



International Journal of Educational Methodology

Volume 8, Issue 2, 275 - 283.

ISSN: 2469-9632

<https://www.ijem.com/>

Lecturers' Experiences of Administering Online Examinations at a South African Open Distance e-Learning University During the COVID-19 Pandemic

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Received: January 14, 2022 ▪ Revised: March 2, 2022 ▪ Accepted: May 6, 2022

Abstract: South Africa, like other countries in the world, went into lockdown due to the Coronavirus disease (COVID-19) which meant closure of venue-based exam centres, university libraries and academic offices for more than three months. This encounter forced higher institutions of learning to review and reconfigure their assessment practices and conduct alternative assessment practises like timed exams, take home exams, randomised multiple-choice examinations and an online portfolio. Over and above that South Africa experienced load shedding (interruptions to electricity supply) and connectivity challenges which impacted the online examinations. This paper explores the experiences of lecturers whilst administering online examination at a South African Open Distance e-Learning university during COVID-19. Data collected from the lecturers who administered online examination through semi-structured interviews. Thematic analyses were used to analyse the data. Lecturers reported on student challenges related to time allocation, exam security, internet connectivity and data access, digital incompetency and support received from the information communication technology (ICT) department. Academics' reflection suggests that the system and students were not fully prepared and ready to write the online examination. The researchers propose continued technical and technological education and support for academics and students. Therefore, in line with these experiences, it is important to conduct further the research.

Keywords: *COVID-19 pandemic, digital divide, digital skills, lecturers' views, online examination.*

To cite this article: Majola, M. X., & Mudau, P. K. (2022). lecturers' experiences of administering online examinations at a South African open distance e-learning university during the COVID-19 pandemic. *International Journal of Educational Methodology*, 8(2), 275-283. <https://doi.org/10.12973/ijem.8.2.275>

Introduction

South Africa, like other countries in the world, went into lockdown due to the Coronavirus disease (COVID-19) pandemic that affected the normal operation of teaching and learning as well as assessment practices which meant that non-venue-based exam centres for summative examination, university libraries and academic offices were not in operation. This forced the higher institutions to abruptly reconfigure and review their venue-based assessment practices and conduct alternative assessment practises such as online timed exams, take home exams and online portfolios. Due to changes in the learning procedure (moving from correspondence to blended then online education) and demand for information and communication technology The ODeL institution under study was forced to review all assessment practices and adopted alternative assessment. Module leaders had a choice between online examination, e-portfolios, take home and randomized multiple choice.

Over and above that South Africa experienced load shedding due to a shortage of electricity and connectivity challenges which impacted the online exam. The university involved in this study, has been conducting traditional venue-based examinations for the more than 140 years of its existence with venues rented locally and internationally. The university offers blended learning which still includes a paper-based correspondence and learning management system. Although the university uses blended learning for most of its programmes the pandemic forced the institution to abruptly embrace full online teaching, learning and assessment. Students were accustomed to calling their lecturers and e-tutors for support with content, and they were used to venue-based examinations. No one expected the COVID-19 pandemic, but academic life had to continue. Academic activities such as teaching, learning, assessment, and student support had to be done differently. Lecturers and students relied heavily on online learning platforms and communication.

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Although online examinations do have some shortcomings, it came in handy given the pandemic to enhance the learning experience, content creation, course sharing, assessment, and feedback. Lecturers encountered some challenges with randomised tests, multiple choice, authenticating students and receiving proper examination answers from students. Biometrics such as physiological and behavioural characteristics can be used to identify students writing the online examination, which in turn will minimize cheating (Asha & Chellappan, 2008). Students struggled with connectivity to download and upload examination question papers and were unable to receive support from ICT and lecturers as they were working remotely and were unable to assist students, due to communication failure caused by offices changes. ICT is increasingly used as an aid to teach and enhance creativity, interaction, and knowledge sharing (Phuthela & Dwivedi, 2020). Some lecturers did not have basic tools such as laptops, or the laptops were old and lead to systems crashing. Findings of the study for Makgato (2014) reported that e-learning facilities in different institutions of higher learning are not effectively and efficiently used due to lack of technical support and assistance. This kind of support is necessary and should not stop during examination, moreover there should be a fail-safe measure to continuously create back up files in case of system failure (Pagram et al., 2018). Furthermore, students struggled to upload their answers via the digital platforms.

Literature Review

The COVID-19 pandemic disrupted normal teaching and learning as well as assessment in higher education. Thus, institutions of learning, including universities, were shut across the world. This situation forced universities to change their content delivery mode and they resorted to online learning (e-learning) to contain and stop the spread of the virus (Henaku, 2020). Across the world, institutions of higher learning such as universities transitioned successfully but there were inevitable challenges such as student access to internet connection, digital resources, and support from the institutions. In developing countries such as South Africa and other African states, transition was met with poor connectivity, high cost of data and recurring power interruptions. Online learning experiences were characterised by network problems caused by inadequate mobile phones which denied students constant internet connection for online learning (Henaku, 2020). The use of cell phones during randomised multiple-choice examinations created a lot of problems for students at the South African ODeL university. The university is an ODeL university offering blended learning which normally ran two semester examinations yearly. It has been offering traditional examinations for over 148 years. The non-venue-based examinations were conducted through invigilators who monitored the security of the examination throughout a two-hour session. However, during the online examination period most of the lecturers including the researchers in the college of education received numerous queries from students struggling to complete the online examination due to various reasons, cell phones took longer to load questions, load shedding, connectivity, and network challenges.

Despite these challenges, online assessment has its own benefits although it kept people away from their institution to curb the spread of the virus. Various authors highlighted the benefits of online examination. Firstly, Heidon and Arnold (2021) asserted that online assessment accelerates the development of alternative assessment techniques. According to Rehman et al. (2021) online examination curbs cheating better than traditional exams because of the use of proctoring software and apps that is designed to invigilate online examination. Online assessment techniques such as multiple-choice offer immediate feedback but do not automatically evaluate essay-writing exams. There are many varieties of online examination that can be managed by a business process model which can cover all examination processes and factors of educational institutions. Issues pertinent to the implementation of online learning are technological skills, support, time allocation for examination, roles, and functions as well as pressure and privacy (Harun et al., 2021).

On the other hand, it is worth noting that online examination has shortcomings that include lack of or inadequate technology knowledge or skills. Students want more flexibility in the Learning Management system, and lack of access and promotion are the biggest technology related problems for students (Olstad, 2020). In this regard study conducted by Olstad reported that artefacts were missing when students uploaded documents via Google Docs. Zafiropoulou and Darra (2019) assert that there is a risk of evaluating students 'technological knowledge more than their skills.

Onyema et al. (2020) lamented that the COVID-19 pandemic increased gaps in education globally because it created education disruption and lasted longer than expected. Online education was activated by the call of government to shut down the countries to ensure that teaching and learning continued effectively. In this study, we can learn about that from the perspectives of the lecturers. The authors also discuss the digital divide as another issue faced by students mostly from underdeveloped and developing countries. University closure made it harder for many students because they did not have technological tools to learn virtually (Onyema et al., 2020). Online education and added more pressure on students with limited digital skills, education, and resources. This affected their performance on learning and performance because they relied on the library resources and tools to learn.

The digital divide is defined as the gap between people who do and do not have access to forms of information and communication technology (Van Dijk, 2017), such as computers, internet, cell phones and digital hardware and software. People without access to ICT tools struggle to meet the obligations of the institutions. Moreover, the reasons for the digital divide are lack of resources, geographical locations, and demographics of income, education, age, gender,

and ethnicity, all of which were emphasised and shown to correlate to (physical) access. Furthermore, is argued that the problem with the digital divide is that we all know about it and its effects but tend to ignore them. Access in technology is achieved by learning skills and competencies needed for digital access. The author asserted that inequality contributes towards the digital divide because the group with resources try to appropriate the technology first, hoards its opportunities and reinforce their position in relation to another category. A transition to an online education model posed challenges for students without proper facilities and infrastructure (Onyema et al., 2020). The digital divide is most noticeable in rural areas and perpetuated by lack of connectivity. Performance of the student studied via online education can be affected by poor internet connection, lack of digital skills, and unavailability technological tools. Students are expected to access the university's learning management system to access content and assessment activities, which requires good internet connection and technological tools.

There is a great need for technical and pedagogical support for students (Bouzeghala, 2020). Lack of student support is another issue that contributes towards poor performance in online examination. Literature suggests that academics should devote time to support students to understand the targeted competency, and their scores will improve. Students desire more connectivity with their instructors, and report poor online platform connectivity (Schroder et al., 2020). Reasons for this include those working students do not have time to socially connect with peers and instructors via online platforms and may have less time to devote to schoolwork, thus prioritising interaction with instructors who could reply to course questions and concerns instantly. Support is crucial even though online examination strategies encourage autonomy for students, but many students do not have the necessary technical skills to do their studies online (Beckers & Merrienboer, 2018). Instructors need to prepare students prior the examination but due to COVID-19 this was difficult. Furthermore, academic support plays an important role in helping students gradually assume more responsibility over their own learning. They can support students by giving them feedback to improve their technical skills (Beckers & Merrienboer, 2018).

Theoretical framework

The researchers opted for the network learning theory as a theory underpinning this research study for several reasons provided by different scholars. Sirghea (2020) argues that during interaction with technology children can acquire knowledge autonomously and control the learning process. "Connectivism and networked learning emerged in the 1970s when Ivan Illich presented his ideas an "out-of-schooling" education and encouraged to move toward student social learning opportunities" (Sirghea, 2020, p.152). Universities offering education through ODeL are expected to offer everyone who wants to learn, access to resources at any time in their lives. Network learning provides students with independence and an autonomous environment within which to achieve their goals (Atay & Sumuer, 2021). This learning theory requires students to take responsibility for their learning. They are responsible for selecting and exploring knowledge within connected networks rather than consuming knowledge passively. An online learning environment requires students to be independent to obtain valid and current information. It is also argued that autonomous learning skills help students control the network learning process. Networks integrate knowledge developed by individuals and their learning is expanded through interaction (Baque et al., 2020).

Students are expected to build and maintain their own learning networks using human and non-human resources for access, and then process, apply, and create information by means of digital technologies (Atay & Sumuer, 2021). Sirghea (2020) argued that social networks are spreading rapidly and allow the development of collaborative content. Social networks comprise of people with a common interest or goal which is to promote and support a well organised flow of knowledge. This suggest that teaching and learning is facilitated by blogs, wikis, forms, and various tools. According to Yu et al. (2020) social networking enhances students' sense of community, promotes student support and peer interaction, and directly and positively influences students' learning experience, progress, and outcome. Social networking is an important medium to expand "communication" learning through ever-widening circles of contact. These networks include Facebook, WhatsApp, Links, LinkedIn. Given that the purpose of this paper is to explore lecturers' experiences of administering online examinations during the COVID-19 pandemic at a South African ODeL university to save the academic year, it is important to analyse their experiences for future reference. In this light the study seeks to answer the following research question: What are the lecturers' experiences of administering online examinations during COVID-19 pandemic at a South African ODL university?

Methodology

In this section, the research design, sampling and procedures, methods of data collection, analysis and trustworthiness of the study are discussed. With the above purpose in mind, qualitative approaches were employed to collect data.

Research Design

This study employed an interpretivist approach aimed at examining lecturers' experience. A case study design with the aim of getting holistic picture on the phenomenon under study was employed. The case study strategy enables the researchers to describe and explain issues related to the research that might not otherwise be accessible through other methods of inquiry (Denscombe, 2010).

Sampling and procedures

The participants interviewed were lecturers involved in the online examinations during May/ June and Oct/Nov 2020 in their respective modules at a South African ODeL university. Participants were purposively selected based on their experience of working in an online environment and administering online examination from the College of Education within the university. These lecturers were administering venue-based examination prior the COVID-19 pandemic. Due to COVID-19 restrictions the university decided to administer online examination only. Lecturers had to choose between take home and randomized multiple-choice examination. Although the participants' have ODeL teaching experience of more than five years however their experience of administering online examination is over a year, and their ages range from 35 to 60 years. Before the study was conducted, ethical clearance from the institution and informed consent from the participants were obtained.

Data collection

Eight participants were interviewed for 30-45 minutes each through Microsoft Teams App. were audio-recorded between August and December 2020. Inductive coding was used to identify themes from data because thematic analysis was employed to analyse data.

Data Analysis

Researchers opted for thematic analysis to identify and interpret data collected as it offers flexibility to researchers more especially novice researchers (Kiger & Varpio, 2020). Thematic analysis is a method used to analyse qualitative data and offers flexibility to researchers more especially novice researchers (Kiger & Varpio, 2020) and is widely used to seek to understand experiences, thoughts, or behaviours across data set. Laster et al. (2020) alluded that thematic analysis offers flexibility in identifying key issues from data that can be coded as themes. It is widely used to seek to understand experiences, thoughts, or behaviours across data sets. The researchers started with descriptive level of coding and work upwards in a systematic manner towards a more interpretive level. This interpretive process starts with identifying key themes from data supported by verbatim quotations or views of participants to provide proper interpretation in the form of discussion, conclusion, and recommendations (Smith, 2019). We derived themes from data constructed through interviews to make meaning and answer the research questions. This process involved coding and interpretation of selected codes and resulted in a data driven set of findings and a range of research questions.

Trustworthiness of the study

Trustworthiness refers to the systematic rigor of the research design, the credibility of the researcher, the believability of the findings and applicability of the research (Rose & Johnson, 2020). To ensure credibility of this study the researchers demonstrated the audit trail throughout the data analysis process. One of the researchers of the study who collected data in the initial study acted as research project leader. We used verbatim quotations of data and thick description to support data analysis to ensure transferability. Findings in the form of themes represent the reality of what happened during June/July and October/November online examinations. The literature review suggest that what happened in the studied context is happening somewhere else more especially in the university from developing countries. Discussions are supported by literature reviewed by the researchers, and we believe that this research can be transferred to other contexts because developing countries are faced with similar challenges such as poor connectivity, cheating, inadequate student support, and poor online systems. These challenges affect the delivery of content and administration of examinations.

Ethical clearance was given by the university, participants were given consent form to sign. Signature signalled availability and interest to participate in the study.

Findings

The participants interviewed were lecturers involved in the administering of online summative MCQs examinations. The eight participants were coded as participant using the letters of the alphabet A-H for data presentation of direct extracts. All participants were ensured confidentiality, with no identity markers, but rather using pseudonyms (Participant A-H). The following themes emerged: Exam security, internet connectivity and data and support from the ICT.

Time allocation

As is the case with any examination session there is time allocated for writing the examination. The participants revealed that their students reported that they could not complete their exams at the allocated time. Participants highlighted that they received calls and emails from students asking for extra time to upload their exam scripts.

"I received numerous calls from students reporting that time allocated lapsed while they tried to finish typing the answers." (Participant B)

"My students reported to me that they had connectivity challenge as they were trying to load their papers." (Participant A)

"Online examination is being administered for the first time therefore students get nervous when trying to navigate the system." (Participant E)

Authentication and examination security.

Cheating is a primary concern, as it may invalidate assessments, and may occur in many forms. Broadly, an individual may impersonate the candidate, or the candidate may access prohibited materials during the assessment. Such behaviours are overcome or minimised in an examination centre where proctors monitor behaviour. New mitigating strategies are essential to reduce cheating during online assessments.

"During the process of marking I came across many answers sheet that were the same, thus indicating that students shared information through cell phones, or they were writing together somewhere." (Participant B)

"This while marking the examination papers, given the large number of students in my module I have six markers out assisting with marking, in their reports they highlighted that scripts were the same." (Participant C)

Internet connectivity

During the interview the lecturer indicated that some students were hampered by a lack of internet access due to the digital divide, the high cost of data bundles, weak network signals and poor network coverage. Load shedding or interruptions in electricity supply added on poor network coverage.

The participants further noted that students expressed their concern that even though the university was able to provide data, many students never received the data as they had changed their numbers for various reasons without updating their contact details.

"There was a student that could not write the examination because the cell phone he was using could not download questions due to poor network." (Participant A)

"Without a smart phone it's difficult to download the question paper." (Participant C)

"Struggled to connect to the university online platforms due to poor network connection because Wi-Fi in the area of residence was not good." (Participant D)

This confirmed that the phones of some students lack the compatibility needed for synchronisation. These are major contributors towards implementation of online examination. Lecturers blame it on the COVID-19 pandemic because the institution created centres for students without laptops and internet to learn, where they can access content, activities and interact with their peers. Due to the COVID-19 pandemic and total shutdown these students could not attend these technological centres.

Due to the unexpectedness, short notice, and short preparation time, lecturers and students were inadequately prepared for the required learning resources. For instance, lecturers said:

"My students called me throughout the set exam day because they experienced challenges with connectivity thus failed to submit their online exams." (Participant F)

"Participant F said it was difficult to render instruction and support students because he did not have the laptop to do the job". (Participant D)

The lecturer was using the desktop personal computer from his office until all academic staff members were told to stay at home due to the increasing number of cases in South Africa. He only received a laptop at the beginning of June 2020. For many lecturers at the university, it was a case of not having a laptop to work on from home, or the laptop being so old that it was causing problems requiring IT assistance.

Participant E added that her laptop was very old and was shutting down all the time, requiring a service by the ICT technicians. She could access online platforms using the phone, but some documents could not be accessed due to their size.

"I have a special challenge before I was having a problem of laptop, it was malfunctioning, and sometimes I could not do anything from the laptop, sometimes it was frustrating to work from home because of the system itself, sometimes it was not user friendly, maybe because I was not used to the system, sometimes the technical errors made it difficult for me to do my job." (Participant F)

"I did not know how the online mark sheet is numbered for multiple-choice online examination; the structure of the question paper was not discussed prior to the examination date." (Participant A)

This was the comment of the new lecturer, raising concern over the instructional support students are supposed to get from the lecturer. System failure was also another big problem, on examination day the system could not handle the

vast number of students accessing at one time. *"System crashed during an online MCQ examination because it could not handle big number of students accessing on one time."* (Participant G)

Support from the ICT

Lack of support was highlighted by candidates as one of the issues that hindered smooth running of the examination.

"During Covid-19 exam online there were lot of challenges, some of the challenges it was difficult to fix because if you want to contact the person responsible for helping you, like I said it could take some time. So, there was a change, slight change from how

I used to do things before corona and during corona". (Participant H)

"I found that I was not linked to the module for second semester because when I was trying to post announcements for students, I could not, I did not know what was wrong until I went to the office to find out that no, you are not linked for second semester".

"So many virtual meetings we had to attend at the beginning were very long and took much of student time." (Participant E)

"I am a member of different committees in the department (ethics, research, teaching and learning, primary lecturer for 2 modules)." (Participant B)

Discussion

Prior to the COVID-19 outbreak, only a small number of courses administered and utilised online examination platforms. Heidon and Arnold (2021) asserted that online assessment accelerates the development of alternative assessment techniques. Time allocation during any type of exam has always been concern as many students would struggle to complete their venue-based examinations during the allocated time. It has been acknowledged that time allocated varied from one module to the other, with time allocated for downloading the paper and writing and uploading the completed exam script. Issues pertinent to the implementation of online learning are technological skills, support, time allocation for examination, roles, and functions as well as pressure and privacy (Harun et al., 2021). Students were given time ranging from two to 12 hours. Challenges such as load shedding, connectivity and insufficient digital literacy hampered the pace of uploading as students' struggle to download and upload affected their time allocated.

Worth noting that it is difficult to prevent cheating during online examination because of various connectivity options and tools students can use to chat with each other. Students can use Bluetooth, wireless networking, mobile phones, and wearable technology to communicate, share, and search answers during online examination. It is difficult to block from each student but according to Rehman et al. (2021) online examination curbs cheating better than traditional examinations because of the use of proctoring software and apps designed to invigilate online examination. Authentication of identity and monitoring are more difficult during online examination because there is no present human invigilator and students take exams in an uncontrolled environment such as homes or public venues.

Students needed to connect into university online learning management system to write their examination through technological devices. Lecturers designed assessment tasks and uploaded them on the online learning management system. Success of assessment also depended on the network learning which involved connectivity, and autonomous learning and assessment. Online learning experiences were characterised by network problems caused by inadequate mobile phones which denied students constant internet connection for online learning (Henaku, 2020). The use of cell phones during randomised multiple-choice examinations created a lot of problems for students at the South African ODeL university. If the internet (or WIFI) connection is lost during examination for an extended period, the student won't be able to continue. The eight participants in this study faced multiple challenges while teaching remotely during South Africa's first Covid-19 pandemic lockdown. However, all of them noted that their most significant challenge was having to tackle the problems caused by the country's poor infrastructure, namely interruption in electricity supply and poor internet connection. As a result, essential aspects of teaching and learning, were disrupted, including assessment. This agrees with university students' attitudes, whose primary concerns regarding online examinations were data security and data loss (Pagram et al., 2018).

The findings suggest that academics require technical support irrespective of the level of training received by academics for the implementation and usage of e-learning platforms. University closure made it harder for many students because they did not have technological tools to learn virtually (Onyema et al., 2020). Online education and added more pressure on students with limited digital skills, education, and resources. This affected their performance on learning and performance because they relied on the library resources and tools to learn. Access to internet is crucial for disseminating content and administering online examination. An IT support team is an essential resource during the transition from traditional to online examination. Findings of the study for Makgato (2014) reported that e-learning facilities in different institutions of higher learning are not effectively and efficiently used due to lack of

technical support and assistance. This kind of support is necessary and should not stop during examination, moreover there should be a fail-safe measure to continuously create back up files in case of system failure (Pagram et al., 2018).

Conclusion

The findings of this research study revealed that despite the pressure of redesigning assessment practice, the use of alternative assessment such as take-home examination and timed examination has yielded benefits. Students are expected to build and maintain their own learning networks using human and non-human resources for access, and then process, apply, and create information by means of digital technologies (Atay & Sumuer, 2021). Given the paradigm shift from traditional assessment practices to alternative online examinations that support 21st century skills like digital literacy, self-regulated learning, and critical thinking. Coronavirus took everyone by surprise and forced institutions of learning to make drastic changes to maintain the status quo. Onyema et al. (2020) lamented that the COVID-19 pandemic increased gaps in education globally because it created education disruption and lasted longer than expected. Real-time invigilation is required to maintain and demonstrate integrity of the online examination. Therefore, university must have a remote proctoring software in the form of an Invigilator App to monitor the online examination and maintain integrity of the examination. Students need to be reminded about an academic integrity policy and compelled to agree to it. Clear communication regarding outcomes and expected performance also helps. Biometrics are very important to identify people and therefore the university needs to ensure that every student passes a screening process before writing the examination. Lecturer training in technological tools and online learning management systems is very important because they are the first people to receive calls from students when they have a problem. Communication is key in an online learning space and more especially during a pandemic when people are quarantined in their homes. The emails received from students mainly conveyed enquiries about what might happen since they were unable to call their lecturers from the land line phones. One could argue for mobile learning using mobile devices but not all mobile devices have the minimum required capacity to carry and open the online system.

Recommendations

The study recommends that strategies for online examinations should be developed to address challenges that arose, such as connectivity literacy, time management and technical support during the examination period. In a country where there are many issues that affect online education and examination, continuous assessment could be the solution. Students can be graded according to their scores in formal formative assessment activities. The weight of final summative examinations can also be reduced and carefully redistributed to continuous assessments to promote an emphasis on positive learning behaviours. The researchers also propose the use of e-portfolios during the semester to track student progress and identify problems and gaps with learning. Institutions of learning need to ensure that their online systems are user friendly and easily accessible by students, for example, by subsidising students with data. Students performed badly in online examinations due to the following major contributors: expensive data in South Africa, lack of support or inadequate support, lack of skills, poor internet coverage and load shedding (interruptions in electricity supply).

Researchers suggest that Biometrics such as physiological and behavioural characteristics can be used to identify students writing the online examination, which in turn will minimize cheating (Asha & Chellappan, 2008) Further argued that Biometrics commonly uses soft traits like gender, age, height, weight and ethnicity, physiological characteristics such as face, eye and hands and behavioural characteristics such as keystrokes, signature, mouse movement, voice, gait, and pulse to recognise individuals, but two or more of the listed biometrics can be combined to improve the recognition accurateness.

Limitations

The limitations of this study lie therein that interviews were conducted at one university in South Africa with 15 participants but only eight administered randomised multiple-choice questions. More challenges prevailed during multiple-choice online examinations even though other types of examination, such as take-home examinations, presented problems. Many challenges were experienced were experienced by lecturers in administering multiple-choice questions (MCQs).

Acknowledgments

The research is based on the project housed in the Department of Curriculum and Instructional studies entitled: Re-defining and re-imagining teaching and learning: Response to COVID-19 challenges (Ethics certificate Ref: 2020/08/12/90159772/19/AM). The researchers are grateful for the participants who took time to participate in the project and the institution's editing team for their expertise in editing this article.

Authorship Contribution Statement

Majola: Conceptualization, design, analysis, writing and editing. Mudau: Conceptualization, design, analysis, writing, review and editing.

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