven hospitals from the Central region were included, with Xiangya Hospital, affiliated with Central South University, topping the list with 16 short videos. Table 3 provides further details of the most liked videos.

**Public Engagement With the Official TikTok Accounts of Public Hospitals**

Public engagement refers to citizens’ reactions to videos created by the official TikTok accounts of public hospitals. In the list of the most popular 100 short videos, videos differ in terms of the total number of likes, comments, and reposts received. Specifically, the total number of likes of the top 100 short videos reached 5,502,818, ranging from 7,975 to 664,000 per video. The total number of comments received were 159,520 with 27 being the least, to 19,000 representing the most. Among them, the number of short videos that received comments exceeding 1,000 was 32. The total number of reposts amounted 367,728 with seven being the least and 105,000 being the most. Thirteen videos were reposted at least 5,000 times. Table 4 presents further details.

**Message Sensation Value of Short Videos posted by Public Hospitals**

Message sensation value consists three sub-dimensions. The overall value MSV is averaged at 5.52 (SD=2.01, Median=5). The highest MSV was 12, in a video produced by Nanjing First Hospital, which discussed a true story about

---

Table 3. Basic Information of the Official Tiktok Accounts Managed by Public Hospitals in China (Top 10 Liked).

| Hospital name                                      | Province    | Region  | First time video uploaded | Number of followers | Number of uploaded videos | Total number of likes | Number of 100 most liked short videos |
|---------------------------------------------------|-------------|---------|---------------------------|---------------------|-------------------------|-----------------------|--------------------------------------|
| Xiangya Hospital, affiliated with Central South University | Hunan      | Central | 4 February, 2019          | 901,000             | 164                     | 1,339,000             | 15                                   |
| Lu Zhou City Hospital                             | Sichuan     | West    | 11 January, 2019          | 61,000              | 101                     | 1,612,000             | 7                                    |
| 2nd Hospital, affiliated to NanChang University   | Jiangxi     | Central | 2 February 2019           | 43,000              | 254                     | 1,178,000             | 7                                    |
| Xiangyang City First People’s Hospital            | Hubei       | Central | 2 November, 2018          | 27,000              | 168                     | 270,000               | 6                                    |
| Huaxi Hospital, Sichuan University                | Sichuan     | West    | 12 December, 2018         | 291,000             | 122                     | 742,000               | 4                                    |
| Yunnan First People’s Hospital                    | Yunnan      | West    | 25 December, 2018         | 33,000              | 140                     | 203,000               | 4                                    |
| NanChuan District People’s Hospital               | Chongqing   | West    | 15 December, 2019         | 13,000              | 60                      | 339,000               | 4                                    |
| ZhuZhou City Central Hospital                     | Hunan       | Central | 15 January, 2019          | 83,000              | 167                     | 1,105,000             | 4                                    |
| Jiangxi Provincial People’s Hospital               | Jiangxi     | Central | 14 February,2019          | 10,500              | 441                     | 1,455,000             | 4                                    |
| Shiyan City People’s Hospital                      | Hubei       | Central | 17 October, 2018          | 12,000              | 93                      | 168,000               | 3                                    |
| JingDeZhen City Second People’s Hospital           | Jiangxi     | Central | 19 April, 2019            | 4,125               | 175                     | 79,000                | 3                                    |
| Total                                             |             |         |                           | 1,573,125           | 1,885                   | 8,490,000             | 61                                   |

Table 4. The Distribution of the Public Engagement Dimension.

| Public engagement | Min   | Max    | Median | Sum    |
|-------------------|-------|--------|--------|--------|
| Number of likes   | 7,975 | 664,000| 22,500 | 5,502,818|
| Number of comments| 27    | 19,000 | 595    | 159,520 |
| Number of reposts | 7     | 105,000| 465.5  | 367,728 |
| Aggregation of PE | 8,009 | 788,000| 23,560.5| 6,030,066|
a person with no heartbeat. In total, it received 70,000 likes, 802 comments, and 197 reposts. The reason for this is may be that storytelling portraying true events, heights viewer empathy and helps build trusting connections that solidifies the relationship between people and public organizations. The lowest MSV was two, demonstrated by three videos created by Yunan First Hospital, Kunshan TCM Hospital, and Qingdao Women and Children’s Hospital, respectively. For the sub-dimension of videos/images, the average value was 3 \((SD=1, Median=3)\). For the sub-dimension of music/sound, the average value was 2 \((SD=1, Median=1)\). Finally, for the sub-dimension of content, the average value was 1 \((SD=1, Median=1)\). This means that the video/images feature has been demonstrated more often in short videos compared to music/sound and the content dimensions, and their variations within each dimension are subtle.

### Video Content and Format

For content type, five categories were included. Among them, film clips were the dominant type with 44, while cartoons were least represented with only two. Film clips often spark the curiosity of viewers, maintaining their engagement through captivating storylines and cinematography. Situation comedies ranked second with 20, followed by documentaries and lectures. Comedies can be effective medium for introducing citizens to social issues, such as healthcare provision, in a non-threatening manner, while documentaries and lectures typically present factual information that viewers can relate to. For video theme, health professional promotion content is prevalent, representing half of the total amount. For hospital promotion and disease knowledge content, these were similar with 18 and 17, respectively. Healthy eating and related activities were the least covered theme in short videos with 15. For characters, health professionals were the most frequently observed with 84 videos. The number of videos portraying public members and non-medical hospital staff were six and five, respectively. Interestingly, four videos had no characters or animated characters, while one video featured soldiers.

The format of uploaded videos was divided into four subdimensions. For background music, four categories were included: no background music, ordinary music, popular TikTok music and adapted music by the hospitals. About 78 out of the 100 short videos were accompanied by background music. Among them, 58.9\%(46/78) included ordinary music. Since many videos included rich information and subtitles, hospitals preferred not to use background music or just light music to avoid possible distraction to audiences from the health message conveyed. In terms of the length of videos, the longest was 346 seconds, while the shortest was 4 seconds (Average =41.82, \(SD=44.58\)). An overwhelming number of videos (88, 88/100) was presented within 60 seconds. Among them, 22 lasted 0 to 15 seconds, 24 from 15 to 30 seconds, and 42 from 30 to 60 seconds. In terms of subtitles, 67 out of the 100 short videos showed subtitles. Slightly over half of all videos (53%, 53/100) included an introduction at the beginning of the video.

### Discussion and Conclusion

#### Discussion

This study has identified that public hospitals in the Central region of China are more active in their use of TikTok and have garnered significant public attention. Among the top 10 influential public hospital official TikTok accounts, six are from the Central region. This finding corroborates previous research in which Zhu et al. (2020) found that local health departments’ interest in TikTok is distinguished by engagement diffusion where regions with better economic prosperity operate accounts more efficiently. It is essential to understand that with the changing landscape of social media, hospitals have greater choices for engaging with patients and they have started to calculate the cost-benefit of investment in social media. For some hospitals, they have already established a well-managed social media platform for increasing brand awareness and maintaining patient relationships. In fact, many top-tier hospitals in China are missing from the list of official TikTok accounts. It is assumed that the quality of medical services and patient safety in hospitals receive greater attention than hospital marketing. Hospital attitudes toward social media is complicated. On the one hand, it is indeed helpful for building trusted physician-patient relationships and good hospital reputation. On the other hand, social media is out of the range for traditional business and hospital operations who cannot allocate sufficient resources to support multichannel methods. In considering the unique features of short videos and their targeted population, not all hospitals will prioritize their adoption. In reality, it is understandable that hospitals choose one or two social media platforms with least efforts but which exert the most impact.

TikTok has caught the attention of public hospitals’ across various levels in Mainland China. Not only are large tertiary hospitals engaging with the platform, but also some secondary level hospitals are making their voice heard on TikTok. The results of this study suggest that early innovators are “learning by doing” to exert maximum impact on TikTok, and no significant difference is observed in the adoption of TikTok between large and medium-sized hospitals. In China, it is common that only private hospitals spend much time to establish and maintain their reputation through vigorous marketing strategies; however, for public hospitals, especially tertiary ones, their popularity is widely acknowledged through word-of-mouth. The results reveal that public hospitals are stepping out of their safety zone, embracing novel social networking strategies and engaging citizens in health-related topics, while promoting healthy lifestyles for the realization of the Healthy China goal. For example, Xiangya hospital has contributed the most popular videos with
901,000 followers and 1,339,000 likes. It is undeniable that Xiangya hospital is the most successful public hospital on TikTok and could provide valuable input to other hospitals seeking to grow engagement with the platform. Since TikTok is comparatively new, the corresponding managerial rules and operational strategies are still underexplored. In addition, public hospitals are shifting from offering only medical treatment to a more comprehensive health delivery, incorporating preventive medicine, training on healthy lifestyles, and self-health management, it emphasizes the crucial role of healthcare education in the overall improvement of citizens’ health. Obviously, it still requires time for public hospitals to realize the value of TikTok in reaching out to hard-to-find groups and develop specialized health education for them. For example, providing simple but effective measures for youth being bullied, as well as their friends, parents, guardians and teachers (Zhu et al., 2021).

This study also found that TikTok users prefer short videos that require the least effort to comprehend. For health-related videos with rich information, distracting elements, such as visual features, loud music, and switching cuts, should be cautiously applied. However, if properly used, they can facilitate better understanding of health information and public commitment (Alonso- Cañadas et al., 2020). For example, in using yellow or blue colored subtitles for strength and illustration, audiences can quickly grasp the main idea of a video. A high message sensation value does not necessarily indicate high public engagement. Other factors, such as content type, video theme, and the hospital’s offline reputation, may also contribute to public engagement levels. With regards to content type, film clips and situational comedy take up a large proportion. Film clips, from either a well-known film or a self-made film, are usually composed of rich plots and are displayed in high definition. These features are likely to sustain viewers’ attention and their intentions for interactive behaviors. For situation comedy, viewers can learn health-related information by enjoying the story at the same time, which greatly reduces the viewers’ burden and increases their confidence in understanding the health information. For health lectures, although it seems much easier compared to the former two video types, the creators need to focus extensively on the content and solicit the public favored health topics, such as lung cancer, liver cirrhosis, strokes, weight loss, myopia, and smoking. The illustrators must use easy-to-understand language instead of medical terms to arouse public interest. Meanwhile, the promotion of healthcare professionals and hospitals, and disease knowledge are major themes viewed. This reflects that hospitals’ motivation for TikTok adoption is self-promotion, as well as health education, which are more likely to create sensational short videos. An alternative explanation for this could be the knowledge gap between the public and healthcare professionals. The public rely on physicians, nurses, and anesthetists for trusted health information. It is no surprise, therefore, to see that healthcare professionals prevail in popular videos. Videos related to disease knowledge encompass a variety of topics, ranging from commonly seen illnesses, such as the common cough, headaches, and burns, to chronic diseases, such as diabetes and hypertension. Usually, videos start with a daily scene, followed by risk arousal and professional treatment. For example, a video that introduces treatment for child burns, presented by Zhuzhou City Central Hospital, has made a sensational success with 664,000 likes, 67,000 reposts and 17,000 comments. The video title is “After being burned by boiling water, proper treatment may reduce the likelihood of leaving a scar!”, which caught the attention of parents with young children. The narrative style is a good example to follow. At the beginning of the video, the visual character of a child being burned is bold for attraction, and then it describes the severe consequences of burns to sustain the audiences’ attention. In concluding part, a deputy physician from the burns unit vividly demonstrates how to deal with emergencies. By using a problem-oriented narrative, it is more likely to maintain public interest and provide corresponding health knowledge at the same time.

Conclusion

This study identifies that the majority of the most popular short videos created by public hospitals in China on TikTok were created by those located in the Central and West regions of the country. The identified public hospitals present significant potential for attracting fans, and generating Likes, Comments and Reposts. The common characteristics of the 100 most popular videos include lower message sensation value, shorter video length (i.e., under 60 seconds), and are typically accompanied by background music, subtitles, and an introduction at the beginning of the video. The most frequently viewed video type is film clips which focus on the promotion of healthcare professionals and the teaching of disease knowledge.

Practical Implications

The results of this study provide several implications for communicating health information via official accounts on TikTok. For hospitals with hesitancy, evidence shows that TikTok users are gradually accepting hospitals as a means for receiving health education, which is likely to improve the general health knowledge of citizens in the future. With social media platforms becoming one of the major sources of health information, it is important that hospitals stand out on such platforms to deliver reliable information, combat misinformation, and support patients in the self-management of their health (Richter & Kazley, 2020). Through engagement on TikTok, hospitals can deliver health education to all citizens, regardless of their socio-demographics, and improve patient-physician relationships for mutual understanding.

Although TikTok is commonly used as an entertainment platform, the delivery of health education via the platform requires caution. On the one hand, hospital accounts represent the overall image of the hospital. It is, therefore,
essential to keep content reliable and professional. Failing to build a professional brand will affect public perception of the hospital, leading to distrust in the hospital, as well as their physicians, nurses and managerial staff. On the other hand, in providing a real-life look into hospital management via TikTok is likely to attract many viewers. For example, engaging on TikTok caterers to public preferences for receiving health-related information. However, the complicated video editing and visual effects require cautious application, while the video content must provide educational significance and positive energy. False or misinformation and irrelevant health information should be avoided.

Limitations

Several limitations exist in this study. First, since the popularity of the short videos is measured by the number of likes alone, this may affect the final 100 videos that were analyzed. Alternative sampling criteria could have included the number of reposts, and incurred comments, as well as other outcome variables at the population level, such as the health knowledge acquired and positive behavioral changes. Meanwhile, this study focused exclusively on the TikTok platform, which may overlook the efforts of other short video-based platforms with different preferences for video content and features, such as KuaiShou. Future research can adopt video capture approaches to explore the content of videos frame-by-frame, across different platforms, for a more comprehensive view of the official TikTok accounts managed by public hospitals in China. Second, although this is an explorative study, a more detailed research design with an enlarged sample to quantify variables is deemed important to specify the mechanism of public engagement with hospital TikTok accounts. Meanwhile, we did not aim to investigate the operations of public hospitals’ TikTok accounts, regarding their video making, managerial rules, underlying reasons for initial adoption, continued intention, challenges, and obstacles faced. Future studies can employ a qualitative approach with key informants to landscape how hospital managers perceive the value of TikTok, and if their perceptions differ with pre-existing social media platforms (Heras-Pedrosa et al., 2020). Finally, this study concerns public engagement with public hospitals TikTok accounts in a normal state, while the conclusion may not apply to health emergencies. Considering the long-term effect of the COVID-19 pandemic on hospital operation and public behaviors, it is worthwhile exploring the public engagement and underlying mechanisms under health crises. Some indicated that citizen engagement on government TikTok may be different during the pandemic; for example, posts with higher media richness measured by video length is less likely to attract public attention since citizens care more about the content itself rather than how it is presented (Chen et al., 2021).

Author Note

Richard Evans is now affiliated to Dalhousie University, Halifax, Canada.

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.

Funding

The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: This work was partially supported by National Natural Science Fund of China (7210041729) and the Fundamental Research Funds for the Central Universities (HUST 2021WKYYQN018).

ORCID iDs

Wei Zhang https://orcid.org/0000-0003-0178-0750
Richard Evans https://orcid.org/0000-0001-6367-0560

References

Alonso-Cañadas, J., Galán-Valdivieso, F., Saraite-Sariene, L., & Caba-Pérez, C. (2020). Committed to health: Key factors to improve users’ online engagement through Facebook. *International Journal of Environmental Research and Public Health*, 17, 1814. https://doi.org/10.3390/ijerph17061814

Brennan, R. L., & Prediger, D. J. (1981). Coefficient Kappa: Some uses, misuses, and alternatives. *Educational and Psychological Measurement*, 41, 687–699. https://doi.org/10.1177/001316448104100307

Chen, J., & Wang, Y. (2021). Social media use for health purposes: Systematic review. *Journal of Medical Internet Research*, 23, e17917. https://doi.org/10.2196/17917

Chen, Q., Min, C., Zhang, W., Ma, X., & Evans, R. (2021). Factors driving citizen engagement with government TikTok accounts during the COVID-19 pandemic: Model development and analysis. *Journal of Medical Internet Research*, 23, e21463. https://doi.org/10.2196/21463

Chen, Q., Min, C., Zhang, W., Wang, G., Ma, X., & Evans, R. (2020). Unpacking the black box: How to promote citizen engagement through government social media during the COVID-19 crisis. *Computers in Human Behavior*, 110, 106380. https://doi.org/10.1016/j.chb.2020.106380

Chung, S., & Cho, H. (2017). Fostering parasocial relationships with celebrities on social media: Implications for celebrity endorsement. *Psychology and Marketing*, 34, 481–495.

CNNIC. (2021). *The 47th China statistical report on Internet development* (2021). CNNIC.

Donohew, L., DiBartolo, M., Zhu, X., Benca, C., Lorch, E., Noar, S. M., Kelly, T. H., & Joseph, J. E. (2018). Communicating with sensation seekers: An FMRI study of neural responses to anti-drug public service announcements. *Health Communication*, 33, 1004–1012.

Donohew, L., Palmgreen, P., & Lorch, E. P. (1994). Attention, need for sensation, and health communication campaigns. *American Behavioral Scientist*, 38, 310–322.

Everett, M. W., & Palmgreen, P. (1995). Influences of sensation seeking, message sensation value, and program context on effectiveness of Anticocaine public service announcements. *Health Communication*, 7, 225–248. https://doi.org/10.1207/s15327072hc0703_3

Ferchaud, A., Grzeslo, J., Orme, S., & LaGroue, J. (2018). Parasocial attributes and YouTube personalities: Exploring
content trends across the most subscribed YouTube channels. *Computers in Human Behavior*, 80, 88–96.

Gonçalves, G. (2020). Are hospitals our friends? An exploratory study on the role of facebook in hospital organizations’ dialogic communication. *Health Marketing Quarterly*, 37, 265–279. https://doi.org/10.1080/07359683.2020.1805898

Griffis, H. M., Kilaru, A. S., Werner, R. M., Asch, D. A., Forshey, J. C., Hill, S., Ha, Y. P., Sellers, A., Mahoney, K., & Merchant, R. M. (2014). Use of social media across US hospitals: Descriptive analysis of adoption and utilization. *Journal of Medical Internet Research*, 16, e264. https://doi.org/10.2196/jmir.3758

Harrington, N. G., Lane, D., Donohew, L., & Zimmerman, R. (2006). An extension of the activation model of information exposure: The addition of a cognitive variable to a model of attention. *Media Psychology*, 8, 139–164.

Hartmann, T., & Goldhoorn, C. (2011). Horton and Wohl revisited: Exploring viewers’ experience of parasocial interaction. *Journal of Communication*, 61, 1104–1121. https://doi.org/10.1111/j.1460-2466.2011.01595.x

Heras-Pedrosa, C. D. L., Rando-Cuetó, D., Jambrino-Maldonado, C., & Paniagua-Rojano, F. J. (2020). Analysis and study of hospital communication via social media from the patient perspective. *Cognet Social Sciences*, 6, 1718578. https://doi.org/10.1080/23311886.2020.1718578

Horton, D., & Richard Wohl, R. (1956). Mass communication and para-social interaction. *Psychiatry*, 19, 215–229.

Kong, W., Song, S., Zhao, Y. C., Zhu, Q., & Sha, L. (2021). TikTok as a health information source: Assessment of the quality of information in diabetes-related videos. *Journal of Medical Internet Research*, 23(9), e30409. https://doi.org/10.2196/30409

Li, Y., Guan, M., Hammond, P., & Berrey, L. E. (2021). Communicating COVID-19 information on TikTok: A content analysis of TikTok videos from official accounts featured in the COVID-19 information hub. *Health Education Research*, 36, 261–271. https://doi.org/10.1093/her/cyab010

Men, L. R., & Tsai, W.-H. S. (2015). Infusing social media with humanity: Corporate character, public engagement, and relational outcomes. *Public Relations Review*, 41, 395–403.

Monaci, S. (2020). Social media campaigns against violent extremism: A new approach to evaluating video storytelling. *Journal of International Communication*, 14, 24.

Morgan, S. E., Palmgreen, P., Stephenson, M. T., Hoyle, R. H., & Lorch, E. P. (2003). Associations between message features and subjective evaluations of the sensation value of anti-drug public service announcements. *Journal of Communication*, 53, 512–526.

Pack, H.-J., Kim, K., & Hove, T. (2010). Content analysis of anti-smoking videos on YouTube: Message sensation value, message appeals, and their relationships with viewer responses. *Health Education Research*, 25, 1085–1099. https://doi.org/10.1093/her/cyq063

Palmgreen, P., Donohew, L., Lorch, E. P., Reger, M., Helm, D., & Grant, N. (1991). Sensation seeking, message sensation value, and drug use as mediators of PSA effectiveness. *Health Communication*, 3, 217–227.

Palmgreen, P., Stephenson, M. T., Everett, M. W., Baseheart, J. R., & Francies, R. (2002). Perceived message sensation value (PMVS) and the dimensions and validation of a PMVS scale. *Health Communication*, 14, 403–428. https://doi.org/10.1207/S15327027HC1404_1

Richter, J. P., & Kazley, A. S. (2020). Social media: How hospital Facebook activity may influence patient satisfaction. *Health Marketing Quarterly*, 37, 1–9. https://doi.org/10.1080/07359683.2020.1713573

Richter, J. P., Muhlestein, D. B., & Wilks, C. E. (2014). Social media: How hospitals use it, and opportunities for future use. *Journal of Health Management*, 59, 447–460.

Shen, L., Wang, S., Chen, W., Fu, Q., Evans, R., Lan, F., Li, W., Xu, J., & Zhang, Z. (2019). Understanding the function constitution and influence factors on communication for the WeChat official account of top tertiary hospitals in China: Cross-sectional study. *Journal of Medical Internet Research*, 21, e13025. https://doi.org/10.2196/13025

Song, S., Zhao, Y. C., Yao, X., Ba, Z., & Zhu, Q. (2021). Short video apps as a health information source: An investigation of affordances, user experience and users’ intention to continue the use of TikTok. *Internet Research*, 31(6), 2120–2142. https://doi.org/10.1108/INTR-10-2020-0593

Southwick, L., Guentuku, S. C., Klinger, E. V., Seltzer, E., McCalpin, H. J., & Merchant, R. M. (2021). Characterizing COVID-19 content posted to TikTok: Public sentiment and response during the first phase of the COVID-19 pandemic. *Journal of Adolescent Health*, 69, 234–241. https://doi.org/10.1016/j.jadohealth.2021.05.010

Sugawara, Y., Murakami, M., & Narimatsu, H. (2020). Use of social media by hospitals and clinics in Japan: Descriptive study. *JMIR Medical Informatics*, 8, e18666. https://doi.org/10.2196/18666

Van de Belt, T. H., Berben, S. A., Samsom, M., Engelen, L. I., & Schoonhoven, L. (2012). Use of social media by Western European hospitals: Longitudinal study. *Journal of Medical Internet Research*, 14, e61. https://doi.org/10.2196/jmir.1992

Vanzetta, M., Vellone, E., Molin, A. D., Rocco, G., Grazia, M., Marinis, D., & Rosaria, A. (2014). Communication with the public in the health-care system: A descriptive study of the use of social media in local health authorities and public hospitals in Italy. *Annali dell’Istituto superiore di sanità*, 50(2), 163–170.

Wang, J., Zhou, Y., Zhang, W., Evans, R., & Zhu, C. (2020). Concerns expressed by Chinese social media users during the COVID-19 pandemic: Content analysis of Sina Weibo microblogging data. *Journal of Medical Internet Research*, 22, e22152. https://doi.org/10.2196/jmir.22152

Wei, R., & Zhou, S. (2010). Effects of message sensation value in bird flu TV stories on audience arousal and perception of story quality. *China Media Research*, 6, 1–8.

Wong, C. A., Ostapovich, G., Kramer-Golinkoff, E., Griffis, H., Asch, D. A., & Merchant, R. M. (2016). How U.S. Children’s hospitals use social media: A mixed methods study. *Healthcare*, 4, 15–21. https://doi.org/10.1016/j.hjdsi.2015.12.004

Xu, J. (2008). *Influences of the sensation and cognition value of anti-smoking public service announcements on college students’ message processing and self assessment*. The University of Alabama.
Xu, J. (2015). Designing messages with high sensation value: When activation meets reactance. Psychology and Health, 30, 423–440. https://doi.org/10.1080/08870446.2014.977280
Xu, J. (2017). Message sensation value in health and risk. In J. Nussbaum (Ed.), Oxford Research encyclopedia of communication (pp. 1–24). Oxford University Press.
Zhang, W., Deng, Z., Evans, R., Xiang, F., Ye, Q., & Zeng, R. (2018). Social media landscape of the tertiary referral hospitals in China: Observational descriptive study. Journal of Medical Internet Research, 20, e249. https://doi.org/10.2196/jmir.9607
Zhang, W., Xu, X., Zhang, H., & Chen, Q. (2016). Online participation chaos: A case study of Chinese government-initiated e-polity square. International Journal of Public Administration, 39, 1195–1202.
Zhu, C., Xu, X., Zhang, W., Chen, J., & Evans, R. (2020). How health communication via Tik Tok makes a difference: A content analysis of Tik Tok accounts run by Chinese provincial health committees. International Journal of Environmental Research and Public Health, 17, 192.
Zhu, C., Huang, S., Evans, R., & Zhang, W. (2021). Cyberbullying among adolescents and children: a comprehensive review of the global situation, risk factors, and preventive measures. Frontiers in Public Health, 9, 634909.