Chapter 4

Science and Health Journalists in the Health Communication Continuum: Working towards Improved Skills and Capacities in South Africa and Namibia

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Abstract

The recognition of the role of science and health reporters in the value chain of social and behavioural change communication continues to gain momentum in Africa. Recent developments in health information access have shown that health and science reporters play an important role in bridging the gap between 'the voice of science', the 'voice of the state' and the public who have to use the information in decision-making. This science communication role requires specific capacities and capabilities to repurpose and contextualise messaging and to disaggregate communication tools and platforms to reach different audiences. Although they are such important health communication stakeholders, their actual place in the health communication continuum continues to be mostly misunderstood and overlooked. This poses challenges for them in accessing the appropriate skills and capacity-building opportunities. Using a qualitative approach, this chapter explores the systemic and capacity challenges of science and health reporters during the Coronavirus disease 2019 (COVID-19) pandemic in South Africa and Namibia. The chapter argues that understanding the capacity and capability needs of science and health journalists is the starting point towards skills enhancement and more effective science and health journalism.

Introduction

Information is undeniably a valuable mechanism that enables people to cope in crisis situations. It is a means that people can use to reduce uncertainty, anxiety, panic and chaos during a crisis (Casero-Ripolles, 2020; Cheung et al., 2023). The COVID-19 pandemic was a health crisis that brought to the fore the significance of science and health information. Given the uncertainty that surrounded the pandemic, it was imperative that reliable information about the pandemic was shared. Information on COVID-19 would focus on transmission and prevention and encourage the public to adopt measures that would curb the spread of the pandemic (Guttman & Lev, 2020; Mello et al., 2021 in Massarani et al., 2021). Journalism thus assumed a very important role – that of disseminating information to the masses. Massarani et al. (2021) argue that journalism played a very crucial role in providing reliable information about the pandemic. In the same vein, Capurro (2021) maintains that news media are important and dominant sources of health information. Media reports enable people to learn about novel health threats (Capurro, 2021; Ouchene et al., 2024). It is for these reasons that the COVID-19 narrative dominated the public sphere; it became a priority for the media.

The prominence that was given to the coverage of the COVID-19 pandemic reignited discussions about the role of science and health journalism, especially during a crisis. COST (2021) notes that COVID-19 placed science at the centre of the public debate. There was an urgent need to 'tell meaningful stories about scientific topics that would have an impact on citizens' (COST, 2021), and thus create a 'strong demand for science journalism' (UNESCO, 2021). Science and health journalism plays a significant role in communicating about scientific knowledge and public health information to the public (Chuarasia et al., 2020). It is through science and health reporting that the public receives scientific, evidence-based information about disease and viruses, consequently shaping their views about diseases, their treatment and prevention (Chuarasia et al., 2020; Cheung et al., 2023).

While the recognition of the role of science and health reporters in the value chain of social and behavioural change communication continues to gain momentum, it is important to note that science and health journalists require specific capacities and capabilities to repurpose and contextualise messaging to reach different audiences. In addition to these capabilities, the actual place of science and health journalists in the health communication continuum continues to be mostly misunderstood and overlooked. This poses challenges for them in accessing the appropriate skills and capacity-building opportunities. In this chapter, we explore the systemic and capacity challenges of science and health reporters in South Africa and Namibia. Specifically, the chapter explores the experiences of science and health journalists who reported on COVID-19 in South Africa and Namibia, the challenges encountered by these journalists in reporting about COVID-19 and the capacity needs for effective reporting on science issues. The chapter argues that understanding the capacity and capability needs of science and health journalists will contribute towards skills enhancement and more effective science and health journalism.

The role of science and health journalism during the COVID-19 pandemic

Science journalism can be described as journalists' attempts to obtain and present scientific information in a simplified manner (Shehab, 2020), while health journalism is concerned with the dissemination of medical and health information (Paul et al., 2021). In other words, science and health journalism aims to simplify complex information in ways that the general public can understand (Shehab, 2020). Thus, it will involve translating health information into plain language and enabling the adoption of protective measures (WHO, 2021). Science journalism presents scientific information in ways that boosts people's ability to think critically and independently about issues presented to them (WHO, 2021). Based on these definitions, it is evident that journalism and the media played an important role during a health crisis such as COVID-19 – one of preserving public interest and public health (UNESCO, 2021).

Christians et al. (2010) discuss the normative roles of journalism. Normative roles explain the expected roles that journalists must fulfil in order to make a contribution towards society. Hanitzsch (2017) believes that the roles of journalists are socially negotiated, sensitive to context and place emphasis on journalism's contribution to the effective functioning of society. While it is recognised that journalism's roles are socially negotiated and in a state of flux, the field does have generally accepted roles. According to Christians et al. (2009), journalists can assume four roles: monitorial, facilitative, radical and collaborative. Christians et al. (2010) also note that journalists play a facilitative, enriching and disseminator role during a health crisis. By assuming these roles, journalists are in a position to understand audience needs, serve these needs and then monitor and observe the environment for trends and threats (Christians et al., 2010).

Under the monitorial role, journalists assume the overseer or surveillance role (Christians et al., 2009). Here journalists and the media bring to the attention of society issues that are of concern to them, especially if these are issues that threaten society. During the pandemic, journalists in some cases fulfilled this role. For example, in South Africa (BBC, 2020) and Zimbabwe (Chigono, 2020), journalists reported on the misuse of funds which were allocated for COVID-19 emergencies. In this instance, the media played a monitorial role. In terms of the facilitative role, journalists reporting on COVID-19 assumed the informative and educative roles in order to provide timely and in-depth information on the pandemic (UNESCO, 2021). Society was informed to enable informed decision-making on health-related matters. The collaborative role of journalism saw journalists and the media working with government to provide timely information to the public about the pandemic. The media became the means through which the public could be reached with COVID-19 messages. Journalists were invited to press briefings on COVID-19 updates, and this was imperative for the media to serve society with necessary and relevant information. In Namibia, for example, a COVID-19 Communication Centre was developed to provide relevant information to the public through the media.

Presidential and ministerial updates were conducted regularly, and the media participated in these gatherings. In South Africa, presidential updates were also aired to the public via television and other channels of communication.

Literature Review

The role of journalists providing health education during health crises: The Case of COVID-19

Numerous studies have been conducted on journalism's role in providing health education to the public during the COVID-19 pandemic (see Arriaga, 2021; Perreault & Perreault, 2021; Houston, 2021). These studies confirm that 'journalism served as a conduit through which the public learnt and also shared their experiences about Covid-19' (Perreault & Perreault, 2021). Perreault and Perreault (2021) argue that journalism was part of the 'Covid-19 disaster communication ecology'. A communicative ecology basically defines resources for information during a crisis (Perreault & Perreault, 2021). In the case of COVID-19, the communicative ecology of the public would consist of information and communication resources that individuals needed to cope with this pandemic (Houston, 2021). Houston (2021) further explains that communication ecologies provide resources which can enable individuals to achieve a particular goal. For instance, in a time of crisis, people may use the communication ecology to seek and share information that can assist them in coping with the crisis. While they may have been many other sources of information on COVID-19, it is safe to argue that journalists were part of the COVID-19 disaster communicative ecology. They provided information that the public used to make informed health decisions.

In the sub-Saharan Africa context, media also played a crucial role during the height of the COVID-19 pandemic. The study conducted by Wollnik (2021) on the societal importance of journalistic health reporting on COVID-19 in sub-Saharan Africa observed how health reporting during crises provides a variety of normative functions of journalism in democracies.

Furthermore, Drabo (2021) concedes that journalists and the media were essential in keeping the public informed about the pandemic and the preventive measures. Chiumbu et al. (2022), Maractho and Omland (2022) and Dralega et al. (2022) conducted framing studies in South Africa and Namibia, Uganda, and Ghana, Sierra Lione, Ethiopia and Zimbabwe respectively, in order to understand how media in these different countries reported on COVID-19. At the centre of these studies is the appreciation that journalists and media play a significant role in 'discourse setting by the way they frame and communicate crises.' These studies further highlight the crucial role of journalistic health reporting in influencing how people make decisions regarding their health. While the role of science and health reporting is in no doubt, journalists often encounter challenges which hinder or limit their ability to fulfil their roles.

Challenges associated with science and health journalism during the COVID-19 pandemic

Despite the recognised roles of journalism, Sujoko (2022) argues that the ability to provide information and educate people can be influenced by numerous factors. These factors can be internal (personal factors) to the journalists or external ones. Thus Perreault and Perreault (2021) argue that the ability of journalists to disseminate meaningful science and health information depends upon the capacity of journalists and the overall composition of the media environment. One of the issues that affected the ability of journalists in fulfilling their normative role was the overflow of information about COVID-19 on social media platforms. This overflow of information made it difficult for the public and even journalists to assess the veracity of claims made. The term 'infodemic', coined by the WHO (World Health Organization), describes the amount of information that was spread about COVID-19, especially on social media platforms. Sujoko (2022) contends that this problem with social media, especially when news is spread first by social media, is that journalists often missed or failed to update points related to the pandemic (see also Riedlinger & Montana-Nino, 2024)

Another challenge that confronts science journalism is the relationship between journalists and sources (see Marín-González et al 2023). Peters (2013) maintains that "the relationship between science and the media has been characterised by metaphors and terms such as 'distance, gap, barrier, fence, oil and water and creative tension'". This explains why journalists and sources often act like strangers to each other, often do not understand each other's language and scientists often carry negative perceptions regarding journalists' coverage of science matters (Peters, 2013). Another dimension of looking at challenges related to sources and science journalism is the overreliance or dependence on a small 'influential' pool of resources. Schafer (2011, cited in Massarani et al., 2021) highlights that from a vast amount of scientific information produced, science journalists generally draw on a small number of 'influential' sources. This may arguably mean that some narratives are favoured over others.

Access to information is another concern which science journalists encounter in their reporting on science matters. For instance, Perreault and Perreault (2021) have opined that pandemic pressures tend to be intensified by, amongst other factors, the pressures of not getting correct information that needs to be relayed to the public. This is because, in the case of COVID-19, health agencies were not releasing consistent messaging about the pandemic (Perreault & Perreault, 2021). It became an almost expected occurrence to hear about constant adjustments in the health messages about COVID-19, especially on how it could be transmitted. In some cases, there were constant adjustments on how the disease spread and this also led to many questions arising on the effectiveness of suggested methods of prevention. This meant that journalists were in many instances reporting on contradictory messages from government and scientists (Radcliffe, 2021). In some cases, journalists were barred from reporting on certain information relating to COVID-19. A case in point is when certain Namibian journalists were barred from covering the inauguration of a COVID-19 isolation facility (IPI, 2020).

The need for training science and health journalists has also been highlighted in the literature (see Jamil, 2022). This

empowers journalists with knowledge on how to tell scientific stories that can engage the audience. Fischhoff (2018) explains that communicating science effectively requires practitioners to know how to send or share the information that they have received. This places emphasis on the communicators' ability to select, process and package information in a manner that would be easily comprehended by the receiver (Mulchandani, et al, 2024). The ability to effectively communicate was undermined by journalists' limited understanding of the pandemic and its complex nature. Much of the reporting, using South African print media as an example, was characterised by Wasserman et al. (2021) and (Ndlovu & Nikabs, 2023) as alarmist, negative, episodic, superficial and lacking in-depth analysis. To further demonstrate limited understanding of the pandemic, Lukanda and Walulya (2021) looked at media coverage of COVID-19 in Uganda and Tanzania. They found that media focused on issues related to statistics (COVID-19 figures), prevention and issues related to the lockdowns (Lukanda & Walulya, 2021). This approach to reporting re-emphasises a lack of depth in reporting, as journalists focused, without critical analysis, on information provided by dominant sources. To provide further discussion on factors that could affect the ability of journalists to fulfil their normative role during a crisis, the next section will look at the hierarchy of influence model.

Theory

The hierarchy of influence model

The hierarchical model of influence was developed by Shoemaker and Reese (1996) with the intention of trying to understand influences on media content. Earlier efforts directed towards understanding media content, specifically factors that shaped media content, can be attributed to the works of Gans (1979) and Gitlin (1980), who were of the view that media content is affected by factors like media workers' socialisation and attitudes, media organisation policies and routines, and social institutions, and they argued that media content was a function of ideological positions. It is from Gitlin (1980) that Shoemaker and Reese

(1996) were able to develop a more comprehensive framework to understand influences on media content (Reese, 2019), which they termed the hierarchical model of influence.

According to Shoemaker and Reese (1996), the model uses five levels of analysis to understand influences on media content. The levels of analysis include the individual level, routine level, media organisation level, social institutions level and social systems level (Shoemaker & Reese, 2014, 1996). At the individual level, the model assumes that the characteristics of individual communicators matter in the process of content creation (Reese, 2019; Shoemaker and Reese, 1996, 2014). For Gans (1979) and Gitlin (1980), this level is a communicator-centred level and focus is placed on factors that can hinder individual work. The next level of the model is the routine level. This level focuses on how media work is organised and how routines within media organisation could have a constraining effect on journalists. Reese (2019) believes that newsroom routines or the immediate environment of the work of journalists can influence content creation. The organisation level explains how news is produced within entities or organisations that have set policies and economic imperatives (Reese, 2019). Hanitzsch et al. (2010, cited in Jamil & Appiah-Adjei, 2020) comment that organisational policies and their role in addressing commercial goals can have an influence on media content. The last two levels, social institution and social systems level, acknowledge the influence of factors outside the media organisation (Jamil & Appiah-Adjei, 2020). The social institution, according to Reese (2019), considers the influence of advertisers, social institutions and technology on media content, while the social systems level pays attention to how ideological forces may shape the work of journalists (Reese, 2019).

While this model offers some explanation of the diverse streams of influence which potentially impact on news content, some criticisms have been levelled against it. For instance, some critics argue that the theory does not provide clear boundaries between the different levels of influence (Anderson et al., 2012 in Jamil & Appiah-Adjei, 2020). Despite this limitation, Jamil and Appiah-Adjei (2020) believe that this model is still relevant as it can help in understanding systematic irregularities that can

influence media content. In this study, this model is useful in helping to understand the coverage of COVID-19 and unpack the systemic challenges that affected COVID-19 reporting amongst science and health journalists.

The ability of science and health journalists to provide quality coverage of science news is influenced by numerous factors. This notion is supported by Reese (2019), who contends that the creation of news content happens within a larger institutional and ideological context. This institutional and ideological context provides different sources of influence, and Shoemaker and Reese (1996, 2014) have proposed the hierarchy of influence model in order to understand these influences.

Data collection

In order to explore the systemic and capacity challenges of science and health reporters in South Africa and Namibia, more specifically the experiences of science journalists and journalists who reported on COVID-19, the challenges encountered by these journalists in reporting about COVID-19 and the capacity needs for effective reporting on science issues, a qualitative research approach was adopted. This was done in order to provide an in-depth understanding of the participant's views on the subject under investigation. As a form of qualitative inquiry, interviews were used to document participant's experiences, challenges and capacity needs when reporting on a health crisis.

Given the prevailing COVID-19 circumstances and established health protocols (at the time of conducting this study), telephonic and Zoom interviews were conducted. An interview schedule was developed to allow the research to focus on issues pertinent to the study while at the same time allowing for issues to be explored as they emerged from the discussions (see Ryan et al., 2009). Participants were purposively selected journalists who had reported about COVID-19 in South African and Namibian newspapers and science journals. A total of 17 journalists from South Africa and Namibia, eight and nine participants respectively, were selected.

The process of data collection was preceded by an application for ethical clearance at Namibia University of Science and Technology and the University of Johannesburg and was granted. Informed consent (see Nnebue, 2010) was sought and obtained from participants. In Namibia, a researcher was appointed to interact with participants. This involved setting up schedules for the interviews and conducting the interviews. Questions posed to the participants centred on, amongst other issues, experiences, challenges and capacity needs when reporting on a health crisis such as COVID-19. Some of the questions emerged from the responses provided by the participants. A similar data collection process was followed by the researcher, who collected data amongst selected South African journalists. The interviews were recorded on the Zoom platform and also using a voice recorder. Recording was essential to correctly capture the views of the participants. An identification code was developed in order to protect the identity of the participants (see Saunders et al., 2015). The codes NA01 to NA09 (Namibia) and S01 to S08 (South Africa) were used to identify participants.

Data analysis

Deductive thematic analysis was employed to analyse and attach meaning to journalists' views on their experiences, challenges encountered in reporting about COVID-19 and the capacity needs for effective reporting on science issues. The process of data analysis involved the transcription of interviews from an audio format to a written transcript. Before coding began, transcripts were read several times in order to understand the content. Open / initial, axial and selective / theoretical coding (see Saldana, 2009:81-167) was used. Open coding allowed for the close examination of participant views and to identify key words and phrases that describe their experiences. The key words and phrases were given descriptive labels and then organised into categories through axial coding (Saldana, 2009). Through the use of selective coding, themes with greatest explanatory relevance (Saldana, 2009:163) were identified and these are discussed in the next section.

Results of the study

Experiences of science reporters with reporting on COVID-19

The narratives below reflect the experience of science and health journalists who reported about the COVID-19 pandemic in South Africa and Namibia. Firstly, the pandemic is described as a complex issue which affected not only health aspects but various dimensions of society. NA08 commented:

> It's a bit of a complex and multifaceted question because there is Covid-19, the disease itself, and then there's everything else around it, like the finance side. Your report will not really just focus on the disease itself; sometimes you're focused on maybe the money that's been spent by the government into Covid-19 ... Sometimes you're focusing on the laws that deal with Covid-19 ... (NA08, Namibia)

NA08 reveals the complex nature of the pandemic and how it challenged how journalists reported about the pandemic. This view is buttressed by Radcliffe (2021), who described the all-encompassing nature of COVID-19 and its effect on the practice of journalism. According to Radcliffe (2021), the constantly changing nature of COVID-19 placed specific demands on journalists. Because of these demands, reporting about COVID-19 was not an easy assignment for some journalists. To highlight this, some of the participants commented:

> I think when it comes to covering Covid-19 stories, it hasn't been a walk in the park. Health is a very sensitive matter; you can't just jump onto it and start covering it. But I gained a lot ... it's a year of experience covering Covid-19 related stories. (NA03, Namibia)

> Well, in general, I think we have all just learned along the way, we have learned to ask certain questions. When you go back to the office, and you start writing your story, you realise there is this gap, you need to get clarity on this thing. And from the beginning, there was no guidebook. (NA05, Namibia)

> You will never talk confidently about something new and Covid-19 was new when it came ... and our way of reporting will tend to be based on that information that we get from the government and relevant partners. (NA07, Namibia)
>
> ... the whole Covid-19 thing was a learning curve, and it caught everybody else by surprise. ... so most of the things about Covid-19, we actually learned as we go even up to this day. You can't convincingly tell anyone that you know everything there is to know about Covid-19. (NA06, Namibia)

While reporting on COVID-19 was a 'learning curve' for some journalists, a number of South African journalists had a science background, which influenced how they reported on COVID-19.

> I think because I have a science background it made it very much easier for me to talk about all the new concepts that were coming through for Covid-19 ... (S02, South Africa)
>
> Well, I am a very lucky person because at the very beginning I am a vice president of the world federations of science journalists and in the very early days of this pandemic, we decided that we are going to collate science, corporate science for journalists. I was gathering the preprints, the latest peer-reviewed published sources, so I was getting information that was informing my reporting on Covid from really just about every outlet ... (S07, South Africa)

Similarly, some participants describe how their background played a role in how they reported COVID-19 issues. S06 expressed the following:

> I think firstly it is important to say that I had a very interesting and . . . unique experience during the pandemic, especially at the start of the pandemic, because while I am a reporter, while I am a journalist I am also an intermediate paramedic, and ... I think my experiences as a healthcare worker helped shape my reporting. I was doing work as a

> freelancer and I did stories for Aljazeera, I did stories for Health eNews... (South Africa).

SO8 also believes that background knowledge informed how well they reported about COVID-19:

> Well, I think my biggest advantage is that I have been able to log onto the webinars that have been sponsored by Discovery Health. So I have used this material for education and I have been able to convert this information shared by professional people, doctors etc. (S08, South Africa)

Despite NA01 not having background knowledge in science and health reporting, the views of this participant confirmed the role of experience and background towards effective reporting:

> Your level of knowledge about a certain topic would actually also guide you in terms of how to write a certain topic, like Covid-19, for instance. A lot of us still don't know everything. Of course journalists read more and know more. But it's still very complex . . . Covid I understand it mutates ... (NA01, South Africa)

The experiences by some journalists while reporting on COVID-19 have been attributed to changes in the newsroom, which have necessitated the use of general assignment reporters instead of specialised reporters. Participant S07 commented:

> Well, I am going to make a distinction here: there are science journalists in this country, there are health journalists in this country and there are generalist journalists in this country and sadly what has happened to the media in the last 10 to 20 years has impacted on how we have reported on Covid. It's very few and far between that you will find the media that have budget to employ a science or health journalist, so what happened at the beginning of this was they slimmed down, they kept newsrooms, you know, with a few generalist journalists in it often fairly young ... A lot of people were [swimming] in the deep end and didn't . . .

> have some basic skills that you learn, as a science journalist or the health journalist ...(South Africa).

The narratives above reflect participants experience while reporting on COVID-19. It is evident that background knowledge can influence how journalists report about science matters. It is also evident that organisational factors can impact on quality science and health reporting.

Personal initiative and its contribution to effective COVID-19 reporting

The study also observed that journalists who took on the responsibility of reporting about science or COVID-19-related matters without the necessary skills or knowledge used their personal initiative to ensure effective reporting. NA01 explained:

> I read on it a lot to just keep myself informed and to write informed pieces and to ensure that I'm writing factual stories, based on what I'm hearing from the experts, or also just if the government gives me a response ... (NA01, Namibia)

NA04 emphasised the role of research in reporting about COVID-19:

> I think obviously, because of research, and also checking whatever was happening everywhere in the world, and also engaging with various sources, within a very short period of time, it pretty much put me into a position where I think I understood faster, and ... didn't take that long to grasp the concept.

Similarly, NA05 explained how they participated in workshops to improve on their reporting.

> From the beginning, there was no guidebook. We have learned along the way, but I have also reached out and I have taken part in a number of trainings, online trainings, I have done one with Bhekisisa, which is part

> of the *Mail & Guardian* … the medical section, I have done trainings on vaccinations, I have done some on Covid and reporting (Namibia).

Perreault and Perreault (2021) have argued that, in reporting about COVID-19, journalists encountered a lot of difficulty but were able to find ways of dealing with forces "pressuring their work". This view is shared by Radcliffe (2021), who contends that challenges associated with reporting on COVID-19 "compelled journalists to learn new skills related to health reporting". These observations are in line with the findings of this study, which highlight that journalists had to use their personal initiative in order to ensure effective reporting. The next section discusses the challenges encountered while reporting on COVID-19.

Challenges encountered while reporting on COVID-19

Journalists encountered various challenges while reporting on COVID-19. Some of the challenges relate to the inconsistencies in messages or information about COVID-19 and also relationships with sources.

> … but the problem was just like in the USA, the doctors and specialists were saying a different message from the government. So it was very, very confusing … (S04, South Africa)

> So we would speak to the minister, and he was always accessible but you could not rely on the information he gives you. Because it's as if his team within the ministry did not properly inform him. When you ask him a question . . . sometimes it will be . . . something that you can't work with, or it's something that is unimportant. Then you speak, let's say, to the CDC, and then they will [contradict] the information. He says one thing, the CDC says one thing, and then you're like, Okay, what is it? (NA01, Namibia)

To support the views above, research has shown that journalists have, in some instances, reported contradictory guidance received

from public health officials (Radcliffe, 2021). Related to the nature of information received, are the views of journalists regarding sources of information. While accessing sources appeared not to be a challenge, journalists were concerned about the sources they engaged with. For example, S01 explained:

> Yes, sometimes you find that experts are going to weigh in ... because I don't know if they want the media moment or they make themselves very available and their expertise isn't exactly . . . it's not like public health or immunology or specifically related and I found often we get sources that aren't, I don't think connected enough to the science they're speaking about .... you need to make sure that you're speaking to an expert who is deeply involved in those kind of questions rather than maybe a public health expert who can speak generally about it (South Africa).

This was a concern because for SO1 the kind of information a journalist receives from a source will impact on the way in which a story is framed. Another participant also highlighted a similar challenge with sources:

> So the Ministry of Health, the CDC, some nurses in the industry, some private doctors were not very helpful. So I have really also picked up that not all of them are on the right track. (NA05, Namibia)

Participants' concerns about sources place emphasis on the importance of accessing reliable and credible information sources (Radcliffe, 2021), especially during a pandemic. In addition to the findings above, it emerged from the findings that journalists had concerns about the ability of scientists to communicate about the pandemic. According to S06, scientists lacked the ability to transfer knowledge to the public. A participant commented as follows:

> ... it's not just to support journalists in getting the knowledge but it is also to train our scientists in communication, because we have a lot of phenomenal

> scientists and researchers in this country who very often lack the ability to transfer that knowledge to the public and if that knowledge doesn't reach the streets then it isn't worth that much. (S06, South Africa)

This observation is supported by MacArthur et al. (2020: 62), who believe that scientists "need help to engage and communicate effectively … they must be prepared to interact with different publics and share scientific information clearly and efficiently". In addition, Auerbach et al. (2020) stress the importance of better preparing scientists for effective communication.

Capacity-building needs for effective science and health reporting

Participants were asked to reflect upon the capacity building needs for effective science and health reporting. It emerged from the findings that there is a need for journalists to develop critical thinking skills, benefit from mentorship, training and education, and develop the ability to communicate about science in a simplified way as well understanding how to nurture relations with scientists or sources of information.

Development of critical thinking skills

> Critical thinking, number 1, if I read, if you read something on the article don't take it as it is, you know, your job is to go deeper into that, and that is like interview skills, how do I ask questions that give real answers … (S01, South Africa)

Critical thinking emerged as one of the important skills required for effective science and health reporting. It is a skill that compels journalists to question the information they receive before they share it with the public. It requires journalists to verify and understand information presented to them. S03 commented:

> … if you look at one of Harvard's articles you really have to concentrate if you want to get what they want to say … [journalists] must have the ability to read that, understand

> it and [express] it in plain English so that people understand ... they [must] also have the ability to think laterally and tackle topics around Covid ... (S03, South Africa)

S07 expressed the following:

> I was talking about how to read, interrogate and use science ... those are key skills ...(South Africa).

Critical thinking is considered by participating journalists as one of the important capacity needs of science and health journalists. This view is supported by existing literature, which also emphasises that critical thinking can help journalists to "raise vital questions and problems by coming in grips with a topic; gather and assess relevant information; think open minded (challenging any assumptions) and enable journalists to communicate effectively with others"

The need for mentorship towards effective science reporting

Mentorship was also identified as another key essential element needed for effective science journalism. Support from editors and senior journalists and empowering journalists was seen as key:

> ... and with the capacity ... the editors should be giving the support and encouragement, I mean if there were more mentors for this field ... if mentorship was maybe more robust. (S01, South Africa)

NA02 shared a similar sentiment:

> So more mentorship and understanding of senior journalists ... guidance and also more on sources ... It's difficult to build these relationships with medical practitioners. (NA02, South Africa)

Another participant highlighted the need for empowerment:

> Okay, the first issue is to empower journalists, give them options, if I want to venture into health reporting, for example, empower me enough in the newsroom, let there be that person who assists me to identify the sources, access the sources, get the information, analyse the information, be able to present the information in the most simple way that can be understood by everybody, and also sometimes get an opportunity to go to these workshops … go to also international workshops, where you engage with other people in this beat, learn what needs to be done. (NA04, Namibia)

Participant NA04 further explained the need for senior staff to offer support for health journalism:

> My opinion on this issue is, it comes down to the senior or the backroom staff in most of the newsrooms in Namibia. Health reporting is not incentivised – well, nobody really cares whether there is a health reporter or there's no health reporter in the newsroom … So I think incentivising the beat itself has been the biggest problem, getting support from the backroom staff for this beat has been a big problem (Namibia).

El-Awady and Lublinski (2007) believe that mentorship by senior journalists is important in improving the quality of science reporting and maintaining professionalism. In line with the views of the participants, El-Awady and Lublinski (2007) go on to argue that mentorship can help science journalists know how to identify sources and good stories and it is a means of improving the skills of science journalists.

The role of training and education for effective science reporting

Related to mentorship is the need for training and education focusing on science and health journalism. The lack of training

workshops and the limitations of formal journalism education in universities were highlighted by the participants. Some of the participants opined:

> I think we are not skilled like we are supposed to be. ... [at] all the universities in South Africa one is never trained to be a health journalist and one is never trained to be science journalist; it's something which we have to learn after we have graduated ... (S04, South Africa)

> So we definitely need more training on specific issues. Like I have said, I've had the privilege to attend a training on vaccinations and what I should know about vaccinations, and number of questions that we need to ask, I could ask there, definitely how Covid works, how a pandemic works, how a virus works, because very often people don't understand that a virus mutates. Journalists need to be trained about that, they need to understand the nitty gritty of working with diseases and viruses. (NA05)

> I think it's important to have a variety of training sources and a variety of resources for people to tap into because that helps us as journalists ask the right questions specifically over public officials and specifically of the people who are running the pandemic response because if we allow them to train us then we are going to be thinking in the way that they want us to think. (S06, South Africa)

To emphasise the need for training and education, some participants highlighted the lack of training:

> It [training] really lacks. We don't have a lot of trained people like I told you, not just health reporting but any other kind of reporting. I think a lot of journalists need training, especially if you want to be a health reporter or a scientific reporter. It's a very complex topic it would be nice to be actually trained earlier on. ... Journalists really need extensive training; capacity is really lacking. (NA01, Namibia)

> So capacity in terms of science stories, we don't understand what the situation is, what the scientific processes are, what the health issues are. There is a major lack in capacity when we speak about knowledge and understanding of these things and because of that you saw in the first few months it was a lot of different media information coming from different media houses. (NA02, Namibia)

The narratives above speak to the need for training, through workshops and even at tertiary institutions, to capacitate science and health journalists. Menezes (2018:3) agrees that training science journalists is imperative, as it will enable them to 'become more discerning translators of scientific information'. Menezes (2018) also argues that training will enable science reporters to understand scientific methods and place them in a position where they are able to write stories that have a broader context and are relevant to their audiences. Training is therefore seen as a mechanism that would address the barriers faced by journalists when reporting on science matters.

Use of appropriate language in science and health reporting

Participants also highlighted the need for journalists to be able to use appropriate language when communicating about science issues.

> The other thing that I was saying was the art of communicating science, these
>
> storytelling elements to it, the people miss out, they just report and … you have to tell a story in some way, you have to go to humanness of people and grab that and when you give them scientific underpinnings, you know, it is in a way that is digestible. So that's something that you know you can learn, by looking at really good science communication, by going to webinars and training sessions. (S07, South Africa)

> You need to set up how you will get the information to the people in the way they will understand .... access to the [grandmother] in that village . . . and not just live on TV, but radio because they would have the information and speak the language that they understand. It should not just be in English, because you can't use words that they can't understand. It should be worded in a manner that they can get and that they can then explain to the next aunt in the same village. (NA09, Namibia)

Another participant explained:

> It will be maybe figuring out the different strategies of what your key message is; understanding how to get it down. Let's say you want to talk about cancer: what is your objective about cancer? Figuring what the key messaging is and how to communicate the key message will be quite important. (NA02, Namibia)

According to Radcliffe (2021), it is important for journalists to understand how facts and figures can be translated into stories that can impact on society. Suharno and Sastra (2001) explain that using complicated language in science reports does not help; instead, it misleads or confuses readers. This places emphasis on the need to train science journalists on how to use appropriate language when communicating scientific information.

Developing relationships with sources

It emerged from the findings that science journalists need to be equipped in terms of how to build and nurture relationships, particularly with sources.

> I think relationship building is the centre, because . . . when it comes to doctors, health practitioners, time is spent in nurturing those resources, trusting that the media is not there to frame you in such a bad light. I think that is why those professionals are scared because they think that that the media is out to get them. So trust, building

> relationships with these medical institutions and giving us the mentorship and the information we need ... (NA02, Namibia)
>
> You have relationship building and networking that will be the most pressing because we don't have relationships. We can't talk to each other the way we talk to politicians. The relationships aren't there. So relationship and networking will be one of them. (NA02, Namibia)

For other participants, the ability to ask the right questions is an important element in building relationships with sources. Participants shared the following comments:

> Yah, the skills of asking the right questions to the right individuals so that he or she will be able to give the (right answer), having the right answers to his readers and then he will also know how to communicate with people ... I think the manner of approach, the communication skills is the other skill ... (S05, South Africa)
>
> I am not the expert and what I need is a network of people who are available that I can pick up the phone and [say]: . . . you said this, what does it mean in normal language? So I think that having a network is very important and I think knowing how to ask the right questions is important. (S06, South Africa)

In line with the narratives above, Hertzum (2022) stresses the importance of building relations with sources. He contends that there is a "need for building rather than presuming rapport" (Hertzum, 2022) in the source–journalist relationship. This is crucial since the journalist and scientist relationship is usually characterised by prejudice (Hertzum, 2022).

Discussion of findings

It is evident, from the findings above, that science and health reporting is influenced by various factors. Sujoko (2022) and Perreault and Perreault (2021) all agree that the ability of

journalists to tell meaningful science stories depends upon the capacity of journalists as well as factors external to the media organisations. This view is supported by the findings reported in this chapter, which have highlighted the influence of different factors on how journalists reported on COVID-19. What is clear from the findings is that the individual characteristics of journalists played a role in how they reported about COVID-19. In this case, some journalists did not have background knowledge on science reporting while other reporters had some experience with reporting on science and health issues. Reese (2019) has argued that the characteristics of individual communicators matter in the process of content creation. This view is useful in helping to explain why for some journalists reporting on COVID-19 was 'not a walk in the park' while for some they were becoming 'naturals' at reporting on COVID-19 every day. While individual characteristics matter, it is also evident that there is an interplay of factors.

The lack of specialised reporting in news organisation due to economic interests and less focus on science matters can also be seen as a factor in journalists' inability to effectively report on science and health stories. Hanitzsch et al. (2010) referred to the influence of organisational policies on news content. They argued that organisational policies and their implementation, particularly to address economic interests, tend to impact on media content (Hanitzsch et al., 2010, cited in Jamil & Appiah-Adjei, 2020). Because of budgetary issues, some news organisations assigned general reporters or reporters specialising in other beats to report on COVID-19, and this could have contributed to some of the weaknesses observed in COVID-19 reporting.

The findings have also highlighted how science reporting was informed by the information received from sources. The framing of stories depended on the information journalists obtained. To explain this, Reese (2019) discusses the social institution and social systems level of the hierarchy of influence model. Social institutions can determine the dominant narrative to be communicated with the masses through the information they share with science reporters. Therefore, what dominated the public sphere in the case of COVID-19 reporting is largely what

emerged from sources of information, which in many instances was the government. The findings also highlighted challenges with inconsistent messages, sources of information and the ability of scientists to effectively communicate. Perreault and Perreault (2021) argue that journalists' reporting on COVID-19 was undermined by the pressures of not getting correct information. This is confirmed by participants' narratives which show how they received different information on the same issue from different sources, thus reporting contradictory messages in some instances. Fjaestad (2007) highlights that the media has often criticised sources or scientists for expressing contradictory opinions on important matters and in some instances for withholding and repressing information that needs to be shared with the public.

The findings also highlight how in some instances journalists questioned the credibility of sources of science information as well the ability of scientists to communicate in ways that will allow journalists to relay this information to the public. Anderson (2017) explains that the relationship between science journalists and scientists has a long tradition and is an important factor influencing journalists' decisions within the production of news. However, this relationship, as Peters (2013) argued, has always been characterised by tension. Often journalists and scientists do not understand each other's language and in some cases have negative perceptions towards each other (Peters, 2013). Thus de Semir (2000) has argued that the interaction between science and media is inevitable and calls for a new relationship to be forged in order to support effective science reporting.

The need for training and education is another important finding from this study. It is through training and education that science journalists can be equipped with the ability to develop and nurture relationships with sources of information, acquire skills to frame and package science stories in a language that is easily understood by the public and develop critical thinking skills to interrogate information they receive beyond what it simply says. Smith et al. (2017) have argued that training gives journalists confidence and skills for science reporting. In the same vein,

Fischhoff (2018) explains how training can help practitioners know how to process and share information they have received. De Semir (2000) also emphasises that the reporter must be a 'translator' who is able to convert information from a specialised source into something that can be understood by a more general audience with no background knowledge of the information (Sobane et al., 2023). This is possible if science journalists are empowered with the requisite reporting skills. Furthermore, de Semir (2000:128) explains that the challenges often associated with science reporting, such as "sensational news, a lack of analysis and perspective when handling scientific issues, excessive reliance of certain sources, lack of criticism of sources, lack of criteria for evaluating information", can be attributed to a lack of training and education. These views are consistent with participants' views on the role of training and education in effective science reporting.

Conclusion

Findings of this study confirm that science journalism has an important role to play, especially in a health crisis where information plays a central role. To fulfil this role, there is a need to acknowledge the existence of factors that limit the capacity and capabilities of science journalists. These limitations manifest at different levels, for instance at individual, organisational and social level (Reese, 2019) and tend to influence how journalists report on science matters. The study further argues that there is a need to empower science journalists with requisite skills for effective reporting. The role of education institutions and training in general has been highlighted as an essential element towards capacitating science journalists. Education and training will enable science reports to be critical in their approach and develop knowledge on framing and packaging of scientific stories in ways that will matter to the public. Training will also provide strategies on how reporters can develop and nurture good working relations with relevant sources. In a nutshell, this chapter is arguing that understanding of journalist's experiences with reporting on science matters is an important starting point towards

transforming and empowering science and health reporters so that they are able to fulfil their normative roles in society.

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