

ASCILITE 2023

People, Partnerships and Pedagogies

Exploring social media use for healthcare professionals

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This concise paper introduces the importance of Healthcare Professionals (HCP) voice on Social Media Platforms (SMP) to combat widespread mis/disinformation around health issues that is now prevalent on these platforms. While HCPs actions have been acknowledged as effective in dispelling myths surrounding health topics, the specific strategies employed by HCPs on different SMPs to address these issues remain largely unexplored. Employing a technology affordance perspective, this paper outlines a proposed research methodology aimed at investigating the strategies employed by HCPs for correcting misinformation across various SMPs and offers guidance in this area.

Keywords: Social Media, Healthcare Professionals, Misinformation, Disinformation.

Introduction

The COVID-19 pandemic has brought attention to the concept of an “infodemic”, an information environment characterised by an excessive volume of information that is often inaccurate, misleading, or false (World Health Organization, 2020). With a growing number of individuals seeking health information online, health-related topics have become a prominent target of the “infodemic”. It is indicated that a significant portion of online health content is incorrect (Islam et al., 2020). The dissemination of such false information can have profound consequences. Firstly, false information can strongly influence individuals' behaviours and undermine the effectiveness of government countermeasures. For instance, Schmidt et al. (2020) found that young people who believe in online myths perceive themselves as immune to COVID-19, leading to non-compliance with social distancing measures. Secondly, misconceptions about disease cures, such as the belief that consuming maize meal porridge can enhance one's immune system (Schmidt et al., 2020), can lead to the formation of inappropriate health knowledge, thereby increasing the risk of disease exposure. Furthermore, information disorder can amplify fear and panic, negatively impacting the public's mental health and well-being (Alanzi et al., 2020). Also, the persistence of myths, such as the notion that "HIV is a disease of 'black' people," perpetuates stigmatisation and ethnic discrimination (Mwamwenda, 2015). To combat the spread of rumours, it is essential to employ communication strategies. Social media platforms (SMPs) such as YouTube and Twitter have gained significant prominence as channels for social interaction and information dissemination, particularly regarding health-related topics (Naeem et al., 2020). The COVID-19 pandemic has further accelerated the use of SMPs, with reports indicating a global increase in social media usage ranging from 20% to 87% (Naeem et al., 2020). However, the proliferation of rumours and questionable information on SMPs has emerged as a concurrent issue. For instance, in Australia, online misconceptions such as 'hot temperatures killing the virus' and 'Ibuprofen exacerbating COVID-19' have gained traction (Pickles et al., 2021). Additionally, a multitude of self-proclaimed health experts and alternative medicine practitioners have propagated unverified pills, advice, and therapies on SMPs as purported solutions to the health crisis (Caulfield, 2020), exacerbating the problem of information disorder. However, it is worth noting that while SMPs are known to harbour a significant amount of false information, they also hold potential for correcting misperceptions (de las Heras-Pedrosa et al., 2020). One plausible explanation for this phenomenon is that SMPs enable individuals to be exposed to messages from a variety of sources, which may provide novel information that individuals do not encounter through offline interactions alone (Barberá, 2015). This suggests that social media users may have a greater chance of encountering corrective information within their daily use of social media. Therefore, in line with the previous efforts, the present study aims to investigate the strategic mechanism of using SMPs by HCPs in debunking health myths and combating mis(dis)information.

Referring to the rumours correction on SMPs, a growing body of research emphasises the importance of HCPs on enhancing the public health expertise and effectively addressing public panic (Huo et al., 2019). Prior research on corrective interventions implemented within SMPs has primarily focused on the practice on Facebook (Vraga & Bode, 2017). Although Facebook remains the most widely utilised SMP in Australia, with approximately more than half of adult Australians being active users, it is essential to recognise the significant usage rates of other platforms such as YouTube as well (Ramshaw, 2023). Considering that HCPs currently engage with their audiences across three or more social media modalities (Melkers et al., 2017), it is imperative to examine the impact of corrections across various SMPs, taking into account the distinctive characteristics and functionalities

of each platform. Exploring HCPs perceived affordances across various SMPs can contribute to the development of more effective health communication strategies. And this study can thereby inform the design of products and platforms that better combat “infodemic”. Therefore, this study’s overarching research question is: **How do healthcare professionals correct misinformation on multiple social media platforms?**

It is reported that the primary SMPs used by HCPs for mis(dis)information correction are Twitter, Facebook YouTube, LinkedIn and Instagram (Dol et al., 2019). Each of these platforms possesses distinct affordances. Twitter, established in 2006, functions as a microblogging platform, allowing users to share messages within a character limit of 280. HCPs prefer using Twitter to quickly update information and engage with their audience immediately (Valenzuela et al., 2017). Additionally, the hashtag feature on Twitter (#) enables HCPs and other users to participate in health-related conversations and foster online communities. Facebook, with over two billion users, is the most popular social networking site in the world. HCPs commonly utilise Facebook pages to facilitate specific discussions. A huge distinction of Facebook is that it requires mutual agreement, resulting in a more closed relationship between HCPs and their followers. YouTube stands out for its availability of audio and visual communication. It allows for the creation of longer videos (e.g., 10-20 minutes), making it suitable for HCPs to educate and elucidate complex healthcare issues. LinkedIn serves as a platform for people to engage in social networking and knowledge exchange. Its features, such as the option to send connection requests, encourage users to expand their personal connections and access accurate professional healthcare information. Finally, Instagram is a photo-based platform, where users can share photos, videos, and live content with their followers. Users are free to follow, like, and comment on other users' content. Due to its visual nature, Instagram is recommended for HCPs to educate the public using visual aids, such as displaying before-and-after photos of a disease (Wong et al., 2019). Based on the reviews of SMPs’ features above, the first research question is: **RQ1: What are the affordances that enable health myths correction on Twitter, Facebook, YouTube, LinkedIn, and Instagram, respectively?**

Perceived affordances of SMPs may differ in users’ preferences and interpretations. For instance, an exploratory study involving 193 users' perceptions of the affordances of SMPs for self-presentation (DeVito, Birnholtz, & Hancock, 2017) highlights the phenomenon of individual differences. This study indicates that people's previous experiences and personalities influence the perception of the flexibility affordance of SMPs in terms of self-presentation. Understanding the interplay between affordances and HCP actions within SMPs requires a comprehensive exploration of HCPs autonomy and the context of mis(dis)information correction. The different perceptions of SMPs’ affordance may influence HCPs actions. Given this understanding, it becomes valuable to examine how HCPs specifically employ these affordances in the process of correcting healthcare rumours. Therefore, the second research question is: **RQ2: How do healthcare professionals harness different affordances on Twitter, Facebook, YouTube, LinkedIn, and Instagram to effectively counteract healthcare rumours?**

For instance, YouTube is commonly perceived by the public as a platform for acquiring knowledge, while Facebook predominantly serves as a space for expressing personal opinions (Kim et al., 2011). These divergent user perceptions of SMPs may lead to varied reactions to the posts made by HCPs aiming to correct mis(dis)information. Furthermore, it is essential to recognise that users assess messages differently across differing SMPs. Notably, Eriksson and Olsson's study (2016) found that participants evaluated crisis information on Facebook as more helpful, targeted, and transparent compared to similar content on Twitter. This divergence in information evaluation across SMPs may influence the public's acceptance of and response to correction posts addressing mis(dis)information. Considering the potential variation in the effects of debunking rumours among different user groups, it is necessary to evaluate the public's reactions to messages. Therefore, the third research question is: **RQ3: How does the public respond to healthcare professionals’ corrections on Twitter, Facebook, YouTube, LinkedIn, and Instagram, respectively?**

Methodology

This study employs two sets of research methods to address the research questions. Ethnographic content analysis (ECA) will be employed to answer RQ1, while quantitative content analysis (QCA) will be utilised to address RQ2 and RQ3. ECA usually adopts an interpretative and reflective approach (Altheide, 1987), such as observing relevant interactions, making it particularly suitable for dynamic and complex phenomena. Given the intricacy of the affordances designed in SMPs, encompassing various functions, tones, and settings, the utilisation of ECA can offer a comprehensive understanding for examining the affordances that facilitate misinformation correction within a networked media environment. Additionally, ECA consistently serves as a *priori* within a content analysis process (Silverman, 2009), as the categories derived from ECA provide a systematic coding framework for variables. Therefore, the incorporation of ECA can enhance the QCA's ability

to address RQ2 and RQ3. QCA functions as a method for quantifying the frequency of occurrence and diversity of messages (Berelson, 1952), and it is typically employed to identify relationships between two or more variables (Altheide, 1987). The application of QCA in this study can help investigate HCPs' efforts to debunk misinformation on various SMPs and assess the effectiveness of their actions by examining potential trends. Purposive sampling is employed to select participants for this study. The selection criteria for HCPs are as follows: 1) possessing a doctoral degree in medicine to indicate their level of expertise, 2) maintaining active accounts on all five aforementioned SMPs (Table 1), 3) having a substantial number of followers (exceeding 50,000 in total) as the impact of a post often depends on the number of followers the poster has (Breland et al., 2017). Accounts with a limited number of followers may elicit a lower level of user engagement, thereby compromising the analysis of post effectiveness, and 4) ensuring that the selected HCPs have public accounts. Drawing from a compilation of seventy-five influential online HCPs listed on a professional website (Gish, 2022), this study manually selected ten HCPs based on the aforementioned criteria (refer to Table 1 for examples). Relevant posts from past year will be retrieved for the purpose of this study.

Table 1: Example healthcare professionals social media use and impact (Followers up to July 2023)

Anonymised Name	Medical Context	Twitter Followers	Facebook Follower	YouTube Subscribers	Instagram Followers	LinkedIn Followers	Journal Citation
Dr 1	medical futurism expert	85K	88K	85K	6K	296K	2725
Dr 2	neonatologist	229K	951K	15K	1.1M	4K	/
Dr 3	Menopause specialist	52K	78K	27K	444K	2K	406

During this process, one prominent ethical consideration revolves around the question of whether participants should be made aware of this study. This study chooses to adopt an overt approach based on two justifications. Firstly, by employing an overt ethnographic approach, participants are afforded the opportunity to exercise their autonomy and make an informed decision regarding their participation. Through explicit communication and obtaining informed consent, HCPs are given the agency to voluntarily opt-in or opt-out of the research process. This approach upholds ethical principles of transparency, respect for individuals' autonomy, and protection of their rights as research participants. Secondly, it is worth noting that the focus of this study lies in analysing posts and interactions that have occurred over the past year. Given this temporal dimension, the presence of the researcher during the data collection phase would have minimal impact on past practices and behaviours observed within the SMPs. As such, the retrospective nature of the analysis mitigates potential concerns related to participants' awareness of the researcher's presence.

Data collection and analysis

The affordances available on each SMP will be observed by researchers using Excel and note taking for the purpose of ECA. Firstly, the platform itself will be observed. The data related to functions such as its homepage, notification setting, comment function, reply function, hyperlink function, following function, and hashtag# function will be collected. Moreover, the content on each SMP will be examined as well, including the form of content, visibility, and editing. Thematic analysis will be used in analysing the collected data to identify emergent themes of affordances for answering RQ 1 and the analysis of QCA. After collecting data from ECA, QCA is used for RQ2 and RQ3 to examine what affordances are used by HCPs and what are the effectiveness of the usage. Python Web Crawler will be used to retrieve HCPs' profile information and information pertaining to rumour correction posts from the past year. Considering that HCPs share a variety of content on SMPs, including misinformation correction messages, advertisements, and personal updates, it's essential to have a sufficiently extended timeframe for data collection, and a shorter time frame would not capture the richness and diversity of their posts effectively. On the other hand, going beyond the one-year timeframe would demand significantly more effort to thoroughly investigate each post's context to determine whether it pertains to misinformation debunking. Given the constraints of limited time and resources, focusing on the past year is considered a practical and reasonable approach. The content will be coded into categories. For Twitter, Instagram, LinkedIn, and Facebook, posts will be categorised into three types: text (0 = absent, 1 = present), image (0 = absent, 1 = present), and video (0 = absent, 1 = present). The frequency of posting will be coded as the number of posts released within one year. For YouTube, the length of videos will be coded in seconds, and the frequency of video uploads will be coded as the number of videos released within the past year. Regarding HCPs use of SMP affordances, the themes generated from ECA will be examined in every HCP's actions (0 = not used, 1 = used). Regarding audience's reactions, the nature of comments will be coded into five categories: 1) agreement with the post (0 = no, 1 = yes), 2) seeking further clarification (0 = absent, 1 = present), 3) relating

to personal experience (0 = absent, 1 = present), 4) providing advice on the author's posts (0 = absent, 1 = present), and 5) other categories. Comment sentiments will be coded into three categories (1 = negative, 2 = neutral/ambiguous, 3 = positive). Furthermore, the number of views, likes, dislikes, shares, and audience comments will be retrieved. To ensure intercoder reliability, two well-trained coders will independently code the first ten percent of all posts. The intercoder reliability will be assessed using Krippendorff's alpha. In case of any coding disputes between the two coders, resolutions will be reached through discussion. Following the initial coding agreement, each coder will proceed to code half of the remaining content, respectively. And data generated from QCA will be analysed using STATA.

Implications

This study adopts an affordance lens to examine the usage of different SMPs by HCPs in addressing healthcare misinformation and disinformation. The implications of this study encompass several key dimensions. First and foremost, this study can mitigate the dissemination and amplification of health "infodemic". Secondly, it may fill a significant gap in the existing literature and provide valuable recommendations for the effective dissemination of healthcare information across multiple platforms, enhancing the digital media skills of healthcare professionals. Also, the evidence-based results in this study can positively influence the target population, with a particular focus on social media users, in altering their health-related behaviours and decision-making process. Moreover, this study can identify ways to strengthen the connections and interactions within the health information ecosystem, ultimately fostering a more reliable and trustworthy information network. Finally, this study can offer valuable insights to platform designers to develop and refine features that promote accurate health information dissemination and combat mis(dis)information effectively.

Possible limitations

Firstly, the use of purposive sampling introduces the possibility of selection bias. The selected sample consists of HCPs who employ all five mentioned SMPs. However, research by Antheunis et al. (2013) suggests that some professionals predominantly use LinkedIn and Twitter but not all five SMPs, meaning that influential HCPs who employ only a subset of the SMPs may be excluded. While this bias is challenging to eliminate entirely, efforts will be made to mitigate it by diversifying the sampling criteria. Specifically, HCPs from different areas of expertise, genders, and ethical backgrounds will be purposefully selected to enhance sample representation. Secondly, the limited number of sample posts is another potential limitation. The intended timeframe for post collection is one year. However, HCPs may use SMPs for various purposes beyond mis(dis)information correction, including communication with colleagues and marketing endeavours (Antheunis et al., 2013). Consequently, if the initial timeframe fails to yield a substantial number of sample posts, the duration will be extended to ensure an adequate sample size for analysis.

Conclusion

In light of the prevalence of health rumours on SMPs, it is necessary to develop effective strategies to combat the dissemination of inaccurate information. While prior studies have primarily focused on investigating mis(dis)information correction on Facebook, this study aims to broaden the scope by examining the effectiveness of applying SMP affordances across multiple platforms. By adopting ECA and QCA methods, this study seeks to enhance the understanding of the various SMPs and hopefully, the concerted efforts of HCPs, informed by the findings of this study, will contribute to the reduction of the "infodemic" and the promotion of accurate health information dissemination on SMPs.

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