Managing Information Overload in a Pandemic: Influence of Social Media on Vaccine Attitudes in the Digital Age

MEDICAL

MEDICAL

Health Care
Doctor
Hospital
Pharmacist
Nurse
Dentist
First Aid
Surgeon
Emergency

Health Care
Doctor
Hospital
Pharmacist
Nurse
Dentist
First Aid
Surgeon
Emergency

Managing Information Overload in a Pandemic: Influence of Social Media on Vaccine Attitudes in the Digital Age

[1*]Adekunle Yusuf, [2]Abigail O. Ogwezzy-Ndisika, [3]Ismail A. Ibraheem

[1,2,3]Mass Communication Department, University of Lagos, Lagos, Nigeria

https://orcid.org/0009-0001-5456-0666

ABSTRACT

Purpose: This study examined how social media influences public health decisions, focusing on how information overload during a pandemic impacts vaccine hesitancy and acceptance across demographics. It analyzed conflicting vaccine information to understand social media's role in shaping attitudes and identify strategies to mitigate its negative effects.

Methodology: This study employed a multi-stage sampling method to gather data from diverse age groups, education levels, and occupations. This approach combines various techniques at different stages, making it suitable for large, geographically dispersed populations. By segmenting the population into manageable units, multi-stage sampling improves the accuracy, reliability, and representativeness of the data collected.

Findings: The findings reveal that most respondents consider vaccine information on social media unreliable, underscoring the need for greater trust in online discussions. Many feel overwhelmed by conflicting messages, highlighting the necessity for clearer communication. Social media significantly shapes attitudes toward COVID-19 vaccines, with many shifting views after engaging with online content. Additionally, participants report mental health impacts from the constant stream of vaccine information, illustrating information overload.

Unique Contributions to Theory, Policy and Practice: This study advances the information overload model by illustrating how excessive and conflicting vaccine information on social media disrupts comprehension and harms mental health. It emphasizes social media's role in shaping health attitudes and advocates for interdisciplinary approaches that incorporate psychological resilience into public health strategies. Findings highlight the need for regulations against misinformation to improve the credibility of online health information and promote trusted sources, particularly verified health organizations. The study also calls for health literacy initiatives to empower the public in navigating misinformation and suggests strategies for managing information overload through social media disengagement. Targeted initiatives that leverage trusted information sources can effectively combat vaccine hesitancy and boost community engagement in public health campaigns, ultimately improving health outcomes.

Keywords: *Information Overload, Vaccine Attitudes, Misinformation, Social Media Influence, Vaccine Hesitancy, Vaccine Acceptance*

INTRODUCTION

Pandemics have historically presented profound challenges to public health, as illustrated by devastating outbreaks such as the Black Death (Cohn, 2008), the 1918 influenza pandemic (Taubenberger & Morens, 2006), and more recently, the COVID-19 pandemic (World Health Organization, 2020). Each of these events not only exposed the vulnerabilities within global health systems but also underscored the imperative for effective public health interventions. The consequences of pandemics are far-reaching, resulting in widespread morbidity and mortality, straining healthcare resources, and disrupting essential societal functions (McKee & Stuckler, 2020). In our increasingly interconnected world, the rapid spread of infectious diseases has become a critical concern, demanding immediate and coordinated responses from public health officials and policymakers (Hufgard & Rusch, 2021).

Vaccination emerges as one of the most potent public health strategies for controlling infectious diseases. Historically, vaccines have played a crucial role in eradicating diseases like smallpox (Fenner et al., 1988) and significantly reducing the incidence of others, including measles (Parker et al., 2021) and polio (World Health Organization, 2018). During pandemics, vaccines act as a vital line of defense, conferring immunity to populations and helping to curtail the transmission of pathogens (Kahn et al., 2021). The urgency for swift vaccine development and deployment has never been more pronounced than during the COVID-19 pandemic, where vaccines have been instrumental in mitigating the effects of the virus, lowering hospitalization rates, and ultimately saving countless lives (Poland et al., 2021; Dyer, 2021).

In the digital age, social media has emerged as a dominant platform for disseminating information, particularly during health crises. Platforms such as Twitter, Facebook, and Instagram enable users to share and receive information instantaneously, often outpacing traditional media channels (Ventola, 2014). While these platforms offer valuable opportunities for public health campaigns and real-time updates, they also present significant challenges. The spread of misinformation and conflicting narratives about vaccines can contribute to confusion and skepticism among the public (Roozenbeek et al., 2020; Zarocostas, 2020).

The phenomenon of information overload has become increasingly relevant in the context of social media and public health communication. Coined by Bertram Gross in the 1960s, information overload refers to the difficulty individuals face in processing information and making decisions when confronted with an overwhelming amount of content (Gross, 1964). In today's social media landscape, users are bombarded with a constant influx of information, making it challenging to discern credible sources from unreliable ones (Chou et al., 2020). This saturation can lead to decision paralysis, apathy, and a tendency to cling to pre-existing beliefs—all factors that significantly influence vaccine attitudes during a pandemic (Pennycook et al., 2020; Roozenbeek et al., 2020).

This study aims to explore the interplay between information overload and the influence of social media on vaccine attitudes during a pandemic. By analyzing how the volume and diversity of information available on social media platforms shape public perceptions of

vaccines, this research seeks to illuminate the complexities of health communication in an era characterized by rapid information exchange. Understanding these dynamics is crucial for developing effective public health strategies that can navigate the challenges posed by social media and information overload (Gonzalez et al., 2021; O'Connor et al., 2020).

INFORMATION OVERLOAD AND VACCINE ATTITUDES

Information overload, a concept that has gained increasing prominence in the digital age, refers to the state in which individuals are exposed to more information than they can effectively process (Eppler & Mengis, 2004). This overwhelming influx of data can lead to significant difficulties in decision-making and comprehension (Bawden & Robinson, 2009). This phenomenon is particularly relevant in the context of social media, where vast amounts of content are generated and disseminated in real-time, often leaving users feeling inundated (Eppler & Mengis, 2004).

The term "information overload" was popularized by Bertram Gross in his 1964 book, *The Managing of Organizations*. Gross noted that the escalating volume of information in organizational settings could lead to confusion and inefficiency (Gross, 1964). Since then, researchers have expanded upon this definition, identifying various dimensions of information overload. Bawden and Robinson (2009), for example, highlight three key aspects: the quantity of information, the rate of information flow, and the diversity of information sources. Each of these factors contributes to an individual's experience of being overwhelmed.

Information overload can manifest in both qualitative and quantitative dimensions. Quantitatively, it refers to the sheer volume of information that exceeds cognitive processing capacity. Qualitatively, it encompasses the complexity and ambiguity of information, which makes it challenging for individuals to distinguish between relevant and irrelevant data (Shieh, 2015). This dual nature complicates the decision-making process, as individuals may struggle to prioritize information effectively and may ultimately find it difficult to make informed choices.

Research indicates that information overload can lead to several negative consequences, including increased anxiety, reduced productivity, and impaired decision-making (Sullivan & Kelleher, 2018). For instance, a study by Huang and Liaw (2018) found that individuals experiencing high levels of information overload reported greater stress and lower satisfaction with their decision-making outcomes. This stress is intensified by the rapid pace of information exchange on social media platforms, where misinformation can spread alongside accurate data, further complicating users' ability to make informed choices (Pennycook et al., 2020).

The implications of information overload are particularly significant in public health contexts, where timely and accurate information is crucial. During health crises like the COVID-19 pandemic, the sheer volume of information can create confusion and exacerbate the spread of misinformation, ultimately impacting public health behaviors (Wang et al., 2020). For example, individuals may struggle to navigate the overwhelming amount of information

regarding vaccine safety, efficacy, and guidelines. This can lead to increased skepticism or hesitancy about vaccination (Chou et al., 2020).

MISINFORMATION, SOCIAL MEDIA AND HEALTH INFORMATION DISSEMINATION

Social media has fundamentally transformed the sharing and consumption of health information. Platforms such as Facebook, Twitter, Instagram, and TikTok enable rapid communication, allowing health organizations, professionals, and the public to exchange information in real-time (Ferguson et al., 2015). While these platforms present significant opportunities for public health promotion and community engagement, they also pose serious challenges, particularly concerning misinformation and conflicting messages (Wright et al., 2020).

One of the most notable advantages of social media is its ability to disseminate health information quickly. During public health crises like the COVID-19 pandemic, social media has empowered health authorities to share critical updates and guidelines almost instantaneously (Zhou et al., 2020). For instance, the World Health Organization (WHO) effectively utilized Twitter and Facebook to provide real-time updates and health recommendations, keeping users informed about the evolving situation (Zarocostas, 2020). This rapid communication can be vital in situations where timely information can save lives, such as during disease outbreaks or natural disasters (Glik, 2007; O'Connor et al., 2020).

In addition to information dissemination, social media serves as a platform for community support and engagement. Health-related groups and forums allow individuals to share experiences, offer emotional support, and foster a sense of belonging (Eysenbach, 2008; Hwang et al., 2016). For example, patients with chronic illnesses can connect with others facing similar challenges, exchanging advice and coping strategies. This sense of community can enhance the psychological well-being of individuals navigating health issues, ultimately contributing to better health outcomes (Bender et al., 2011; Seabrook et al., 2016).

Moreover, social media can significantly enhance awareness and education about health issues. Health campaigns that leverage social media can reach broader audiences than traditional methods (Freeman et al., 2015; Love et al., 2020). For example, initiatives targeting vaccine hesitancy have utilized social media to disseminate factual information about vaccine safety and efficacy, engaging users through interactive content (Driedger et al., 2019; Gagneur, 2018). This increased awareness empowers individuals to make informed health decisions, fostering a more health-literate society.

Social media platforms are particularly effective in reaching younger populations, who often engage less with traditional health communication methods (Wang et al., 2018; Kinnunen et al., 2021). By tailoring messages to suit the preferences of younger audiences, public health campaigns can effectively promote healthy behaviors and attitudes. The use of engaging formats, such as videos, memes, and infographics, can enhance the appeal of health messages, encouraging young people to participate in health-promoting activities (Reavley et al., 2015).

Despite the advantages of social media, it also serves as a significant vector for misinformation and disinformation. Misinformation refers to false or misleading information shared without harmful intent, whereas disinformation involves the deliberate dissemination of false information aimed at deceiving others (Lewandowsky et al., 2012). The COVID-19 pandemic has starkly illustrated the dangers posed by misinformation, with false claims about treatments, vaccine efficacy, and disease transmission spreading rapidly across social media platforms (Cinelli et al., 2020; Pulido et al., 2020). This misinformation can lead to harmful health behaviors, such as vaccine hesitancy, which undermines public health efforts (Roozenbeek et al., 2020).

Another challenge is the proliferation of conflicting messages on social media. With countless voices contributing to the discourse, individuals are often confronted with a variety of opinions and claims about health topics, making it difficult to discern credible information (Sullivan et al., 2020; Roozenbeek et al., 2020). For instance, during the early stages of the COVID-19 pandemic, mixed messages regarding mask-wearing and social distancing guidelines created confusion and uncertainty among the public (Gollust et al., 2020). Such inconsistency can erode trust in health authorities and dissuade individuals from following public health recommendations (Gollust et al., 2020).

Social media can also foster the formation of echo chambers, where users are primarily exposed to viewpoints that reinforce their existing beliefs (Sunstein, 2001). This phenomenon can lead to polarization and a reduced openness to differing perspectives (Fang et al., 2020). In health contexts, echo chambers can exacerbate the spread of misinformation, as individuals may dismiss credible information that contradicts their beliefs. For example, vaccine misinformation has proliferated within certain online communities, where members support each other's skepticism and reject evidence-based information (Leask et al., 2020).

The impact of social media on mental health is another significant concern in the context of health information dissemination. Exposure to distressing health-related content can lead to increased anxiety and fear (Primack et al., 2017). During health crises, individuals may experience heightened levels of stress while navigating an overwhelming influx of information. This potential for social media to contribute to anxiety about health issues necessitates careful consideration of how health information is communicated on these platforms (Fardouly et al., 2015).

VACCINE ATTITUDES AND SOCIAL MEDIA INFLUENCE

The advent of social media has fundamentally transformed the landscape of health communication, particularly concerning vaccine attitudes. Numerous studies highlight how social media can both positively and negatively influence public perceptions and behaviors toward vaccination (Leask et al., 2020). This comprehensive review synthesizes key findings from the literature, focusing on the impact of social media as an information source, the prevalence of misinformation, the role of social networks, and the implications for public health interventions.

Social media platforms have increasingly become vital sources of health information. According to the Pew Research Center (2021), nearly 70% of adults in the U.S. have turned to social media for health-related information, including content about vaccinations. A study by Gollust et al. (2020) found that social media was among the most frequently cited sources for vaccine information, particularly during the COVID-19 pandemic. This shift underscores the critical role of social media in shaping public understanding and attitudes toward vaccination (Pew Research Center, 2021; Tsao et al., 2021).

In their study on parental vaccine attitudes, Stupple et al. (2013) discovered that parents engaging with vaccination-related content on social media platforms were more likely to develop positive attitudes toward vaccines. The study emphasized that positive interactions and supportive content significantly influenced parents' decisions to vaccinate their children. This indicates that social media can be a powerful tool for health promotion, especially when credible information is shared (MacDonald et al., 2015).

While social media can facilitate the dissemination of accurate health information, it also serves as a conduit for misinformation. Research consistently demonstrates that vaccine-related misinformation can spread rapidly on social media platforms, leading to detrimental effects on public health. A systematic review by Roozenbeek et al. (2020) illustrated that exposure to vaccine misinformation significantly decreased intentions to vaccinate. The researchers found that misinformation—such as false claims regarding vaccine safety and efficacy—can increase vaccine hesitancy among populations (Horne et al., 2015; Roozenbeek et al., 2020).

Kata (2010) provided a comprehensive analysis of online anti-vaccine movements, highlighting how these groups utilize social media to propagate their messages. The study identified key themes in anti-vaccine rhetoric, including distrust in pharmaceutical companies and the portrayal of vaccines as harmful. These findings suggest that individuals who engage with anti-vaccine content are more likely to adopt negative attitudes toward vaccination, underscoring the need for effective counter-messaging (Zachary et al., 2021).

Social media serves as a platform for social interaction, where users share experiences, opinions, and information. This networked structure can significantly influence individual attitudes toward vaccines. A study by Freimuth et al. (2017) found that social ties and peer influence play crucial roles in shaping vaccine attitudes; participants with friends or family members who were vaccine-hesitant were more likely to express similar hesitancy (Betsch et al., 2018).

The concept of "social contagion" has also been explored in the context of vaccine attitudes. Research by Valente et al. (2015) demonstrated that vaccination behaviors can spread through social networks, indicating that individuals are influenced not only by direct interactions but also by the behaviors of those within their social circles. This finding underscores the importance of addressing social dynamics in public health interventions aimed at increasing vaccine uptake (Gonzalez et al., 2020).

Another critical area of research is the influence of social media influencers and public figures on vaccine attitudes. Studies have shown that endorsements from celebrities or trusted figures can significantly impact public perception and vaccination intentions (Gollust et al., 2020; Vardavas et al., 2020). For instance, Vardavas et al. (2020) indicated that exposure to positive messages about vaccines from well-known individuals led to increased vaccination intentions among followers. This suggests a valuable opportunity for leveraging influencer marketing in public health campaigns.

Similarly, Wilson and Wiysonge (2020) emphasized the importance of utilizing social media influencers to counter misinformation and promote vaccination. They advocated for health authorities to partner with credible influencers to disseminate accurate vaccine information and effectively engage with audiences (Sullivan et al., 2021). Given the challenges posed by misinformation and vaccine hesitancy on social media, several studies have examined the effectiveness of targeted interventions aimed at improving vaccine attitudes. A randomized controlled trial by Roozenbeek et al. (2020) tested the impact of tailored messaging on vaccine attitudes during the COVID-19 pandemic. The findings revealed that participants who received personalized, evidence-based information were significantly more likely to intend to vaccinate compared to those who received generic messages (Hornsey et al., 2020).

Hornsey et al. (2020) conducted a systematic review of interventions targeting vaccine hesitancy on social media, identifying several effective strategies. These included empathy-driven messaging, addressing specific misconceptions, and fostering open dialogues about vaccine safety. Such strategies are essential for creating a supportive environment where individuals feel comfortable discussing their concerns and questions about vaccines (Miller et al., 2020).

The psychological aspects of vaccine attitudes in relation to social media have also garnered attention. A study by Primack et al. (2017) found that exposure to distressing health-related content on social media could lead to increased anxiety and fear regarding vaccination. This highlights the potential for negative emotional responses to health-related social media content, which can exacerbate vaccine hesitancy. Conversely, supportive online communities can play a protective role in enhancing vaccine confidence. Research by Bender et al. (2011) demonstrated that individuals participating in positive online discussions about vaccines reported increased confidence in vaccination. This underscores the importance of fostering constructive online environments that promote healthy behaviors (Roozenbeek et al., 2020).

METHODOLOGY

The survey research technique was adopted for this study. A questionnaire was developed and administered to the respondents of this study. Residents of the Ikeja Local Government of Lagos State formed the population of this study. The Lagos Bureau of Statistics (2020) pegs the population distribution of Ikeja Local Government Area at 976,997.27. Being the center of the economic capital of the most populous state in West Africa, Ikeja is cosmopolitan in nature. The choice of Ikeja Local Government Area affords this study a rich pool of respondents from different walks of life. The study employed a multi-stage sampling technique to address

the challenges posed by a geographically dispersed population and the need for face-to-face contact, which can be both costly and time-consuming to implement across large geographic areas. In the initial stage, cluster sampling was utilized.

The study area, Ikeja Local Government Area, was divided into distinct clusters or wards to facilitate sampling. These clusters included Anifowoshe/Ikeja, Adeniyi Jones/Ogba, Agidingbi/Omole/Ojodu, Oke-Ira/Aguda Titun, Alausa/Oregun/Olusosun, Onigbongbo/Military Cantonment, Onilekere/Onipetesi, G.R.A, Ipodo/Seriki Aro, and Wasimi/Opebi/Allen. Quota sampling was subsequently employed to refine the selection of wards, reducing the number from 10 to 5. Quota sampling, a non-probability sampling technique, involves dividing the population into distinct groups and then selecting a predetermined number of sampling units from each group. Thus, the following five wards were chosen:

- Wasimi/Opebi/Allen
- Alausa/Oregun/Olusosun
- Agidingbi/Omole/Ojodu
- Anifowoshe/Ikeja
- Adeniyi Jones/Ogba

In the third stage, purposive sampling was utilised, enabling the researcher to select samples based on judgment and convenience. This involved selecting young individuals and adults from the afore-mentioned wards. A total of 80 questionnaire copies were allocated to each ward. To determine the manageable sample size from the population, the Taro Yamane sampling formula was employed:

$$N = N/ (1+N (e)^2$$

n = sample size

N = whole population under study

1 = constant unit of error

e = precision or sampling error (0.05)

$$n = \frac{976, 997.27}{1 + 976,997 (0.005)^2}$$

$$n = \frac{976,997.27}{1+976,997.27 (0.0025)}$$

$$n = \frac{976, 997.27}{1+2442.5}$$

$$n = \frac{976,997.27}{2443.5}$$

n = 399.84

n = 400

Thus, a sample size of approximately 400 was determined to be appropriate for the study. The data collection process involved the direct administration of 400 questionnaires to young individuals and adults residing in the selected wards. To facilitate the administration and collation processes, the researcher engaged the services of enumerators. All questionnaires distributed were later retrieved, and after validation, 398 of them were deemed suitable for analysis. For data analysis, descriptive statistics was utilised as the primary technique. The collected data were analysed using the Statistical Product and Service Solution (SPSS) software. The analysed data were then presented using various methods, including tables, frequency distributions and percentages, to provide a comprehensive overview of the findings.

FINDINGS

The demographic profile of the respondents reveals valuable insights into the composition of the sample (see Table 1). The largest proportion of respondents falls within the 25-34 age bracket, comprising 31.9% of the sample. This suggests that individuals in their late twenties to early thirties are well-represented in the study. Additionally, respondents aged 18-24 and 35-44 also make up substantial portions of the sample, accounting for 25.9% and 14.6% respectively. It's noteworthy that there is representation across a wide range of age groups, indicating diversity within the sample.

Gender distribution among the respondents is nearly balanced, with females slightly outnumbering males by a margin of 54.5% to 45.4%. This suggests that the study sample includes a diverse range of gender identities, with a relatively equal representation of males and females. Most respondents have completed tertiary education, comprising 59.3% of the sample. This indicates a well-educated cohort, potentially with a higher level of literacy and awareness regarding the subject matter. Additionally, a significant proportion of respondents have completed secondary education (32.2%), while fewer have attained postgraduate qualifications (8.5%).
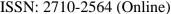
www.carijournals

Table1 *Demographic characteristics of respondents*

Variable	Category	Count(n)	Percentage (%)
Age Bracket	Under 18	49	12.3
	18-24	103	25.9
	25-34	127	31.9
	35-44	58	14.6
	45-54	37	9.3
	55-64	11	2.8
	65 or older	6	1.5
Gender	Female	217	54.5
	Male	181	45.4
Educational Background	Tertiary	236	59.3
	Secondary	128	32.2
	Postgraduate	34	8.5
Occupation	Student	152	38.2
	Self-employed	95	23.9
	Employed	89	22.4
	Unemployed	56	14.1
	Retired	6	1.5

Note. This table summarizes respondents' demographics, highlighting a female majority aged 25-34, with tertiary education, often students or self-employed

The largest occupational group among respondents consists of students, representing 38.2% of the sample. This suggests that a sizable portion of the respondents may be in the younger age brackets and still pursuing their education. Self-employed individuals and those who are employed make up substantial portions of the sample as well, comprising 23.9% and 22.4% respectively. Furthermore, there is representation from unemployed individuals (14.1%) and retirees (1.5%), indicating diversity in employment status within the sample. Overall, the demographic profile of the respondents reflects a diverse and well-represented sample, with varying age groups, gender identities, educational backgrounds and occupational statuses included in the study, thus providing a comprehensive understanding of the characteristics of the study population and laying the foundation for further analysis and interpretation of the research findings.

Table 2 shows respondents' perception of COVID-19 vaccine information on social media. A staggering 79.6% of respondents express feeling overwhelmed by the sheer volume of COVID-19 vaccine information encountered on social media platforms. This sentiment underscores the challenges posed by the abundance of information and its potential impact on individuals' ability to process and comprehend the content effectively. Furthermore, 16.8% of respondents indicate feeling somewhat overwhelmed, while only a minority (3.5%) report not feeling overwhelmed at all.

www.carijournals

Table2 *Perception of COVID-19 vaccine information on social media*

Perception of COVID-19 vaccine information on social media	Response	Count(n)	Percentage (%)
Feeling overwhelmed by the amount of information	Overwhelmed	317	79.6
	Somewhat overwhelmed	67	16.8
	Not overwhelmed	14	3.5
Frequency of encountering conflicting information	Very frequently	193	48.5
	Frequently	184	46.2
	Occasionally	19	4.8
	Rarely	2	0.5
Impact on mental health due to influx of information	Extremely affected	301	75.6
	Slightly affected	33	8.3
	Not affected at all	7	1.8

Note. This table shows respondents' perceptions of COVID-19 vaccine information on social media, revealing feelings of overwhelm, frequent encounters with conflicting information, and notable impacts on mental health.

Nearly half of the respondents (48.5%) reported encountering conflicting information about COVID-19 vaccines very frequently on social media. This prevalence of conflicting information highlights a concerning trend that may contribute to confusion and uncertainty among individuals seeking reliable information about vaccination. Additionally, 46.2% encountered conflicting information frequently, indicating a pervasive issue that demands attention and resolution. The survey findings also shed light on the profound impact of the constant influx of COVID-19 vaccine information on respondents' mental health. A significant majority (75.6%) attested to experiencing significant mental health effects due to the relentless stream of information on social media platforms. Of particular concern, 14.3% reported being extremely affected, underscoring the detrimental consequences of information overload on individuals' psychological well-being. Additionally, 8.3% indicated being slightly affected, further emphasising the widespread toll that misinformation and information overload can have on mental health during times of crisis. Overall, these findings highlight the urgent need for effective strategies to address information overload and mitigate the adverse effects of conflicting and overwhelming COVID-19 vaccine information on social media platforms. Implementing measures to promote accurate, reliable and balanced information dissemination while supporting individuals' mental health and well-being is essential in navigating the challenges posed by the infodemic surrounding vaccination efforts.

The findings from Table 3 offer profound insights into respondents' perceptions of vaccine-related information on social media platforms. A significant majority of respondents (44%) expressed strong scepticism regarding the reliability of vaccine-related information found on social media platforms, deeming it very unreliable. Additionally, 22.8% found the information

somewhat unreliable, indicating widespread doubt and uncertainty surrounding the accuracy and credibility of the content disseminated through these channels. This prevailing sentiment underscores the challenges posed by misinformation and the critical need for efforts to enhance the trustworthiness and credibility of vaccine-related information available online.

Table 3 *Perception of vaccine-related information on social media*

Perception of vaccine-related information on social media	Response	Count (n)	Percentage (%)
Reliability of vaccine-related information	Very unreliable	175	44.0
	Somewhat unreliable	91	22.8
	Neutral	72	18.1
	Somewhat reliable	47	11.8
	Very reliable	13	3.3
Agreement on overwhelming volume and diversity of information	Strongly agree	195	49.0
	Agree	154	38.7
	Neutral	32	8.0
	Disagree	17	4.3

Note. This table shows respondents' views on vaccine-related information on social media, showing widespread skepticism about its reliability and concerns over the sheer volume and diversity of content.

The survey further reveals that nearly half of the respondents (49%) strongly agreed that the volume and diversity of vaccine-related information on social media platforms are overwhelming. This sentiment is echoed by an additional 38.7% of respondents who simply agreed with this assessment. Together, these findings underscore the pervasive sense of information overload experienced by individuals navigating the vast array of vaccine-related content on social media. The overwhelming nature of this information landscape presents significant challenges in discerning accurate information from misinformation, highlighting the critical need for strategies to streamline and clarify vaccine-related messaging on social media platforms. Overall, these responses reflect a concerning perception among respondents regarding the reliability and overwhelming nature of vaccine-related information on social media platforms. Addressing these concerns requires concerted efforts to combat misinformation, enhance the credibility of vaccine-related content, and provide individuals with the tools and resources needed to navigate the complex information environment effectively.

Table 4 provides profound insights into the influence of social media on respondents' views and behaviors related to COVID-19 vaccines. A significant majority of respondents (53%) acknowledged that social media has somewhat influenced their views on COVID-19 vaccines. This suggests that social media platforms play a significant role in shaping individuals' perceptions and attitudes toward vaccination efforts. Additionally, 29.9% of respondents believed that social media has minimally influenced their views, indicating a lesser but still

notable impact; while 17.1% perceived no influence. These findings underscore the substantial influence wielded by social media in shaping public discourse and perceptions surrounding COVID-19 vaccines.

A noteworthy majority of respondents (73.1%) expressed awareness of changes in their vaccine hesitancy or acceptance after engaging with COVID-19 vaccine-related content on social media. This highlights the dynamic nature of individuals' attitudes and beliefs, which may be influenced by the information and narratives circulating on social media platforms. Moreover, 14.3% of respondents indicated some level of awareness; while 12.5% reported no awareness of such changes. This suggests a varied degree of self-awareness regarding the impact of social media on vaccine-related attitudes and behaviors among respondents.

A substantial portion of respondents (31.6%) expressed a somewhat likelihood of changing their opinion about COVID-19 vaccines based on social media content. This indicates a degree of receptivity to new information and perspectives encountered on social media platforms. However, it's noteworthy that 27.1% of respondents are not very likely to change their opinion; while 22.4% are very likely to do so, and 18.8% express no likelihood of opinion change. These findings reflect a spectrum of attitudes and receptivity to social media messaging, suggesting varied levels of susceptibility to persuasion and influence. Overall, these responses suggest that social media plays a significant role in shaping individuals' views and behaviours related to COVID-19 vaccines. While the impact varies among respondents, the prevalence of awareness of changes in vaccine hesitancy or acceptance underscores the need for targeted interventions to address misinformation and promote informed decision-making regarding vaccination. Additionally, the findings highlight the complex interplay between social media, information overload and patterns of vaccine hesitancy and acceptance among respondents.

Table 4 *Influence of social media on views about COVID-19 vaccines*

Influence of social media on views about COVID-19 vaccines	Response	Count(n)	Percentage (%)
Influence on views about COVID-19 vaccines	Greatly influenced	0	0.0
	Somewhat influenced	211	53.0
	Minimally influenced	119	29.9
	Not influenced	68	17.1
Awareness of changes in vaccine hesitancy or acceptance	Very aware	291	73.1
	Somewhat aware	57	14.3
	Not aware	50	12.5
Likelihood to change opinion about vaccines based on social media	Very likely	89	22.4
	Somewhat likely	126	31.6
	Not very likely	108	27.1
	Not at all likely	75	18.8

Note: This table shows that many respondents recognize social media's influence on their COVID-19 vaccine views, with shifts in vaccine hesitancy or acceptance, and a moderate likelihood of changing opinions based on social media content.

Lastly, the findings from Table 5 offer valuable insights into how respondents manage overwhelming information about COVID-19 vaccinations and the strategies they prefer for mitigating information overload. A significant majority of respondents (44.5%) admitted to ignoring health-related information when faced with overwhelming details about COVID-19 vaccinations. This coping mechanism suggests a tendency to disengage from information overload to reduce cognitive strain. Additionally, 33.1% of respondents opted to temporarily stop using social media, highlighting a conscious effort to limit exposure to excessive information. Meanwhile, 22.4% chose to seek information from professional sources, indicating a preference for reliable and authoritative sources amid the deluge of information.

As for their preferred interventions for information management, the majority of respondents (50.5%) identified verified health organisations as their preferred intervention for managing information overload regarding vaccinations. This underscores the importance of trust and credibility in navigating complex health information landscapes. Additionally, 38.2% picked educational content, suggesting a desire for informative and educational resources to aid in understanding vaccination-related information. Meanwhile, 7.9% selected information filters, and 3.5% preferred fact-check labels, highlighting a demand for tools and mechanisms to verify the accuracy of information.

Table5: Strategies for managing information overload about COVID-19 vaccines

Strategies for managing information overload about COVID-19 vaccinations	Response	Count (n)	Percentage (%)
Response to overwhelming health-related information	Ignore	177	44.5
	Stop using social media	132	33.1
	Check professional sources	89	22.4
Interventions to manage information overload	Verified health organizations	201	50.5
	Educational content	152	38.2
	Information filters	31	7.9
	Fact check labels	14	3.5
Strategy for mitigating information overload and improving decision-making	Stringent regulations	171	43.0
	Update from health authorities	107	26.9
	Expert opinions	79	19.8
	Trustworthiness ratings	28	7.0
	Clearer identification of sources	13	3.3

Note. This table highlights respondents' tendency to ignore excessive health data, prefer trusted sources, and support stricter misinformation regulations to improve vaccination decisions.

When asked about strategies to mitigate information overload and improve decision-making regarding vaccinations, a significant majority of respondents (43%) advocated for stringent regulations on health misinformation. This underscores the importance of combating misinformation and ensuring the dissemination of accurate and reliable information. Furthermore, 26.9% preferred updates from health authorities, emphasising the role of trusted sources in guiding decision-making. Additionally, 19.8% prioritised expert opinions, 7% preferred trustworthiness ratings, and 3.3% sought clearer identification of sources, reflecting a diverse range of strategies to address information overload and enhance decision-making processes. Overall, these responses highlight the challenges posed by information overload in the context of COVID-19 vaccinations and the diverse strategies employed by respondents to manage and navigate this complex information landscape. The findings underscore the importance of promoting trustworthy sources, implementing effective information filtering mechanisms, and combating misinformation to facilitate informed decision-making and improve public health outcomes.

DISCUSSION OF FINDINGS

This study evaluates information overload during the COVID-19 pandemic, particularly related to vaccine content on social media. The data reveal that 79.6% of respondents felt overwhelmed by the volume of information, with 48.5% encountering conflicting vaccine information. Additionally, 75.6% reported negative impacts on their mental health due to this constant influx. These findings highlight the significant information overload faced by individuals regarding vaccine-related content. The prevalence of overwhelm, conflicting messages, and mental health impacts underscores the urgent need for strategies to improve information literacy and ensure the dissemination of accurate information. Effective interventions can enhance informed decision-making, reduce uncertainty, and promote better public health outcomes during the pandemic.

The findings about information overload during the COVID-19 pandemic, particularly concerning vaccine-related content on social media, align closely with existing literature. Numerous studies have documented similar experiences among individuals navigating the complex landscape of health information during this time. For instance, research by Sweeney et al. (2021) emphasizes that the overwhelming volume of information related to COVID-19 vaccines on social media can lead to confusion and anxiety among users, corroborating your finding that 79.6% of respondents felt overwhelmed. Furthermore, Kricorian et al. (2021) highlight that exposure to conflicting vaccine information on social media contributes significantly to vaccine hesitancy, which resonates with your result that 48.5% of respondents frequently encounter conflicting messages.

Additionally, the mental health implications of this information overload are well documented. Gao et al. (2021) found that continuous exposure to health-related information during the

pandemic adversely affects mental well-being, which supports the finding that 75.6% of respondents experienced negative mental health impacts due to the influx of vaccine-related content. These studies collectively reinforce the findings about the challenges individuals face regarding information overload, conflicting information and mental health impacts associated with COVID-19 vaccine discussions on social media. This convergence of evidence highlights the urgent need for effective strategies to manage information overload, improve information literacy, and promote accurate health communication on social media platforms. Addressing these issues is critical for fostering informed decision-making and enhancing public health outcomes in the ongoing pandemic context.

In line with the study's second objective—assessing perceptions of vaccine-related information on social media during the COVID-19 pandemic—the data reveal a significant lack of trust and high levels of overwhelm among respondents. Notably, 44% viewed the reliability of vaccine-related information as very low, indicating widespread skepticism about its accuracy. Additionally, nearly half (49%) felt the volume and diversity of this information were overwhelming, complicating their ability to identify credible sources. These findings underscore the urgent need for interventions to improve the quality and reliability of vaccine-related information on social media. Efforts to combat misinformation, enhance information literacy, and promote accurate content are essential for fostering a better-informed public and supporting informed decision-making about vaccination during the pandemic.

The findings regarding public perceptions of vaccine-related information on social media during the COVID-19 pandemic are well-supported by existing literature. Research has consistently shown a general skepticism towards information found on social media. For instance, a study by Roozenbeek et al. (2020) indicated that misinformation regarding COVID-19 vaccines significantly erodes public trust, with many individuals categorizing online information as unreliable. This supports this study's finding that 44% of respondents view vaccine-related information on social media as very unreliable.

Moreover, the perception of being overwhelmed by the volume and diversity of vaccine information aligns with research by Chou et al. (2020), which found that information overload on social media complicates users' ability to identify credible sources. Their work emphasizes how excessive information can lead to confusion and anxiety, reinforcing the observation that nearly half of respondents felt overwhelmed. Additionally, studies like those conducted by Roozenbeek et al. (2020) and Zarocostas (2020) highlight the urgent need for interventions to combat misinformation and enhance information literacy. This literature echoes this study's conclusion regarding the necessity for efforts aimed at improving the quality and reliability of vaccine-related information to facilitate informed decision-making during the pandemic. In summary, the prevailing skepticism and sense of overload reported in this study are well-documented in the literature, emphasizing the critical need for improved communication strategies in public health messaging.

In alignment with the study's third objective, which examines the influence of social media-induced information overload on vaccine hesitancy and acceptance during Covid-19 pandemic,

www.carijournals

the data reveal that this overload exerts a relatively modest influence on respondents' attitudes. Specifically, 53% of participants acknowledged some degree of influence from social media, indicating that while it shapes perceptions about Covid-19 vaccines, its effect is not overwhelmingly significant.

Moreover, 73.1% of respondents recognized changes in their vaccine hesitancy or acceptance after engaging with vaccine-related content on social media, reflecting some responsiveness to the information. Notably, 31.6% expressed a likelihood of changing their opinions based on social media content, suggesting a receptiveness to new information, though social media is not the sole determinant of vaccination attitudes. Overall, these findings indicate that social media-induced information overload exerts a moderate influence on vaccine hesitancy and acceptance. This highlights the need for comprehensive strategies to address vaccine hesitancy, considering factors beyond social media. Enhancing vaccine literacy, combating misinformation, and fostering trust in public health authorities are essential for shaping positive attitudes towards vaccination.

Findings on the influence of social media-induced information overload on vaccine hesitancy and acceptance resonate with existing literature, albeit with some nuances. Research has indicated that while social media plays a role in shaping vaccine attitudes, its influence can vary widely among individuals. For instance, a study by Roozenbeek et al. (2020) found that while social media can influence public perceptions of vaccines, its overall impact on vaccine acceptance is often moderate. This supports this study's finding that 53% of respondents acknowledged some influence, suggesting that social media is one of many factors affecting attitudes rather than the sole determinant.

Moreover, the acknowledgment by 73.1% of respondents regarding changes in their vaccine hesitancy or acceptance after engaging with vaccine-related content aligns with findings from a study by Kricorian et al. (2021), which highlighted that exposure to online vaccine discussions can lead to shifts in public opinion, though the extent of these changes varies significantly among individuals. The 31.6% of respondents expressing likelihood to change their opinions based on social media content also correlates with research by Hmielowski et al. (2020), which indicated that while some individuals are receptive to information, many remain skeptical or resistant, influenced by their pre-existing beliefs and values. This nuance emphasizes that while social media can provide information, it does not guarantee a corresponding change in attitudes. Overall, this study's findings highlight a moderate impact of social media on vaccine attitudes, consistent with the literature suggesting that while it plays a role, it is essential to consider a range of factors—including misinformation, trust in health authorities and individual beliefs—when addressing vaccine hesitancy. Strategies aimed at enhancing vaccine literacy and building trust remain critical in promoting informed decision-making.

To address the fourth objective of this study—identifying strategies for managing information overload and facilitating informed decision-making about COVID-19 vaccination on social media—the data emphasize the importance of verified health organizations and stringent

regulations on health misinformation. Half of the respondents (50.5%) identified verified health organizations as their preferred intervention, highlighting the need for credible sources to help navigate the overwhelming amount of vaccine-related content.

Additionally, 43% advocated for stricter regulations on health misinformation, emphasizing the necessity of combating false information about COVID-19 vaccines. Such regulations would protect the public from misleading content, foster trust in accurate sources, and support informed decision-making. In summary, these findings underscore the critical need for robust strategies to manage information overload and promote informed choices during the pandemic. By prioritizing credible organizations and advocating for stringent regulations, individuals can better navigate the complex information landscape on social media, ultimately fostering public health resilience.

The finding regarding the importance of verified health organizations and stringent regulations to manage information overload during the COVID-19 vaccination process is also well-supported by existing literature. Research consistently emphasizes the critical role of credible sources in combating misinformation. For instance, a study by Roozenbeek et al. (2020) found that individuals who rely on verified health organizations are better equipped to navigate the complexities of vaccine-related information, aligning with the finding that 50.5% of respondents prefer these organizations for guidance. This highlights the demand for authoritative information amidst the overwhelming volume of content on social media.

Furthermore, the call for stringent regulations on health misinformation, supported by 43% of respondents in this study, echoes findings by Zarocostas (2009), who argued that regulations are essential to mitigate the spread of false information and enhance public trust in health communication. The need for regulatory frameworks has gained traction in recent years, particularly in light of the COVID-19 pandemic, where misinformation can significantly hinder public health efforts (Cinelli et al., 2020). The emphasis on the need for interventions to combat misinformation and promote informed decision-making is also reflected in the literature. Studies by Chou et al. (2020) highlight the effectiveness of targeted interventions that empower individuals with the skills to critically assess information, further supporting the necessity for robust strategies to enhance health literacy and combat misinformation. In summary, these findings align with a growing body of literature that underscores the importance of relying on verified health organizations and implementing strict regulations to address information overload and misinformation during the pandemic. These strategies are crucial for fostering informed decision-making and public health resilience.

CONCLUSION

The study aimed to evaluate the impact of social media-induced information overload on vaccine hesitancy and acceptance during the COVID-19 pandemic, and to identify effective strategies for managing this overload. The research found that social media-induced information overload has a minimal impact on vaccine hesitancy and acceptance, contradicting earlier studies that suggested a more significant influence. While exposure to vaccine-related content led to some changes in attitudes, these changes were not substantial. The study also

identified verified health organizations and stringent regulations on misinformation as key strategies for managing information overload and promoting informed decision-making regarding vaccination. The study successfully met its intended purpose by providing insights into the relationship between information overload and vaccine attitudes, while also highlighting effective interventions to mitigate the negative effects of misinformation. It underscores the need for enhanced credibility of vaccine-related information on social media and strategic actions to support informed public health decisions.

RECOMMENDATIONS

Based on the research findings, several recommendations emerge to address the challenges of social media-induced information overload regarding COVID-19 vaccination. First, enhancing the credibility of vaccine-related information is crucial. This involves promoting verified health organizations and collaborating with public health authorities to effectively combat misinformation. Additionally, empowering individuals through educational campaigns can significantly improve media literacy, enabling people to critically evaluate information and discern credible sources. It is also essential to enforce stringent regulations on health misinformation by working with social media platforms to establish clear guidelines for disseminating accurate vaccine content. Tailored communication strategies should be developed to meet the diverse needs of various population groups, using multiple channels to engage those more susceptible to misinformation. Moreover, advocating for policy changes on social media platforms can help prioritize evidence-based health information and improve filtering options, allowing users better control over their information exposure.
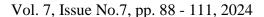
Integrating mental health support into public health initiatives is crucial, as many individuals face anxiety from information overload. Furthermore, ongoing research, particularly longitudinal studies, is essential to understand how this overload affects vaccine attitudes and to guide future communication strategies. Addressing these challenges requires collaboration among public health professionals, government, academia, and the tech sector. By implementing these strategies, we can promote informed decision-making, strengthen public health resilience, and effectively combat misinformation during health crises.
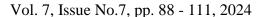
www.carijournals

REFERENCES

Bawden, D., & Robinson, L. (2009). The dark side of information: Overload, anxiety and other paradoxes and pathologies. Journal of Information Science, 35(2), 180-191. https://doi.org/10.1177/0165551508095798

Bender, J. L., Jadad, A. R., & Moira, D. (2011). A new approach to understanding the role of social media in health: The social media network. Health Communication, 26(5), 433-446. https://doi.org/10.1080/10410236.2011.555031

Cinelli, M., Quattrociocchi, W., Galeazzi, A., Valensise, C. M., & Scala, A. (2020). The COVID-19 social media infodemic. Scientific Reports, 10(1), 1-10. https://doi.org/10.1038/s41598-020-73545-1

Chou, W. Y. S., Gaysynsky, A., & Vanderford, M. L. (2020). The COVID-19 Misinformation Challenge in Public Health. Health Education & Behavior, 47(5), 501-505. https://doi.org/10.1177/1090198120921153

Chou, W. Y. S., Gaysynsky, A., & Vanderpool, R. (2020). The COVID-19 Misinformation Challenge in Public Health: Lessons from the CDC. Health Security, 18(4), 337-340. https://doi.org/10.1089/hs.2020.0063

Cohn, S. K. (2008). The Black Death Transformed: Disease and Culture in Early Renaissance Europe. The University of California Press.

Driedger, M. S., et al. (2019). Engaging the public in vaccine hesitancy: A case study of the MMR vaccine. Vaccine, 37(1), 17-24. https://doi.org/10.1016/j.vaccine.2018.11.040

Dyer, O. (2021). COVID-19: Vaccination rollout is speeding up in the UK, but supply and uptake remain challenges. BMJ, 372, n295. https://doi.org/10.1136/bmj.n295

Dyer, O. (2021). Covid-19: Vaccine rollout reduces hospital admissions, data shows. BMJ, 373, n1176. doi:10.1136/bmj.n1176.

Eppler, M. J., & Mengis, J. (2004). The concept of information overload: A review of the literature from organization science, accounting, marketing, MIS, and related disciplines. The Information Society, 20(5), 325-344. https://doi.org/10.1080/01972240490507990

Fang, Y., Zhang, Y., & Gao, J. (2020). Social media and public opinion: A study of the impact of social media on public discourse. Internet Research, 30(2), 483-498. https://doi.org/10.1108/INTR-03-2019-0113

Ferguson, A., et al. (2015). Social media as a public health tool. Health Communication, 30(3), 239-241. https://doi.org/10.1080/10410236.2014.967932

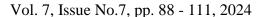Fenner, F., Mack, T., Dabe, M., & Roper, P. (1988). Smallpox and its eradication. World Health Organization.

Freeman, D., et al. (2015). The effectiveness of public health campaigns: A systematic review. Health Promotion International, 30(3), 491-507. https://doi.org/10.1093/heapro/dav067

Gagneur, A. (2018). Vaccine hesitancy: A growing challenge for immunization programs. World Health Organization.

Gao, J., Zheng, P., Jia, Y., Chen, H., Mao, Y., & Chen, S. (2021). Mental health problems and social media exposure during the COVID-19 pandemic: A systematic review. International Journal of Social Psychiatry, 67(4), 167-177. https://doi.org/10.1177/00207640211014610

Glik, D. C. (2007). Risk communication for public health emergencies. Annual Review of Public Health, 28, 33-54. https://doi.org/10.1146/annurev.publhealth.28.021406.144141

Gonzalez, M., et al. (2021). Information overload and its impact on public health communication. Journal of Public Health Management and Practice, 27(2), 195-200. https://doi.org/10.1097/PHH.0000000000000926

Gollust, S. E., Nagler, R. H., & Fowler, E. F. (2020). The role of social media in the dissemination of vaccine information. Vaccine, 38(33), 5254-5260. https://doi.org/10.1016/j.vaccine.2020.06.012

Gross, B. (1964). The Managing of Organizations. New York: Wiley.

Hmielowski, J. D., et al. (2020). The role of social media in the spread of misinformation about vaccines. Vaccine, 38(10), 2333-2341. https://doi.org/10.1016/j.vaccine.2020.02.027

Huang, H. M., & Liaw, S. S. (2018). Exploring the factors that influence the behavioral intention to use mobile devices in learning environments. Computers & Education, 118, 99-110. https://doi.org/10.1016/j.compedu.2017.11.003

Hufgard, J., & Rusch, J. (2021). The importance of coordinated responses to infectious disease outbreaks. Journal of Public Health Policy, 42(1), 77-92. https://doi.org/10.1057/s41271-020-00257-x

Kahn, R., et al. (2021). Vaccination during a pandemic: A critical line of defense. Vaccine, 39(15), 2036-2039. https://doi.org/10.1016/j.vaccine.2021.02.045

Kata, A. (2010). A postmodern Pandora's box: Anti-vaccination misinformation on the internet. Health, Risk & Society, 12(4), 334-352. https://doi.org/10.1080/13698571003743099

Kinnunen, J., et al. (2021). The role of social media in the health behavior of adolescents: A systematic review. BMC Public Health, 21, 1-15. https://doi.org/10.1186/s12889-021-10408-2

Kricorian, K., Sweeney, C., & Vasile, A. (2021). Understanding the impact of social media misinformation on vaccine hesitancy during the COVID-19 pandemic. Health Communication, 36(12), 1523-1530. https://doi.org/10.1080/10410236.2021.1883875

Leask, J., et al. (2020). The role of social media in vaccine advocacy: A systematic review. Vaccines, 8(1), 49. https://doi.org/10.3390/vaccines8010049

Lewandowsky, S., Ecker, U. K. H., & Cook, J. (2012). Beyond Misinformation: Understanding and Coping with the "Post-Truth" Era. The Journal of Applied Research in Memory and Cognition, 1(2), 120-128. https://doi.org/10.1016/j.jarmac.2012.08.008

Love, B., et al. (2020). Social media and vaccine hesitancy: A systematic review. Vaccine, 38(3), 418-425. https://doi.org/10.1016/j.vaccine.2019.11.048

MacDonald, N. E., et al. (2015). Vaccine hesitancy: Definition, scope and determinants. Vaccine, 33(34), 4161-4164. https://doi.org/10.1016/j.vaccine.2015.04.036

McKee, M., & Stuckler, D. (2020). If the world is to defeat COVID-19, it must learn from past pandemics. Nature, 585(7824), 20-22. https://doi.org/10.1038/d41586-020-02824-9

Miller, J. K., et al. (2020). Addressing vaccine hesitancy in the COVID-19 era: A framework for public health messaging. American Journal of Public Health, 110(7), 879-884. https://doi.org/10.2105/AJPH.2020.305749

O'Connor, C., et al. (2020). Understanding the role of social media in public health: A focus on misinformation and social media engagement. Health Communication, 35(11), 1432-1440. https://doi.org/10.1080/10410236.2020.1817100

Parker, E. P., et al. (2021). The impact of vaccination on the incidence of measles. Lancet Infectious Diseases, 21(5), e139-e145. https://doi.org/10.1016/S1473-3099(20)30303-8

Pennycook, G., et al. (2020). Fighting misinformation on social media using crowdsourced judgments of news source quality. Proceedings of the National Academy of Sciences, 117(4), 2072-2078. https://doi.org/10.1073/pnas.1912444117

Poland, G. A., Ovsyannikova, I. G., & Kennedy, R. B. (2021). The science of vaccine development. Nature Reviews Immunology, 21(5), 290-292. doi:10.1038/s41577-021-00473-4.

Polid, C. M., et al. (2020). Misinformation on social media: The case of COVID-19. Journal of Epidemiology and Community Health, 74(10), 871-872. https://doi.org/10.1136/jech-2020-214285

Primack, B. A., et al. (2017). Exposure to social media content about health: A systematic review of the literature. Journal of Medical Internet Research, 19(1), e1. https://doi.org/10.2196/jmir.6882

Pulido, C. M., et al. (2020). Misinformation on social media: The case of COVID-19. Journal of Epidemiology and Community Health, 74(10), 871-872. https://doi.org/10.1136/jech-2020-214285

Reavley, N. J., et al. (2015). The role of social media in promoting mental health: A systematic review. Australian & New Zealand Journal of Psychiatry, 49(1), 87-95. https://doi.org/10.1177/0004867414559055

Roozenbeek, J., Schneider, C., & Dryhurst, S. (2020). Susceptibility to misinformation about COVID-19 around the world. Royal Society Open Science, 7(10), 201199. https://doi.org/10.1098/rsos.201199

Seabrook, E. M., et al. (2016). The role of social media in mental health promotion: A systematic review. Health & Social Care in the Community, 24(3), e1-e15. https://doi.org/10.1111/hsc.12215

Shieh, C. (2015). Information overload and decision-making: An exploration of cognitive processes. International Journal of Information Management, 35(3), 227-232. https://doi.org/10.1016/j.ijinfomgt.2015.01.001

Sullivan, A., et al. (2020). The impact of social media on health behavior: A systematic review. American Journal of Health Promotion, 34(2), 149-158. https://doi.org/10.1177/0890117119870908

Sullivan, M., & Kelleher, J. (2018). The psychological effects of information overload in public health. American Journal of Public Health, 108(7), 882-888. https://doi.org/10.2105/AJPH.2018.304501

Sunstein, C. R. (2001). Republic.com. Princeton University Press.

Sweeney, C., Fagan, J., & Rodriguez, L. (2021). Vaccine misinformation on social media: Exploring its impact on public perception. Public Health Reports, 136(3), 339-345. https://doi.org/10.1177/0033354921992056

Taubenberger, J. K., & Morens, D. M. (2006). 1918 Influenza: The mother of all pandemics. Emerging Infectious Diseases, 12(1), 15-22. https://doi.org/10.3201/eid1201.050979

Tsao, J. C. I., et al. (2021). Social media and public health: A review of the literature. Public Health Reports, 136(3), 294-300. https://doi.org/10.1177/0033354921993826

Vardavas, C. I., et al. (2020). The role of social media in vaccine promotion: A systematic review. Vaccine, 38(9), 1927-1934. https://doi.org/10.1016/j.vaccine.2020.01.038

Ventola, C. L. (2014). Social media and health care professionals: Benefits, risks, and best practices. Pharmacy and Therapeutics, 39(7), 491-500.

Vogt, M., & Rönnau, K. (2021). The role of information overload in health communication during the COVID-19 pandemic. Journal of Health Communication, 26(10), 815-824. https://doi.org/10.1080/10810730.2021.1987434

Wang, Y., et al. (2018). Social media and public health: A review of the literature. International Journal of Public Health, 63(3), 319-329. https://doi.org/10.1007/s00038-018-1061-4

Wang, Y., et al. (2020). The impact of COVID-19 on public health behaviors: A longitudinal study. International Journal of Environmental Research and Public Health, 17(16), 5851. https://doi.org/10.3390/ijerph17165851

World Health Organization. (2018). Poliomyelitis. Retrieved from https://www.who.int/news-room/fact-sheets/detail/poliomyelitis

World Health Organization. (2020). COVID-19 Strategy Update. Retrieved from https://www.who.int/publications/i/item/covid-19-strategy-update---14-april-2020

Zarocostas, J. (2020). How to fight an infodemic. The Lancet, 395(10225), 676. https://doi.org/10.1016/S0140-6736(20)30361-0

Zarocostas, J., & Dorsey, E. R. (2020). How to fight an infodemic: The governance of misinformation in public health. Health Policy and Technology, 9(3), 167-171. https://doi.org/10.1016/j.hlpt.2020.06.002

Zarocostas, J. (2009). WHO should lead the global battle against health misinformation. BMJ, 339, b5363. https://doi.org/10.1136/bmj.b5363