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ORIGINAL RESEARCH

Optometry Students' Mental Health at a University in South Africa: Investigating the Links Between Anxiety, Depression, and Key Variables

Rajesh Vagiri[1], Velibanti Sukati[2], Mabitsela Hezekiel Mphasha[3], Nsovo Mayimele[4], Varsha Bangalee[5], Wandisile Grootboom[6], Letlhogonolo Makhele[7], Neelaveni Padayachee[8]

[1]Department of Pharmacy, Faculty of Health Sciences, University of Limpopo, Mankweng, Limpopo, 0727, South Africa; [2]Department of Optometry, Faculty of Health Sciences, University of Limpopo, Mankweng, Limpopo, 0727, South Africa; [3]Department of Public Health, Faculty of Health Sciences, University of Limpopo, Mankweng, Limpopo, 0727, South Africa; [4]Department of Pharmaceutical Sciences, Faculty of Science, Tshwane University of Technology, Pretoria, 0001, South Africa; [5]Discipline of Pharmaceutical Sciences, School of Health Sciences, University of Kwazulu-Natal, Durban, KwaZulu-Natal, 4000, South Africa; [6]Medical School, Nelson Mandela University, Port Elizabeth, 6031, South Africa; [7]School of Pharmacy, Sefako Makgatho Health Sciences University, Molotlegi St., Ga-Rankuwa, Pretoria, 0208, South Africa; [8]Department of Pharmacy and Pharmacology, School of Therapeutic Sciences, Faculty of Health Sciences, University of Witwatersrand, Johannesburg, Gauteng, 2193, South Africa

Correspondence: Rajesh Vagiri, Department of Pharmacy, Faculty of Health Sciences, University of Limpopo, Mankweng, Limpopo, 0727, South Africa, Tel +2715 268 4842, Email rajesh.vagiri@ul.ac.za

Introduction: Anxiety and depression in optometry students are becoming acknowledged as critical concerns, especially given the rigorous demands of their academic curricula. This study aimed to identify the severity of anxiety and depression and their association with socio-demographic, academic, and clinical variables among optometry students in South Africa.

Methods: This study was a descriptive, quantitative, and cross-sectional study involving 171 optometry undergraduate students at a university in South Africa. Data was gathered using the Generalized Anxiety Disorder (GAD-7) scale, the Patient Health Questionnaire (PHQ-9), and a questionnaire encompassing socio-demographic, student, and clinical variables. Students who agreed to participate and provided written consent were recruited to participate in this study. The association between socio-demographic, student, and clinical variables with total GAD-7 and PHQ-9 scores was determined using the Mann–Whitney *U*-test and Kruskal–Wallis test where applicable.

Results: More than half of the participants were female (n=63; 63.2%), identified as belonging to *the Pedi* ethnic group (n=96; 56.1%), single (n=118; 69%), and lived with both parents (n=94; 55.0%). Over half (51.4%; n=88) of the participants reported high levels of anxiety, while two-thirds (n=141; 67.8%) exhibited high levels of depression. Variables such as academic level, receipt of financial bursary, and prior professional psychological support had a significant ($p < 0.05$) association with total GAD-7 and PHQ-9 scores. Correlation analysis revealed a strong positive correlation between total GAD-7 and PHQ-9 scores ($r = 0.77$, $p < 0.001$).

Conclusion: Addressing the high levels of anxiety and depression among optometry students necessitates a comprehensive strategy that encompasses the augmentation of mental health resources, fostering resilience, and creating supportive environments. By implementing these strategies, educational institutions can enhance the mental health and well-being of optometry students, ultimately leading to improved academic outcomes and professional readiness.

Keywords: anxiety, depression, mental health, optometry students

Introduction

The prevalence of anxiety and depression among university students has become a pressing concern in recent years, reflecting a growing recognition of mental health issues within this demographic.[1] According to the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-V), outlines specific criteria for diagnosing anxiety and depressive disorders, which can help in understanding the symptoms experienced by university students. For anxiety disorders, symptoms may include excessive worry, restlessness, fatigue, difficulty concentrating, and sleep disturbances.[2] In contrast, depressive disorders are characterised by symptoms such as persistent sadness, loss of interest in previously

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enjoyed activities, changes in appetite or weight, sleep disturbances, and feelings of worthlessness or excessive guilt.[3] The overlap of these symptoms can complicate the clinical picture, as many students may experience both anxiety and depression simultaneously, a phenomenon known as comorbidity.[4,5]

Studies have shown that students in rigorous academic programs, such as those in health sciences, report higher levels of psychological distress compared to their peers in less demanding fields.[6,7] Research indicates that the prevalence of anxiety and depression among university students can vary widely, with estimates ranging from 5% to over 70% depending on the population studied and the specific diagnostic criteria used.[8,9] Various studies have documented high rates of these conditions, with estimates suggesting that between 20% and 50% of university students experience symptoms of anxiety and depression at some point during their academic careers.[10,11] A systematic review of the mental health of medical students indicated anxiety prevalence rates from 26.8% to 73% and depression rates from 14.7% to 60%.[12] Nursing students similarly encounter major mental health challenges, with research revealing anxiety was reported at a prevalence of 29.2% to 34.6% and depression at 18.3% to 33.2% among nursing students.[13,14] Numerous studies also highlighted the high prevalence of mental health challenges faced by pharmacy students, with 21% of them exhibiting clinically significant anxiety symptoms, whereas 19% to 40.3% reported depressive symptoms.[15,16]

The transition to university life is often marked by a multitude of stressors, including academic pressures, social adjustments, and financial burdens, all of which can contribute to the deterioration of mental health.[17,18] The unique challenges faced by university students can exacerbate pre-existing mental health conditions or trigger new ones. Many students enter higher education with underlying mental health issues, which can be intensified by the demands of academic life. Mofatteh (2020) highlighted that those students with a history of mental health problems, such as post-traumatic stress disorder (PTSD), are particularly vulnerable to experiencing heightened levels of anxiety and depression during their university years.[8] Moreover, the academic environment itself can be a significant source of stress. The pressure to perform academically, coupled with the need to balance social life and extracurricular activities, can lead to overwhelming feelings of anxiety and depression.[19] This phenomenon is often compounded by the fear of failure and the competitive nature of university life, which can create a cycle of stress and mental health deterioration.[20] The impact of anxiety and depression on academic performance and overall well-being cannot be overstated. Studies have shown that students experiencing high levels of anxiety and depression are more likely to face academic challenges, including lower grades and higher dropout rates.[21,22]

The prevalence of anxiety and depression among optometry students is an increasingly recognised concern within the field of optometric education.[23] A study by Simjee et al, (2021) reported that optometry students exhibited notable levels of anxiety and depression, with many students expressing concerns about their mental well-being during their training.[24] Ching and Cheung (2021) found that active coping strategies were crucial for maintaining resilience among optometry students, suggesting that those who effectively manage stress are better equipped to handle the challenges of their education.[25] Moreover, the transition to clinical practice is often a particularly stressful period for optometry students. The shift from theoretical learning to practical application can induce anxiety related to performance and patient interactions. This transition is compounded by the high expectations placed on students to demonstrate competence in clinical settings, which can exacerbate feelings of inadequacy and stress.[26] Although Zulu and van Staden's study primarily focused on perceptions of public eye care services, it underscores the importance of addressing the concerns of optometry students, including their feelings of preparedness for clinical responsibilities.[27]

To our knowledge, no study in South Africa had assessed the prevalence of anxiety and depression among optometry students. Therefore, this study aimed to assess the prevalence and severity of anxiety and depression, association of socio-demographic, student, and clinical variables with total anxiety and depression scores among optometry undergraduates at a university in South Africa.

Materials and Methods

Study Design and Sample

This research was descriptive and cross-sectional, utilizing survey data. The study was conducted with optometry undergraduate students at a university in South Africa. Purposive sampling was employed to choose the study population.

Participants in this study completed three questionnaires: General Anxiety Disorder (GAD-7), Patient Health Questionnaire (PHQ-9), and a socio-demographic, clinical, and student characteristics questionnaire.

Data Collection Instruments

GAD-7 Scale

The GAD-7 scale is designed to screen the symptoms of GAD, serving as a rapid and efficient instrument for physicians to identify patients requiring further evaluation or treatment.[28] The assessment comprises seven items that evaluate the frequency of anxiety symptoms encountered in the preceding two weeks, yielding a total score between 0 and 21. The responses for all items encompassed "not all" (0), "many days" (1), "more than half the days" (2), and "almost every day" (3).

PHQ-9

PHQ-9 assesses the presence and severity of depressive symptoms based on the criteria for major depressive disorder (MDD) outlined in the DSM-V. The assessment consists of nine components that signify the primary symptoms of depression, encompassing mood, interest, and energy levels, with an overall score spanning from 0 to 27.[29] Participants were directed to assess each item about the frequency of their experiences with the signs and symptoms of depression over the preceding two weeks. All items received responses of "not all" (0), "several days" (1), "more than half the days" (2), and "nearly every day" (3).

Socio-Demographic, Student and Clinical Variables Questionnaire

The questionnaire included three components: socio-demographic, student, and clinical variables. The preliminary section comprised socio-demographic information, encompassing gender, age, relationship status, etc. The second section contained student characteristics, including academic year, household income, and monthly allowance. The concluding portion included clinical criteria, comprising previous trauma exposure and receiving professional psychological support, among others.[30]

Data Collection

The data was collected for four weeks in October 2024. Participants in this study were aged 18 and older, enrolled in 2024, and had provided written consent to participate. Individuals that opted out were excluded from the study. The researchers supplied a study information sheet outlining the aims, objectives, and purpose of the inquiry. Students who consented to participate in this study were offered the data collection instruments (DCIs) to complete. The participants filled out the DCIs in a private area on the university campus and were given ample time for completion.

Reliability, Validity and Bias

The GAD-7 demonstrated exceptional test-retest reliability, with an intraclass correlation value (ICC) reaching 0.83 in multiple trials, signifying stable results over time.[31] The PHQ-9 has exceptional test-retest reliability, affirming its consistency across multiple assessments.[32] Both the GAD-7 and PHQ-9 exhibited significant internal consistency. The Cronbach's alpha for the GAD-7 is approximately 0.92, whereas the average for the PHQ-9 is around 0.89 across various studies.[28] The construct validity of both instruments has been corroborated by numerous investigations. Factor analyses have consistently shown that the GAD-7 functions as a unidimensional construct, accurately reflecting the nature of generalized anxiety.[31,32] Similarly, confirmatory factor analyses of the PHQ-9 corroborated with its unifactorial structure, offering robust evidence of its reliability in measuring depression symptoms.[33] Both measures have been verified to exhibit a strong correlation with behavioral and psychological characteristics. The suggested cut-off score of 10 or above for the GAD-7 signifies clinically severe anxiety, with sensitivity reported between 73% and 75%.[28,34] The PHQ-9 has shown comparable effectiveness in diagnosing major depressive illness across various demographics, including adolescents and adults, hence affirming its validity.[35,36]

Both questionnaires were translated into several languages and widely utilized in clinical treatment and research worldwide.[30,37,38] This study utilized established data-gathering techniques, and all filled questionnaires were verified for

completeness. This study strictly followed the established inclusion and exclusion criteria, hence eliminating selection bias. The research team received extensive training to mitigate information bias. Response bias was alleviated through the self-administration of the data collection tools. Language and translation bias were eradicated by conducting the questionnaires only in English.

Ethical Considerations

The institutional research ethics committee of the university granted ethical approval for this study. Authorization to conduct this study was obtained from the university registrar, and approval from the gatekeeper was acquired from the School of Healthcare Sciences. The research team guaranteed confidentiality by refraining from gathering any personal information from participants, such as student numbers, national identification numbers, and mobile phone numbers. Confidentiality was further maintained by the secure storage of all data and tools employed in this research, with access restricted solely to the research team. The participants' confidentiality was preserved through the utilization of codes associated with their academic year. The researchers minimized psychological harm in this study by making counselors from the university's Counselling and Development Centre available if needed. Informed written agreement was secured from all participants, who were advised that their involvement in the study was voluntary and that they might withdraw at any moment without justification. This study adhered to all ethical principles for medical research set in the Declaration of Helsinki.

Data Capture and Analysis

Data about socio-demographic, student, and clinical variables, as well as the GAD-7 and PHQ-9 questionnaires, were recorded in Microsoft Office Excel and analyzed using Statistical Package for the Social Sciences (SPSS) version 29.0. Information about socio-demographic, student, and clinical characteristics was presented as frequencies and percentages. The cumulative GAD-7 scores were derived by aggregating all responses for each item, yielding a score between 0 and 21. The total GAD-7 scores were categorized as "no symptoms" (0–4), mild (5–9), "moderately severe" (10–14), and "severe" (≥15) to assess the severity of anxiety. The PHQ-9 responses were compiled to provide a total score between 0 and 27, classified as 0–4 (none), 5–9 (mild), 10–14 (moderate), 15–19 (moderately severe), and 20 or higher (severe) to assess the degree of depression. A score of 10 or higher on both scales typically indicates moderate to severe anxiety and depression.

The normality of the distribution of the study variables was assessed using the Kolmogorov–Smirnov (K-S) test. As the data did not follow normal distribution, non-parametric tests were employed. The relationship between socio-demographic, student, and clinical characteristics with total GAD-7 and PHQ-9 scores was explored using the Mann–Whitney *U*-test and Kruskal–Wallis test where applicable. A correlation study was conducted to determine the strength and direction of the relationship between total GAD-7 and PHQ-9 scores. The criterion for statistical significance in this study was set at $p < 0.05$.

Results

Socio-Demographic, Student and Clinical Variables of the Sample

Table 1 presents the socio-demographic, student and clinical variables of the study sample. In this study, over half of the participants were female (n=63; 63.2%), identified as *Pedi* ethnic group (n=96; 56.1%), single (n=118; 69%), and cohabitated with both parents (n=94; 55.0%). Majority of the respondents identified as Christians (n=143; 83.6%), resided in the rural areas (n=133; 77.8%). Over a quarter reported having experienced trauma previously (n=44; 25.7%).

Severity of Anxiety and Depression

In this study, students who reported moderately severe to severe levels (total GAD-7 score > 10) were deemed to exhibit symptoms of GAD. Table 2 demonstrates that over half (51.4%; n=88) of the participants exhibited high levels of anxiety. On the other hand, students who reported moderate, moderately severe, and severe depression (total PHQ

Table 1 Sample Characteristics (n=171)

Variables		n (%)	*p*-value*
Socio-demographic variables			
Gender	Male	63 (36.8)	< 0.001
	Female	108 (63.2)	
Ethnicity	Pedi	96 (56.1)	< 0.001
	Tsonga	24 (14.1)	
	Venda	27 (15.8)	
	Others	24 (14.0)	
Age (in years)	18-19	72 (42.1)	< 0.001
	20-21	67(39.2)	
	22-23	24 (14.0)	
	>23	8 (4.7)	
Academic level	First level	44 (25.7)	< 0.001
	Second level	50 (29.3)	
	Third level	46 (26.9)	
	Fourth level	31 (18.1)	
Relationship status	In a relationship	53 (31.0)	< 0.001
	Single	118 (69.0)	
Religion	Christian	143 (83.6)	< 0.001
	None/Others	28 (126.4)	
Household income (ZAR: South African Rands)	0 – 5000	32 (18.7)	< 0.001
	5001 – 10,000	45 (26.3)	
	10,001- 20,000	36 (21.1)	
	>20,000	58 (33.9)	
Family residence	Rural	133 (77.8)	< 0.001
	Urban	38 (22.2)	
Cohabitation	Living with a single parent	58 (33.9)	< 0.001
	Living with both parents	94 (55.0)	
	Living with relatives	19 (11.1)	
Student variables			
Receiving financial bursary?	Yes	149 (87.1)	< 0.001
	No	22 (12.9)	
Monthly allowance (ZAR: South African Rands)	0 – 500	13 (7.6)	< 0.001
	501 – 2000	117 (68.4)	
	>2000	41 (24.0)	
Failed any modules this year?	Yes	16 (9.4)	< 0.001
	No	155 (90.6)	
Accommodation	On campus	162 (77.9)	< 0.001
	Off campus	46 (22.1)	
Do you have any children?	Yes	16 (9.4)	< 0.001
	No	155 (90.6)	
Clinical variables			
Previous exposure to trauma	Yes	44 (25.7)	< 0.001
	No	127 (74.3)	
Received professional psychological support before?	Yes	34 (19.9)	< 0.001
	No	137 (80.1)	

Notes: *One-Sample Kolmogorov–Smirnov (K-S) Test.

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Table 2 Severity of Anxiety and Depression Among Optometry Undergraduate Students (n=171)

Condition	Severity (n; %)				
	No Symptoms	Mild	Moderate	Moderately Severe	Severe
Anxiety	35 (20.5)	48 (28.1)	N/A	63 (36.8)	25 (14.6)
Depression	32 (18.7)	38 (22.2)	53 (31.0)	41 (24.0)	7 (4.1)

score >10) were categorized as having depressive symptoms. Approximately two-thirds of the participants (n=141; 67.8%) reported high levels of depression.

Socio-Demographic, Student and Clinical Variables Influencing Total GAD-7 and PHQ-9 Scores

Table 3 illustrates the association of socio-demographic, student, and clinical variables with total GAD-7 and PHQ-9 scores. Variables such as academic level of study, receipt of a financial bursary, and previously receiving professional

Table 3 Association of Socio-Demographic, Student and Clinical Variables with Total GAD-7 and PHQ-9 Scores (n=171)

Socio-Demographic, Student and Clinical Variables		GAD-7 Total Scores (0–21)		PHQ-9 Total Scores (0–27)	
		Mean (±SD)	*p*-value	Mean (±SD)	*p*-value
Gender	Male	9.83 (4.71)	0.22	10.76 (5.95)	0.95
	Female	8.99 (4.70)		10.73 (5.63)	
Ethnicity	Pedi	9.76 (4.63)	0.22	11.38 (5.34)	0.37
	Tsonga	7.96 (5.27)		9.71 (6.76)	
	Venda	9.70 (3.56)		9.89 (5.54)	
	Others	8.33 (5.41)		10.21 (6.39)	
Age (in years)	18-19	9.60 (4.53)	0.51	12.68 (5.30)	0.00*
	20-21	9.48 (4.91)		9.66 (5.74)	
	22-23	7.83 (4.58)		7.96 (4.86)	
	>23	9.50 (4.99)		10.75 (6.92)	
Academic level	First level	7.89 (4.65)	0.01*	10.02 (5.07)	0.00*
	Second level	11.00 (3.58)		14.80 (4.89)	
	Third level	8.87 (5.06)		8.35 (4.89)	
	Fourth level	9.19 (5.21)		8.77 (5.78)	
Relationship	In a relationship	9.98 (5.37)	0.77	11.02 (6.72)	0.32
	Single	8.99 (4.37)		10.62 (5.26)	
Religion	Christian	9.37 (4.74)	0.32	10.98 (5.86)	0.08
	None/Others	8.93 (4.63)		9.54 (4.93)	
Household income (South African Rands)	0 – 5000	8.47 (4.83)	0.17	9.31 (4.11)	0.44
	5001 – 10,000	8.87 (4.46)		10.42 (5.74)	
	10,000 – 20,000	8.97 (5.15)		10.89 (6.37)	
	>20,000	10.29 (4.48)		11.69 (6.02)	
Family residence	Rural	9.32 (4.54)	0.92	10.45 (5.69)	0.18
	Urban	9.21 (5.32)		11.76 (5.82)	
Cohabitation	Living with a single parent	9.43 (5.37)	0.26	10.43 (6.18)	0.21
	Living with both parents	9.54 (4.29)		11.27 (5.15)	
	Living with relatives	7.68 (4.44)		9.11 (6.90)	
Receiving financial bursary?	Yes	8.91 (4.75)	0.00*	10.36 (5.90)	0.01*
	No	11.95 (3.48)		13.32 (3.54)	

(*Continued*)

Table 3 (Continued).

Socio-Demographic, Student and Clinical Variables		GAD-7 Total Scores (0–21)		PHQ-9 Total Scores (0–27)	
		Mean (±SD)	*p*-value	Mean (±SD)	*p*-value
Monthly allowance (South African Rands)	0 −500	11.46 (3.91)	0.04*	9.77 (3.32)	0.24
	501 −2000	8.73 (4.73)		10.49 (5.86)	
	>2000	10.24 (4.61)		11.78 (5.91)	
Failed any modules this year?	Yes	9.88 (4.26)	0.55	13.50 (4.53)	0.03*
	No	9.24 (4.76)		10.46 (5.78)	
Accommodation	On campus	9.65 (4.86)	0.14	10.66 (5.79)	0.63
	Off campus	8.44 (4.23)		10.94 (5.64)	
Do you have any children?	Yes	9.81 (4.15)	0.62	12.13 (4.12)	0.22
	No	9.25 (4.77)		10.60 (5.86)	
Previous exposure to trauma?	Yes	9.82 (5.10)	0.26	10.16 (5.67)	0.28
	No	9.12 (4.57)		10.94 (5.76)	
Received professional psychological support before?	Yes	10.74 (3.36)	0.02*	12.24 (4.83)	0.08
	No	8.94 (4.93)		10.37 (5.89)	

Notes: *p < 0.05 (Mann–Whitney *U*-test and Kruskal–Wallis test where applicable).

Table 4 Correlation Analysis of Total GAD-7 and PHQ-9 Scores (n=171)

Mean (SD)		Correlation Co-Efficient (*r*)	*p*-value*
Total GAD	9.30 (4.70)	0.77	< 0.001
Total PHQ-9	10.74 (5.73)		

Notes: *Pearson Correlation Test.

Abbreviations: DCIs, data collection instruments; DSM-5, diagnostic and statistical manual of mental disorders, fifth edition; GAD, general anxiety disorder; K–S Test, Kolmogorov–Smirnov test; MDD, major depressive disorder; PHQ, patient health questionnaire; SD, standard deviation; SPSS, statistical package for the social sciences; ZAR, South African rands.

psychological support showed a significant ($p < 0.05$) association with total GAD-7 and PHQ-9 scores. Age had a significant ($p = 0.00$) influence on the total PHQ-9 scores. Students aged between 18 and 19 exhibited elevated levels (mean = 12.68; standard deviation: 5.30) of total PHQ-9 relative to other age cohorts in this study. A significant association ($p < 0.04$) was identified between monthly allowance and total GAD-7 scores. Students receiving a monthly allowance of less than ZAR 500 reported high levels of anxiety (mean = 11.46; standard deviation: 3.91) compared to those with a monthly allowance beyond ZAR 500.

Correlation Between Total GAD-7 and PHQ-9 Scores

Table 4 presents the correlation analysis of total GAD-7 and PHQ-9 scores. There is a strong positive correlation between total GAD-7 and PHQ-9 scores ($r = 0.77$, $p < 0.001$), suggesting that the higher levels of anxiety were significantly associated with greater depressive symptoms among optometry students.

Discussion

The results of our study reveal that 51.4% of optometry students displayed high levels of anxiety, while 67.8% reported high levels of depression, underscoring a significant mental health crisis within this population. These elevated rates of psychological distress can be attributed to several factors inherent in the academic environment of health sciences,

especially optometry, which is characterised by rigorous coursework, clinical responsibilities, and high expectations.[39] The prevalence of anxiety and depression among health sciences students, including those in optometry programs, aligned with findings from other studies. A systematic review conducted by Hope and Henderson (2014) revealed that medical students frequently encounter increased levels of anxiety and depression as they progress through their academic programs.[40] This trend may also be applicable to optometry students, as they face similar academic pressures and stressors. The transition from theoretical learning to practical application in clinical settings can be especially challenging, leading to heightened anxiety about performance and patient interactions.[26]

Furthermore, the academic stressors associated with health sciences education are well-documented. Research by Zhang et al, (2021) demonstrated that academic stress is a significant predictor of depressive symptoms among college students.[41] The demanding nature of optometry schools, characterised by extensive study hours, practical examinations, and the pressure to excel, may have contributed to the elevated levels of anxiety and depression reported in our study. The fear of failure and the competitive nature of the field may further exacerbate these mental health challenges.[42] Additionally, the impact of social support on mental health cannot be overlooked. Research has shown that students who perceive higher levels of social support are less prone to experiencing severe symptoms of anxiety and depression.[43] In the context of optometry education, fostering a supportive environment for students to share their experiences and concerns may help alleviate some of the psychological distress they face.[1] Institutions should consider implementing mentorship programs and peer support networks to bolster the sense of community among students.[44] Moreover, the stress associated with impending employment opportunities may significantly affect health sciences students' mental health, rendering it a crucial subject for investigation.[45]

Our study found high levels of anxiety and depression among first- and second-level (typically aged between 18 and 19) optometry students, which is consistent with the existing literature highlighting the mental health challenges faced by students in health sciences. The combination of academic pressures, social adaptations, and the transition to clinical practice can significantly impact student well-being.[46] Melnyk et al, (2016) identified a strong correlation between anxiety and depression, which indicates that as anxiety levels rise, so too do symptoms of depression, which may be particularly relevant for first- and second-year optometry students who are navigating the transition into a rigorous academic setting.[47] Additionally, the impact of academic stress on mental health is further supported by research from Kumar et al, (2016), which found that medical students reported higher levels of anxiety and depression during their early years of study compared to later years.[48] This trend may also apply to optometry students, as the transition from high school to university-level education can be particularly challenging, leading to increased psychological distress.[49] This aligns with our findings, as first- and second-year students are often adjusting to the rigors of their programs, which can lead to increased anxiety and depression. It is crucial for educational institutions to implement targeted mental health interventions and support systems to address these issues and promote resilience among optometry students.[50]

The findings from our study, which indicate that optometry students lacking financial bursaries (including limited monthly allowance) exhibited high levels of anxiety and depression, align with a growing body of literature that underscores the significant impact of financial stress on mental health among university students. Financial concerns are a recognized form of stress that can negatively affect students' psychological well-being, particularly in demanding fields such as health sciences.[51] Research by Pisaniello et al, (2019) emphasized that medical students often encounter heightened financial stress, especially during their initial years of education, which is associated with increased levels of anxiety and depression.[52] This corresponds with our findings, suggesting that optometry students, particularly those lacking financial support, may similarly experience elevated psychological distress due to financial burdens. Conversely, Jiang et al, (2022) emphasized that students who regard their social support as inadequate frequently encounter intensified mental health problems when confronted with financial difficulties.[53] In contrast, the presence of social support can alleviate the negative impacts of financial stress.[54] Frankham et al, (2020) emphasized that subjective views of financial difficulty are more potent predictors of mental health than objective financial hardship, suggesting that emotional and social elements substantially moderate this link.[55] Furthermore, the strain of financial challenges might engender feelings of isolation, as students may hesitate to communicate their financial struggles or seek assistance, especially if they believe their peers are faring better financially.[56] The anticipation of accumulating debt and the pressures associated with funding their education can lead to significant mental health challenges.[57] Jessop et al, (2019)

corroborate our findings by illustrating that financial concern is a predictor of deteriorating mental health among university students.[58] Their research indicates that students who experience financial stress are more likely to report adverse mental health outcomes, including anxiety and depression. Additionally, the findings from our study resonate with the work of Ansari and Stock (2010), who identified that financial hardship among university students is linked to poorer academic performance and mental health.[59] The pressures of balancing academic responsibilities with financial concerns can create a stressful environment that negatively impacts students' mental well-being.[60] This is particularly pertinent for optometry students, who must manage the demands of their rigorous academic programs while also navigating financial challenges. The interplay between financial concerns and psychological well-being underscores the need for educational institutions to implement comprehensive support systems, including financial aid and mental health resources, to assist students in managing these challenges.[61] By addressing the financial barriers faced by students, universities can help promote better mental health outcomes and academic success among optometry students.

Our study's findings indicate that optometry students who received professional psychological support had high levels of anxiety and depression, underscoring the urgent need for comprehensive mental health interventions tailored to the unique challenges faced by health sciences students. Although psychological support is crucial, it is equally important to address the underlying stressors contributing to mental health issues.[62] Additionally, the findings from Guo's research demonstrate that stressful life events significantly affect medical students' academic adjustment, with anxiety and depression playing mediating roles in this relationship.[63] This suggests that the high levels of anxiety and depression reported by optometry students receiving psychological support may be linked to the cumulative stressors they face in their academic environment. The ongoing demands of clinical training, coupled with the academic pressure, can create a challenging atmosphere that exacerbates mental health issues.[26]

Furthermore, the influence of past trauma on present psychological health must not be disregarded. Melnyk et al, (2016) examined the correlation between the history of trauma and increased levels of anxiety and depression in health professional students. Individuals with previous trauma may face intensified mental health difficulties in the rigorous environment of health sciences education.[47] The prevalence of anxiety and depression among students who receive psychological support may also reflect the stigma surrounding mental health in academic settings. Many students may be reluctant to seek help until they are experiencing significant distress, which can lead to a delayed response to their mental health needs.[64] This is supported by research indicating that students often perceive mental health services as inadequate or stigmatizing, which can deter them from utilizing available resources.[65] Educational institutions should prioritize the development of supportive environments that promote mental well-being, enhance coping strategies, and reduce stigma associated with seeking help.[62,66] By doing so, they can better support the mental health of optometry students and foster their academic success.

Limitations

We acknowledge that our cross-sectional study has limitations that may have affected the generalizability and interpretation of our findings. Our study was conducted with a relatively small sample of optometry students; therefore, our results may not be representative of the broader population of optometry students across different institutions or regions. There is a possibility of the introduction of response bias in our study, as the participants may have underreported or overreported their symptoms due to social desirability or a lack of awareness about their mental health status. Due to the cross-sectional nature of the study, the associations established in this study could be casual and may not have determined the directionality of these relationships. This study did not include an analysis of potential correlations between socio-demographic, student and clinical variables with anxiety and depression. Our study may not have completely captured the effect of external stressors such as personal life events and societal issues, which may have contributed to students' mental health challenges.

Conclusion

The mental health challenges encountered by optometry students are multifaceted and intricately linked to many academic and socio-economic stressors. Our study highlights that a significant proportion of these students experience elevated levels of anxiety and depression, primarily driven by the rigorous demands of their academic program,

financial stressors, and the transition from theoretical learning to practical application in clinical settings. To address these pressing issues, it is imperative for higher educational institutions to implement targeted mental health interventions and support systems. This includes fostering a supportive environment that encourages open dialogue about mental health, enhancing access to psychological and psychiatric services, and developing mentorship and peer support networks. By prioritizing the mental well-being of optometry students, institutions can help mitigate the adverse effects of anxiety and depression, ultimately promoting resilience and academic success in this demanding field.

Ethics Approval and Consent to Participate

This study was conducted in compliance with all ethical guidelines and approved by the University of Limpopo's Turfloop Research Ethics Committee (reference number: TREC/1494/2024:UG). Permission to conduct the study was also obtained from the Registrar of the university and the Director of School of Healthcare Sciences. Written informed consent was obtained from all participants before enrolment.

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