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RESEARCH ARTICLE

The experiences of nurses who were involved in the COVID-19 contact tracing and tracking activities in Bulawayo, Zimbabwe [version 1; peer review: awaiting peer review]

Idah Moyo[1,2], Livhuwani Tshivhase [ID][3],
Azwihangwisi Helen Mavhandu-Mudzusi [ID][4]

[1]Department of Health Studies, University of South Africa, Pretoria, 0003, South Africa
[2]Department of HIV Services, Populations Solutions for Health, Harare, Zimbabwe
[3]Department of Nursing Sciences, Sefako Makgatho Health Sciences University, Pretoria, 0204, South Africa
[4]Office of Graduate Studies and Research, University of South Africa, Pretoria, 0003, South Africa

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Abstract

Background: The COVID-19 pandemic had a significant impact on the healthcare systems worldwide. For countries to contain the spread of COVID-19 and to mitigate its impact, contact tracing was adopted as one of the COVID-19 response strategies. The objective of this study was to explore and describe the experiences of nurses who were involved in the COVID-19 contact tracing and tracking activities in Bulawayo, Zimbabwe.

Methods: A descriptive phenomenological design was utilised in this study. Data was collected telephonically using in-depth individual interviews between the 28th of December 2020 and 25th February 2021. Twelve participants comprising of two males and ten females with experience in contact tracing were purposively sampled and interviewed telephonically to get lived experiences. The number of females and males who were purposefully sampled depended on the proportion of this participants in the setting. Analysis followed the seven steps by Colaizzi strategies.

Results: The study findings demonstrated that the participants experienced challenges as they implemented contact tracing activities. Four themes on contact tracing emerged: follow-up and contact-tracing activities; support systems; psychosocial implications; and witnessed patients' experiences. Fourteen sub-themes were identified: negative perceptions of the re-assigned roles; unintended outcomes; delayed COVID-19 test results; increased workload; provision of personal protective equipment; training and orientation on COVID-19; meals for providers involved in contact tracing; we want to be heard and listened to; anxiety and fear; stress; emotionally challenging moments; unable to provide a service; witnessed discomfort; and stigma and discrimination.

Conclusions: Contact tracing is key in the response to the COVID-19 pandemic. The strategy has proven to be complex, with increased workload, which is emotionally draining – hence the need for an effective support system for staff conducting contact-tracing activities.

Keywords
contact tracing, COVID-19, experiences, nurses, tracing activities

This article is included in the Sociology of Health gateway.

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Corresponding author: Livhuwani Tshivhase (livhuwani.tshivhase@smu.ac.za)

Introduction

COVID-19 first appeared in China in 2019 then spread globally (World Health Organisation, 2020a). The situation caused disruption in the already burdened healthcare delivery system (Bandyopadhyay *et al*., 2020; Moazzami *et al*., 2020). To contain COVID-19 and mitigate its impact, Zimbabwe like other countries adopted contact tracing as one of the COVID-19 response strategies (WHO, 2019). A multidisciplinary Rapid Response Team was formed, that included teams conducting contact tracing, the majority of whom were nurses. Due to its highly communicable nature, for its prevention and containment, Centre for Disease Control (2020) recommends COVID-19 contact tracing as a critical intervention.

COVID-19 contact tracing was defined as the process of identifying all people that a COVID-19 patient had been in contact with in the last two weeks (WHO, 2019). Contact tracing involves having a system to identify cases; a functioning laboratory; a system to feedback data; and people who can identify and follow up with contacts, provide support if contacts need quarantine, and who treat contacts properly. According to the Department of Health, South Africa (Department of Health, 2020), the process of contact tracing entails the following steps: contact identification, contact listing, informing contacts, contact follow-up, as well as case and contact monitoring and the provision of support.

In Zimbabwe, the people involved in the tracing are mostly nurses who were trained in the processes of COVID-19 tracing during the outbreak. This study explores and describes the experiences of nurses involved in COVID-19 contact tracing and the tracking activities in Zimbabwe. The critical role played by nurses during pandemics such as COVID-19 has been highlighted by scholars such as Jackson *et al*. (2020) and Fawaz *et al*. (2020). This point is further emphasised by Chemali *et al*. (2022) who argues that nurses are a crucial pillar for health systems resilience, therefore exploring their experience as COVID-19 contact tracers is important.

Contact tracing is a strategy that has been used for controlling the spread of infectious diseases such as Ebola, SARS, MERS, tuberculosis, and other disease outbreaks (Bode *et al*., 2020). Regarding COVID-19, contact tracing is the critical intervention to prevent and contain the spread of the virus during outbreaks and it begins with those who test positive (WHO, 2015, 2019). The contacts are then notified and supported through a period of quarantine. These contacts are to be observed for symptoms throughout the window of risk, until they prove to be free from COVID-19 (WHO, 2019).

The great benefit of COVID-19 contact tracing is its cost-effectiveness, as compared to a general public lockdown (Reddy, Sheddi, Foote *et al.*, 2021) Contact tracing targets those who were exposed to COVID-19 and they become the ones who are quarantined, while the rest of the public remain under the governing rule of the country (WHO, 2019).

The process of contact tracing involves the following activities, as outlined by the World Health Organization (WHO, 2019): testing for COVID-19 positivity; identification and listing of contacts before the onset of symptoms; notification of contacts' status, which could be followed by quarantine or isolation for high-risk contacts; follow-up, monitoring and support of contacts, including checking regularly for symptoms to determine appropriate interventions, including quarantine.

According to the World Health Organization (WHO, 2021), contact tracing can be complicated and it is time-consuming, as the virus could be transmitted between people without the manifestation of symptoms. Nachega *et al*. (2021) also reported contact tracing as an overwhelming workload which predisposed people to misinformation, stigma, and poorly sustained adherence to isolation and quarantine.

In a study conducted in Turkey, contact tracers expressed their dissatisfaction with personal protective equipment (PPE) which was of a poor quality and inadequate, workers not being regularly screened for COVID-19, and security risks associated with working at night and poor working conditions (Sevimli & Sevimli, 2021). The tracers also reported the attitudes and behaviours of members of the public towards contact tracing, such as mistrust/apprehension, fear, stigmatisation, belief that the teams will provide insufficient and incorrect information, and privacy concerns (Sevimli & Sevimli, 2021; Lo & Sim, 2021).

In Nigeria, Rwanda, South Africa and Uganda, challenges experienced following contact tracing included stigma, discrimination, mistrust of political entities, an overwhelming contract-tracing and case-detection workload for health-care workers, limited testing capacity and poor adherence to quarantine (WHO, 2019; Ikonge, Chukwu & Chukwu 2020). In Uganda, contact-tracing training was conducted by district teams and the use of the WHO's Go Data, a software application used to collect patient/case and contact data electronically on mobile phones (Nachega *et al*., 2021).

Contact tracing in Ghana and South Africa has been used as surveillance of infectious diseases (Asiimwe *et al.*, 2021; Nachega *et al.*, 2021). In Ghana (Asiimwe et al., 2021) it was used to monitor contacts and provide psychosocial support, while in South Africa (Nachega *et al.*, 2021), it included, among other things, identification of contacts and electronic updating of their base. In Ghana, contact tracing was largely physical, in contrast, in South Africa it was telephonically.

Zimbabwe, like other countries, reported more than 8099 cases of COVID-19 in October 2020 (Mashe *et al.*, 2021). Contact tracing and tracking activities were vital to combat the spread of the disease. Given the crucial role played by contact tracers in managing COVID-19, they can provide useful insights that will support and enhance tracing efforts. This study therefore sought to explore the experiences of nurses involved in COVID-19 contact-tracing and tracking activities in Bulawayo, Zimbabwe.

Methods

A descriptive phenomenological design that sought to understand the perspective of those with lived experiences of the phenomenon under study was adopted (Gray, Grove & Sutherland, 2020). The design was chosen for its ability to delve deeper into the participants' lived experiences, with the aim of making meaning from them. According to Polit and Beck (2021), a key feature in phenomenological research is the concept of bracketing. Since the researchers are healthcare workers themselves, they already had experiences related to the healthcare delivery system, which they had to put aside. In the context of this study, the researchers bracketed preconceived beliefs and opinions about the phenomenon under study to remove influences that could block access to the meaning of experiences during contact-tracing activities.

Setting and participants

The study was conducted in Bulawayo, the second largest city in Zimbabwe. Bulawayo City has 19 city health clinics and three central hospitals, one of which is a mental health institution. Zimbabwe has a very fragile healthcare system, characterised by a perennial shortage of medicines and a manpower shortage owing to a brain drain (Makoni 2020). Therefore, with the emergence of COVID-19, the health institutions in Bulawayo re-assigned staff to work on COVID-19 response activities. The local authority was responsible for coordinating COVID-19 contact-tracing activities. The City Health department was also responsible for quarantine centres. The two central hospitals and Bulawayo City Health re-allocated some of their nurses to work in the COVID-19 centre, the pre-investigation ward and quarantine centres, thus joining the COVID-19 Rapid Response Team. The inclusion criteria for this study were nurses designated specifically for COVID-19 contact tracing, line listing (an *organized, detailed table that contains key information about each COVID-19 contact*) and the testing of contacts in the Metropolitan Province of Bulawayo, and who were willing to participate in the study. There was no deliberate effort made to recruit any gender to participate in the study, however only two participants were males.

As part of the COVID-19 response activities, these nurses were re-assigned to the new role of conducting contact-tracing activities for the whole city of Bulawayo. The majority belonged to the Bulawayo City Health department, while some were seconded nurses from the two central hospitals. The scope of work for these nurses encompassed following up all contacts of all indices that had tested positive for COVID-19 and providing testing and support services to all of them. In addition to the contact-tracing activities, the city health department manned COVID-19 quarantine centres. On the other hand, one central hospital had a COVID-19 centre whilst the other had a COVID-19 pre-investigating ward.

Data collection

To facilitate the recruitment of study participants, the managers responsible for coordinating the contact-tracing activities, on behalf of the researcher, distributed the information sheets about the study as well as screening questionnaires which were sent to potential study participants. This was meant enable the recruitment process of study participants by managers on behalf of the researcher. Contact details were then availed by those who were willing to participate in the study and met the inclusion criteria. The researcher then collected these forms, The researcher then made a follow up by calling them and arranging convenient dates and times for the in-depth interviews. Data was collected telephonically by the first author, in keeping with the then COVID-19 guidance, whose focus was to limit physical contact. The researcher contacted participants when they were ready to be interviewed at their own convenient time and space. The first author conducted interviews in English. The author is an experienced female qualitative researcher working as a research fellow in a South African university and a holder of PhD. Prior to commencement of the study, potential study participants had access to the information sheet that detailed the nature and aims of the study as well as the credentials of the researcher. Because COVID-19 was novel and so it stimulated interest in the researcher, who has a passion for public health issues.

A pilot study was conducted, involving two nurses who shared similar characteristics as the participants of this study, not part of the study participants and who worked in a COVID-19 quarantine centre in the city. This process assisted the researchers in refining the interview guide and minor adjustments were instituted. It was established that the participants

understood the questions in the interview guide. Few probes were adjusted in the tool as the participants clearly responded to the main question. Other probes followed the participants verbal cues. The findings from the pilot were not used for the study findings.

As indicated, data collection was guided by the use of an interview guide. The interview guide was developed guided by the research question and the literature and the expertise of the researchers as qualitative researchers holding PhD. A copy of the interview guide is shared as an *Extended data* in the Figshare (Moyo *et al.* 2022b). To prevent the potential risk of contracting or spreading COVID-19, all the interviews were conducted virtually, through a cell phone call that was audio-recorded. The interviews were conducted through individual interviews virtually between 28 December 2020 and 25 February 2021. The interview guide had a central question that was used to guide the interviews: *"What have been your experiences in conducting COVID-19 contact tracing?"* Thereafter, open-ended probing questions based on the participants' responses were used to obtain more detailed descriptions of the participants' experiences. This is in tandem with Polit and Beck (2021), who posit that open-ended probes enable the researcher to delve deeper into personal and sensitive issues. Each individual interview lasted 45 to 60 minutes.

The sample size of twelve participants was determined by saturation, which refers to the point at which the data-collection process fails to yield new information relevant to the study, as highlighted by Korstjens and Moser (2018). Data saturation was attained (at participant number ten) when no new information emerged and there was only repetition of previously collected data. Two more participants were interviewed before closure was reached at participant number twelve. At the end of the interviews the researcher set a reminder for second contact to discuss the study findings to ascertain study findings reflected the participants experiences (member-checking).

Ethics statement

In complying with the ethics of research, all the rights of participants, as well as the ethical principles governing research, were adhered to (Gray, Grove & Sutherland, 2020). Prior to conducting the study, the full research protocol was reviewed and approved by the University of South Africa's College of Human Sciences Research Ethics Review Committee (NHREC Registration #: Rec-240816-052) on the 30th September 2020 and the Medical Research Council of Zimbabwe (MRCZ/A/268) on the 14th December 2020. An overarching project covered the experiences of health workers who were affected or infected by COVID-19 (Moyo *et al.,* 2022a). These were nurses who either contracted COVID-19 and or provided care to confirmed COVID-19 cases or those still under investigation in different healthcare settings. This manuscript, however, covers one of the other objectives of the main study and targets different participants, namely the experiences of nurses involved with COVID-19 contact tracing and tracking activities in the community. Permission to conduct the study was also obtained from the Director of Health Services of the City of Bulawayo.

Information leaflets stating the purpose of the study, the rights of participants and the objectives of the study were given and explained to participants during recruitment. Those who agreed to participate were given consent forms that were signed before the interviews were conducted. Aspects covered by the consent form included among other issues: permission to voluntarily take part in the study and that the study findings will be used for academic purposes. Participants had been informed about the publication of the study findings on the information leaflet provided prior signing the consent form. The consent form assured participants of anonymity and confidentiality throughout the study and the publication process. The participants were told that participation was voluntary and that there would be audio-recording of the data to capture all that would be said during the interviews. The interviews were conducted telephonically, in line with the COVID-19 pandemic guidelines that emphasised limited contact. Confidentiality, anonymity, and privacy were ensured during the interviews. Pseudonyms were used instead of real names and the data was stored with an encrypted password on a computer.

Data analysis

The data analysis followed the seven steps of Colaizzi (1978) strategy, as outlined in Beck (2019). No software was used to analyse the data but the strategies by Collaizi was followed step by step to ensure every experience shared was captured. Colaizzi's steps were chosen for their ability to generate a dense description of the experiences of participants, as they capture the essential aspects of those experiences. All the three authors were involved with data analysis. In step one: Familiarisation was done by repeatedly reading the transcripts of participants' experiences of the phenomenon of the study. The 3rd author who is an established researcher was responsible for doing independent coding to ascertain we reach consensus over the themes and subthemes. Step two: The researchers identified the significant statements that were directly relevant to the phenomenon of the study. In step three: The researchers formulated meaning relevant to the phenomenon of the study from significant statements. In step four: The researchers clustered themes by identifying meanings in themes that were common across all accounts. In step five: the researchers developed a full and inclusive description of the phenomenon, incorporating all themes produced in step four. In step six: The researchers produced a

fundamental structure by condensing the exhaustive description into a short, dense statement that captured essential aspects of the structure of the phenomenon. In step seven: In seeking verification of the structure of the phenomenon, the researchers returned the fundamental structure to the participants to check whether the experiences were captured as verbalised by them. After summarising the findings, the first author conducted telephone conversations with eight of the participants whom she collected data from, to ascertain whether what was captured was a true reflection of what had transpired (whether it was their voice or not). Feedback received from participants confirmed the collected data was a true reflection of what was voiced out during the interviews. After confirmation from the participants, the results were captured as themes and sub-themes. The results yielded by the analysis are displayed in Table 2 as themes and sub-themes.

Rigour

Rigour in this study was ensured through the four criteria of Lincoln and Guba (1985), as cited in De Vos *et al.* (2016). Credibility, dependability, transferability, and confirmability were ensured in this study in the following manner:

Credibility was ensured by engaging participants for a substantial amount of time during the interviews, and by using an independent coder to analyse data separately from the researchers who collected and transcribed the data. Participant checking was done through a telephone call, as explained in 2.4 above, and as guided by a study of Williams and Kimmons (2022). The researchers ensured dependability and confirmability by thoroughly describing the steps taken from the start of this research project to the development and reporting of the findings. The reporting of the research journey in steps was maintained throughout the study. Transferability was ensured through the detailed description of behaviours and experiences, as well as the context of the study, to allow someone to replicate what was done (Korstjens & Moser, 2017, 2018). Member checking which was done through the telephonic calls with participants was to verify if the transcripts reflected their insights. The participants confirmed that the transcripts accurately captured their experiences during COVID-19 contact tracing. This is in keeping with insights from Carlson (2010) and Harvey (2015), who emphasise the importance of discussing the contents of each transcript with each study participant.

Results

The study comprised twelve participants in the age range of 31-55 years and of these, only two were males. The participants were nurses with varying experience of nursing, from 7-25 years. Table 1 presents the demography of the participants.

Table 2 gives a summary of the themes and sub-themes of the study.

Follow-up and contact-tracing activities
Negative perceptions of the re-assigned roles

Perceptions of the re-assigned nurses' roles were negative. Some participants felt that working in the COVID-19 Rapid Response Team was not an easy task, but it had to be done since it was the prevailing situation. Participants also thought that the exercise was unfairly done, as the following excerpts show:

Table 1. Demographic characteristics of participants.

Participant Pseudonyms	Gender	Profession	Years of experience
Sebi	Female	Nurse	20-30
Mpho	Female	Nurse	10-20
Joy	Female	Nurse	10-20
Sane	Female	Nurse	20-30
Sipho	Male	Nurse	0-10
Dudu	Female	Nurse	20-30
Sifiso	Male	Nurse	0-10
Sakhe	Female	Nurse	0-10
Sihle	Female	Nurse	10-20
Thandi	Female	Nurse	10-20
Conny	Female	Nurse	10-20
Jane	Female	Nurse	10-20

Table 2. Summary of themes and sub-themes.

Themes	Sub-themes
1. Follow-up and contact-tracing activities	1.1 Negative perceptions of the re-assigned roles
	1.2 Unintended outcomes
	1.3 Delayed COVID-19 test results
	1.4 Increased workload
2. Support system	2.1 Provision of personal protective equipment
	2.2 Training and orientation on COVID-19
	2.3 Meals for providers involved in contact tracing
	2.4 We want to be heard and listened to
3. Psychosocial implications	3.1 Anxiety and fear
	3.2 Stress
4. Witnessed patients' experiences	4.1 Emotionally challenging moments
	4.2 Unable to provide a service
	4.3 Witnessed discomfort
	4.4 Stigma and discrimination

"The job was stressful. Getting into the Rapid Response Team was like a case of punishment, later on without an incentive. There was an element of unfairness; some people felt they were sacrificed." (Conny)

"In normal or routine instances, community health nurses are responsible for the containment of outbreaks. It's part of the responsibility, part of the job description. We had to participate in the Rapid Response Team as per the assigned task, assigned responsibility. Painful as it were, there was no option/choice." (Dudu)

Some participants were allocated from the central hospitals to join the contact-tracing activities and had this to say:

"Imagine, I was working in a surgical ward in a central hospital, only to notice on the change list that I had been deployed to the local authority for COVID-19 contact-tracing activities. I felt that I was being sacrificed. Even my family could not understand this sudden change in COVID-19 activities." (Sipho)

Unintended outcomes

Whilst the initial intention of contact tracing was to identify COVID-19 exposed individuals, test them and link them to appropriate service, several issues emerged as the following extracts illustrate:

"We were assigned a number of clients to follow per day. Then further elicit more contacts. The numbers were overwhelming. Some of the contacts would have been told by their relative that they have been exposed and that they are contacts. For some, we had to break the news and at times it was not an easy task; clients would be emotionally filled with a lot of fear. Despite that, we spent very little time with each client, yet some required information or counselling." (Sebi)

"We had to put on COVID-19 coveralls in people's residence, either behind the house or inside the house. At times we would follow the client in a hotel and do the testing in their hotel rooms. It was not a pleasant procedure due to the discomfort experienced by the clients." (Sane)

Delayed COVID-19 test results

According to the study participants, efforts were made to test all the contacts. However, there was a challenge in accessing all the test results.

"We worked and had to make sure that COVID-19 contacts are tested, however, the majority of clients never received their results because of the overwhelming situation. This meant that the clients were kept in suspense, waiting. The focus was on those that tested COVID-19 positive." (Sihle)

Another challenging experience cited by participants was delayed turnaround times for COVID-19 test results, as the following excerpt shows:

"It was a difficult challenge to respond to. As we moved into the community, people would ask about the COVID-19 test results that were not coming. Because the results were either delayed or not come at all, the community felt they were wasting their time." (Joy)

Increased workload

The nurses indicated that the workload was overwhelming because of the contact-tracing activities at hand, as reflected below:

"The job was challenging, overwhelming, strenuous and emotionally draining. A lot of activities needed to be conducted per day." (Mpho)

"Due to the increased workload, we had to work long working times. There were many contacts to be followed with an increased number of cases, particularly during the first COVID-19 wave. It was generally a strenuous exercise; at times we had to work for 12 hours or more." (Sakhe)

"Initially, we were working long shifts one week, the following week we would rest, but this system was later changed. We would work following people even into to the evening." (Thandi)

The participants pointed out that they were not happy with the incentives they received compared to the workload, as shown below:

"Sadly, despite the hard work and commitment in efforts of curbing the COVID-19 in our province, the workload and incentives received could not be compared. I felt that our parent ministry was not caring for us." (Sifiso)

"Surely, the job was challenging, overwhelming and emotionally draining and, worse still, risky to us as contact tracers. It would have been better if a risk allowance was allocated to us (everyone else involved in contact tracing)." (Jane)

Support system

In this study, the participants appreciated the support they received from the health management teams in terms of availing PPE, conducting training, and providing meals.

Provision of personal protective equipment

In this study, the participants indicated that they were happy that they had been provided with adequate PPE as the following excerpt show:

"We had adequate PPE; we never experienced any shortages. In this regard, we felt supported and had this feeling of being protected." (Dudu)

The participants indicated that they attended some training (workshop) on COVID-19 which prepared them for their new roles. However, they also felt that the training was inadequate, as illustrated below.

Training and orientation on COVID-19

The participants said that they had some training on COVID-19 and infection prevention and control:

"We had some training before we started COVID-19 duties. Since there was a lot of panic during that time, additional or refresher training would have gone a long way since the World Health Organization guidelines were constantly changing." (Sakhe)

"Use of PPE was initially a bit of a challenge; however, we polished some infection prevention and control practices (donning and doffing) whilst in the field." (Thandi).

Meals for providers involved in contact tracing

The participants appreciated the gesture associated with getting meals while they were in the field. The following extract demonstrates that:

"Provided with meals, we were able to access prepared meals from one hospital. The cost of these meals had been sponsored by some donor. The provision of these meals ceased along the way. The whole issue was frustrating; not easy to eat in the same car that carries COVID-19 specimens." (Jane)

We want to be heard and listened to

On the other hand, participants also felt they would have benefitted from a listening ear from management, for them to express themselves, to explain the challenges they encountered and their emotions during the course of duty. Some participants had this to say:

"Everything was just overwhelming and emotionally draining. There were moments I felt I needed a listening ear and/or a shoulder to lean on. I would have felt if we were given an opportunity to share our experiences from the COVID-19 contact tracing activities, or at least have someone listen to us." (Mpho)

"The COVID-19 was novel, with everyone busy with the challenging environment. Having a meeting together as a team or having a way of debriefing would have gone a long way, but this opportunity was never there." (Sebi)

Psychosocial implications

Some of the psychosocial effects experienced by nurses during contact tracing included anxiety and fear, stress and discomfort.

Anxiety and fear

The participant lived in fear of contracting the virus and infecting their family members, since they were in contact with both confirmed COVID-19 patients and their contacts.

"I had the constant fear that I would contract the virus and eventually spread it to my family members. This was a persistent worry. It was even difficult to have a discussion on this subject with my family." (Sipho)

Stress

"The whole scenario was overwhelming and stressing, worse still during the first days I started contact tracing. What was stressing me most is that one of my children felt it was part of punishment from my workplace." (Conny)

Witnessed patients' experiences

Providers experienced emotional pain when they met clients in the community after the loss of relatives to COVID-19, or after testing positive or being told they were a contact of someone who has COVID-19.

Emotionally challenging moments

Participants expressed emotionally challenging moments as follows:

"There were difficult and painful moments as we executed our duties in the community, particularly meeting people in the community who had just lost their relatives. It was not easy; you could see people expected answers or some form of consoling, but it was emotional even to us." (Sane)

"Other challenging times were the reactions of some people being told that there were contacts of someone who had tested COVID-19 positive. At times the COVID-19 positive relative would not have disclosed and it becomes a shock to the contacts. It was challenging in some instances." (Joy)

The participants also indicated that they witnessed clients being emotional in the community. The following excerpts demonstrate their experiences.

Unable to provide a service

> *"There is a day I felt sad. I met this adolescent who had tested COVID-19 positive, was emotional, and required lots of answers. Clearly, I could see the young lady needed psychological [help] and was emotional, but I was not able to do so because of the number of contacts we needed to follow and the amount of available time. This has always haunted me for not being able to counsel the client during her time of need." (Sihle)*

Witnessed discomfort

Participants indicated that they witnessed a lot of discomfort on the part of the community on seeing either the vehicle with the Rapid Response Team or the ambulance. This is evident from the following extracts:

> *"Seeing a council vehicle getting into someone's residence was a nightmare; at times the teams would be in COVID-19 coveralls. It created a lot of anxiety in the community, it was a signal that there is someone who has tested COVID-19 positive in the neighbourhood." (Mpho)*

A person who tested positive for COVID-19 had to be transported by ambulance to an isolation centre:

> *"I witnessed instances where a COVID-19 positive person in the community was being taken from their residence by an ambulance to an isolation centre. The ambulance team was in COVID coveralls/gears. It was a frightening and traumatic experience for the person and his family. The whole neighbourhood was out of their houses watching. Can you imagine the trauma the client goes through? It was never a pleasant sight to witness." (Sakhe)*

Experiences of stigma and discrimination

Participants indicated that they noticed that the community was either afraid or uncomfortable in their presence. One participant had this to say:

> *"Being in a nurse's uniform or in COVID-19 coveralls created some fear in the community. As a healthcare worker participating in COVID-19 response activities, I felt the pain of being stigmatised." (Sipho)*

Discussion
In an effort to curb the spread of the COVID-19 virus and in accordance with the World Health Organization's guidance, Zimbabwe introduced COVID-19 contact tracing. The contact-tracing healthcare workers interviewed in this study experienced challenges as they executed their contact-tracing duties. Even though, there were more females than males that participated in this study, there were no differences in terms of study results. These challenges were associated with follow-up and contact-tracing activities, the psychological implications of the work, the support system provided for the job, and witnessed patient experiences. The discussion that follows is in line with the stated themes.

Follow-up and contact-tracing activities
Healthcare leaders play a critical role in supporting healthcare workers, particularly during moments of crisis (O' Donovan & McAulife, 2020). The importance of utilising a framework for best leadership practices during public health crises that encompasses listening to people, being truthful and honest, and maintaining frank and open communication with compassion, cannot be overemphasised (O' Donovan & McAulife, 2020). The participants that were involved in the COVID-19 Rapid Response activities were both from the local authority and public health facilities. These healthcare workers felt they were not prepared for the task, that they were simply assigned to the work, and they perceived it as some form of punishment. To enhance efficiency and ensure continuity of care during COVID-19 and other such pandemics, scholars have advocated for the provision of proper mental health support for the healthcare providers involved (Ho, Chee & Ho, 2020; Elkholy et al., 2021). This is further corroborated by Tomlin et al. (2020) and Cabarkapa et al. (2020), who emphasise the importance of organisational leaders to understand the needs of and provide support to their workforce. The researchers are of the opinion that these frontline healthcare workers should have been consulted, informed about the proposed move, and psychologically prepared before deployment to the COVID-19 Rapid Response Team.

The study participants also felt that that the workload involved in COVID-19 contact tracing was overwhelming, while incentives lacked. Many countries have adjusted their provider payment systems in response to pandemics such as COVID-19 (Waitzberg et al., 2020). In Tanzania, both financial and non-financial incentives were found to be effective motivators for healthcare providers (Mpembeni et al., 2015). According to the study findings of Bhaumik et al. (2020),

the provision of incentives to healthcare workers during COVID-19 (such as transport and housing allowances, equal training opportunities, and improved salaries) was found to be an effective strategy for staff retention.

Another stumbling block that was cited by healthcare providers (the contact tracers) was the long turnaround period for COVID-19 test results. This had a negative effect on the affected families and meant that the clients were kept in suspense, with some never getting their test results. This state of affairs made the clients and their relatives anxious, and they would constantly ask the Rapid Response Team about the results, whenever they met them. This echoed the findings of a study conducted in Ethiopia by Mulu *et al.* (2021), where delays in the COVID-19 test results were attributed to human resource challenges. Similarly, Kobia and Gitaka (2020) attributed delays in Africa to the fact that there were very few testing centres that had the capacity to do COVID-19 testing.

Support system
Preparedness

During any public health emergence, the support system forms the basis for motivating teams in the frontline involved in public health emergencies. This is a point that is further buttressed by Chapman and Veras-Estévez (2021) who argue that investment in training ahead of public health emergencies pays dividends by strengthening the health system resilience. In the COVID-19 context, a study by Williams *et al.* (2020) found that different governments provided different types of support to boost the morale of health workers during COVID-19.

According to Tessema and Nkengasong (2021), the health systems in Africa were inadequately prepared for the COVID-19 pandemic, and the impact was significant, particularly on frontline healthcare workers. A study by Desalegn *et al.* (2021) that assessed COVID-19 knowledge and the preparedness of healthcare workers found that there was sub-optimal preparation of healthcare workers involved in COVID-19 activities, which was evidenced by a lack of knowledge. Contrary to the findings of this study, the participants (COVID-19 contact tracers) in the current study indicated that they received some form of training that prepared them for the new role, although they felt that the training was inadequate. For example, the participants indicated that they polished their knowledge of some infection prevention and control practices (e.g., donning and doffing) while in the field.

The training of healthcare providers plays a critical role during an emergency such as COVID-19. Evidence has demonstrated that supportive conversations and clear guidance on the existing recommendations could minimise misinformation and help reduce anxiety (Adams & Walls, 2020). To ensure uniformity and standardisation regarding COVID-19 (and other pandemic) management, regular refresher training and debriefings should be conducted.

Provision of personal protective equipment

The evidence cited by Moyo *et al.* (2021) in South Africa and Bajaria *et al.* (2021) in Tanzania has demonstrated that healthcare facilities had limited availability of some COVID-19 precaution products, such as medical masks, disinfectants, hand sanitisers, and even access to running water (particularly in public healthcare facilities). In this study, the findings were different, as the participants indicated that they had sufficient supplies of personal protective equipment and that they appreciated this support that was provided by institutional managers. In contrast, in a study in Ethiopia by Deressa *et al.* (2021) found that the inadequacy of PPE during emergencies left the healthcare providers dissatisfied. That adequate training, proper use and uninterrupted availability of adequate PPE provide nurses with a minimal risk of infection when providing care to suspected or confirmed COVID-19 cases is emphasised in several studies (Adams & Walls, 2020; Karlsson Fraenkel, 2020).

The healthcare workers in this study who were involved in contact tracing indicated that the work environment was busy and challenging and that they were emotionally drained. The participants also expressed the need for a listening ear from management, which was absent at the time. Similar findings were noted in a study by Shanafelt, Ripp and Trockel (2020), which established that healthcare providers were grateful for the visit management made to COVID-19 units, as well as the support provided (Shanafelt *et al.*, 2020). In addition, the World Health Organization (2020b) calls for the provision of an adequate supportive supervision structure for all health workers assigned to COVID-19 activities. In this study, the participants appreciated the meals that were provided to them as they conducted COVID-19 contact tracing in the community, but unfortunately these were only provided for a short period of time by a donor during the initial days of the pandemic. Related to this, Zhang *et al.* (2020), in a study in China, found that a significant proportion of frontline healthcare workers had unbalanced diets throughout the COVID-19 response. Maffoni, Kalmpourtzidou and Cena (2021) highlight the important role played by nutrition during periods of stress and how it may affect healthcare professionals involved in COVID-19 activities. The authors argue that it is critical that strategies be put in place to enhance the nutritional status of frontline healthcare workers during public health crisis.

Psychological implications

The evidence shows that the COVID-19 pandemic has had a huge psychological impact on frontline healthcare workers. This is attributed to the excessive workload and long working hours, and the psychological strain emanating from the fear of contracting the virus, as well as the fear of spreading the disease to their families (Shanafelt *et al.*, 2020; Cullen *et al.*, 2020; Kisely *et al.*, 2020).

The participants in this study experienced anxiety and stress as they executed their contact-tracing duties. They feared contracting the virus, as well as spreading it to their families. In addition, the work environment was characterised by overwhelming workloads, resulting in stress. As per findings by Adams and Walls (2020) and Liu *et al.* (2020), this study found that healthcare workers were afraid they transmit the COVID-19 virus to their families. These findings concurred with those by Buselli *et al.* (2020) and Chersich *et al.* (2020) who also found a similar concern among healthcare workers.

The provision of psychosocial support to healthcare workers during an epidemic can have a positive impact on their mental health as studies in China have demonstrated (Wang *et al.*, 2020; Chen *et al.*, 2020; Zaka *et al.*, 2020). In that vein, the researchers would recommend that Zimbabwe provides such support to healthcare providers engaged in the fight against COVID-19 and other epidemics.

The healthcare providers experienced emotional pain or distress when they met clients in the community after the loss of relatives to COVID-19, or after testing positive or being told that they were a contact of someone who has COVID-19. According to the study participants, these clients were emotional and required psychosocial counselling, but the healthcare workers were not able to provide this service because of time constraints. The authors recommend a structured support system for healthcare workers during COVID-19 and other pandemics. Healthcare leaders play a critical role in supporting healthcare workers, particularly during moments of crisis (O'Donovan & McAulife, 2020). The authors further emphasise the importance of utilising a framework for best leadership practices during public health crises that encompass listening to people with compassion, being truthful and honest, and maintaining frank and open communi-cation (O'Donovan & McAulife, 2020). According to Shanafelt *et al.* (2020), the evidence shows that healthcare workers appreciate hospital leaders regularly visiting hospital units that are caring for patients with COVID-19, to provide reassurance and support.

Witnessed patient experiences

In the present study, healthcare workers who were part of the Rapid Response Team and who were involved in COVID-19 contact-tracing activities experienced emotionally challenging moments, for example when they came across people who had just lost a relative to COVID-19, or who were in distress because of being told that they were a contact. In some instances, they felt discomfort because of being unable to provide counselling to those in need, because of a lack of time. In a related study, Liu *et al.* (2020) pointed out that quantitative studies have shown that frontline healthcare workers who had provided care to COVID-19 patients have greater risks of mental health problems, such as stress, anxiety, depression and insomnia. Similar findings were noted during the Severe Acute Respiratory Syndrome (SARS) and Middle East Respiratory Syndrome (MERS) outbreaks, when healthcare workers experienced severe stress owing to fear of contracting the disease, and stigma and discrimination (Lee *et al.*, 2018; Maunder *et al.*, 2003). In addition, the healthcare workers in the current study also stated that they witnessed some discomfort on the part of the community on seeing either the vehicle with the Rapid Response Team, or the ambulance. Such instances of stigma and discrimination were noted in some studies. There is indeed evidence of stigma and discrimination against frontline healthcare workers (WHO, 2019; Poudel & Subedi 2020).

Limitations

Firstly, the study was limited to nurses who were involved in contact-tracing activities, working in a particular city and in one specific province (Bulawayo) in Zimbabwe. Still, the study was critical in that it provided the researchers with an opportunity to gain in-depth insights into the experiences of nurses who conducted contact tracing during the COVID-19 pandemic. Secondly, the study utilised telephone interviews as a data-collection method, which was convenient because of the COVID-19 situation. However, this meant that the interviewer was not able to observe and record the facial expressions/nonverbal cues of the study participants, and some non-verbal information might have been missed.

Conclusions

The COVID-19 contact-tracing strategy is an effective strategy in breaking the chain of transmission and controlling the pandemic. Our study findings confirmed that nurses play a critical role in the prevention and control of pandemics such as COVID-19. However, during the process of contact tracing, the nurses experienced several challenges related to the lack of an effective support system, work overload emanating from manpower shortages, and emotional effects. Contact tracing has proven to be a complex intervention and hence it must be integrated with an intense psychosocial support

system for the contact tracers, the indices, and the contacts alike. What the COVID-19 pandemic has done is to expose how fragile the health system in Zimbabwe is, and how dire the need is to boost its resilience in order to effectively respond to this and other pandemics. This study underlines the need for disaster/pandemic preparedness, including resource mobilisation to facilitate an appropriate response during such a public health emergency.

Data availability

Underlying data

Individual interview data for this study are not available without relevant permission from the Ministry of Health in Zimbabwe as the study involved healthcare providers and the Ministry of Health. Some of the information shared by the participants is confidential and disclosing of such information even with anonymity could violate the ethical principles of participants as their voices/identity might be recognised.

To access the individual transcripts data for this study, please contact the corresponding author (livhuwani.tshivhase@smu.ac.za). Access will be granted for research purposes only and after permission from the Ministry of Health in Zimbabwe has been granted.

Extended data

Figshare: The experiences of nurses who were involved in the COVID-19 Contact Tracing and Tracking activities in Bulawayo, Zimbabwe. https://doi.org/10.25443/smu-za.21564396.v2 (Moyo et al. 2022b).

This project contains the following extended data:

- Consent form Experiences on Contact tracing 29112022.pdf

- INTERVIEW GUIDE CONTACT TRACING 09 Nov 2022.docx

Data are available under the terms of the Creative Commons Attribution 4.0 International license (CC-BY 4.0).

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