



OFFICE OF THE PRESIDENT
OF THE SOUTH AFRICAN MEDICAL
RESEARCH COUNCIL

COMMUNICATION DURING PANDEMICS: LESSONS LEARNT FROM THE COVID-19 PANDEMIC

A POSITION PAPER BY THE SOUTH AFRICAN MEDICAL RESEARCH COUNCIL



EXECUTIVE SUMMARY

Throughout history, very few phenomena have shaped societies the way infectious disease outbreaks have done. The 2009 H1N1 outbreak was the first pandemic where vaccines and antiviral use were combined. There was dissonance between public sentiment about the outbreak and the public health steps recommended and undertaken by the World Health Organisation (WHO) and national health institutions. Public alarm because of WHO releases and warnings rapidly transitioned to discontent and mistrust as the initial bleak outlook failed to materialize. A lesson to have learnt from that pandemic is how difficult it is to understand and manage public expectations and public sentiments when attempting to mobilise a response. This can be compared to the anti-vaccine sentiment and lack of confidence in state players during the COVID-19 pandemic.

From the outset of the COVID-19 pandemic, there was a global health information crisis. There was a huge degree of uncertainty, in particular at the early stages of the pandemic regarding the health crisis caused by the virus. This was compounded by the complex social, economic, and medical consequences of the pandemic, including scarcity of protective materials and a lack of vaccines in many countries. People gravitated to the mass media, printed or digital, to follow the news about that yet-unknown disease, with the lockdowns probably encouraging people to spend most of their time focused on the media, resulting in fertile ground for a substantial volume of misinformation. The predominant medium in which information was both looked for and disseminated during the pandemic was social media.

The role of communication during an outbreak is critical to allay public fears, assure communities of the work that health agencies are doing, mitigate rumours and disinformation, offer preventative solutions and procedures for recovery and show credibility and openness. Other challenges include problems of trust: in science; in politicians' decisions; in pharmaceuticals and; in the media. In addition, the lack of health literacy; the lack of a culture of public engagement in some countries; and the lack of skills by scientists to convince the public that uncertainty in science is inevitable further compounds issues.

The complex phenomenon of information disorder – that of misinformation, disinformation and malinformation was prevalent during the COVID-19 pandemic. This, coupled with information overload led to an infodemic, itself of pandemic proportions. An infodemic is too much information including false or misleading information in digital and physical environments during a disease outbreak, which causes confusion and risk-taking behaviours that can harm health, leads to mistrust in health authorities and undermines the public health response. Low levels of health literacy undoubtedly contributes to the spread of misinformation. Misinformation and unsubstantiated, rumours regarding COVID-19 and potential vaccination against SARS-CoV-2 emerged on social media platforms even before the vaccine arrived in Africa, with negative impact on public confidence as the vaccines were rolled out in African countries.

It is imperative that communication is managed effectively during pandemics and the failures of communication experienced during the SARS CoV-2 outbreak avoided. There is a definite probability of another infectious disease outbreak and it is likely that it could be more dangerous. Therefore, there is a need to prepare for such a possibility to prevent the loss of lives and livelihoods. That meaningful and honest communication is at the crux of management of pandemics is indisputable. In this way, people will feel respected and preventative public health measure will be more acceptable. All the objectives of pandemic communication must be achieved: reassuring the public; advising on preventive measures; raising awareness and enhancing solidarity on the issue; providing timely and regular information as the threat evolves; and adapting the approach as new knowledge emerges. In addition, there must be timely communication of the best information available at the time to counter information disorder.

Individuals and populations will have ongoing concerns during a pandemic. Focussed, honest, meaningful and culturally appropriate communication strategies based on available scientific evidence including candid information on uncertainties are necessary at individual, community and population levels. Messages must be packaged so that they can be comprehended by all, regardless of age, life circumstances, or level of education. No one must be left behind. For any communication strategy to be successful, the messenger must be trustworthy. Hence building trust, using trusted messengers and communications mediums in understandable languages are key in communication on preventing spread.

Several vaccines were available against SARS-CoV-2 close to a year after the onset of the COVID-19 pandemic. The speed at which the vaccines were developed was unprecedented in medical history and was enabled by the convergence of modern virology, mRNA technology, big data management, and fast-tracking testing procedures. While most people, both inside and outside the scientific community welcomed this achievement, mistrust and blunt rejection of vaccine options presented a huge challenge globally. In the context of vaccines, transparency with regard to *inter alia* the benefits, risks, adverse events, and the limits of available evidence must be built into the communication. Given that health care practitioners have been found to be trustworthy, the patient-healthcare encounter provides a valuable opportunity to take forward the communication. This would be of benefit, in the main, at the individual level.

Messaging at a community level would be credible where religious leaders transmit the information, as they have also been shown to be trustworthy messengers. Religious institutions should be used as venues in which the messages are spread. Respectful and collaborative community engagement, to include civil society organisations, non-governmental organisations and leaders from within communities to customise messages would assist in motivating communities to trust and accept preventative interventions including vaccinations. South Africa and other countries on the continent can draw on lessons from their strong histories of and experiences with community engagement and mobilization in the context of HIV and AIDS advocacy and health literacy.

Given that the media plays a significant role in disseminating information, measures including monitoring and investigative responses to identify and debunk disinformation, instituting and implementing content credibility labelling initiatives are recommended. Sensationalism must be avoided and only trusted sources must be used when communicating news during pandemics. It would be prudent for media personnel to have access to educational programs on scientific issues.

The role of the government must be highlighted. The population must have the tools to access relevant information. It is the state's responsibility to promote health literacy, public dialogue, address the problem of the digital divide and to promote health communication as integral to the social determinants of health. Priority must be given to preventative measures right at the outset of a pandemic. More research on contextually relevant pandemic communication is necessary and must be conducted before the outbreak of the next pandemic. The state has an obligation to fund and support these studies.



Professor Glenda Gray
President and CEO SAMRC
30 January 2024

**COMMUNICATION DURING PANDEMICS:
LESSONS LEARNT FROM THE COVID-19
PANDEMIC**

**A POSITION PAPER BY THE SOUTH
AFRICAN MEDICAL RESEARCH COUNCIL**

DATE: 31 JANUARY 2024

FUNDER: OPEN SOCIETY FOUNDATION

**PRINCIPLE INVESTIGATOR: PROFESSOR
AMABOO DHAI**

LIST OF ACRONYMS

Ad26.COVS.S COVID-19 vaccine (JnJ vaccine)

Africa Centres for Disease Control and Prevention (Africa CDC)

African Union (AU)

Effective crisis and risk communication (ECRC)

Electronic Vaccine Data System (EVDS)

Extended Parallel Process Model (EPPM)

International Bioethics Committee (IBC)

International Health Regulations (IHR)

Health Belief Model (HBM)

National Department of Health (NDOH)

Personal protective equipment (PPE)

Risk communication and community engagement (RCCE)

Social determinants of health (SDH)

Southern African Development Community (SADC)

United Nations Educational, Scientific and Cultural Organisation (UNESCO)

US Center for Disease Control (US-CDC)

World Commission on the Ethics of Scientific Knowledge and Technology (COMEST)

World Health Organization (WHO)

World Medical Association (WMA)

COMMUNICATION DURING PANDEMICS: LESSONS LEARNT FROM THE COVID-19 PANDEMIC

1. INTRODUCTION

On 30 January 2020, The Director-General of the World Health Organization (WHO) declared the 2019 SARS-CoV-2 outbreak a public health emergency of international concern. This was done following advice from the Emergency Committee and within the confines of the International Health Regulations (IHR) (2005) (WHO, 2020a). South Africa had its own first case of what was subsequently called Covid-19 on 4 March 2020, and on the 24 March, President Cyril Ramaphosa made an announcement that the country would go into a nationwide lockdown for 21 days (The Presidency, 2020). This meant that, in an endeavour to restrict the spread of the virus, there would be restrictions on many everyday freedoms enjoyed by South Africans for the first time since the transition to democracy in the country. Accordingly, communication, and in particular, government communication became a critical tool to inform, educate, and reassure South Africans on how to effect personal and societal behavioural change and to understand the steps that had to be taken to overcome the devastation caused by the virus during this tumultuous time (Della Togna et al, 2021).

1.1 Historical Perspective

Throughout history, very few phenomena have shaped societies the way infectious disease outbreaks have done. Entire populations have been wiped out, societies decimated and outcomes of wars determined by pandemic outbreaks (Huremović, 2019). The 2009 H1N1 outbreak reached pandemic proportions within weeks, began to taper off toward the end of the year and by May 2010, it was declared over. This was the first pandemic where vaccines and antiviral use were combined (Piret and Boivin, 2021). It is interesting to note the dissonance between public sentiment about the outbreak and the public health steps recommended and undertaken by the World Health Organisation (WHO) and national health institutions. Public alarm because of WHO releases and warnings rapidly transitioned to discontent and mistrust as the initial bleak outlook failed to materialize with health agencies being accused of creating “panicdemics” and pushing unproven vaccines so the pharmaceutical industry could be promoted. A lesson to have learnt from that pandemic is how difficult it is to understand and manage public expectations and public sentiments when attempting to mobilise a response (Huremović 2019). This can be compared to the anti-vaccine sentiment and lack of confidence in state players during the COVID-19 pandemic (Dhai et al, 2021).

1.2 The Global Information Crisis

From the very beginning of the COVID-19 pandemic, there was a tsunami of information locally and globally. A global health crisis is also a global information crisis. It is hence imperative for information behaviours to be understood so as to identify suitable responses (Montesi, 2021). Of note, there was a huge degree of uncertainty, in particular at the early stages of the pandemic regarding the health crisis caused by the virus. Globally, there was a scarcity of knowledge about the aetiology and treatment of this infectious disease. Yet concurrently, people were confronted with unprecedented public health control measures. This was compounded by the complex social, economic, and medical consequences of the pandemic, including scarcity of protective materials and a lack of vaccines in many countries, as well as South Africa. As the pandemic gained momentum, people gravitated to the mass media, printed or digital, to follow the news about that yet-unknown disease, its symptoms, and precautionary measures. Adding to this was

the lockdowns, which probably encouraged people to spend most of their time focused on the media (UNESCO, 2023). Therefore, what ensued was fertile ground for a substantial volume of misinformation spreading rapidly on mass media and social media (Gabarron et al, 2021). The predominant medium in which information was both looked for and disseminated during the pandemic was social media. The use of social media platforms during the COVID-19 pandemic increased to 20-87% worldwide (Bin Naeem and Kamel Boulos, 2021). The Bruno Kessler Foundation analysed 112 million public posts on social media about the COVID-19 pandemic and found that 40% were from unreliable sources. Almost 42% from over 178 million Twitter posts about COVID-19 were generated by robots. Furthermore, the Reuters Institute demonstrated that about a third of social media users reported false or misleading information about coronavirus (UNDP, 2020). This rapid and repeated spread of information aided in indirectly validating their legitimacy and magnitude resulting in users in turn, disseminating the posts and becoming vectors of misleading information (Gallotti et al, 2020; Bin Naeem & Kamel Boulos, 2021).

The role of communication during an outbreak is critical. Through robust communication, information is disseminated, meaningful exchanges realised, goals achieved and even people who are far distant and in rural areas reached. Communicating during an outbreak needs to allay public fears, assure communities of the work that health agencies are doing, mitigate rumours and disinformation, offer preventative solutions and procedures for recovery and show credibility and openness ((Della Togna et al, 2021). However, the many challenges with regard to communication during the pandemic were not only related to a lack of correct information. Other issues included problems of trust: in science; in politicians' decisions; in pharmaceuticals and; in the media. In addition, the lack of health literacy; the lack of a culture of public engagement in some countries; and the lack of skills by scientists to convince the public that uncertainty in science is inevitable further compounded the predicament.

As the pandemic evolved the supply of COVID-19 vaccines across Africa, while initially low, increased with approximately 672 million doses distributed across the continent. Despite this improvement, the rapid spread of false and misleading information in digital and physical environments caused confusion and risk-taking behaviours. This harmed health, led to mistrust in health authorities and undermined the public health response. COVID-19 vaccination remains very low among African countries with only 11% of the adult population fully vaccinated (Osuagwu et al, 2023).

1.3 Objectives of the Position Paper

An analysis of the challenges posed by communication during the COVID-19 pandemic is requisite to allow for the identification of the most appropriate strategies to be utilised during a future global health crisis for successful promotion of correct and verified information and the countering of misinformation and disinformation. An understanding of issues with communication, and this needs to be at the outset of the pandemic, is necessary to appreciate the complexities and impediments subsequently encountered as has been seen during the COVID-19 vaccine rollout.

The objectives of this paper are to:

- a. Discuss the information disorder that ensued from the beginning of the COVID-19 pandemic;
- b. Explore the role of health communication during the COVID-19 pandemic and discuss risk communication and community engagement strategies during infectious disease outbreaks;
- c. Discuss health literacy, its enablers and facilitators in the context of pandemics;

- d. Describe vaccine hesitancy, its aetiology and impact on COVID-19;
- e. Analyse the problems encountered with communication during COVID-19 in the African context;
- f. Discuss COVID-19 vaccination uptake in South Africa; and
- g. Suggest recommendations on management of pandemic communication.

This paper starts off with a discussion on information disorder experienced during the COVID-19 pandemic, includes the role of social media and the impact of the infodemic. Communication during pandemics is thereafter generally explored, the role of uncertainty and risk communication highlighted, relevant theories for health messaging described and vaccine hesitancy introduced. This is then followed by the bearing communication had on COVID-19 vaccine uptake in South Africa. The paper concludes with recommendations specific to communication for pandemic preparedness programs.

Communication is defined as providing, obtaining or exchanging ideas, information, signals or messages through appropriate mediums to allow for individuals or groups to search for information or offer use of the information. Persuasion may form part of the process of communication (Bauer, 2015). Communication science, which is drawn upon in the paper deals with processes of human communication and behaviour patterns of communication and communication in different cultures (Calhoun, 2012).

2. THE ANATOMY OF INFORMATION DISORDER IN THE CONTEXT OF THE COVID-19 INFODEMIC

What was experienced during the pandemic was the complex phenomenon of information disorder – that of misinformation, disinformation and malinformation. Harm and falseness are used to differentiate between these three types of information disorder. When false information is shared with no intention to cause harm, it falls into the category of misinformation. When false information is shared to intentionally cause harm, it is categorised as disinformation. The third category is mal-information and occurs when real and authentic information is shared to cause harm. This is often executed by transferring into the public domain information intended to remain private (Wardle & Derakhshan, 2017.). In addition to categories, there are three elements to information disorder, the agent, the message, and the interpreter. The agent who initiates the false message might be different from the agent who develops that message, who, in turn might be different from the agent that disseminates the message. Hence, a meticulously comprehensive understanding of who these agents are and what encourages, influences and spurs them on is requisite. In addition, it is necessary to understand the different types of messages that agents distribute to estimate the scale of each and develop strategies to address them. It is also essential to explore how misinformation, disinformation and malinformation are utilized, comprehended and effected. Some questions that will need to be answered are whether they are re-shared as the original agent intended; whether they are re-shared with an oppositional message attached; and whether the false information continues to be disseminated online or whether they move offline into personal spaces and conversations. The latter will be difficult to capture. (Wardle & Derakhshan, 2017; UNESCO, 2023).

2.1 The COVID-19 Infodemic

While misinformation has been present through the decades and during previous pandemics, it gained rapid momentum during the COVID-19 pandemic, and gave rise to an infodemic in itself of pandemic proportions (misinformation pandemic). WHO states that an infodemic is too much information including false or misleading information in digital and physical environments during a disease outbreak, which causes confusion and risk-taking behaviours that can harm health, leads to mistrust in health authorities and undermines the public health response. It can intensify or lengthen outbreaks when people are unsure about what they need to do to protect their health and the health of people around them. Growing digitization, i.e., an expansion of social media and internet use, can result in information spreading more rapidly. This assists with filling information voids quickly but it can also amplify harmful messages (WHO, 2023). Conspiracy theories and scientifically unproven claims about diagnosis, treatment, and prevention of COVID-19 comprised components of the infodemic (Bin Naeem & Kamel Boulos, 2021). The magnitude of the infodemic resulted in difficulties with identifying correct information and implementing effective measures to prevent the spread of the virus (UNESCO, 2023). The WHO deemed this infodemic also as a global challenge to public health (WHO 2020(b)).

2.2 The Role of Social Media

Regarding COVID-19 vaccines, it was found that sources of vaccination information had different effects on how people assessed how to deal with vaccination. Unlike mainstream media, social media such as Facebook, Twitter, Instagram, WhatsApp, and Pinterest allow rapid creation and sharing of content globally without editorial oversight. These complex and fluid ecosystems, amplified antivaccination viewpoints and represented them as mainstream. Moreover, vaccine-hesitant parents came across compelling narratives from other parents persuading against vaccination. Misinformation and unsubstantiated, rumours regarding COVID-19 and potential

vaccination against SARS-CoV-2 emerged on social media platforms even before the vaccine arrived in Africa, with negative impact on public confidence as the vaccines were rolled out in African countries. Information spread through social media directly or indirectly increased hesitancy toward COVID-19 vaccination in the region, while the opposite effect was observed for institutional websites (Osuagwu et al, 2023).

In many rural localities communication via social media and 'word-of-mouth' was a significant tool for disseminating information. The drawback to this was that information shared via these 'informal' platforms was usually unverified and inaccurate and contributed significantly to the infodemic, which in most cases worsened the situation. The reality was that as the COVID-19 crisis progressed, social media communication proliferated substantially. In this way a robust medium emerged for communicating unverified information with potential for harm, including to public and population health. To counter this challenge, in South Africa the government sent out SMSes to registered cellphone users with information on where to get assistance and to adhere to the many preventative measures put in place (Ataguba & Ataguba, 2020). South Africa has a highly diverse communication space in which digital new media platforms exist along with loudhailers. In addition, there are significant class, language and digital divides (Della Togna et al, 2021).

2.3 The Unfolding of the Infodemic

The infodemic evolved as the pandemic evolved. Unreliable information speedily emerged at the beginning of the pandemic, even prior to an increase in the incidence of COVID-19. Globally many people were confronted with false information, but as the pandemic progressed, attention was progressively paid to more credible sources, thereby limiting the impact of the infodemic (Gallotti *et al.*, 2020). The infodemic risk varied between countries. This was irrespective of the level of socio-economic development (Gallotti et al., 2020). Moreover, the impact of the infodemic varied in different population groups, with, for example, older adults preferring traditional media, information provided by government and health care workers as sources of information. This was somewhat protective against online misinformation (Choudrie et al., 2021). People with low levels of health literacy were not in a position to properly comprehend health information and therefore not able to follow health recommendations adequately (Bin Naeem & Kamel Boulos, 2021). Hence, low levels of health literacy undoubtedly contributed to the spread of misinformation (Pian, Chi & Ma, 2021).

2.4 The Impact of the Infodemic

The psychological impact of misleading or manipulative information include reduction of anxiety because of denial or minimizing the seriousness of the threat, control of fear and anger by making certain individuals, groups or institutions responsible for generating the crisis and creating a perception of control by presenting miracle cures (Gallotti *et al.*, 2020). Hence, relying on this type of information may be more appealing to some people, in particular if it is in line with their beliefs (UNESCO, 2023).

The pandemic rapidly witnessed reduced public trust in credible sources of information. This, coupled with difficulty in accessing credible information, significantly contributed to spreading misleading information (Bin Naeem & Kamel Boulos, 2021). The situation was compounded by the fast-tracked process of publishing and pre-print options of scientific articles. Releasing incompletely verified scientific data in the virtual sphere, with several proven to be incorrect at a later stage unquestionably promoted and maintained the infodemic. (Pian, Chi & Ma, 2021). It can therefore be seen that there has been a vicious cycle of the infodemic, both maintaining and intensifying it (Kouzy et al., 2020). Additionally, with people adopting inappropriate protective behaviour, they posed risks to others as well, hence the infodemic contributed substantially to the spread of COVID-19 (Gallotti *et al.*, 2020).

Conspiracy theories and the susceptibility of communities to falsehoods led to poor to non-compliance with mask wearing, keeping one's distance, and non-acceptance of the COVID-19 vaccines. (Gabarron, Oyeyemi & Wynn, 2021; Pian, Chi & Ma, 2021). Accordingly a caution was issued by The United Nations Development Program (UNDP), which warned that national pandemic responses were being threatened by dangerous disinformation and misinformation, thereby putting even more lives and livelihoods at risk (UNDP, 2020). The danger of the infodemic to the pandemic response was an unambiguous reality in Africa as well.

As a result of the infodemic, public confidence in government and medical institutions was eroded. In addition, psychological problems like post-traumatic stress disorder and social problems including violence, misinterpretation of scientific data, racism, xenophobia, and increased alcohol and tobacco use emerged or were exacerbated (UNESCO, 2023). Panic purchasing of protective or other types of products was fuelled adding to the economic disruption already being experienced (UNDP, 2020; Pian, Chi and Ma, 2021). It was also found that because of perceived threat and information overload, the opposite effect could ensue with some people avoiding exposure to information because of their resultant emotional states. (Montesi, 2021).

2.5 Recommendations from United Nations Educational, Scientific and Cultural Organisation (UNESCO)

Early in the pandemic, the International Bioethics Committee (IBC) and The World Commission on the Ethics of Scientific Knowledge and Technology (COMEST) of UNESCO, in their statement of April 2020 called for information that was issued by politicians, scientists, authorities, and the media to be timely, accurate, clear, complete, and transparent (UNESCO, 2023). They also asked that different categories of information be provided so that everybody, regardless of age, life circumstances, or level of education, could appraise the situation. It was highlighted that social media accommodates misinformation and fake news, hence accurate public information, and more importantly, scientific information, needed to play a central role in guiding the societal engagement of individuals. They stated that concrete, practical, and comprehensible information on the best ways to realize everyday life activities was critical for the protection of health and for contributing to securing public health. "In essence, the message needs to be honest, precise, transparent, and measured in order not to spread panic or downplay the severity of conditions, but to make citizens aware, in a critical way, of imminent or future risks" (UNESCO, 2020).

2.6 Recommendations from WHO

WHO recommended the systematic use of risk- and evidence-based analysis and approaches to manage the infodemic and reduce its impact on health behaviours during health emergencies. The aim of infodemic management is to enable good health practices. This can be achieved through the following 4 types of activities (WHO, 2023):

- "Listening to community concerns and questions
- Promoting understanding of risk and health expert advice
- Building resilience to misinformation
- Engaging and empowering communities to take positive action"

The marked increase in activity on social media during the pandemic allowed for health information seeking behaviour to be monitored through infoveillance, which allows for predictions of the evolution of the number of cases of illness; the identification of people's preferences for various sources of information; or the identification of information on impediments, for example, the difficulty of accessing medical services. However, it is critical that challenge to the privacy of individuals as a result of infoveillance is recognised and countered (UNESCO,2023).

3. COMMUNICATION DURING THE PANDEMIC

The global nature of the COVID-19 crisis was an existential threat to humanity and society leading to significant global public health actions and solidarity with substantial financial and human resources deployed by many countries to fight the pandemic. In addition to the suspected and confirmed cases, anxiety, panic and uncertainty also accompanied the pandemic. Health and social inequalities were perpetuated and exacerbated within and between countries. Globally, racial and ethnic minorities and socio-economically disadvantaged groups suffered an undue burden of Covid-19 morbidity and mortality. In South Africa early evidence revealed that people who were already socio-economically disadvantaged prior to the pandemic, were disproportionately affected by its economic and social consequences (Della Togna et al,2021). Moreover, public health systems and their ability to communicate with their populations effectively were challenged.

3.1 Objectives of Pandemic Communication

The pandemic not only transformed how health services are delivered and how health systems respond to crisis, but also highlighted the significance of communication science as integral to the social determinants of health (SDH), including crisis and risk communication in reducing disease burden. Effective communication was essential for mental and physical health. The objectives of communication during COVID-19 included that of:

- reassuring the public;
- disseminating information on and justification of the preventive measures to combat SARS-CoV-2 spread;
- advancing awareness of solidarity in the context of a rapidly spreading pandemic where everyone was endangered without exception;
- educating the public on the evolution of the pandemic through reports, often on a daily basis; and
- revising the approach and sensitization of the public with the emergence of new data and knowledge to shed light on a previously unknown disease (UNESCO,2023).

3.2 Uncertainty and Risk

Communicating uncertainty and risks about the COVID-19 pandemic affected morbidity, mortality and trust. People need to understand that uncertainty is inherent to knowledge (van der Bles *et al.*, 2019). Therefore, uncertainty and the reasons for it must be communicated well to avoid obstructing building trust in communities and populations. Communicating uncertainties is not limited to scientific data only. It included uncertainties relating to political decisions made by relevant authorities. Transparency, clearly communicating information about uncertainty, upholding consistency over time and in communication among partners, and communicating the decided upon action are just some of the tools to assist with communicating uncertainty (UNESCO, 2023).

Globally several international bodies provided guidelines for pandemic risk communication. They underscored that the communication must be clear, concise, consistent, actionable, relevant, and timely while being sensitive to the speed required for unique contexts and the trustworthiness of communication, which had to be based on science (Della Togna et al,2021). In Africa, the African Union (AU) and the Africa Centres for Disease Control and Prevention (Africa CDC) provided

support for a multisectoral preparedness and response plan at national, regional, and continental levels. In addition, member countries of the Southern African Development Community (SADC), including South Africa, adopted the WHO guidelines and those of the Africa CDC (Della Togna et al,2021).

Early on in the pandemic, the Africa CDC established a technical working group for risk communication and community engagement with one of its objectives being that of identifying false information and drafting messages to address them. It also provided guidance on how to reach and counter disbelief, misinformation, and stigmatisation around Covid-19 in remote areas. In addition, guidelines for communications campaigns were provided, and member countries were encouraged to adapt these to suit their contexts. To engage with the general public, the Africa CDC used social media, where it developed a strong presence (Africa CDC, 2020). However, with only three key risk communication experts for the entire region it had challenges with regard to capacity (Della Togna et al,2021).

3.3 Achieving Efficient Communication

To be effective, crisis and risk communication strategies also had to take into account the context of already existing inequalities and socio- economic fragilities. In these situations, efficient communication had to be 'pro-poor' and 'pro- vulnerable' (Ataguba & Ataguba, 2020). It has been shown that awareness of the facts of scientific advances, and confidence that public authorities will act with the utmost transparency, results in a greater willingness to comply with responsible and virtuous behaviour for one's own good and that of others (Chowdhury, 2016). Trust is strengthened when information is complete and transparent. Public institutions play a critical role by being both informative and supportive when activating interpersonal trust (UNESCO, 2023). However, most African countries had poorly developed crisis and risk communication strategies. Exceptions included Kenya and South Africa. (Makoni, 2020). The Africa Centres for Disease Control and Prevention established a task force whose objectives included improving risk communication strategies on the continent (Africa CDC, 2020). Communication strategies may be resource-intensive, and effectiveness may somewhat depend on sensitivity to the diversity of people living in the country, including the languages spoken in disseminating information. It is also important to avoid over-reassurance. Fundamentally, risk communication is about effective and timely dissemination of high- or low-risk information accurately to the population at risk while crisis communication presumes the existence of an emergency (Ataguba & Ataguba, 2020).

Health communication that is accurate and well-managed assists with how uncertainty and fear are handled by societies. Furthermore, adherence to necessary behavioural change is both supported and realized. Hence fear is countered and hope is promoted when confronted with a crisis (Finset et al., 2020). Any communication plan must include at minimum, content development; messaging production, and information dissemination; monitoring, analysis, research, and rapid response; intergovernmental coordination; media engagement, including social media and digital platforms; and public and stakeholder engagement.

3.4 Risk Communication and Community Engagement

Targeted public health information designed to reach various communities with appropriate adaptations and partnerships between public health authorities and trusted organizations were necessary (van Bavel et al., 2020). Recognising the asymmetry in perceptions of risks among population, experts and authorities, the WHO proposed that risk communication and community engagement (RCCE) is central for successful responses to health emergencies so that the infodemic, amongst others could be curtailed. The realisation was that the infodemic made it challenging to identify a solution or an appropriate cause of action in countries. The WHO developed a checklist for RCCE to be implemented in members states irrespective of the stage of the pandemic (WHO, 2020(c)), with six domains for actions:

- (i) setting up, strengthening and managing risk communication systems,
- (ii) producing and reinforcing coordination internally and with partners to harmonise messages and public communication, while identifying and acknowledging each partners' strengths and outreach capacities,
- (iii) timely and effective public communication with the use of appropriate channels and media that target different populations, and ensuring that health professionals are aware of public concerns and possess the necessary training to provide public health advice,
- (iv) active community engagement suitable for diverse audiences including affected people, health care workers, political leaders and donors, e.g., adapting communication materials to ensure different literacy levels, culture and relevant languages are accommodated,
- (v) addressing uncertainty and perceptions, and managing misinformation, and
- (vi) ongoing capacity assessment and capacity building for RCCE as the risk evolves.

The effectiveness of RCCE strategies is significantly impacted by risk messages that are complex, confusing, inconsistent, or incomplete, lack of trust in information sources; selective and biased reporting by the media; and psychological factors that affect how risk information is processed (Ataguba & Ataguba, 2020).

3.5 Relevant Theories for Health Messaging

Various theories and models for health messaging have been proposed by health communication theorists. With regard to the pandemic context, the Health Belief (Rosenstock, 1974) and the Extended Parallel Process (Witte K, 1994) models seem best suited because they are based on health risk. Hence, an understanding of the constructs of risk and efficacy (or the belief that the health response can yield the desired effect) is essential to encourage protective behaviour during pandemics. The Health Belief Model (HBM) uses key variables such as risk susceptibility/vulnerability, risk severity, efficacy, and barriers to behavioural change perception, for prediction of health response behaviour. The Extended Parallel Process Model (EPPM) uses these variables plus distinguishing between two independent reactions to fear appeals, which are: (1) a cognitive response of risk management process, leading to protective behaviour, and (2) an emotional response of fear management process, that leads to denial, and avoidance. In addition, the EPPM model uses four elements to explain the contexts when protective behaviour or avoidance response is evoked: the perceived severity of a threatening event; the perceived vulnerability; the response efficacy of the recommended preventive behaviour; and the perceived self-efficacy. With this model, efficacy plays a mediating role in the relationship between risk perception and response to the fear appeal message. Based on the available risk reduction measures two possible outcomes emerge even with high perceived risk, from the interaction between risk perception and perceived efficacy; that of High risk-High efficacy and High risk-Low efficacy (Kollamparambil U, et al, 2021). Therefore, greater fear does not necessarily lead to greater message acceptance. However, it can perversely cause message rejection, a possibility not acknowledged by HBM. In addition, with the EPPM model, where the perception of risk is low, motivation to adopt behavioural change is low even if the individuals have high efficacy. In the context of COVID-19, the High risk-Low efficacy category would have benefitted from health communication that focused on the efficacy and benefits of vaccination, as they were already aware of the health risks COVID-19. The low risk category required to be educated about the pandemic related health risks first, irrespective of their efficacy perception. With regard to the High risk-High efficacy category, communication needed to focus on calls to vaccination with information on vaccination access. Accordingly, identifying the risk-efficacy interaction plays a significant role in tailoring the communication strategy to improve health response behavior (Kollamparambil U, et al, 2021).

3.6 Implementing the Principles of Communication

The risks associated with the information disorder during the COVID-19 pandemic were undoubtedly high, especially where there was corrosion of trust and credibility in authorities and governments. Trust, credibility, honesty, transparency, and accountability for the sources of information are principles to be adhered to during the communication process. It is usually the perception of risk and not the real risk that determines how people respond to threats (Glik, 2007). Therefore, it is essential that governments in developing countries ensure that crisis and risk communications strategies foster trust in authorities, dispel fabricated and unverified information, and work towards providing and implementing favourable decisions to improve public and population health during infectious disease outbreaks. RCCE is a critical social determinant of health in this regard. It is vital that such communication strategies are all inclusive and that no one is left behind, in particular the poor and vulnerable. RCCE must be contextually relevant in terms of the language and culture. As an initial step the predominant communication avenues used by different populations must be understood when designing appropriate strategies. It is imperative that just replicating traditional approaches is avoided. It would be helpful in rural localities, to collaborate with well-respected village chiefs and community leaders in RCCE as they could serve as avenues for crisis and risk communication. In addition, other key stakeholders to be considered for partnering with for RCCE are role models, religious leaders and even places of worship themselves. The social gradient must be recognised as important for crisis and risk communication strategies so that relevant information to target populations is transmitted and the already high disease burden and health inequalities are not worsened (Ataguba & Ataguba, 2020).

Drawing from Covello et al, (Covello, et al, 2001) Ataguba & Ataguba offer a useful guide for stakeholders to engage with when developing appropriate RCCE strategies (Ataguba & Ataguba, 2020):

- “(i) Who is perceived to be the most trustworthy source for providing the information?
- (ii) Who is best suited to communicate crisis and risk messages at different times and in different environments?
- (iii) Which messages are most likely to be effective in different circumstances and settings?
- (iv) Which messages respect the different values, cultures and belief systems?
- (v) Which messages raise moral or ethical issues? And ultimately,
- (vi) Where, when, and how to communicate risk information to different population groups.”

Respect should guide all communication and choosing a credible and trustworthy spokesperson may help persuade the public that the message is credible, particularly in the context of targeted public health information (van Bavel et al., 2020). It is imperative that political spokespersons are credible. They need to provide positive feedback on the behaviour needed to alleviate the negative effects of the crisis. This may encourage people to take up recommendations (Lowe et al., 2022). Furthermore, the importance of clear leadership during crises, in particular, the performance of leadership, media management and protection of the narrative within the information environment shape the discussion of how crisis communication can be placed into a political context suitable for the understanding of the dynamics of communication during pandemics (Lilleker et al., 2021). However, protecting the narrative should not be used to curtail the rights to free expression and free speech and attempts to stop information disorder must not result in unjustified censorship and the restriction of free flow of authenticated information (UNESCO, 2023).

In South Africa, the Constitution, in section 195(1)(g), requires that ‘transparency must be fostered by providing the public with timely, accessible and accurate information’. It also provides in section 32 that ‘everyone has the right of access to (a) any information held by the state; and (b) any information that is held by another person and that is required for the exercise or protection of any rights’ (South African Government, 1996). While these provisions needed to

underpin the government's response to the pandemic this was unfortunately not always the case.

3.7 Health Literacy During Pandemics

The WHO defines health literacy as the achievement of a level of knowledge, personal skills and confidence to take action to improve personal and community health by changing personal lifestyles and living conditions. Health literacy is critical to empowerment as it improves people's access to health information and their capacity to use it effectively. (WHO, 2022). Health communication and health literacy must always be founded on verified science and must debunk misinformation. The level of health literacy is important for access to healthcare, comprehending the rationale for actions that may be taken during infectious disease outbreaks and other health crisis, and for people to be able to exercise their rights and participate in public dialogue about health. Improving health literacy especially in disadvantaged and marginalised societies may assist with speeding up the process of reducing inequities in health (WHO, 2022). It is therefore necessary to ensure everyone is included when planning health literacy and strategies to reach out to those who may encounter barriers are necessary (UNESCO, 2023).

3.8 Digital Technology

Among the factors critical to the success of communication for all people, is digital technology. The Covid-19 pandemic made clear how important it was for all people to access such technology. In South Africa, the digital divide between rural and urban, and richer and poorer communities affects access to education, health, employment opportunities, and other essential information. Unreliable cell phone network coverage is a significant challenge, particularly for rural communities. South Africa's apartheid-legacy geography, high levels of poverty, and low population densities between major centres continue to be challenges for cell phone companies, who provide the infrastructure (Della Togna et al, 2021). According to Stats SA, only 10,4% of households had Internet access at home in 2019, but only 1,7% had this access in rural areas (Stats SA, 2019). People in rural areas have no option but to use cell phones, despite high data costs and limited coverage. Despite increasing data usage, 47% of South Africans by 2018 did not use the Internet because devices and data were not affordable (Mothobi et al., 2018). Hence, messaging during the pandemic via smartphones (interactive websites, mobile apps or video-streaming) could not be accessed by half of the population (Harrison, 2020).

3.9 Time Sensitive Communication

Communication in the context of health requires a combination of information and education so that people are enabled to develop critical awareness and individual and social responsibility towards health. Through appropriate health communication people can get health literate and involved in public debates, public engagement or public discussion on health. Additional challenges are raised during a pandemic because communication must be time-sensitive. Six principles of Effective crisis and risk communication (ECRC) in the context of infectious disease outbreaks were advanced by the US Center for Disease Control (US-CDC). These were: to share information about a disease outbreak quickly to assist with stopping its spread ("be first"); to be right; to be credible; to express empathy, to promote action and to show respect (US-CDC, 2014). The infodemic and the confusion that it caused made it difficult to apply these principles during the COVID-19 pandemic (Dubé, 2022) and choices made were incorrect and behaviour inappropriate (UNESCO, 2023).

3.10 Science Communication

Deficits in science communication contributing to ignorance or false beliefs about the scientific underpinnings of public health recommendations and policymaking was clearly highlighted during

the pandemic. (Thagard, 2021). Furthermore, society's expectations from research and science to provide rapid responses about something under study was underscored and a lack of understanding of what the research process entails eroded public trust in science. Rushed, miscommunicated, or misrepresented science, questionable research practices, and research misconduct complicated the situation even further (Saitz & Schwitzer, 2020). Trust in science varied during the pandemic (Algan, 2021) as the public witnessed contradicting statements from authorities, and inconsistencies between scientists during open scientific discussions. This probably invigorated COVID denial and conspiracy beliefs (Evanega et al., 2020; van Mulukom et al., 2022), and thwarted public support for recommended preventive measures. In addition, scientific data, science-based recommendations and political decision-making are different, but frequently these differences were vague during the COVID-19 pandemic debates. UNESCO affirms that improving science communication to the public and distinguishing the role (and limits) of science in the management of a health crisis should be one of the priorities of the agenda for future health crises (UNESCO, 2023).

3.11 Role of Healthcare Professionals

It has been shown that that healthcare professionals are amongst the most trusted professional groups globally. They play a critical role in health education and health literacy (Funk & Gramlich, 2020). Through the ages, they have been regulated by strict legal and ethical standards of conduct. Professionalism and a high standard of ethical conduct is expected of them both in the clinical context and when they make public statements. Therefore, when making public statements healthcare professionals must ensure that they do not raise anxiety and doubts about the efficacy and safety of evidence-based treatments and medicines, especially within the context of a public health crisis (UNESCO). Furthermore, public statements made by healthcare professionals which promote immunization hesitancy are professionally and ethically a cause of concern. (WHO, 2020c). The World Medical Association (WMA) underscores in the International Code of Medical Ethics that, "*Physicians must be prudent in discussing new discoveries, technologies, or treatments in non-professional, public settings, including social media, and should ensure that their own statements are scientifically accurate and understandable*" and "*must indicate if their own opinions are contrary to evidence-based scientific information*" (WMA, 2022).

3.12 Role of Media

News that comes from government bodies and technical-scientific committees are relayed to the public via the media, which is important as a source of information and also to stabilise or change certain behaviour and attitudes. Hence professional journalists and public broadcasters have a strategic task when it comes to pandemic health communication. For this they need to be competent, professional and ethical. Information communicated must be correct, accurate, and authentic. They must steer clear from sensationalism as this could result in excessive and unjustified alarms, false reassurance and panic. During uncertainty, people usually rush both to mainstream and digital media for information. It has been found that the media can assist with controlling the spread, or it can obstruct successful management by disseminating inaccurate news and information (Anwar et al., 2020). UNESCO published a handbook in 16 languages on disinformation literacy and countermeasures (UNESCO, 2020(a)).

A further two policy briefs on information disorder to assist media with communication were published by UNESCO. Nine types of Covid-19-related disinformation were identified in the first one (Posetti & Bontcheva, 2020(a)). In the second, ten categories of responses to Covid-19 disinformation at four points of the disinformation life cycle – production, transmission, reception, and reproduction were highlighted (Posetti & Bontcheva, 2020(b)). Covid-19-related

disinformation needed to be eradicated. It was recommended that disrupting disinformation in the process of transmission, preventing disinformation from reaching targets, and preventing viral redistribution of disinformation was necessary. Measures including monitoring and investigative responses to identify and debunk disinformation, instituting law and policy regulations, and implementing content credibility labelling initiatives were recommended.

3.13 Communication and Vaccine Hesitancy

The WHO defines vaccine hesitancy as:

“Vaccine hesitancy refers to delay in acceptance or refusal of vaccination despite availability of vaccination services. Vaccine hesitancy is complex and context specific, varying across time, place and vaccines. It is influenced by factors such as complacency, convenience and confidence.” (MacDonald NE & the SAGE Working Group on Vaccine Hesitancy, 2015). Concerns have been raised that hesitancy implies negativity and hence “confidence”, a more positive word should be considered as an alternative. Confidence covers a range of issues including trust in vaccines, concerns about vaccine safety, and trust in healthcare workers delivering the vaccine and in those making the decisions to approval of vaccines for the population. However, confidence has been found to be narrow in scope covering only one category of factors that affect vaccination acceptance decisions. WHO has therefore opted for the use of “hesitancy” (MacDonald NE, the SAGE Working Group on Vaccine Hesitancy, 2015).

Hesitancy, in terms of a behavioural response against vaccination can be specific to a particular vaccine. It depends on the perceived risk of infection and the confidence in the vaccine (Dubé et al, 2013). This has been acknowledged in pre-COVID-19 vaccine studies and important predictors of vaccine intentions come to light when health behaviour models are used. Key driving factors are efficacy and risk perception. i.e., vulnerability and severity. Enhanced risk perception improves vaccine acceptance amongst these groups of individuals. Appropriately formulated information on vaccines are important in driving the behavioural response to it. During a pandemic, strong health communication to educate and create awareness on the infectious disease outbreak improves vaccine acceptance as well. (Kollamparambil et al,2021)

Several vaccines were available against SARS-CoV-2 close to a year after the onset of the COVID-19 pandemic. The speed at which the vaccines were developed was unprecedented in medical history and was enabled by the convergence of modern virology, mRNA technology, big data management, and fast-tracking testing procedures. While most people, both inside and outside the scientific community welcomed this achievement, mistrust and blunt rejection of vaccine options presented a huge challenge globally. The reasons for the hesitancy were several-fold. They varied greatly between and within countries and included beliefs in conspiracy myths, general scepticism towards modern science or vaccination, unease with the specific new technology, lack of trust in pharmaceutical companies, doubt about the quality of vaccines, or fear of injection (UNESCO, 2023). In addition, many scientists' initially expressed public hope that vaccination could, and would fully protect from both infection and transmission of the virus, was proven not to be true. However, the reality is that vaccination was highly effective in globally preventing millions of severe infections and deaths, despite claims to the contrary by vaccine denialism disinformation (UNESCO, 2023). While vaccine nationalism and lack of vaccine equity also contributed significantly to the spread of infections and death, especially in many resource poor countries, focussed and well packaged health communication would have gone a long way in preventing even more infections and deaths.

4. COVID-19 VACCINATION UPTAKE IN SOUTH AFRICA

In South Africa COVID-19 vaccination was first rolled out among health care workers in February 2021, using Ad26.COVS under the Sisonke Program. The Sisonke Program was a collaboration between the National Department of Health (NDOH), South African Medical Research Council (SAMRC), Desmond Tutu Health Foundation, Centre for the AIDS Program of Research in South Africa, Janssen and Johnson & Johnson. It allowed for the government to make the Ad26.COVS COVID-19 vaccine (JnJ vaccine) immediately available to healthcare workers using a research program through a Phase 3B trial, while the licencing process took place. The South African government chose to move ahead with the program because it would have been unethical to withhold a vaccine proven to be safe and effective (SAMRC, 2021). The Program was spearheaded by the SAMRC. In May 2021, individuals older than 60 years started being vaccinated with BNT162b, and essential health workers such as teachers received Ad26.COVS. The national roll-out was then expanded to those aged 35-50 years in July 2021, 18-35 years in August 2021, and 12-18 years in October 2021. Booster doses for Ad26.CoV.2 and mRNA vaccines were introduced in December 2021. By August 2022, 49% of adult South Africans had received at least one vaccine dose. The uptake of booster doses was low, with less than 5% of people having received a booster at that time (NDOH, 2022; Moshabela M, et al, 2022).

In April 2021 the NDoH launched the Electronic Vaccine Data System (EVDS), a complete vaccination health information system from registration to certification, to ensure facilities were accredited, co-ordinate the supply of vaccines, enable a pre-booking and vaccination system, and record who was and was not vaccinated. Prior to the launch, the EVDS was used in the Sisonke Program. The EVDS online application was accessed digitally via the internet through a self-registration portal. It captured basic information to be able to assign the date of vaccination and the vaccination site. Information submitted during registration was utilized to identify eligible vaccination beneficiaries; plan the supply of vaccines and ancillary items; allocate beneficiaries to their nearest available service point; communicate with enrolled individuals about the vaccination program, including but not limited to eligibility, when and where they would be vaccinated and their follow-up vaccination appointments. (Moshabela M, et al, 2022)

4.1 Vaccine Hesitancy in South Africa

Supply related and access challenges contributed significantly to suboptimal vaccination coverage, so too did vaccine hesitancy (Cooper et al, 2021). Accepting and taking up new innovations, both at the individual and social levels are driven by complex factors that influence how people make the decision to either adopt or reject the new innovations irrespective of the claimed benefits. Various stages within which individuals or communities can be categorized in the process of adopting new innovations are described in the Stages of Change Theory. Sequentially, these are: Pre-contemplation, Contemplation, Preparation, Action and Maintenance (Raihan & Cogburn, 2022). Different levels of vaccine acceptance and varying degrees of vaccine hesitancy are found in the different stages. According to several surveys conducted in South Africa to measure vaccine hesitancy in the general population, vaccine hesitancy was reported by about a third of respondents (Runciman et al, 2021; Sewpaul, et al, 2021; Katoto et al, 2022; Spaul et al, 2021). In these surveys, the key determinants for vaccine hesitancy included misinformation, fear of needles, distrust of the government, beliefs in conspiracy theories and religious reasons (Moshabela M, et al, 2022). 91% of South Africans surveyed consider religion important. Religious individuals are found more likely to belong to the denial (high risk-low efficacy) group (Kollamparambil, et al, 2021). Furthermore, one of the most consistent findings across several studies conducted on vaccine hesitancy was the ongoing fear and uncertainty people had about the safety and effectiveness of COVID-19 vaccines (Cooper et

al, 2022). Young people were the most hesitant sub-population. Those that were most accepting of vaccines were in the category of high risk and high efficacy. Low-risk individuals were more likely to be hesitant. Furthermore, there was significant difference between the vaccine intention of the responsive and the denial groups inferring that risk perception was the driving factor and efficacy, the mediating factor. In addition, there was a negative association between COVID-19 awareness and vaccine hesitancy indicating the need for more awareness and education around vaccines to be established for hesitancy to be reduced (Kollamparambil U, et al, 2021). Vaccine hesitancy in South Africa was described by Cooper, et al as a complex social phenomena driven by various constructs such as fear, doubt, indecision even mistrust of the vaccine (Cooper, et al 2021). In particular, vaccine hesitancy in South African indigenous communities could have been influenced by their cultural context and social spaces, and founded in their socio-economic situations, cultural and religious beliefs, and historical inequalities and disparities. It is possible that socio-economic status acts via risk perception and efficacy (Kollamparambil U, et al, 2021). To address long term hesitancy and improved acceptance and uptake, all strategies had to take greater cognizance of the context and the non-homogenous nature of people that were vaccine hesitant (Sifunda et al, 2022). In addition, health communication had to include both risk and efficacy messaging as excessive fear messaging without efficacy-related messaging could lead to mental health issues (Kollamparambil U, et al, 2021).

4.2 COVID-19 Vaccine Mandates in South Africa

The controversies around mandatory vaccination resulted in huge resistance globally and in South Africa to COVID-19 mandates. The South African government did not adopt the strategy and policies of mandatory vaccinations that had been adopted in many countries in Europe such as Austria, Germany, Italy and several states in the United States of America. However, during the course of 2021, based on various laws in South Africa, including the Bill of Rights of the Constitution (South African Government, 1996) and the Occupational Health and Safety Act (South African Government, 1993) several institutions and organizations introduced mandatory vaccinations and only vaccinated individuals were allowed into work places and campuses. The decision to implement vaccine mandate policies was left to the discretion of employers and institutions. Despite the controversies and labour and court challenges, several employers and tertiary education institutions required people to be fully vaccinated before they were allowed to return to work or campuses. Health communication in support of mandates was robust at these sites and included why vaccine mandates were positive in confronting COVID-19 from the public health and Constitutional perspective of protecting the rights of others, in particular people who were already immunocompromised (Moshabela M, et al, 2022).

4.3 COVID-19 Vaccination Communication in South Africa

Appropriate science communication was undoubtedly at the core of a successful fight against the outbreak of COVID-19 right from the outset of the pandemic. In the early days of the pandemic, the rapport between the government and the public was perceived as positive and based on goodwill. Most surveys conducted at that stage indicated that civil society accepted most of the decisions that were being implemented in the national COVID-19 response (Moshabela M, et al, 2022). However, this did not last long as increasingly poor communication and draconian decisions probably led to a significant trust deficit between the government and public. In addition, reports started surfacing of rampant corruption in personal protective equipment (PPE) tenders, which were in the main driven by politically connected individuals and government officials, leading to even further erosion of trust in the government. The nail in the coffin of trust, though, was the news on the NDOH COVID-19 communications contract with a dubious company called Digital Vibes. The scandal that ensued almost explained why the country's communications programme crumbled, as the corruption allegedly involved the then Minister of

Health, his associates and his family members. It is highly likely that the government's communication strategy, burdened with the weightiness of corruption may have had a strong impact on the sub-optimal COVID-19 vaccination roll-out in the country. South Africa had lower vaccination rates, compared to neighbouring countries like Botswana, Mozambique and Namibia (Moshabela M, et al, 2022).

5. RECOMMENDATIONS: PANDEMIC PREPAREDNESS COMMUNICATION

It is imperative that communication is managed effectively during pandemics and the failures of communication experienced during the SARS CoV-2 outbreak avoided. There is a definite probability of another infectious disease outbreak and it is likely that it could be more dangerous. Therefore, there is a need to prepare for such a possibility to prevent the loss of lives and livelihoods. That meaningful and honest communication is at the crux of management of pandemics is indisputable. In this way, people will feel respected and preventative public health measure will be more acceptable. All the objectives of pandemic communication must be achieved: reassuring the public; advising on preventive measures; raising awareness and enhancing solidarity on the issue; providing timely and regular information as the threat evolves; and adapting the approach as new knowledge emerges. In addition, there must be timely communication of the best information available at the time to counter information disorder (UNESCO, 2023).

Individuals and populations will have ongoing concerns during a pandemic. Focussed, honest, meaningful and culturally appropriate communication strategies based on available scientific evidence including candid information on uncertainties are necessary at individual, community and population levels. Messages must be packaged so that they can be comprehended by all, regardless of age, life circumstances, or level of education. No one must be left behind. For any communication strategy to be successful, the messenger must be trustworthy. Hence building trust, using trusted messengers and communications mediums in understandable languages are key in communication on preventing spread.

In the context of vaccines, transparency with regard to *inter alia* the benefits, risks, adverse events, and the limits of available evidence must be built into the communication. Given that health care practitioners have been found to be trustworthy, the patient-healthcare encounter provides a valuable opportunity to take forward the communication. This would be of benefit, in the main, at the individual level.

Messaging at a community level would be credible where religious leaders transmit the information, as they have also been shown to be trustworthy messengers. Religious institutions should be used as venues in which the messages are spread. Respectful and collaborative community engagement, to include civil society organisations, non-governmental organisations and leaders from within communities to customise messages would assist in motivating communities to trust and accept preventative interventions including vaccinations. South Africa and other countries on the continent can draw on lessons from their strong histories of and experiences with community engagement and mobilization in the context of HIV and AIDS advocacy and health literacy.

Given that the media plays a significant role in disseminating information, measures including monitoring and investigative responses to identify and debunk disinformation, instituting and implementing content credibility labelling initiatives are recommended. Sensationalism must be avoided and only trusted sources must be used when communicating news during pandemics. It would be prudent for media personnel to have access to educational programs on scientific issues.

The role of the government must be highlighted. The population must have the tools to access relevant information. It is the state's responsibility to promote health literacy, public dialogue, address the problem of the digital divide and to promote health communication as integral to the social determinants of health. Priority must be given to preventative measures right at the outset

of a pandemic. More research on contextually relevant pandemic communication is necessary and must be conducted before the outbreak of the next pandemic. The state has an obligation to fund and support these studies.

6. REFERENCES

- Africa CDC, 2020. Africa CDC establishes continent-wide task force to respond to global coronavirus epidemic <https://africacdc.org/news-item/africa-cdc-establishes-continent-wide-task-force-to-respond-to-global-coronavirus-epidemic/>
- Algan (2021) 'Trust in scientists in times of pandemic: Panel evidence from 12 countries"', *PNAS*, 118(40 e2108576118).
- Anwar, A., Malik, M., Raees, V. and Anwar, A. (2020) 'Role of Mass Media and Public Health Communications in the COVID-19 Pandemic', *Cureus*, 12(9), p. 10453. Available at: <https://doi.org/10.7759/cureus.10453>
- Ataguba OA & Ataguba JE (2020) Social determinants of health: the role of effective communication in the COVID-19 pandemic in developing countries, *Global Health Action*, 13:1, 1788263, DOI: 10.1080/16549716.2020.1788263
- Bauer T. (2015). *Organisational Behaviour*. Boston MA: Flatworld; 227-242. ISBN978-1-4533-7118-3.
- van Bavel, J.J., Baicker, K., Boggio, P.S., Capraro, V., Cichocka, A., Cikara, M., Crockett, M.J., Crum, A.J., Douglas, K.M., Druckman, J.N., and others (2020) 'Using social and behavioural science to support COVID-19 pandemic response', *Nature human behaviour*, 4(5), pp. 460–471.
- Bin Naeem, S. and Kamel Boulos, M.N. (2021) 'COVID-19 Misinformation Online and Health Literacy: A Brief Overview', *International Journal of Environmental Research and Public Health*, 18(15), p. 8091. Available at: <https://doi.org/10.3390/ijerph18158091>.
- van der Bles, A., Linden, S., Freeman, A., Mitchell, J., Galvao, A., Zaval, L. and Spiegelhalter, D. (2019) 'Communicating uncertainty about facts, numbers and science', *R. Soc. open sci*, 6, p. 181870.
- Calhoun C. (2012). *Communication as Social Science (and More)*. In Jones S (ed). *Communicating at the Center*. Hampton Press. ISBN 978-1-61289-082-1.
- Choudrie, J., Banerjee, S., Kotecha, K., Walambe, R., Karende, H. and Ameta, J. (2021) 'Machine learning techniques and older adults processing of online information and misinformation: A COVID 19 study', *Computers in Human Behavior*, 119, p. 106716. Available at: <https://doi.org/10.1016/j.chb.2021.106716>.
- Chowdhury M. (2016). Emphasizing morals, values, ethics and character education in science education and science teaching. *The Malaysian Online Journal of Educational Science*, 4:2. Available at <chromeextension://efaidnbmninnibpcajpcglclefindmkaj/https://files.eric.ed.gov/fulltext/EJ1095995.pdf>
- Cooper S, van Rooyen H, Wiysonge CS (2021). COVID-19 vaccine hesitancy in South Africa: A complex social phenomenon. *S Afr Med J*. 111(8):702. doi:10.7196/SAMJ.2021.v111i8.15800.
- Cooper S, van Rooyen H & Wiysonge CS. (2022) Addressing COVID-19 vaccine hesitancy in South Africa- moving beyond a reliance on information-based responses, *Human Vaccines & Immunotherapeutics*, 18:6, 2107851, DOI: 10.1080/21645515.2022.2107851)

Covello VT, Peters RG, Wojtecki JG, et al. Risk communication, the West Nile virus epidemic, and bioterrorism: responding to the communication challenges posed by the intentional or unintentional release of a pathogen in an urban setting. *J Urban Health*. 2001;78:382–391

Della Togna, M., Garman, A., Adjin-Tettey, T. D., Diale, M., Hyera, F., Bukula, T., Halse, P., Petersen, F., Bombi, T. & Kleyn, L., 2021. Chapter 4. Communication. South Africa Covid-19 Country Report [First edition]. DPME (Department of Planning, Monitoring and Evaluation), GTAC (Government Technical Advisory Centre) & NRF (National Research Foundation), Pretoria: June 2021

Dhai, A., Ballot, D. and Veller, M. (2021) 'Introduction to pandemics in Health Care. Principles, Processes and Structures', in A. Dhai, D. Ballot, and M. Veller (eds) *Pandemics in Health Care. Principles, Processes and Structures*. Cape Town: JUTA, pp. 1-10 15.

Dubé E, Laberge C, Guay M, Bramadat P, Roy R, Bettinger JA. Vaccine hesitancy: an overview. *Hum Vaccin Immunother*. 2013;9(8):1763–73. <https://doi.org/10.4161/hv.24657> .

Dubé E (2022) Public health communication during the COVID-19 pandemic: perspectives of communication specialists, healthcare professionals, and community members in Quebec, Canada. *Canadian Journal of Public Health*. Available at: <https://doi.org/10.17269/s41997-022-00697-7>.

Evanega, S., Lynas, M., Adams, J., Smolenyak, K. and Insights, C.G. (2020) 'Coronavirus misinformation: quantifying sources and themes in the COVID-19 "infodemic"', *JMIR Preprints*, 19(10).

Finset, A., Bosworth, H., Butow, P., Gulbrandsen, P., Hulsman, R. L., Pieterse, A. H., van Weert, J., 2020. Effective health communication – A key factor in fighting the COVID-19 pandemic. *Patient Education and Counselling*, 103(5): 873–876. doi:10.1016/j.pec.2020.03.027

Funk C, Gramlich J. (2020). Amid coronavirus threat, Americans generally have a high level of trust in medical doctors. Available at <https://www.pewresearch.org/short-reads/2020/03/13/amid-coronavirus-threat-americans-generally-have-a-high-level-of-trust-in-medical-doctors/#:~:text=In%20the%20same%20survey%2C%2074,to%20prevent%20and%20treat%20them.%E2%80%9D>

Gabarron, E., Oyeyemi, S.O. and Wynn, R. (2021) 'COVID-19-related misinformation on social media: a systematic review', *Bulletin of the World Health Organization*, 99(6), p. 455

Gallotti, R., Valle, F., Castaldo, N., Sacco, P. and Domenico, M. (2020) 'Assessing the risks of "infodemics" in response to COVID-19 epidemics', *Nature Human Behavior*, pp. 1285–1293., 2020.

Glik DC. Risk communication for public health emergencies. *Annu Rev Public Health*. 2007;28:33–54

Harrison D., 2020. *Harnessing the thunder: Civil society's care and creativity in South Africa's Covid storm*. Porcupine Press, Johannesburg.

Huremović D. Brief History of Pandemics (Pandemics Throughout History). (2019). In D. Huremović (ed.), *Psychiatry of Pandemics*, Springer Nature Switzerland. 7-35. https://doi.org/10.1007/978-3-030-15346-5_2

Katoto P, Parker S , Coulton N, et al (2022); Predictors of COVID-19 Vaccine Hesitancy in South African Local Communities: The VaxScenes Study, *Vaccines*, <https://doi.org/10.3390/vaccines10030353>

Kollamparambil U, Oyenubi A, Nwosu C. COVID19 vaccine intentions in South Africa: health communication strategy to address vaccine hesitancy. *BMC Public Health* (2021) 21:2113 <https://doi.org/10.1186/s12889-021-12196-4>).

Kouzy, R., Abi Jaoude, J., Kraitem, A., El Alam, M.B., Karam, B., Adib, E. and Baddour, K. (2020) 'Coronavirus goes viral: Quantifying the COVID-19 epidemic misinformation on Twitter', *Cureus*, 12(3).

Lowe, A.E., Voo, T.C., Lee, L.M., Gillespie, K.K.D., Feig, C., Ferdinand, A.O., Mohapatra, S., Brett-Major, D.M. and Wynia, M.K. (2022) 'Uncertainty, scarcity and transparency: Public health ethics and risk communication in a pandemic', *The Lancet Regional Health-Americas*, 16, p. 100374.

Lilleker, D., Coman, I.A., Gregor, M. and Novelli, E. (2021) 'Political communication and COVID-19: Governance and rhetoric in global comparative perspective', in *Political Communication and COVID-19*. Routledge, pp. 333–350.

MacDonald NE., the SAGE Working Group on Vaccine Hesitancy. Vaccine hesitancy: Definition, scope and determinants. *Vaccine* 33 (2015) 4161–4164.

Makoni M. Africa prepares for coronavirus. *Lancet*. 2020;395:483

Montesi, M. (2021) 'Human information behavior during the Covid-19 health crisis. A literature review', *Library and Information Science Research*, p. 101122.

Moshabela M, Pohl-Albertyn C, Sifunda S, Jassat W. (2022). Second edition COVID-19 Country Report. Chapter 5.1 Health. Available at [Microsoft Word - Chapter Health 2nd draft.docx \(gtac.gov.za\)](https://www.gtac.gov.za/Microsoft%20Word%20-%20Chapter%20Health%202nd%20draft.docx)

Mothobi, O., Gillwald, A. & Rademan, B., 2018. Dominant operators' data prices remain static while SA struggles to get and stay online – Policy brief No. 1. Research ICT Africa, June. https://researchictafrica.net/wp/wp-content/uploads/2018/06/2018_Policy-brief-1_Data-prices-remain-static_South-Africa-.pdf

van Mulukom, V., Pummerer, L.J., Alper, S., Bai, H., Čavojová, V., Farias, J., Kay, C.S., Lazarevic, L.B., Lobato, E.J., Marinthe, G., and others (2022) 'Antecedents and consequences of COVID-19 conspiracy beliefs: A systematic review', *Social Science & Medicine*, p. 114912.

National Department of Health South Africa. Latest Vaccine Statistics. SAcoronavirus website. Available at: <https://sacoronavirus.co.za/latest-vaccine-statistics/>

Osuagwu et al. The impact of information sources on COVID-19 vaccine hesitancy and resistance in sub-Saharan Africa. *BMC Public Health* (2023) 23:38. <https://doi.org/10.1186/s12889-022-14972-2>

Pian, W., Chi, J. and Ma, F. (2021) 'The causes, impacts and countermeasures of COVID-19 "Infodemic": A systematic review using narrative synthesis', *Information Processing & Management*, 58(6), p. 102713. Available at: <https://doi.org/10.1016/j.ipm.2021.102713>.

Piret J and Boivin G (2021). Pandemics Throughout History. *Front. Microbiol.* 11:631736. doi: 10.3389/fmicb.2020.631736.

Posetti, J. & Bontcheva, K., 2020(a). Disinfodemic – Deciphering COVID-19 disinformation: Policy brief 1. UNESCO (United Nations Educational, Scientific and Cultural Organization), Paris https://en.unesco.org/sites/default/files/disinfodemic_deciphering_covid19_disinformation.pdf

Posetti, J. & Bontcheva, K., 2020(b). Disinfodemic – Deciphering COVID-19 disinformation: Policy brief 2. UNESCO (United Nations Educational, Scientific and Cultural Organization), Paris. https://en.unesco.org/sites/default/files/disinfodemic_dissecting_responses_covid19_disinformation.pdf

The Presidency, 2020. Statement by President Cyril Ramaphosa on escalation of measures to combat the Covid-19 epidemic. Union Buildings, Tshwane. 24 March.

<http://www.thepresidency.gov.za/speeches/statement-president-cyril-ramaphosa-escalation-measures-combat-covid-19-epidemic%2C-union>

Raihan N, Cogburn M. Stages of Change Theory. In: StatPearls. StatPearls Publishing, Treasure Island (FL); 2022. PMID: 32310465.

Rosenstock IM. Historical origins of the health belief model. *Health Educ Monogr.* 1974;2(4):328–35. <https://doi.org/10.1177/109019817400200403>

Runciman C, Roberts B, Alexander K, et al, (2021) Willingness to take a Covid-19 vaccine: A Research Briefing, UJ/HSRC Covid-19 Governance Surveys

Saitz, R. and Schwitzer, G. (2020) Communicating Science in the Time of a Pandemic. *JAMA* 324(5), pp. 443–444. Available at: <https://doi.org/10.1001/jama.2020.12535> .

Sewpaul R, Sifunda S, Mokhele T, Reddy P et, al (2021) HSRC Covid 19 one year later Survey, 2021

Sifunda S. , Sewpaul R, Mokhele T, Gaida R, (2022) Covid-19 vaccination acceptance intentions and other related factors in South Africa: Unpacking beyond the dichotomy of “vaccine hesitancy” discourse. Webinar, February 2022

Spaull, N., Daniels, R. C et al. (2021) NIDS-CRAM Wave 5 Synthesis Report. NIDS/CRAM Surveys.

South African Government. Occupational Health and Safety Act No 85 of 1993. Available at [Occupational Health and Safety Act 85 of 1993 | South African Government \(www.gov.za\)](https://www.gov.za/occupational-health-and-safety-act-85-of-1993)

South African Government. Constitution of the Republic of South Africa, 1996. Available from <https://www.gov.za/documents/constitution/constitution-republic-south-africa-1996-04-feb-1997>

South African Medical Research Council. Sisonke. Protecting Healthcare Workers. Available at [sisonkestudy,samrc.ac.za](https://sisonkestudy.samrc.ac.za)

Stats SA (Statistics South Africa), 2019. Statistical release P0318 – General household survey, 2018. <http://www.statssa.gov.za/publications/P0318/P03182018.pdf>

Thagard, P. (2021) The cognitive science of COVID-19: Acceptance, denial, and belief change. *Methods*, 195, pp. 92–102.

UNDP (2020) 'Governments must lead fight against coronavirus misinformation and disinformation'. Available at: <https://www.undp.org/press-releases/undp-governments-must-lead-fight-against-coronavirus>

UNESCO (2020) 'Statement of the UNESCO International Bioethics Committee (IBC) and UNESCO World Commission on the Ethics of Scientific Knowledge and Technology (COMEST) on COVID-19: Ethical considerations from a global perspective'. Available at: <https://unesdoc.unesco.org/ark:/48223/pf0000373115>.

UNESCO 2020(a). Journalism, 'fake news' and disinformation: A handbook for journalism education and training. <https://en.unesco.org/fightfakenews>)

UNESCO (2023). Report of The International Bioethics Committee (IBC) on the Covid-19 Pandemic: Lessons Learnt And Recommendations For Future Directions <https://unesdoc.unesco.org/ark:/48223/pf0000386467>

US-CDC (2014) 'Crisis Emergency Risk Communication', *Health Advisory* [Preprint]. Available at: https://emergency.cdc.gov/cerc/resources/pdf/315829-A_FS_CERC_Infectious_Disease.pdf.

Wardle, C. and Derakhshan, H. (2017) 'Information Disorder: Toward an Interdisciplinary Framework for Research and Policy Making', *Council of Europe Report* [Preprint]. Available at: <https://rm.coe.int/information-disorder-toward-an-interdisciplinary-framework-for-research/168076277c>

WHO 2020. Available at: <https://www.who.int/publications/i/item/covid-19-global-risk-communication-and-community-engagement-strategy>

WHO 2020(a). World Health Organization. 2019 Novel Coronavirus (2019-nCoV): Strategic preparedness and response plan. Geneva:WHO, 2020.

WHO 2020(b). COVID-19 global risk communication and community engagement strategy.

WHO, 2020(c). Risk communication and community engagement readiness and response to coronavirus disease (COVID-19). Geneva: World Health Organization; 2020. Available from <https://apps.who.int/iris/rest/bitstreams/1272597/retrieve>

WHO 2022. Improving health literacy. Available at: <https://www.who.int/activities/improving-health-literacy> .

WHO 2023. Infodemic. Overview. Available at https://www.who.int/health-topics/infodemic#tab=tab_1

Witte K. Fear control and danger control: a test of the extended parallel process model (EPPM). *Commun Monogr.* 1994;61(2):113–34. <https://doi.org/10.1080/03637759409376328>) 106226.

WMA (2022) International Code of Medical Ethics. Available at: <https://www.wma.net/policies-post/wma-international-code-of-medical-ethics/> .

