



Attitude and Practices about the Coronavirus Disease and its' impact on the mental well-being on university students: A cross-sectional study amongst pharmacy students in the University of KwaZulu-Natal.

By

Nabeela Ebrahim (216002027)

Submitted to:

THE UNIVERSITY OF KWAZULU-NATAL DISCIPLINE OF
PHARMACEUTICAL SCIENCES AND SCHOOL

OF HEALTH SCIENCES
FACULTY OF PHARMACY

Submitted as the dissertation component in fulfilment for the degree of
Master of Pharmacy.

Supervisors:

Prof. Varsha Bangalee

Dr Khayati Moudgil

Date of Submission: 15 November 2023

Chapter review

This dissertation consists of six chapters as follows:

Chapter 1: Introduces the study and presents the significance, the research question, aims, and finally the objectives.

Chapter 2: Reviews the current literature available on attitude and practices about the Coronavirus Disease and its' impact on the mental well-being on university students.

Chapter 3: Provides a detailed research methodology, containing the study setting and target population, study period, study design, sampling procedure, sample size, and data sources.

Chapter 4: Presents the results and data analysis.

Chapter 5: Discusses the results obtained from the study.

Chapter 6: Provides a summary of the findings, significance and novelty of the work, strengths of the study, limitations, and future recommendations.

Declaration 1: Dissertation submission

This is to certify that the contents of this dissertation are the original work of:

Student: Nabeela Ebrahim

Signed: 

Date: 15 November 2023

As the student's supervisor and co-supervisors, we have approved this dissertation for submission.

Supervisor: Prof. Varsha Bangalee

Signed: 

Date: 5 April 2024

Co-Supervisor: Dr Khayati Moudgil

Signed: 


Date: 5 April 2024

Declaration 2: Plagiarism

I, Nabeela Ebrahim, declare that:

1. The research reported in this dissertation, except where referenced, is my original work.
2. This dissertation has not been submitted for any degree or examination at any other university.
3. This dissertation does not contain other persons' data, pictures, graphs, or other information unless specifically acknowledged as being sourced from other persons.
4. This dissertation does not contain other persons' writing unless specifically acknowledged as being sourced from other researchers.

Where other written sources have been quoted, then:

- a. their words have been re-written but the general information attributed to them has been referenced.
 - b. where their exact words have been used, their writing has been placed inside quotation marks and referenced.
5. This dissertation does not contain text, graphics, or tables copied and pasted from the internet unless specifically acknowledged and the source being detailed in the thesis and in the reference sections.

Student Signature: 

Date: 15 November 2023

This is to certify that the contents of this thesis are the original work of Mrs Nabeela Ebrahim and as the candidate's supervisor/ co-supervisors, I have approved this thesis for submission.

Signed:

Prof. Varsha Bangalee:

Date:

Dr Khayati Moudgil:

Date:

Declaration 3: Ethical approval

Ethical approval for this study was obtained from the Human and Social Sciences Research Ethics Committee (HSSREC) at the University of KwaZulu-Natal (UKZN). Reference number: **HSSREC/00004544/2022** (Annexure 1).

Declaration 4: Manuscript publication

My contribution to the project was as follows:

Nabeela Ebrahim: Author – crafting the introduction, conducting the literature review, outlining the research methodology, as well as analyzing and deliberating the findings. Also wrote and compiled the dissertation.

The contributions of others to the project were as follows:

Prof. Varsha Bangalee: Supervisor - supervised the concept of the study, the literature review, and the editing of the dissertation.

Dr Khayati Moudgil: Co-Supervisor – reviewed and edited the dissertation.

The manuscript has been prepared for submission to Health SA Gesondheid (Appendix 3).

Dedication:

*To my mother, Ayesha,
For your silent sacrifices,
For your unwavering support,
For teaching me that I can reach for the stars.*

*To Rashaad and Nurah,
For making the stars easier to reach.*

Acknowledgements:

“All praise is due to Allah, Lord of the worlds” (*Quraan; Surah-Al-Fatihah Verse 2*)

All my accomplishments are solely the result of the grace and benevolence of Allah (SWT). I express my heartfelt appreciation to my Creator for granting me the capacity and resilience to successfully complete this study.

The author would like to acknowledge the following people who have contributed to the completion of this dissertation:

Prof. Varsha Bangalee: I extend my sincere gratitude to my supervisor for your unwavering support, inspiration, and encouragement. Your belief in me and the opportunity you provided have meant the world.

Dr Khayati Moudgil: A sincere thank you for all your support and assistance.

Table of Contents

Declaration 1: Dissertation submission	ii
Declaration 2: Plagiarism	iii
<i>Declaration 3: Ethical approval</i>	<i>v</i>
<i>Declaration 4: Manuscript publication</i>	<i>vi</i>
<i>Dedication:</i>	<i>vii</i>
<i>Acknowledgements:</i>	<i>viii</i>
<i>Abstract</i>	<i>1</i>
CHAPTER 1: INTRODUCTION	3
1.1. Background	3
1.2. The COVID-19 pandemic and University students	4
1.3. Problem Statement	4
1.4. Research Question.....	5
1.5. Aims and Objectives	5
Chapter summary	6
CHAPTER 2: LITERATURE REVIEW:	7
2.1. Epidemiology	7
2.2. The Coronavirus (COVID-2019) pandemic in South Africa	7
2.3. What is mental health?	8
2.4. The impact of COVID-19 on the mental health of university students worldwide	8
2.5. Factors exacerbating mental health challenges in South Africa amid the COVID-19 pandemic.....	9
2.5.1. Unemployment in South Africa as a result of the COVID-19 pandemic.....	9
2.5.2. Impact of familial environment on mental well-being during the COVID-19 pandemic	9
2.5.3. Difficulty accessing basic needs during the COVID-19 pandemic.	11
Chapter summary	14

CHAPTER 3: RESEARCH METHODOLOGY.....	15
3.1. Study design.....	15
3.2. Study Setting.....	15
3.3. Study population.....	15
3.4, Sampling procedure	16
3.5. Sample Size	16
3.6. Data sources	17
3.6.1 Methods of assessment or measure	17
3.6.2. Internal Validity	19
3.6.3. External Validity.....	19
3.6.4. Measures to reduce bias	19
3.6.5. Data collection method	19
3.6.6. Statistical data analysis.....	19
3.6.7. Data Handling	20
3.7. Study Administration and Ethical Issues	20
3.8. Dissemination & Outcome	21
Chapter summary	22
CHAPTER 4: RESULTS.....	23
4.1. Social and demographic characteristics	23
4.2. Assessment of students' Attitude and Practices towards the COVID-19 Virus	26
4.3. Assessment of the impact of COVID-19 on mental status of students	29
4.4. Impact of COVID-19 and its' restrictions on students' studies.....	36
4.5. Strategies used to improve mental health during the lockdown period.	40
CHAPTER 5 – DISCUSSION	42
5.1. Background	42
5.3. Attitudes and Practices towards the COVID-19 pandemic	45
5.4. Impact of COVID-19 on mental status:	46
5.5. Impact of COVID-19 and its' restrictions on students' studies:	49
5.6. Strategies used to improve mental health during the lockdown period.	51
Chapter summary	53

CHAPTER 6: CONCLUSION	54
6.1. Summary of findings	54
6.2. Significance and novelty of the work	55
6.3. Strengths of the study	56
6.4. Limitations:	56
6.5. Future recommendations	57
Chapter summary	58

List of Figures:

Figure 1: Feelings towards contracting COVID-19.....	28
Figure 2: Feelings experienced because of COVID-19	32
Figure 3: Difficulties experienced by participants during the COVID-19 pandemic:.....	34
Figure 4: Impact of COVID-19 on the participants studies.....	39

List of tables:

Table 1: Summary statistics for social and demographic variables (N=190)	24
Table 2: Summary statistics for attitude and practices towards COVID-19.....	27
Table 3: Summarized statistics showing the impact of COVID-19 on the mental status of pharmacy students in UKZN.	30
Table 4: Summarized statistics of the impact of COVID-19 and its restrictions on students’ studies.	37
Table 5: Summarized statistics showing strategies used to improve mental health during the lockdown period.....	41

Annexes:

Annexure 1: Ethical approval letter from the University of KwaZulu-Natal’s (UKZN) Humanities and Social Sciences Research Ethics Committee (HSSREC) 59

Annexure 2: Ethics training certificates of the investigator and supervisors 60

Annexes:

Appendix 1: Informed Consent Form 61

Appendix 2: “Attitude, Practices, and mental health impact of the novel COVID-19 pandemic on the third- and fourth-year pharmacy students at UKZN.” questionnaire 65

Abstract

Background

Student mental health at a tertiary level of education has become a growing concern since the beginning of the COVID-19 pandemic. University students in South Africa face academic challenges as well as a cascade of socio-economic challenges making them more at risk for anxiety and depression. The restrictions, and challenges that COVID-19 brought has intensified these risks. The effect of the COVID-19 pandemic on the psychological well-being of South African university students has a major role to play in analyzing the future implications for the populations' mental health. The steps that were taken to prevent the spread of COVID-19 including lockdown measures, social distancing and quarantine have introduced significant threats to the mental health of the public at large. The current study aims to determine the attitude, practices impact of COVID-19 on the mental health of Pharmacy students at University of KwaZulu-Natal (UKZN).

Method

This study was designed to be a cross-sectional quantitative study which was carried out as a survey questionnaire to fulfil the required objectives. Data was collected via a survey questionnaire; hard copies of the survey were distributed to third-and-fourth year pharmacy students at UKZN once on-site learning at the campus resumed after a period of remote learning as a result of COVID-19. The data was entered into Microsoft® Excel® and analyzed using Statistical Package for the Social Science® (SPSS®), version 28. Descriptive and inferential statistics were calculated, the results were discussed, and conclusions were drawn.

Results

A total of 190 participants completed the survey. There were no exclusions as all the participants were over the age of 18 and were studying in third- or fourth-year pharmacy at UKZN. Majority of the participants (72.5%) perceived the COVID-19 virus as a threat to their community and 83% of students felt scared towards the COVID-19 pandemic. Increased levels of anxiety, loneliness, depression, and substance abuse was also reported. Most students found trouble concentrating (75.9%), which impacts academic and daily functioning and 77.6% found that the

lockdown had a negative impact on their academic experience.

Conclusion

The current study was able to provide a comprehensive assessment of the attitudes and practices about the Coronavirus Disease (COVID-19) and its' impact on the mental well-being on university students amongst pharmacy students in the University of KwaZulu-Natal. The findings suggest that the Covid-19 outbreak has globally introduced many hurdles for tertiary education institutions and challenges for students' mental health. A variety of factors that are linked to the pandemic such as financial difficulty, a weakened social circle, trouble sleeping, fear of contracting the virus, trouble concentrating, and loneliness have increased anxiety and stress among university students. The study also reports a thorough analysis of the students and their range of feelings during the pandemic and consequent lockdown to evaluate their energy levels, prepotent feelings and challenges faced as a result. Our findings highlight that most participants displayed negative feelings and experienced many challenges as a result of the lockdown.

In light of these findings, it is imperative that proactive measures are implemented to address the mental health concerns of students. Such efforts should not only encompass addressing the immediate challenges posed by the pandemic but also address the pre-existing vulnerabilities that have been exacerbated. By recognizing the multifaceted nature of these challenges and the diverse emotional responses they elicit, institutions and governments can work in tandem to provide comprehensive support systems that aid students in navigating these unprecedented times.

CHAPTER 1: INTRODUCTION

Chapter One provides the overall context for the study. It introduces the study by discussing the background, covid-19 pandemic and students, and the problem statement. The research question aims and objectives are also included.

1.1. Background

The South African government rapidly responded to the COVID-19 pandemic by declaring a state of disaster and initiating a comprehensive public health response and lockdown restrictions to reduce the spread of the virus (Kim et al., 2020). The effects of the lockdown, quarantine and social distancing had major ramifications on an already struggling economy (Statistics SA 2, 2022). It rendered a large amount of the workforce unemployed or furloughed due to them being unable to travel to work thus risking their job and income (Statistics SA 2, 2022). The nationwide lockdown included curfews and limited movement except for essential workers and to get food and medicine.

In South Africa, susceptibility to mental health conditions because of the COVID-19 pandemic is intensified by the other pre-existing vulnerabilities such as food insecurity, hunger, direct and indirect exposure to violence, poverty, unemployment, lack of quality healthcare due to an exhausted healthcare system and a high prevalence of infectious and chronic diseases (Kim et al., 2020).

Studies carried out during recent pandemics such as severe acute respiratory syndrome (SARS), Ebola, Swine flu and the current COVID-19 reveals that the psychological impacts extend beyond the fear of contracting the virus. (Barbisch et al., 2015), they also include: feeling helpless, fear of being socially isolated and fear regarding the dangers of the disease (Li, et al., 2020).

Pre-covid data from The South African College of Applied Psychology suggests that one in six South Africans suffer from mental health conditions and only 27% of patients with severe mental illnesses seek treatment (SACAP, 2018). This could be due to the stigma associated with mental health conditions, neglect from the health system, insufficient knowledge to identify characteristics of poor mental health, difficulty finding or accessing help during the lockdown period. Recent estimates

gathered during the first lockdown show that one-third of the South African population (33%) were depressed and there was only 0.31 psychiatrist seeing to 100 000 patients in the government sector (SACAP, 2018).

1.2. The COVID-19 pandemic and University students

University students are a vulnerable population and have been especially affected by the COVID-19 pandemic and its restrictions. The lockdown that was triggered by the pandemic led to many students being socially isolated resulting in feelings of loneliness and despondent behaviour (Lee, 2020). In combination with the challenges faced by the population at large, students have experienced additional challenges which include disturbances to their studies and assessments, changes in the method of teaching and separation from fellow students. Additionally, many courses that require practical intervention or laboratory work were unable to proceed via virtual interaction. The effects of the pandemic may result in uncertainty regarding future career opportunities and prospects thus affecting their financial situation (Appleby et al., 2022).

1.3. Problem Statement

As a result of the COVID-19 pandemic, universities in South Africa have transferred in-person learning to online virtual learning. This gave rise to additional challenges for students at a time when there were concerning levels of mental health disorders in the population (SACAP, 2018). Many students couldn't shift to online platforms immediately because of internet access, connectivity, or lack of technology. This created a learning gap amongst students (Lee, 2020).

A recent study conducted in the United States reported that 71% of students had increased levels of stress and anxiety because of the COVID-19 outbreak (Son et al., 2020). The study concluded that the restrictions imposed due to the pandemic resulted negatively on students in university, bringing into focus the importance of mental health in university students.

Another study conducted in Turkey showed that the stress and anxiety associated with the COVID-19 pandemic has formed part of the burdens faced by university students thus impacting their psychological development and well-being (Durbas et al., 2021). Increased stress and anxiety were found to be associated with loss of family members and the gender of participants, females being more anxious than

males.

The effects of the pandemic will likely have a long-standing effect on students at university. Therefore, it is important to assess the impact that the COVID-19 pandemic has had on students' mental health and academic outcomes. A study conducted in South Africa to assess the attitude and practices concerning the COVID-19 pandemic and its consequent impact on pharmacy students has not yet been conducted and the immense need for one was identified as COVID-19 grew more rampant. To bridge gaps this study investigates the impact of the pandemic on mental health of pharmacy students at the University of KwaZulu Natal (UKZN).

1.4. Research Question

What is the attitude, practices and impact of the COVID-19 pandemic on the mental health of pharmacy students at UKZN?

1.5. Aims and Objectives

The aim of this study is to assess the attitude, practices and impact of the COVID-19 pandemic and its consequent mental health impact on university students studying pharmacy at UKZN. This will provide a representative sample of the mental well-being of students in South Africa.

The objectives of the study are:

1. To determine the attitude of the pharmacy students at UKZN-Westville toward the COVID-19 pandemic.
2. To determine the academic experience of pharmacy students at UKZN-Westville because of the COVID-19 pandemic
3. To determine the impact of COVID-19 on the psychological well-being of pharmacy students at UKZN-Westville.
4. To determine strategies used by students to improve their mental health during the COVID-19 pandemic and lockdown restrictions.

Chapter summary

This chapter has provided an outline of the study. The significance of the research, aim, and objectives of the study are discussed. The following chapter provides a theoretical basis for the study in the form of a literature review

CHAPTER 2: LITERATURE REVIEW:

Chapter Two provides an overview of COVID-19 in South Africa and worldwide, the challenges experienced by the South African people as a result of COVID-19, The overall impact of COVID-19 on mental health of students in other countries are also presented.

2.1. Epidemiology

The COVID-19 pandemic has had a worldwide impact on people's lives. Since its' onset in December 2019, the virus has affected 538 million people with death rates over 6.3 million (Vindegaard et al., 2022). The coronavirus is a respiratory infection that is spread through infectious droplets when virus particles are spread from coughs and sneezes (Hopkins medicine, 2022). The incubation period for the COVID-19 virus is between 2 to 14 days after exposure (WHO, 2022). The symptoms of the COVID-19 virus include difficulty breathing, shortness of breath, fever, and severe coughs (CDC, 2022).

2.2. The Coronavirus (COVID-2019) pandemic in South Africa

In March 2020 the World Health Organization (WHO) declared COVID-19 a global pandemic. On March 26, 2020, South Africa went into a national lockdown to contain the spread of the coronavirus. The lockdown restrictions included national and international travel restrictions, curfews, and limited social interactions. South Africa experienced a risk-adjusted five-level lockdown system. This was guided by several factors including the number of infections, capacity of healthcare facilities to accommodate patients and the implementation of public health measures and the economic and social consequences of ongoing restrictions. (South African Government About alert system | About alert system, 2022). In March of 2020, a level 5 lockdown was implemented until April 2020. However, in December 2020 there was a resurgence of COVID-19 infections which lead to an adjusted level 3 lockdown, this eased to alert level 1 but was later adjusted to level 4 in June 2021. Between June to September 2021, the country went back and forth between level 3 and level 4. Since October 2021, South Africa has been in level 1 lockdown- indicating a low Covid-19 spread with a high health system readiness (South

African Government | About alert system, 2022).

2.3. What is mental health?

The World Health Organization (WHO) defined mental health as “a state of well-being in which the individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her community”. Impaired mental health can be associated with rapid societal changes, social isolation, unhealthy lifestyles, and physical ailments (WHO, 2018). The most recent Mental State of the World report identified South Africa as the country with the poorest mental well-being (Newson, 2021). Prior to 2020, there were reports of happiness and thriving well-being globally. Since then, there has been an alarming decline in the mental well-being of the younger generation worldwide, the gap between the older and younger generation has been worsened by the COVID-19 pandemic. There is much we need to yet understand with regards to the decline in mental well-being in the youth because of COVID-19.

2.4. The impact of COVID-19 on the mental health of university students worldwide

A qualitative and quantitative interview survey was conducted to assess the mental well-being of university students in the United States (Son et al., 2020). The study reported that there are multiple stressors that affected students leading to anxiety and depression. Of the students interviewed, 89% of the participants reported finding it difficult to focus, 86% reported difficulty sleeping, 82% had growing concern about academic performances and 91% reported fear for themselves and their family’s well-being.

A cross-sectional survey conducted online amongst university students in South Africa reported that 72.8% of students reported fear regarding contracting COVID-19, 31.6% of students reported that it was difficult to cope with the mental challenges that came with the lockdown restrictions and 65.2% of the students reported that their emotional well-being was affected (Visser et al., 2021). Another study conducted prior to COVID-19 reported much lower levels of anxiety and depression than (Visser et al., 2021) amongst students studying at a tertiary level in South Africa (Banties et al., 2016).

Another study reported that mental health is the third highest contributor to the burden of disease in South Africa and yet it is less likely to be treated as compared to physical disorders (Posel et al., 2021). Mental health treatment in South Africa is critically under subsidized resulting in inadequate care being provided. The South African Depression and Anxiety group (SADAG) has reported a higher call volume since the beginning of lockdown, callers reported feelings of anxiety, loneliness, and depression due to the pandemic, job security, violence, and trauma. A survey was conducted amongst 1200 callers and the results indicated that 55% of callers felt anxiety and panic during the lockdown period (SADAG, 2020).

2.5. Factors exacerbating mental health challenges in South Africa amid the COVID-19 pandemic

2.5.1. Unemployment in South Africa as a result of the COVID-19 pandemic

The COVID-19 pandemic has resulted in large increases of unemployment globally. After the lockdown was imposed in South Africa, it is estimated that approximately 3 million people were rendered unemployed nationally between February and April 2020 (Jain et al., 2020; Statistics South Africa, 2020; Casale et al., 2020). By the third quarter of 2021, there were 7.6 million unemployed South Africans, this major increase in unemployment rates comes on top of already frightening unemployment statistics in South Africa (Statistics SA 2, 2022). Loss of employment leads to increased financial burden and psychological strain. It was also found that individuals who lost their jobs because of the pandemic were significantly more exposed to anxiety and depression than those who didn't. Having so many families left unemployed could result in students finding difficulty paying tuition fees, covering food, travel and accommodation costs which will cause more anxiety and stress thereby affecting their academic outcome (Leal et al., 2021).

2.5.2. Impact of familial environment on mental well-being during the COVID-19 pandemic

Family plays an instrumental role in the advancement of South African society. The family aids by increasing socializing, nurturance, providing an emotional support structure and giving a sense of belonging. An estimated 95% of South Africans reported that family was an important part of their lives (HSRC, 2013). An

individual's physical, emotional, and psychological development takes place within the family environment (Department of social development, 2021). Well-functioning families help families feel safe and secure resulting in individuals who are better able to deal with stress, trauma, and daily life. On the other hand, the lack of a strong familial support structure affects a person's overall well-being (Department of social development, 2021). According to the Department of Social Development (Department of social development, 2021), COVID-19 has strongly affected the well-being of families in South Africa, this can be seen through shifts in the burden of care, health challenges and loss of family members. The COVID-19 pandemic led to a lockdown, quarantine and in turn – social isolation. Being isolated from family and friends can lead to increased stress levels and loneliness (Mental Health Foundation, 2022). Socializing and communicating with others is a coping mechanism, especially during the stress of a pandemic. Being able to share your feelings with others or seeing a familiar face can help us feel connected and less isolated. Some students were isolated from families whereas others were fearful of losing a loved one because of the virus, resulting in increased anxiety (Durbas et al., 2021).

The lockdown worked out well for some people who were able to use this time to strengthen their relationships with family members. Many students were studying from home and had an added responsibility of childcare and teaching the academic curriculum while balancing their own studies. A great deal of students was rendered helpless after experiencing difficulties with their accommodation on campus residence and had to either live with family or find an alternate source of housing during a difficult period. This forced them out of their comforted learning environment heightening anxiety levels.

Stay-at-home learning made many women students vulnerable to the plight of gender-based violence faced by women in SA (Dlamini, 2020). A cross-sectional study conducted amongst students in France has found that the living conditions of students during the lockdown restrictions had a direct impact on their mental health. The study found that conflicts with household members, noise in and outside the home and finding difficulty isolating within the home were all associated with impaired mental health. This in-turn resulted in reduced learning time and poorer academic performance (Baumann et al., 2021).

2.5.3. Difficulty accessing basic needs during the COVID-19 pandemic.

The effects of the COVID-19 pandemic impacted many households' food security and nutrition status. Food insecurity occurs when people have trouble meeting their essential requirements for nutrition. Severe food insecurity occurs when there is a dire lack of access to food (Statistics SA 1, 2022). The household unemployment rate increased resulting in economic disruptions and higher levels of food insecurity (Statistics SA 1, 2022). According to recent estimates, approximately 8.8 million (15%) of South Africans were affected by extreme food insecurity during Covid-19 (Statistics SA 1, 2022). This results in poorer health and reduced energy levels in students thereby prevents them from functioning at their optimum academic level (Ahmad et al., 2021), this leads to increased psychological distress including anxiety and depression (Fang et al., 2021). The rising health costs of COVID-19 are not limited to physical health, it also includes the individual's mental health and well-being (Vindegaard and Benros, 2020).

In addition to the above socio-economic challenges, students had to face the difficult change to virtual or distance learning. This is especially difficult for students who do not have internet access, proper connectivity, or the necessary technology. The virtual learning resulted in a loss of routine and feelings of loneliness due to being isolated from teachers and other students, thus resulting in increased risk of mental illness (Lee, 2020).

Some of the mental health challenges faced by students include (Fegert et al., 2020):

- Uncertainty about the future
- Fear of contracting the virus
- Trouble sleeping
- Depression
- Substance abuse
- Anxiety
- Trauma
- Stress

These feelings could be a result of the combined effect of the factors discussed above including financial constraints, food insecurity, the shift to virtual learning, fear of themselves or family members contracting the virus and domestic abuse.

A scientific brief conducted by the World Health Organization (WHO) found that there was a 25% increase worldwide in the prevalence of mental health conditions (anxiety and depression) set off by the COVID-19 pandemic (COVID-19 pandemic triggers 25% increase in prevalence of anxiety and depression worldwide - PAHO/WHO | Pan American Health Organization, 2022). The most prominent increases in major depressive disorder (MDD) were established in areas most affected by the COVID-19 pandemic. It also showed that during the first year of the pandemic, there was a significant increase in mental health problems in the general population. The effect was majorly felt by low- and middle-income countries (WHO, 2022).

The WHO also found that there was a 25.6% increase in worldwide cases of anxiety disorders in 2020, this shows the significant impact that COVID-19 had on the mental health of the population (WHO, 2022).

In another study, it was found that many individuals in South Africa didn't have access to the psychological assistance needed to cope with the heightened levels of stress in the household during the lockdown restrictions (The conversation, 2022).

Measuring individual mental health and well-being because of COVID-19 is vital to assess its' contribution on the population's mental health. Furthermore, evaluating the number of people that are receiving treatment for mental health conditions exacerbated by COVID-19 will allow governments to put the necessary measures in place to ensure adequate care and interventions are being held. The WHO has recommended seeking support for both COVID-19 and our mental and psycho-social well-being. There was increased risk of family stress and domestic abuse due to restricted movement and people being confined to homes with their abusers. Access to mental health care services were disrupted when people needed it most, during the initial stages of the pandemic. False news and incorrect information regarding the virus heightened fears and stress levels, resulting in less people seeking care (WHO 2, 2022).

Most of the current research assessing the mental health of individuals during the COVID-19 pandemic consists of cross-sectional data that is collected through online questionnaires. This leads to selection bias as many South Africans have limited access to the internet depending on their location and socio-economic status (Xiong et al., 2020). Further comprehension of the impact that the pandemic

has had on students is vital to alleviate the mental and psychological changes they've experienced.

I am unaware of any studies conducted in South Africa to assess the attitude and practices concerning the COVID-19 pandemic and its consequent impact on pharmacy students'. To bridge these gaps this study investigates the impact of the pandemic on mental health of pharmacy students at the University of KwaZulu Natal (UKZN).

Chapter summary

This chapter presented a literature review of studies in South Africa and other countries. The next chapter will provide the research methodology used to carry out the study.

CHAPTER 3: RESEARCH METHODOLOGY

Chapter Three consists of a detailed methodology that was used to design and analyze the study. Sections included in this chapter are study setting and target population, study period, study design, sampling procedure, sample size, and data sources.

3.1. Study design

This was a cross-sectional questionnaire-based study that was performed using questions derived from the aims and objectives of the study.

The dissertation used a quantitative research method. This form of research strategy was executed by testing current hypotheses and scanning analytical data. A diligent data analysis protocol was attained by using students from the third and fourth year to increase the sample size, allowing us to achieve sufficient statistical power required for the study to be significant and for the aims and objectives to align with the method of data collection and analysis. Data was collected via a survey questionnaire; hard copies were distributed to pharmacy students at UKZN once on-site learning at the campus had resumed. This ensured that individuals felt at ease in a familiar setting and maintained confidentiality.

3.2. Study Setting

The data was collected from the third- and fourth-year students studying pharmacy at the University of KwaZulu Natal (UKZN) – Westville campus only..

3.3. Study population

This study population included all students who were currently enrolled in their third and fourth year of study for pharmacy at UKZN. Third- and fourth-year students were chosen as the subjects because their early university years were most affected by the pandemic, and they were the first roll-out of students who experienced the change from in-person to online virtual learning.

Inclusion criteria: The study included members of all races and genders who were currently enrolled for third- and fourth-year pharmacy at UKZN-Westville campus.

Exclusion criteria: This study excluded individuals who were not studying Pharmacy at UKZN-Westville.

3.4, Sampling procedure

The sample size was calculated using the simple random sampling method (SRS). This was a well-established technique with standard formulas available to calculate the target sample size (SPRING 2014).

3.5. Sample Size

The formula used for this study is:

$$n = \frac{\frac{Z^2 PQ}{d^2}}{1 + \frac{1}{N} \left(\frac{Z^2 PQ}{d^2} - 1 \right)}$$

In the above formula:

P	Expected prevalence of mental health conditions present in Pietermaritzburg and Richmond, this is 50%
Q	1-P
Z	Upper point of the standard normal distribution which is 1.96
d	Clinically acceptable margin of errors (which is 5%)

Using the above data, the total target population is 223 students as the third-year class has 105 students and the fourth-year class has 118 students. The required sample size will be 142 students. Considering the potential for unexpected situations., a 10% non-response rate will be added to the sample size - this will give a maximum sample size of 157.

3.6. Data sources

3.6.1 Methods of assessment or measure

A questionnaire survey was used to collect data (see appendix 2). The questionnaire was modified from a Knowledge, Attitudes and Practices (KAP) study performed by Alian A Alrasheedy and colleagues in Saudi Arabia (Alrasheedy et al., 2021). To use their questionnaire, permission was obtained from the authors. Their survey consisted of questions on demographics, knowledge and awareness, attitudes and practices towards the pandemic, and the psychological impact of the COVID-19 pandemic on students' studies and lives. Students were also given an opportunity to write down any activities that improved their mental health status during the lockdown restrictions. The questionnaire was accessible in English and had not been interpreted into any other official language of South Africa as all the pharmacy university students are literate in English. The questionnaire is made up of 6 sections:

Section 1: Informed Consent (see appendix 1)

Section 2: Demographic information of participants

Section 3: Participants attitude and practice towards COVID-19

Section 4: The impact that COVID-19 had on the mental status of Participants.

Section 5: The impact of COVID-19 and its' restrictions on the students' studies.

Section 6: Strategies carried out to improve mental health during the lockdown restrictions.

Section 1: Informed Consent

This section refers to permission to use the data collected being allowed by participants. It has a confidentiality agreement and the participants rights.

Section 2: Demographic information of participants

This section consisted of 7 socio-demographic questions. These questions included information about the participants' age, gender, nationality, race, area of residence, co-existing conditions, and current year of study.

Section 3: Participants attitude and practice towards COVID-19

This section consisted of 5 attitude and practice questions with a multiple-choice type of questioning. An extra space was provided for participants to elaborate if they felt it necessary. These practice questions covered topics on prevention and mask-wearing. The attitude questions covered topics on lockdown restrictions, spread and threat of the COVID-19 pandemic, these questions were directed at getting a better understanding of the participants feelings towards COVID-19.

Section 4: The impact of COVID-19 had on the mental status of Participants.

This section consisted of 5 questions aimed at getting a better understanding of the feelings of participants because of the pandemic and the restrictions. The questions were multiple choice and had an extra space provided for participants to elaborate if necessary.

Section 5: The impact of COVID-19 and its' restrictions on the students' studies.

This section consisted of 9 questions that were aimed at understanding the impact of the pandemic on the students' academic performance.

Section 6: Strategies carried out to improve mental health during the lockdown restrictions.

This section was open-ended to allow participants to elaborate according to their own experiences.

3.6.2. Internal Validity

A pilot study consisting of 3 UKZN students was conducted for review, comments, and feedback regarding the simplicity and ease of comprehension of the study. The responses were not included in the final study.

3.6.3. External Validity

This refers to the degree to which the findings from this study can be applied to other studies. The results of the study were generalized to university students in South Africa.

3.6.4. Measures to reduce bias

A standardized set of questions was used to reduce information bias. The researcher included all third and fourth year UKZN pharmacy students to reduce selection bias.

3.6.5. Data collection method

Participants included third- and fourth-year pharmacy students from UKZN. Hard copies of the survey were physically distributed to the students. Participants were required to consent to the study before proceeding with the survey. The questionnaire took approximately 15-20 minutes to complete and hand in to the researcher. Once the form was completed, the participants weren't able to change any answers.

3.6.6. Statistical data analysis

The data was entered into Microsoft® Excel® and analyzed using the Statistical Package for the Social Science® (SPSS®) program, version 28. This allowed for the distribution of the quantitative variables to be demonstrated using descriptive statistics to determine the measures of central tendency, including the median, mode, mean, frequency, range, and standard deviation.

Descriptive statistics were used to summarize the data. Frequencies and percentages were used to summarize categorical variables. The frequency

distribution of numeric data was examined for normality and means or medians were used appropriately. To account for possible relationships, comparisons were made using Chi-square statistical tests for categorical data and t-test/Wilcoxon rank-sum test for numeric data. All analyses were performed using SPSS version 28, and a p-value < 0.05 was considered statistically significant.

Descriptive and inferential statistics were calculated, including the percentage and a 95% confidence interval for positive responses to questions. A Chi-square test was used to test the association between attitude and practices versus socio-demographic variables and the impact of COVID-19 on the mental health of pharmacy students at UKZN. To determine the impact of COVID-19 on the mental health of pharmacy students at UKZN, binary logistic regression was used. All tests were two-sided, and all p-values reported were tested at the $\alpha=0.05$ level. The outcome data and demographic summaries were presented in graphs, tables, and figures.

All responses were reported irrespective of the result. Data was not manipulated, plagiarized, or forged to achieve an expected outcome of the study. The data collected and references used were stored safely to verify results and information obtained during the study.

3.6.7. Data Handling

All hard copies of data collected were kept under lock and key, with only the researchers involved having access to them. Additional data was stored on a password-protected personal laptop. The responses were transferred to a Microsoft Excel® spreadsheet, and only the researchers involved had access to the data. The spreadsheet was securely stored under password access control. The data was also stored on an external storage device for backup purposes. The data was stored for 5 years..

3.7. Study Administration and Ethical Issues

The responses gathered from the participants were kept strictly confidential. Ethical approval was obtained from the Humanities and Social Sciences

Research Ethics Committee (HSSREC) at the University of KwaZulu Natal (Annexure 1). The questionnaire was distributed after approval from the Ethics Committee. The contact details of the researcher were readily available to the participants in case they had any questions or issues. Informed consent was obtained from all participants before the commencement of the survey. No participant names were used in any context. Although no question was anticipated to illicit any trauma to the participants, if the participant, however, felt the need to have access to a professional counselor due to their participation in the study, they could have booked an appointment by sending an email to the College of Health Sciences' Student Support Services' or calling the Toll-Free Line.

3.8. Dissemination & Outcome

The findings of the study will be published.

The results of this study will give an overview of the pharmacy students' attitude and practices towards COVID-19 as well its psychological impact on their mental well-being. This will provide guidance for measures that need to be put in place during future pandemics. The outcome of this study can guide universities and education committees in tackling important stressors and causes of anxiety amongst students during online learning, it will also allow consideration of providing proactive psychological and mental health support services for students during future pandemics.

Chapter summary

This chapter contained the detailed research methodology of the study that included the study setting and target population, study period, study design, sampling procedure, sample size, and data sources. The next chapter will present the results and data analysis obtained from the study

CHAPTER 4: RESULTS

This chapter presents the results and data analysis of the study aimed at determining the attitudes, practice, and mental health impact of the novel coronavirus (COVID-19) on pharmacy students at UKZN.

The results will be divided into the following sections:

- 4.1. Social and demographic characteristics
- 4.2. Assessment of students' Attitude and Practices towards the COVID-19 Virus
- 4.3. Assessment of the impact of COVID-19 on mental status of students
- 4.4. Impact of COVID-19 and its' restrictions on students' studies.
- 4.5. Strategies used to improve mental health during the lockdown period.

4.1. Social and demographic characteristics

A total of 190 participants completed the survey. There were no exclusions as all the participants were over the age of 18 and were studying in third- or fourth-year pharmacy at UKZN. The final sample consisted of 190 participants. Table 1 shows the social and demographic characteristics of the study participants.

This section consisted of 7 socio-demographic questions. The data of the participants that was collected includes age, gender, residence, nationality, year of study, co-existing diseases, and race.

Of the total sample, 124 (65.6%) were female and 65 (34.4%) were male. Majority of the participants were between the ages of 18-25 years, 181 (95.3%); 131 (69.3%) resided in urban areas, 187 (98.4%) were South African, 178 (94.7%) did not have co-existing diseases, 96 (50.5%) were third year pharmacy students and 114 (60%) were Black (Table 1).

Table 1: Summary statistics for social and demographic variables (N=190)

Social and demographic variables		Coun	Percent
		t	
What is your age?	<18	0	0%
	18-25	181	95.3%
	26-35	7	3.7%
	36-45	2	1%
	46-55	0	0%
	56-65	0	0%
	>65	0	0%
Gender	Male	65	34.4%
	Female	124	65.6%
	Prefer not to say	0	0%
	Other (specify)	0	0%
What type of area do you reside in?	Urban	131	69.3%
	Semi-Rural	22	11.6%
	Rural	36	19.1%
Year of study	Third	96	50.5%
	Fourth	94	49.5%
Co-existing diseases	Yes	10	5.3%
	No	178	94.7%
Are you a South African	Yes	187	98.4%
	Other	3	1.6%
Race	Black	114	60%

	Indian	74	39%
	White	0	0%
	Coloured	2	1%
	Other	0	0%

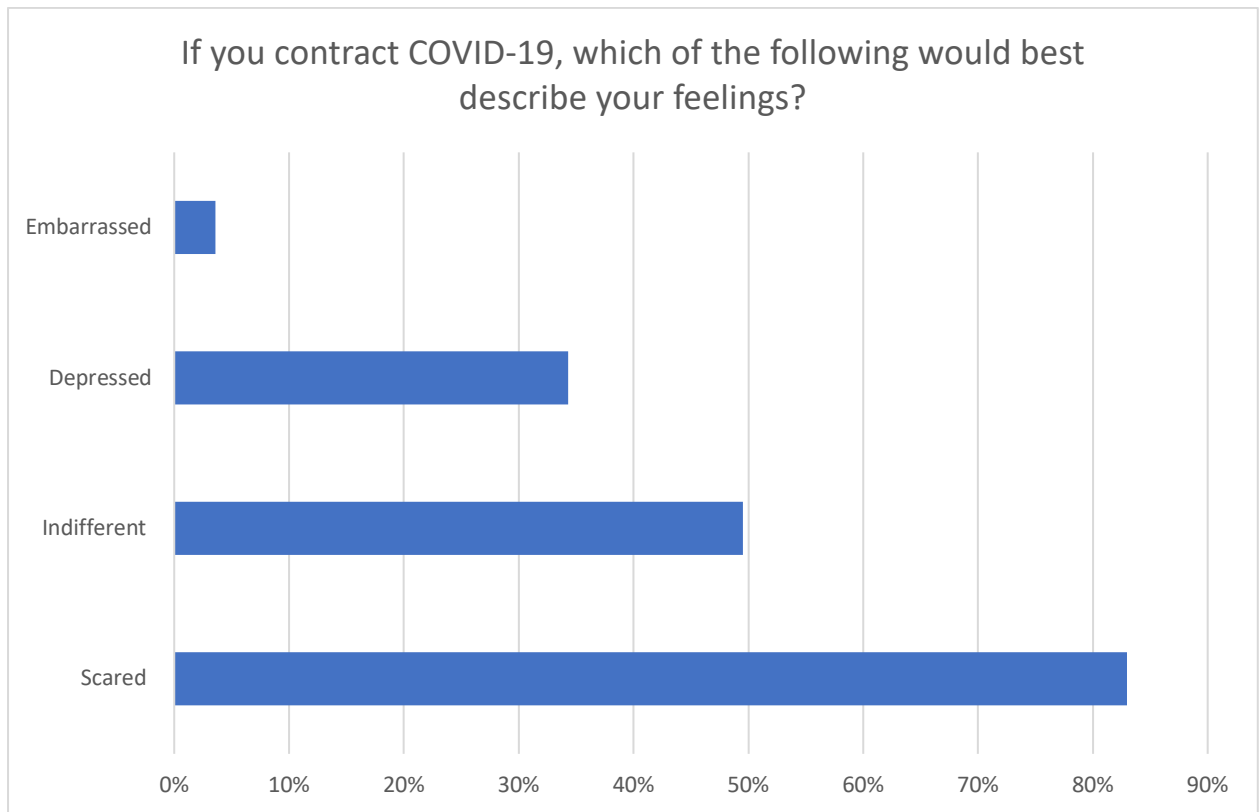
4.2. Assessment of students' Attitude and Practices towards the COVID-19 Virus

A total of five questions were used to measure the attitude and practices towards the COVID-19 virus. According to these variables, most participants were scared (83%) of contracting the COVID-19 virus. Additionally, a substantial portion of students (72.5%) perceived the virus as a threat to their community. A high level of awareness was also evident, with 95.8% of students acknowledging that large gatherings and crowded spaces increase the risk of virus transmission. Interestingly, 51.6% of students continued to wear masks in public, even though it is no longer mandated. Furthermore, a significant majority (81.7%) of students adhered to the recommended strategies outlined by authorities to prevent infection and the spread of COVID-19, as detailed in Table 2.

Table 2: Summary statistics for attitude and practices towards COVID-19.

Attitude and Practices towards COVID-19	Count	Percent	
If you contract COVID-19, which of the following would best describe your feelings? (Please select all that apply)	Scared	107	83%
	Indifferent	44	49.5%
	Depressed	23	34.3%
	Embarrassed	2	3.6%
	Other (please specify)		
Do you think that COVID-19 is a threat for your community?	Yes	137	72.5%
	No	48	25.4%
	Other (please specify)	4	2.1%
Do you think large gatherings and crowded spaces can increase the chances of contracting the virus?	Yes	182	95.8%
	No	8	4.2%
Wearing of masks is no longer mandatory, do you still wear a mask in public?	Yes	24	12.6%
	No	98	51.6%
	Sometimes	68	35.8%
Are you following the strategies recommended by authorities (e.g., Department of Health) to prevent the infection and spread of COVID-19?	Yes	152	81.7%
	No	34	18.3%

Figure 1: Feelings towards contracting COVID-19



From figure 1, we can see that most of the students felt scared (83%) towards COVID-19, followed by students feeling indifferent (49.5%) towards COVID-19, students feeling depressed (34.3%) towards COVID-19 and lastly, students feeling embarrassed (3.6%) towards COVID-19.

4.3. Assessment of the impact of COVID-19 on mental status of students

This section consisted of 5 questions used to evaluate the impact that the COVID-19 virus has had on pharmacy students in UKZN (**Table 3**). According to the responses to these questions, a significant portion of participants reported experiencing various challenges related to the COVID-19 pandemic. Specifically:

- Anxiety: A substantial majority, 75.2% of participants, expressed feelings of anxiety concerning the COVID-19 pandemic.
- Fear of Infection: Nearly 80% of participants (79.4%) harbored fear regarding the possibility of contracting the virus.
- Concentration Issues: The pandemic had an impact on the ability to concentrate for 75.9% of participants, causing difficulties in maintaining focus.
- Financial Constraints: Financial constraints were a concern for a significant portion of participants, with 64.2% reporting such constraints due to the pandemic.
- Loss of Interest in Activities: A notable 40.2% of participants occasionally experienced diminished interest in engaging in activities because of the pandemic.
- Impact on Studies: Using a Likert scale ranging from 1 to 5, where 5 indicates the most substantial impact, 33.9% of participants rated the impact of COVID-19 on their studies as a 4.
- Impact on Mental Well-being: Using the same Likert scale, 29.9% of participants assigned a value of 3 for the impact of COVID-19 on their mental well-being.

These responses collectively indicate that a significant proportion of participants have been grappling with various emotional, financial, and academic challenges because of the COVID-19 pandemic, as detailed in Table 3.

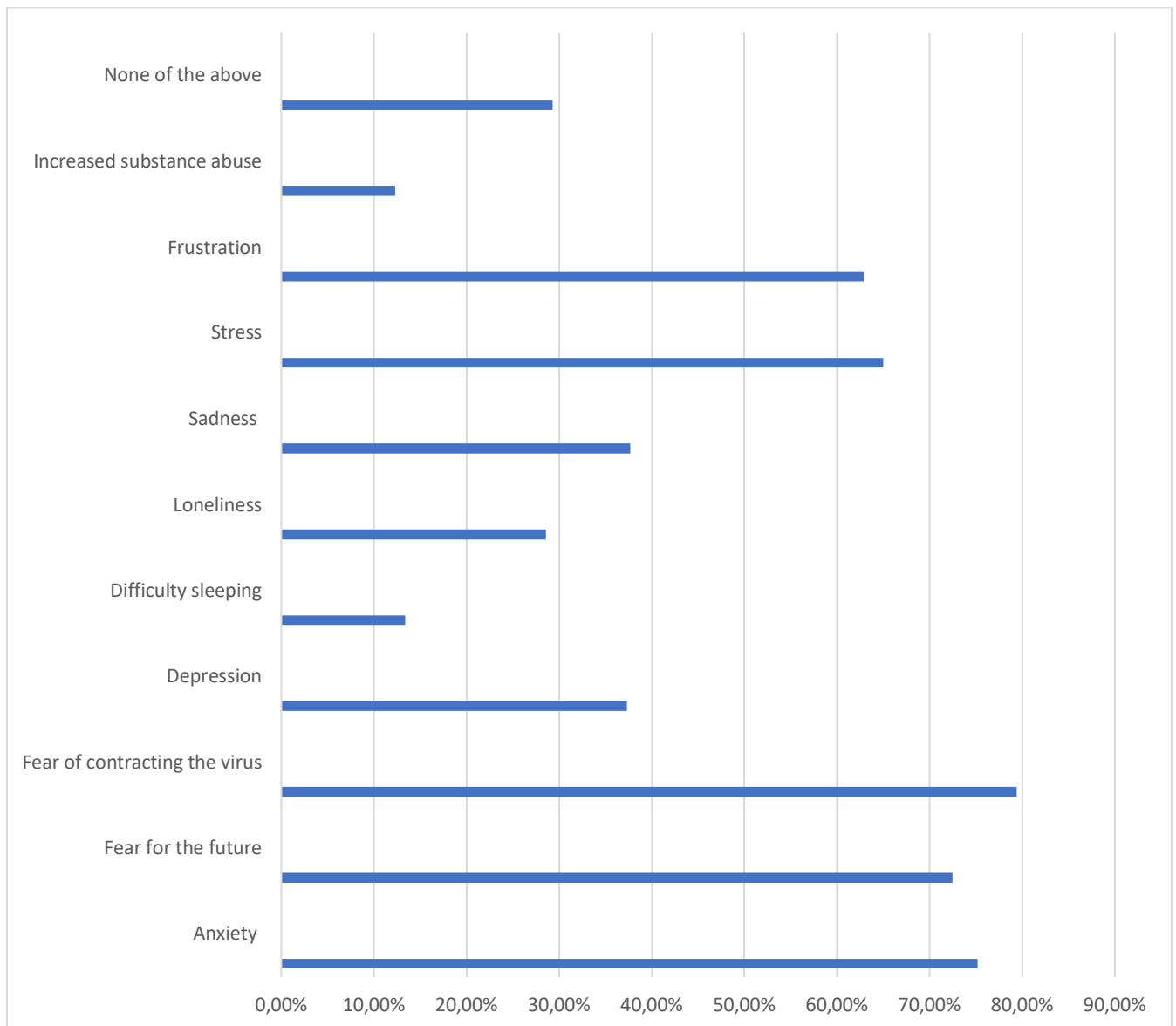
Table 3: Summarized statistics showing the impact of COVID-19 on the mental status of pharmacy students in UKZN.

Impact of COVID-19 on mental status		Count	Percent
Have you experienced any of the following feelings because of the COVID-19 pandemic? Please select all that apply	Anxiety	91	75.2%
	Fear for the future	79	72.5%
	Fear of contracting the virus	85	79.4%
	Depression	28	37.3%
	Difficulty sleeping	9	13.4%
	Loneliness	20	28.6%
	Sadness	29	37.7%
	Stress	67	65%
	Frustration	61	62.9%
	Increased substance abuse	8	12.3%
	None of the above	22	29.3%
Have you experienced any of the difficulties listed during the COVID-19 pandemic? Please select all that apply	Financial constraints due to your guardian or self being rendered unemployed	68	64.2%
	Trouble concentrating	82	75.9%
	Difficulty getting food	21	29.6%

	Problems with transport	57	59.4%
	Housing issues	7	10.9%
	Difficulty getting medication and necessities	24	32.4%
	Difficulty accessing healthcare	24	33.3%
	Victim of violence	0	0%
Feeling little interest in doing activities because of the pandemic	Always	27	14.3%
	Frequently	33	17.5%
	Occasionally	76	40.2%
	Rarely	48	25.4%
	Never	5	2.7%
Do you think the current COVID-19 pandemic has affected your studies on a scale of 1-5 (1 being the smallest impact and 5 being the biggest impact)?	1	3	1.6%
	2	21	11.5%
	3	48	26.2%
	4	62	33.9%
	5	49	26.8%
How would you describe the impact that COVID-19 has had on your mental well-being on a scale of 1-5 (1 being the smallest	1	19	10.3%
	2	37	20.1%
	3	55	29.9%
	4	43	23.4%
	5	30	16.3%

impact and 5 being the biggest impact)

Figure 2: Feelings experienced because of COVID-19

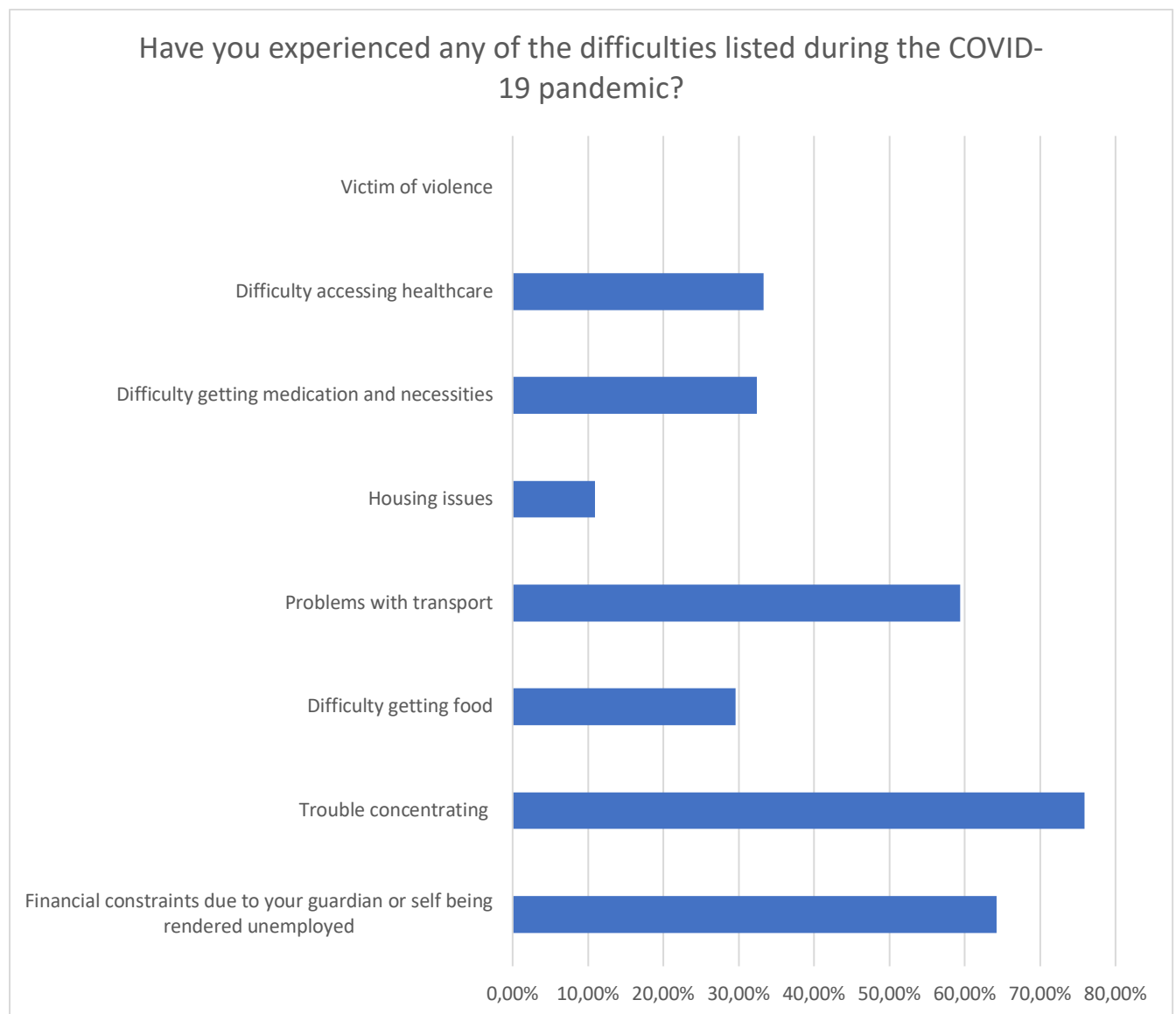


Based on the data presented, it is evident that the most reported feelings experienced by students because of the COVID-19 pandemic were as follows:

- Fear of Contracting the Virus: The highest percentage of participants, at 79.4%, expressed fear concerning the possibility of contracting the COVID-19 virus.
- Anxiety: A significant majority, 75.2% of participants, reported experiencing anxiety related to the pandemic.
- Fear of the Future: A substantial 72.5% of participants felt apprehensive about the future.
- Stress: Approximately 65% of participants reported experiencing stress because of the pandemic.
- Frustration: Nearly 63% of participants expressed feelings of frustration due to the pandemic.
- Sadness: Over one-third of participants, at 37.7%, reported feelings of sadness.
- Depression: Similarly, 37.3% of participants indicated experiencing symptoms of depression.
- None of the Above Feelings: 29.3% of participants, did not report any of the specified feelings.
- Loneliness: Approximately 28.6% of participants reported experiencing loneliness during the pandemic.
- Difficulty Sleeping: For 13.4% of participants, the pandemic led to difficulties in sleeping.
- Increased Substance Abuse: A smaller percentage, 12.3%, indicated increased substance abuse because of the pandemic.

These findings illustrate the diverse range of emotional responses and challenges that students have encountered during the COVID-19 pandemic. It underscores the importance of addressing not only the physical health aspects of the pandemic but also the significant impact it has had on mental and emotional well-being.

Figure 3: Difficulties experienced by participants during the COVID-19 pandemic:



Based on the data provided, it is evident that participants encountered various difficulties during the COVID-19 pandemic, with the following challenges being the most prevalent:

- **Trouble Concentrating:** The most reported difficulty, affecting 75.9% of participants, was trouble concentrating. This issue likely impacted their academic and daily functioning.

- Financial Constraints due to Guardians/Caretakers Being Unemployed: Approximately 64.2% of participants faced financial constraints stemming from the unemployment of their guardians or caretakers. This economic strain likely affected their access to essential resources.
- Problems with Transport: A significant portion, 59.4% of participants, encountered difficulties related to transportation, which could have hindered their mobility and access to various services.
- Difficulty Accessing Healthcare: About 33.3% of participants reported challenges when attempting to access healthcare services, which is critical during a health crisis like the COVID-19 pandemic.
- Difficulty Getting Medication and Necessities: Similarly, 32.4% of participants encountered issues related to obtaining medication and essential necessities, highlighting the disruption of their usual routines.
- Housing Issues: While less prevalent, 10.9% of participants also faced housing-related problems, indicating housing instability as a concern for some.

These findings emphasize the multifaceted challenges that participants navigated during the pandemic, underscoring the need for comprehensive support mechanisms that extend beyond health measures to address the various social, economic, and logistical difficulties that individuals encountered.

4.4. Impact of COVID-19 and its' restrictions on students' studies.

A set of nine questions were used to assess the impact of COVID-19 and associated restrictions on students' academic experiences (**Table 4**). According to these questions, the following key findings emerged:

- Negative Effect of Lockdown on Studying: A significant majority, 77.6% of students, believed that the lockdown had a negative impact on their studying experience.
- Impact of Living with Family: About half of the participants, 50.3%, felt that living with family during the lockdown negatively affected their studies.
- Negative Impact of COVID-19 on Studies: A substantial 75.8% of participants perceived the impact of COVID-19 on their studies as negative.
- Adjustment to Virtual Learning: The majority, 83.3% of participants, reported that they had successfully adjusted to virtual learning.
- Comfort with Returning to Campus: A significant portion, 61.5% of participants, expressed that they were not concerned about returning to campus.
- Concerns About Changes on Campus: 55.3%, did not express fear regarding potential changes on campus since the onset of the pandemic.
- Stress Level Due to Being Away from Campus: Using a Likert scale from 1 to 5, with 5 indicating the highest stress level, 28% of students rated their stress level as 3 when being away from colleagues on campus.
- Home as a Source of Distraction: A substantial 70% of students felt that being at home served as a source of distraction, leading to a lack of accountability and dedication to their studies.

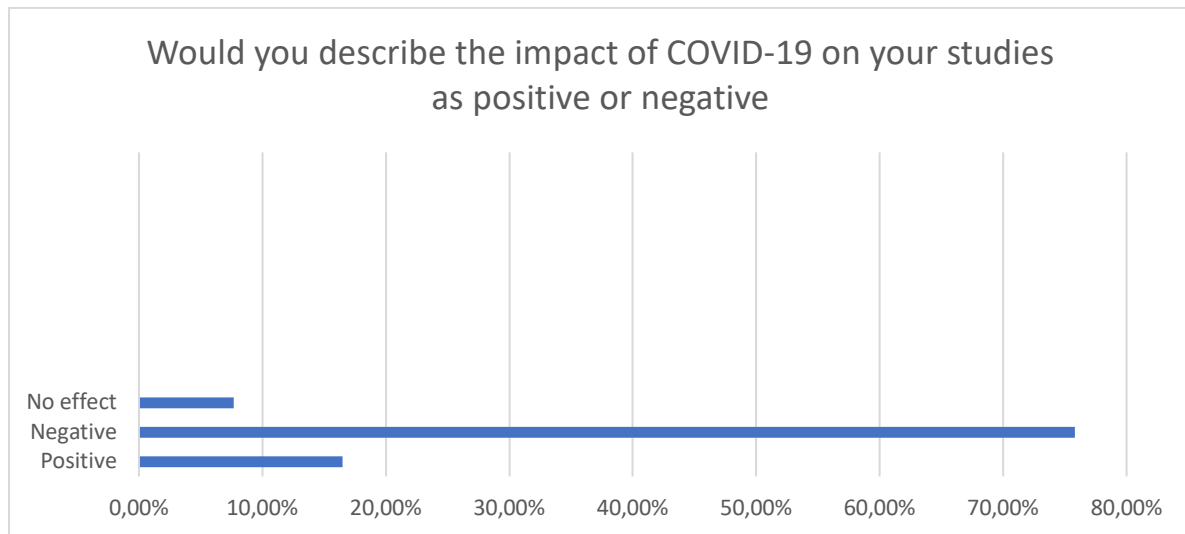
These findings collectively reveal the complex interplay of factors affecting students' academic experiences during the COVID-19 pandemic, encompassing challenges related to remote learning, family dynamics, concerns about returning to campus, and the impact of pandemic-related restrictions on their studying environment.

Table 4: Summarized statistics of the impact of COVID-19 and its restrictions on students' studies.

Impact of Covid-19 and its' restrictions on students' studies		Count	Percent
How did the lockdown affect your academic studying experience?	Positively	27	14.8%
	Negatively	142	77.6%
	Not at all	13	7.1%
If you were living with family during the lockdown period of COVID-19, did you find that this positively or negatively affected your studies?	Positively	62	34.3%
	Negatively	91	50.3%
	Not applicable	28	15.5%
Would you describe the impact of COVID-19 on your studies as positive or negative	Positive	30	16.5%
	Negative	138	75.8%
	No effect	14	7.7%
Have you adjusted to virtual learning?	Yes	150	83.3%
	No	29	16.1%
Are you concerned with returning to campus? (Feel free to explain why)	Yes	69	37.9%
	No	112	61.5%
Are you scared of how	Yes	80	44.2%

much things have changed on campus since the beginning of the pandemic?	No	100	55.3%
How did you find being away from fellow colleagues during the COVID-19 period (on a scale of 0-5, 0 being not stressful, 1 being somewhat stressful and increasing to 5 being highly stressful)?	0	34	18.7%
	1	31	17%
	2	34	18.7%
	3	51	28%
	4	23	12.6%
	5	9	5%
Did you find that being at home during the COVID-19 period was a source of distraction that led to a lack of accountability and dedication towards your studies?	Yes	126	70%
	No	54	30%
Are you confident in the knowledge you have gained at university to go out and practice your profession?	Yes	110	62.2%
	No	66	37.3%

Figure 4: Impact of COVID-19 on the participants studies.



The most chosen answer for the impact COVID-19 has had on your studies was: negative (75.8%)

4.5. Strategies used to improve mental health during the lockdown period.

Participants were asked to choose which strategies were used to improve their mental health during the lockdown period.

Maintaining Social Connections Online: A significant majority, at 81.8% of participants, found that maintaining social connections and communication online played a crucial role in improving their mental health during the lockdown period.

Following Normal Routine: An almost identical percentage, 81.6% of participants, believed that adhering to their regular routines was beneficial for their mental well-being during the lockdown.

Healthy Eating and Regular Exercise: Approximately 80.5% of participants reported that consuming a healthy diet and engaging in regular physical exercise contributed to the improvement of their mental health while in lockdown.

These findings underscore the importance of social interaction, adherence to established routines, and prioritizing physical health as effective strategies for promoting mental well-being during challenging periods such as lockdowns. It highlights the significance of holistic approaches that encompass social, behavioural, and lifestyle aspects in maintaining and improving mental health.

Table 5: Summarized statistics showing strategies used to improve mental health during the lockdown period.

Strategies used to improve mental health during the lockdown period (please tick all that apply)	Count	Percent
Following your normal routine	102	81.6%
Eating healthy food and carrying out regular exercise	103	80.5%
Maintaining social connection and communication online	108	81.8%
Used this time to spend more quality time with your family	101	76.5%
Keeping up to date with the latest information from the National Department of Health	78	70.9%
Developed new skills and worked on talents.	71	68.3%
Avoided reading or exposing yourself to news about COVID-19	39	50.6%
Other (please explain further)		

CHAPTER 5 – DISCUSSION

This chapter discusses the results and data analysis of the study entitled “*Attitude and Practices about the Coronavirus Disease and its’ impact on the mental well-being on university students: A cross-sectional study amongst pharmacy students in the University of KwaZulu-Natal*”

This chapter includes the following sections:

- 5.1. Background
- 5.2. Social and demographic characteristics
- 5.3. Attitudes and practices towards the COVID-19 pandemic
- 5.4. Impact of COVID-19 on mental status
- 5.5. Impact of COVID-19 and its’ restrictions on students’ studies:
- 5.6. Strategies used to improve mental health during the lockdown period.

5.1. Background:

COVID-19 is a global pandemic that has, within a short period, shown catastrophic effects since it was first encountered in December 2019. As of November 2022, South Africa recorded the highest number of casualties in Africa with over 100 000 reported deaths (Statista, 2022). To date, there have been a limited number of studies in South Africa about the Attitude and Practices about the Coronavirus Disease and its’ impact on the mental well-being on university students. To our knowledge, no studies were performed on the pharmacy students in the University of KwaZulu-Natal. Due to the unfamiliarity of the disease as well as the risks and precariousness, it is critical for the educational institutions to strategize, design interventions and policies and to implement methods to improve mental health in the public. To guide these endeavors, this quantitative, cross-sectional study is aimed at determining the attitudes, practices, and impact amongst a group of university students towards the novel coronavirus (COVID-19) was carried out.

Our results found that the participants felt that COVID-19 had a negative impact on their mental well-being and academic experience. Most participants encountered difficulties because of the COVID-19 pandemic, this included: trouble concentrating, financial constraints, problems with transport and difficulty accessing healthcare. Other studies performed showed similar results (Batra, K et.al, 2021).

5.2. Social and demographic characteristics:

Most participants in the study fell within the 18–25-year age bracket, reflective of the student population in universities. Previous worldwide research has highlighted that psychological challenges were pre-existing concerns among university students even before the onset of the pandemic. Disturbingly, nearly half of these mental issues began as early as 14 years of age, according to studies conducted globally (American Council on Education, 2019; WHO, 2020). This global context is significant as suicide continues to rank among the primary causes of death for adolescents on a global scale. This alarming trend underscores the urgency of implementing early interventions aimed at addressing the mental health and emotional well-being of this demographic (WHO, 2020).

It is crucial to recognize that without timely interventions during the initial stages, the unresolved psychological concerns can persist into later phases of life, significantly affecting an individual's overall mental health (WHO, 2020). This underlines the importance of proactive measures and support mechanisms to prevent the potential exacerbation of mental health issues among young adults and adolescents. By focusing on early intervention and comprehensive mental health support, we can potentially mitigate the long-term consequences and provide individuals with the tools needed to navigate their mental well-being throughout different stages of life.

Participants hailing from rural areas encountered distinct challenges compared to their urban counterparts in terms of accessing healthcare, obtaining medications, and arranging transportation. Additionally, these rural-residing participants expressed a shared sentiment that COVID-19 posed a significant threat to their communities, which in turn adversely impacted their academic journey. This situation is likely compounded by several barriers to care that are prevalent in rural settings, including scarcities in healthcare professionals, restrictions due to lockdown

measures, limited health literacy, and the stigma attached to seeking medical assistance within rural communities.

The pandemic has accentuated the pressing need for enhanced transportation options and healthcare facilities that are tailored to meet the specific requirements of South Africa's rural regions. Recognizing the distinct challenges faced by the rural populace is pivotal, considering they constitute a substantial portion of the entire population. Notably, data from 2020 indicates that only 67.35% of the South African populace resides in urban areas, emphasizing the substantial rural population (Statista 2021).

Addressing the unique needs of rural communities is not only a matter of equity but also essential for ensuring the well-being of a significant segment of the population. Comprehensive efforts aimed at improving healthcare accessibility, dismantling stigma, fostering health literacy, and bolstering transportation infrastructure are indispensable steps in addressing the challenges brought to the forefront by the pandemic. Such initiatives are vital for creating a healthcare system that caters to the diverse demographics of the nation, thereby contributing to a more inclusive and resilient society.

Both male and female participants shared a common sentiment regarding the detrimental effects of COVID-19 on their academic journey. Irrespective of gender, individuals experienced challenges stemming from the pandemic and the subsequent lockdown protocols that were implemented.

These challenges encompassed a wide range of aspects, including changes in learning modalities, limited access to educational resources, disruptions in study routines, and the overall uncertainty brought about by the pandemic. The shared difficulties faced by both genders underscore the fact that the impact of COVID-19 on education was a universal concern that transcended gender lines.

It's important to recognize that the pandemic's repercussions were not isolated to any specific demographic group but rather affected students across the board. This understanding emphasizes the need for comprehensive strategies and support systems that address the diverse challenges posed by the pandemic to ensure the well-being and academic success of all students, regardless of their gender and residential area.

5.3. Attitudes and Practices towards the COVID-19 pandemic

Most participants displayed a strong awareness of the preventive measures that have been instituted in response to the COVID-19 pandemic. This awareness extended to their recognition that gatherings and densely populated areas could facilitate the transmission of the virus. Interestingly, even though mask mandates were no longer obligatory, most participants continued to wear masks in public settings. Additionally, the strategies advocated by health authorities to curb the infection's spread were adhered to by most participants (as indicated in Table 2). It's worth noting that previous research show that efficacy beliefs could serve as predictors of preventative behaviours (Lee, 2021).

Among those participants who subscribed to the notion that gatherings and crowded spaces could exacerbate infection transmission, their adherence to best practices was commendable. Such individuals demonstrated practices that included adhering to social distancing guidelines and avoiding crowded locations. However, a substantial portion, over 80%, expressed fear of contracting the COVID-19 virus. Moreover, more than 70% of participants perceived the virus as a threat to their communities (as shown in Table 2).

Fear, recognized as a significant contributor to heightened anxiety and depression during the pandemic, surfaced as a prominent emotional response among the participants. This study also uncovered a gender disparity in fear levels, with a greater proportion of women reporting heightened fear of contracting the virus compared to men. This aligns with findings from global studies (Sakib et al., 2020; Reznik, 2020) and can potentially be attributed to the fact that women are generally considered to face higher health risks associated with COVID-19 than men (Broce-Pérez et al., 2020).

In summary, participants in this study demonstrated commendable awareness of preventive measures and compliance with recommended strategies. However, the prevalence of fear, particularly among women, underlines the psychological impact of the pandemic and the potential gender-related variations in perceptions of risk.

5.4. Impact of COVID-19 on mental status:

Our findings suggest that majority of the participants had feelings of anxiety, fear of contracting the virus, fear of the future, stress, frustration, sadness, depression, loneliness, and increased substance abuse (Table 3).

Corollaries that are associated with the Coronavirus pandemic, including uncertainty and fear, apply an additional incentive to explain these rising trends. Furthermore, young people enjoy socializing and participating in celebrations, which were limited during lockdown because of the pandemic, adding to their frustration levels (Batra K et al., 2021).

A significant number of students or their guardians experienced job losses either due to voluntary decisions or employer-initiated actions during the lockdown period. The loss of a source of income, particularly in a time of economic uncertainty like the pandemic, exacerbates financial instability and can lead to a cascade of challenges as indicated in Table 3. The loss of employment not only results in an increased financial burden but also places individuals under considerable psychological stress manifesting as anxiety, depression, and an overall sense of uncertainty. Individuals grappling with unemployment often find themselves struggling to meet essential needs, such as housing, food, and healthcare. These findings resonate with our study's results and are consistent with similar research conducted by others, such as the study conducted by Leal et al. (2021), which was mentioned in the literature review above.

The insights from our study, in alignment with previous research, emphasize the profound impact that job losses during the lockdown period can have on individuals' financial and mental well-being. Addressing the multifaceted repercussions of unemployment, including both financial assistance and psychological support, becomes paramount in mitigating the far-reaching consequences of this aspect of the pandemic's impact.

As noted by Wangenge and Kupe (2020), the emergence of the COVID-19 pandemic in South Africa is intertwined to an ongoing socioeconomic backdrop marked by poverty and entrenched, unmanageable disparities. Correspondingly, tertiary education institutions in South Africa encountered an ambiguous path ahead, given the dwindling financial resources within the sector. This situation necessitated

that the universities consider multiple factors when formulating strategies to address the pandemic's impact and simultaneously chart a course for long-term viability. A significant portion of UKZN (University of KwaZulu-Natal) students depend on financial support to cover their tuition fees. When this funding is not received, it leads to additional stress for these students. According to the 1996 South African Constitution, everyone has the right to receive basic education as well as the opportunity for further learning. It is the government's responsibility to ensure that this education is accessible through reasonable methods. Consequently, this situation has resulted in complexities concerning student funding, resulting in students stressed and fearful of the future (Walker & Mkwanazi, 2015).

Tertiary educational institutions and governments should take steps to ensure the safety and the academic, social, financial, and mental wellbeing of the students. Factors associated with anxiety could include gender, fear of contracting the virus, financial constraints, housing etc. (Jehi T et al., 2022)

In times of global pandemics, fear of infection and spreading the infection is a common concern and can lead to anxiety and depression (Rubin et al., 2016). Many students in this study did experience this as seen in Table 3.

The main information channel used by students for the COVID-19 virus was the internet, this included electronic news websites and social media platforms such as Twitter, Facebook, YouTube, Instagram, Snapchat, and WhatsApp. Following this, traditional mass media including television, newspapers, magazines, and radio were also commonly used sources. Scientific websites and articles came next in line. A minor fraction of participants relied on alternate sources such as friends and family for their information (Olaimat et al., 2020). Gathering information about COVID-19 from social media platforms may not always guarantee authenticity and reliability. Being exposed to misleading information can cause a lack of clarity and can magnify the anxiety about the illness and correct ways of prevention.

The online study conducted by Visser et al. (2021) corroborated the results from my study. In both studies, students found it difficult to cope with the mental challenges that came with the lockdown restrictions, expressed fear of contracting the COVID-19 virus and had their emotional well-being affected. In China, Li et al. (2021) conducted an extensive, longitudinal, population-based survey among college

students, discovering that senior students faced a greater risk of developing anxiety during the pandemic compared to their counterparts in lower academic levels. Our study aligns with these findings, as fourth-year students exhibited a higher anxiety rate than third-year students. Longitudinal studies examining the evolution of students' mental health before and during the pandemic have consistently indicated a notable increase in anxiety levels (Jehi T et al., 2022).

Higher education institutions must enhance psychological monitoring and establish a comprehensive mental health treatment plan. Additionally, they should conduct health education and promotion activities to empower students (Jehi T et al., 2022). Encouraging students to engage in activities such as physical exercise, meditation, hands-on activities, or seeking guidance from mental health professionals is crucial. Faculties should also provide necessary accommodations to support academic achievement while minimizing stress and anxiety among students.

The pandemic has brought to light both the positive aspects and limitations of the mental health support system within universities. The occurrence of mental illnesses, emotional strain, and diminished sense of well-being among students in higher education worldwide is on the rise, and it is notably elevated when compared to other demographic groups (Lisiecka et al., 2023). Therefore, effectively addressing students' mental health requires a comprehensive approach that covers not only the higher education sector but also extending beyond it. This is crucial to ensure that students are provided with the necessary assistance during challenging periods.

Higher education institutions (HEI's) in Poland are striving to provide specialist psychological support that often include co-operation from medical institutions, NGOs and associations that provide specialist psychological support (Lisiecka et al., 2023). Moreover, the establishment of collegiate support groups for students who may be hesitant to directly seek professional assistance is commendable. These groups cater to individuals who may be apprehensive about sharing their challenges openly. By creating a safe and understanding space within the academic community, HEIs facilitate peer support and interaction. These groups can foster a sense of belonging, reduce stigma associated with seeking help, and encourage students to share their experiences and concerns with others facing similar challenges. When compared to the situation in South Africa, where such extensive collaboration and support structures are less common, the efforts of HEIs in Poland are notable for

their proactive and holistic approach. It's important for institutions worldwide to recognize the importance of addressing students' mental health needs and to implement strategies that cater to diverse challenges and preferences.

In England, the HEIs have mental health issue support delivered via the Student Services department and offer counseling services, guidance, establish support networks, and conduct mental health workshops. The student unions also provide Peer support groups and helplines for guidance and advice. that are student-led (Bolton P; Hubble S, 2020). At this point, it is important that the endeavours made by the university are supplemented by broader preventative measures that aim at reducing the prevalence of psychological issues among students in the future. Having complemented educational initiatives such as workshops, seminars and information campaigns play a crucial role in helping students navigate their lives and find a balance.

Furthermore, enhancing peer support and fostering a genuine sense of university community through involvement in social, academic, cultural, and athletic activities is essential. In times of uncertainty, the university's objective should revolve around mentally preparing students to confront upcoming challenges. The period following the pandemic emerges as a pivotal opportunity to intervene in instances of mental health crises among university students.

Association of other contributing factors such as financial constraints, trouble concentrating, problems with transport and access to medication, difficulty getting food and housing issues must be thoroughly examined. This comprehensive exploration is essential for the complete design of a holistic public health approach to address mental health challenges among university students in South Africa.

5.5. Impact of COVID-19 and its' restrictions on students' studies:

The study showed that over 77% of students felt that the lockdown negatively affected their studying experience. If a lockdown occurs again, these negative feelings can be minimized by ensuring a seamless shift to online education. while contributing to a steady educational framework and announcing the coursework calendar weeks ahead of time. Asynchronous teaching methods and virtual programmes can be used to offer lectures and activities, while giving special

consideration to students who live in rural areas, are engaged in employment or responsible for childcare (Savitsky et al., 2020)

As opposed to many other studies conducted globally that suggested Students who lived with their families during the pandemic experienced lower levels of anxiety compared to those who underwent quarantine alone. (Cao et al., 2020; Demetriou et al., 2021; Garvey et al., 2021; Husky et al., 2020; Wathélet et al., 2020), the participants in this study reported a negative studying experience while living with family members. In rural areas of South Africa, it's common for people to live in larger extended families within modest-sized dwellings which might be the reason for the negative experience. The challenges reported by students can be attributed to increased conflict, noise and overcrowding, the quality of the home environment, poor relationship shared with family members, lack of communication, limited privacy, financial burden, and housing trouble.

Universities across the world had to shift towards virtual learning which allowed for virtual teaching during the lockdown periods to ensure safety of the staff members and students while allowing students to complete their studies (Fawaz et al., 2021). This transition was done rapidly and came with its own challenges such as technological adjustments, changes in the methods of learning and teaching. University students were barraged with many obstacles as they shifted to virtual learning, this included and the rise in academic workload (Fawaz et al., 2021) and the lack of robust social and emotional connections. (Demetriou et al., 2021). These challenges might have influenced their mental well-being (Fawaz et al., 2021; Demetriou et al., 2021). Despite the challenges associated with virtual learning, certain participants were apprehensive about returning to on-campus education. They raised concerns about heightened anxiety due to the increased presence of people on campus as compared to the virtual learning environment. Some participants shared that the prospect of readjusting to a different learning method posed a significant challenge. They highlighted the difficulty associated with managing larger crowds, navigating campus spaces, and interacting face-to-face after an extended period of remote learning. These sentiments underpin a broader issue of acclimating to the physical and social changes that come with the transition from virtual to on-campus learning.

Results in our study have reported overall positive adjustment to virtual learning.

However, students did report increased stress, anxiety and difficulty concentrating, indicating that the barriers to virtual learning weren't just technological and educational challenges but also social, emotional, and mental challenges of isolation and social distancing. In addition to the pedagogical and technological aspects of virtual learning, successfully supporting students in their virtual training and education will require that educators see to the social, emotional, and mental aspects of online learning.

It's crucial to highlight that tertiary education students in South Africa were already confronting numerous challenges before COVID-19, encompassing financial difficulties, insecurity regarding food and housing, and stress due to the endemic nature of crime in the country. (Bantjies J et al., 2023). Also, pandemics are not new to South Africa, we have long faced the HIV (Human Immuno Virus) and TB (Tuberculosis) syndemic with South Africa having the highest number of people living with HIV in the world (Bantjies J et al., 2023). Social, environmental and the local history of pandemics in the country have outlined the impact of the coronavirus pandemic in South Africa and consequently the students' experiences of the pandemic. It is likely that residing in a country marked by the persistent presence of numerous life-threatening infectious diseases may have desensitized students to the psychological impact of COVID-19. (Bantjies J et al., 2023).

5.6. Strategies used to improve mental health during the lockdown period.

Participants found that following a normal routine, eating healthy and doing regular physical exercise, maintaining a social connection, spending time with family and keeping up to date with the latest information about the pandemic helped them to improve mental health. During the COVID-19 pandemic and the subsequent lockdown period, some students discovered coping mechanisms to navigate the challenges posed by the unprecedented circumstances. For some, the pursuit of self-improvement emerged as a constructive strategy. This involved dedicating time to personal development endeavors such as honing skills, exploring new hobbies, or engaging in creative pursuits. By channeling their energy toward self-enhancement, these individuals found a way to proactively manage the uncertainties of the

pandemic.

Moreover, accepting the situation at hand emerged as a vital aspect of their coping strategies. Instead of dwelling on the limitations and disruptions, these students chose to embrace the reality and focus on adapting their routines and expectations accordingly. This mindset shift allowed them to find a sense of balance in an otherwise turbulent period.

Spiritual practices, such as prayer and reflection, played an integral role in helping some students cope with the challenges of the pandemic. Engaging in these practices offered a source of solace, grounding, and a means of connecting with their inner selves during times of isolation and uncertainty.

Another strategy involved seeking solace in literature and rest. Reading became a means of escape, offering a mental retreat from the stressors of the pandemic. Simultaneously, prioritizing sleep ensured that they maintained their physical and emotional well-being, as ample rest contributes significantly to one's ability to manage stress and maintain a positive outlook.

However, it's noteworthy that not all coping mechanisms were inherently positive. A subset of students resorted to using intoxicating substances as a means of dealing with the challenges brought on by the pandemic. The circumstances of lockdown, isolation, and disruption to routine might have heightened feelings of boredom and stress, prompting some individuals to experiment with substances to alleviate these negative emotions. This trend underscores the significance of providing accessible mental health resources and healthy coping mechanisms, as the allure of substances as an escape can pose risks to overall well-being.

In essence, the pandemic prompted a diverse array of coping strategies among students. While many leaned towards self-improvement, spiritual practices, and positive outlets, it's crucial to address the emergence of potentially harmful coping mechanisms as well, emphasizing the importance of holistic support for mental well-being during challenging times.

Chapter summary

This chapter discussed the results and data analysis from Chapter Four. The significance and novelty of the work, limitations experienced as well as, the conclusion highlighting key concepts will be presented in the next chapter.

CHAPTER 6: CONCLUSION

The final chapter presents the conclusion for the study, as well as, future recommendations, significance, limitations, and finally strengths of the study.

6.1. Summary of findings

As outlined in Chapter 1, the research undertaken in this thesis aimed to determine the attitude and practices about the Coronavirus Disease (COVID-19) and its' impact on the mental well-being on university students amongst pharmacy students in the University of KwaZulu-Natal. To achieve this, the following objectives were met:

1. Determining the attitude of the pharmacy students at UKZN-Westville toward the COVID-19 pandemic.
2. Determining the academic experience of pharmacy students at UKZN-Westville because of the COVID-19 pandemic
3. Determining the impact of COVID-19 on the psychological well-being of pharmacy students at UKZN-Westville.
4. Determining strategies used by students to improve their mental health during the COVID-19 pandemic and lockdown restrictions.

The present study was able to provide a comprehensive assessment of the attitudes and practices about the Coronavirus Disease (COVID-19) and its' impact on the mental well-being on university students amongst pharmacy students in the University of KwaZulu-Natal. The findings suggest that the Covid-19 outbreak has globally introduced many hurdles for tertiary education institutions and challenges for students' mental health. A variety of factors that are linked to the pandemic such as financial difficulty, a weakened social circle, trouble sleeping, fear of contracting the virus, trouble concentrating, and loneliness have increased anxiety and stress among university students. The study also reports a thorough analysis of the students and their range of feelings during the pandemic and consequent lockdown to evaluate their energy levels, prepotent feelings and challenges faced as a result. Our findings highlight that most participants displayed negative feelings and

experienced many challenges because of the lockdown. By conducting a survey, it allowed us to distinguish a wide range of feelings and difficulties experienced by students, of these feelings, the five most notable ones included fear of infection, fear of the future, anxiety, stress, and frustration. The three most notable difficulties faced by students include trouble concentrating, financial constraints and problems with transport. Therefore, tertiary institutions and the government should design strategies to ensure the safety and the physical, social, and mental well-being of students. The interventions designed should be appropriate for the age group and individuals it is targeting to counteract the negative mental health impact COVID-19 as had on students. The global concern over the mental well-being of university students predates the pandemic, as existing data indicated a higher susceptibility to common mental disorders among this demographic compared to the public. Furthermore, psychological trauma has seen a surge since the onset of COVID-19. Our study findings underscore the multitude of challenges faced by students, including heightened anxiety, depression, and stress as a direct consequence of the pandemic.

Considering these findings, it is imperative that proactive measures are implemented to address the mental health concerns of students. Such efforts should not only encompass addressing the immediate challenges posed by the pandemic but also address the pre-existing vulnerabilities that have been exacerbated. By recognizing the multifaceted nature of these challenges and the diverse emotional responses they elicit, institutions and governments can work in tandem to provide comprehensive support systems that aid students in navigating these unprecedented times.

6.2. Significance and novelty of the work

This study provided an evaluation of the attitudes, practices, and impact of a South African community. As of the 28th of March 2023, KwaZulu-Natal was ranked the 2nd highest number of cases and the 2nd highest death toll in South Africa. This research aimed at improving the mental health of students by utilizing the data analysis to

improve interventions for psychological improvement. To the best of our knowledge, there hasn't been any other studies performed at UKZN to assess the attitudes, practices, and impact of COVID-19 on the mental well-being of students. This research also addressed common strategies used to combat mental health issues during the lockdown.

6.3. Strengths of the study

This research forms part of the first study in this geographical region of South Africa. This study contributes to and strengthens existing literature while addressing strategies to overcome mental health issues among university students in third and fourth year of pharmacy at the University of KwaZulu-Natal. The findings of this study can be used to design targeted physical and mental health awareness campaigns and may be generalized to similar groups.

6.4. Limitations:

This study was only conducted among two groups of students in South Africa; therefore, a true reflection of all students could not be established.

Another limitation involves the reliance on self-reported measures to assess and determine students' feelings, such as anxiety and stress. The evaluation of anxiety did not involve a clinician conducting diagnostic assessments; instead, it relied on the administration of various screening tools. This reliance on self-reported data introduces the possibility of social desirability bias and memory recall bias.

The data collection of this study was only carried out over a short period as this study forms part of an academic submission for a master's degree and the researcher is faced with a limited timeframe within which to complete the master's degree.

The target group was small and so more accurate representation would not have provided a full reflection of the community population.

6.5. Future recommendations

Health officials, education institutions and governments may use these findings to create interventions to promote a healthy psychological well-being.

Chapter summary

The final chapter presented the summary of the findings, significance and novelty of the work, strengths of the study, limitations and future recommendations. The annexes and appendices will be presented below.

Annexure 1: Ethical approval letter from the University of KwaZulu-Natal's (UKZN) Humanities and Social Sciences Research Ethics Committee (HSSREC)



26 September 2022

Nabeela Ebrahim (216002027)
School Of Health Sciences
Westville Campus

Dear N Ebrahim,

Protocol reference number: HSSREC/00004544/2022

Project title: Attitude and practices about the coronavirus disease and its' impact on the mental well-being on University students: A cross-sectional study amongst pharmacy students in the University of KwaZulu-Natal.

Degree: Masters

Approval Notification – Expedited Application

This letter serves to notify you that your application received on 21 July 2022 in connection with the above, was reviewed by the Humanities and Social Sciences Research Ethics Committee (HSSREC) and the protocol has been granted **FULL APPROVAL**.

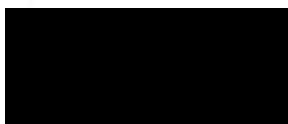
Any alteration/s to the approved research protocol i.e. Questionnaire/Interview Schedule, Informed Consent Form, Title of the Project, Location of the Study, Research Approach and Methods must be reviewed and approved through the amendment/modification prior to its implementation. In case you have further queries, please quote the above reference number. **PLEASE NOTE:** Research data should be securely stored in the discipline/department for a period of 5 years.

This approval is valid until 26 September 2023.

To ensure uninterrupted approval of this study beyond the approval expiry date, a progress report must be submitted to the Research Office on the appropriate form 2 - 3 months before the expiry date. A close-out report to be submitted when study is finished.

HSSREC is registered with the South African National Research Ethics Council (REC-040414-040).

Yours sincerely,



Professor Dipane Hlalele (Chair)

/dd

Annexure 2: Ethics training certificates of the investigator and supervisors



TRREE

Zertifikat Certificat

Certificado Certificate

Promouvoir les plus hauts standards éthiques dans la protection des participants à la recherche biomédicale
Promoting the highest ethical standards in the protection of biomedical research participants

Certificat de formation - Training Certificate
Ce document atteste que - this document certifies that

Nabeela Ebrahim

a complété avec succès - has successfully completed
Introduction to Research Ethics

du programme de formation TRREE en évaluation éthique de la recherche
of the TRREE training programme in research ethics evaluation

Release Date: 2022/07/01
CID: L4rCDKDs4s

APPROVED BY

SIWF
FMH
ISFM

Programmes de formation continue (2 crédits)
Continuing Education Programs (2 credits)

Professeur Dominique Sprumont
Coordinateur TRREE Coordinator



Foederatio
Pharmaceutica
Helveticae

FPH

Programmes de formation
postgraduée et continue

Programmes de formation continue
Continuing Education Programs

Ce programme est soutenu par - This program is supported by :
European and Developing Countries Clinical Trials Partnership (EDCTP) (www.edctp.org) - Swiss National Science Foundation (www.snf.ch) - Canadian Institutes of Health Research (<http://www.cihr-irsc.gc.ca/r/2891.html>) -
Swiss Academy of Medical Science (SAMS/ASSM/SAMW) (www.samw.ch) - Commission for Research Partnerships with Developing Countries (www.kfpe.ch)

[REV : 20220217]

Certificate of Completion

The National Institutes of Health (NIH) Office of Extramural Research certifies that

Varsha Bangalee successfully completed the NIH Web-based training course "Protecting Human Research Participants".

Date of completion: 04/01/2016.

Certification Number: 2046264.

Appendix 1: Informed Consent Form

Study Title: Attitude and Practices about the Coronavirus Disease (COVID-19) and its' impact on the mental well-being on University students: A cross-sectional study amongst pharmacy students in the University of KwaZulu Natal.

Dear Potential Research Participant

I would like to invite you to take part in our research study by completing an online questionnaire.

What is the purpose of this study?

The aim and purpose of this research is to calculate the knowledge, attitude, practices, and mental health impact of the novel COVID-19 pandemic on the third- and fourth-year pharmacy students at UKZN.

What does the study include?

It will consist of 6 socio-demographic questions, 6 questions on attitude and practices and 5 questions on the psychological impact of COVID-19 on participants. There is also an open-ended section to allow for students to elaborate on their coping mechanisms during COVID-19. The questions are multiple choice type questions and will take approximately 20 minutes to complete.

Benefits of the study:

There are no expected risks involved this study nor is there anything to directly gain for the participants, but you will be assisting the researcher to learn more about the knowledge, attitude, practices, and the mental health impact of the novel COVID-19 pandemic on the third- and fourth-year pharmacy students at UKZN. The information obtained will be solely used for educational purposes.

Withdrawal from the study:

Participation is voluntary and no costs or consequences will be induced should you refuse to participate or withdraw from the study and any stage. Participants can decline to continue participation at any stage as they wish.

Confidentiality:

Participants will be kept anonymous; no personal information will be obtained for participation. All data obtained will be kept for a period of 5 years. Confidentiality will always be adhered to.

Rights and complaints:

There are no questions expected to illicit any trauma to you. However, if you feel the need to communicate with a counselor because of participating in the study, you may book an appointment by emailing the College of Health Sciences' Student Support Services' or call the Toll-Free Line. The email address for appointment booking is chs.sss@ukzn.ac.za

When booking your appointment, please provide the information below: ·

Your Name

Contact number.

Two dates and times that are suitable for your appointment.

The FDA (Front Desk Administrator) will respond to your appointment request, confirm the date and time of your appointment, and provide you with the online Intake and Consent form for completion. You can also access this service using the TOLL-FREE LINE:

Access free, professional, and confidential counselling - Monday to Friday - 08:00 and 16:30

Toll Free Line - 080 080 0017

If you have any questions or require more information about the study itself, feel free to contact the researchers:

Name of researcher	Contact number	Email address
Mrs Nabeela Ebrahim	073 8855 491	nabeelamoosa27@gmail.com
Dr Varsha Bangalee	082 522 0348	bangalee@ukzn.ac.za

If you have any questions or concerns about your rights as a study participant, or if you are concerned about an aspect of the study or the researchers then you may

contact:

HUMANITIES & SOCIAL SCIENCES RESEARCH ETHICS ADMINISTRATION

Research Office, Westville Campus

Govan Mbeki Building

Private Bag X54001

Durban

4000

KwaZulu-Natal, South Africa

Tel: 27 31 2604557 - Fax: 27 31 2604609 Email: HSSREC@ukzn.ac.za

Study Title: Attitude and Practices about the Coronavirus Disease (COVID-19) and its' impact on the mental well-being on University students: A cross-sectional study amongst pharmacy students in the University of KwaZulu Natal.

Your participation in the study will be highly appreciated.

I have been informed about the study titled "Knowledge, attitude, practices, and mental health impact of the novel COVID-19 pandemic on the third- and fourth-year pharmacy students at UKZN." By Nabeela Ebrahim.

I declare that my participation in this study is completely voluntary, and I can withdraw at any time. I understand the aim and procedures of the study. I have been informed of the available medical treatment should I need to seek any because of study-related procedures.

I understand that I am free to contact the researcher using the following details should I have any queries or concerns.

Name of researcher	Contact number	Email address
Mrs Nabeela Ebrahim	073 8855 491	nabeelamoosa27@gmail.com
Dr Varsha Bangalee	082 522 0348	bangalee@ukzn.ac.za

If you have any questions or concerns about your rights as a study participant, or if you are concerned about an aspect of the study or the researchers then you may contact:

HUMANITIES & SOCIAL SCIENCES RESEARCH ETHICS ADMINISTRATION

Research Office, Westville Campus

Govan Mbeki Building

Private Bag X54001

Durban

4000

KwaZulu-Natal, South Africa

Tel: 27 31 2604557 - Fax: 27 31 2604609 Email: HSSREC@ukzn.ac.za

Signature:

Date:

Appendix 2: “Attitude, Practices, and mental health impact of the novel COVID-19 pandemic on the third- and fourth-year pharmacy students at UKZN.” questionnaire

QUESTIONNAIRE: Tick the most appropriate answer(s) and fill in the required information where indicated

Sociodemographic characteristics of participant	
Age	<input type="checkbox"/> <18 <input type="checkbox"/> 18-25 <input type="checkbox"/> 26-35 <input type="checkbox"/> 36-45 <input type="checkbox"/> 46-55 <input type="checkbox"/> 56-65 <input type="checkbox"/> > 65
Gender	<input type="checkbox"/> Male <input type="checkbox"/> Female <input type="checkbox"/> Prefer not to say. <input type="checkbox"/> Other (specify)
What type or area do you reside in?	<input type="checkbox"/> Urban <input type="checkbox"/> Semi-rural <input type="checkbox"/> Rural
Year of study	<input type="checkbox"/> Third <input type="checkbox"/> Fourth
Co-existing diseases	<input type="checkbox"/> Yes <input type="checkbox"/> No

Are you a South African?	Yes Other
Race	Black Indian White Coloured Other

Attitude and Practices towards COVID-19	
If you contract COVID-19, which of the following would best describe your feelings? (Please select all that apply)	Scared Indifferent Depressed Embarrassed Other (please specify)
Do you think that COVID- 19 is a threat for your community?	Yes No Other (please specify)
Do you think large gatherings and crowded spaces can increase the chances of contracting the virus?	Yes No
Wearing of masks is no longer mandatory, do you still wear a mask in public?	Yes No Sometimes
Are you following the strategies recommended by authorities (e.g., Department of Health) to prevent the infection and spread of COVID-19?	Yes No

--	--

Impact of COVID-19 on mental status	
<p>Have you experienced any of the following feelings because of the COVID-19 pandemic?</p>	<p>Anxiety</p> <p>Fear for the future</p> <p>Fear of contracting the virus</p> <p>Depression</p> <p>Difficulty sleeping</p> <p>Loneliness</p> <p>Sadness</p> <p>Stress</p> <p>Frustration</p> <p>Increased substance abuse</p> <p>None of the above</p>
<p>Have you experienced any of the difficulties listed during the COVID-19 pandemic? Please select all that apply</p>	<p>Financial constraints due to your guardian or self being rendered unemployed.</p> <p>Trouble concentrating</p> <p>Difficulty getting food.</p> <p>Problems with transport</p> <p>Housing issues</p> <p>Difficulty getting medication and necessities.</p> <p>Difficulty accessing healthcare.</p> <p>Victim of violence</p>

	Other- please specify.
Feeling little interest in doing activities because of the pandemic	Always Frequently Occasionally Rarely Never
Do you think the current COVID-19 pandemic has affected your studies on a scale of 1-5 (1 being the smallest impact and 5 being the biggest impact)?	1 2 3 4 5
How would you describe the impact that COVID-19 has had on your mental well-being on a scale of 1-5 (1 being the smallest impact and 5 being the biggest impact)	1 2 3 4 5

Impact of Covid-19 and its' restrictions on students' studies	
How did the lockdown affect your academic studying experience?	Positively Negatively Not at all
If you were living with family during the lockdown period of COVID-19, did you find that this positively or negatively affected your studies?	Positively Negatively Not applicable
Would you describe the impact of	Positive

COVID-19 on your studies as positive or negative	Negative No effect
Have you adjusted to virtual learning?	Yes No
Are you concerned with returning to campus? (Feel free to explain why)	Yes No
Are you scared of how much things have changed on campus since the beginning of the pandemic?	Yes No
How did you find being away from fellow colleagues during the COVID-19 period (on a scale of 0-5, 0 being not stressful, 1 being somewhat stressful and increasing to 5 being highly stressful)?	0 1 2 3 4 5
Did you find that being at home during the COVID-19 period was a source of distraction that led to a lack of accountability and dedication towards your studies?	Yes No
Are you confident in the knowledge you have gained at university to go out and practice your profession?	Yes No

Strategies used to improve mental health during the lockdown period (please tick all that apply)	
Following your normal routine	
Eating healthy food and carrying out regular exercise	
Maintaining social connection and communication online	
Used this time to spend more quality time with your family	
Keeping up to date with the latest information from the National Department of Health	
Developed new skills and worked on talents.	
Avoided reading or exposing yourself to news about COVID-19	
Other (Please explain further)	

Appendix 3: Manuscript submitted to Health SA Gesondheid



aosis@hsag.co.za

to me ▼

Ref. No.: 2557

Manuscript title: Attitude and Practices about the Coronavirus Disease and its' impact on the mental well-being on university students: A cross-sectional study amongst pharmacy students in the University of KwaZulu-Natal.

Journal: Health SA Gesondheid

Dear Mrs Ebrahim

Your submission has been received by the journal and will now be processed in accordance with published timelines.

3.1 Introduction:

This article describes the general findings and discussion of the study results, presented as a manuscript entitled “Attitude and Practices about the Coronavirus Disease and its' impact on the mental well-being on University students: A cross-sectional study amongst pharmacy students in the University of KwaZulu-Natal.”

Manuscript:

Attitude and Practices about the Coronavirus Disease and its' impact on the mental well-being on University students: A cross-sectional study amongst pharmacy students in the University of KwaZulu-Natal.

Nabeela Ebrahim*; Varsha Bangalee; Khayati Moudgil

***Corresponding author**

Nabeela Ebrahim

Discipline of Pharmaceutical Sciences, College of Health Sciences,

University of KwaZulu-Natal,

Westville Campus University Road,

Private Bag, X54001, Durban 4000, South Africa

Contact number: +27 73 8855 491

Email: nabeelamoosa27@gmail.com

Keywords: Attitudes, practices, impact, COVID-19, mental well-being, students, South Africa

Word count: 4767 (excluding the abstract, tables, figures, graphs, and references)

ABSTRACT

Background

Student mental health has become a pressing concern, particularly at the tertiary level, amid the COVID-19 pandemic. South African university students, already contending with academic demands, face additional socio-economic challenges that heighten their susceptibility to anxiety and depression. Analysing the pandemic's impact on the psychological well-being of South African university students holds significance for future mental health considerations.

Aim:

This study aims to evaluate the attitudes, practices, and impact of the COVID-19 pandemic on the mental health of pharmacy students at the University of KwaZulu-Natal (UKZN).

Method:

Conducted as a cross-sectional questionnaire-based investigation, this study employed questions aligned with its objectives. A total of 190 students participated in the study. Data was collected in the form of a survey. The survey encompassed inquiries into demographics, knowledge and awareness levels, attitudes, practices regarding the pandemic, and its psychological effects on students' academic and personal lives. Descriptive and inferential statistics were used to analyse the results.

Setting:

Data collection centred on third- and fourth-year pharmacy students at UKZN.

Results:

The study revealed that a substantial majority, 77.6%, believed that the lockdown negatively impacted their academic experiences, with 75.2% reporting pandemic-

related anxiety. Collectively, the responses underscored the emotional, financial, and academic challenges faced by a significant proportion of participants due to the COVID-19 pandemic.

Conclusion:

The COVID-19 outbreak has presented formidable obstacles to tertiary education institutions and students' mental health worldwide. Our findings emphasize that most participants grappled with negative emotions and encountered numerous challenges arising from the pandemic and subsequent lockdown. Consequently, it is imperative for tertiary institutions and governments to devise strategies ensuring the safety and holistic well-being—physical, social, and mental—of students.

Introduction:

The South African government rapidly responded to the COVID-19 pandemic by declaring a state of disaster and initiating a comprehensive public health response and lockdown restrictions to reduce the spread of the virus (Kim et al., 2020). The effects of the lockdown, quarantine and social distancing had major ramifications on an already struggling economy (Statistics SA 2, 2022). It rendered a large amount of the workforce unemployed or furloughed due to them being unable to travel to work thus risking their job and income (Statistics SA 2, 2022). The nationwide lockdown included curfews and limited movement except for essential workers and to get food and medicine.

In South Africa, susceptibility to mental health conditions because of the COVID-19 pandemic is intensified by the other pre-existing vulnerabilities such as food insecurity, hunger, direct and indirect exposure to violence, poverty, unemployment, lack of quality healthcare due to an exhausted healthcare system and a high prevalence of infectious and chronic diseases (Kim et al., 2020).

Studies carried out during recent pandemics such as severe acute respiratory syndrome (SARS), Ebola, Swine flu and the current COVID-19 pandemic show that the psychological effects are not restricted to the fear of contracting the virus (Barbisch et al., 2015), they also include: feeling helpless, fear of being socially isolated and fear regarding the dangers of the disease (Li, et al., 2020).

Pre-covid data from The South African College of Applied Psychology suggests that one in six South Africans suffer from mental health conditions and only 27% of patients with severe mental illnesses seek treatment (SACAP, 2018). This could be due to the stigma associated with mental health conditions, neglect from the health system, insufficient knowledge to identify characteristics of poor mental health, difficulty finding or accessing help during the lockdown period. Recent estimates gathered during the first lockdown show that one-third of the South African

population (33%) were depressed and there was only 0.31 psychiatrist seeing to 100 000 patients in the government sector (SACAP, 2018).

University students are a vulnerable population and have been especially affected by the COVID-19 pandemic and its restrictions. The lockdown that was triggered by the pandemic led to many students being socially isolated resulting in feelings of loneliness and despondent behaviour (Lee, 2020). In combination with the challenges faced by the population at large, students have experienced additional challenges which include disturbances to their studies and assessments, changes in the method of teaching and separation from fellow students. Additionally, many courses that require practical intervention or laboratory work were unable to proceed via virtual interaction. The effects of the pandemic may result in uncertainty regarding future career opportunities and prospects thus affecting their financial situation (Appleby et al.,2022).

As a result of the COVID-19 pandemic, universities in South Africa have transferred in-person learning to online virtual learning. This gave rise to additional challenges for students at a time when there were concerning levels of mental health disorders in the population (SACAP, 2018). Many students couldn't shift to online platforms immediately because of internet access, connectivity, or lack of technology. This created a learning gap amongst students (Lee, 2020).

The effects of the pandemic will likely have a long-standing effect on students at university. Therefore, it is important to assess the impact that the COVID-19 pandemic has had on students' mental health and academic outcomes. I am unaware of any studies conducted in South Africa to assess the attitude and practices concerning the COVID-19 pandemic and its consequent impact on pharmacy students'. To bridge these gaps this study investigates the impact of the pandemic on mental health of pharmacy students at the University of KwaZulu Natal (UKZN).

Research Methodology and design:

Study design and setting:

This was a cross-sectional questionnaire-based study that was performed using questions derived from the aims and objectives of the study.

The dissertation used a quantitative research method. This form of research strategy was executed by testing current hypotheses and scanning analytical data. A diligent data analysis protocol was attained by using students from the third and fourth year to increase the sample size, allowing us to achieve sufficient statistical power required for the study to be significant and for the aims and objectives to align with the method of data collection and analysis. Data was collected via a survey questionnaire; hard copies were distributed to third-and-fourth year pharmacy students at UKZN once on-site learning at the campus had resumed. This ensured that individuals felt at ease in a familiar setting and maintained confidentiality.

Subjects/Patients:

This study population included all students who were currently enrolled in their third and fourth year of study for pharmacy at UKZN. Third- and fourth-year students were chosen as the subjects because their early university years were most affected by the pandemic, and they were the first roll-out of students who experienced the change from in-person to online virtual learning.

Sampling procedure:

The sample size was calculated using the simple random sampling method (SRS). This was a well-established technique with standard formulas available to calculate the target sample size (SPRING 2014).

Sample Size:

The formula used for this study is:

$$n = \frac{\frac{Z^2 PQ}{d^2}}{1 + \frac{1}{N} \left(\frac{Z^2 PQ}{d^2} - 1 \right)}$$

In the above formula:

P	Expected prevalence of mental health conditions present in Pietermaritzburg and Richmond, this is 50%
Q	1-P
Z	Upper point of the standard normal distribution which is 1.96
d	Clinically acceptable margin of errors (which is 5%)

Using the above data, the total target population is 223 students as the third-year class has 105 students and the fourth year class has 118 students. The required sample size will be 142 students. Taking into consideration the possibility of unforeseen circumstances, a 10% non-response rate will be added to the sample size - this will give a maximum sample size of 157.

Methods of assessment or measure:

A questionnaire survey was used to collect data (see appendix 2). The questionnaire was modified from a Knowledge, Attitudes and Practices (KAP) study performed by Alian A Alrasheedy and colleagues in Saudi Arabia (Alrasheedy et al., 2021). In order to use their questionnaire, permission was obtained from the authors. Their survey consisted of questions on demographics, knowledge and awareness, attitudes and practices towards the pandemic, and the psychological impact of the COVID-19 pandemic on students' studies and lives. Students were also given an opportunity to write down any activities that improved their mental health status during the lockdown restrictions. The questionnaire was accessible in English and had not been interpreted into any other official language of South Africa as all the pharmacy university students are literate in English. The questionnaire is made up of

6 sections:

Section 1: Informed Consent (see appendix 1)

Section 2: Demographic information of participants

Section 3: Participants attitude and practice towards COVID-19

Section 4: The impact that COVID-19 had on the mental status of Participants.

Section 5: The impact of COVID-19 and its' restrictions on the students' studies.

Section 6: Strategies carried out to improve mental health during the lockdown restrictions.

Data collection method:

Participants included third- and fourth-year pharmacy students from UKZN. Hard copies of the survey were physically distributed to the students. Participants were required to consent to the study before proceeding with the survey

Statistical data analysis:

The data was entered into Microsoft® Excel® and analyzed using the Statistical Package for the Social Science® (SPSS®) program, version 28. Descriptive statistics were used to summarize the data. Frequencies and percentages were used to summarize categorical variables. Descriptive and inferential statistics were calculated, including the percentage and a 95% confidence interval for positive responses to questions. A Chi-square test was used to test the association between attitude and practices versus socio-demographic variables and the impact of COVID-19 on the mental health of pharmacy students at UKZN. To determine the impact of COVID-19 on the mental health of pharmacy students at UKZN, binary logistic regression was used. All tests were two-sided, and all p-values reported were tested at the $\alpha=0.05$ level. The outcome data and demographic summaries were presented in graphs, tables, and figures.

Declaration: Ethics Approval

Written ethical approval for the study was obtained from the Humanities and Social Research Ethics Committee (HSSREC) of the University of KwaZulu-Natal (HAAREC/00004544/2022) – (Annexure 1).

Results:

Social and demographic characteristics:

A total of 190 participants completed the survey. There were no exclusions as all the participants were over the age of 18 and were studying in third- or fourth-year pharmacy at UKZN. The final sample consisted of 190 participants. Table 1 shows the social and demographic characteristics of the study participants.

This section consisted of 7 socio-demographic questions. The data of the participants that was collected includes age, gender, residence, nationality, year of study, co-existing diseases and race.

Of the total sample, 124 (65.6%) were female and 65 (34.4%) were male. Majority of the participants were between the ages of 18-25 years, 181 (95.3%); 131 (69.3%) resided in urban areas, 187 (98.4%) were South African, 178 (94.7%) did not have co-existing diseases, 96 (50.5%) were third year pharmacy students and 114 (60%) were Black people (Table 1).

Attitude and Practices towards the COVID-19 Virus

A total of five questions were used to measure the attitude and practices towards the COVID-19 virus. According to these variables, most participants were scared (83%) of contracting the COVID-19 virus. Additionally, a substantial portion of students (72.5%) perceived the virus as a threat to their community. A high level of awareness was also evident, with 95.8% of students acknowledging that large gatherings and crowded spaces increase the risk of virus transmission. Interestingly, 51.6% of students continued to wear masks in public, even though it is no longer mandated. Furthermore, a significant majority (81.7%) of students adhered to the recommended strategies outlined by authorities to prevent infection and the spread of COVID-19, as detailed in Table 1.

Table 1: Summary statistics for attitude and practices towards COVID-19.

Attitude and Practices towards COVID-19		Count	Percent
If you contract COVID-19, which of the following would best describe your feelings? (Please select all that apply)	Scared	107	83%
	Indifferent	44	49.5%
	Depressed	23	34.3%
	Embarrassed	2	3.6%
	Other (please specify)		
Do you think that COVID-19 is a threat for your community?	Yes	137	72.5%
	No	48	25.4%
	Other (please specify)	4	2.1%
Do you think large gatherings and crowded spaces can increase the chances of contracting the virus?	Yes	182	95.8%
	No	8	4.2%
Wearing of masks is no longer mandatory, do you still wear a mask in public?	Yes	24	12.6%
	No	98	51.6%
	Sometimes	68	35.8%
Are you following the strategies recommended by authorities (e.g. Department of Health) to prevent the infection and	Yes	152	81.7%
	No	34	18.3%

spread of COVID-19?			
---------------------	--	--	--

Impact of COVID-19 on mental status of students

These responses collectively indicate that a significant proportion of participants have been grappling with various emotional, financial, and academic challenges as a consequence of the COVID-19 pandemic, as detailed in Table 2.

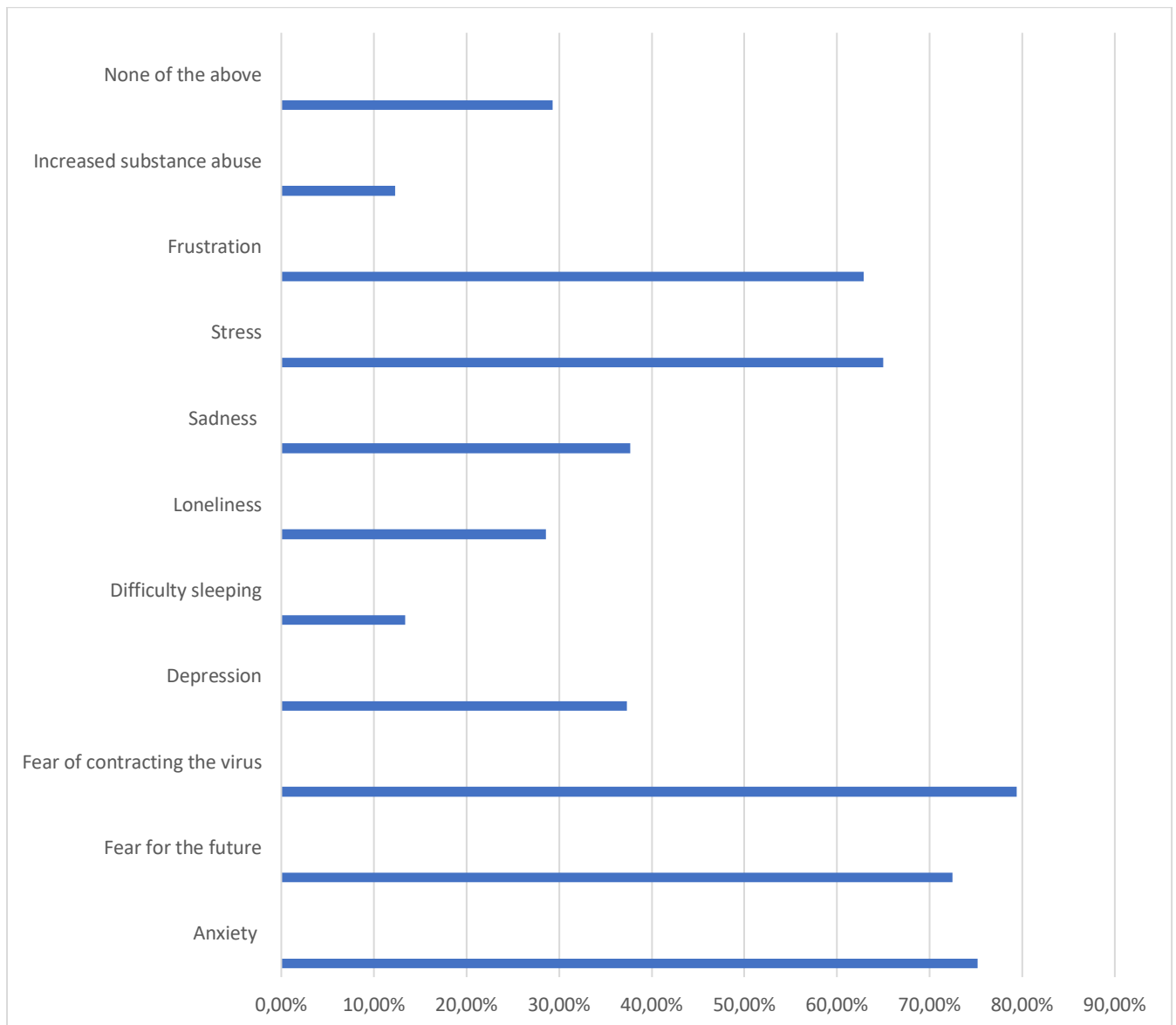
Table 2: Summarized statistics showing the impact of COVID-19 on the mental status of pharmacy students in UKZN.

Impact of COVID-19 on mental status		Count	Percent
Have you experienced any of the following feelings because of the COVID-19 pandemic? Please select all that apply	Anxiety	91	75.2%
	Fear for the future	79	72.5%
	Fear of contracting the virus	85	79.4%
	Depression	28	37.3%
	Difficulty sleeping	9	13.4%
	Loneliness	20	28.6%
	Sadness	29	37.7%
	Stress	67	65%
	Frustration	61	62.9%
	Increased substance abuse	8	12.3%

	None of the above	22	29.3%
Have you experienced any of the difficulties listed during the COVID-19 pandemic? Please select all that apply	Financial constraints due to your guardian or self being rendered unemployed	68	64.2%
	Trouble concentrating	82	75.9%
	Difficulty getting food	21	29.6%
	Problems with transport	57	59.4%
	Housing issues	7	10.9%
	Difficulty getting medication and necessities	24	32.4%
	Difficulty accessing healthcare	24	33.3%
	Victim of violence	0	0%
Feeling little interest in doing activities because of the pandemic	Always	27	14.3%
	Frequently	33	17.5%
	Occasionally	76	40.2%
	Rarely	48	25.4%
	Never	5	2.7%
Do you think the current COVID-19 pandemic has affected your studies on a scale of 1-5 (1 being the	1	3	1.6%
	2	21	11.5%
	3	48	26.2%
	4	62	33.9%

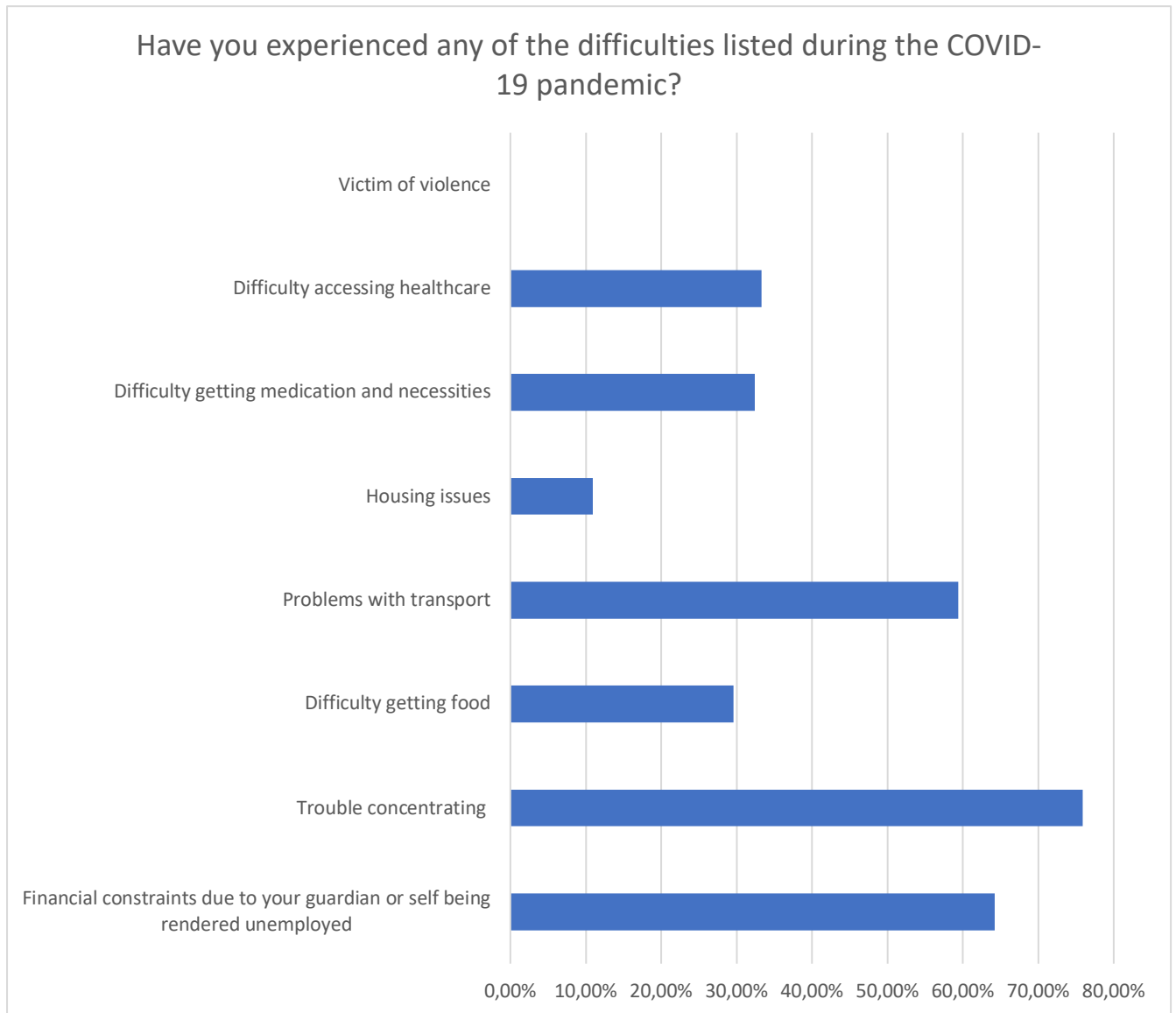
smallest impact and 5 being the biggest impact)?	5	49	26.8%
How would you describe the impact that COVID-19 has had on your mental well-being on a scale of 1-5 (1 being the smallest impact and 5 being the biggest impact)	1	19	10.3%
	2	37	20.1%
	3	55	29.9%
	4	43	23.4%
	5	30	16.3%

Figure 1: Feelings experienced as a result of COVID-19



These findings illustrate the diverse range of emotional responses and challenges that students have encountered during the COVID-19 pandemic. It underscores the importance of addressing not only the physical health aspects of the pandemic but also the significant impact it has had on mental and emotional well-being.

Figure 2: Difficulties experienced by participants during the COVID-19 pandemic:



Based on the data provided, it is evident that participants encountered various difficulties during the COVID-19 pandemic.

Impact of COVID-19 and its' restrictions on students' studies.

A set of nine questions were used to assess the impact of COVID-19 and associated restrictions on students' academic experiences. According to these questions, the following key findings emerged:

- **Negative Effect of Lockdown on Studying:** A significant majority, 77.6% of students, believed that the lockdown had a negative impact on their studying experience.
- **Impact of Living with Family:** About half of the participants, 50.3%, felt that living with family during the lockdown negatively affected their studies.
- **Negative Impact of COVID-19 on Studies:** A substantial 75.8% of participants perceived the impact of COVID-19 on their studies as negative.
- **Adjustment to Virtual Learning:** The majority, 83.3% of participants, reported that they had successfully adjusted to virtual learning.
- **Comfort with Returning to Campus:** A significant portion, 61.5% of participants, expressed that they were not concerned about returning to campus.
- **Concerns About Changes on Campus:** 55.3%, did not express fear regarding potential changes on campus since the onset of the pandemic.
- **Stress Level Due to Being Away from Campus:** Using a Likert scale from 1 to 5, with 5 indicating the highest stress level, 28% of students rated their stress level as 3 when being away from colleagues on campus.
- **Home as a Source of Distraction:** A substantial 70% of students felt that being at home served as a source of distraction, leading to a lack of accountability and dedication to their studies.

These findings collectively reveal the complex interplay of factors affecting students' academic experiences during the COVID-19 pandemic, encompassing challenges related to remote learning, family dynamics, concerns about returning to campus, and the impact of pandemic-related restrictions on their studying environment.

Table 3: Summarized statistics of the impact of COVID-19 and its restrictions on students studies.

Impact of Covid-19 and its' restrictions on students studies		Count	Percent
How did the lockdown affect your academic studying experience?	Positively	27	14.8%
	Negatively	142	77.6%
	Not at all	13	7.1%
If you were living with family during the lockdown period of COVID-19, did you find that this positively or negatively affected your studies?	Positively	62	34.3%
	Negatively	91	50.3%
	Not applicable	28	15.5%
Would you describe the impact of COVID-19 on your studies as positive or negative	Positive	30	16.5%
	Negative	138	75.8%
	No effect	14	7.7%
Have you adjusted to virtual learning?	Yes	150	83.3%
	No	29	16.1%
Are you concerned with returning to campus? (Feel free to explain why)	Yes	69	37.9%
	No	112	61.5%
Are you scared of how	Yes	80	44.2%

much things have changed on campus since the beginning of the pandemic?	No	100	55.3%
How did you find being away from fellow colleagues during the COVID-19 period (on a scale of 0-5, 0 being not stressful , 1 being somewhat stressful and increasing to 5 being highly stressful)?	0	34	18.7%
	1	31	17%
	2	34	18.7%
	3	51	28%
	4	23	12.6%
	5	9	5%
Did you find that being at home during the COVID-19 period was a source of distraction that lead to a lack of accountability and dedication towards your studies?	Yes	126	70%
	No	54	30%
Are you confident in the knowledge you have gained at university to go out and practice your profession?	Yes	110	62.2%
	No	66	37.3%

Strategies used to improve mental health during the lockdown period.

Participants were asked to choose which strategies were used to improve their mental health during the lockdown period.

Maintaining Social Connections Online: A significant majority, at 81.8% of participants, found that maintaining social connections and communication online played a crucial role in improving their mental health during the lockdown period.

Following Normal Routine: An almost identical percentage, 81.6% of participants, believed that adhering to their regular routines was beneficial for their mental well-being during the lockdown.

Healthy Eating and Regular Exercise: Approximately 80.5% of participants reported that - consuming a healthy diet and engaging in regular physical exercise contributed to the improvement of their mental health while in lockdown.

These findings underscore the importance of social interaction, adherence to established routines, and prioritizing physical health as effective strategies for promoting mental well-being during challenging periods such as lockdowns. It highlights the significance of holistic approaches that encompass social, behavioural, and lifestyle aspects in maintaining and improving mental health.

Table 4: Summarized statistics showing strategies used to improve mental health during the lockdown period.

Strategies used to improve mental health during the lockdown period (please tick all that apply)	Count	Percent
Following your normal routine	102	81.6%
Eating healthy food and carrying out regular exercise	103	80.5%
Maintaining social connection and communication online	108	81.8%

Used this time to spend more quality time with your family	101	76.5%
Keeping up-to-date with the latest information from the National Department of Health	78	70.9%
Developed new skills and worked on talents	71	68.3%
Avoided reading or exposing yourself to news about COVID-19	39	50.6%
Other (please explain further)		

Discussion:

Background:

COVID-19 is a global pandemic that has, within a short period, shown catastrophic effects since it was first encountered in December 2019. As of November 2022, South Africa recorded the highest number of casualties in Africa with over 100 000 reported deaths (Statista, 2022).

Our results found that the participants felt that COVID-19 had a negative impact on their mental well-being and academic experience. Most participants encountered difficulties as a result of the COVID-19 pandemic, this included: trouble concentrating, financial constraints, problems with transport and difficulty accessing healthcare. Other studies performed showed similar results (Batra, K et.al, 2021).

Social and demographic characteristics:

The majority of participants in the study fell within the 18–25-year age bracket, reflective of the student population in universities. Previous worldwide research has highlighted that psychological challenges were pre-existing concerns among university students even before the onset of the pandemic. Disturbingly, nearly half of these mental issues began as early as 14 years of age, according to studies conducted globally (American Council on Education, 2019; WHO, 2020). This global context is significant as suicide continues to rank among the primary causes of death for adolescents on a global scale. This alarming trend underscores the urgency of implementing early interventions aimed at addressing the mental health and emotional well-being of this particular demographic (WHO, 2020).

It is crucial to recognize that without timely interventions during the initial stages, the unresolved psychological concerns can persist into later phases of life, significantly affecting an individual's overall mental health (WHO, 2020). This underlines the importance of proactive measures and support mechanisms to prevent the potential exacerbation of mental health issues among young adults and adolescents.

It's important to recognize that the pandemic's repercussions were not isolated to any specific demographic group but rather affected students across the board. This

understanding emphasizes the need for comprehensive strategies and support systems that address the diverse challenges posed by the pandemic to ensure the well-being and academic success of all students, regardless of their gender and residential area.

Attitudes and Practices towards the COVID-19 pandemic

The majority of participants displayed a strong awareness of the preventive measures that have been instituted in response to the COVID-19 pandemic. This awareness extended to their recognition that gatherings and densely populated areas could facilitate the transmission of the virus. Interestingly, even though mask mandates were no longer obligatory, most participants continued to wear masks in public settings. Additionally, the strategies advocated by health authorities to curb the infection's spread were adhered to by most participants (as indicated in Table 2). It's worth noting that previous research show that efficacy beliefs could serve as predictors of preventative behaviours (Lee, 2021).

In summary, participants in this study demonstrated commendable awareness of preventive measures and compliance with recommended strategies. However, the prevalence of fear, particularly among women, underlines the psychological impact of the pandemic and the potential gender-related variations in perceptions of risk.

Impact of COVID-19 on mental status:

Our findings suggest that majority of the participants had feelings of anxiety, fear of contracting the virus, fear of the future, stress, frustration, sadness, depression, loneliness, and increased substance abuse (Table 3).

Corollaries that are associated with the Coronavirus pandemic, including uncertainty and fear, apply an additional incentive to explain these rising trends. Additionally, young people like to socialize and indulge in celebrations which were restricted during lockdown as a result of the pandemic, adding to their frustration levels (Batra K et al., 2021).

A significant number of students or their guardians experienced job losses either due to voluntary decisions or employer-initiated actions during the lockdown period. The

loss of a source of income, particularly in a time of economic uncertainty like the pandemic, exacerbates financial instability and can lead to a cascade of challenges as indicated in Table 3. The loss of employment not only results in an increased financial burden but also places individuals under considerable psychological stress manifesting as anxiety, depression, and an overall sense of uncertainty. Individuals grappling with unemployment often find themselves struggling to meet essential needs, such as housing, food, and healthcare. These findings resonate with our study's results and are consistent with similar research conducted by others, such as the study conducted by Leal et al. (2021), which was mentioned in the literature review above.

The insights from our study, in alignment with previous research, emphasize the profound

The main information channel used by students for the COVID-19 virus was the internet, this included electronic news websites and social media platforms such as Twitter, Facebook, YouTube, Instagram, Snapchat, and WhatsApp. Following this, traditional mass media including television, newspapers, magazines, and radio were also commonly used sources. Scientific websites and articles came next in line. A minor fraction of participants relied on alternate sources such as friends and family for their information (Olaimat et al., 2020). Gathering information about COVID-19 from social media platforms may not always guarantee authenticity and reliability. Being exposed to misleading information can cause a lack of clarity and can magnify the anxiety about the illness and correct ways of prevention.

The higher education institutions should strengthen the psychological monitoring and develop and implement a systemic mental health treatment plan, health education and health promotion should also be conducted to empower students (Jehi T et al., 2022). The universities should also encourage activities in the form of physical exercise, meditation, tactile activities or speaking to a mental health professional. Faculties should also offer students the required accommodations to achieve in erudite while minimizing stress and anxiety.

Association of other contributing factors such as financial constraints, trouble concentrating, problems with transport and access to medication, difficulty getting food and housing issues need to be fully explored to fully design a holistic public

health approach to address mental health challenges among University students in South Africa.

Impact of COVID-19 and its' restrictions on students' studies:

The study showed that over 77% of students felt that the lockdown negatively affected their studying experience. If a lockdown occurs again, these negative feelings can be minimized by ensuring a smooth transition to online learning while contributing to a steady educational framework and announcing the coursework calendar weeks ahead of time. Asynchronous teaching methods and virtual programmes can be used to offer lectures and activities, while giving special consideration to students who live in rural areas, are employed or taking care of a child (Savitsky et al., 2020)

Results in our study have reported overall positive adjustment to virtual learning. However, students did report increased stress, anxiety and difficulty concentrating, indicating that the barriers to virtual learning weren't just technological and educational challenges but also social, emotional, and mental challenges of isolation and social distancing. In addition to the pedagogical and technological aspects of virtual learning, successfully supporting students in their virtual training and education will require that educators see to the social, emotional, and mental aspects of online learning.

Strategies used to improve mental health during the lockdown period.

Participants found that following a normal routine, eating healthy and doing regular physical exercise, maintaining a social connection, spending time with family and keeping up-to-date with the latest information about the pandemic helped them to improve mental health. During the COVID-19 pandemic and the subsequent lockdown period, some students discovered coping mechanisms to navigate the challenges posed by the unprecedented circumstances. For some, the pursuit of self-improvement emerged as a constructive strategy. This involved dedicating time to personal development endeavours such as honing skills, exploring new hobbies, or engaging in creative pursuits. By channelling their energy toward self-enhancement, these individuals found a way to proactively manage the uncertainties

of the pandemic.

In essence, the pandemic prompted a diverse array of coping strategies among students. While many leaned towards self-improvement, spiritual practices, and positive outlets, it's crucial to address the emergence of potentially harmful coping mechanisms as well, emphasizing the importance of holistic support for mental well-being during challenging times.

Strengths of the study

This research forms part of the first study in this geographical region of South Africa. This study contributes to and strengthens existing literature while addressing strategies to overcome mental health issues among university students in third and fourth year of pharmacy at the University of KwaZulu-Natal. The findings of this study can be used to design targeted physical and mental health awareness campaigns and may be generalized to similar groups.

Limitations:

This study was only conducted among two groups of students in South Africa; therefore, a true reflection of all students could not be established.

Another limitation is the use of self-reported measures, to assess and determine certain feelings of the students (e.g., anxiety and stress). Anxiety was thus not evaluated by a clinician following diagnostic evaluation but by administering various screening tools. The collected self-reported data could possibly be subjected to social desirability bias and memory recall bias.

The data collection of this study was only carried out over a short period as this study forms part of an academic submission for a master's degree and the researcher is faced with a limited timeframe within which to complete the master's degree.

The target group was small and so more accurate representation would not have provided a full reflection of the community population.

Conclusions:

The present study was able to provide a comprehensive assessment of the attitudes and practices about the Coronavirus Disease (COVID-19) and its' impact on the mental well-being on university students amongst pharmacy students in the University of KwaZulu-Natal. The findings suggest that the Covid-19 outbreak has globally introduced many hurdles for tertiary education institutions and challenges for students' mental health. A variety of factors that are linked to the pandemic such as financial difficulty, a weakened social circle, trouble sleeping, fear of contracting the virus, trouble concentrating, and loneliness have increased anxiety and stress among university students. The study also reports a thorough analysis of the students and their range of feelings during the pandemic and consequent lockdown to evaluate their energy levels, prepotent feelings and challenges faced as a result. Our findings highlight that most participants displayed negative feelings and experienced many challenges as a result of the lockdown.

In light of these findings, it is imperative that proactive measures are implemented to address the mental health concerns of students. Such efforts should not only encompass addressing the immediate challenges posed by the pandemic but also address the pre-existing vulnerabilities that have been exacerbated. By recognizing the multifaceted nature of these challenges and the diverse emotional responses they elicit, institutions and governments can work in tandem to provide comprehensive support systems that aid students in navigating these unprecedented times.

REFERENCES:

1. Alrasheedy, A., Abdulsalim, S., Farooqui, M., Alsaahli, S. and Godman, B., 2021. Knowledge, Attitude and Practice About Coronavirus Disease (COVID-19) Pandemic and Its Psychological Impact on Students and Their Studies: A Cross-Sectional Study Among Pharmacy Students in Saudi Arabia. *Risk Management and Healthcare Policy*, [online] Volume 14, pp.729-741. Available at: <<https://www.dovepress.com/getfile.php?fileID=66877>> [Accessed 24 June 2022].
2. American Council on Education. Mental Health, Strategies for Leaders to Support Campus Well-Being. 2019. Available online: <https://www.acenet.edu/Documents/Mental-Health-Higher-Education-Covid-19.pdf> (accessed on 15 April 2023).
3. Appleby, J., King, N., Saunders, K., Bast, A., Rivera, D., Byun, J., Cunningham, S., Khera, C. and Duffy, A., 2022. Impact of the COVID-19 pandemic on the experience and mental health of university students studying in Canada and the UK: a cross-sectional study. *BMJ Open*, [online] 12(1), p.e050187. Available at: <<https://bmjopen.bmj.com/content/12/1/e050187>> [Accessed 30 June 2022].
4. Barbisch, D., Koenig, K., and Shih, F. (2015). Is there a case for quarantine? *Perspectives from SARS to Ebola. Dis. Med. Pub. Health Prepar*
5. Batra K, Sharma M, Batra R, Singh TP, Schvaneveldt N. Assessing the Psychological Impact of COVID-19 among College Students: An Evidence of 15 Countries. *Healthcare*. 2021; 9(2):222. <https://doi.org/10.3390/healthcare9020222>
6. Jehi, T., Khan, R., Dos Santos, H. et al. Effect of COVID-19 outbreak on anxiety among students of higher education; A review of literature. *Curr Psychol* (2022).

<https://doi.org/10.1007/s12144-021-02587-6>

7. Kim, A., Nyengerai, T. and Mendenhall, E., 2020. Evaluating the mental health impacts of the COVID-19 pandemic: perceived risk of COVID-19 infection and childhood trauma predict adult depressive symptoms in urban South Africa. *Psychological Medicine*, pp.1-13.
8. Leal Filho, W., Wall, T., Rayman-Bacchus, L. *et al.* Impacts of COVID-19 and social isolation on academic staff and students at universities: a cross-sectional study. *BMC Public Health* 21, 1213 (2021). <https://doi.org/10.1186/s12889-021-11040-z>
9. Lee J. Mental health effects of school closures during COVID-19. *Lancet Child Adolesc Health*. 2020; 4:421.
10. Li, L. Z., and Wang, S. (2020). Prevalence and predictors of general psychiatric disorders and loneliness during COVID-19 in the United Kingdom.
11. Olaimat AN, Aolymat I, Shahbaz HM, Holley RA. Knowledge and information sources about COVID-19 among university students in Jordan: A cross-sectional study. *Frontiers in Public Health*. 2020;8. doi:10.3389/fpubh.2020.00254
12. Savitsky, B., Findling, Y., Ereli, A., & Hendel, T. (2020). Anxiety and coping strategies among nursing students during the covid-19 pandemic. *Nurse Education in Practice*, 46, 102809
13. South African College of Applied Psychology (SACAP). (2018). The shocking state of mental health in South Africa in 2018. <https://www.sacap.edu.za/blog/counselling/mental-health-south-africa/>
14. Statista - Coronavirus deaths in Africa 2022, by country [online] Available at: <https://www.statista.com/statistics/1170530/coronavirus-deaths-in-africa/>

[Accessed 15 April 2023]

15. Statistics South Africa. Measuring food security in South Africa: Applying the food insecurity experience scale. Report 03-00-19 Available online: <https://www.statssa.gov.za/publications/Report-03-00-19/Report-03-00-192020.pdf> (accessed on 09 June 2022)
16. Statistics South Africa. Unemployment in South Africa. Available online: <https://www.statssa.gov.za/?cat=31> (accessed on 09 June 2022)
17. World Health Organization. Adolescent Mental Health. 2020. Available online: <https://www.who.int/news-room/fact-sheets/detail/adolescent-mental-health> (accessed on 15 April 2023).

References:

1. Ahandani, E.A.; Sheydaei, M. Overview of the Introduction to the New Coronavirus (Covid19): A Review. *J. Med Biol. Sci. Res.* 2020, 6, 14–20.
2. Ahmad, N., Sulaiman, N. and Sabri, M., 2021. Food Insecurity: Is It a Threat to University Students' Well-Being and Success. *International Journal of Environmental Research and Public Health*, [online] 18(11), p.5627. Available at: <<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8197461/>> [Accessed 30 June 2022].
3. Alrasheedy, A., Abdulsalim, S., Farooqui, M., Alsaahli, S. and Godman, B., 2021. Knowledge, Attitude and Practice About Coronavirus Disease (COVID-19) Pandemic and Its Psychological Impact on Students and Their Studies: A Cross-Sectional Study Among Pharmacy Students in Saudi Arabia. *Risk Management and Healthcare Policy*, [online] Volume 14, pp.729-741. Available at: <<https://www.dovepress.com/getfile.php?fileID=66877>> [Accessed 24 June 2022].
4. American Council on Education. Mental Health, Strategies for Leaders to Support Campus Well-Being. 2019. Available online: <https://www.acenet.edu/Documents/Mental-Health-Higher-Education-Covid-19.pdf> (accessed on 15 April 2023).
5. Appleby, J., King, N., Saunders, K., Bast, A., Rivera, D., Byun, J., Cunningham, S., Khera, C. and Duffy, A., 2022. Impact of the COVID-19 pandemic on the experience and mental health of university students studying in Canada and the UK: a cross-sectional study. *BMJ Open*, [online] 12(1), p.e050187. Available at: <<https://bmjopen.bmj.com/content/12/1/e050187>>

[Accessed 30 June 2022].

6. Bantjes, J. et al. (2023) "Covid-19 and common mental disorders among university students in South Africa," *South African Journal of Science*, 119(1/2). Available at: <https://doi.org/10.17159/sajs.2023/13594>.
7. Bantjes, J. R., Kagee, A., McGowan, T., Steel, H. (2016). Symptoms of posttraumatic stress, depression, and anxiety as predictors of suicidal ideation among South African university students. *Journal of American College Health*, 64(6), 429–437. <https://doi.org/10.1080/07448481.2016.1178120>
8. Barbisch, D., Koenig, K., and Shih, F. (2015). Is there a case for quarantine? *Perspectives from SARS to Ebola. Dis. Med. Pub. Health Prepare*
9. Batra K, Sharma M, Batra R, Singh TP, Schvaneveldt N. Assessing the Psychological Impact of COVID-19 among College Students: An Evidence of 15 Countries. *Healthcare (Basel)*. 2021;9(2):222. Published 2021 Feb 17. doi:10.3390/healthcare9020222
10. Baumann, C., Rousseau, H., Tarquinio, C. *et al.* Effect of the COVID-19 outbreak and lockdown on mental health among post-secondary students in the Grand Est region of France: results of the PIMS-CoV19 study. *Health Qual Life Outcomes* 19, 265 (2021). <https://doi.org/10.1186/s12955-021-01903-9>
11. Bolton P., Hubble S. *Support for Students with Mental Health Issues in Higher Education in England*. UK Parliament; London, UK: 2020. [(accessed on 29 August 2023)]. Available online: <https://commonslibrary.parliament.uk/research-briefings/cbp-8593/>

12. Broche-Pérez Y, Fernández-Fleites Z, Jiménez-Puig E, Fernández-Castillo E, Rodríguez-Martin BC. Gender and fear of COVID-19 in a Cuban population sample. *Int J Ment Health Addict.* (2020) 12:1–9. doi: 10.1007/s11469-020-00377-y
13. Cao, W., Fang, Z., Hou, G., Han, M., Xu, X., Dong, J., & Zheng, J. (2020). The psychological impact of the COVID-19 epidemic on college students in China. *Psychiatry Research*, 287, 112934
14. Casale D, Posel D. Gender inequality and the COVID-19 crisis: Evidence from a large national survey during South Africa's lockdown. *Research in Social Stratification and Mobility*. 2020; 100569.
15. CDC (Centers for Disease Control and Prevention) - Symptoms of COVID-19 [online][Centers for Disease Control and Prevention; 2022. Available from: <https://www.cdc.gov/coronavirus/2019-ncov/symptoms-testing/symptoms.html> [accessed on 10 August 2022]
16. *COVID-19 pandemic triggers 25% increase in prevalence of anxiety and depression worldwide - PAHO/WHO | Pan American Health Organization.* [online] Available at: <<https://www.paho.org/en/news/2-3-2022-covid-19-pandemic-triggers-25-increase-prevalence-anxiety-and-depression-worldwide>> [Accessed 21 June 2022].
17. Demetriou, L., Keramioti, L., & Hadjicharalambous, D. (2021). Examining the relationship between distance learning processes and university students' anxiety in times of COVID-19. Demetriou, L., Hadjicharalambous, D., & L. keramioti. (2021). Examining the relationship between distance learning processes and university students' anxiety in times of covid. *European*

Journal of Social Sciences Studies, 6(2), 123-141.

18. Department of Social Development. *Revised White Paper on Families in South Africa*; Department of Social Development: Polokwane, South Africa, 2021
19. Dlamini, J., 2020. Gender-Based Violence, Twin Pandemic to COVID-19. *Critical Sociology*, p.089692052097546.
20. Durbas, A., Karaman, H., Solman, C., Kaygisiz, N. and Ersoy, Ö., 2021. Anxiety and Stress Levels Associated With COVID-19 Pandemic of University Students in Turkey: A Year After the Pandemic. *Frontiers in Psychiatry*, [online] 12. Available at: <<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8585741/>> [Accessed 25 June 2022].
21. Fang, D., Thomsen, M.R. & Nayga, R.M. The association between food insecurity and mental health during the COVID-19 pandemic. *BMC Public Health* 21, 607 (2021). <https://doi.org/10.1186/s12889-021-10631-0>
22. Fawaz, M., Al Nakhal, M., & Itani, M. (2021). COVID-19 quarantine stressors and management among Lebanese students: a qualitative study. *Current Psychology*, 1–8.
23. Fegert J.M., Vitiello B., Plener P.L., Clemens V. Challenges and burden of the coronavirus 2019 (COVID-19) pandemic for child and adolescent mental health: A narrative review to highlight clinical and research needs in the acute phase and the long return to normality. *Child Adolescent Psychiatry Mental Health*. 2020; 14:20.
24. Garvey, A. M., García, I. J., Otaí Franco, S. H., & Fernández, C. M. (2021).

- The psychological impact of strict and prolonged confinement on business students during the COVID-19 pandemic at a Spanish University. *International Journal of Environmental Research and Public Health*, 18(4), 1710.
25. Hopkins medicine, Infectious diseases, what is coronavirus? Available online: <https://www.hopkinsmedicine.org/health/conditions-and-diseases/coronavirus> (accessed 09 June 2022)
26. Human Sciences Research Council (HSRC). Family matters: An overview of family values and preferences. South African Social Attitudes Survey. Available online: <http://www.hsrc.ac.za/en/review/hsrc-review-july-2013/family-matters-an-overview-of-family-values-and-preferences>
27. Husky, M. M., Kovess-Masfety, V., & Swendsen, J. D. (2020). Stress and anxiety among university students in France during Covid-19
28. Jain R, Budlender J, Zizzamia R, Bassier I. The labor market and poverty impact of Covid-19 in South Africa. 2020.
29. Jehi, T., Khan, R., Dos Santos, H. et al. Effect of COVID-19 outbreak on anxiety among students of higher education; A review of literature. *Curr Psychol* (2022). <https://doi.org/10.1007/s12144-021-02587-6>
30. Kim, A., Nyengerai, T. and Mendenhall, E., 2020. Evaluating the mental health impacts of the COVID-19 pandemic: perceived risk of COVID-19 infection and childhood trauma predict adult depressive symptoms in urban South Africa. *Psychological Medicine*, pp.1-13.
31. Leal Filho, W., Wall, T., Rayman-Bacchus, L. et al. Impacts of COVID-19 and social isolation on academic staff and students at universities: a cross-sectional study. *BMC Public Health* 21, 1213 (2021).

<https://doi.org/10.1186/s12889-021-11040-z>

32. Lee J. Mental health effects of school closures during COVID-19. *Lancet Child Adolescent Health*. 2020; 4:421.
33. Li, L. Z., and Wang, S. (2020). Prevalence and predictors of general psychiatric disorders and loneliness during COVID-19 in the United Kingdom.
34. Li, Y., Zhao, J., Ma, Z., McReynolds, L. S., Lin, D., Chen, Z., . . . Zhang, J. (2021). Mental health among college students during the COVID-19 pandemic in China: A 2-wave longitudinal survey. *Journal of Affective Disorders*, 281, 597-604.
35. Lisiecka A, Chimicz D, Lewicka-Zelent A. Mental health support in higher education during the COVID-19 pandemic: A case study and recommendations for Practice. *International Journal of Environmental Research and Public Health*. 2023;20(6):4969. doi:10.3390/ijerph20064969
36. Mental Health Foundation. Loneliness during Coronavirus. 2021. Available online: <https://www.mentalhealth.org.uk/coronavirus/loneliness-during-coronavirus> (accessed on 10 June 2022)
37. Newson, D., 2022. *A report of the mental health million project*. [online] Sapienlabs.org. Available at: <<https://sapienlabs.org/wp-content/uploads/2022/03/Mental-State-of-the-World-Report-2021.pdf>> [Accessed 17 June 2022].
38. Olaimat AN, Aolymat I, Shahbaz HM, Holley RA. Knowledge and information sources about COVID-19 among university students in Jordan: A cross-sectional study. *Frontiers in Public Health*. 2020;8. doi:10.3389/fpubh.2020.00254

39. Posel D, Oyenubi A, Kollamparambil U (2021) Job loss and mental health during the COVID-19 lockdown: Evidence from South Africa. *PLoS ONE* 16(3): e0249352. <https://doi.org/10.1371/journal.pone.0249352>
40. Reznik A, Gritsenko V, Konstantinov V, Khamenka N, Isralowitz R. COVID-19 fear in eastern Europe: validation of the fear of COVID-19 scale. *Int J Mental Health Addict.* (2020) May 12:1–6. doi: 10.1007/s11469-020-00330-z
41. Rubin, G.J. et al. (2016) “How to support staff deploying on overseas humanitarian work: A qualitative analysis of responder views about the 2014/15 West African ebola outbreak,” *European Journal of Psychotraumatology*, 7(1). Available at: <https://doi.org/10.3402/ejpt.v7.30933>.
42. Sakib N, Bhuiyan AKMI, Hossain S, Al Mamun F, Hosen I, Abdullah AH, et al. Psychometric validation of the bangla fear of COVID-19 Scale: confirmatory factor analysis and rasch analysis. *Int J Ment Health Addict.* (2020) 11:1–12. doi: 10.1007/s11469-020-00289-x
43. Savitsky, B., Findling, Y., Erel, A., & Hendel, T. (2020). Anxiety and coping strategies among nursing students during the covid-19 pandemic. *Nurse Education in Practice*, 46, 102809
44. Son, C., Hegde, S., Smith, A., Wang, X. and Sasangohar, F., 2020. Effects of COVID-19 on College Students' Mental Health in the United States: Interview Survey Study. *Journal of Medical Internet Research*, [online] 22(9), p.e21279. Available at: <<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7473764/>> [Accessed 25 June 2022].
45. South African College of Applied Psychology (SACAP). (2018). The shocking state of mental health in South Africa in

2018. <https://www.sacap.edu.za/blog/counselling/mental-health-south-africa/>
46. South African Depression and Anxiety Group (SADAG). SADAG's Online Survey Findings On COVID-19 And Mental Health (21 April 2020). Available online:
https://www.sadag.org/index.php?option=com_content&view=article&id=3092:sadag-s-online-survey-findings-on-covid-19-and-mental-health-21-april-2020&catid=149:press-releases&Itemid=226. (Accessed on 17 June 2022)
47. South African Government. About Alert System. Available online:
<https://www.gov.za/covid-19/about/about-alert-system> (accessed on 09 June 2022).
48. Statista - Coronavirus deaths in Africa 2022, by country [online] Available at:
<https://www.statista.com/statistics/1170530/coronavirus-deaths-in-africa/>
[Accessed 15 April 2023]
49. Statistics South Africa. Measuring food security in South Africa: Applying the food insecurity experience scale. Report 03-00-19 Available online:
<https://www.statssa.gov.za/publications/Report-03-00-19/Report-03-00-192020.pdf> (accessed on 09 June 2022)
50. Statistics South Africa. Unemployment in South Africa. Available online:
<https://www.statssa.gov.za/?cat=31> (accessed on 09 June 2022)
51. The Conversation. 2022. *How COVID added to the stresses of the most vulnerable young women in South Africa*. [online] Available at:
<<https://theconversation.com/how-covid-added-to-the-stresses-of-the-most-vulnerable-young-women-in-south-africa-180729>> [Accessed 21 June 2022].
52. Vindegaard N, Benros ME. COVID-19 pandemic and mental health

consequences: Worldometer. COVID-19 Coronavirus Pandemic. Available online: <https://www.worldometers.info/coronavirus/> (accessed on 09 June 2022)

53. Vindegaard, N. and Benros, M., 2020. COVID-19 pandemic and mental health consequences: Systematic review of the current evidence. *Brain, Behavior, and Immunity*, [online] 89, pp.531-542. Available at: <<https://www.sciencedirect.com/science/article/pii/S0889159120309545?via%3Dihub>>.
54. Visser, M. and Law-van Wyk, E., 2021. University students' mental health and emotional wellbeing during the COVID-19 pandemic and ensuing lockdown. *South African Journal of Psychology*, [online] 51(2), pp.229-243. Available at: <<https://journals.sagepub.com/doi/full/10.1177/00812463211012219#>> [Accessed 30 June 2022].
55. Walker M, Mkwanzani F. Challenges in accessing higher education: A case study of marginalised young people in one South African informal settlement. *International Journal of Educational Development*. 2015; 40:40–9. doi: 10.1016/j.ijedudev.2014.11.010
56. Wangenge-Ouma, G., and Kupe, T. (2020). Uncertain Times: Re-Imagining Universities for New, Sustainable Futures. Available at: <https://www.usaf.ac.za/wp-content/uploads/2020/09/Uncertain-Times-Paper.pdf>. [accessed on 28 August 2023]
57. Wathelet, M., Duhem, S., Vaiva, G., Baubet, T., Habran, E., Veerapa, E., . . . Grandgenèvre, P. (2020). Factors associated with mental health disorders

among university students in France confined during the COVID-19 pandemic. *JAMA network open*, 3(10), e2025591-e2025591.

58. WHO (2022). Coronavirus disease (COVID-19). Available online: https://www.who.int/health-topics/coronavirus#tab=tab_1 (accessed on 09 June 2022)
59. Who.int. 2022. *Mental Health and COVID-19: Early evidence of the pandemic's impact: Scientific brief, 2 March 2022*. [online] Available at: <https://www.who.int/publications/i/item/WHO-2019-nCoV-Sci_Brief-Mental_health-2022.1> [Accessed 21 June 2022].
60. Who.int. 2022. *The impact of COVID-19 on mental health cannot be made light of*. [online] Available at: <<https://www.who.int/news-room/feature-stories/detail/the-impact-of-covid-19-on-mental-health-cannot-be-made-light-of>> [Accessed 21 June 2022].
61. World Health Organization Mental health: Strengthening our Response. 2018. [(accessed on 29 August 2023)]. Available online: <https://www.who.int/news-room/fact-sheets/detail/mental-health-strengthening-our-response>
62. World Health Organization. Adolescent Mental Health. 2020. Available online: <https://www.who.int/news-room/fact-sheets/detail/adolescent-mental-health> (accessed on 15 April 2023).
63. Xiong J, Lipsitz O, Nasri F, Lui LM, Gill H, Phan L, et al. Impact of COVID-19 pandemic on mental health in the general population: A systematic review. *Journal of affective disorders*. 2020.

