Social Media Misinformation on Covid-19 Vaccine Hesitancy: A South African Perspective

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Abstract

This study is timely and important. Covid-19 vaccine acceptance is crucial to protecting persons and vulnerable populations' health, reopening social and economic life and potentially achieving population health and safety through immunity. This study focuses on the contribution of social media misinformation on the Covid-19 vaccine hesitancy in South Africa. The objectives of the study are to determine the Covid-19 vaccine hesitancy fuelled by social media, evaluate the type of Covid-19 vaccine misinformation shared on social media and propose solutions to prevent Covid-19 vaccine misinformation on social media. Protection motivation theory was adopted to help understand human responses to fear appeals caused by Covid-19 vaccine misinformation. The study used qualitative methodology to explore social media misinformation on the Covid-19 vaccine hesitancy. The study's data were collected from the previous literature. Descriptive analysis was adopted and used as a method to analyse data. It was revealed in this study that vaccine hesitancy causes a delay in acceptance or refusal of vaccines uptake despite the availability of vaccination services as indicated by the World Health Organization (WHO). With this study, researchers aim to bring solutions to prevent social media misinformation on the Covid-19 vaccine hesitancy in South Africa.

Keywords: Covid-19, hesitancy, misinformation, social media, vaccine

Introduction and problem statement

Globally, social media platforms have changed how the public participates in and expresses opinions about government strategies and policies. The powerful roles of social media platforms include the spread of misinformation regarding the Covid-19 vaccines. Steffens, Dunn, Wiley and Leask (2019) define the term 'misinformation' as false information shared without the intention of harm.

On the other hand, Burger, Buttenheim, English, Maughan-Brown, Köhler and Tameris, (2021:1) explained that hesitancy is dynamic and responds to the shifts that occur regularly when new research on vaccine efficacy is released – especially relating to the Covid-19 variant that was first identified in South Africa. Hesitancy may also respond to Covid-19 outbreaks, vaccine availability and uptake, as well as disinformation. In this regard, Social Science in Humanitarian Action Platform (SSHAP) (2021:9) revealed that in the East and Southern African region, South Africa accounts for the highest number of social media engagements generated by rumours and concerns.

According to the WHO (2014:7), vaccine hesitancy refers to delay in acceptance

or refusal of vaccines despite availability of vaccine services. Vaccine hesitancy is complex and context specific, varying across time, place and vaccines. From the study conducted by the European Investment Bank in Africa in 2020, there is widespread concern that the Covid-19 crisis could lead to social unrest and security problems, particularly in countries where there is a conflict or where a large part of the population is living on a day-to-day income. Similar to what the European Investment Bank has discovered, the arrival of a vaccine in South Africa has raised concerns among many South Africans including those who are social media users.

The rapid growth in the use of social media platforms directly means that most people rely on these social media's coiled unverified narratives found in these platforms even when it comes to health information. Covid-19 vaccines were also not spared by social media which continues to spread misinformation centred around these vaccines. According to Burger *et al.* (2021), social media has often been demonised as a negative influence and channel for spreading conspiracy theories; it can also be a cost-effective way to convey accurate and updated information directly to targeted subpopulations – as we have seen with the government Covid-19 WhatsApp and SMS services. As expressed by the SSHAP (2021), conspiracy theories and other rumours about the genesis and existence of Covid-19 have also circulated since the beginning of the pandemic and are likely to affect acceptance of the vaccine as well.

Wilson and Wiysonge (2020) contend that vaccine hesitancy is not a new phenomenon, but the proliferation of anti-vaccination misinformation through social media has given it new urgency especially in the light of the coronavirus pandemic and hopes for rapid development and deployment of a vaccine. The study conducted by Burger *et al.* (2021) in South Africa revealed that respondents who said that they trusted social media as a source of information and those under 25 had considerably and significantly higher levels of vaccine hesitancy. Furthermore, the authors revealed that respondents who described social media as a trusted information source are more likely to be hesitant about vaccines.

In line with what has been reported by the aforementioned authors, one can concur that, even though there are people who trust information from social media on Covid-19, on the other hand, there are those who encounter vaccine hesitancy. As a result, these findings show that although there is genuine knowledge and scientifically proven facts of the effectiveness of the Covid-19 vaccine, the prevailing degree of uncertainty brought by misinformation often led to vaccine hesitancy. As expressed by Burger *et al.* (2021), there has been far less effort from the government to counter misinformation about vaccines compared to efforts about knowledge of Covid-19 symptoms and ways to prevent Covid-19 infection.

The South African Medical Research Council (SAMRC) (2021) revealed that as South Africa finds itself amid a deadly, second Covid-19 surge, and the first batch of vaccines is on its way to the country, it is alarming that some of these conspiracies and misinformation originate from high profile individuals. Some leaders have suggested any vaccine not developed in Africa should be rejected and Africans should rely on alternatives such as indigenous herbs. One can agree that the origination of the above-mentioned misinformation has led to Covid-19 vaccine hesitancy among some of the South African citizens.

Most importantly, this study aims to propose solutions to government, policymakers and social media users to prevent Covid-19 vaccine misinformation on social media. This could help in accelerating the process of vaccine acceptance and uptake as vaccines are crucial in protecting persons and vulnerable South African populations' health and reopening of social and economic life.

Covid-19 vaccine hesitancy fuelled by social media

In the study on Covid-19 vaccine misinformation conducted by Loomba, de Figueiredo, Piatek, de Graaf and Larson (2021), it is reported that misinformation exposure induces a decrease in the number of respondents who would 'definitely' take the vaccine. In a similar vein, Wilson and Wiysonge (2020) found that the use of social media to organise offline action to be highly predictive of the belief that vaccinations are unsafe.

According to Burger *et al.* (2021), in South Africa, there is the highest percentage of hesitancy for those who trust social media versus the rest. In line with what has been reported by the aforementioned authors, one can concur that misinformation on Covid-19 has a great negative impact on vaccine hesitancy. Additionally, SSHAP (2021:9) indicates that rumours and misinformation, or the so-called *infodemic*, has been identified as one of the major threats to vaccine acceptance. With all the above being said, one can agree that misinformation has led a lot of people to vaccine hesitancy.

SSHAP (2021:9) explains that in South Africa, rumours and misinformation are easily escalated, especially within the current context of global vaccine inequality. SSHAP (2021) found that in South Africa there is still a significant minority who remain hesitant; 35-40% are not fully convinced or have some doubts about taking the vaccine. Further, SSHAP (2021) explains that in South Africa, comments reflecting distrust in western vaccines and worries about Africans being used to test vaccines were widely shared on social media at the time of the rollout of the Johnson & Johnson (J&J) vaccine, which started without a formal licence in South Africa. According to SSHAP (2021), suspicion about the vaccine was reflected in community feedback and social listening data.

Types of Covid-19 vaccine misinformation shared on social media

In South Africa, the type of vaccine misinformation includes concerns about side-effects; complacency regarding the individual risk of getting infected with Covid-19; distrust in the vaccines in general and in the government; disbelief in the existence of Covid-19; lack of knowledge; and lack of time or money to travel to vaccination sites (SSHAP, 2021). From the findings of the study conducted by SAMRC (2021), the main reasons for opposition to Covid-19 vaccines include widespread misinformation.

The common type of Covid-19 vaccine misinformation include that Bill Gates is trying to control the world by implanting microchips in the Covid-19 vaccine; the vaccine will be used to kill Africans as part of an age-old population control plan; big pharmaceutical companies created the virus to profit billions from supplying the

vaccine; Covid-19 comes from 5G towers; and so on (SAMRC, 2021). Furthermore, SAMRC (2021) found that the most dangerous claim is that Covid-19 and the vaccine are part of an evil plan to reduce Africa's population so that Western countries can fully control the continent's natural resources.

Similar to the findings above, Loomba *et al.* (2021) stated that there has been widely circulating false information about the pandemic on social media platforms, such as that 5G mobile networks are linked with the virus; that vaccine trialists have died after taking a candidate Covid-19 vaccine; and that the pandemic is a conspiracy or a bioweapon. Further, SSHAP (2021) found that the main reasons South Africans point out for not being willing to take the vaccine are concerns related to its safety and effectiveness. It was then revealed that comments on social media reflect similar scepticism about whether a vaccine is needed to supplement an individual's immune response.

Social media references to herbal remedies as alternative treatments to "western medicine" surged in early February following the suspension of the AstraZeneca vaccination campaign (SSHAP, 2021). In addition to what has been explained above, SSHAP (2021) indicates that reports of planned mandatory vaccinations amplified mistrust in the government and institutions and generated angry responses on social media. Although the government has denied such plans, fears and rumours remained. In line with the above-mentioned report by SSHAP (2021), SAMRC (2021) adds that these, and other fears, have dominated social media conversations in South Africa and across the world for many months as Covid-19 vaccines were being tested.

Solutions to prevent Covid-19 vaccine misinformation on social media

The arrival of vaccines signalled a new era in South Africa's fight against the Covid-19 pandemic, with the focus shifting from containment to eliminating the pandemic (Burger *et al*., 2021:1). In this regard, Burger *et al.* (2021) explain that it is vital to continue to track vaccine hesitancy over time. The aforementioned authors suggested that *infodemiological* and *infoveillance* methods can be used to monitor fake news, myths and misinformation, and to flag and address disinformation quickly. As expressed by Burger *et al*. (2021), messages disseminated through social media platforms to counter misinformation should also be incorporated into other platforms, such as government communication channels, newspapers, and television, to increase the intensity of the messaging and to ensure maximum reach.

Social media campaigns sharing accurate information and building literacy can also play an important role, especially in reaching younger populations. Schools and universities may have the ability to play an important role in reaching adolescent and young adult populations, who are amongst the most hesitant groups (SSHAP, 2021:12). Likewise, Burger *et al.* (2021) support SSHAP by explaining that messaging must be on a platform favoured by the youth, e.g. TikTok, using language and visuals they understand and accept. For subgroups, populations, and regions where hesitancy is higher, additional intensive vaccine promotional efforts should be required. It is recommended that messages are developed in collaboration with key actors of local geographical areas and subgroups to ensure that messages are

delivered appropriately and have maximum impact.
Molteni (2020) reported that to combat this turmoil of misinformation, the plan is to recruit people who think vaccines are a vital public good and who have a track record of activism, doing things like signing petitions or attending demonstrations. Those people will sign up to receive information about how to combat vaccine-related misinformation when they see it. Concerning solutions to prevent Covid-19 vaccine misinformation, Megget (2020) reported that Facebook told The BMJ that it rejects advertisements that include vaccine misinformation and has removed hundreds of thousands of posts containing harmful misinformation relating to Covid-19 and a potential vaccine while also directing people to articles with accurate information.
Islam, Kamal, Kabir, Southern, Khan, Hasan, Sarkar, Sharmin, Das, Roy and Harun (2021) found that tracking Covid-19 misinformation in real-time and engaging with social media to disseminate correct information could help safeguard the public against misinformation. In addition, Murthy (2021) showed that some technological platforms have improved efforts to monitor and address misinformation by reducing the distribution of false or misleading posts and directing users to health information from credible sources. These results revealed the importance of deploying an active and timeless social media monitoring in a quest to disseminate clear, verified and correct information regarding the Covid-19 vaccine. Leung and Hon (2021) revealed that widespread use of social media should be enhanced to disseminate scientifically sound information to a greater audience to counteract vaccine hesitancy.

Legal framework for the study

The Cybercrimes Act (No. 19 of 2020) of South Africa was found relevant for the study. The reason for applying this Act is because Section 9. (1) states that any person who unlawfully and with the intention to defraud makes— *(a)* false data; or *(b)* a false computer program to the actual or potential prejudice of another person, is guilty of the offence of cyber forgery. Further, subsection (2) indicates that any person who unlawfully and with the intention to defraud, passes off— *(a)* false data; or *(b)* a false computer program to the actual or potential prejudice of another person, is guilty of the offence of cyber uttering. With all of the above being said, this study urges the South African government and judiciary to find guilty anyone who shares Covid-19 vaccine misinformation on social media platforms since this could help to prevent cyber forgery. Hence, this could also help prevent people not to access information that promotes Covid-19 vaccine hesitancy and scepticism in South Africa. Without a doubt, one can concur that this Act is relevant to punish those who practice cyber forgery.

Theoretical framework to respond to social media misinformation

Roger's revised protection motivation theory is a major health psychology theory intended at clarifying the cognitive mediation process of behavioural shift in terms of threat and coping appraisal (Plotnikoff & Trihn, 2010). According to Shillair (2020), the threat appraisal process includes assessing the severity of the threat and the

likelihood of the threat occurring, i.e., the vulnerability of the community. The coping appraisal process includes consideration of the efficacy of the response, how difficult the response is to carry out (e.g., response cost), and the perceived self-efficacy of enacting the coping response. According to Bandura (1994), perceived self-efficacy refers to people's beliefs about their capabilities to produce effects. On the other hand, Aboulnasr (2013) states that response efficacy refers to the degree to which a certain action or response to a given problem is perceived as being effective.

Therefore, if the threat appraisal outweighs the coping appraisal, then flowed response follows. This can include denial, minimising the threat, or ignoring it (Shillair, 2020). In addition, Shillair (2020) states that if the coping response, which includes belief in response efficacy and perceived self-efficacy, is stronger, protection motivation is achieved. In relation to this study, the theory reveals that when people are exposed to health information which emphasises the perceived severity of Covid-19 it can be outweighed by the perceived benefits of the vaccine and subsequently lead to perceived response efficacy. The theory predicts the high intention of taking the Covid-19 vaccine. In contrast, it also predicts that if the threats of taking the vaccine in terms of fear appeal messages such as death as a result of the vaccine may result in people refusing to take the vaccine and ignoring verified information on Covid-19 vaccine with the fear of the response cost.

Methodology

The approach employed by this study is qualitative. According to Busetto, Wick and Gumbinger (2020), qualitative research is defined as "the study of the nature of phenomena", including "their quality, different manifestations, the context in which they appear or the perspectives from which they can be perceived", but excluding "their range, frequency and place in an objectively determined chain of cause and effect". Another reason for employing a qualitative approach is that researchers want to better address the problem of social media misinformation on Covid-19 vaccine hesitancy in society and to propose solutions to prevent Covid-19 vaccine misinformation on social media.

The desk research technique was adopted to collect data for the study in which researchers concur that it involves synthesising existing data that can be sourced from peer-reviewed journals, online reports, and government archives among others. In this regard, 20 journal articles and reports were accessed to generate data for this study. The articles and reports were selected based on their relevance to the study. For data analysis, secondary data were analysed using descriptive analysis which Loeb, Dynarski, McFarland, Morris, Reardon and Reber (2017) explain stands on its own as a research product, such as when it identifies phenomena or patterns in data that have not previously been recognised. Further, the afore-mentioned authors explained that descriptive analysis can also be used to diagnose issues that warrant the immediate attention of policymakers, practitioners and researchers.

Criteria such as data sampling strategies, such as coding, were carefully used to enhance the quality of the study conducted. The data focused on the Covid-19 vaccine hesitancy; types of Covid-19 vaccine misinformation and prevention of Covid-19

vaccine misinformation on social media.

Results

The results of the study have been derived from the literature consulted by the researchers. The results focused on the Covid-19 vaccine hesitancy fuelled by social media; the types of Covid-19 vaccine misinformation shared on social media; and proposed solutions to prevent Covid-19 vaccine misinformation on social media.

In relation to Covid-19 vaccine hesitancy fuelled by social media, the paper found that misinformation exposure results in a decreased number of people who are interested in taking Covid-19 vaccines. At the same time, the study revealed that in South Africa, there is a highest percentage of hesitancy for those who trust social media compares to those who do not trust social media platforms. Rumours and misinformation, or the so-called *infodemic*, have been identified as one of the major threats to vaccine acceptance. Consequently, this study revealed that in South Africa there is still a significant minority who remain hesitant with a tiny percentage who are not fully convinced to take the Covid-19 vaccine. Furthermore, it was also found in this study that in South Africa, comments indicating distrust and concerns about Africans being used to test vaccines were widely shared on social media at the time when J&J vaccines were being rolled out without a formal licence.

Concerning the types of Covid-19 vaccine misinformation, the dominant types of misinformation shared on social media platforms in South Africa included side effects; complacency regarding the individual risk of getting infected with Covid-19; distrust in the vaccines in general and in the government among others. In addition, some of the dominant social media misinformation was that Bill Gates is trying to control the world by implanting microchips in the Covid-19 vaccine and killing Africans as part of an age-old population control plan, while on the other hand, big pharmaceutical companies created the virus to profit billions from supplying the vaccine. Similarly, the study found widely circulating false information about the pandemic on social media platforms, such as that 5G mobile networks are linked with the virus.

With reference to solutions to combat Covid-19 vaccine misinformation on social media, *infodemiological* and *infoveillance* methods were found to be used in monitoring fake news and myths among others. At the same time, researchers believe that social media campaigns designed to share accurate information and build social media literacy can also play an important role, especially in reaching youth. Moreover, the study showed wide support by SSHAP which explained that messaging must be on social media platforms favoured by the youth using language and visuals they understand and accept. Rejection of advertisements that include vaccine misinformation and hundreds of thousands of posts containing harmful information relating to potential Covid-19 vaccines were removed in a quest to deal with the spread of misinformation. It was also revealed in the study that the use of social media should be enhanced to disseminate scientifically sound information to prevent Covid-19 vaccine misinformation to impede vaccine hesitancy.

Conclusion and recommendations

The findings of the study prove that there is a need to understand motives leading to

Covid-19 vaccine hesitancy. Most importantly, findings from this study are relevant to help combat social media misinformation on Covid-19 vaccine hesitancy in South Africa. The major findings of the study are based on the literature gathered by researchers. The major Covid-19 vaccine hesitancy fuelled by social media includes misinformation, distrust and rumours among others, while some of the types of Covid-19 vaccine misinformation shared on social media include Bill Gates is trying to control the world, big pharmaceutical companies created the virus to profit billions from vaccine supply and 5G mobile networks linked with the virus as bioweapons. Some of the significant solutions to prevent Covid-19 vaccine misinformation on social media include social media campaigns designed to share accurate information and social media literacy; monitoring the fake news and myths; messaging on social media platforms liked by the youth using language and visuals they understand and accept among others. Based on the above-mentioned findings, the study recommends the following:

- The social media accounts managers including Twitter for the South African government (Department of Health, Government Communications Information Systems (GCIS), The Presidency) should start to have transparent dialogue and social media community engagement about Covid-19 vaccines immediately. These should be done while respecting emotions and real concerns that the public has as opposed to one-way information supply. For example, if the above-mentioned government departments share information about Covid-19 vaccines on Twitter, they should monitor the comment section to identify concerns and fear and therefore design health communication campaigns that will address these concerns and fears, populated through social media and traditional media platforms;
- The South African government should implement social media policies that promote punishment to those who misinterpret and forge government messages online;
- GCIS, together with the Department of Health, should design and implement strong social media communication strategies for promotion and acceptance of Covid-19 vaccines especially among the youth who are mostly found online;
- The government should strive to empower the social media community to identify and report misinformation about the Covid-19 vaccine, working together with social media companies to remove harmful information regarding Covid-19 vaccines with legal consequences for individuals or groups who spread such misinformation;
- To mitigate the spread of misinformation on social media, GCIS together with the Department of Health should develop and launch social media campaigns that will be used to share and promote accurate information especially among young people as suggested by SSHAP;
- The government and pro-vaccine groups should strive to promote trust in Covid-19 vaccines by sharing evidence of the effectiveness of these vaccines to counterbalance the misinformation.
- This study was conducted to propose solutions to prevent social media misinformation on the Covid-19 vaccine uptake in South Africa. However, it

was limited to the recent literature on social media misinformation on Covid-19 vaccine hesitancy. Hence, it is of the utmost importance for researchers to continue conducting more studies on social media misinformation on Covid-19 vaccine hesitancy to accelerate Covid-19 vaccine uptake in South Africa.

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