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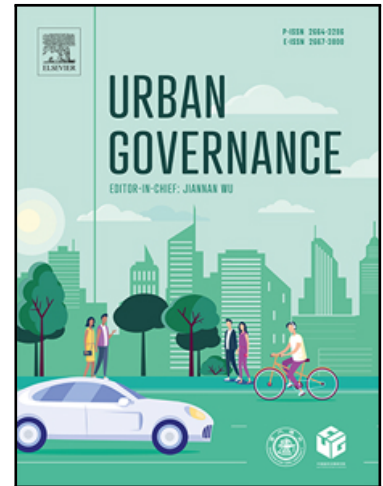
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## Risk communication in an informal settlement during COVID-19: case of Dinaweng, Bloemfontein South Africa

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### Abstract

This article interrogates the nuances of risk communication in a poor neighbourhood of South Africa during the COVID-19 pandemic. We argue that risk communication had multifaceted implications for managing and governing the COVID-19 pandemic. This pandemic has coincided with the information age, where multiple communication channels affect the success of risk communication through miscommunication, false news, or distortion. Using a qualitative study premised on a phenomenological research design, data were collected from 60 purposively sampled residents in Bloemfontein to capture their perspectives regarding risk communication on COVID-19. This data was triangulated with secondary sources to enhance the validity of the findings. Among the secondary data sources are reviews of news media outlets reporting on the COVID-19 pandemic at the international and the local level. The study's findings reveal that the poor residing in informal settlements are marginalised in risk communication. This is mainly a result of the digital divide that has resulted in challenges for the poor communities in accessing specific news channels, while also making it difficult for them to validate some information.

### Keywords

COVID-19, risk communication, infodemic, misinformation

### Introduction

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In December 2019, China reported the first case of COVID-19, and by February 2020, many countries in Europe and America were also reporting cases. In March 2020, the World Health Organization (WHO) declared COVID-19 a global pandemic. Then, most cases were concentrated in developed countries, with few in African countries other than South Africa and Egypt (Welte et al., 2022). From April 2020, the pandemic rapidly spread across the globe, with impacts being felt differently among countries and communities, especially along income lines (Liu et al., 2021; Matamanda et al., 2022; STATS SA, 2022). Many studies have been undertaken to document the socio-economic impacts of the COVID-19 global pandemic (Bisong et al., 2020; Blundell et al., 2020; Nicola et al., 2020), while others have focused on the governance and management issues relating to the efforts to combat the pandemic (Dodds et al. 2020; Trivedi 2020). Another perspective and critical issue concerning COVID-19, as with any other pandemic, is risk communication – the focus of this article. Risk communication is exchanging information among interested parties about the nature, magnitude, significance, or control of risk (Covello, 1992: 359; World Health Organisation, 2021).

The COVID-19 pandemic has reinforced the significance of risk communication as a strategy among citizens to understand the disease, its symptoms, how it spreads, and the possible ways of slowing its spread (Ataguba and Ataguba, 2020). Li (2020: 1) argues that the government has the responsibility of disseminating risk communication and reasons that “[g]overnments can effectively communicate policy information to citizens, and citizens will then comply with the policy and voluntarily participate in the coproduction on the policy’s outcomes as desired by both parties.” However, information asymmetries have been associated with the COVID-19 pandemic as the flow of information between citizens and their governments was often compromised. The major factor was mistrust citizens had of the governments, especially in Southern Africa (Matamanda et al., 2022). In such instances, where trust is broken, compliance becomes difficult, thus hindering the success of risk communication and ultimately jeopardising effective dissemination of timely information (Ataguba and Ataguba, 2020; Stecula and Pickup, 2021; Yang and Huang, 2021).

Risk communication is disproportionate among different income groups in cities, which was the case during the COVID-19 pandemic (Abraham, 2020). A typical example is the case of some marginal communities in Bangladesh that could not access information relating to COVID-19 (Ahmed et al., 2022). Minority groups also include the poor communities often positioned in marginal spaces, who, as Yiftachel (2009) argues, reside in the shadow of the formal city. In this shadow, the poor are vulnerable to multiple shocks, including a lack of access to information.

Consequently, the poor tend to be “left behind” regarding decisions that include and affect them. The same is true for risk communication during the COVID-19 pandemic, which required constant communication and information updates, as the disease was emerging with there being little understanding of its dynamics (World Health Organization, 2021).

The COVID-19 pandemic has also provoked studies on risk communication (Yang and Huang, 2021), especially in poor neighbourhoods (Ahmed et al., 2022). Adebisi et al. (2021) explored the risk communication and community engagement strategies for COVID-19 in 13 African countries. Kunguma et al. (2022) assessed the significance of risk communication as a critical prevention and mitigatory factor in disaster risk management in Bloemfontein. No studies known to the authors have been undertaken by urban scholars to understand the nuances of risk communication in poor neighbourhoods during the COVID-19 pandemic in a (South) African context. It has been argued by Renn et al. (2018) that such an exploration is critical, as it brings insights into risk communication from an urban planning perspective for effective pandemic mitigation and reduction. The inherent digital divide that characterises the poor, as highlighted by Beaunoyer et al. (2020) and Broom (2020), also makes this study critical, as we explore how the individuals and groups residing in poor neighbourhoods accessed information related to the COVID-19 pandemic. Dinaweng informal settlement is used as a case study to analyse how risk communication unfolds in an informal settlement where the poor reside.

## **Literature Review on risk communication and the COVID-19 pandemic**

### ***Risk communication and the COVID-19 pandemic***

Risk communication is a core public health intervention in any disease outbreak and health emergency. It refers to exchange of information, guidance and views among specialists, bureaucrats, and people under threat concerning disease outbreak dynamics (Li, 2020). This exchange should be instantaneous, evidence-based, and accessible to at-risk people. Risk communication seeks to facilitate informed decision-making and the adoption of protective behaviours on mitigation and adaptive strategies. It is conducted through conventional media such as posters, television, radio, press conferences, and contemporary media, including social media and text messaging (WHO Africa, 2020). Yang and Huang (2021) highlight the role of risk communication in the governance of the COVID-19 pandemic.

Risk communication models include crisis, consensus, care communication, actionable risk communication, and social trust. The crisis communication approach

posits that the risk communicator should use all available communication means to persuade suitable action. This means that the only information shared is that which the communicator deems essential and beneficial to the public (Lundgren and McMakin, 2018). This type of communication also relates to traditional authoritarian communication, in which the government initiates and controls the dissemination of information through platforms such as radio, TV, and newspapers (Adebisi et al., 2021). In this instance, communication tends to be top-down. Several scholars have identified how the poor tend to be marginalised in this authoritarian approach to information dissemination and how they are often disregarded, considering their position on the margins of the formal and informal city. Their needs (including risk communication) are rarely acknowledged.

The actionable risk communication model encourages action by the public to limit the hazards it faces from potential threats and can inform education campaigns to encourage desired public preparedness (Wood et al., 2011). Consensus communication is meant to build consensus between all stakeholders. However, in the case of COVID-19, this was generally omitted. Instead, care communication, one of the approaches used for health risks, was the most popular model used by governments and non-governmental organizations. This approach determines the level of danger and how to manage it, as determined through scientific research and consensus among the majority of experts. It is not profitable for the communicator, but assists in improving human lives (Lundgren and McMakin, 2018). The nature of the COVID-19 pandemic required such communication, as the nature and characteristics of the virus and its effects were ambiguous in the early phases of the pandemic.

Due to the enormous impact of the COVID-19 infodemic, several initiatives have been established globally to improve the quality of COVID-19 information. The WHO is the world leader in COVID-19 mitigation and has battled the infodemic and misinformation that followed the pandemic (John, 2020; WHO-Africa, 2020). The WHO Information Network for Epidemics (EPI-WIN) intervened with a global consultation as early as April 2020. EPI-WIN aims to provide timely, accurate, and easily accessible global public health information. Over 1,375 contributors and specialists participated in a two-day online consultation, after which the WHO set out to mitigate the impact of the infodemic (Tulloch et al., 2021). This represents interactive communication through social media in which several stakeholders unite and deliberate on the crisis at hand (Yang and Huang, 2021). However, this has proved to be an elitist platform which the poor are often excluded from participating in, mainly due to the digital divide that hinders them from connecting to online events. EPI-WIN activities include promoting accurate information on social media, developing fact-monitoring tools,

and publishing information, education and communication (IEC) material (John, 2020). The Centres for Disease Control (CDC) worldwide helped improve information credibility through an open system of self-disclosure wherein its contact details, information basis and accountability criteria are made available to the public (Eysenbach, 2002; Lundgren and McMakin, 2018).

### ***Risk (mis) communication in poor neighbourhoods***

Risk communication has been compromised by several factors during the COVID-19 pandemic. First, the infodemic has been identified as a major factor jeopardising effective risk communication. An infodemic is directly linked to misinformation, which circulates inaccurate information (Ahmed et al., 2022). The distinction is that while both terms indicate an influx of information through communication channels, “infodemic” denotes both accurate and false content, while “misinformation” is exclusively imprecise material. For example, COVID-19 misinformation led to many people around the world believing that alcohol was an effective cure for the virus (Aghababaeian et al., 2020; Pomeranz and Schwid, 2021). This led to an estimated 800 deaths due to the ingestion of methanol and alcoholic cleaning products (Zielinski, 2021). Misinformation does not imply an intention to mislead, but can be circulated by those who genuinely believe in its content due to their living conditions, culture, access to information, health literacy, educational levels, and political allegiances or governance structures (Okereke et al., 2021; Pomeranz and Schwid, 2021).

An infodemic may be attributed to the political environment, where the dissemination of information by news media may be regulated and censored by the government. The motives may vary from avoiding public panic to concealing governance failures, especially when the disaster results from bad governance and poor decisions (Ataguba and Ataguba, 2020; Matamanda et al., 2022). The latter has been the case in reporting COVID-19 information across most African countries as governments tried to convince the world that COVID-19 was not in their backyards (Wasserman et al., 2021). For example, in Tanzania in 2020, the government forced the closure of media houses reporting on COVID-19 in the country, when the President announced that “there is no COVID-19 in Tanzania” (BBC News, 2021).

Misconceptions and misunderstandings regarding a disaster or pandemic become significant factors in risk (mis)communication, especially considering the role of social media, where individuals often post and share information that is not credible (Adebisi et al., 2021). A study conducted in Bangladesh revealed community

perceptions that the “COVID-19 virus is not dangerous. Many believed that COVID-19 virus is a punishment from God while others opined that it is a virus war.” (Bakebillah et al., 2021: 5). In South Africa, it was reported that most individuals in the poor neighbourhoods thought the virus only infected the affluent and those who had been abroad (Schmidt et al., 2020).

It is postulated that social media contribute significantly to the failure of risk communication due to the limited – or absence of – peer review in most of the content posted on social media. Due to the digital divide, and lack of internet connectivity and literacy levels in most poor neighbourhoods, authentication of the content shared on social media platforms may be lacking (Adebisi et al., 2021). This inability to validate these data jeopardises the information available to the poor who rely on and believe some of the information they come across. Although some platforms, such as YouTube and Facebook, eventually deleted some content, false information would have circulated. On the other hand, in science, authentic information is published, and this involves extensive peer review processes where the credibility of the information being reported is checked and verified. Misinformation is minimised through this peer review process as researchers report on the correct information. However, science can also be misleading when the elites have captured science and scientists and become responsible for disseminating the information, as argued by Yang and Huang (2021).

News media come after social media in constituting a significant source of misinformation, though the level is lower than in social media. In some cases, certain media houses may be “captured” by the state, and journalists must report what they are instructed to say. At the same time, those who oppose the political elites may be banned, as was the case in Tanzania. In addition, government policies can contribute to the infodemic because, by their nature, policies are those “things” the government decides to do or not do. Hence, the government may only inform people about specific issues, thus restricting information.

### ***Challenges related to the infodemic and miscommunication: the African perspective***

The greatest challenge posed by an infodemic is that it further extends the social and economic impact of a hazard. Due to lack of control, false information about a hazard or pandemic can be circulated on multiple information platforms (Buchanan, 2020). Misinformation interferes with sound decision-making, adversely impacting the intervention (Eysenbach, 2020). Moreover, with the massive circulation of flawed information, the public tends to distrust the government, and with this loss of confidence, many others suffer psychologically. Consequently, the COVID-19



infodemic has compromised and distorted global mitigation attempts (Hu et al., 2020).

These implications have been as prevalent in Africa as in the rest of the world due to expected determinants such as the level of trust in the state and medical practitioners, the level of understanding and availability of relevant and viable information, and limited access to credible information sources (Loembé et al., 2020; Müller-Mahn and Kioko, 2021). Additional factors include the widespread belief that Africans would not be affected, fear for wellbeing and of aftereffects, existing conspiracy theories exacerbated by the infodemic and miscommunication, and the political economy of states: for example, corruption, political instability, and a lack of state funds, government accountability, or transparency (Tulloch et al., 2021).

Okereke et al. (2021) point out that African countries have limited internet access, especially in rural and poor communities. This poor connectivity has perpetuated the spread of the COVID-19 infodemic and miscommunication, as communities believe any trending information. Considering the current digital era, the lack of internet connection may translate into limited access to verifiable sources such as online news media, which may be critical in validating and cross-checking certain information (Müller-Mahn and Kioko, 2021). Boza-Kiss et al. (2021) demonstrate that this digital divide symbolises the persisting inequalities in cities. According to Broom (2020), information deprivation becomes the root of misinformation among the poor, who cannot access authentic data to validate certain information on some platforms. Moreover, available, known, or well-understood social media platforms such as WhatsApp, Facebook and Twitter have played a significant role in perpetuating the infodemic (Wasserman and Madrid-Morales, 2021).

While the WHO has worked tirelessly to provide reliable information related to COVID-19, alternative perceptions have arisen within the continent about the nature of the virus and vaccines. Various theories have fuelled these perceptions from national, regional, and international conspiracies, especially on social media, circulating on various platforms. For example, in Senegal and South Africa, locals believed that their presidents colluded with Bill Gates to enable the pandemic to spread. The idea that the COVID-19 vaccine (COVAX) was created to kill Africans has already harmed local children (Wasserman and Madrid-Morales, 2021). They further deemed chloroquine, now termed the “African remedy for COVID,” as an effective cure for COVID-19 symptoms. It seems that a general opinion in Africa is that COVID-19 and its ensuing vaccines are bioweapons of infertility and a ploy for domination of the citizenry in developing countries, and that Africa is a testing ground where citizens are lab-rats for Western pharmaceutical companies. This led to a proposition

that an exclusively African vaccine is more lethal than the pandemic, while others demonised it and suspected it would alter human DNA (BBC News, 2020; Okereke et al., 2021).

Though states must transfer crucial information to citizens to encourage their participation for improved health outcomes, they sometimes fail to achieve this successfully (Li, 2020). One of the causes of public cynicism over COVID-19 interventions is the lack of state communication and social dialogue on current issues and response strategies (Stecula and Pickup, 2021). Moreover, delayed and ineffective interventions have resulted in misperceptions about and discouragement of vaccination and a general inclination towards untested cures such as chloroquine. In South Africa, Senegal and Ghana, lack of information caused mistrust and a reluctance to be vaccinated. This attitude has been replicated among some Americans, who perceived the vaccines and COVID-19 as bioweapons (Stecula and Pickup, 2021). Furthermore, the public felt their governments excluded relevant players in the communication and intervention process (Müller-Mahn and Kioko, 2021).

## **Methodology**

This study is qualitative and adopted an exploratory phenomenological research design. A phenomenological design is based on the understanding and articulation of the everyday lived experiences of the respondents. For this study, we examined the experiences of the residents of Dinaweng informal settlement regarding COVID-19 risk communication in the South African context. The selection of this informal settlement was purposive, as our paper builds on a broader study exploring the inherent inequalities and divides in poor neighbourhoods (Matamanda et al., 2022). Ethical approval (approval number UFS-HSD2020/1704/192) to conduct this study was granted by the University of the Free state's Ethics Committee.

This study collected data from 60 purposively sampled residents in Dinaweng informal settlement to capture their perspectives on risk communication on COVID-19. Critical case purposive sampling was used for this study. First, in selecting Dinaweng as a case study for this paper we reasoned that the insights from this informal settlement can be generalised (Patton, 2002) for other similar communities in (South) Africa characterised by poverty, unemployment, limited access to basic services and marginalisation (Matamanda et al., 2022; Mphambukeli, 2015; Turok, 2018). This confirms the assertion by Patton (2002: 236) that "if it happens there, it will happen anywhere." Second, participants were randomly selected in the settlement based on their availability and willingness to participate in the study.

The data were sourced from semi-structured questions concerning the respondents' demographic information, the sources of information they relied on, and their frequency of use of social media platforms and news media. The residents' perceptions of the information they received from the respective platform were also analysed. The latter included asking whether the respondents made any follow-ups to validate the information they received from their primary sources. We also explored the misinformation and myths that were circulating in the community.

The primary data were triangulated with secondary sources to enhance the findings' validity, including a document review of the news media and how COVID-19 was disseminated in South Africa. A literature review was conducted to explore the platforms used to disseminate COVID-19 information. Government reports and policies were consulted, and these were obtained from the website <https://sacoronavirus.co.za/covidalert/>. A global literature survey was also conducted with a literature search on Google Scholar focusing on risk communication among poor neighbourhoods during the COVID-19 pandemic.

These data were analysed through content and thematic analysis following the steps suggested by Erlingson and Brysiewicz (2017). First, we familiarised ourselves with the interview and secondary data. Second, we divided the data into meaning units that then enabled condensing these units into codes. Lastly, as presented in the next section, reports on the findings, we developed categories and themes from the emerging data.

## Findings

### ***Communication platforms used by the government of South Africa to convey COVID-19 messages to the people***

Various communication platforms have been put in place by the South African government to convey COVID-19 messages to the people. A national website for COVID-19 was created to safeguard against fake news. The COVID-19 Online Resource & News Portal (SACoronavirus.co.za) (available at <https://sacoronavirus.co.za/covidalert/>) is used by the government to disseminate COVID-19 related information. The platform is accessible to all individuals with access to the internet. It provides information on the national infection statistics, vaccine updates, press releases and notices, speeches by the Minister of Health, and the national addresses and speeches delivered by the President on COVID-19. In addition to online communication, the government sends text messages to mobile users, providing essential information about the virus and measures to minimise infections.

Another platform was *The Presidency*, where information was disseminated regarding the COVID-19 pandemic situation in South Africa. This platform also served to give updates on the President's critical speeches and national addresses that came to be labelled by many as “family meetings”.

The official website shares verified information, which has helped clarify whether something is authentic or fake news. The government has made a concerted effort to address fake news by encouraging South Africans to report such news via the national WhatsApp and website platforms. The government has warned that spreading fake news will be met with severe consequences and possible prosecution. Fake news creates panic amongst the masses, evidenced by a viral Facebook video in which a man stated that the first COVID-19 testing kits sent to South Africa were contaminated (Grobler, 2020). The Democratic Alliance (DA) released a statement noting that

Spreading fake news, as this person has done, is against the Covid-19 Disaster Management Regulation 11(5) which prohibits and criminalises the spread of fake news on efforts of combating this pandemic. The regulations are clear that transgressors can be jailed for up to six months.

There have also been several online news media providing daily updates on the COVID-19 situation in the country. These include the Daily Maverick and News 24, which have reported on several issues during the pandemic. Specifically, the Daily Maverick is dedicated to reporting authentic information relating to COVID-19 on their platform *COVID-19 Archives*. Although access to mainstream websites is not always the primary source of information verification by residents, and given the high usage of social media platforms used to inform themselves of COVID-19, the government should also use these platforms to ensure that authentic news and information is widely disseminated.

Print media also play an essential role in informing the public about ongoing developments regarding the virus. Wasserman et al. (2021) reported high levels of sensationalism due to the COVID-19 virus, and these were generally reported in an alarmist and negative tone. Few print media outlets reported ways to limit the spread of misinformation and focused instead on increasing market share, which was concerning (Wasserman et al., 2021).

The government also used SMS notifications to inform the public of specific residential areas with high rates of COVID-19 infections; these awareness measures are vital strategies for limiting the spread of the virus.

### ***Demographic information***

The demographic data pertains to gender, age, employment status, and educational level. Table 1 shows the percentage of respondents as regards gender attributes. The age groups that participated in the study ranged between 18 and 61+ years, as portrayed in Figure 1. These demographic statistics also indicate that most residents in informal settlements are primarily in the working age group and consist mostly of the youth, who are the most mobile age group and generally migrate to the cities for economic opportunities and reside in informal settlements that they use as “arrival spaces” (Saunders, 2010).

Table 1. Gender of respondents

Gender	%	No.
Male	55	33
Female	45	27
<b>Total</b>	<b>100</b>	<b>60</b>

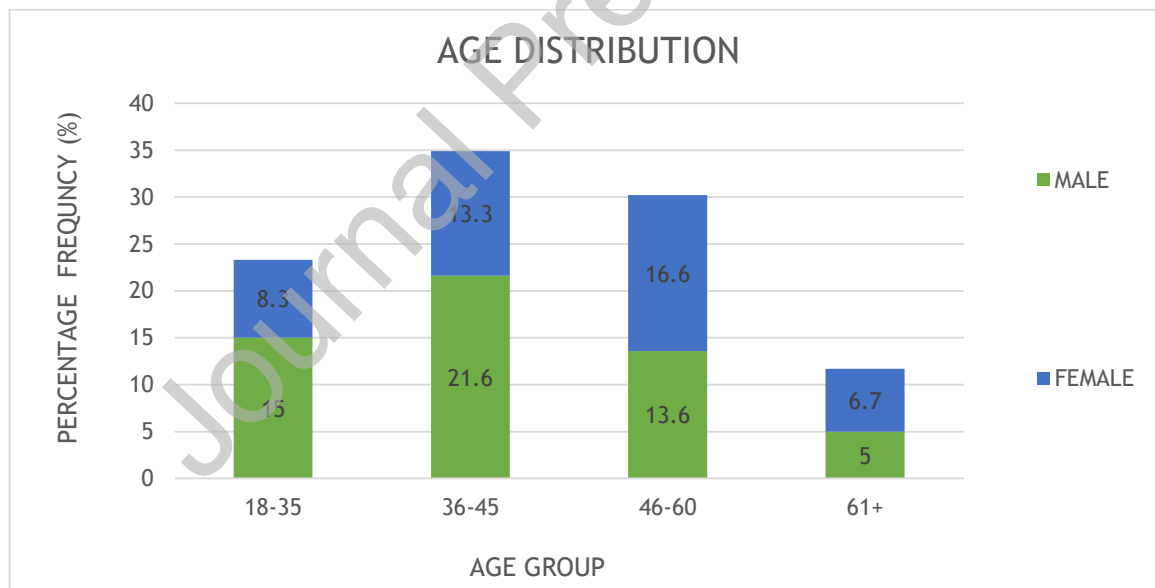


Figure 1. Age group of respondents

The educational status of respondents was assessed based on four categories (Figure 2).

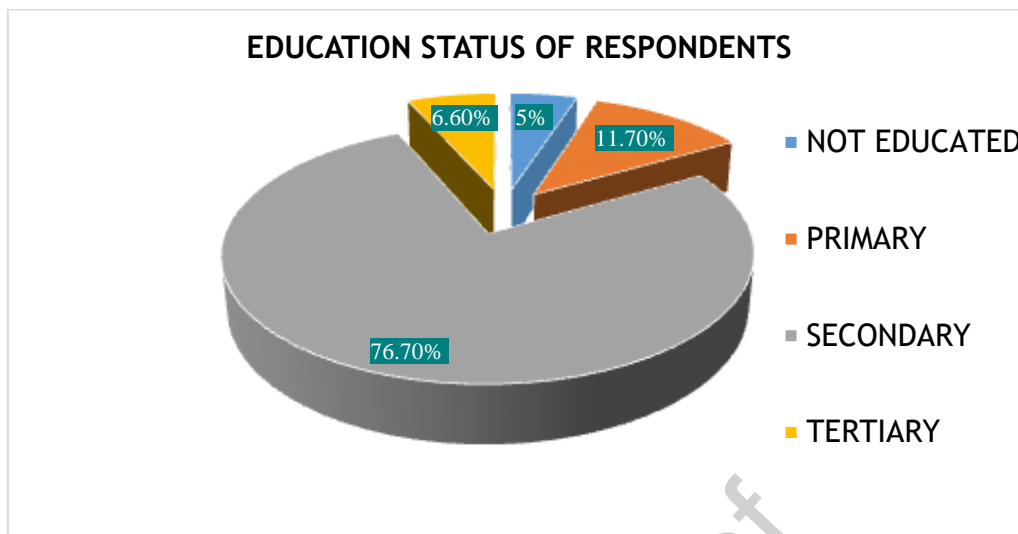


Figure 2: Respondents' education status

Regarding employment status in the settlement, it emerged that nineteen (32%) respondents were employed. They include the self-employed, contracted workers, and formally-employed participants. In comparison, a large portion – thirty-five (58%) – of the population sample was unemployed. Six (10%) other respondents relied on government social grants or were retired from work. Comparing the age/sex/employment data suggests that this informal settlement, as a poor neighbourhood, is linked to high levels of unemployment. This confirms the findings from Stats SA (2022) reports that highlighted a heavy reliance of the urban poor in SA on social grants.

#### ***Information sources and awareness about Covid 19***

A critical issue in understanding the perceptions and knowledge of the community regarding COVID-19 has been to investigate when they first heard about the COVID-19 pandemic. The findings showed that 29 (48.3%) of the respondents stated that they first heard about COVID-19 in March 2020. These statistics point to the fact that, at the time, the information about the “hard” lockdown that the government imposed nationwide from 20 March 2020 was the major factor that contributed to residents' awareness of this pandemic, as police and the army were deployed to help in enforcing the lockdown. Fifteen (25%) participants became aware of the epidemic in December 2019. January 2020 was the least-rated period, contributing three (5%) respondents. Only six (10 %) respondents mentioned that they became aware of COVID-19 in February, while seven (11.7%) of respondents confirmed they first heard about Covid 19 after March 2020.

### ***News media platforms used for risk communication in Dinaweng***

The role of the radio in disseminating valuable news among the respondents was predominant. Specifically, the respondents relied heavily on Lesedi FM, a local station based in the Free State Province, broadcasting in Sesotho, the dominant language spoken among most residents of this informal settlement. As presented in Figure 3, forty (66.7 %) of the respondents stated that they listened to the radio daily, while forty-six percent confirmed that they watched television daily. Most respondents pointed out that the radio and television provided reliable information that they trusted. The following quotes highlight the opinions of the respondents regarding radio and TV:

I listen to Lesedi FM whenever Ramaphosa is about to make an announcement.

I trust the information provided by the radio (Lesedi FM) because I know the radio presenters, where they reside and if they try to give out incorrect information, I will deal with them.

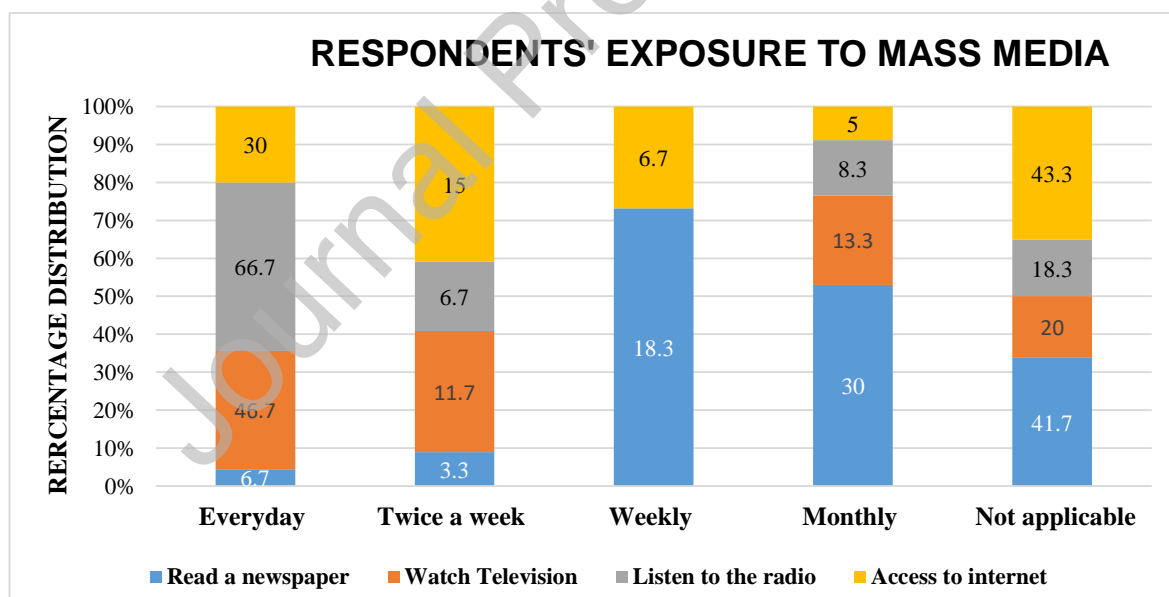


Figure 3. Respondents' exposure to mass media.

The responses further show that the respondents depend most on radio broadcasts as a platform for disseminating reliable information. Their rationale is that radio stations are mandated to report and broadcast accurate information that does

not cause public harm. All the information is verified and checked before it is aired publicly. For this reason, one respondent remarked, “I compare the information I get on my phone (via WhatsApp) with the information I get from the radio to check whether it is true.” On the other hand, “[...] the radio and TV provide trustworthy and accurate information about the virus. The radio usually interviews experts on the virus, providing more accurate and helpful information.” For others, the radio is the only platform they can access, as indicated by a respondent: “to get information relating to Coronavirus, I listen to the news on the radio. I trust this information because it is the only platform that is accessible to me.”

### ***Experiences from victims of the pandemic in risk communication***

The interactions with respondents from Dinaweng revealed that understanding the COVID-19 pandemic and information was also made possible by individuals infected with the virus. These people shared their experiences, mostly warning others of the “excruciating pain” they suffered in most instances. One respondent narrated that her relative cautioned them to take the virus seriously. She recounted that “She [relative] got healed and informed us [the entire household] that COVID-19 is real and we should take care of ourselves.” In this regard, risk communication becomes effective when narrated by those who have experienced the side-effects of the virus. The testimonials of the victims of COVID-19 became a vital tool for many in demystifying the pandemic, because people believed when they could relate to and see its effects. The doubts among many were confirmed by another respondent, who indicated that she did not think the virus truly existed and still does not believe it. She said, “Yes, I get scared when I hear about the people it has killed, but since I have not seen a person infected, it is hard for me to believe that COVID-19 exists. Because in some cases there isn't even symptoms for this virus and yet you hear that someone has tested positive.” Ultimately, this woman revealed that she does not try to determine whether the information given to her by people is the truth. She wants to meet someone who either has the virus or has recovered from it.

However, some individuals still showed scepticism and identified those infected as being paid to claim that they had COVID-19 to push a government agenda and narrative. Hence, it became difficult for some to believe these narratives in some instances. A respondent pointed out, “Yes, I believe the information I receive but not all of it. I disregard some information because some people find it hard to believe this virus exists. After all, they have not experienced it yet, but I believe it exists, and it is dangerous. Also, we don't know the role the government has played in all this, especially with the vaccines being 'forced' on us and why South Africa in Africa has so many infections.”



### ***Reliance on expert knowledge and sources***

Health professionals also played a critical role in disseminating COVID-19-related information and conscientising the community. One respondent pointed out that when her relative contracted COVID-19, a nurse at the health institution they attended "also explained to us that because she has healed from the symptoms of the virus, it does not mean she will not be infected again in future." This information helped the household to remain vigilant. The role of health experts in risk communication was asserted by one respondent, an unemployed woman in her 30s, who stressed that "when I need information about COVID-19, I go to the clinic because here people will not lie to us. Also, I do not search about the virus on the internet because most of the stuff posted is incorrect and I don't take it seriously." The significance of health knowledge and information comes into perspective here, and confirms the role of healthcare practice in minimising misinformation and thus curbing the infodemic, as Eysenbach (2020) articulated. A respondent further emphasised the role of science and research in providing credible information. The respondent explained, "When I watch the news, I want to know whether the scientists have found the cure. I feel that politics should be put aside, and scientists should be allowed to focus on finding the cure because they went to school to study science. The politicians should step aside. The same way ARV was discovered, scientists can find the cure for this virus." The foregoing quote points to the role of politics in spreading misinformation, as observed in instances where politicians interfere in information dissemination, as was the case in Tanzania, where the late former President Magufuli remarked that there was no COVID-19 in Tanzania.

### ***Evidence of misinformation through use of social media***

Considering the role of social media in misinformation and the infodemic, participants were asked to rate how active they are on social media. We established that WhatsApp was rated as the most frequently used social media platform by twenty (33.7%) respondents, followed by Facebook with eighteen (30%) users from among the respondents. Instagram and Twitter were not very popular social media platforms; over 90% of respondents said they never used them. Additionally, the participants did not recognize WeChat and Tumblr, nor were they used. Only four respondents (6.7%) of the study sample used other social media platforms, namely YouTube and the Moya App.

The respondents indicated that they use social media platforms such as WhatsApp and Facebook, yet they did not trust these platforms due to the number of messages with misinformation. Moreover, as the social media platforms are open to everyone, anyone can send and share content that has not been validated or authenticated, thus

resulting in rumours, lies, and shared myths, which respondents cannot verify. The following are some of the misinformation the respondents indicated they were exposed to through social media.

- *The virus comes from a spider*

The first issue involved the myths and misconceptions regarding the origins of the COVID-19 pandemic. Social media has played a significant role in spreading inaccurate information and conspiracy theories associated with this pandemic. A respondent narrated that when she first heard about COVID-19, it was all rumours that “[...] the virus came from a spider that will dig a hole in the ground, so if a person came into contact with the spider, they would contract the virus.” To make matters worse, the respondent claimed that she received images and videos on WhatsApp of people with rashes on their bodies and people saying the COVID-19 virus was caused by spiders.

- *COVID-19 is a flu: herbs will cure it*

Some respondents believed that COVID-19 is a form of influenza. All they needed to do was drink natural remedies and herbs, which would cause the virus to disappear. One respondent indicated, “We would drink things that would prevent us from getting ‘flu because we heard that Corona is a type of ‘flu.” Although the virus affects the respiratory system, experts have warned against downplaying it. Its deadly effects are evident from the high mortality of the first and second waves, particularly in Europe and Asia.

- *COVID-19 is not for the poor: it only infects the rich*

The narrative that COVID-19 affects only the rich was also mentioned in Dinaweng. It was pointed out that “[...] the government made it seem as if this virus can only infect privileged people, people that have TV, radio and can access the internet every day; that's why there is a saying that **COVID is for rich people**. People in our communities believe that COVID is for rich people.” The point raised here reveals the nature of informal settlements, where testing was not prevalent, and once someone tested positive, they chose to keep quiet, fearing stigmatisation. Hence it appeared as if there were no infections in informal settlements. The respondent argued, “I have never heard of anyone in my community being infected with the virus. Whether it is a stigma or people do not test, there is not even one person I know who was infected. Hence, these people need to be taught how severe this virus is.”

- *You get it (COVID-19) when you visit the hospital*

A lady indicated that all the "rumours were quite confusing, and you would find in some cases that a person would go see a doctor and the doctor is infected and therefore [it] will be transmitted to the patient". In the same vein, one respondent remarked, "The people who speak are not telling the truth, because whenever a person goes to the hospital, they are always told that they have Covid. Even if they go to the hospital with sharp pain, by the time I get there, after two days, they will say that I have Covid, which means that Covid comes from the hospitals." This problem stemmed possibly from the lack of information regarding COVID-19. Many thought an infection meant death, but many also recovered. However, several studies have shown that individuals with underlying health problems were at more risk. This may explain why some could test positive and be asymptomatic. Therefore, many people eventually disregarded the whole COVID-19 narrative, claiming it was a hoax, as indicated by the following quote by a respondent: "Yes, my son's girlfriend got the virus, my cousin also the virus but he was someone who always lacked oxygen, his oxygen levels have always been low, which is why he always had an oxygen machine at home. So, when he got sick, he went to the hospital, and they said he got Covid, but I know he died because he had lung problems. After all, Covid affects the lungs as well. Which is why I say if you have a chronic disease, they will not say you died of that disease but rather Covid."

- *I don't trust this vaccine!*

A male respondent said "I don't trust the vaccine! Because even the scientists state that even if one gets vaccinated, there is no guarantee that they won't get COVID-19. The vaccine just helps to lessen the harshness of the virus." However, he had no problem getting vaccinated and reasoned, "I feel that it is better to get the vaccine now while it's free, rather than later when it will be required of us to pay for it."

Some respondents were hesitant to take the vaccine as they had not received enough information. A woman explained, "[...] the vaccine scares me because some people say that it changes a person's body and others say it changes the skin on your neck." This narrative aligns to and supports the misinformation spread regarding 5G chips being inserted into people when they get the vaccine and how their DNA is eventually altered, thus making COVID-19 and the vaccine a form of bioweapon. Likewise, it also confirms the rumours about "eliminating the human race", especially in Africa, and "turning humankind into aliens". To address this misinformation, a respondent complained, "If people do not read and educate themselves about the vaccine and the pandemic, they believe what they hear from people. Also, I say the government needs to do [a] campaign and interact with people and educate them about the vaccine."

- *I am afraid of the COVID-19 vaccine*

Some respondents said they fear the vaccine because they heard it is intended to kill people to depopulate Africa. A respondent said, “I don’t want the vaccine because I do not trust it. Some people are becoming ill after getting vaccinated, so people are dying.” Yet another one mentioned that “I am afraid of the vaccine, but I do not have a choice, I must get vaccinated. There are rumours that you can die after getting the vaccine and you experience swelling in your face and body.” The fear arose from a lack of information and limited public health education and knowledge. This was evident from a respondent who explained, “So far, I do not want it, unless I am forced to get it, but if I am not, I will not take it. I do not want it because I have not gotten sick and do not understand how it is being explained. They are saying that they are injecting you with Covid, for it to fight Covid, which does not make sense to me.” This point may relate to the platforms used by the government of South Africa to disseminate information, which are largely inaccessible to the poor who cannot access the internet. The digital divide has allowed misinformation and the infodemic, as the poor could not access the digital platforms where the government was sharing information

Some people mentioned that the government was to blame for this vaccination problem among the respondents:

[...] people, especially blacks from disadvantaged backgrounds, have not been taught about the vaccination process. In this community (Dinaweng), most people hear about the vaccine from others. They listen to different stories and not from educated people. Most of the stories they hear are usually negative, especially on social media where people post a lot of negative stories regarding the vaccine, which then causes people to panic.

- *Beliefs and thoughts*

For some people, COVID-19 has been hypothetical, or they believe it is meant for others and not them. A respondent said, “[...] I guarantee that I will live until I am 77 year[s], because I talk to God and tell him that I would like to live until I am 77 years of age. So, I am so positive.” Another respondent explained,

I have been HIV positive for about ten years, and I am still going strong. I understand that previously there was no cure for HIV that was not created as fast as this one, which is why we lost our family and friends due to HIV. Still, the numbers were nothing compared to what this virus has done. Every day and each hour, someone is dying from Covid. See the way I have disclosed my

status. If I do not take my medication, get sick, and go to the hospital, the hospital will inform me that I have Covid, and their focus will no longer be on HIV but rather on the Covid-19 virus. I do not think it is Covid that kills us. The stigma kills us; people die due to fear whenever they hear that they have the virus. That is why I do not take the statistics of the virus to heart, because I do not want any negativity.

## Discussion and Conclusion

The study analysed the dynamics of risk communication in a poor neighbourhood in South Africa using the COVID-19 pandemic as a case study. The challenges associated with risk communication were identified, and it emerged that the poor tended to be marginalised in accessing information that was critical in combatting the pandemic. First, the crisis communication approach posited by Lundgren and McMakin (2018) has been adopted in disseminating COVID-19-related information in (South) Africa. This approach has been associated with multiple problems that have negatively affected risk communication. Chiefly, poor governance has tended to compromise the communities' trust of the government, which has been evident in some individuals and communities defying government orders such as the lockdown, being suspicious of the vaccination programmes, and also in some refusing to believe that the virus actually existed. This brings to attention the political economy of risk communication that has been articulated by Matamanda et al. (2022). This finding also confirms the assertion that the public felt their governments excluded relevant players in the communication and intervention process (Müller-Mahn and Kioko, 2021).

Second, the value of actionable risk and consensus risk communication (Wood et al., 2011; Lundgren and McMakin, 2018) is confirmed. The information accessed directly from healthcare professionals was accepted as truthful. This finding emphasises the role of health care workers in risk communication and how they can help facilitate the dissemination of credible information. These findings are consistent with Eysenbach (2020), who highlighted the significance of health knowledge and information and the role of public health experts and scientists in curbing the infodemic. As the views of scientists and experts were highly regarded, risk communication in low-income and marginalised communities should include the insights of experts and scientists, rather than politicians, to create credibility.

Third, radio and TV media were also viewed as reliable sources, notably when scientists aired their views. The interactive nature of TV and radio platforms and the limited cost of connecting to these platforms contributed to their popularity among the poor. We conclude that the reliance on radio and a strong faith in official broadcasters' information among the poor suggest that these media should be

prioritised for risk communication, particularly local-language regional radio stations. As highlighted by Wasserman et al. (2021), the use of print media has been limited, and in poor neighbourhoods this may be attributed to a lack of disposable income to buy newspapers, while the lockdowns may also have limited the ability of the community to go out and buy the print media.

Fourth, the predominance of the population in the informal settlement that relied on TV and radio, highlights the digital disparities between poor households and more affluent ones. The inability of many respondents to access the internet meant that some failed to question the rumours and conspiracies they were hearing and could only wait for the news or announcements on TV or radio. At times, one would need to check and validate information using government websites. Therefore, addressing digital disparities and ensuring that adequate means of communication that cater to all are used is paramount. The community was exposed to multiple types of misinformation that significantly affected their behaviour and actions regarding the pandemic. This is consistent with the findings by Stecula and Pickup (2021) showing that the tendency to believe conspiracy theories, rather than seek out the truth, also contributes to the infodemic around COVID-19. Therefore, misinformation is a severe problem internationally.

The role of social media in misinformation has been confirmed in this study. Respondents have shown how social media influences misinformation and thus fuels the infodemic. This is consistent with an investigation by Gerosa et al. (2021) that indicated that, although greater COVID-19 literacy was associated with education, the propensity to use social media was essential in misinformation. Therefore, our study reveals that social media played a role in the infodemic in our study area, although it appears to have been word-of-mouth that spread the most misinformation.

Although the lack of access to the internet prevented many respondents from accessing social media, this digital divide may also have limited the spread of conspiracy theories. However, it also prevented respondents from verifying information and reducing misinformation. The study points to the importance of governments building trust with communities to establish a rapport that becomes the bedrock of trust and acceptance of government communication by citizens. The significance of public health education and awareness is vital in enhancing health literacy, which effectively helps in curbing misinformation.

The potential implications of this study for government are twofold. First, the government must consider different social groups when disseminating risk information such that they package it in befitting ways and communicate in ways that address the socio-economic dynamics inherent in society. In this way, they would limit mistrust

among the marginalised. Second, the government must address the issue of the digital divide that is so critical in risk communication, considering the importance of an internet connection – which was a challenge for poor households. Future research building on this study may focus on exploration of risk communication approaches that contribute to effective governance and management of disease pandemics such as COVID-19.

#### CONFLICT OF INTEREST

- The authors declare that they have no know competing financial interests of personal relationships that could have influenced the work reported in this manuscript
- All authors have substantially contributed to conducting the underlying research and drafting the manuscript

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