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Social Media Visual Reporting in COVID-19: Characteristics, Communication Strategies, and Impacts

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Abstract

In 2020, the world witnessed the coronavirus outbreak, a significant public health crisis threatening human well-being and garnered global attention. The Credibility of media sources and the accessibility of information became pivotal not only in terms of conceptual understanding but also for safeguarding public health. A triad of stakeholders comprising scientists, medical professionals, journalists, and ordinary citizens, all occupying distinct roles, formed a multifaceted and interactive landscape for health information dissemination. The role of the media was instrumental in simplifying complex aspects of the pandemic for the general public, fostering a better comprehension of the situation, and promoting a rational response while discouraging panic. This study analyses selected social media coverage of the COVID-19 pandemic and delves into information visualization strategies and distinctive attributes.

Keywords: COVID-19, Public Health awareness, Social media, Reliability information, Health literacy.

1. Introduction

The emergence of novel coronavirus pneumonia marked the most alarming public health crisis 2020 (Sohrabi et al., 2020). The apprehension of the unknown is a universal fear, with the general populace possessing limited medical insights regarding COVID-19 (Lipsitc et al., 2020). In our era of globalization, the frequency of public health emergencies has surged (Brown et al., 2006). With the substantial movement of people and the expansion of production and business activities, health risks can no longer be confined to a single geographical area. Recent years have witnessed sudden and highly contagious virus outbreaks, such as the 2009 H1N1 Flu (Gatherer, 2009), the 2014 Ebola outbreak in West Africa (Dixon, Schafer, 2014), the 2015 Middle East Respiratory Syndrome (MERS) outbreak in South Korea (Kim et al., 2017), and the 2015 Zika virus outbreak (Hennessey et al., 2016).

Public health discussions typically demand a scientific and professional approach, necessitating a certain level of expertise for active participation (Gebbie et al., 2003). Health communication seeks to dismantle knowledge barriers (Backer et al., 1992). This involves translating scientific knowledge into accessible and digestible content, fostering public awareness of health issues and influencing attitudes and behaviours.

Social media Visual communication simplifies complex ideas using computer graphics and image processing technology (Borba, Villarreal, 2006). It encompasses methods and technologies for visualizing professional knowledge, presenting vast datasets, and providing a comprehensive view of intricate events. Given the asymmetry of information and the intricacy of public opinions

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surrounding COVID-19, there is an imperative need for timely, accurate, and professional information dissemination and risk communication. Consequently, the role of visual media reporting in this context is of utmost significance.

The battle against COVID-19 involves a wealth of medical expertise and epidemiological data. Both media professionals and researchers have invested substantial effort in elucidating ways to simplify intricate concepts and visualize data that may otherwise be dull. This study, focusing on visualizing pertinent epidemic reports, explores the application of visual communication in health communication.

1. What are the characteristics of visual reporting in COVID-19?
2. What are the communication strategies for visual reporting in COVID-19?
3. What are the impacts of visual reporting on COVID-19?

2. Materials and methods

Qualitative analysis (Strauss, 1987) content analysis is mainly used in this study. Researchers selected from 27 January 2020 to 27 March 2020, People's Daily, Tencent News, Ifeng.com News, Paper News, and Sina News are five professional news organizations. Ali Health and Dxy.com are professional medical information organizations. From the news reports of these seven organizations, 70 valid information dates were collected. 70 coverage was divided into visualization report types, coded and analyzed.

Based the past research (Aakko, 2004; Andrulis et al., 2007; Covello, 2006; Crouse Quinn, 2008; Dickmann et al., 2015; Glik, 2007; Malley et al., 2009; Paek et al., 2010; Prue, Gantt, 2003; Reynolds, 2008; Reynolds, Wseeger, 2005; Savoia et al., 2008; Wray et al., 2006) a coding sheet has been designed. The coding sheet included the fifteen resources, for example, Health; Safety Economic, Ecological/environmental, Quality of life Equity/fairness, Cultural/symbolic/stigma, Legal/regulatory, Organisational (for example, who is in charge), Basic information-who, where, what, when, why, how; Openness/Transparency/access to information; Accountability; Options/alternatives; Control; Effects on children/future generations.

70 COVID-19 reports were coded and tested with SPSS software to check the reliability between encoders. The cross table was selected in the descriptive analysis, and the coder's data was analyzed with the help of Cohen's Kappa. In the crosstab, the kappa test is to understand the reliability between encoders. It ranges from 1.00 to 0.70, with most variables falling in the middle or accurate to 1.00.

3. Discussion

Health communication is an important professional field in communication research (Anwar et al., 2020). However, communication scholars have been committed to applying their professional knowledge to health promotion and disease prevention activities for many years (Mheidly, Fares, 2020). Only about 50 years ago did health communication start as a recognized and consistent knowledge enterprise (Rogers, 1994).

Communication scholars designed the communication information to Conduct evaluation studies (Chib, 2010). Measuring the impact of these interventions. They often cooperate with public health (Finset et al., 2020), medical schools (Paul et al., 2021), action organizations and health promotion programs. With the emergence of the federal government's Anti-drug War In the 1980s (Reuter, Ronfeldt, 1992), large-scale funds began to be used for drug abuse prevention projects and their effects. In addition, due to healthcare costs as a percentage of Gross National Product GNP (Okun, 1963) increased (currently more than 15 %), interest in preventive healthcare methods has increased (Davis et al., 2000).

American communication scholar (Rogers, 1994) defines health communication as any human communication involving health content is health communication. This definition is now widely accepted and still in use today. He believes that health communication transforms medical research results into public health knowledge, changes attitudes and behaviour, and reduces morbidity and mortality. Effectively improve the quality of life and health of a community or country (Kreps et al., 2003).

As an interdisciplinary subject of health and communication, Chinese scholars (Zhang et al., 2014), Health communication has multi-dimensional characteristics. It is based on many subjects, such as communication, sociology, psychology, linguistics, anthropology, public health, education and management. The content of health communication depends on knowledge of the medical field

(Guenther et al., 2021). It is relatively difficult for people without a professional background to understand professional vocabulary and terminology (Paakkari, Okan, 2020). Therefore, journalists need to break down the barriers of knowledge and reduce the difficulty of understanding in communication.

Health communication should consider the difference in the audience's educational and health literacy levels (Aldoory, 2017). Emergency risk communication is an important area of healthy communication (Glik, 2007). Due to the different social and cultural backgrounds, the communication objects are different. In addition to the general characteristics of health communication, emergency risk communication also shows the characteristics of publicity, timeliness, popularity, flexibility and continuity (Adebayo et al., 2022).

Visualization Capabilities are commonly used in the field of medical research. Scholars use different maps, charts and tables to study medical information (Chittaro, 2006). It is used in many clinical settings, including outpatient, inpatient, emergency or intensive care units (Rajwan, Kim, 2010).

4. Results

When the COVID-19 outbreak was in China, the "Dxy.com" team, with a professional medical background, was the first to do the epidemic map. Later, Tencent News, Ifeng.com News, The Paper News, Sina News, Ali Health, etc, also followed the epidemic map. The epidemic map was originally based on the China map module. The colour depth reflects the severity of the epidemic in various regions. Click on any provincial region on a mobile phone or computer, and real-time epidemic data will appear. China was the first country to have a COVID-19 outbreak globally, and other countries gradually used the epidemic map.

In addition to maps, the cumulative trend of epidemic situation data is displayed through graphs and histograms. The epidemic figures cover the whole country, with a huge amount of data. Readers will be dazzled if traditional numerical tables are used to show them all. If it is partially displayed, it cannot accurately reflect the overall situation of the epidemic situation. The interactive design of epidemic maps can help users in different regions to locate the target data quickly. Initially, the epidemic map released only three pieces of data: confirmed, suspected and dead. As the epidemic progressed, the data increased to six: Existing confirmed, existing suspected, existing severe, cumulative confirmed, cumulative dead and cumulative cured.

With the development of the epidemic situation, COVID-19 infection cases have appeared in many countries in the world. The international epidemic situation has gradually become the focus of public attention, and the epidemic situation maps of various media have added international epidemic situation data. For example, the situation in South Korea, Italy, Iran, the United States and other countries with serious epidemic situations. It reflects the flexibility of public health emergencies. Regarding visualization design, the media mentioned above all adopt mobile-side adaptation design. From the beginning of the China epidemic to the later international epidemic, the data have been continuously updated, fully reflecting the characteristics of public health emergencies.

The pathological knowledge about COVID-19 belongs to the medical category and has a certain professionalism. Without a medical background, it is difficult to understand medical information. Spreading pathological knowledge helps the public understand the process and principle of virus occurrence and development, helps people treat coronavirus scientifically and rationally, to reduces public anxiety and panic. The tools used by Chinese media in visualization reporting are shown in Table 1.

Table 1. The tools used by Chinese media

COVID-19 coverage theme	Tools
COVID-19 map	Kepler. Gl/ AE / PS
Covid-19 spread speed	QGIS/ Flourish/ Processing/ Ai
Health/ safety	QGIS/ Processing/ Ai
Cultural/ symbolic/ stigma; Legal/ regulatory	Processing/ Ai
Openness/ Transparency /access to information	PlotDB/ Processing/ Ai
Basic information, who, where, what, when, why, how	QGIS/Processing/ Ai
Quality of life; Equity/ fairness/ Control	Echarts/ Ai

Epidemic Historical Events

For thousands of years, human beings have been accompanied by infectious diseases. Comparing COVID-19 with large-scale infectious diseases that have occurred in history, it is helpful for people to know COVID-19 from the perspective of history. The paper. Cn written the illustrates the 2,000-year history of infectious diseases. Plague with complete historical information is sorted and visually presented according to its occurrence time, duration, epidemic scope and death toll.

The works have the advantages of detailed data and multi-dimensional analysis angles. Use a chart to illustrate the large-scale infectious disease data recorded worldwide over the past 2,000 years. The design is to consider the propagation of the mobile terminal. The information map is designed as a long bar, through a time axis, a brief description of infectious disease events and a circular area map of the death toll. The audience can see clearly with their mobile phones and get an intuitive reading experience.

However, this work uses a static scatter plot when comparing the fatality rate of COVID-19 with other infectious diseases. Although the design is beautiful, but it cannot show the changing trend of the epidemic. During the development of the epidemic, the mortality rate, basic infection number and other data have been changing dynamically. Static charts cannot show this change.

Health Education Information

Healthy education is important to healthy communication (Hornik, 2002). The government announced that the public should take protective measures against the epidemic. For example, wearing masks, washing hands frequently, keeping social distance etc. Take masks, for example; there are many types of masks. It is suitable for different environments and different groups of people, but the general public cannot distinguish it correctly. Guiding the public to choose the appropriate mask type can effectively reduce the supply pressure of masks. People's Daily Guidelines for Selecting Masks for Different People. A table form is used to correspond different types of masks to the users and scenes, which is very simple and practical. However, the characters and patterns in the form are less exciting and lack attraction for people of a young age.

5. Conclusion

Visual communication integrates (Rahman et al., 2020) a large amount of complicated data and information into charts, information maps, videos, comics etc, to help people obtain important information conveniently and quickly. Visualization works depend on the support of original data (Turoń et al., 2020). Health communication requires the government to disclose data information promptly to ensure the accuracy of data information (Brown, Mourão, 2021). The transparency, timeliness and format of the government's disclosure of data and information will directly affect the reuse value of information (Liu et al., 2009). For example, the Shenzhen government data open platform's COVID-19 project provides CSV, JSON, XML, XLSX and RDF in five formats (Blackall et al., 2012). Suppose government information is not disclosed well, the data is not provided, the data is provided slowly, or the data is incomplete. In that case, Products such as epidemic maps are difficult to complete.

The data information visualization method (Çöltekin et al., 2020) can visualize abstract things and reduce the difficulty of understanding medical knowledge. Building a bridge between scientific knowledge and the audience is helpful for the transmission of knowledge (Ji, Lin, 2022). However, it should be noted that in the transformation process, it is necessary to ensure that the core information is accurate and cannot be misread (Herdin et al., 2020). The visualization works of COVID-19 include plane information maps and situation maps, 3D animation videos, virtual simulation experiments, etc. There is no doubt that visualization in future health communication will continue to improve with the development of computer technology (Bennett, 2023). Also puts forward higher requirements for journalist workers in visualization communication.

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