



## REVIEW ARTICLE

### MENTAL HEALTH AND STUDENT WORRIES IN THE COLLEGE OF MEDICAL SCIENCES AT THE UNIVERSITY OF GUYANA

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#### ABSTRACT

**Background:** In the challenging realm of health-science education, a rigorous curriculum, combined with the expectations to thrive in a fiercely competitive environment, affects students' academic performance, physical health, and psychological well-being.

**Objective(s):** This paper embarks on an exploration of mental health within the University of Guyana; College of Medical Sciences, contextualizing it within a global landscape of stress, anxiety, and depression that afflicts aspiring healthcare professionals.

**Methods:** In this cross-sectional study, the researchers investigated the correlation between student concerns and mental health. They utilized Google Forms to administer Warwick-Edinburgh Mental Well-Being Scale questionnaires to 265 participants. The modified scale included 9 items rated on a five-point Likert scale, achieving a post-administration Cronbach alpha score of 0.854. Psychological distress was defined as scores below 26 out of 45. Chi-squared tests were employed to examine associations between worries and indicators of psychological distress, such as sleep disturbance and university studies. Additionally, Chi-squared tests were used to assess connections between students' requests for support and their mental well-being scale category. Statistical analyses were conducted with a 95% confidence interval and a significance level of  $p < 0.05$ , including odds ratios to explore relationships between reported sleep disturbance, worries, and daily living or university activities.

**Results:** The chi-square tests revealed a significant correlation between students seeking support from academic staff and concerns about finances ( $X^2 = 9.085$ ,  $df=1$ ,  $p < 0.003$ ), as well as between sleep disturbance and listed worries among students ( $X^2 = 20.647$ ,  $df=1$ ,  $p < 0.001$ ). Students who worried about finances were found to be 2 times more likely to require support from academic staff compared to their counterparts (OR: 2.0944, CI: 1.2909 to 3.3983, z statistic: 2.994, Significance level  $P = 0.0028$ ). Those reporting interference with daily living activities and university studies due to worries were 3 times more likely to experience sleep disturbance (OR: 3.0421, CI: 1.8699 to 4.9492, Z statistic: 4.481, Significance level  $P < 0.0001$ ). Normality was confirmed through a Shapiro-Wilk test using the modified questionnaire (Test statistic  $W = 0.993$ ,  $df = 289$ ,  $p$ -value: 0.175). An independent sample t-test comparing mean scores on a Warwick-Edinburgh mental health well-being test showed a significant difference between those who worry about university studies and those who do not ( $t = 5.676$ ,  $df = 287$ ,  $p < 0.001$ ) with a large effect size ( $d = 0.839$ ).

**Conclusions:** The research highlights the pressing necessity for specific interventions aimed at tackling psychological distress and easing concerns among students in health science.

## INTRODUCTION

Health Science Education, revered for its noble pursuit of knowledge and service, harbors a dark undercurrent: the pervasive specter of psychological distress among its students (1). In the crucible of health science education, where the pursuit of excellence intertwines with the weight of responsibility, students navigate treacherous waters (2).

The demands of a rigorous curriculum, coupled with the pressure to excel in a highly competitive environment, exact a toll on the academic performance, physical health, and psychological well-being of students. Studies, such as the one conducted among undergraduate medical students in the United States, underscore the magnitude of this challenge, revealing alarming statistics: 23% experience clinical depression and 57% grapple with psychological stress (3).

The burden of stress is particularly acute during periods of examination preparation, as students endeavor to master vast amounts of knowledge and skills while sacrificing personal and social pursuits (3). It is no wonder, then, that medical students rank among the most distressed group compared to their peers in other disciplines (2,4). This stress, left unchecked, can lead to dire consequences, including the development of depression and anxiety, with ramifications that echo throughout students' careers and lives (5). Alarming studies suggest that psychological problems such as stress, depression, and anxiety are often under diagnosed and undertreated among health science students, exacerbating the risk of long-term psychological morbidity(6). Early detection of these issues is paramount, as it not only shortens the duration of episodes but also mitigates long-term social impairment(2,3,5)However, there remains a dearth of research on stress among health science students in certain regions, such as Guyana, highlighting the urgent need for further investigation. Recent studies, including a cross-sectional examination at King Saud University, shed light on the prevalence and correlates of stress among health science students. Findings reveal a stark reality: a significant proportion of students experience stress, with female students and those in their initial years of study being particularly vulnerable (2) Moreover, the association between stress levels and academic performance underscores the profound impact of psychological distress on students' educational journey (2,3,7).

In the Caribbean, at the University of the West Indies, concerns about students' mental health have prompted inquiries into the prevalence of psychological distress and its correlates. The heavy workload and curriculum burden faced by students have raised red flags, prompting calls for preventive mental health services to be integrated into routine clinical care (4). Indeed, the ramifications of psychological distress extend beyond academic performance, affecting personal lives, relationships, and even the mental health of future doctors(2–5,8). As such, it is imperative to not only identify students at risk but also to understand the factors contributing to distress, including demographic variables like age, gender, and program duration. By comprehensively examining the nuances of psychological distress among health science students, this research aims to inform targeted interventions that promote the holistic well-being of aspiring healthcare professionals, ensuring that they emerge not only as competent clinicians, but also as resilient individuals equipped to navigate the challenges of their chosen profession. This paper embarks on an exploration of this phenomenon within the College of Medical Sciences (CMS), contextualizing it within a global landscape of stress, anxiety, and depression that afflicts aspiring healthcare professionals. Psychological distress among medical students is a critical issue with far-reaching implications for their academic performance, personal well-being, and future professional endeavors(9,10). Several studies have shed light on the prevalence, correlates, and consequences of psychological distress within the context of medical education, providing valuable insights into the multifaceted nature of this phenomenon. One seminal study conducted by Sherina, Rampal, and Kaneson (2004) explored the prevalence of psychological stress among medical students, revealing a prevalence rate of 41.9% based on GHQ-12 scores(1). The study found no significant gender or ethnic differences in the prevalence of psychological stress, although certain symptoms such as feeling constantly under strain and experiencing problems with sleeping when worried were prevalent among the student population.

Importantly, the study identified a significant association between psychological stress and depression, underscoring the complex interplay between these two constructs (1,11). Abdulghani *et al* (2)delved deeper into the prevalence and correlates of stress among medical students, highlighting a prevalence rate of 63.8% for all levels of stress, with severe stress affecting 25.2% of the student population(2). Their findings underscored significant associations between stress levels and factors such as gender, year of study, and perceived physical problems, with first-year students bearing the highest burden of stress. Additionally, the study revealed the adverse impact of stress on academic performance and personal well-being, as evidenced by higher rates of absenteeism and impaired study/work productivity among stressed students (2). Othman *et al* (12) conducted a comprehensive examination of health science students at a Malaysian university to identify the primary sources of student stress. They identified potential stressors encompassing academic challenges, interpersonal and intrapersonal factors, the motivation and desire for learning, as well as social and group activities. They revealed the principal stressor was associated with academic pressures while teaching experiences and social relationships were identified as sources of moderate stress among students. Chen *et al*(3) provided further insights into the psychological distress experienced by medical students, focusing on dimensions such as depression, anxiety, self-harm, impulsivity, and psychiatric disturbance. Their study revealed prevalence rates ranging from 2.6% for impulsivity to 8.2% for anxiety, with enrollment year, age, sex, program duration, and college emerging as significant predictors of psychological distress. Notably, the study identified an increased risk of self-harm among students enrolled in later years and those pursuing longer program durations, highlighting the need for targeted interventions to mitigate the risk of adverse outcomes (3). Sahu *et al.* (4) highlighted anxiety as the most prevalent form of psychological distress among medical students, with depression and stress also exerting significant burdens on student well-being (4,13). Their findings underscored the importance of considering demographic factors such as gender, age, and nationality in understanding the prevalence and correlates of psychological distress within diverse student populations (4).

Delving into other programs, a study conducted in Norway (14) examined students enrolled in nursing, physiotherapy, and occupational therapy programs over a three-year duration. The investigation utilized a General Health Questionnaire to assess psychological distress. Findings indicated that nursing students experienced higher levels of psychological distress in their initial three years compared to those in occupational therapy and physiotherapy. Furthermore, the study identified that stress levels at the commencement of the students' studies served as the most significant predictor of psychological distress during their final year (14). Atkinson's(5) provided valuable insights into the psychological distress experienced by first-year medical students, revealing clinically significant symptoms of depression, anxiety, and stress among a substantial proportion of participants. The study highlighted the impact of factors such as financial concerns and program duration on stress levels, emphasizing the need for targeted support mechanisms to address the unique challenges faced by medical students (5). In summary, the literature reviewed underscores the pervasive nature of psychological distress among students in health science and the complex interplay of factors contributing to its prevalence and correlates. Moreover, there is overwhelming literature highlighting psychological distress in content-heavy

programs like nursing and medicine which presents a lack of research on health science, overall. By elucidating the multifaceted nature of this phenomenon and other health science programs, these studies provide valuable insights into the challenges faced by health science students and underscore the importance of implementing evidence-based interventions to promote student well-being and academic success.

**METHODS**

**Study Design:** This cross-sectional study conducted a detailed analysis of the relationships between student worries and mental health within the College of Medical Sciences. Google Forms were employed to digitally administer questionnaires across the CMS. Ministry of Health as well as the Dean of the College of Medical Sciences approval was obtained to conduct the study.

**Data Collection:** The research team employed convenience sampling, ensuring participants' consent before questionnaire completion. All students involved were legally eligible, meeting Guyana's legal age requirement of 18 years. Collected demographic data encompassed age, residence (urban/rural), and sex. Utilizing a modified Warwick-Edinburgh Mental Well-Being Scale(15)the study assessed students' well-being, mental health, and various worries. A pilot test, involving 30 students from October 6th to 17th, preceded reliability testing via IBM SPSS software (version 29), yielding a Cronbach alpha of 0.866. Post-reliability assessment and questionnaire adjustments tailored to the study's sample. The updated questionnaire was administered from October 20th to November 8th, 2023.

**Sample Size:** A sample size of 265 persons was calculated using Cochran's formula. The parameters used for the calculation are a confidence interval of 95%, a margin of error of 5%, a population proportion of 50%, and a population size of 850. The study was able to consider 289 responses.

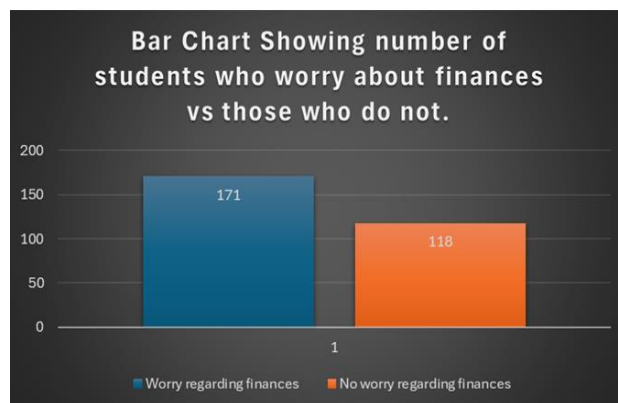
**Data Sources:** The information was collected using a Google Form distributed through the University of Guyana's DECC communication channel and accessed via the principal researcher. Following required approvals (IRB approval and approval from the Dean of CMS), students received links to the form and provided consent for their data to be collected. All participants were over 18 years old and legally permitted to consent according to Guyana's laws.

**Data Analysis and Statistical tests:** The modified Warwick-Edinburgh Mental Well-Being Scale(15) used 9 items assessed via a five-point Likert scale system and a post-administration Cronbach alpha score of 0.854 was garnered. The responses are as follows: None of the time-1 Rarely-2 Some of the time-3 Often-4, All the time-5. Lower scores on the modified Warwick-Edinburgh Mental Well-Being Scale(15) indicate poorer mental health, while higher scores indicate better mental health and less psychological distress. Psychological distress was defined as scores lower than 26 out of 45, and no psychological distress as scores equal to or greater than 26 out of 45. Chi-squared tests were used to explore associations between the various worries and indicators of psychological distress such as reported sleep disturbance and University studies and the Warwick-Edinburgh Mental Well-Being Scale category. Also, Pearson Chi-squared tests were used to assess associations with students' requests for support from the academic staff and their Warwick-Edinburgh Mental Well-

Being Scale category. A Shapiro-Wilk test checked the normal distribution of the Warwick-Edinburgh Mental Well-Being Scale(15) scores. Subsequently, an independent samples T-test determined if there was a significant difference in mean scores between those who reported experiencing interference with daily living activities and University Studies due to worry and those who did not. Finally, an Odds Ratio was calculated to ascertain values to indicate relationships between those who indicated needing student support from Academic staff and their worry about finances. Odds ratios were also carried out to determine the relationships between those who reported sleep disturbance and interference of the listed worries with their daily living and university activities. All statistical tests were performed with 95% confidence intervals and a significance level of  $p < 0.05$ .

**RESULTS**

There was a significant association between student indication for support from academic staff and worry regarding finances among College of Medical Science students. ( $X^2 = 9.085$ ,  $df=1$ ,  $p < 0.003$ ). Those who worry about finances are 2 times more likely to need student support from Academic staff as compared to their counterparts.



**Figure 1.**

**Table 1. Distribution of student worries by percentages**

Student Worries About:	Yes	No
Romantic partner	30%	70%
Finances	59%	41%
Emotional Wellbeing and Mental Health	66%	34%
Social Life	46%	54%
University Studies	80%	20%
Discrimination	23%	77%
Friends	31%	69%
Interference of Listed Worries with Daily Living or Studies	57%	43%

Note: N = 289 for each listed category

Those who reported interference with daily living activities and University studies due to listed worries were three times more likely to experience sleep disturbance than their counterparts.

**A Shapiro-Wilk's:** test was used to assess the normality of the modified Warwick-Edinburgh mental health well-being scores and the results are as follows: Test statistic  $W = 0.993$ ,  $df: 289$ ,  $p$ -value: 0.175. Since the  $p$ -value is greater than 0.05, the modified Warwick-Edinburgh mental health well-being test scores are normally distributed.

**Table 2. Chi-squares test showing the association between the need for support from academic staff and COMS student worry regarding finances**

	Worry regarding finances	NO worry regarding finances	Totals
<b>Students who indicated the need for more student support from Academic staff.</b>			
Yes	117 (40.5%)	60 (20.8%)	177 (61.3%)
No	54 (18.7%)	58 (20.1%)	112(38.8%)
<b>Totals</b>	171 (59.2%)	118 (40.9%)	289 (100%)

**Table 3. Odds ratio displaying the association between worry about finances and the need for support from Academic staff**

Students who indicated the need for more student support from Academic staff,	Outcome		
	Worry regarding finances	No Worry regarding finances	Total
Yes	117	60	177
No	54	58	112
Total	171	118	289

Odds ratio: 2.0944 95 % CI:1.2909 to 3.3983 z statistic:2.994 Significance level P = 0.0028

**Table 4. Chi-squares test showing the association between Sleep disturbance and interference of listed worries**

	Interference of listed worries with daily living and university activities	NO Interference of listed worries with daily living and university activities	Totals
<b>Sleep disturbance category</b>			
Sleep disturbance	98 (33.9%)	41 (14.2%)	139 (48.1%)
Normal sleep	66 (22.8%)	84 (29.1%)	150 (51.9)
<b>Totals</b>	164 (56.7%)	125 (43.3%)	289 (100%)

Note: Therefore, there is a significant association between student sleep disturbance and listed worries among College of Medical Science students. ( $X^2 = 20.647$ ,  $df=1$ ,  $p < 0.001$ ).

**Table 5. Odds ratio displaying the association between Interference with Daily Living Activities and University Studies due to listed worries and sleep disturbance**

Sleep Disturbance	Outcome		
	Interference of listed worries with daily living and university activities	No Interference of listed worries with daily living and university activities	Total
Yes	98	41	139
No	66	84	150
Total	164	125	289

Note: Odds ratio: 3.0421 95 % CI: 1.8699 to 4.9492 Z statistic: 4.481 Significance level P < 0.0001

**Table 6. Independent sample t-test showing the difference between the mean scores on the Warwick-Edinburgh Mental Well-Being test for those who worry about university studies and those who did not**

Group:	Mean Warwick- Edinburgh mental health well-being scores	t-Value	P value	Confidence interval (CI)
Worry about University Studies				
Yes	25.65 +/- 5.657	5.676 df=287	<0.001	6.35- 3.082
No	30.36+/- 5.47			
Effect Size Cohen's d	d = 0.839 for this difference the effect size is large.			

**Independent Samples T-test:** The mean score for students who worried about university studies had lower Warwick Edinburgh scores which indicates poorer mental health  $M=25.65$ ,  $SD=5.657$ . The mean score for students who noted no worry about university studies and studies and had higher Warwick Edinburgh mental health scores which indicated better mental health were  $M=30.36$ ,  $SD=5.47$ . The "T-test revealed a significant difference between the two groups  $t(5.676)$ ,  $df=287$ ,  $p<0.001$ ." The effect size for the difference was large ( $d=0.839$ ). The 95% confidence interval for the difference in the means ranged from 3.082 to 6.35. Table 6: Independent sample t-test showing the difference between the mean scores on the Warwick-Edinburgh Mental Well-Being test for those who worry about university studies and those who did not.

## DISCUSSION

The results of this study shed light on the prevalence and impact of psychological distress among students in the College of Medical Sciences (CMS).

Across the studies reviewed, psychological distress emerges as a prevalent issue among CMS students, with high rates of stress, anxiety, depression, and overall psychological distress reported. Studies by Sherina *et al.* (1), Abdulghani *et al.* (2), Chen *et al.* (3), and Sahu *et al.* (4), consistently highlight the significant burden of psychological distress experienced by medical students, underscoring the urgent need for targeted interventions to support student well-being(1–4). Additionally, studies like Nerdrum *et al.* (14), Khaksarian *et al.*(13), and Franzen *et al.* (6) delved into other programs for health science and/ or allied health students and compared notable domains like financial burdens, sleep disturbance and psychological stressors like delved into other programs for health science and/ or allied health students and compared notable domains like financial burdens, sleep disturbance and psychological stressors like academic pressure and program satisfaction on student mental health. Firstly, the findings (Table 1) highlight the prevalence of various worries among CMS students, including concerns about finances, emotional well-being and mental health, social life, university studies, discrimination, and interference with daily living or studies.

These worries reflect the multifaceted nature of the stressors experienced by students in the medical field(2,4,14,16) By analyzing various statistical values, significant associations between different worries and their consequences on students' mental well-being were discovered. However, studies done by Sherina *et al.* (1) and Abdulghani *et al.* (2)revealed several factors which have been identified as significant correlates of psychological distress among health science students. Gender, year of study, program duration, and college affiliation have emerged as key predictors of distress, with female students, first-year students, and those enrolled in longer programs demonstrating higher levels of stress, anxiety, and depression (1,2). The study also revealed a noteworthy association between the need for support from academic staff and students' worry regarding finances.

The Chi-squared test (Table 2) indicated a significant association ( $X^2 = 9.085$ ,  $df=1$ ,  $p < 0.003$ ), emphasizing the importance of academic support systems in addressing financial concerns among CMS students (7,8). In Ethiopia(17), social support emerged as a significant determinant of mental distress in students (AOR = 5.28; 95% CI: 2.176–12.835). The presence of a low level of social support from significant others was positively linked to mental distress. Specifically, the odds of students experiencing mental distress were 5.3 times higher among those with low social support compared to their counterparts with robust social support. This trend is also in keeping with a similar study in Norway by Nerdrum *et al.* (14). Moreover, the odds ratio displayed in Table 3 further elucidates this association, showing that students who worry about finances are approximately two times more likely to need support from academic staff compared to their counterparts (OR: 2.0944, 95% CI: 1.2909 to 3.3983,  $z$  statistic: 2.994,  $p = 0.0028$ )(9–11). Nerdrum *et al.* (14) also cited faculty observations that posited financial constraints as being one of the burdens related to nursing students. The findings underscore the importance of implementing evidence-based interventions to support the mental health and well-being of CMS students.

Targeted support mechanisms, such as peer mentoring programs, counseling services, and financial assistance programs, may help alleviate stress and provide students with the resources they need to cope effectively with academic and personal challenges (2–4). Additionally, the research identified a significant association between sleep disturbance and listed worries among CMS students. The Chi-squared test (Table 4) indicated a significant association between sleep disturbance and interference of worries ( $X^2 = 20.647$ ,  $df=1$ ,  $p < 0.001$ ), highlighting the detrimental impact of worries on students' sleep quality and overall well-being. Furthermore, Table 5 presents the odds ratio displaying the association between interference with daily living activities and university studies due to listed worries and sleep disturbance. The results indicate that students who reported interference with daily living activities and university studies due to worries were three times more likely to experience sleep disturbance than their counterparts (OR: 3.0421, 95% CI: 1.8699 to 4.9492,  $Z$  statistic: 4.481,  $p < 0.0001$ ). Similarly, a thorough systematic review and meta-analysis conducted in Iran(13) revealed that sleep disturbances, particularly among medical and healthcare professions students, adversely affect their academic performance, disrupt social relationships, diminish quality of life, and elevate the risk of mental illnesses such as depression and anxiety(7,10,11). This discovery aligns with similar findings in Norway(14), particularly among nursing students. In

the United States, attending the first and third years was linked to higher rates of sleep-related issues compared to the second- and fourth-years Ayala *et al* as cited in Khaksarian *et al* (13). However, this observation was specific to medical students, similar findings were with high reported rates of sleep-related disorders in nursing students in Iran (13) when compared to paramedical students. Moreover, the study utilized an independent sample t-test to compare the mean scores on the Warwick-Edinburgh Mental Well-Being Scale between students who worried about university studies and those who did not. The results revealed a significant difference between the two groups  $t(5.676)$ ,  $df=287$ ,  $p < 0.001$ , indicating that students who worried about university studies had significantly lower mental well-being scores compared to their counterparts indicating poorer mental health and psychological distress (11,16).

Othman *et al* (12)found that the main stressor was related to academia, which is consistent with our findings. Academic demands like examinations(12,14), high content loads, and time constraints bear heavily on student stress levels Aktekin *et al* as cited in Othman *et al*(12). However, it should be noted that the stress levels or severity may differ in significantly different ways depending on the study location Kaufman, Day, Mensink, as cited in Othman *et al* (12). In conclusion, the study underscores the urgent need for targeted interventions to address psychological distress and alleviate worries among COMS students. By identifying key associations and consequences of worries on students' mental well-being, policymakers and educators can implement effective support mechanisms to promote student resilience and enhance overall well-being within the College of Medical Sciences.

## RECOMMENDATIONS

Student mental health and worries represent intricate constructs influenced by a multitude of factors, including socioeconomic status, academic pressure, family dynamics, and cultural background (1,2,7,8). Collaborating with pertinent stakeholders such as educators, mental health professionals, students, and policymakers is crucial for addressing students' academic support needs and enhancing their awareness of available guidance and counseling services within university facilities (7,9). Upon reporting the study's findings to relevant bodies and the university administration, it is imperative to utilize these insights for instituting policy changes aimed at enhancing the current mental health landscape of the college. Moreover, the research findings can serve to bolster mental health literacy among students, educators, parents, and the broader community, encompassing efforts to raise awareness, combat stigma, and provide resources for managing mental health concerns and worries effectively (1,2,4,10). The annual medical outreach fair hosted by the college presents an opportune platform for initiating such endeavors. However, it's vital to acknowledge the study's limitations, particularly its lack of longitudinal perspective, which underscores the need for further research to ensure that implemented measures yield tangible improvements in the college's mental health situation (11) This study advocates for subsequent research endeavors to replicate findings, delve into causal relationships, and address any remaining gaps in understanding the association between student mental health and worries (16).

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