The Impact of Misinformation on Vaccine Hesitancy during the COVID-19 Pandemic in the United States

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Abstract

The speed with which false information spreads through the media has greatly affected how people think and act especially during health crises like the COVID-19 pandemic. This "infodemic" had a big impact on how people in the United States responded to health warnings and how willing they were to get vaccinated. Since false information is often presented as true, it made many people hesitant to get vaccinated which made it harder for public health to control the pandemic (Muric et al., 2021). Therefore, the object of this media literacy research paper is to look into how false information affected people's decision not to get a vaccine during the COVID-19 pandemic in the United States and to highlight the significance of effective communication strategies in combating misinformation and enhancing public health Furthermore, this research study suggested the media literacy interventions-can be effective on individuals' perspectives and vaccination rates.

Table of Contents

1. Introduction 4

2. Origins and Prevalence of Misinformation on Vaccine Hesitancy 5

3. Misinformation in Media Message Presentation and Communication 7

4. The Factors of Misinformation on Vaccine Hesitancy 12

5. Effective Strategies for Mitigating Misinformation and Promoting Vaccine Uptake 14

6. Development of a Media Literacy Program 16

7. Summary 18

References 20

1. Introduction

During the COVID-19 pandemic, there was a lot of misinformation in media from conspiracy theories about where the virus came from and how bad it is to false claims about how unsafe and ineffective vaccines are. According to Roozenbeek et al. (2020), social media sites made it much easier for dis-and misinformation to spread faster and further than true knowledge based on evidence, which has had a big effect making people around the world hesitant to get vaccinated. Vaccine hesitancy, which means waiting to get a vaccine or refusing to get a vaccine at all, made it harder for public health officials to get enough people vaccinated against COVID-19 for herd immunity (Loomba et al., 2021). The reluctance that was caused by false information, made the containment of the pandemic even harder, which is an aspect that showed how important it is to have effective strategies to combat the false information and get people to get vaccinated.

The need of addressing the misinformation's impact on vaccine hesitancy become imperative and is influenced by compelling statistics. According to Allington et al. (2021), 30% of Americans were not sure if they should get the COVID-19 vaccine and one of the reasons given was that they had heard false information about it in the past. Also, the spreading false information about vaccines could make some groups as much as 6.2% less likely to get vaccines, showing that spreading false information does hurt public health efforts. In learning more about how to stop people who do not want to get vaccinated from being affected by false information, such statistics are very important. These percentages may seem small, but with a population of over 330 million in the United States, they represent millions of people potentially not getting vaccinated due to misinformation, which could hinder efforts to achieve herd immunity and post the severe threats to public safety.

This literature research is primarily intended to bring the awareness of impact of the misinformation to general public, particularly those individuals who are hesitant about getting vaccinated against COVID-19 due to the fact that they have been given incorrect information, and healthcare professionals, policymakers as well as educators all of whom play important roles in the communication and formulation of public health policies because both the public and professionals can benefit from media literacy because it helps them develop critical thinking skills to evaluate the credibility of information which in turn improves their ability to make informed decisions. Additionally, it helps professionals improve their communication strategies which makes it possible for them to more effectively combat misinformation and promote public health initiatives.

In this research paper, I delve into the insights through the literature review that brings together the research on four main subjective: where misinformation comes from and how common it is; how it affects people's minds when they hear it; how social as well as cultural factors play a part in people not wanting to get vaccinated; and how to combat misinformation and get more people to accept vaccines. Basically, the review will look at how misinformation can hurt public health efforts and show how important media literacy and clear communication are in fighting false information and helping people make smart decisions about vaccinations.

2. Origins and Prevalence of Misinformation on Vaccine Hesitancy

Looking at the relevant historical background and context, the term vaccine hesitancy, as identified by Dubé et al. (2013), has been around before the COVID-19 pandemic. Some people have been skeptical of vaccines in the past like with the MMR (measles, mumps, and rubella) vaccines and that shows how hard it is to get everyone to accept vaccines. A now-debunked study that linked the MMR vaccine to autism caused a lot of debate and it ended up showing how

false information can have a big effect on public health efforts and vaccine uptake (Godlee et al., 2011). This study was later found to be fraudulent by the British Medical Journal

Although the spread of misinformation has a long historic existence, nowadays social media has changed the game by enabling people to generate misinformation easily and spread it rapidly in an anonymous and decentralized fashion (Del Vicario et al., 2016; Wu et al., 2016); so it is very important to look into the media content that is linked to false information and people not wanting to get vaccinated because theories like the "agenda-setting theory" says the media does not tell us what to think but rather what to think about, showing how powerful the media is at shaping people's ideas about what matters most (McCombs, 2015). According to Cinelli et al. (2021), another thing that helps spread and accept false information is the "echo chamber effect" which happens when people find themselves mostly surrounded by views that agree with their own and therefore is important to have a good understanding of these dynamics in order to come up with ways to fight false information and encourage well-informed public debate about vaccine uptake. The echo chamber effect can reinforce existing beliefs and biases, making it harder for people to consider opposing viewpoints or factual information that contradicts their beliefs (Cinelli et al., 2021). This highlights the need for media literacy efforts to help people recognize echo chambers and seek out diverse, credible sources of information.

The onset of the COVID-19 pandemic witnessed an escalation in vaccine hesitancy due to an unparalleled magnitude of misinformation. The exponential growth of digital media fundamentally altered the way information is distributed and made it possible for misinformation to propagate more rapidly and extensively than in the past. The ease with which misinformation spreads was exacerbated by the algorithms used by social media platforms which frequently prioritize captivating content over factual correctness thereby amplifying the dissemination of

false information (Johnson et al., 2020). Therefore, the history of people who do not want to get vaccinated and the problems that digital media causes today are very important for understanding what is going on now. There was a lot of false information on social media about where the COVID-19 virus came from, how to avoid it, how to treat it and how to get a vaccine. Also, many false claims about how the disease was bioengineered, how well hydroxychloroquine worked as well as how safe vaccines were. Zarocostas (2020) studied about how fast fake information spreads presented the phenomenon as a major public health issue. Kouzy et al. (2020) research was more in-depth and showed how false information spreads across different media platforms as the study discovered that Twitter as a great place for spreading false information because people shared false tweets much more quickly than they shared true tweets which was a very worrying finding given how important Twitter is for instant communication. Brindha et al. (2021) did an extensive study that looked at Facebook, Instagram and YouTube and found that each site spread false information in a different way but they all had a big impact on the.

The studies show that even though misinformation is spread through different platforms and methods, which consistently presents a challenge to public health communication, there is a need for the approaches and strategies to combat the misinformation to be both flexible as well as thorough. It is also important to have the methods to track and analyze the trends in misinformation and come up with better ways to prevent it from spreading.

To make plans that will help lower the harm that false information does to public health, it is important to understand where it comes from, how common it is and how it spreads.

3. Misinformation in Media Message Presentation and Communication

3.1 Origin and Goals of Content Creator in Media

The sources of people communicating misinformation about COVID-19 vaccinations are usually the fringe media stations, independent bloggers and social media influencers. The objectives of these groups vary greatly and extend from swaying public opinion and undermining trust in health authorities to gaining financial gains through increased number of viewers or followers. Some are driven by the desire to provide the society with alternative health care, while others by the political agendas and they do so by using the fear and uncertainty that accompanied the pandemic to escalate their reach and magnitude.

3.2. Motivations and Constraints

Content creators' motivation is the influence of public discourse, which is frequently based on their personal views and political beliefs or on financial incentives. One of their main difficulties is that they are under the constant surveillance and regulation of social media platforms and governments which are trying to prevent the distribution of fake news. Nevertheless, the creators of such content find their way around these efforts by using the coded language, shifting to less regulated platforms or hiding the misinformation within the legitimate information, hence still having the ability to reach and influence their target audiences.

3.3 Values and Backgrounds

The creators almost always have a distrust of mainstream media and health authorities. They respect independence in thinking and consider any figure in authority as a fraud. Their backgrounds are diversified, ranging from people with some background in medicine or science to those with no formal qualification in these areas. This variation helps the disinformation to be regarded as trustworthy and captivating as the creators use their experiences, selective evidence, or expert-like personalities to justify their narratives and touch people’s minds that have been already preloaded with their beliefs and fears.

3.4 Analysis and Integration

The influence of misinformation on the hesitancy to get vaccinated is greatly determined by the origin, intentions, and values of the makers of false information. Comprehending the variety of content producers together with their objectives proves how misinformation campaigns are designed to manipulate fears and mistrust that exists among people. This systematic information sharing is a key factor in vaccine uncertainty, thereby breaking down public health initiatives. Media literacy interventions that are effective must examine the root causes of the problem and thus supply critical perspectives that can dismantle the power of misinformation.

3.5 Media Message Presentation

3.5.1 Historical vs. Current Presentation

Traditionally, vaccine misinformation spread through pamphlets, books and early internet forums where it focused on a form of generalized vaccine skepticism. On the other hand, the nowadays spread of misinformation regarding COVID-19 vaccines is a growing phenomenon that has been disseminated through many digital platforms including social media, websites and video-sharing platforms. The transition has enabled the diffusion of counterfeit narratives at a fast-global scale from the vaccine efficacy doubts to the conspiracy theories about microchipping as presented by Roozenbeek et al. (2020) since the evolution of media technology has made it possible for communication campaigns to be both localized and slow-spreading to global and instantaneous thereby redefining the nature of public health communication.

3.5.2 Inclusion/Exclusion of Information

Misinformation campaigns are the manipulations of information by either including or excluding some of it in order to generate public opinion and they usually use stories or instances

that are not related to support their position and ignore the fact that large-scale peer review studies demonstrate the safety and effectiveness of vaccination (Lazer et al., 2018). Lack of balanced representation of vaccines' risks and benefits may lead to the skewed perception which in turn develops vaccine hesitancy. Also, these campaigns often give attention to the opinions of an individual who is against science, those who represent a minority while bypassing the views of experts and health organizations that provide the consensus of the scientific community and by means of this technique, it is easier to lead the audience into the trap of thinking that there is an actual debate and controversy around vaccinations, thus, people lose their trust in the vaccines. The influence of this phenomenon on the spread of misinformation has been tremendous as it has lowered the trust in vaccines and health authorities as well as made more difficult to achieve herd immunity during the COVID-19 pandemic (Loomba et al., 2021).

3.6 Communication of Media Messages

3.6.1 Mediums and Channels

The misleading information about COVID-19 vaccines is essentially disseminated digitally via social media platforms (Facebook, Twitter, Instagram), video sharing sites (YouTube), messaging apps (WhatsApp) and online communities (Reddit). The platforms for social networks offer a very good environment for the fast spread of misinformation because of their large reach and the fact that the information can be shared with little effort by users (Kouzy et al., 2020). The social networking sites have been essential for the circulation of false information, as content which attracts users is more likely to be promoted by algorithms without regard to the accuracy of data (Johnson et al., 2020). The platforms make possible the formation of echo chambers where the information that users encounter reinforces their existing beliefs thus only deepen their acceptance of misinformation (Cinelli et al., 2021).

3.6.2 Content Shaping and Restriction

The form of digital platforms that shape and limit misinformation is influenced by nature. Algorithm led content curation might result in highlighting of sensational or controversial misinformation that is not only clickbait but also engages audience so immensely (Johnson et al, 2020). To be in line with this, platforms have applied various measures to limit the spread of false information, including fact-checking labels, removing false content, and reducing the visibility of flagged posts (Lazer et al., 2018). Nevertheless, these interventions encounter difficulties, such as the tension between censorship and freedom of expression, the way misinformation spreads faster than the process of verification and the capability of misinformation producers to find new methods that help them to surpass limitations. While various measures are implemented to curb misinformation, its adaptive mechanism guarantees that it molds the way public perceives; therefore, there is a need for constant vigilance and innovative strategies to control it.

3.6.2 Key Audiences

The primary populations of people likely to be influenced by COVID-19 vaccine misinformation are the people with low education level, those who have high level of mistrust in government and health institutions and the users who mostly use social media as a source of information. Studies have revealed that people with lower education are at a higher risk of being misled by misinformation as they may not be adequately endowed with the critical thinking skills to assess the authenticity of sources (Allington et al., 2021). Also, people who have been historically skeptical toward governmental and health organizations are most likely to receive and spread false information about vaccination and consider alternative sources more credible (Hornsey et al., 2018). Again, social media users who are in echo chambers or have specific

interest groups that are against vaccination can easily get and pass on misinformation more than those who diversify their sources of information (Loomba et al., 2021). Such demographics embody the target groups of the media literacy program aimed at misinformation handling and therefore, media literacy strategies should be personalized for each group and based on their specific needs and characteristics to achieve better results of media content critical engagement.

4. The Factors of Misinformation on Vaccine Hesitancy

4.1 Psychological Effects of Misinformation on Public Perception

Cognitive biases and psychological factors make people more likely to believe false information affecting how people feel about the safety and usefulness of vaccines. Cognitive biases, like confirmation bias and the Dunning-Kruger effect which is a cognitive bias where people with low ability overestimate their skills or knowledge which make people more likely to believe false information, and that affects how people feel about the safety and usefulness of vaccines (Kruger & Dunning, 1999). This shows that people look for information that backs up what they already believe and think they know a lot about a topic and Lewandowsky et al. (2017) talk about how fake information uses the biases to make people believe things that are not true. Vosoughi et al. (2018) research on how false information spreads on social media backs up the study as it shows that false information that is highly charged is shared more often which makes people more biased. Concerning how false information about vaccines affects people's views on their safety and effectiveness, Ferreira Caceres et al. (2022) did polls that showed people who heard false information about the COVID-19 vaccine were less likely to get vaccinated. There is more evidence for this conclusion from Loomba et al. (2020) who used longitudinal data to show that people were much less likely to accept vaccines after hearing false claims which shows how misinformation can really hurt public health efforts. Because of the psychological effects, it is

hard to make health communication efforts that work. Pennycook and Rand (2019) say that teaching people how to think analytically can make them less likely to believe false information as their research showed that getting people to think critically about information helped them spot false claims more easily. Bode and Vraga (2017) agree with this method as they discovered that fact-checking and corrective information could lessen the impact of false information but how well it worked depended on the audience's existing beliefs and trust in the source of the correction. What the studies mean for health communication strategies is huge as they show how important it is to understand the psychological reasons people believe false information and directly address those reasons in campaign designs. A lot of the time, plans that make people question what they read, change things based on reliable sources and tailor messages to the audience's views as well as biases will work better and as a whole, these studies show that talking about public health should be more complex. There is a need to use psychological insights to fight false information and help people make better choices about vaccines.

4.2 Social and Cultural Factors Influencing Vaccine Hesitancy

Social and cultural factors are key in influencing vaccine hesitancy as misinformation takes advantage of these factors to deepen skepticism and resistance. Influences on people's choices about vaccines include social rules, long-held views as well as the way "echo chambers" work on social media and a study by Betsch et al. (2010) says that culture views and community values can strongly support or oppose attempts to vaccinate. Other research by Hornsey et al. (2018) supports the study by showing that people are hesitant to get vaccines when their family and friends are not sure about them or when their cultural beliefs make them wonder if vaccines are important or safe. It is even worse because, as Chan et al. (2017) point it out that social media

acts like an echo chamber thereby increasing and supporting people's already held views which makes it simple for fake information to spread without being checked.

To further support the issue of social and cultural factors that influence vaccine hesitation, the studies by Larson et al. (2018) and Streefland et al. (1999) make it clear how trust affects the willingness of individuals to get a vaccine. Larson et al. (2018) look into why people do not trust health workers and how the lack of trust makes people less likely to get vaccinated and argued that that fake information uses the lack of trust by telling them different stories that play on their fears and doubts. In the same way, Streefland et al. (1999) argued that the history of trust in vaccination programs and how mistakes made by health officials in the past can make people less likely to trust and accept vaccines in the future and therefore comparing the studies reveals a complex interaction between social, cultural and psychological factors that influence vaccine hesitancy. That makes it hard for public health campaigns to work because people do not trust health officials and social media echo chambers spread negative views about vaccinations and because of such circumstances, getting people to trust health officials and changing communication strategies to fit different cultural and social settings is just as important as spreading information about vaccines.

5. Effective Strategies for Mitigating Misinformation and Promoting Vaccine Uptake

There exist several problems with figuring out how common false material is; and finding as well as labeling fake information is only the beginning because it is also very important to keep track of how it spreads and what effect it has. In their 2020 study, Pulido et al. (2020) looked at how hard it is to measure misinformation and also discussed how quickly it changes and how different research projects with different ideas can be effective in tracking the

evolvement of misinformation. Also, false information has a big effect on public health communication strategies as what Bode and Vraga (2017) pointed out that public health messages need to use creative ways to fight false information stories so that people get and believe factual information. In addition, the studies show that even though misinformation is spread through different platforms and methods, which consistently presents a challenge to public health communication, there is a need for the approaches or methods to be both flexible as well as thorough. It is also important to keep an eye on trends in misinformation and come up with better ways to stop it from spreading. To make plans that will help lower the harm that false information does to public health, it is important to understand where it comes from, how common it is and how it spreads.

In the ongoing fight against the COVID-19 pandemic, it is very important to have effective methods for reducing false information and encouraging use of vaccines. Research shows that spreading false information and getting people to vaccinate needs a multifaceted approach that includes direct involvement, public health campaigns, educational programs as well as policy changes. Empirically tested interventions reveal that direct engagement with misinformation through corrective information can significantly impact public perceptions as Bode and Vraga (2017) argued that responding to false claims on social media with correct information can help users have fewer misunderstandings. Lazer et al. (2018) agree with the approach and stress the importance of social media in the fast spread of both correct and incorrect information thereby calling for platforms to take the initiative in content moderation and promoting facts.

Public education programs that teach people how to understand and think critically about media have also proved to be so helpful since well-informed individuals can be less easily fooled

by false information if they know how to analyze rather disseminate the misinformation. Hence teaching media literacy in school can be one of effective way, as suggested, to make people smarter and more informed (Swart, 2021).

Putting in place policies that require social media sites to actively search for and remove false information is another way to help solve the problem at its source (Meel & Vishwakarma, 2019). During the COVID-19 pandemic, health officials and tech companies worked together to make information hubs that focus on material from trustworthy sources which helped reach public health goals (Loomba et al., 2020).

Changes in vaccination rates, improvements in the public's knowledge of vaccines and a drop in false information are all ways to measure how well these strategies work. If things are going well, it can be observed by how many people are reached by campaigns for accurate information, how interested people are in educational material and how much false information is taken down or flagged by platforms. Therefore, combating false information and vaccine reluctance needs a coordinated effort like face-to-face interactions, reliable public health communication, education as well as policy changes and thus it is important for public health to fight false information and get more people protected.

6. Development of a Media Literacy Program

To effectively combat the misinformation spread in the media, based on the literature review and studies, a media literacy plan is presented in this paper. We first look at the content of literacy plan along with the development of one of the strategies: engagements. Furthermore, the assessment of the effectiveness is proposed, followed by the diagram of a structured process flow.

6.1 Educational Content

Fighting off misinformation about COVID-19 vaccines will be the target of media literacy program which will be certain to develop content on teaching people how to critically evaluate information sources, understand the process of scientific discoveries behind vaccine development, and recognize common misinformation practices. This will comprise interactive modules, graphs showing the process of the vaccine production and approval, and video testimonials of healthcare professionals about the most popular myths (Swart, 2021). The content will target specific age groups that are at a higher risk of being affected by the issue, to ensure the relevance and appropriateness of the intervention.

6.2 Engagement Strategies

Engagement will be facilitated by social media campaigns, community events, and collaboration with local influencers and health care specialists who share the community's trust. Social media platforms will be employed for the wide propagation of educational materials by applying the targeted advertising technique to reach specific vulnerable groups as identified by Allington et al. (2021). Community meetings will be the place where people can ask questions and interact with the healthcare professionals themselves, which will greatly contribute to their trust in the system. Through influencer partnerships, the trustworthiness and broad reach of individuals with whom the target audience feels connected will be leveraged to dispel myths and spread vaccine literacy, which is critical.

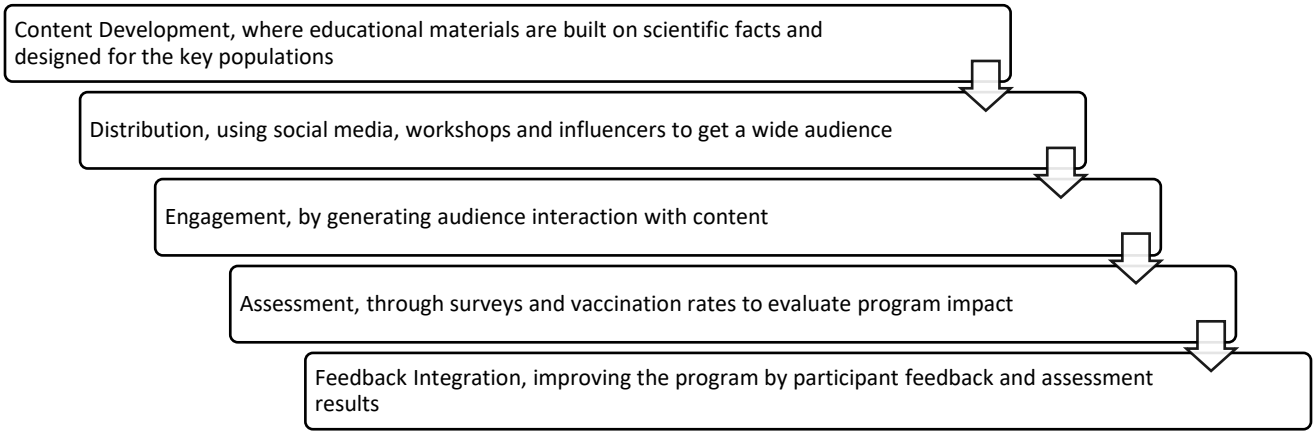
6.3 Assessment of Effectiveness

The program’s effectiveness will be evaluated by conducting pre and post-intervention surveys that measure the degree of knowledge, attitude towards COVID-19 vaccines and intent to vaccinate. Engagement metrics (e.g., reach, shares, likes) on social media channels and attendance rates of the community workshops will also offer information on the program’s

penetration and engagement levels. Furthermore, cooperating with local health departments to track vaccination rates in specific groups can also provide measurable results of the success of campaign's success (Loomba et al., 2021). We will use feedback from the program as a reference for future adjustments that will enhance the program's impact.

6.4 Process Diagram Explanation and Logistics

The media literacy program will follow a structured process:



The logistics will be about the concerted efforts of community leaders for workshop sites and schedules, and the experts in digital marketing for online content sharing strategy.

7. Summary

This literature research examined how the "infodemic" surrounding COVID-19 contributed to vaccine hesitancy. The dissection of the details of the presentations and communication of misinformation in the media messages the factors such as the psychological effects of misinformation, social influences on vaccine attitudes, and the role of media literacy interventions is also presented. In addition, this research paper also highlighted the importance of effective communication strategies in combating misinformation and concluded that media literacy programs could enhance individuals' ability to discern credible information, based on

which a media literacy program with the key elements such as the creation of education content, engagement strategies, feedback loops, and the assessment of effectiveness, as well as a structured process development diagram is proposed.

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