

RESEARCH ARTICLE

An Assessment of COVID-19 Pandemic Quarantine and Isolation Programmes: A Case Study of the University of Limpopo

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Abstract

South Africa, like the rest of the world, was affected by the outbreak of the COVID-19 pandemic. From March 2020, the country's president, Cyril Ramaphosa, imposed lockdown regulations in an attempt to curb the spread of the coronavirus, which led to the closure of universities. When the national regulations allowed for the resumption of university activities, the University of Limpopo had to set up quarantine and isolation facilities as a strategy to manage infections. As a new initiative, challenges would be expected in managing this unfolding situation. Against this background, this paper considers the findings of a study which focused on the establishment and operations of quarantine and isolation facilities at the university. Documents were analysed for the purpose of data construction and substantiated with data collected through semi-structured interviews. The university staff members responsible for the facilities were purposively selected to participate in this study. Data were analysed through thematic content analysis. The study found that the university established the quarantine and isolation facilities according to government guidelines; the facilities were well managed; and activities were implemented as expected. However, operational challenges that require improvements were identified and this article accordingly makes recommendations.

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Keywords

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Introduction

On 30 January 2020, the World Health Organization (WHO) declared the coronavirus disease 2019 (SARS-CoV-2) outbreak a pandemic and a Public Health Emergency of International Concern (PHEIC). It further proclaimed the outbreak to be a biological threat to 21st-century society (Remuzzi & Remuzzi, 2020). In South Africa, the first COVID-19 case was diagnosed on 28 February 2020. In an endeavour to curb the spread of COVID-19, the WHO came up with multiple strategies, among which quarantine and isolation strategies were identified as fundamental. Considering the magnitude and severity of the COVID-19 outbreak, South Africa declared a National State of Disaster on 15 March 2020. In anticipation of actions that would follow, universities were advised by the Department of Higher Education in collaboration with Higher Education and Training, Health, Wellness and Development Centre (Higher Health) to close and evacuate students. The University of Limpopo suspended operations on 16 March 2020 and sent staff members and students home.

As a decisive measure to save millions of South Africans from infection, President Cyril Ramaphosa announced a national lockdown on 23 March 2020, which officially began on 27 March 2020. The lockdown enforced travel restrictions and led to the closure of educational institutions. The lockdown was categorised into different levels, from level 5 to level 1, with alert level 5 representing the worst case scenario, high levels of infection amidst low health system readiness.

As lockdown alert levels were relaxed, the process of returning students to campus (referred to in this article as “repatriation”) came into effect. The university established a repatriation committee, which consisted of a number of university stakeholders, to manage the return of staff and students. Under alert level 4, final-year medical students were repatriated to the University of Limpopo. All other students were supported through remote multi-modal teaching, learning and assessment.

With the return of students, universities were expected to establish quarantine and isolation sites to accommodate students who might have been affected by the virus. The establishment of such sites on campuses was meant to relieve the overburdened national healthcare system. The literature shows that the outbreak of the COVID-19 pandemic has surfaced a range of problems which include putting pressure on healthcare systems which have limited resources to manage the pandemic effectively in the context of high global infection rates (Zhao et al., 2020). The South African Department of Health (DoH) and Higher Health, with guidance from WHO, designed protocols and guidelines to be observed by quarantine and isolation facilities. The guidelines explicitly outlined procedures, processes, and standards for establishing and implementing quarantine and isolation sites (Higher Health, 2020; Department of Health, 2020). Deploying the Higher Health (2020) guidelines advising post-school education and training (PSET) institutions on how to manage and respond to COVID-19 outbreaks, the University of Limpopo

developed a quarantine programme and an isolation programme, which led to the establishment of quarantine and isolation facilities. The quarantine facility was developed to accommodate students who had had close contact with those who had been infected, as well as those who were showing signs and symptoms of COVID-19. The isolation facility was developed for students who were infected with COVID-19. In addition, the university adopted self-quarantine and self-isolation strategies for staff members.

Assessing the implementation and performance of the quarantine and isolation programmes at the University of Limpopo is essential for compliance, accountability and quality enhancement (Babbie & Mouton, 2011). Assessment provides feedback on how the programmes operated and the extent to which their expected objectives were attained (De Vos et al., 2011). To the best of the researchers' knowledge, no study has been undertaken to assess the implementation and performance of the quarantine and isolation programmes at the University of Limpopo. It is this background that necessitated that this study be conducted.

Research Problem

The advent of the COVID-19 pandemic, which led to a sudden closure of universities and colleges in South Africa, had extensive impacts on the teaching and learning activities at these institutions. The ensuing effects included unprecedented levels of anxiety and stress among staff members and students as the spread of the virus continued to threaten the well-being of those on campuses and in the communities around the institutions (Morganstein et al., 2017; Al-Rabiaah et al., 2020). When the government allowed for the resumption of academic activities, universities and colleges were left with the task of preventing and controlling the spread of the virus in order to create a conducive environment for living, teaching and learning. Although universities and colleges resorted to online platforms for teaching and learning and for general communication in an effort to minimise contact (Römer, 2020), the implementation of some academic and support activities continued to require face-to-face interaction, which compelled some staff members and students to return to campuses. To mitigate the spread of the virus on campuses, the government provided *Guidelines for Quarantine and Isolation in Relation to Covid-19 Exposure and Infection* (Department of Health, 2020) for the establishment and maintenance of on-campus quarantine and isolation facilities to ensure that those affected by the virus in these environment would receive appropriate care.

Subsequently, the University of Limpopo adopted the principle of self-quarantine and self-isolation for staff members and provided quarantine and isolation facilities for students. The university created quarantine and isolation facilities based on the government's guidelines; and the Student Health and Wellness Centre (SHWC) was tasked with the responsibility of providing programmes of care and support. There is no evidence that the university programmes have been assessed since their initiation. Considering that the logistics were relatively new and complex, a need arose for the programmes to be assessed in relation to their implementation and to establish possible challenges that would require improvements in the programmes.

Purpose of the Study

The purpose of the study was to assess the COVID-19 quarantine and isolation programmes of the University of Limpopo. In line with a number of theories which were used as frameworks for the study, the study sought to provide answers to the following main question and sub-questions:

Main question: To what extent did the University of Limpopo implement the intended programme activities?

Sub-questions:

- Does the University of Limpopo have quarantine and isolation facilities?
- How did the University of Limpopo operationalise its facilities?
- Were the COVID-19 standard operating procedures adhered to as prescribed?
- How was the tracking and placing of people under investigation (PUI) implemented?
- How was COVID-19 data managed in the facilities?
- How was quality ensured in the programmes?
- What were the challenges faced in managing the quarantine and isolation facilities and how were they addressed?

Theoretical Framework

To assess the COVID-19 quarantine and isolation programmes of the University of Limpopo, the theory deemed as the most appropriate guide by the research team was the Realistic Evaluation Theory and the Theory of Action.

The Realistic Evaluation Theory as developed by Pawson and Tilley (1997) argues that the success of interventions depends on the underlying mechanisms at play in a specific context. This is confirmed by Maben et al. (2018), who refer to the theory as concerned with the identification of underlying causal mechanisms that explain how an intervention works and under what conditions. This theory is said to be suited for the assessment of new initiatives and innovative programmes, which makes it suitable in relation to this study's efforts to establish what in the University of Limpopo's quarantine and isolation programmes worked, for whom, and under what circumstances, as well what did not work (Pawson & Tilley, 1997).

In addition, the Theory of Action was also deployed in the context of the Realistic Evaluation Theory as a guide for this research. According to Aguilar (2020), the Theory of Action entails predicting what will happen when implementing a set of strategies. The components of a system and the linkages between them are said to be outlined in a Theory of Action (D'Brot, 2019).

Methodology

There are different methodological approaches that can be used to assess a programme. The choice depends on the focus of the assessment (Gerrits & Verweij, 2018). The focus may either be implementation assessment, outcomes assessment or impact assessment. Given the focus of this study was on the implementation of the COVID-19 pandemic

quarantine and isolation programmes, a qualitative approach was adopted. The choice of methodology was informed by the fact that it enabled the researchers to interact with the participants in the study (Moser & Korstjens, 2018). The chosen methodology also helped the researchers to determine the challenges, the support and the ongoing concerns that needed to be addressed as the programmes were being implemented.

Research design

A case-study design was used to assess the programmes. The use of the design was prompted by the research question of the study, and the advantages that it offered in relation to how the study could be conducted, that is, with a focus on assessment of implementation. The design helped the researchers to interrelate with the participants and also to achieve a holistic view by understanding the nuances of the processes involved in the implementation of the COVID-19 quarantine and isolation programmes (Harrison et al., 2017).

Sampling

Ten respondents who were involved in the implementation of the programmes were purposively and conveniently selected to participate in the study. They were: the chairperson of the repatriation committee (CR); the overseer of repatriation coordination (OR); the head of the Student Health and Wellness Centre (HW); the manager of the quarantine and isolation programmes (MP); a data capturer (DC); a pharmacist (P); a nurse who was employed for the programmes (N1); a manager of housing (MH); an officer responsible for catering (C); and the head of the Centre for Counselling and Development (P). Both De Vos et al. (2011) and Greeff (2011) advise that in purposive sampling a particular case is chosen because its demonstrable features are of some interest for the study in question and are of relevance to the topic under study.

All respondents in this study were sampled because they had a stake in the development or implementation of the quarantine and isolation programmes and were expected to have rich information that was deemed appropriate and relevant in answering the research questions. Consequently, the selection criteria were: involvement in the establishment or implementation of the programmes; health practitioner qualification; and a willingness to participate in the study.

Data construction/collection

Research instruments are tools used to collect data (De Vos et al., 2011), and this study made use of a schedule of structured interviews with individual respondents. Structured interviews were utilised to prevent deviation from the scope of the research. In terms of question construction, this study used open-ended questions to gather detailed information on the implementation of the quarantine and isolation programmes and facilities. Open-ended questions, according to Cleave (2017), allow participants to provide detailed information, providing researchers with more useful and contextual responses.

The construction of the interview schedule was guided by both the Department of Health's guidelines (2020) and the University of Limpopo's COVID-19 health protocols. The 2020 guidelines were provided by the National Department of Health; and the university's health protocols were obtained with the permission of the university's registrar.

As a participatory study, with some of the researchers also participating in the implementation of the quarantine and isolation programmes, internal observations were made through site visits undertaken by those who were authorised to access the highly contagious facilities. A number of people who were involved in the establishment and implementation of the programmes, but were based outside the facilities, were also interviewed. A checklist based on the requirements outlined in the DoH guidelines was used to establish the availability of facilities and resources; and interviews were used to corroborate and confirm the responses in relation to this checklist.

Data Analysis

Analysis of data helps researchers to break data down into a manageable state (Flick, 2013). As the study was qualitative in nature, the data were analysed through a Thematic Analysis approach. This approach was selected because of its potential to assist researchers in identifying and analysing emerging patterns and themes from the data (Nowell et al., 2017). The process started with the transcription of the interviews into text. As Bazeley (2013) and Miles et al. (2014) advise, this was followed by reading the transcripts so that the researchers could familiarise themselves with the data. Data were sorted by developing codes which led to the development of categories. Codes and labels were allocated to words, sentences and paragraphs. This process helped the researchers to analyse the responses of the participants which led to the development of themes (Mori & Nakayama, 2013). The themes that emerged included the establishment of quarantine and isolation facilities at the University of Limpopo; the operation of the quarantine and isolation facilities at the University of Limpopo; adherence to government COVID-19 standard procedures; tracking and placing people in the quarantine and isolation facilities; managing data in the quarantine and isolation facilities; and quality assurance of the programmes.

Ethical Considerations

As Fleming (2018) and Bos (2020) advise, ethics play an important role in research. This is due to the fact that some of the methods that researchers use can be quite personal and invasive. The conduct of this study adhered to ethical guidelines. An ethical clearance was obtained from the Turfloop Research and Ethics Committee (TREC) of the University of Limpopo with the following project number TREC/139/2021: IR. Permission to utilise the university's documents was obtained from the university's registrar.

Other aspects taken into consideration included informed consent (Denzin & Lincoln, 2011). Participants were fully informed about the study, its purpose, and the benefits and consequences of participating in the study. They were also informed that

they had a right to not participate in the study and thereafter asked to sign a consent form. Other aspects taken into consideration included confidentiality and anonymity (Fleming, 2018; Bos, 2020). This was ensured by keeping the data confidential and using pseudonyms to protect the identity of the participants as reflected in the sampling section of the study. For example, the participants were coded as “MP”, “HW”, “NI” and “DC”.

Discussion

This section discusses and synthesises information relating to the two programmes. Research results are presented based on the themes that were identified during research and in alignment with the research questions to allow for thematic analysis as suggested by Mori and Nakayama (2013). After analysis, six themes emerged, each of which is discussed according to the information that was gathered. Any challenges that were identified in relation to each theme, and any solutions that were proposed under each, are also discussed in relation to the views expressed.

Theme 1: The establishment of quarantine and isolation facilities at the University of Limpopo

The research found that the University of Limpopo repatriation committee established separate quarantine and isolation facilities for students. The quarantine facility was established to accommodate students who presented with COVID-19 symptoms as well as those who had close contact with a COVID-positive person; while the isolation facility was strictly reserved for students who had tested positive. The quarantine and isolation facilities were established as part of efforts to manage the COVID-19 pandemic. This is in line with Brooks et al. (2020), who postulate that facilities such as those for quarantine have been used as a preventive measure for centuries in an effort to deal with major infectious outbreaks; and have proven effective in controlling the spread of infectious diseases, such as cholera.

The respondents indicated that the process followed in identifying sites for the facilities met the requirements of the national guidelines. The researchers are of the view that compliance with the national guidelines enabled the university to provide better facilities and healthcare. This is supported by Aiken (2008) and Shortell et al. (2009), who argue that better health facilities are associated with better healthcare. The national requirements for establishing such facilities included secluding them from dwellings; ensuring security was tight; and deploying the necessary resources for a healthy living environment. It is important to note that the context within which the quarantine and isolation programmes were implemented was an unusual one for the participants. The repatriation committee identified a number of student residences that met the national requirements for establishing the necessary facilities.

At the same time, there was a lack of complete adherence to the infrastructure guidelines. A few problems were identified in establishing the facilities, including the

absence of ramps for wheelchairs, and the fact that rooms and ablution facilities had to be shared, a concern especially at times of heightened levels of infection. The absence of ramps comes as no surprise since the university's residences for students living with disability were not among the identified sites. The sharing of rooms was arranged in a manner that met social-distancing requirements. Such sharing occurred mostly in the isolation areas.

To fulfil the requirements for the establishment of such facilities, it is suggested that a wheelchair-friendly environment be created. Antonak and Livneh (2000) and Wiman and Sandhu (2004) note that neglect of the needs of people living with disability can increase their vulnerability. One of the managers (MP) of the programmes succinctly made the point:

My biggest worry and challenge lies with the issue of easy access to the facilities by disabled students, as the facilities are not wheelchair-friendly.

Maintenance challenges such as power disruption were also reported, with the university's emergency services being called upon to alleviate the resulting problems. This finding is in line with Gehringer et al. (2018), who found that power disruptions pose a serious challenge to paediatric hospital admissions in South Africa.

Theme 2: The operation of the quarantine and isolation facilities at the University of Limpopo

Respondents indicated that the quarantine and isolation facilities operated as per the government guidelines and that the services were available at all times. The participants noted that students were quarantined or isolated for 10 days as per the guidelines and were released from the facilities when declared clear of the coronavirus. An existing management team comprising staff from the Student Health and Wellness Centre provided administrative support and cleaning services, alongside professional nurses who had been trained in how to respond to COVID-19 and were employed on a temporary basis. The services provided in the facilities were said to meet the minimum requirements for the implementation of quarantine and isolation. For example, three meals were provided every day; cleaning followed the required procedure; all staff members were supplied with the appropriate personal protection equipment (PPE); and sanitizer and cleaning disinfectants were made available at all the relevant spots.

Although the number of nurses and the absence of a proper data-capturing programme were initially cited as challenges, a lot of compromise and improvisation facilitated the smooth running of the facilities. In line with the theories used as a frameworks for this study, it was found that the quarantine and isolation programmes benefitted the students and eased the health threat to the broader welfare of the campus, as alluded to by Morganstein et al. (2017). One respondent (HW) noted:

The operation of the university quarantine and isolation facilities is as per the guidelines. For example, the facilities are open for 24 hours [a day, each] week.

Participants indicated that the university had not employed an environmental health practitioner, which had inhibited appropriate inspection of the facilities. Therefore, the strict facility-inspection procedures suggested by the national guidelines could not be undertaken. The challenge was exacerbated by a ban on external visitors under the university protocols at this time. This is in line with the findings by David and Mash (2020) at a quarantine facility in Cape Town where a number of staffing-logistics challenges were identified. Some of the facility management activities at the University of Limpopo were managed internally by university staff members.

Theme 3: Adherence to government COVID-19 standard procedures

It is necessary to state that reporting on most of these services required site visits for direct observation. Unfortunately, such visits were vetoed as a result of the nature and behaviour of the coronavirus. Thus, the information on this aspect of the facilities' operations was obtained indirectly from the staff members working in these spaces.

It was reported that the SHWC team developed a protocol to guide the delivery of services in the quarantine and isolation facilities, based on national standards. Pawson and Tilley (1997), in line with one of the theories used as a lens in this study, advise that deployment of good mechanisms leads to successful interventions. In this regard, the delivery of the services at the facilities entailed the implementation of standard operating procedures for both clinical and non-medical teams and the establishment of appropriate infection prevention and control measures. The study found procedural adherence to the protocol in areas including the stringent use of PPE within the facilities; well-executed daily clinical examinations of the residents and referrals to the nearest hospital for stabilisation; proper record keeping; and appropriate housekeeping, disinfection and decontamination procedures. Laminated paper was used for demarcating areas where necessary. The adherence to guidelines and protocols was confirmed by one of the respondents (N1) who noted:

Students are mandated to wear masks in the facilities and must be catered for in the facilities and this has been happening in the university facilities.

The movement of residents from one facility to another and the processes for their discharge strictly followed the protocol. That said, services were often affected by a surge of infections and some instability would be caused by the limited staff complement. Although the disposal of waste material was not supervised by an environmental health practitioner, staff members were well trained on how to dispose of PPE in coordination with the university's waste management company. Although it had been expected that an entrance and an exit would be provided at each of the facilities, the study found that, in fact, one main gate at each of the facilities was used to monitor and restrict both inward and outward movement. Inside the facilities, residents' rooms were separated, and no visits were allowed.

Challenges experienced in this area of service provision were reported as manageable mainly because staff members were well prepared to deal with the problems. This is contrary to the findings of David and Mash (2020), who found that there were challenges with regard to staff.

Theme 4: Tracking and placing people in the quarantine and isolation facilities

The respondents indicated that, in line with the national guidelines, the professionals within the facilities were tracking and placing students who came under investigation. The respondents indicated that the process of tracking and placing was triggered by a number of factors such as: arriving with COVID-19-related symptoms and reporting having been in close contact with a person who had tested positive for coronavirus but had failed to take the recommended safety precautions. In such cases, tracking and placement would be initiated immediately. Screening at the university gates also assisted in identifying people suspected of having contracted the virus, who would then be immediately placed under observation in the quarantine facilities. One respondent involved in the repatriation process (HW) noted:

At the gates, for example, everyone is screened and mandated to disclose any symptoms they might be having. If the person is positive, all their close contacts will be contacted or reached for placement or admission in the facilities.

According to one of the respondents (DC) involved in the facilities, those with whom the students who tested positive had been in contact were tracked down.

Say during screening a positive student indicates that they have been in contact with so and so, the process of tracking and placing will unfold.

According to the respondents, the main challenge in this regard was when the alleged contacts of those who had tested positive denied having had any such contact. This made it difficult to bring suspected cases to the quarantine facilities. Another reported challenge was the difficulty in detecting COVID-19 among students living off campus, especially if they did not seek help from the SHWC. This finding is in line with Kariuki et al. (2021), who found that privacy and confidentiality concerns can inhibit quarantining and tracing, especially when using an app.

The Realistic Evaluation Theory as developed by Pawson and Tilley (1997) argues that the success of interventions depends on the underlying mechanisms at play in a specific context. Accordingly, this study found that the quarantine and isolation programmes had been satisfactorily implemented.

Theme 5: The management of data in the quarantine and isolation facilities

The respondents indicated that the data captured at the quarantine and isolation facilities were well managed and kept safe and confidential. The quarantine and isolation programmes utilised an electronic register designed by the data capturer in the SHWC

to capture data and to enable access to these data, while the hard copies of the patient files were kept locked away. This adherence to ethical standards of confidentiality and anonymity was confirmed by one of the facility managers (MP):

The confidential information does not get shared with wrong people. It is managed and shared within professionals. Even in the reporting to seniors, like those in student affairs, the names of students are not shared; only statistics, general challenges and successes are shared.

Captured data were reportedly analysed statistically for reports that were shared with the management of the institution. This is in line with the findings by Ienca and Vayena (2020), who found that data management can also be used to mitigate future infections. This indicates that instead of treating data management as an ethical issue only, it can also be used as a strategy to mitigate future pandemics.

Theme 6: Quality assurance of the programmes

In line with the theories used as lenses for this study, one of the themes that emerged was that of quality assurance. The managers of the programme provide supervision at the facilities. For purposes of compliance with the university's health protocols, public health officers paid weekly visits to the facilities to monitor their activities and compile reports. These reports were presented at weekly meetings of the Division of Student Affairs, where general challenges are discussed and solutions are sought.

The study found that an online client satisfaction survey tool designed by the COVID-19 response team in the SHWC had been produced for quarantined and isolated students. Such online forms of communication have become quite common under what may be referred to as the "new normal" and, as Römer (2020) indicates, have provided some of the most effective strategies for "mediating" the situation under COVID-19. On admission, students were provided with particulars of those responsible for the management of the quarantine and isolation sites, as well as the details of those in authority at the university who could be contacted when emergency attention was required. The study found that, accordingly, the offices of the Dean of Students, the director of the SHWC and the director of the Centre for Student Counselling and Development (CSCD) were among those regularly consulted by students. This strategy of furnishing the students with a range of contacts who may be contacted in relation to COVID-19 issues assisted with the monitoring of services in the facilities.

Meanwhile, the study also found that the isolation and quarantine facilities offered no opportunities for physical and recreational activity, which could explain why many of the students in these spaces reportedly expressed discomfort in the facilities, with some demanding an early discharge. Most such cases were referred to university psychologists who offered counselling online. In this context, problems of internet connectivity experienced by a number of students were reportedly resolved when a new facility for the quarantine and isolation programmes was established. Baker and Greiner (2021)

assert that there is also a need to manage patient stress by giving them comfort and providing them with knowledge about the pandemic.

Limitations of the Study

The limitations of this study include following: limited literature on the assessment of COVID-19 quarantine and isolation facilities; insufficient responses to some of the questions because only a few respondents had access to the facilities.

Recommendations

There is a need

- for the utilisation of facilities that are disability-friendly to accommodate disabled individuals;
- for the university to employ an environmental health practitioner not only for COVID-19-related matters, but also for general assessment of its own facilities;
- to intensify health education to address challenges such as refusing to disclose close contacts in the facilities; and
- for the establishment of physical and recreational activities to deal with the discomforts that were reported by occupants of the facilities.

Conclusion

The data and analysis above suggest that the University of Limpopo developed effective quarantine and isolation programmes and established facilities within which quarantine and isolation could take place. This research found that the quarantine and isolation programmes adhered to government COVID-19 standard operating procedures and that the tracking and placing of people under quarantine and isolation were effectively implemented. The programmes were managed by experienced SHWC staff members who were able to capture and manage data properly and administer a client-satisfaction survey tool effectively.

The study identified a number of challenges and made recommendations where necessary. It found that some of the challenges encountered had been resolved through improvisation by using available resources. However, it was found that the university should attend to the lack of an environmental health practitioner, whose services are essential for the effective management of health programmes and facilities in general, as a critical matter.

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