

Compliance of Learners and Teachers to COVID-19 Standard Precautions at Selected Rural Secondary Schools of Vhumbedzi Circuit, South Africa

by

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DECLARATION

I, **Misimiswa Rasivhetshela**, hereby declare that the mini-dissertation, titled, “**Compliance of learners and teachers to COVID-19 standard precautions at selected rural secondary schools of Vhumbedzi circuit, South Africa**”, hereby submitted by me, has not been submitted previously for a degree at this or any other university, that it is my own work in design and in execution, and that all reference material contained therein has been duly acknowledged.

Signature: 

Date: 26-09- 2022

DEDICATION

To my mother Tshililo Florence Mudau, my father Azwinnyandi Samuel Rasivhetshele, my brother Tshanduko Rasivhetshele, and my husband Tshifhiwa Musekene; thanks for always being there for me, for being my source of strength and inspiration when I thought of giving up. Thanks also for continually providing me with moral, spiritual, emotional, and financial support.

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ABSTRACT

COVID-19, as an infectious disease, is transferred from one person to another if standard precautionary measures are not complied with. Obese and older people, as well as those with chronic conditions, are more at risk of contracting this disease and its fatal outcomes. Despite government effort to enforce precautionary measures in every sector and communities, it is not clear whether all people are adhering to these measures. This study was conducted to investigate compliance of learners and teachers with COVID-19 standard precautions at selected rural secondary schools of Vhumbedzi circuit, South Africa. Learners represent every family; therefore, targeting them is like reaching out to families. The study used the descriptive cross-sectional quantitative research method. The target population were all secondary school learners and teachers, from grade eight (8) to grade twelve (12) in Vhumbedzi Circuit. To avoid selection bias, stratified sampling method was used to select learners, whereas total population sampling was used to recruit all teachers from the circuit. Data was collected following an observation checklist from four hundred and sixty-three (463) participants. Validity and reliability of the instrument were strengthened by adapting a standardised checklist from COVID-19 preventive measures in the community, which was developed by the Saudi Centre for Disease Prevention and Control. Its reliability correlation coefficient of 0.86. Data was analysed using the Statistical Package for the Social Sciences version 26.0. Descriptive statistics was used. The level of significance was set at $P < 0.05$. All (359, 100%) learners and all (n=88, 100%) teachers were complying with hand-sanitizing and temperature checks at the gate. All (359, 100%) learners were not complying with frequent hand washing, whilst all (n=88, 100%) teachers were complying. About 73% (n=262) of learners were non-compliant with wearing of mask at all times, while the majority (n=60, 68.2%) of teachers were compliant with the wearing of masks. In addition, all (n=359, 100%) the learners were non-compliant with using sanitizers when there was no water available at the schools, while all (n=88, 100%) teachers were compliant with this stipulation. Furthermore, all (n=359, 100%) of learners were non-compliant with avoidance of touching the eyes, nose and mouth with their fingers, as well as practicing social distancing in class and during breaks. All (n=359, 100%) the learners were also disinfecting their desktops, while the majority (98.9%, (n=87) of the teachers were not compliant on this stipulation. About 87.2% (n=313) were non-compliant with avoiding the sharing of food with others. The study concluded that there was better compliance with Covid-19 protocols amongst teachers than amongst learners. The study also generally found that there was a lack of evidence of statistical association between Covid 19 adherence and demographic factors, except in limited cases.

Keywords: COVID-19, Compliance, Learners, Precaution and Teachers.

LIST OF ACRONYMS

ARDS	: Acute Respiratory Distress Syndrome
COVID-19	: Coronavirus Disease 2019
CDC	: Centers for Disease Control and Prevention
DBE	: Department for Basic Education
DoH	: Department of Health
KAP	: Knowledge Attitude and Practices
KZN	: KwaZulu-Natal
MEC	: Member of the Executive Council
MERS-CoV	: Middle Eastern Respiratory Syndrome Coronavirus
NICD	: National Institute for Communicable Disease
SAMRC	: South African Medical Research Council
SARS	: Severe Acute Respiratory Syndrome
SARS-CoV	: Severe Acute Respiratory Syndrome Coronavirus
UK	: United Kingdom
USA	: United States of America
WHO	: World Health Organization

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CHAPTER ONE

OVERVIEW OF THE STUDY

1.1. Introduction

Coronavirus (COVID-19) is an extremely contagious disease that affects people of all ethnicities and ages. People with underlying medical disorders, such as cardiovascular disease, diabetes, chronic respiratory diseases, and cancer, as well as those over the age of 60, are at a higher risk (World Health Organisation, 2019). COVID-19 spreads between persons via respiratory droplets and contact pathways (WHO, 2020a). When a person comes into close contact (within one meter) with someone who is coughing or sneezing, droplet transmission occurs (National Institute for Communicable Diseases (NICD), 2020; WHO, 2020a). Once infected, both asymptomatic and symptomatic individuals can spread the disease. Furthermore, droplet transmission may occur via fomites in the immediate environment of the sick person (CDC, 2020; WHO, 2020d). COVID-19 virus can be transmitted through direct touch with infected people as well as indirect contact with surfaces in the local area or things used on the infected person (e.g a stethoscope or thermometer) (Liu et al. 2020; WHO, 2019).

COVID-19's clinical appearance is most similar to that of Middle Eastern Respiratory Syndrome Coronavirus (MERS-CoV) and SARS-CoV. This is due to the fact that most patients complain of a cough, myalgia or weariness and fever, that may or may not be productive (NICD, 2020; WHO, 2020a). Individuals with this condition may experience dyspnea and hypoxemia, with the danger of rapidly progressing to Acute Respiratory Distress Syndrome (ARDS) or organ failure requiring artificial breathing (Remuzzi, 2020).

This chapter focuses on the study's orientation. It describes the general orientation of the investigation, the research background, and the study's problem. The chapter also reveals the study's aim and objectives, as well as its significance, demarcation and scope. The important phrases and concepts are also provided and discussed in a way that demonstrates how the researcher interprets and applies them in the study.

1.2. Background of the study

COVID-19 is a global public health challenge, which emerged as an outbreak from Wuhan, China in December 2019 (Zhong et al. 2020). The World Health Organization declared it a pandemic on March 11, 2020, due to increasing numbers of cases outside China, and because all regions and countries were starting to experience incidences of COVID-19) As of

24 July 2022, there were 574.794.634 coronavirus cases reported worldwide (Chen et al. 2020). Europe had the highest number of COVID-19 cases (213.481.140), America (171.029.546), Asia (166.788.994), Africa (12.489.031) and Oceania 11.005.202 (WHO, 2020c; WHO, 2020d; Young, 2020). South Africa reached its highest infections, with 4.002.133 people (24 July 2022). This is the largest number of confirmed cases in Africa (WHO, 2021, United Nations International Children's Emergency Fund, 2020).

Vaccines against COVID-19 were subsequently introduced in the world's market, and until now (2022), they are considered the best way to protect oneself against the COVID-19 pandemic. Although different vaccines have been produced, the WHO strongly encourages nations to implement actions to slow the spread of COVID-19 by limiting contact between infected and uninfected people (Graham, 2020; WHO, 2020a). Despite the wide availability of vaccines, some countries are continuing with suggested measures such as lockdowns, school and public place closures, and strict personal techniques of utilizing face masks, cough and hand cleanliness, as well as physical distance. This is because some people are still vaccine hesitant and there are countries that have not yet reached herd immunity (WHO, 2020a; Zhu et al. 2020). Many governments are lifting COVID-19 restrictions (Ong et al. 2020). COVID-19 patients with underlying conditions are twelve (12) times as likely to die, compared with those who have no such conditions (CDC, 2020). Therefore, it is essential for those who are at higher risk to always protect themselves and others around them (Centers for Disease Control and Prevention (CDC), 2020). Despite poor health infrastructure in many African countries, the reported death rate has been low, compared to other parts of the world (CDC, 2020; Hopkins University, 2020).

Regarding studies that have been conducted among learners in different countries to investigate compliance with standard precautions, only one study was found in Uganda (Nakitto, 2021). According to Nakitto (2021), a large number of learners and staff members wear masks every day inside school premises. Furthermore, most of the schools had temperature guns, handwashing facilities and classroom arrangements that encourage social distancing. However, many learners were not using sanitizers because they are not provided by the school and are costly. Learners and staff members wash their hands many times a day. This is attributed to the lower cost of water and soap and material accessibility (Mbabazi, 2020). The above measures were in adherence to the directions of the ministry of education and health, which had been put in place before schools reopened.

South Africa closely watched the virus epidemic in China and other countries, implementing tight safeguards from the start, especially after the WHO declared COVID-19 a pandemic

(WHO, 2020c). These measures include the closure of schools and universities, the temporary ban of government and private activities, cancellation of international flights, the closing of retail malls, and the prohibition of large gatherings, even prayer meetings. They also included house isolation for suspected patients as well as those living with these people (South Africa; Regulations, 2020; WHO, 2020b). The Department of Health developed a series of ongoing educational initiatives to raise public awareness and urge adherence to infectious disease preventative measures, particularly the importance of the entire country preserving social distance (DoH, 2020; WHO, 2020b). While these stringent precautions were effective in lowering viral transmission, they had to be maintained in conjunction with vaccination; otherwise, cases would rise again once the intervention measures were eased (CDC 2020; WHO, 2020d).

Nonetheless, despite these precautions, the fight against COVID-19 continues in South Africa (WHO, 2020d). South Africa entered an amended alert level 4 lockdown on June 27, 2021, in an effort to limit the spread of the third wave of COVID-19 triggered by a new strain (Delta variant) and lessen the burden on healthcare facilities. According to the research, the Delta variant had a severe wave in South Africa, swiftly becoming a dominant variety; the country still has the greatest COVID-19 burden in Africa. Western Cape effectively became the country's COVID-19 epicentre in terms of active cases during the third wave, while Gauteng is still home to the most confirmed cases; more than 75% of cases were reported as recoveries (National Institute for Communicable Diseases, 2020). Meanwhile, as of Tuesday August 31, 2021, the cumulative total of COVID-19 cases had risen to 2.770.575 in South Africa, after 7 086 patients were confirmed to have contracted the virus. Gauteng had 905 489 cases after the outbreak, followed by Western Cape with 485 186 cases, KZN at 479 952 and Eastern Cape at 268 879 (NICD, 2020). It was reported by the Department of Education that there were many schools which had been affected by COVID-19 in South Africa, and a growing number of learners in Gauteng were testing positive; more than 3314 cases were identified in different schools with more than 1000 learners testing positive (Department for Basic Education [DBE], 2021).

The Minister of Basic Education announced standard operating procedures for the prevention, containment, and management of COVID-19 in schools, which included learners, staff members, and visitors wearing face masks at all times and maintaining a social distance of at least one meter from others, where possible. It also advised a staged approach to learner and employee arrival and leave to further reduce social interaction (DBE, 2020; WHO, 2020a; NICD, 2020). Furthermore, frequent washing of hands with water and soap was implemented. Where there was a shortage of water, a 60% alcohol-based

hand sanitizer had to be used. Resources were made available to all learners and staff to practice uninterrupted hygiene (DBE, 2020; WHO, 2020a; NICD, 2020). In South Africa, such restrictions had never been used on this magnitude previously. As a result, it is unknown to what extent people are adhering to these measures, what factors influence adherence, how long adherence lasts, and how successful the whole intervention and its components are at reducing transmission of COVID-19 (WHO, 2020d). Therefore, a study of this nature is important, to investigate compliance of learners and teachers with COVID-19 standard precautions at selected rural secondary schools of Vhumbedzi Circuit, South Africa.

1.3. Problem statement

Every learner and staff member is expected to comply with the Department of Basic Education standard operating practice for the prevention, containment, and control of COVID-19 in public transportation to schools, as well as around schools premises across South Africa. These include wearing of face masks at all times, maintaining a social distance of at least 1.5 to 2 meters with others (DBE 2020; WHO 2020a; NICD 2020). The researcher observed with concern that learners and teachers are ignorant in following precautionary measures during the third wave, when using public transport to school, which might lead to a COVID-19 surge. Furthermore, the degree of compliance in school premises amongst learners and staff members is not clear. Hence, the pertinence of this study, which attempt to investigate compliance of learners and teachers to standard COVID-19 precautions at, selected rural secondary schools of Vhumbedzi Circuit, South Africa.

1.4. Rationale of the study

The researcher was inspired to perform this investigation since previous studies on compliance were conducted in China, globally and in developed countries only (Chen et al.2020). Furthermore, there is just a single study that has been conducted globally at schools. While education initiatives have increased understanding of COVID-19, it remains unclear to what degree these public health actions are adhered to at schools. According to the researcher's knowledge, this is the first study to be carried in Vhumbedzi, to investigate learners and teachers' compliance with COVID-19 standard precautionary measures at rural secondary schools of Vhumbedzi Circuit, South Africa.

1.5. Study purpose and Objectives

1.5.1. Study purpose

The study's purpose was to investigate learners' and teachers' compliance with standard COVID-19 precautionary measures at selected rural secondary schools of Vhumbedzi Circuit, South Africa.

1.5.2. Objectives

- To assess the level of compliance of secondary school learners/teachers regarding standard COVID-19 precautionary measures.
- To describe the factors contributing to compliance levels of learners and teachers.
- To assess the relationship between compliance and demographic factors.

1.6. Significance of the study

These insights gained from this study might serve as a baseline for future intervention studies. Currently, there are few studies, which have attempted to research about COVID-19 in the Department of Education of the Vhembe District. The study findings might also help the Department of Education to improve its responses to COVID-19, by measuring adherence to COVID-19 standard precautionary measures. The results of the study may also provide guidelines to inform policy implementation strategies for the Department of Basic Education. The study findings will also help the Department of Health in Vhembe to identify the gaps with regards to COVID-19 precautionary measures adherence. Furthermore, the results might assist the circuit management and the school principals to make recommendations that can be utilized to improve the effectiveness of COVID-19 guidelines. Finally, the study findings may conscientize learners and teachers on the status of adherence to standard COVID-19 precautions and the need to take such measures seriously.

1.9. Definition of terms

In scientific research, concepts are supposed to be defined, to avoid vagueness. If terms are used without a definition, indistinctness transpires. The following key terms are defined and explained below:

Compliance- It is defined as the extent to which a person's behaviour coincides with medical or health advice (Haynes, 1979). In this study compliance refers to strictly adhering to standard COVID-19 precautions of screening, wearing mask, social distancing and hand washing/sanitization.

Learner- It is someone who seeks information on a specific topic (Department of Basic Education 2017). In this research, learners refer to all males and females registered for the 2021 academic year across secondary schools in Vhumbedzi Circuit.

Teacher- Is a professional who is trained to provide instruction and teaching methods in the field of education to learners (Cameron, 2016). For this study's purpose, teachers refer to all teachers, teacher's assistants and the principals working at secondary schools in Vhumbedzi Circuit during 2021 academic year.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

The outbreak of Coronavirus (COVID-19) was accompanied by various measures to try and contain and prevent its spread (World Health Organisation (WHO), 2020a). These preventive measures were meant to keep COVID-19 from spreading between persons through respiratory droplets and contact routes (WHO, 2020a). When a person comes into close contact (within 1 m) with someone who is coughing or sneezing, droplet transmission occurs (National Institute of Communicable Diseases (NICD), 2020). As a result, maintaining a one-meter gap between persons is a protective precaution. Droplet transmission also happens through fomites in the infected person's immediate surroundings (WHO, 2020d). As a result, preventive measures are critical to preventing COVID-19 transmission between people, and being in contact with infected people, as well as indirect contact with surfaces in the nearby environment or with equipment used on those infected, such as stethoscopes or thermometers (WHO, 2020a). The precautionary measures were implemented as a proactive measure to protect people from contracting COVID-19 because it is not always easy to detect the symptoms of COVID-19 from individuals. These precautionary measures include the wearing of masks in public spaces, maintaining of the social distance of 1 metre from other people, washing of hands, self-isolation, quarantine in cases of infection, and vaccination. This chapter discusses these COVID-19 preventive measures. There are some advantages and challenges regarding the implementation and compliance with these measures.

2.2 The safe practices for COVID-19 prevention

According to Vokó and Pitter's (2020) research, the implementation of the 'stay-at-home' policy in many nations resulted in the decrease in COVID-19 cases. However, with the lifting of this barrier and the lifting of movement among people, the rates of COVID-19 cases surged by 24 percent every day in most European countries. This growth was greatly curtailed by the establishment of social separation, which differed from nation to country. In some countries, for example, when social distancing quartiles increased, COVID-19 spread decreased to 0.9 percent, 0.7 percent, and 1.7 percent, respectively. Thus, the benefit of increased social distance quartiles, the fourth quartile, was statistically significant. In addition, controlling the initial wave of the COVID-19 pandemic was linked to good

management of the social distance measure. Despite the implementation of social distance measures, the study discovered a need to focus on the protection of targeted micro-societies, such as high-risk elderly folks and nursing facilities, and chronic facilities, to ensure that the activities in these places do not compromise and obstruct the prevention measures in place. The study's findings highlighted the importance of maintaining and adhering to COVID-19 preventative measures in all public locations, including schools.

According to Ahmed, Ahmad, and Jeon (2021), different countries implemented exceptional preventive steps to deal with the COVID-19 global pandemic and strive to reduce the rate of infections, and schools were no exception. One of the critical methods used to prevent the spread of the virus was social distancing (Saxena, Baber, & Kumar, 2021). On the learning architecture, a social distance was established as a preventative measure that aids in the maintenance, management, monitoring, and reduction of the physical connection between persons in a real-time setting (Ahmed, Ahmad and Jeon, 2021). The outcomes of the study by Ahmed, Ahmad, and Jeon (2021) demonstrated that some individuals efficiently monitor their social distance and pass the practice to other individuals, which increase the accuracy by 96 percent adherence to the approach. However, maintaining social distance in the school setting is challenging because the classroom setting requires pupils to engage with one another (Varela & Fedynich, 2021).

Sun and Zhai (2020) discovered that social separation is one of the most heavily emphasized prevention precaution method to stop the spread of COVID-19. There was a challenge in determining what constituted a safe distance, particularly in places such as schools and workplaces. The study found that 1.6 - 3.0 m is the social distance that is safe for the aerosol transmission of large droplets inhaled while talking. The study also found it difficult to maintain a safe social distance because, in calm air situations, taking into consideration all the droplets while individuals are chatting could necessitate a distance of up to 8.2 m apart. According to the study, estimations utilizing validated models for different circumstances, such as building spaces, indicated that greater social distance could significantly reduce the COVID-19 infection risk by 20% - 40% of the first minutes. The minimal ventilation for fresh air should vary according to the distancing condition, exposure time periods, and the performance of air distribution systems. As a result, this study concluded that social distance alone is not an effective method for mitigating COVID-19 infection.

Another study by Olivera-La Rosa, Chuquichambi, and Ingram (2020) found that there is widespread agreement among academics on the approaches to social distancing as a way of reducing the transmission of COVID-19. The study also sought to determine whether

individual differences in pathogen sensitivity, social anxiety, and generalised social trust predicted evaluations of the necessary social distance and illness perceptions in target faces wearing surgical masks. The findings revealed a significant sensitivity to infection discomfort, which was associated with reduced trustworthiness judgments and decreased social desirability. High levels of social anxiety among participants indicated higher levels of sickness and lower levels of trustworthiness. Mask wearers were perceived to be sicker, more trustworthy, and more socially appealing than those who did not. However, the school setting differs from any other public environment in that it entails a precise gathering of students to achieve education in a collective manner. This suggests that extra precautions against COVID-19 are required.

In the United States, Varela and Fedynich (2020) evaluated the influence of COVID-19 on leading schools in South Texas. The paper cites school cancellations as evidence of the seriousness of the COVID-19 threat to kids, staff, and parents. The study found that COVID-19 served as a warning to education stakeholders about the experiences of education in times of crisis and how to run schools during such times, such as the COVID-19 epidemic. The study revealed that COVID-19 demonstrated the necessity for schools to be prepared for pandemics or crises of similar nature, in order to effectively serve children, staff, and parents. However, a shortage of resources and widespread student inequities hamper the COVID-19 experience. The study's findings demonstrated the need for competent school leadership in situations like COVID-19.

As one of the most successful COVID-19 prevention measures, almost all countries throughout the world have implemented social distance rules. Lee, Chen, Wu, and Chiou (2021) explored the unexpected consequences of COVID19 social distance limits. This constituted a significant difficulty because resources for human survival, such as social connections and money, are interchangeable. This is predicated on the premise that scarcity in one area can inspire people to acquire resources in another domain due to social connection. This study demonstrated that, contrary to popular belief, humans seek to be linked. This has implications for educational situations as, in most underdeveloped nations and settings, education is primarily focused on classroom setting and pupil gathering. It is intriguing to analyze adherence to COVID-19 containment methods (Johansen, Astrup, Jore, Nilssen, Dahlberg, Klingenberg, Berg, & Greve-Isdahl, 2020).

In South Africa, the Basic Education Minister announced standard operating procedures for the prevention, containment, and management of COVID-19 in schools, which included learners, staff members, and visitors wearing face masks at all times and maintaining a social distance of at least one meter from others, where possible. It also advised a staged

approach to learner and employee arrival and leave to further reduce social interaction (DBE, 2020; WHO, 2020a; NICD, 2020). Furthermore, frequent washing of hands with water and soap was implemented. Where there was a shortage of water, a 60% alcohol-based hand sanitizer had to be used. Resources were made available to all learners and staff to practice uninterrupted hygiene (DBE, 2020; WHO, 2020a; NICD, 2020). In South Africa, such restrictions had never been used on this magnitude previously. As a result, it is unknown to what extent people are adhering to these measures, what factors influence adherence, how long adherence lasts, and how successful the whole intervention and its components are at reducing transmission of COVID-19 (WHO, 2020d). As a result, this study is justified, to investigate adherence to COVID-19 prevention strategies among learners and instructors at selected rural secondary schools in South Africa's Vhumbedzi Circuit.

In South Africa, strategy to control the spread of COVID-19 included closure of schools and universities, temporary cancellation of government and private activities, suspension of foreign flights, and closure of retail malls, and a prohibition on large meetings, including group prayers in churches (Haider, Osman, Gadzekpo, Akipede, Asogun, Ansumana, Lessells, Khan, Hamid, Yeboah-Manu, & Mboera, 2020). Furthermore, there was isolation at home for suspected patients and those who live with them (WHO, 2020b). In South Africa, these measures are constantly monitored and altered, to guarantee that the economy does not come to a halt, revitalizing the informal sector of the economy, and especially ensuring the continuity of the education sector (Mhlanga, & Moloji, 2020).

2.3 Social distance as a preventative technique for COVID-19 transmission in schools

Brooks-Pollock, Read, McLean, Keeling, and Danon (2021) found that in the absence of COVID-19 vaccines, the virus transmission could be managed by avoiding person-to-person contact through social distancing measures. These actions were critical for various segments of society to reopen parts of society and economic operations. To guarantee effective COVID-19 containment, health stakeholders, organizations, and governments must analyze how the combination of social policies affect transmission and understand how these measures complement one another. Brooks-Pollock et al. (2021) focused on school re-openings against a backdrop of broader social distancing measures. Based on the low rate of interactions, the study found that reopening primary schools after the lockdown had a minor impact on transmission. However, the re-opening of elementary schools is anticipated to have a substantial influence on COVID-19 transmission because the students involved might be unconsciously failing to adhere to the social distance measures, playful, and

enhanced social mixing. According to the study, proper social distance, avoiding physical contact, wearing masks, and using sanitizers are required for all age groups at school.

Since the beginning of the COVID-19 epidemic, some countries have implemented e-learning measures, employing learning management systems such as Blackboard. Varela and Fedynich (2021) discovered that COVID-19 created an immediate need to transfer from traditional classroom settings to virtual learning in order to preserve students' educational continuity. This proven to be a successful strategy for avoiding COVID-19 spread through student interaction (Maatuk, Elberkawi, Aljawarneh, Rashaideh, & Alharbi, 2021). However, the difficulty with this strategy was the pervasiveness of disparities within communities (Aboagye, Yawson , & Appiah, 2021). This is because individual students must have access to digital technology tools and the Internet to participate in e-learning (Almaiah, Al-Khasawneh, & Althunibat, 2020). Some students, particularly in underdeveloped nations, lack the requisite digital tools and skills to benefit from e-learning (Mseleku, 2020). This has compelled most governments to reopen schools, particularly primary and secondary schools, in order to keep the education sector alive, by adhering to precautionary measures such as maintaining social distance, washing hands, using sanitizers, wearing masks, and constantly monitoring temperature for any signs of COVID-19 (Adeoye, Adanikin, & Adanikin, 2020).

According to Ferrero-Guillén, Dez-González, Verde, Ivarez, and Perez (2020), the COVID-19 epidemic has posed a significant obstacle to schooling. School closures in various regions of the world have posed issues for education and children in terms of social connection and physical activities among these pupils. As a result, most countries reopened schools, while effectively imposing some safety preventative measures, such as mask use, complete hand washing, hydro alcoholic gels, and preserving social distance, by lowering classroom capacity. However, the study found that these actions could not completely stop COVID-19 spread among children. The investigation also revealed that there is a need to establish acceptable table dispositions that enhance the distance between pupils, while adhering to government regulation patterns in classroom settings. The study's objectives and conclusions by Ferrero-Guillén et al. (2020) emphasize the importance of taking safety preventative measures in schools to contain COVID-19.

2.4 Quarantine as COVID-19 prevention measure

Lockdown and quarantine precautions were adopted alongside universal measures, including mask use, temperature monitoring, self-isolation, and social distancing (Shah, Shah, & Shah) (2020). However, there are a number of issues associated with the quarantine of individuals who are critical to the operation of organizations and institutions.

The confinement of employees in educational environments made it harder to support and instruct kids (Reeves, & Le Mare, 2017). For example, Laws and Xun's (2021) found that induction of teaching philosophy and curriculum followed new trajectories from previous educational experiences that followed the strict and traditional paradigm. During COVID-19 early phase's outbreak, most instructors participated on a volunteer basis, while in isolation (Lovri, Fari, Miki, & Vev, 2020). Both professors and students encountered practical and technical hurdles when attempting to move from traditional face-to-face learning to online learning (Duraku, & Hoxha, 2020). Due to these obstacles, most teachers were ready to return to their centres, in order to reopen the institutions and allow the children to return to school (Donitsa-Schmidt, & Ramot, 2020; Radecki, & Schonfeld, 2020).

According to the research of Bozkurt, Jung, Xiao, Vladimirschi, Schuwer, Egorov, Lambert, Al-Freih, Pete, Olcott Jr, and Rodes (2020), COVID-19 stimulated reflexes to ensure effective collaboration and perseverance in the education sector. COVID-19 has an impact on traditional education's planned methods. The difficulty is that the desire to adopt new patterns and practices of learning (e-learning) has unwittingly resulted in the persistence of inequalities and plainly deepened the digital divide on initiatives to support distance learning (Czerniewicz, Agherdien, Badenhorst, Belluigi, Chambers, Chili, De Villiers, Felix, Gachago, Gokhale, & Ivala, 2020; Parker, Morris, & Hofmeyr, 2020).

2.5 Impact of COVID-19 on education, constraints, and mitigations

According to Singh and Singh (2020), persons are social by nature, and thus exist through social links and interactions. Contrary to the health, government, and other relevant authorities' containment procedures, this posed a challenge to social engagement. In most poor countries, education has been experienced through every day physical encounters and classroom settings. Safety preventative measures such as one-and-a-half-meter social separation had a significant impact on traditional education settings and resulted in the temporary closure of schools (Crawford, Butler-Henderson, Rudolph, Malkawi, Glowatz, Burton, Magni, & Lam, 2020). The reopening of these schools was rigorously monitored to verify compliance with and adherence to the safety precautions to be taken to avoid the spread of COVID-19 (Ilesanmi, & Afolabi, 2020). Due to the alarming resurgence of the virus within school and/or academic premises, certain schools and/or academic institutions in South Africa and other areas of the world were forced to close. Today, it is critical for schools and academic institutions to guarantee that the COVID-19 safety precautions are implemented (Samarasekera, Goh, Yeo, Ngiam, Aw, Lim, Pillai, Lee, Mahadevan, Kow, & Chong, 2020).

According to Ngwacho's (2020) research, COVID-19 had no direct impact on education. Because COVID-19 hampered economic progress, vulnerable and marginalized households were also harmed because their informal jobs and source of income were harmed. This had a significant influence on their ability to finance and support their children, such as supplying uniforms and learning materials. The governments' adoption of online learning had a severe impact on disadvantaged families and kids who could not afford to engage online or have access to digital tools (Jena, 2020; Tria, 2020). As a result, the government reopened schools in order to manage these hurdles and assure continuing access to inclusive, quality, and equitable education during the COVID-19 pandemic. This necessitated the appropriate deployment and monitoring of safety preventative measures to contain COVID-19, in order to promote continuous learning in these educational institutions (Dibner, Schweingruber, & Christakis, 2020). However, several problems exist in attempts to prevent COVID-19 spread in educational institutions, such as failure to comply with COVID-19 safety precautionary measures (Levinson, Cevik, v & Lipsitch, 2020).

In terms of research undertaken among learners in various nations to assess compliance with standard precautions, only one study was found in Uganda (Nakitto, 2021). According to Nakitto (2021), many learners and staff members wore masks on a daily basis within school grounds. Furthermore, most of the schools used temperature guns, hand washing stations, and classroom layouts that induced social separation. However, many students were not utilizing sanitizers because they were not supplied by the school and were expensive. Learners and staff workers washed their hands numerous times a day. This is because of the shortage of water and soap costs, as well as other material accessibility (Mbabazi, 2020). The aforesaid procedures were strictly implemented in accordance with the orders of the ministries of education and health, which had to be put in place before the schools reopened.

2.6 The implications of vaccination for COVID-19 and education

COVID-19 vaccinations are regarded as the most effective protective approach against the COVID-19 pandemic. Vaccines are also used in an attempt to halt the spread of COVID-19. Despite these advancements toward finding a solution to contain COVID-19 through vaccines, different health organizations and governments continue to strongly advise people all over the world to continue implementing interventions limiting interaction between infected and uninfected people to help to decrease the spread of COVID-19 (WHO, 2020a). COVID-19 containment procedures, such as nationwide lockdowns, school and public area closures, and stringent personal methods of using face masks, cough and hand hygiene, and physical separation, remains crucial.

Some people throughout the world are still unwilling to get the vaccinations. The attitude is political, and governments are depending on strict social distancing strategies to try to halt the development of COVID-19. Recent trends and statistics on vaccine recipients and access show that Africa and the majority of developing countries lag behind the industrialized world. Africa accounts for only 7% of the dosages provided globally. Despite the weak health infrastructure in many African countries and the low rate at which individuals are vaccinated, reported death rates have remained low when compared to wealthy countries.

2.7 Education on the safety practices towards containing COVID-19

The education drive to keep COVID-19 from spreading is critical in most parts of the world, particularly in populations where people are illiterate. Education is also necessary to combat the many misconceptions, ignorance, and disinformation about COVID-19. Misinformation spreads through various platforms, including social media networks and word of mouth from non-experts. Furthermore, correct education on the spread of COVID-19 is critical to raising public awareness and encouraging adherence to infectious disease preventative measures (WHO, 2020b). These safeguards, however, must be complemented by a commitment to take the vaccines.

Arguments have been made that a lack of knowledge, as well as illiteracy among people, are some of the reasons for the ongoing battle against COVID-19, and South Africa is no different (WHO, 2020d). Despite some visible normalcy in some parts of the world due to economic revival and practical involvement in various aspects of socioeconomic and political lives, South Africa appears to be struggling to achieve a substantial level of normalcy in containing COVID-19, as witnessed on 27 June 2021, when the president announced a modified alert level 4 lock down in an attempt to contain the spread of the third wave caused by a new strain known as the Delta.

2.8 Perceptions on reopening of schools

Following the disruptions caused by COVID-19, governments around the world chose to reopen schools. This was viewed by various stakeholders, parents, and non-governmental organizations to have varying implications on the transmission of COVID-19, and in some cases to be counterproductive to efforts to restrict the spread of COVID-19. Meghani, Agarwal, Zapf, Edwards, Labrique, and Gibson (2021) found that parents are comfortable sending their children back to school when it is evident that the government has put in place strategies and plans for how the children would be protected by adhering to safety preventive measures. When compared to the reopening of schools, most parents (84

percent) preferred online learning. The findings highlight the importance of proper monitoring of safety preventative measures to reassure parents that their children are safe (Joulaei, & Kalateh Sadati, 2020).

According to the findings of Narmada and Somasundaram (2020), the reopening of schools following the disruption caused by the COVID-19 pandemic necessitated the need for appropriate support to ensure that schools have access to COVID-19 safety precautionary equipment such as sanitizers, automated sanitizer systems, masks, and thermal scanning technologies. This also resulted in the growth of inequities between private and public schools, with most public schools struggling to satisfy the required requirements to ensure that pupils return to schools (Ancheta and Ancheta, 2020; Dee, Huffaker, Phillips, & Sagara, 2021).

2.9 Conclusion

This chapter discussed the many components of COVID-19 safety preventive measures (Fitzpatrick, Korin, & Riggall, 2020). COVID-19 spread prevention requires preventative steps in any society. Despite the increasing availability of vaccines to various segments of society, the wearing of masks in public places, thorough hand washing, the use of sanitizers, maintaining social distance, self-isolation, and even quarantine, remain critical for individual self-protection and the protection of others against COVID-19. The research, however, revealed that the requirement for human existence, as well as support for socioeconomic and educational activities, contradict the practices of safety preventative measures. Among the obstacles encountered in ensuring compliance to the safety preventive measures to contain COVID-19, the focus of the present study was on compliance of learners and teachers in rural secondary schools of South Africa's Vhumbedzi Circuit.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1. Introduction

The path that researchers must take to perform their research is referred to as research methodology (Sileyew, 2019). Guided by the research objectives, in this section, concepts relating to population, sampling, instrumentation, data collection and analysis strategies are detailed. The study's area and ethical issues related to the study are defined.

3.2. Study design

The study used a quantitative research approach, to quantify the compliance of learners and teachers to COVID-19 standard precautionary measures at rural secondary schools of Vhumbedzi Circuit, South Africa. A Quantitative research is an examination into a social problem that explains phenomena through the collection and analysis of numerical data using mathematically based approaches. (Creswell, 2016). This study used descriptive cross-sectional quantitative research design. The researcher chose the cross-sectional research method because the study seeks to investigate compliance of learners and teachers to COVID-19 standard precautionary measures at rural secondary schools of Vhumbedzi Circuit, South Africa at one point in time. A descriptive design, which is a form of study design that describes a population, circumstance, or phenomenon without altering it in any way, was utilized (Silva, 2017).

3.3. Study setting

The research was carried out at Vhumbedzi Educational Circuit, one of the educational circuits in Vhembe District, which is located east of Sibasa and north of the Kruger National Park. The Vhembe District has a total population of 1.402.779 and the majority of people in this district speak Tshivenda. There are more female than male residents. The Statistics of South Africa community survey 2016 show that the rate of water supply and sanitation in Vhembe District is low. Vhumbedzi Circuit comprises of ten (10) secondary schools; namely, Funzwani, Mpandeli, Ntodeni, Tondalushaka, Ntsedzeni, Mpfumedzeni, Vuvumutshena, Ntevhedzeni, Rannogwana, Limbedzi and twenty-four (24) primary schools and one independent primary school, with a total of four thousand seven hundred and eighty-five (4785) learners and one hundred and fifty-one (151) teachers in all secondary schools. Vhumbedzi Circuit was chosen because of its large population. As a result, there are many secondary schools in Vhumbedzi Circuit, as illustrated in Figure 1 below. Therefore, it was impossible to include all schools that fall under Vhumbedzi Circuit.

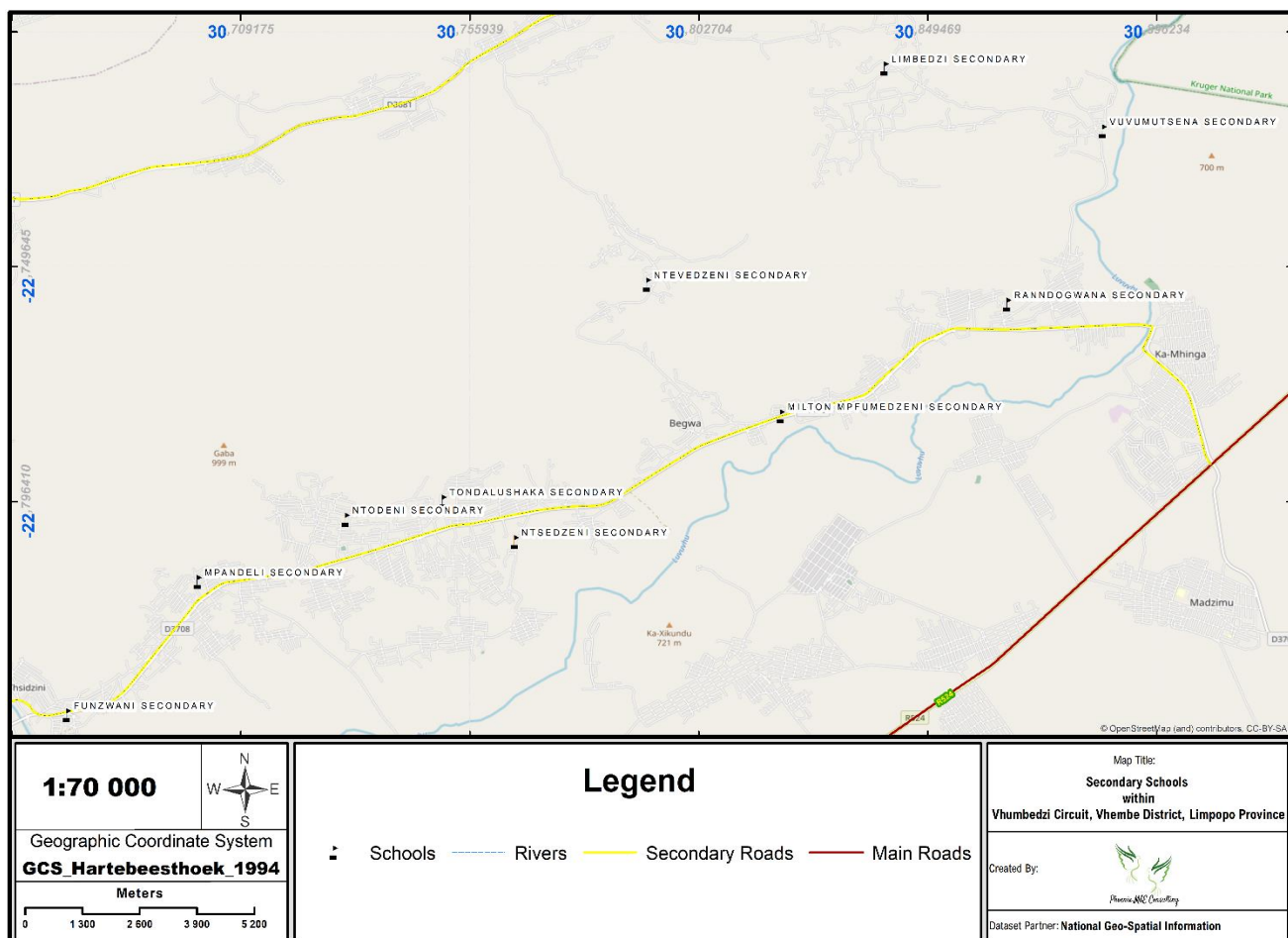


Figure1. Map showing Vhumbedzi Secondary Schools.

3.4. Study population

The study's target population were high school learners and teachers from Vhembe District while the accessible population were learners aged between 13-18 and teachers from high schools that fall under a selected Circuit (Vhumbedzi Circuit), as shown in Table 2.

Table 3.1: Distribution of learners and teachers in Vhumbedzi Educational Circuit in 2021

School names	Learners total per school	Total number of teachers per school
Funzwani	307	11
George Ntodeni	643	15
Tondalushaka	453	16
Ntsedzeni	245	13
Mpandeli	793	30
Vuvumutshena	356	10
Randogwana	426	17

Limbedzi	147	07
Milton Mpfumedzeni	1358	30
Ntevhedzeni	57	02
Total	4785	151

3.5. Sampling

Sampling happened in stages. Schools within the circuit were sampled using purposive sampling method. Participants were sampled using stratified sampling method.

Table 3. 2: Distribution of learners and teachers of selected secondary schools in Vhumbedzi Educational Circuit in 2021

School names	Learners total per school	Total number of teachers per school
George Ntodeni	643	15
Tondalushaka	453	16
Ntsedzeni	245	13
Mpandeli	793	30
Milton Mpfumedzeni	1358	30
Total	3492	104

3.5.1. Sample size

The sample size was calculated using the Slovin formula below

$$n = \frac{N}{1 + Ne^2}$$

n=sample size of adjusted population

N=population size

e=accepted level of error usually set at 0.05

$$n = \frac{N}{1 + Ne^2}$$

$$n = \frac{3492}{1 + 3492(0.05)^2}$$

$$n = 359 \text{ learners}$$

$$n = 359$$

To accommodate non-responses, an additional 10% of the sample size (36) for learners were added to the sample size, which resulted in the total sample size of 395 learners and 104 teachers. In addition, a specific sample frame per grade and gender was calculated by dividing the sample size by the overall population, multiplied by the total number of learners per that particular grade/gender. Refer to the tables below.

3.5.2. Sampling of schools

Purposive sampling was used to select the schools that were convenient for the researcher and easily accessible, because it is impossible to study the entire population due to time constraints, and that the selected schools have large learner numbers. Therefore, only five schools; namely, Mpandeli, George Ntodeni, Tondalushaka, Ntsedzeni, and Milton Mpfumedzeni, were selected using purposive sampling.

3.5.3. Sampling of participants

3.5.3.1. Sampling of learners

To select learners who participated in the study probability-stratified sampling method was used because it was not be feasible to address all learners due to the high enrolment numbers among learners. A stratified sampling is a sampling technique that divides a population into smaller groupings known as strata. Learners in grades 8-12 were divided into strata based on their grade level in each school. To get 359 students for the study, simple random sampling was used within each stratum. A specific sample frame per grade and gender was calculated by dividing the sample size by the total population, multiplied by the total number of learners per that particular grade/gender. See Table 3,4,5,6,

3.5.3.2. Sampling of teachers

For teachers, the total population sampling was used. A purposive sampling method that studies the entire population of interest is called total population sampling. (Creswell, 2017). This sampling method was chosen because the total population of teachers is of manageable size. Thus all 104 teachers were observed.

Table 3.3: Sample frame per gender and grade for Milton Mpfumedzeni Secondary School

Grades	Males	Males sample	Females	Females sample	Total per

		frame		frame	grade
Grade 8	163	17	192	20	37
Grade 9	129	13	141	14	27
Grade 10	139	14	136	14	28
Grade 11	111	11	100	10	21
Grade 12	107	11	140	14	25
Total		66		72	138

Table 3.4: Sample frame per gender and grade for Mpandeli Secondary School

Grades	Males	Males sample frame	Females	Female sample frame	Total per grade
Grade 8	63	6	55	6	12
Grade 9	84	9	74	8	17
Grade 10	94	10	88	9	19
Grade 11	71	7	90	9	16
Grade 12	100	10	74	8	18
Total		42		40	82

Table 3.5: Sample frame per gender and grade for George Ntodeni Secondary School

Grades	Males	Males sample frame	Females	Female sample frame	Total per grade
Grade 8	97	10	97	10	20
Grade 9	67	7	64	6	13
Grade 10	84	9	91	9	18

Grade 11	27	3	50	5	8
Grade 12	30	3	36	4	7
Total		32		34	66

Table 3.6: Sample frame per gender and grade in Ntsedzeni Secondary School

Grades	Males	Males sample frame	Females	Female sample frame	Total per grade
Grade 8	15	1	17	2	3
Grade 9	15	2	11	1	3
Grade 10	41	4	50	5	9
Grade 11	29	3	30	3	6
Grade 12	18	2	19	2	4
Total		12		13	25

Table 3.7: Sample frame per gender and grade for Tondalushaka Secondary School

Grades	Males	Males sample frame	Females	Female sample frame	Total per grade
Grade 8	28	3	46	5	8
Grade 9	32	3	26	3	6
Grade 10	77	8	49	5	13
Grade 11	54	6	41	4	10
Grade 12	44	4	56	6	10
Total		24		23	47

3.6.1. Inclusion criteria

All learners from 13 to 18 years of age, registered for the 2021 academic year and all teachers who were employed at all the selected secondary schools under Vhumbedzi Circuit.

3.6.2. Exclusion criteria

Learners who were in secondary school and teachers who were employed in a secondary school but not at Mpandeli, Tondalushaka, George Ntodeni, Ntsedzeni and Milton Mpfumedzeni secondary schools.

3.7. Data collection tool

An observation checklist was used as a tool for gathering information for the purpose of this study. The checklist contained sixteen (16) close-ended questions. The observation checklist was divided in two (2) sections: Section A, demographic characteristics of the participants, including age, gender, marital status, race, grade, and education level, Section B, observation checklist assessing participant's degree of compliance to standard precautions with a Yes and No format. A quantitative structured observation method was used. Participants were observed in their natural settings. The researcher directly observed the participants from morning until everyone had left after school. The researcher observed them starting from the gate in the morning, participants were asked for their demographic information as they were being observed, and results were recorded.

3.7.1 Pre-test

The precision of the instrument was ensured by using the test-retest method with the same respondents who were involved in pre-testing, to assess the consistency of the results. To ensure reliability, the instrument was pre-tested, and the outcomes were used to reshape and change some features of the observation checklist, thus making it appropriate and understandable for the participants. The test-retest method was also used on 10 percent (36 participants) of the sample size to ensure reliability of the tool. The test-retest was done a week apart from the pre-test.

3.7.2. Validity and reliability

3.7.2.1. Validity

Validity is defined as a measure of the truth or falseness of the data obtained by means of an analysis tool (Burns & Grove, 2016). Content and face validity as a test of validity were used to ensure that the instrument has captured the entire concept related to compliance. To

ensure content validity, the observation checklist was checked by the study supervisors. To ensure face validity, the observation checklist was checked for clarity, appropriateness, wordiness, and use of jargon by the biostatistician and supervisors.

3.7.2.2. Reliability

Reliability is the degree of accuracy with which the instrument calculates an attribute. The reliability of the instrument was strengthened by adapting a standardised checklist from COVID-19 preventive measures in the community, which was developed by the Saudi Centre for Disease Prevention and Control (2020). It has a correlation coefficient of 0.86.

3.7.3. Data collection process

Once the permission to collect data in the respective schools was granted, data collection commenced. Specific prior appointments were made with the respondents at least one week prior to data collection. Data collection took place in participants' respective classrooms, offices, or staff rooms. Prior to collection of data, an information sheet and a consent form (Appendix 5) were handed out to respondents, so that they could read and sign them. Then the data collection process begun.

3.8. Data analysis

Data was analyzed using the Statistical Package for the Social Sciences (SPSS) version 26.0. Descriptive statistics, such as means, standard deviation, and frequencies, were used to describe items on the questionnaire. The chi-square was used to find an association between social demography and other variables when the level of significance was set at $P < 0.05$.

3.9. Ethical considerations

3.9.1. Approval to conduct the study

The researcher used the University of Venda protocol to obtain ethical clearance. The study proposal was presented to the Department of Public Health and School of Health Sciences Higher Degree Committee for quality assurance. The proposal was submitted to the Executive School Higher Degree Committee for approval. It was then submitted to the Research Ethics Committee of the University of Venda for assessment and issuance of ethical clearance. The proposal was also submitted to the University Higher Degree Committee for approval. After approval and ethical clearance from the University of Venda, the researcher consulted the Limpopo Department of Education to seek permission to

conduct the study. Further permission was then obtained from the circuit manager and school principals.

3.9.2. Informed Consent

Nail (2015) states that informed consent is an ongoing communication process that takes place between a participant and a researcher to ensure participant comfort. It allows the participant to volunteer with no fear of harm or feeling threatened. It was the researcher's duty to provide the participants with all the necessary information before participating, so that the participants chose to participate with a full understanding of the study's dimensions. The researcher also gave written consent to each participant and explained the intent to them before the test. For minor participants (those who were less than 18 by age), parental informed consent forms were sent to their parents to give consent on behalf of their children to participate in the study. Participants were then asked to sign an assent form, which approved their parents' or legal guardians' permission to participate in the study.

3.9.3. Volunteering to participate

Babbie & Mouton (2012) suggest that involvement should be optional, that participants should not be forced to participate, and that they should not feel threatened by their own will to participate in the study. Drawing from this, all participants in this study were allowed to form part of the study out of their own will. Thus, participants were informed of their right to withdraw from the study when they no longer wanted to be a part of it.

3.9.4. Confidentiality

Confidentiality refers to how the information revealed by the person is managed (Babbie and Mouton, 2012). Participants' information should be kept safe and accessible only to the researcher, and not to any other person. Confidentiality was ensured by providing each participant with a pseudonym, to protect the true identity of the participant. Numbers such as P1 or P2 (participant 1 or 2) were allocated and used when discussing and analysing the data. The list of participants' real names and matching code were locked in a safe place, where only the researcher could access it. Participants' personal information is not published anywhere in the research report.

3.9.5. Avoidance of harm

The study involved minimal risk of harm. Participants' information was not disclosed to anyone other than people who are involved to the study. No one was forced to form part of

the study and participants were free to opt out of the study anytime they feel like. The researcher clearly informed the participants about the purpose of the research.

3.10. Delimitation

The research was delimited to investigate the compliance of learners and teachers with standard COVID-19 precautionary measures at rural secondary schools of Vhumbedzi Circuit, South Africa.

3.11. Plan for dissemination and implementation of results

Research soft copies will be submitted to the examination department, and then sent to the Library of the University of Venda. The findings will also be presented during seminar presentations and conferences. It is also envisaged that the findings will be published in relevant journals so that they can be accessible to many audiences.

CHAPTER 4

RESULT PRESENTATION AND INTERPRETATION

4.1. Introduction

This section uses tables and graphs to present and provide an interpretation of all the data that was analysed with the purpose of showing what the researcher found in this study.

4.2. Demographic characteristics of the Participants

The study was generally made up of two groups of participants: mainly, learners and teachers. The breakdown of the demographics of each group was done separately, to avoid any confusion.

4.2.1. Learners' demographic characteristics

Table 4.1A below shows that there were 359 students who took part in the study. 146 of the learners were aged 12 to 15 years, which constituted 40.7 percent of the total learners. Another 213 were aged 16 to 25 years, and they constituted 59.3 percent of the total learner population.

Table 4.1A – Learner Age Distribution

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	12-15	146	40.7	40.7	40.7
	16-25	213	59.3	59.3	100.0
	Total	359	100.0	100.0	

Graph 4.1A: Learner Age Distribution

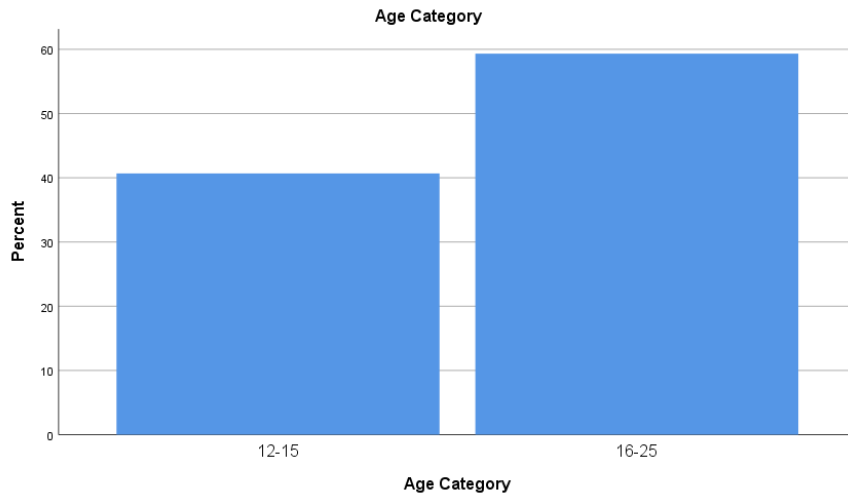


Table 4.2A shows that out of the 359 learners that participated, 176 were males and this constituted 49 percent of the total learner population. Another 183 of the participants were females, and this constituted 51 percent of the total learner population

Table 4.2A: Learner Gender Distribution

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	176	49.0	49.0	49.0
	Female	183	51.0	51.0	100.0
	Total	359	100.0	100.0	

Graph 4.2A: Learner Gender Distribution

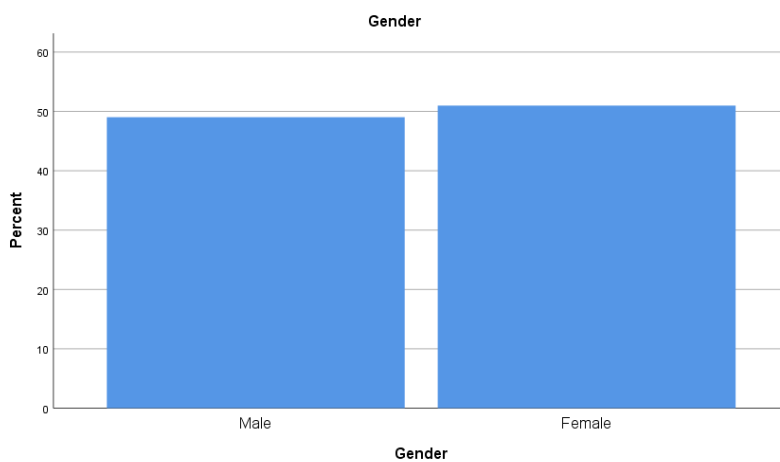


Table 4.3A shows that all 359 (100 percent) of the learners who participated in the study were of African descent.

Table 4.3A: Learner Race Distribution

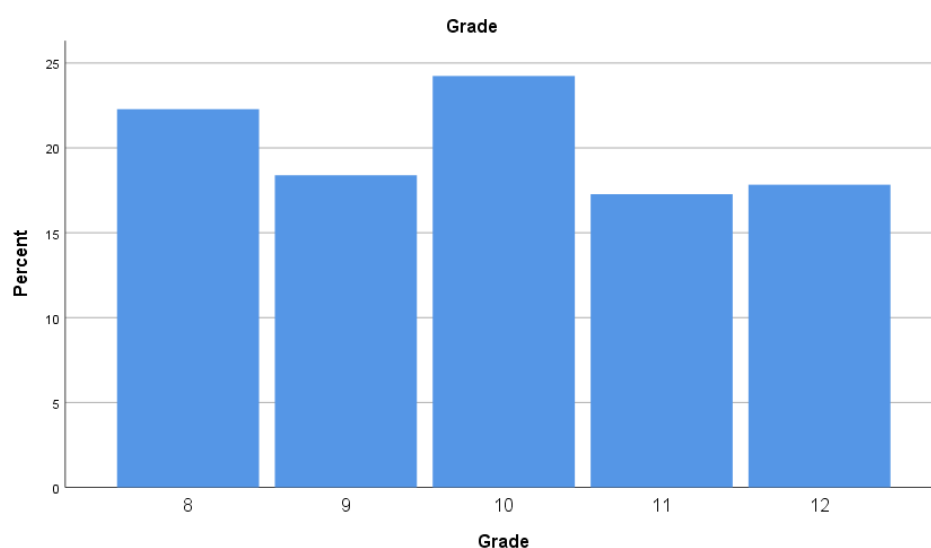
	Frequency	Percent	Valid Percent	Cumulative Percent
Valid African	359	100.0	100.0	100.0

Table 4.4A shows that 80 of the learners who participated in the study were in Grade 8 and they constituted 22.3 percent of the total learner population. The frequency of learners who were in Grade 9 was 66 and they constituted 18.4 percent of the total learner percentage. Another 87 were in Grade 10 learners and were in the majority because they accounted for 24.2 percent of the total learner population. Grade 11 learners were in the minority (at 62) and constituted 17.3 percent of the learner population. Grade 12 learners constituted 17.8 percent of the total learner population, with a frequency of 64.

Table 4.4A: Learner Grade Distribution

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	8	80	22.3	22.3	22.3
	9	66	18.4	18.4	40.7
	10	87	24.2	24.2	64.9
	11	62	17.3	17.3	82.2
	12	64	17.8	17.8	100.0
	Total	359	100.0	100.0	

Graph 4.4.A: Learner Grade Distribution



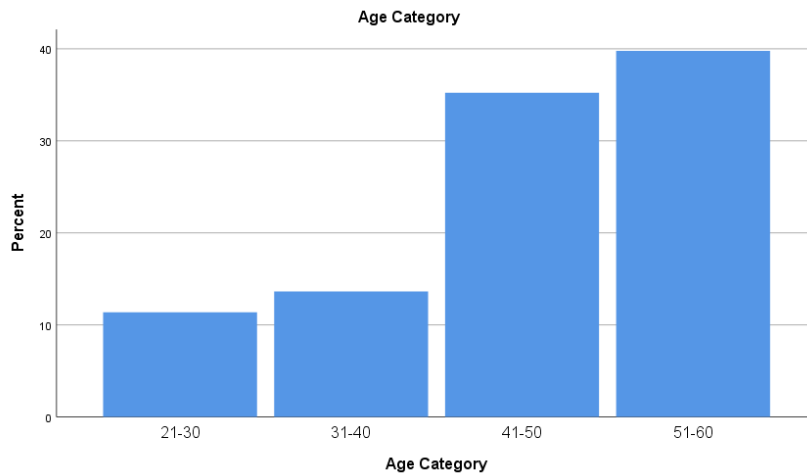
4.2.2. Teacher demographics

Table 4.5A below shows that there was a total of 88 teachers in the study. Their ages ranged from 21 to 60. Of all the teachers who participated, a minority was aged 21 to 30. Their frequency was 10 and they constituted only 11.4 percent of the total teacher population. Teachers aged 31 to 40 constituted 13.6 percent of the total teacher population and their frequency was 12. In addition, teachers aged from 41 to 50 constituted 35.2 percent of the total teacher population and were 35 in number. The majority of teachers were aged 51 to 60 and were 35 in number, which constituted 39.8 percent of the total teacher population

Table 4.5A: Teacher Age Category

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	21-30	10	11.4	11.4	11.4
	31-40	12	13.6	13.6	25.0
	41-50	31	35.2	35.2	60.2
	51-60	35	39.8	39.8	100.0
	Total	88	100.0	100.0	

Graph 4.5A: Teacher Age category



Graph 4.5B: Teacher Age category

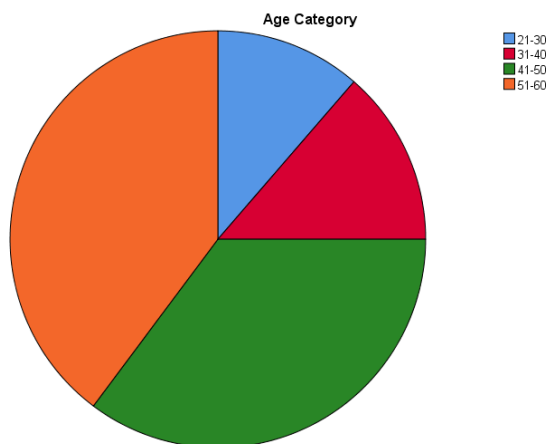


Table 4.6A shows the gender distribution of the teacher who participated in the study. The table shows that the majority of the teachers who participated in the study were male, which constituted 58 percent (frequency=51) of the total population of teachers. Female teachers were in the minority and constituted 42 percent of the total teacher population (frequency=37).

Table 4.6A: Distribution of Teacher by Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	51	58.0	58.0	58.0
	Female	37	42.0	42.0	100.0
	Total	88	100.0	100.0	

Graph 4.6A: Distribution by Gender

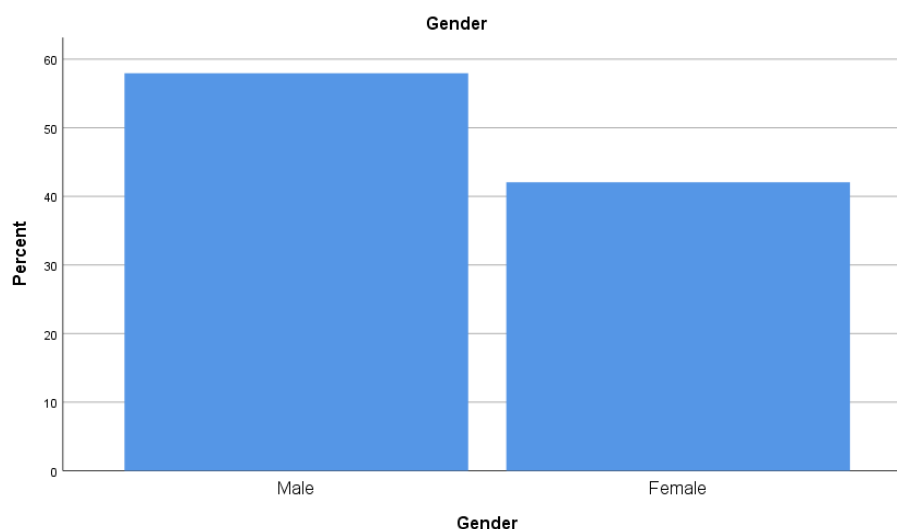


Table 4.7A shows that a minority of the teachers who participated in the study only had a College or Technical School Training qualification. Teachers who only had a college or technical school training qualification were 3 in number and constituted only 3.4 percent of the total teacher population. Another 28 had a College Bachelor's degree and they constituted 31.8 percent of the total teacher population. A further 57 were holders of post-graduate degrees (Masters and PhD). The post-graduate category of educators was in the majority and constituted 64.8 percent of the total teacher population.

Table 4.7A: Level of Teacher Education

	Frequency	Percent	Valid Percent	Cumulative Percent

Valid	College/AA degree/Technical School Training	3	3.4	3.4	3.4
	College Graduate (BA or BS)	28	31.8	31.8	35.2
	Graduate Degree (Masters,PHD, MD,JD)	57	64.8	64.8	100.0
	Total	88	100.0	100.0	

Graph 4.7A: Level of teacher Education

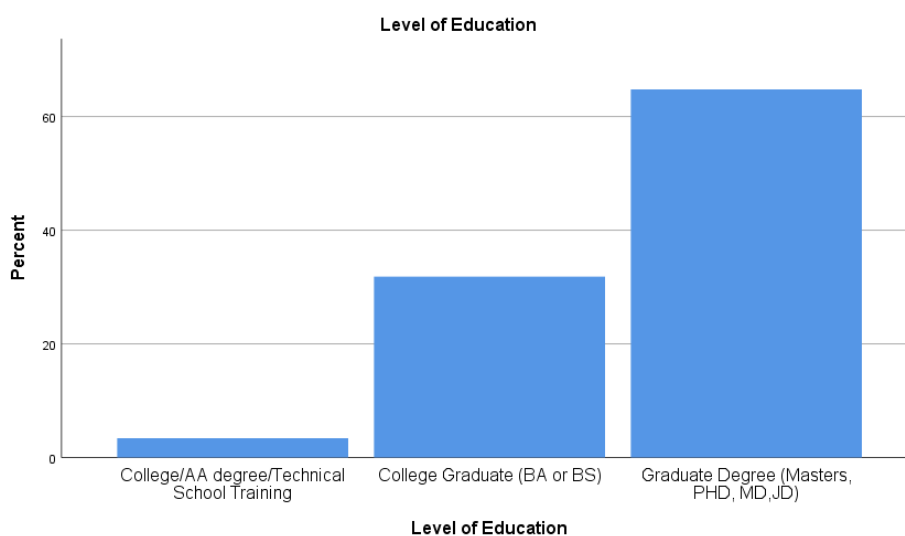


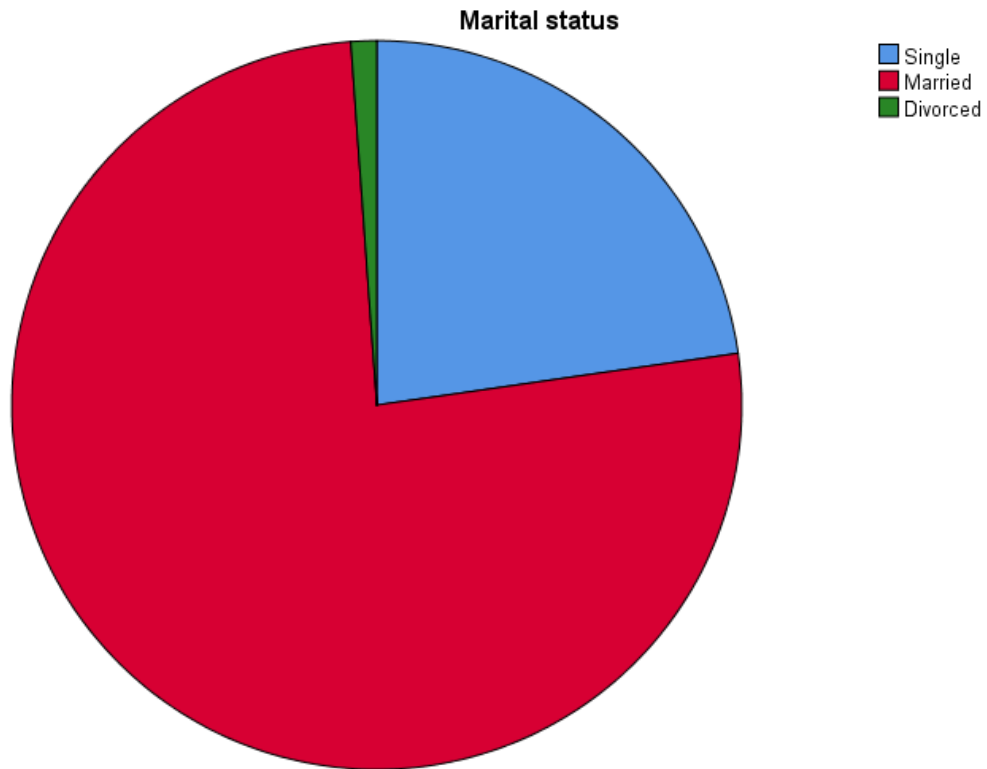
Table 4.8A shows that the majority of teachers who participated in the study were married. They were 67 in number and constituted 76.1 percent of the teacher population. Divorced teachers were the minority and there was only one (1.1 percent) such teacher. Finally, 22.7 percent were single and were 20 in number, out of the 88 who participated

Table 4.8 A: Distribution of teacher Marital status

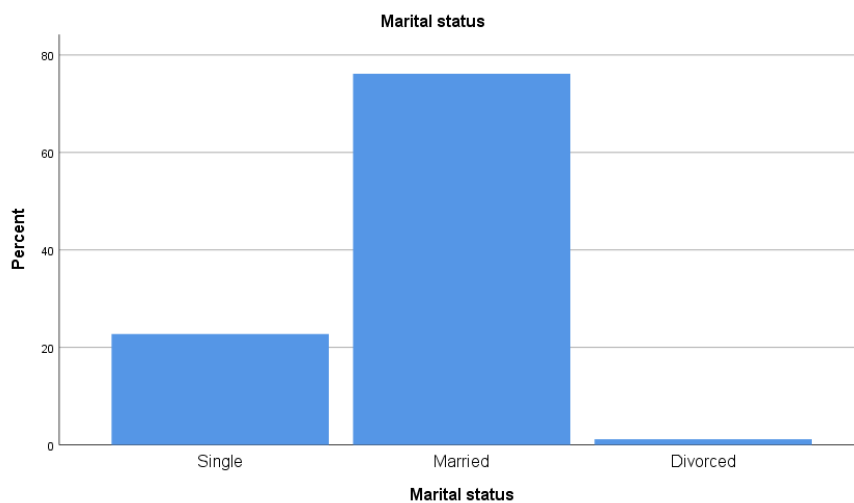
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Single	20	22.7	22.7	22.7
	Married	67	76.1	76.1	98.9

Divorced	1	1.1	1.1	100.0
Total	88	100.0	100.0	

Graph 4.8A: Distribution of teachers' marital status



Graph 4.8B: Distribution of Teacher marital Status



4.3. Learners' level of compliance with standard COVID-19 precautions at Vhumbedzi Circuit

The frequency tables below each show the count (frequency) and percentages for each of the items on the questionnaire and how learners responded.

Table 4.3.1 below shows that when learners were observed to check if 'they were sanitizing hands and doing temperature checks by the gate', 359 of the learners (100%) showed strict compliance to this stipulation. When learners were observed to check if 'learners were washing their hands frequently enough (before touching books, food, etc.)', 359 of the learners (100%) showed noncompliance to this stipulation. About 262 learners (73%) did not wear masks at all times. All (100%) of the learners were using sanitizers if/when water was not accessible. According to Table 4.3.1, all learners (100%) were non-compliant with using sanitizers if/when water was not available. Only 2 learners (0.6%) agreed that they avoided shaking hands and 6 learners (99.4%) indicated compliance with regard to an item which stated, 'Do they clean and disinfect frequently touched objects and surfaces. All the learners (100%) were non-compliant with disinfecting and cleaning frequently touched objects and surfaces. All learners (100%) were not avoiding touching their eyes, nose, and mouth with their hands/fingers. All the learners 359 (100%) were not practicing social distancing in class and during breaks. It also revealed that all the classes were not being disinfected frequently. About 313 learners (87.2%) were not compliant regarding avoiding the sharing of food with others.

Table 4.3.1: Learners' level of compliance with COVID-19 standard precautions
Are they sanitizing their hands and doing temperature check at the gate?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	359	100.0	100.0	100.0
	No	0	0	0	0
	Total	359	100.0	100.0	

Are learners washing their hands frequently enough? (before touching books, food, etc.)?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	359	100.0	100.0	100.0
	Yes	0	0	0	0
	Total	359	100.0	100.0	

Are learners wearing a mask all the time?

Valid	Yes	97	27.0	27.0	27.0
	No	262	73.0	73.0	100.0
	Total	359	100.0	100.0	

Are learners using sanitizers if water is not available?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	359	100.0	100.0	100.0
	Yes	0	0	0	0
	Total	359	100.0	100.0	

Are they avoiding shaking hands with others?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	2	.6	.6	.6
	No	357	99.4	99.4	100.0
	Total	359	100.0	100.0	

Do they clean and disinfect frequently touched objects and surfaces?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	359	100.0	100.0	100.0
	Yes	0	0	0	0
	Total	359	100.0	100.0	

Do they avoid touching their eyes, nose, and mouth with their hands/fingers?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	359	100.0	100.0	100.0
	Yes	0	0	0	0
	Total	359	100.0	100.0	

Are they practicing social distancing in class, during breaks?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	359	100.0	100.0	100.0
	Yes	0	0	0	0
	Total	359	100.0	100.0	

Are the classrooms being cleaned and disinfected frequently?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	359	100.0	100.0	100.0
	Yes	0	0	0	0
	Total	359	100.0	100.0	

Are learners avoiding sharing of food with others?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	46	12.8	12.8	12.8
	No	313	87.2	87.2	100.0
	Total	359	100.0	100.0	

4.3.2 Factors contributing to the learners' level of compliance

The results below indicate that there were no alcohol-based sanitizers and disinfectants in all the classrooms.

Is there an alcohol-based sanitizer/disinfectant in all classrooms?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	359	100.0	100.0	100.0
	Yes	0	0	0	0
	Total	359	100.0	100.0	

4.4. Teachers' Level of Compliance

The frequency tables below each show the count (frequency) and percentages for each of the items in the questionnaire and how teachers responded to it.

Table 4.4.1 shows that 100% of the teachers (88 of all 88 teachers) demonstrated full compliance to sanitizing and checking temperature at the gate; washing their hands

frequently (before touching books, food, etc). A much lower rate of compliance (68.2%, n=60) to wearing masks at all times was found. The study results reveal that 96.6% of teachers were using sanitizers when water was unavailable, while 3.4 percent were not. About 97.7% percent of the teachers avoided shaking hands with others, while 2.3 percent were not. About 98.9% showed compliance with avoiding touching eyes, nose, and mouth with their hands/fingers, while 1.1 percent were not. About 98.9% percent of teachers were practicing social distancing in class and during breaks, and only 1.1 percent were not. Furthermore, 90.9% showed compliance with cleaning and disinfecting the staffrooms frequently, while 9.1% were not.

Table 4.4.1: Teachers' Level of Compliance to COVID-19 standard precautions

Are they sanitizing hands and doing temperature check by the gate?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	88	100.0	100.0	100.0
	No	0	0	0	0
Total		88	100.0	100.0	

Are teachers washing their hands frequently enough? (before touching books, food, etc.)?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	88	100.0	100.0	100.0
	No	0	0	0	0
Total		88	100.0	100.0	

Are teachers wearing a mask, every time?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	60	68.2	68.2	68.2
	No	28	31.8	31.8	100.0
Total		88	100.0	100.0	

Are teachers using sanitizers if water is not accessible?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	85	96.6	96.6	96.6
	No	3	3.4	3.4	100.0
Total		88	100.0	100.0	

Are they avoiding shaking hands with others?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	86	97.7	97.7	97.7
	No	2	2.3	2.3	100.0
	Total	88	100.0	100.0	

Do they clean and disinfect frequently touched objects and surfaces?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	87	98.9	98.9	98.9
	No	1	1.1	1.1	100.0
	Total	88	100.0	100.0	

Do they avoid touching their eyes, nose, and mouth with their hands/fingers?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	87	98.9	98.9	98.9
	No	1	1.1	1.1	100.0
	Total	88	100.0	100.0	

Are they practicing social distancing in class, during breaks?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	87	98.9	98.9	98.9
	No	1	1.1	1.1	100.0
	Total	88	100.0	100.0	

Are the staffrooms being cleaned and disinfected frequently?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	80	90.9	90.9	90.9
	No	8	9.1	9.1	100.0
	Total	88	100.0	100.0	

Are teachers avoiding the sharing of food with others?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	88	100.0	100.0	100.0
	No	0	0	0	0
	Total	88	100.0	100.0	

4.4.2 Factors contributing to the level of teachers' compliance

The results below indicate that there were alcohol-based sanitizers in all the staffrooms.

Is there any alcohol-based sanitizer in all staffrooms?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	88	100.0	100.0	100.0
	No	0	0	0	0
	Total	88	100.0	100.0	

4.5. Relationship between compliance and demographics.

The following section gives chi-square values to demonstrate the relationship or associations between observation checklist items and demographic aspects (age, gender, marital status, level of education)

Table 4.5.1 below shows that the chi-square values for the item 'Are teacher wearing masks every time' versus Age, Gender, Level of Education and marital status had significance values (p-value) much higher than the accepted 0.05 significance level. The significance values were 0.840 (age), 0.916 (gender), 0.482 (education level) and 0.143 (marital status). When this is the case, we are compelled conclude that there is no statistically significant association or relationship between the above-mentioned observation checklist item to all the demographic items. The chi-square values for item 'Are teachers using sanitizers if water is not available' versus the demographic characteristics (age, gender and educational level) yielded chi-square values without statistical significance and were below the accepted 0.05 significance level. The P-values were 0.620 (age), 0.379 (gender), 0.414 (educational level) thus compelling the researcher to conclude that there is no statistical association/relationship between teachers washing using sanitizers when there is no water to the above demographic items. The chi-square results did show that there is a very strong statistical significance (0.0001) between marital status and the use of sanitizers when there is no water.

According to chi-square results there was no significant relationship between the item 'Are teachers avoiding shaking of hands' to Age, gender and level of education. There was however a very strong statistical relationship between this item to marital status because the P value was 0.0001 which is significantly lower than the accepted 0.05 significance level.

The chi-square figures show that there is no statistically significant relationship between the observation checklist items a) Do teachers disinfect frequently touched surfaces b) do they avoid touching their eyes and nose c) Are they practicing social distancing in the staff room

to the demographic items age, gender and level of education as all the significance values (p) are much higher than the statistically accepted 95% significance level (0.05). However, all three of the above-mentioned items have a very strong statistical relationship to marital status (p value=0.0001).

The chi-square figures (together with their significance values and degree of freedom) for the first the following items a) Are teachers sanitizing their hands and doing temperature checks at the gate b) Are teachers washing their hands enough c) is there an alcohol-based sanitizer in all classrooms d) is there proper ventilation in all classrooms e) Are teachers avoiding sharing of food with other; could not be generated because the responses given by the participants in the questionnaire were constant and therefore chi-square cannot be calculated when this condition exists.

Table 4.5.1: Relationship between compliance and teachers' demographics

		Age	Gender	Level of Education	Marital status
Are they sanitizing their hands and doing temperature check at the gate?	Chi-square	n/a	n/a	n/a	n/a
	Df				
	P value				
Are teachers washing their hands frequently enough? (before touching books, food, etc.)?	Chi square	n/a	n/a	n/a	n/a
	Df				
	P value				
Are teachers wearing a mask, every time?	Chi-square	0.841	0.011	1.462	3.652
	Df	3	1	2	2
	P value	0.840	0.916	0.482	0.143
Are teachers using sanitizers if water is not accessible?	Chi-square	1.778	0.773	1.765	33.336
	Df	3	1	2	2
	P value	0.620	0.379	0.414	0.000
Are they avoiding shaking hands with others?	Chi square	3.742	0.053	0.351	45.228
	Df	.3	1	2	2
	P value	0.291	0.818	0.839	0.0001
Do they clean and disinfect frequently touched objects and surfaces?	Chi square	1.532	0.734	2.167	88.000
	Df	.3	1	2	2
	P value	0.675	0.392	0.338	0.0001
Do they avoid touching their eyes, nose, and mouth with their hands/fingers?	Chi square	1.532	0.734	2.167	88.000
	Df	.3	1	2	2
	P value	0.675	0.392	0.338	0.0001
Are they practicing social distancing in class, during breaks?	Chi square	1.532	0.734	2.167	88.000
	Df	.3	1	2	2

	P value	0.675	0.392	0.338	0.0001
Is there an alcohol-based sanitizer in all classrooms?	Chi square	n/a	n/a	n/a	n/a
	Df				
	P value				
Is there proper ventilation in all classrooms?	Chi square	n/a	n/a	n/a	n/a
	Df				
	P value				
Are the staffrooms cleaned and disinfected frequently?	Chi square	3.356	0.229	1.511	1.160
	Df	3	1	2	2
	P value	0.340	0.663	0.470	0.560
Do teachers avoid the sharing of food with others?	Chi square	n/a	n/a	n/a	n/a
	Df				
	P value				

The chi-square values for the demographic item race could not be calculated because all the learners were of the same race (African). Thus, race was constant, with no internal variation, which makes it impossible to calculate chi-square nor indeed any other form of association or correlation statistic including Pearson, Spearman or Eta.

The chi-square figures for the item 'Are learners wearing a mask every time' show that there is no statistical relationship between this item and demographic items (race- $p=0.727$, gender $p=0.561$ and Grade $p=0.921$), as all these p values are much higher than the accepted significance level of 0.05. The chi-square figures for the item 'Are learners avoiding shaking hands with other learners' also bore no statistical significance as all the p -values for the chi-squares are above the accepted 95% significance level (0.05).

In addition, there was no statistical relationship between the item 'Are learners avoiding sharing of food' to the demographic items age and race since the significance values of the chi squares were 0.925 and 0.667 which are both much higher than the accepted significance level of 0.05. There was however a strong relationship between the item 'Are learners avoiding sharing of food with others and gender. According to the results, more male learners were sharing food with each other. The significance value was 0.017, which is much lower than the accepted 95% significance level, which demonstrates that the relationship between this item and gender is very strong.

The chi-square values for the items a) Are learners sanitizing their hands and doing temperature checks b) are learners washing their hands frequently enough c) Do learners avoid touching their eyes and nose d) do learners practice social distancing in the classroom

e) is there alcohol-based sanitizer in the class f) is there proper ventilation in the classrooms and g) Are classes frequently cleaned and disinfected, could not be computable due to lack of internal variation within the items. This means that the responses given to this compliance items were exactly the same for all learners (constant) and under this circumstance chi-square or any other association/correlation statistics would not be computable.

Table 4.5.2: Relationship between compliance and learners' demographics

		Age	Gender	Race	Grade
Are they sanitizing hands and doing temperature checking at the gate?	Chi-square	n/a	n/a	n/a	n/a
	Df				
	P value				
Are learners washing their hands frequently enough? (before touching books, food, etc.)?	Chi square	n/a	n/a	n/a	n/a
	Df				
	P value				
Are learners wearing a mask all the time?	Chi-square	0.123	0.338	n/a	0.923
	Df	1	1		4
	P value	0.726	0.561		0.921
Are learners using sanitizers if water is not accessible?	Chi-square	n/a	n/a	n/a	n/a
	Df				
	P value				
Are they avoiding shaking hands with others?	Chi square	1.379	1.934	n/a	2.884
	Df	.1	1		4
	P value	0.240	0.164		0.577
Do they clean and disinfect frequently touched objects and surfaces?	Chi square	n/a	n/a	n/a	n/a
	Df	.			
	P value				
Do they avoid touching their eyes, nose, and mouth with their hands/fingers?	Chi square	n/a	n/a	n/a	n/a
	Df	.			
	P value				
Are they practicing social distancing in class, during breaks?	Chi square	n/a	n/a	n/a	n/a
	Df	.			
	P value				
Is there an alcohol-based sanitizer in all classrooms?	Chi square	n/a	n/a	n/a	n/a
	Df	.			
	P value				
Is there proper ventilation in all classrooms?	Chi square	n/a	n/a	n/a	n/a
	Df	.			
	P value				
Are the classes cleaned	Chi square	.n/a	n/a	n/a	n/a

and disinfected frequently?	Df				
	P value				
Do learners avoid sharing of food with others?	Chi square	0.009	5.690	n/a	2.374
	Df	.1	1		4
	P value	0.925	0.017		0.667

CHAPTER 5

DISCUSSIONS, LIMITATIONS AND RECOMMENDATIONS

5.1. Introduction

In this section, the researcher discusses the findings of the study and compares them with other findings in literature, to establish if there is any form of confluence and concurrence. The researcher also delves deep into contradictions between these findings and those in previous studies and attempts to provide an explanation for any such contradiction. This chapter then concludes with recommendations, which may aid all relevant stakeholders.

5.2. Overview of the study

In this research, data relating to compliance of learners and staff to Covid-19 protocols or regulations was collected in schools at Vhumbedzi Circuit. The two groups of participants were given questions on a survey, which was designed to measure their level of compliance with Covid-19 regulations. The survey had items to which the participants needed to answer, “yes or no”, based on what the researcher observed regarding adherence. Based on the analysis of the two groups’ responses, the researcher makes some findings, which will be discussed below.

5.3. Overview of the findings

5.3.1 Level of learners’ compliance with standard COVID-19 precautions

All learners, (359, 100%) were compliant with hand sanitizing and temperature checks at the gate. However, all (359, 100%) the learners were non-compliant with hand washing frequently. About 73% (n=262) were non-compliant with wearing of mask at all times. All (n=359, 100%) of learners were non-compliant with using sanitizers when there was no

water available at school. All (n=359, 100%) of learners were non-compliant with avoidance of touching eyes, nose and mouth with their fingers. All (n=359, 100%) of learners were non-compliant with practicing social distancing in class and during breaks. All (n=359, 100%) of learners were non-compliant with disinfecting desktops. About 87.2% (n=313) were non-compliant with avoiding sharing of food with others. Factors contributing to non-compliance to disinfection of desks and frequent use of sanitisers in classroom include lack of disinfection and sanitisers in classrooms. Learners' non-compliance with avoiding the sharing of food with others is significantly associated with gender (0.017).

5.3.2 Level of teachers' compliance with standard COVID-19 precautions

The majority (n=60, 68.2%) of teachers were compliant with the wearing of masks during school hours. About 98.9 % (n=87) were compliant with disinfecting frequently touched surfaces and objects in the staffroom. The majority (98.9%, (n=87) were compliant with avoiding touching eyes, nose and mouth; and practicing social distancing. Factors contributing to compliance with disinfection of desks and frequent use of sanitisers include availability of disinfectants and sanitisers in the staffroom. There was a very strong statistical significance between marital status and the use of sanitisers when there is no water (0,0001), washing hands frequently (0.0001) and practising social distancing (0,0001).

The study generally concluded that there was better compliance with Covid-19 protocols amongst teachers than learners. The study also generally found that there is lack of evidence of statistical association between Covid 19 adherence and demographic factors, except in limited cases.

5.4. Discussion of the findings

The study found that there was 100 percent compliance with sanitizing hands and adhering to temperature checks by both students and teachers at school. The Department of Basic Education (2020) had clearly reiterated in its guidelines that schools should enforce the hand sanitizing and early morning temperature screening. According to Mashaba and Maile (2020), secondary schools in Soshanguve had been adhering to this guideline and the learners in their qualitative study reported that this was being done. Mashaba and Maile (2022), however, found that the learners reported that they were only being screened in the morning, and not twice, as required in the Standard Operating Procedures. Nwakaego and Amuso (2020) came to a similar conclusion as the current study, in that they found that in schools in the Ogun State of Nigeria, more than 75 percent of the learners reported that they

sanitized their hands before entering their classroom. This is also a good compliance rate, similar to that found amongst learners, even though it is lower.

The study also found that there was significant non-compliance by learners with aspects such as avoiding physical contact and avoiding handshaking. In all the learner's cases, it was reported that in cases where sanitizers were unavailable they would not consider washing their hands as an alternative to disinfect their hands. The study also found that all the learners reported that they did not avoid touching themselves; that is, nose, mouth and face. Amongst teachers, the study found that there was a very high compliance with these items. More than 95 percent of the teachers reported that they avoided shaking hands, and more than 98 percent of the teachers reported that they washed their hands and used sanitizers when water was unavailable. The results of the study by Ningsih, Eka and Danal (2020) are generalized by the authors themselves to demonstrate a low adherence and reluctance to adhere to Covid protocols amongst adolescents. One of the behaviours they studied was the aspect of handwashing. They generally found that 20.8 percent of the school-aged adolescents in their study never washed their hands with a sanitiser. This disregard for handwashing amongst learners is also evident in the current study, although it is higher than what was reported in the Ningsih study (2020).

According to the study, learners also showed a significant disregard for wearing masks at all times, with only 27 percent of them reporting that they wear masks all the time. The compliance rate to wearing masks all the time was significantly high amongst teachers (68 percent), although it may not be entirely satisfactory. The results of this study slightly contradicted those obtained by Nwakaego and Amuso (2020) in Nigerian schools in the Ogun State, where 80.7 percent of learners reported that they wore masks all the time.

The study also found that all (100 percent) the learners believed that their classes were poorly ventilated and thus not conducive for learning during Covid-19 waves. Teachers reported the total opposite, as all (100 percent) of them reported that they believed that their staffrooms were sufficiently ventilated. According to a study by Meiss, Alberto, Jimeno-Merino, Poza-Casado, Llorente-Álvarez, and Padilla-Marco (2021) which studied/ investigated the quality of indoor air in naturally ventilated classrooms, one of the key contributors to good ventilation is the use of both natural and artificial ventilation systems, and thus the lack of artificial ventilation (fans and air-conditioners) in South African classrooms and the fact that it may be easier to ventilate a smaller room, such as a staff room, with fewer individuals, can contribute to why so many learners believe their classrooms were not ventilated, whilst teachers believed the direct opposite. Maile and Mashaba (2022) also emphasize the fact that many classes are overcrowded, and this

drastically decreases air quality in those particular classes. All the learners (100 percent) reported that their classes were not properly or frequently disinfected. The majority of teachers (98,9 percent) reported that they had observed that their staffrooms were properly cleaned and disinfected. In its Standard Operating Procedures, The Department of Education (2020) reiterated that classrooms and other school premises should be disinfected and fumigated before the opening of schools. In the study by Mashaba and Maile (2022), which was done in secondary schools in Soshanguve, they showed that most of these schools were indeed fumigated or disinfected before the opening of schools and many of the teachers may have been privy to this information whilst learners may not have been privy to it. This may provide an explanation for the dichotomy in which teachers reported that school premises were disinfected whilst most learners believed that this process never happened probably because they did not witness. According to Maile and Mashaba (2022. p. 69), the belief among learners that the classes were not disinfected is best expressed through a direct quote from one of the learners they interviewed who said *'...when they clean the staffroom and offices, they use disinfectants. When they clean classes I see cleaners just sweeping the classrooms and not using disinfectants. No disinfectant is used here'*

With regards to the availability of sanitizers in the staffrooms, all the teachers (100 percent) reported that there was always an alcohol-based sanitizer in the classrooms. The total opposite answer was provided by the learners because they all (100 percent) reported that there were no sanitizers in their classrooms. Maile and Mashaba's findings (2022) corroborate those reached in the current study. They found that there was lack of compliance in many different ways. In some schools there were no sanitizers in some classes; neither were there soap and water.

The study found that 87 percent of learners were sharing food with other learners, even during Covid, whilst all the teachers (100 percent) reported that they did not share their food with other teachers, as this posed a risk to their health. According to Makroo, Majid, Siddiq, Greiner and Dar (2020), there is little evidence to confirm the transmission of Covid-19 through ingestion of contaminated food. However, Ningshih et al (2021) offer a possible explanation for these findings in that they generally view the behaviour of adolescents to be more erratic and rebellious and willing to question conventional belief systems. Cassese, Farhat and Miller (2020) also attribute some behaviour of young people to the prevalence of conspiracy theories in social media which enforces non-compliant behaviour.

The study found that 98.9 percent of teachers reported that they were practicing social distancing from learners and other staff members. However, the total opposite was the case among the learners. This is because all the learners (100 percent) reported that they were

not practicing social distancing during breaks or in class. Ningsih, Eka and Danal (2021) offer a possible explanation for the difficulty of complying with social distancing amongst learners, by highlighting that they have a greater propensity towards active lifestyles and a much greater scope of activities than adults. Oosterhoff and Palmer (2020) also give a plausible explanation for the lack of social distancing amongst a younger crowd. Their study revealed that many younger people show disregard for social distancing rules because of the belief that the disease is not dangerous enough for them to not get together with their peers. The Oosterhoff (2020) study does not only corroborate the latest study's findings but provides a context by providing the reasoning behind the behaviour amongst the learners. Mashaba and Maile's results (2022) also provide another reasonable explanation for the lack of social distancing amongst learners by highlighting the difficulty of achieving this objective in already overcrowded school in which common areas such tuck-shops or eating areas may be impossible to regulate for learners.

The study discovered no statistically significant relationship or association between mask wearing and any of teachers' demographic characteristics (age, gender, level of education, and marital status). In addition, no association could be made either between the aspects of mask wear to any of the demographic factors (Gender, Age, and Grade) for learners. Liao et al (2010) corroborate these findings because it also shows that there is no correlation between similar demographic factors to other Covid compliance protocols. Furthermore, the study did find a statistical association between washing hands, avoiding touching the face and practicing social distancing to marital status. According to this study, married people demonstrated more adherence to social distancing, avoiding touching the face and washing hands than single, divorced and widowed teachers. This relationship was strong (0.0001). It is plausible that these people had greater difficulty in relying on or obtaining assistance of others.

The study also found that there was a strong statistically significant relationship or association (0.017) between sharing of food amongst learners to gender. It found that male learners were sharing their food with their fellow learners than female learners would. However, the study could not find any other association of all the demographic factors to any of the items on the questionnaires with regards to learners. The study by Zhong, Lou, Li, Zhang, Lui, Li and Li (2020) showed that male adolescents, who were of school-going age, tend to engage in dangerous behaviour and show more deliberate non-compliance to protocols of Covid 19 than their female counterparts; thus, this generalization provides an explanation for the statistical association that this study found. The Ningsih, Eka and Danal

(2021) study found that gender was one of the factors in which they found more correlation or association to Covid compliance more than any other demographic factor (e.g., age).

5.5. Limitations of the study

- One of the limitations was that the study was cross-sectional and was not longitudinal. That means the data was collected in a specific section of time and does not give a progressive analysis of the change in behaviour
- The study was also limited by time constraints related to submission of thesis
- In addition, financial limitations were an issue and posed hindrances to the process of obtaining data
- A larger sample size covering a wider area would have provided more accurate data
- Correlations and associations could not be computed due to non-variability of data in certain aspects.

5.6. Recommendation of the study

- Studies that are more qualitative in nature are necessary and recommended, so that there is sufficient literature to explain the reasons for some of the behaviour (compliance and non-compliance) of both learners and teachers
- More studies that could generate correlations between demographic factors and non-compliance are necessary so that the non-compliant behaviour is easier to predict statistically.
- Similar studies should be done in different parts of the country so that the results can be compared with those obtained in the current study, as this will ensure that there is sufficient knowledge in this area of study.
- The Department of Basic Education needs to develop a more comprehensive monitoring system to ensure that its guidelines are adhered to fully by schools.
- In most public schools, teachers need to be more vigilant in monitoring male learners, as they are more likely to exhibit non-compliant behaviour.
- In future, the Department of Basic Education has to start designing better naturally-aspirated classes, to improve ventilation even when there is no artificial ventilation system installed.
- The Department of Basic Education also needs to develop a more rigorous social media strategy to reach learners with correct information, so that they are not misinformed by peddling of conspiracy theories which is rampant in the social media space.

- The Department of Basic Education needs to ensure that schools are properly equipped with resources and basic supplies such as sanitisers, soaps and etc in time.
 - Finally, the schools themselves, principals and other relevant stakeholder need to be able to customise their own personal strategy, to manage compliance issues based on their specific needs, so that adherence to the Department's guidelines are executed effectively.
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References

- Aboagye, E., Yawson, J.A., and Appiah, K.N. (2021). COVID-19 and E-learning: The challenges of students in tertiary institutions. *Social Education Research*, 1-8.
- Adeoye, I.A., Adanikin, A.F., and Adanikin, A. (2020). COVID-19 and E-learning: Nigeria tertiary education system experience.
- Ahmed, I., Ahmad, M., and Jeon, G. (2021). Social distance monitoring framework using deep learning architecture to control infection transmission of COVID-19 pandemic. *Sustainable Cities and Society*, 69, 102777.
- Ajilore, K., Atakiti, I., & Onyenankeya, K. (2017). College students' knowledge, attitudes and adherence to public service announcements on Ebola in Nigeria: Suggestions for improving future Ebola prevention education programmes. *Health Education Journal*, 76 (6), 648-60.
- Akhtar, I. (2016). Interdisciplinary perspectives: Research in social science. Research Gate. Accessed on 13 May 2017.
- Ali, M. A., Sulaiman, A. A., Hanan A. A., Shaffi, A. S., Hala, M. A., Nouf, S. A., & Hotoon, S. A. (2019). Community's compliance with measures for the prevention of respiratory infections in Riyadh Saudi Arabia. *Journal Family Community Medicine*.
- Almaiah, M.A., Al-Khasawneh, A., and Althunibat, A. (2020). Exploring the critical challenges and factors influencing the E-learning system usage during COVID-19 pandemic. *Education and Information Technologies*, 25, 5261-5280.
- Alvi, M. (2016). A manual for selecting sampling techniques in research. University of Karachi.
- Ancheta, R., & Ancheta, H. (2020). The new normal in education: A challenge to the private basic education institutions in the Philippines. *International Journal of Educational Management and Development Studies*, 1(1).

Babbie, E. & Mouton, J. (2012). *The practice of social Research*. Oxford University Press.

BBC News. (2020). Coronavirus confirmed as pandemic by World Health Organization. [https:// tinyurl.com/wf3vnuo](https://tinyurl.com/wf3vnuo). Accessed 27 March 2020.

Barry, R. (2020). COVID-19 and Italy, What next? *The Lancet*, 119, 1– 19. <https://doi.org/doi.org/10.1016/j.compbio.2020.103670>.

Bukachi, S. A., Mumbo, A. A., Alak, A. C., Sebit, W., Rumunu, J., Biéler, S., & Ndung'u, J. M. (2018). Knowledge, attitudes and practices about human African trypanosomiasis and their implications in designing intervention strategies for Yeicounty, South Sudan. *Neglected tropical diseases*. *The Public Library of Science*, 12(10), e0006826.

Bozkurt, A., Jung, I., Xiao, J., Vladimirsch, V., Schuwer, R., Egorov, G., Lambert, S., Al-Freih, M., Pete, J., Olcott Jr, D. & Rodes, V. (2020). A global outlook to the interruption of education due to COVID-19 pandemic: Navigating in a time of uncertainty and crisis. *Asian Journal of Distance Education*, 15(1), 1-126.

Brooks-Pollock, E., Read, J.M., McLean, A.R., Keeling, M.J., & Danon, L. (2021). Mapping social distancing measures to the reproduction number for COVID-19. *Philosophical Transactions of the Royal Society B*, 376(1829), 20200276.

Cameron, A. J., Welborn, T. A., Zimmet, P. Z., Dunstan, D. W., Owen, N., Salmon, J., Dalton, M., Jolley, D., & Show, J. E. (2016). Overweight and obesity in Australia : the 2000-2016 Australian Diabetes, obesity and lifestyle study. *Medical Journal*, 178, 427-432.

Cassese, E.C., Farhart, C.E. and Miller, J.M., 2020. Gender differences in COVID-19 conspiracy theory beliefs. *Politics & Gender*, 16(4), pp.1009-1018.

Crawford, J., Butlera-Henderson, K., Rudolph, J., Malkawi, B., Glowatz, M., Burton, R., Magni, P., & Lam, S. (2020). COVID-19: 20 countries' higher education intra-period digital pedagogy responses. *Journal of Applied Learning & Teaching*, 3(1), 1-20.

CDC. (2020). Information about coronavirus disease, COVID-19. Community and

Public [Online]. Available: <https://covid19.cdc.gov.sa/community-public/>[Accessed].

Chen, N., Zhou, M., Dong, X., Qu, J., Gong, F., & Han, Y. (2020). Epidemiological and clinical characteristics of 99 cases of 2019 novel coronavirus pneumonia in Wuhan, China. A descriptive study. *Lancet*, 395, 507-13.

Creswell, J. D., & Creswell, J. W. (2016). *Research design, qualitative, quantitative and mixed methods approach*. (5th ed). Sage Publications.

Creswell, J.W, and Creswell, J.D. (2017). *Research design: A qualitative, quantitative and mixed method approaches*. Sage Publications.

Czerniewicz, L., Agherdien, N., Badenhorst, J., Belluigi, D., Chambers, T., Chili, M., De Villiers, M., Felix, A., Gachago, D., Gokhale, C. & Ivala, E. (2020). A wake-up call: Equity, inequality and Covid-19 emergency remote teaching and learning. *Postdigital Science and Education*, 2(3), 946-967.

Dauda G. M., Hasan, H., Naing, N. N., Wan-Arfah, N., Zeiny, D. Z., Nor, A. W., & Abubakar B. A. (2019). Assessment of Knowledge, Attitude and Practice towards Prevention of Respiratory Tract Infections among Hajj and Umrah Pilgrims from Malaysia in 2018. *International Journal of Environmental Research and Public Health*, 16(22), 4569.

Dee, T., Huffaker, E., Phillips, C. and Sagara, E. (2021). *The revealed preferences for school reopening: Evidence from public-school disenrollment* (No. w29156). National Bureau of Economic Research.

Department of Basic Education. (2020). *Guidelines for returning to school*. Limpopo: Basic Education.

Department of Basic Education. (2021). *Guidelines for returning to school*. Basic Education.

Department of Basic Education. (2020). STANDARD OPERATING PROCEDURES for teachers, non-teaching staff and learners (2019- ncov) outbreak in South Africa. Republic of South Africa.

Dibner, K.A., Schweingruber, H.A., & Christakis, D.A. (2020). Reopening K-12 schools during the COVID-19 pandemic: A report from the National Academies of Sciences, Engineering, and Medicine. *Jama*, 324(9), 833-834.

Donitsa-Schmidt, S., & Ramot, R. (2020). Opportunities and challenges: teacher education in Israel in the Covid-19 pandemic. *Journal of Education for Teaching*, 46(4), 586-595.

Duraku, Z.H., & Hoxha, L. (2020). The impact of COVID-19 on education and on the well-being of teachers, parents, and students: Challenges related to remote (online) learning and opportunities for advancing the quality of education. *Manuscript submitted for publication*]. *Faculty of Philosophy, University of Prishtina*.

Ferrero-Guillén, R., Díez-González, J., Verde, P., Álvarez, R., & Perez, H. (2020). Table Organization Optimization in Schools for Preserving the Social Distance during the COVID-19 Pandemic. *Applied Sciences*, 10(23), 8392.

Fitzpatrick, R., Korin, A., & Riggall, A. (2020). An International Review of Plans and Actions for School Reopening. *Education Development Trust*.

Gordon, C. (2016). The national academics of sciences, engineering and medicine.

Graham, B. S. (2020). Rapid COVID-19 vaccine development science, 368 (6494), 945-946.).

Haider, N., Osman, A.Y., Gadzekpo, A., Akipede, G.O., Asogun, D., Ansumana, R., Lessells, R.J., Khan, P., Hamid, M.M.A., Yeboah-Manu, D., & Mboera, L. (2020). Lockdown measures in response to COVID-19 in nine sub-Saharan African countries. *BMJ Global health*, 5(10), e003319.

Haynes, R, B. (1979). Compliance in health care. John Hopkins University Press.

Ilesanmi, O.S., & Afolabi, A.A. (2020). Six months of COVID-19 response in Nigeria: lessons, challenges, and way forward. *Journal of Ideas in Health*, 3(Special1), 198-200.

Jena, P.K., (2020). Online learning during lockdown period for covid-19 in India. *International Journal of Multidisciplinary Educational Research (IJMER)*, 9.

Jimam, N. S., & Ismail, N. E. (2020). Predictors of patients' knowledge, attitudes and practice regarding uncomplicated malaria in the primary healthcare facilities of Plateau state, Nigeria. *Journal of Health Research*.

Johansen, T.B., Astrup, E., Jore, S., Nilssen, H., Dahlberg, B.B., Klingenberg, C., Berg, A.S., & Greve-Isdahl, M. (2020). Infection prevention guidelines and considerations for paediatric risk groups when reopening primary schools during COVID-19 pandemic, Norway, April 2020. *Eurosurveillance*, 25(22), 2000921.

Joulaei, H., & Kalateh Sadati, A. (2020). COVID-19 Outbreak and School Dropout; A Worldwide Challenge for an Equitable Future. *International Journal of School Health*, 7(4), 1-2.

Laws, K., Xun, F. (2021). Teacher Professional Learning Whilst in Quarantine: A Case Study from China. *IAFOR Journal of Education*, 9(2), 127-144.

Lee, C.C., Chen, Y.J., Wu, P.L., & Chiou, W.B. (2021). An unintended consequence of social distance regulations: COVID-19 social distancing promotes the desire for money. *British Journal of Psychology*.

Levinson, M., Cevik, M., & Lipsitch, M. (2020). Reopening primary schools during the pandemic.

Liu, J., Liao, X., & Qian, S. (2020). Community transmission of severe acute respiratory syndrome coronavirus 2, Shenzhen, China, emergency infectious diseases.

Liao, J., Fan, S., Chen, J., Wu, J., Xu, S., Guo, Y., Li, C., Zhang, X., Wu, C., Mou, H. and Song, C., 2020. Epidemiological and clinical characteristics of COVID-19 in adolescents and young adults. *The Innovation*, 1(1), p.100001.

Lovrić, R., Farčić, N., Mikšić, Š., & Včev, A. (2020). Studying during the COVID-19 pandemic: A qualitative inductive content analysis of nursing students' perceptions and experiences. *Education Sciences*, 10(7), 188.

Maatuk, A.M., Elberkawi, E.K., Aljawarneh, S., Rashaideh, H., & Alharbi, H. (2021). The COVID-19 Pandemic and E-learning: Challenges and Opportunities from the Perspective of Students and Instructors. *Journal of Computing in Higher Education*, 1-18.

Makoni, M. (2020). Africa prepares for coronavirus. *The Lancet*, 395(10223), 483. [https://doi.org/10.1016/S0140-6736\(20\)30355-X](https://doi.org/10.1016/S0140-6736(20)30355-X).

Makroo, H.A., Majid, D., Siddiqi, M.A., Greiner, R. and Dar, B.N., 2020. COVID-19 pandemic and its implications on food systems.

Mashaba, E.K. and Maile, S., 2022. Exploring Teacher's Perceptions on Compliance With Covid-19 Safety Protocols in Secondary Schools in Soshanguve. *Journal of African Education*, 3(1), p.59.

Mbabazi, F. K., Yahaya, G., Awichi, R., Olupot, P. O., Rwahwire, S., Biira, S., & Luboobi, L. S. (2020). A Mathematical Model Approach for Prevention and Intervention Measures of the COVID-19 Pandemic in Uganda. <https://doi.org/10.1101/2020.05.08.20095067> McDonald, C.

C. (2020). Reopening

Mc clean, T., Bray, I., De Viggiani, N., Bird, E., & Pilkington, P. (2019). An introduction to sampling methods. SAGE Publication McCombes.

Meghani, A., Agarwal, S., Zapf, A.J., Edwards, J., Labrique, A.B., & Gibson, D.G. (2021). Schooling amidst a pandemic: parents' perceptions about reopening schools and anticipated challenges during COVID-19. *medRxiv*.

Mhlanga, D., & Moloi, T. (2020). COVID-19 and the digital transformation of education: What are we learning on 4IR in South Africa? *Education sciences*, 10(7), 180.

Meiss, A., Jimeno-Merino, H., Poza-Casado, I., Llorente-Álvarez, A. and Padilla-Marcos, M.Á., 2021. Indoor air quality in naturally ventilated classrooms. Lessons learned from a case study in a COVID-19 scenario. *Sustainability*, 13(15), p.8446.

Moran, M.B. and Sussman, S., 2014. Translating the link between social identity and health behavior into effective health communication strategies: An experimental application using antismoking advertisements. *Health communication*, 29(10), pp.1057-1066.

Mseleku, Z. (2020). A literature review of E-learning and E-teaching in the era of Covid- 19 pandemic. *SAGE*, 57(52), 588-597.

Nakitto, S. (2021). Level of awareness and adherence towards severe acute respiratory syndrome coronavirus 2 (sars-cov-2) in secondary schools and surrounding communities in Gayaza town. Department of Education, Makerere University, Kampala, Uganda.

Narmada, S., & Somasundaram, A. 2020. Preparedness for reopening and conduct of schools during and post covid-19 period. *Indian Journal of Practical Pediatrics*, 22(2), 217.

National Institute for Communicable Diseases (NICD). (2020). Retrieved March26,2020, from:<http://www.nicd.ac.za/4https://github.com/dsfsi/covid19za/graphs/contributors>

Ngwacho, A.G. (2020). COVID-19 pandemic impact on Kenyan education sector: Learner challenges and mitigations. *Journal of Research Innovation and Implications in Education*, 4(2), 128-139.

Ningsih, O.S., Eka, A.R. and Danal, P.H., 2020. Factors Predicting Adolescents' Compliance on Covid-19 Prevention Protocols. *Indonesian Nursing Journal of Education and Clinic (INJEC)*, 6(1), pp.55-63.

Nwakaego, D.E. and Amosu, A.M., 2020. Evaluation of Covid-19 Prevention and Control Protocol Compliance Among Pupil's in Ikenne Local Government Area, Ogun State. *Midwifery*, 4(3), pp.74-91.

Olivera-La Rosa, A., Chuquichambi, E.G., & Ingram, G.P. (2020). Keep your (social) distance: Pathogen concerns and social perception in the time of COVID-19. *Personality and Individual Differences*, 166, 110200.

Oosterhoff, B. and Palmer, C.A., 2020. Attitudes and psychological factors associated with news monitoring, social distancing, disinfecting, and hoarding behaviors among US adolescents during the coronavirus disease 2019 pandemic. *JAMA pediatrics*, 174(12), pp.1184-1190.

Oosterhoff, B., Palmer, C.A., Wilson, J. and Shook, N., 2020. Adolescents' motivations to engage in social distancing during the COVID-19 pandemic: associations with mental and social health. *Journal of Adolescent Health*, 67(2), pp.179-185.

Ong, S., Tan, Y. K., Chia, P. Y., Lee, T. H., Ng, O. T., & Wong, M. S. (2020). Air, surface environmental, and personal protective equipment contamination by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) from a symptomatic patient. *The Journal of the American Medical Association*.

Parker, R., Morris, K., & Hofmeyr, J. (2020). Education, inequality and innovation in the time of COVID-19. *JET Educ Serv*, 1-56.

Peeri, N. C., Shrestha, N., Rahman M. S., Zaki, R., Tan, Z., & Bibi, S. (2020). The SARS, MERS and novel coronavirus (COVID-19) epidemics, the newest and biggest global health threats', what lessons have we learned? *International Journal of Epidemiology*.

Person, B., Sy, F., Holton, K., Govert, B., & Liang, A. (2004). National Center for Infectious Diseases. Fear and stigma, the epidemic within the SARS outbreak. *Emergency infectious Diseases*, 10, 358-63.

Radecki, J., & Schonfeld, R. (2020). The Impacts of COVID-19 on the Research Enterprise. *Ithaka S+ R*.

Reeves, J., & Le Mare, L. (2017). Supporting Teachers in Relational Pedagogy and Social Emotional Education: A Qualitative Exploration. *International Journal of Emotional Education*, 9(1), 85-98.

Remuzzi, A., & Remuzzi, G. (2020). *COVID-19 and Italy: what next*. *The Lancet*, 395(10229), 1– 4. [https://doi.org/10.1016/S0140-6736\(20\)30627-9](https://doi.org/10.1016/S0140-6736(20)30627-9).

Samarasekera, D.D., Goh, D.L.M., Yeo, S.P., Ngiam, N.S.P., Aw, M.M., Lim, M.M., Pillai, S., Lee, S.S., Mahadevan, M., Kow, A., & Chong, Y.S. (2020). Response and lessons learnt managing the COVID-19 crisis by School of Medicine, National University of Singapore. *MedEdPublish*, 9.

Saxena, C., Baber, H., & Kumar, P. (2021). Examining the moderating effect of perceived benefits of maintaining social distance on e-learning quality during COVID-19 pandemic. *Journal of Educational Technology Systems*, 49(4), 532- 554.

Shah, J.N., Shah, J., & Shah, J. (2020). Quarantine, isolation and lockdown: in context of COVID-19. *Journal of Patan Academy of Health Sciences*, 7(1), 48-57.

Silva, D. S. (2017). Ethics of health research with prisoners in Canada.

Singh, J., and Singh, J. (2020). COVID-19 and its impact on society. *Electronic Research Journal of Social Sciences and Humanities*, 2.

Sun, C., & Zhai, Z. (2020). The efficacy of social distance and ventilation effectiveness in preventing COVID-19 transmission. *Sustainable cities and society*, 62, 102390.

Tachfouti, N., Slama, K., Berraho, M., & Nejari, C. (2016). The impact of knowledge and attitudes on adherence to tuberculosis treatment. A case-control study in a Moroccan region. *Pan African Medical Journal*, 12(52).

The Novel Coronavirus Pneumonia Emergency Response Epidemiology Team. (2020). The epidemiological characteristics of an outbreak of 2019 novel coronavirus diseases (COVID-19) in China. *China Journal Epidemiology*, 41, 145-51.

Tria, J.Z. (2020). The COVID-19 pandemic through the lens of education in the Philippines: The new normal. *International Journal of Pedagogical Development and Lifelong Learning*, 1(1), 2-4.

United Nations International Children's Emergency Fund. (2020). The state of corona virus, UNICEF. South Africa.

Varela, D.G., & Fedynich, L. (2020). Leading schools from a social distance: Surveying south texas school district leadership during the COVID-19 pandemic. In *National Forum of Educational Administration and Supervision Journal*, 38(4), 1-10.

Varela, D.G., & Fedynich, L.C. (2021). Teaching from a Social Distance: Teacher Experiences in the Age of COVID-19. *Research in Higher Education Journal*, 39.

Vokó, Z. & Pitter, J.G. (2020). The effect of social distance measures on COVID-19 epidemics in Europe: an interrupted time series analysis. *GeroScience*, 42(4), 1075-1082.

Wen, Z., Shikai, Y., Xiangyi, Z., Ning, W., Qiumei, P., Tongzeng, L., & Aixin, L. (2020). Clinical characteristics and durations of hospitalized patients with COVID-19 in Beijing, A retrospective cohort study, 119 (103670), 1–6 <https://doi.org/10.1101/2020.03.13.20035436>

World Health Organization. (2020a). Emerging respiratory viruses, including COVID-19 Methods for detection, prevention, response, and control. <https://openwho.org/courses/introductionto-ncov>, Accessed 1 February 2020.

World Health Organization. (2020b). Coronavirus Disease Situation Reports from <https://www.who.int/emergencies/diseases/novel-coronavirus-2019/situation-reports>.

Accessed March 25, 2020

World Health Organization. (2020a). Emerging respiratory viruses, including COVID-19 Methods for detection, prevention, response, and control. <https://openwho.org/courses/introductionto-ncov>, Accessed 1 February 2020.

World Health Organization. (2020b). Coronavirus Disease Situation Reports. Retrieved June 20, 2021, from: <https://www.who.int/emergencies/diseases/novel-coronavirus-2019/situation-reports>.

World Health Organization. (2020c). Coronavirus disease 2019 (COVID-19): situation report from: <https://apps.who.int/iris/bitstream/handle/10665/331475/nCoVsitrep11Mar2020-eng.pdf>, Accessed 16 March 2020.

World Health Organization. (2020d). Coronavirus disease 2019 (COVID-19): situation report. Retrieved March 16, 2020 from: <https://apps.who.int/iris/bitstream/handle/10665/331475/nCoVsitrep11Mar2020-eng.pdf>.

Young, B. E., Ong, S. W. X., & Kalimuddin, S. (2020). Epidemiologic features and clinical course of patients infected with SARS-CoV-2 in Singapore. *The Journal of the American Medical Association*. <https://doi.org/10.1001/jama.2020.3204>.

Zhong, B. L., Luo, W., Li, H. M., Zhang, Q. Q., Liu, X. G., & Li, W.T. (2020). Knowledge, attitudes, and practices towards COVID-19 among Chinese residents during the rapid rise period of the COVID-19 outbreak: a quick online cross-sectional survey. *International Journal of Biological Science*, 16(10), 1745-1752. <https://doi.org/10.7150/ijbs.45221>

Zhu, W., Xie, K., Lu, H., Xu, L., Zhou, S., Fang, S. (2020). Initial clinical features of suspected Coronavirus Disease 2019 in two emergency departments outside of Hubei, China. *Journal of Medicine of Virology*. United State

APPENDIX 1

REQUEST FOR PERMISSION TO CONDUCT THE STUDY

P O BOX 834
Tshaulu
0987

The Head of Department (HOD)
Department of Education Limpopo
Private Bag x 9489
Polokwane
0700

Dear Ms/Mr.

RE: REQUEST FOR PERMISSION TO CONDUCT THE RESEARCH

I am a registered student in the Master of public Health programme in the Department of Public Health, School of Health sciences at the University of Venda; I hereby request permission to conduct a study entitled "Compliance of learners and teachers to COVID-19 standard precautionary measures at selected rural secondary schools of Vhumbedzi circuit, South Africa"

The objectives of the study are:

- To assess the level of compliance of secondary school learners/teachers regarding COVID-19 standard precautionary measures.
- To assess the relationship between compliance and demographic factors.
-

Should you require any further information, please do not hesitate to contact me (0822137352) or my supervisor.

Your permission to conduct this study will be highly appreciated.

Yours sincerely,

Ms: Rasivhetshele M

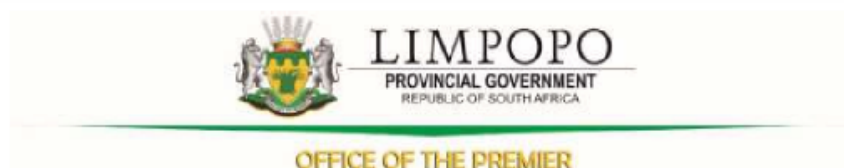
Student no: 15018415

Signature:

Date:.....

APPENDIX 2

PERMISSION TO CONDUCT THE STUDY



Office of the Premier

Research and Development Directorate

Private Bag X9483, Polokwane, 0700, South Africa

Tel: (015) 230 9910, Email: mokobij@premier.limpopo.gov.za

LIMPOPO PROVINCIAL RESEARCH ETHICS COMMITTEE CLEARANCE CERTIFICATE

Online Review Date: 10th – 17th February 2022

Project Number: LPREC/134/2021: PG

Subject: Compliance of Learners and Teachers to Covid-19 Standard Precautions at Selected Rural Secondary Schools of Vhumbedzi Circuit, South Africa

Researcher: Rasivhetshele M

Dr Thembinkosi Mabila



Chairperson: Limpopo Provincial Research Ethics Committee

The Limpopo Provincial Research Ethics Committee (LPREC) is registered with National Health Research Council (NHREC) Registration Number **REC-111513-038**.

Note:

- i. **This study is categorized as a Low Risk Level in accordance with risk level descriptors as enshrined in LPREC Standard Operating Procedures (SOPs)**
- ii. **Should there be any amendment to the approved research proposal; the researcher(s) must re-submit the proposal to the ethics committee for review prior data collection.**
- iii. **The researcher(s) must provide annual reporting to the committee as well as the relevant department and also provide the department with the final report/thesis.**
- iv. **The ethical clearance certificate is valid for 12 months. Should the need to extend the period for data collection arise then the researcher should renew the certificate through LPREC secretariat. PLEASE QUOTE THE PROJECT NUMBER IN ALL ENQUIRIES.**

APPENDIX 3

ETHICAL CLEARANCE CERTIFICATE

ETHICS APPROVAL CERTIFICATE

RESEARCH AND INNOVATION
OFFICE OF THE DIRECTOR

NAME OF RESEARCHER/INVESTIGATOR:
Ms M Rasivhetshela

STUDENT NO:
15018415

PROJECT TITLE: **Compliance of Learners and Teachers to COVID-19
Standard Precautions at Selected Rural Secondary Schools of
Vhumbedzi Circuit, South Africa.**

ETHICAL CLEARANCE NO: FHS/21/PH/31/1301

SUPERVISORS/ CO-RESEARCHERS/ CO-INVESTIGATORS

NAME	INSTITUTION & DEPARTMENT	ROLE
Prof TG Tshilangano	University of Venda	Supervisor
Dr BS Manganye	University of Venda	Co - Supervisor
Ms M Rasivhetshela	University of Venda	Investigator – Student

Type: **Masters Research**

Risk: **Minimal risk to humans, animals or environment (Category 2)**

Approval Period: **January 2022 – January 2024**

The Research Ethics Social Sciences Committee (RESSC) hereby approves your project as indicated above.

General Conditions

While this ethics approval is subject to all declarations, undertakings and agreements incorporated and signed in the application form, please note the following:

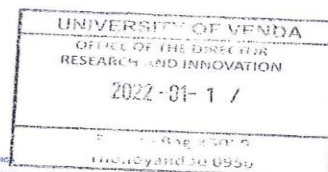
- The project leader (principal investigator) must report in the prescribed format to the REC:
 - Annually (or as otherwise requested) on the progress of the project, and upon completion of the project
 - Within 48hrs in case of any adverse event (or any matter that interrupts sound ethical principles) during the course of the project.
 - Annually a number of projects may be randomly selected for an external audit.
- The approval applies strictly to the protocol as stipulated in the application form. Would any changes to the protocol be deemed necessary during the course of the project, the project leader must apply for approval of these changes at the REC. Would there be deviated from the project protocol without the necessary approval of such changes, the ethics approval is immediately and automatically forfeited.
- The date of approval indicates the first date that the project may be started. Would the project have to continue after the expiry date; a new application must be made to the REC and new approval received before or on the expiry date.
- In the interest of ethical responsibility, the REC retains the right to:
 - Request access to any information or data at any time during the course or after completion of the project,
 - To ask further questions; Seek additional information; Require further modification or monitor the conduct of your research or the informed consent process.
 - withdraw or postpone approval if:
 - Any unethical principles or practices of the project are revealed or suspected.
 - It becomes apparent that any relevant information was withheld from the REC or that information has been false or misrepresented.
 - The required annual report and reporting of adverse events was not done timely and accurately,
 - New institutional rules, national legislation or International conventions deem it necessary

ISSUED BY:

UNIVERSITY OF VENDA, RESEARCH ETHICS COMMITTEE
Date Considered: November 2021

Name of the RESSC Chairperson of the Committee: Prof Takalani Mashau

Signature:

APPENDIX 4

CONSENT FORM AND INFORMATION SHEET

UNIVEN Informed Consent

Appendix 4

“LETTER OF INFORMATION”

“**Title of the Research Study**” : Compliance of learners and teachers to COVID-19 standard precautionary measures at selected rural secondary schools of Vhumbedzi circuit, South Africa

Principal Investigator/s/ researcher : Misimiswa Rasivhetshela, Master of Public Health

“**Co-Investigator/s/supervisor/s**” : ‘Prof T.G Tshitangano and Mr B. S Manganye’

“**Brief Introduction and Purpose of the Study**”: COVID 19 is an infectious disease which is transferred from one person to another if standard precautionary measures are not complied with. Despite the government effort to enforce precautionary measures, COVID-19 battle is still continuing in schools and communities in South Africa. It is not clear whether the schools and communities are adhering to these measures. Thus, the aim of the study is to investigate compliance of learners and teachers to COVID-19 standard precautions at selected rural secondary schools of Vhumbedzi circuit, South Africa

The researcher will be collecting data using an observation checklist. The researcher will meet the participants in their respective classrooms, offices and staff rooms. Voluntarily participation is expected.

Risks or Discomforts to the Participant: The study involves very minimal risk of emotional harm. In case of participants who will go through emotional distress triggered by the study, the researcher will ensure that there is some resolution and follow-up assistance. The research will make arrangements with the nearest hospital for counselling referrals.

Benefits: ‘The researcher will benefit from the participants in order to finish the master’s degree. The participants may benefit when the research has been published, they will know their state of health.’

“Reason/s why the Participant May Be Withdrawn from the Study:” ‘There will not be any adverse consequences if the participant wishes to withdraw from the study. Participants can withdraw if they no longer wish to proceed throughout the study.’

Remuneration: ‘There will not be any monetary payment to participants for participating in this study.’

“Costs of the Study: Participants will not cover any of the study costs.”

“Confidentiality:” Confidentially ensured by providing each participant with a code name to obscure the real name. Code name such as P1 or P2 (participant 1 or 2) will be used when discussing, and analysing data. The main list of participants’ names and matching codes will be kept safe during the study process and after five years the list of real names will be destroyed by the researcher.’

“Research-related Injury: There are no research-related injuries anticipated.”

“Persons to Contact in the Event or Any Problems or Queries:”

“Please contact the researcher +2782 213 7352, my supervisors Prof T.G Tshitangano +2782 448 4111 and Dr B.S Manganye +2772 445 1960 or the University Research Ethics Committee Secretariat on 015 962 9058. Complaints can be reported to the Director:”

“Research and Innovation, Prof GE Ekosse on 015 962 8313 or Georges Ivo.Ekosse@univen.ac.za”

“General:Potential participants must be assured that participation is voluntary and the approximate number of participants to be included should be disclosed. A copy of the information letter should be issued to participants. The information letter and consent form must be translated and provided in the primary spoken language of the research population”

B. CONSENT

“Statement of Agreement to Participate in the Research Study:”

“I hereby confirm that I have been informed by the researcher, Misimiswa Rasivhetshele about the nature, conduct, benefits and risks of this study - Research Ethics Clearance Number:”

“I have also received, read and understood the above written information (*Participant Letter of Information*) regarding the study.”

“I am aware that the results of the study, including personal details regarding my sex, age, date of birth, initials and diagnosis will be anonymously processed into a study report.”

“In view of the requirements of research, I agree that the data collected during this study can be processed in a computerized system, published by the researcher and will be used for authenticity purpose.”

“I may, at any stage, without prejudice, withdraw my consent and participation in the study.”

“I have had sufficient opportunity to ask questions and (of my own free will) declare myself prepared to participate in the study.”

“I understand that significant new findings developed during the course of this research which may relate to my participation will be made available to me.”

Full Name of Participant	Date	Time	Signature
I

“(Misimiswa Rasivhetshela) herewith confirm that the above participant has been fully Informed about the nature, conduct and risks of the above study.”

Full Name of Researcher	Date	Signature
.....

Full Name of Witness (If applicable)	Date	Signature
.....

Full Name of Legal Guardian (If applicable)	Date	Signature
.....

“Please note the following:”

“Research details must be provided in a clear, simple and culturally appropriate manner and prospective participants should be helped to arrive at an informed decision by use of appropriate language (grade 10 level- use Flesch Reading Ease Scores on Microsoft Word), selecting of a non-threatening environment for interaction and the availability of peer counseling (Department of Health, 2004)”

“If the potential participant is unable to read/illiterate, then a right thumb print is required and an impartial witness, who is literate and knows the participant e.g., parent, sibling, friend, pastor, etc. should verify in writing, duly signed that informed verbal consent was obtained (Department of Health, 2004).”

“If anyone makes a mistake completing this document e.g., a wrong date or spelling mistake, a new document has to be completed. The incomplete original document has to be kept in the participant’s file and not thrown away, and copies thereof must be issued to the participant.”

APPENDIX 5

ASSENT FORM FOR MINORS

Introduction

“I am Rasivhetshela Misimiswa, a master student at the University of Venda who is doing research on the topic’ “Compliance of learners and teachers to COVID-19 standard precautionary measures at selected rural secondary schools of Vhumbedzi circuit, South Africa”

“What is RESEARCH?”

“Research is something we do to find new knowledge about the way things (and people) work. We use research projects or studies to help us find out more about a topic we research on. Research also helps us to find better ways of helping or treating children who are sick.”

“What is this research all about?”

“The research wants to investigate learners and teacher’s adherence to COVID-19 standard precautionary measures.”

“Why you have been invited to take part in this research project?”

“You were invited to participate in this study because you are a secondary school learner and have the right information that is needed in the study.”

“What will happen to you in this study?”

“Your daily tasks will be observed by the researcher”

“Can anything bad happen to you?”

“Nothing bad will happen to you”

Can anything good happen to you?

“There is nothing much you will benefit from participating in the study except that you will be able to learn about the compliance level in your school.”

“Will anyone know that you were participating in the study?”

“No one will know that you were in the study because you will not be required to put your name in questionnaire. Information in the research report will not be linked to your name and observation checklist will be kept in the safe where no other persons will have access than the researcher.”

Who can you talk to about the study?

“Should you have further questions about the study, you can contact me 0822137352 in order to answer your questions”

What if you do not want to participate?

“Participation is voluntary you are allowed to take part in the study even if your parents/legal guardian have agreed to that you take part in the study. You also allowed stopping being part of the study at any time without asked any question.”

“Do you understand this research study and are you willing to take part in it?”

 YES NO

“Has the researcher answered all your questions?”

 YES NO

“Do you understand that you can pull out of the study at any time?”

 YES NO

Signature of Child

Date

APPENDIX 6

OBSERVATION CHECKLIST FOR LEARNERS

SECTION A: DEMOGRAPHIC INFORMATION			
D1. Which age range do you fall under?	Learners		
	12-15 15-25		
D2. Gender	Male Female		
D3. Race	African Coloured White		
D4. Grade	8 9 10 11 12		
SECTION B: OBSERVATION CHECKLIST		Yes	No
Do they sanitise their hands and do temperature checks at the gate?			
Do learners wash their hands frequently enough? (before touching books, food, etc.)?			
Do learners wear a mask every time?			
Do learners use sanitizers if water is not accessible?			
Do they avoid shaking hands with others?			
“Do they clean and disinfect frequently touched objects and surfaces?”			
“Do they avoid touching their eyes, nose, and mouth with their hands/fingers?”			
Do they practice social distancing in class, during breaks?			
Is there an alcohol-based sanitizer in all classrooms?			
Is there proper ventilation in all classrooms?			
Are the classrooms cleaned and disinfected frequently?			
Do learners avoid the sharing of food with others?			

APPENDIX 7

OBSERVATION CHECKLIST FOR TEACHERS

SECTION A: DEMOGRAPHIC INFORMATION			
D1. Which age range do you fall under?	"Teachers"		
	"21-30"		
	"31- 40"		
	"41- 50"		
	"51-60"		
D2. Gender	Male Female		
D3. "What is the highest level of education that you have completed?"	"1.High school graduate or GED" "2. Some college/AA degree/Technical school training" "3.College graduate (BA or BS)" "4.Graduate school degree: Master's or Doctorate degree (MD, PhD, JD)"		
D4. What is your marital status?	Single Married Widowed Divorced		
SECTION B: OBSERVATION CHECKLIST		Yes	No
Do they sanitise hands and doing temperature check by the gate?			
Do teachers wash their hands frequently enough? (Before touching books, food, etc.)?			
Do teachers wear a mask all the time?			
Do teachers use sanitizers if water is not accessible?			
Do they avoid shaking hands with others?			
"Do they clean and disinfect frequently touched objects and surfaces?"			
"Do they avoid touching their eyes, nose, and mouth with their hands/fingers?"			

Do they practicing social distancing in staff rooms/ offices, during breaks?		
Is there any alcohol-based sanitizer in all staff rooms, offices?		
Do teachers avoid having meetings in a small and non-ventilated room		
Are staff rooms and offices cleaned and disinfected frequently?		
Do teachers avoid the sharing of food with others?		