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SEX AS A PREDICTOR OF PSYCHOLOGICAL DISTRESS AMONG COLLEGE OF MEDICAL SCIENCE STUDENTS, UNIVERSITY OF GUYANA

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ABSTRACT

Objectives: To explore the relationship between sex, psychological distress and disturbance of daily living activities of College of Medical Science students at the University of Guyana.
Designs & Methods: The study was cross-sectional and utilised convenience sampling to select participants who provided consent before answering a questionnaire. The study used a modified Warwick-Edinburgh Mental Well-Being Scale to evaluate students' well-being, mental health, concerns, medication usage, and coping strategies.
Results: The study showed that there is a significant association between mental- health status based on Warwick-Edinburgh Mental wellbeing groups and the sex of students. (X^2 = 11.782, df =1, p< 0.001). An odds ratio showed that females in the health science faculty were three (9) times more likely to experience psychological distress than male students (OR: 9.2488 95 %, CI:5.2587 to 16.2665, Z statistic 7.722, Significance level P < 0.0001). A Shapiro-Wilk's test assessed normality of the population from which the modified Warwick-Edinburgh mental-health well-being scores were taken - Test statistic W= 0.993, df: 289, p-value: 0.175; test scores were normally distributed. The "T-test revealed a significant difference between the mean scores for psychological distress for each sex, t (3.331), df = 287, p<0.001." The effect size for the difference was small to medium (d=0.464).
Conclusion: These findings underscore the urgency of gender-sensitive mental-health interventions and support systems, especially within academics.

INTRODUCTION

The impact of gender on mental health is a pivotal yet understudied aspect among health science students. University experience triggers a shift in lifestyle behaviours and mental health challenges (Owens et al., 2017). The investigation of student mental health is crucial for comprehending the intricate relationship between psychological distress and overall well-being within the educational sector. Research by Ghrouz et al. (2019) Highlights the relevance of gender in mental health, emphasising cultural and social factors Moreover, critiques by Beauchemin et al. (2018) highlight the limitations of the traditional Western medical model, which focuses predominantly on acute disease treatment and lacks a comprehensive approach to promoting wellness and preventing chronic illness. Wellness is a multi-dimensional concept aimed at optimising an individual's health potential, as outlined by scholars like Dunn (1961) and further

Evidence suggests that university students are particularly prone to precursors of chronic health issues like obesity and elevated cholesterol, compounded by lifestyle challenges such as poor diets and insufficient physical activity (Sacheck et al., 2010). Therefore, exploring the intersection of sex and mental health among health science students encompasses a complex interplay of influences by various factors. In regions like Ethiopia, the prevalence of mental distress—which includes symptoms of anxiety, depression, and somatic issues—reflects a substantial part of the country's disease burden (Bedaso et al., 2020). The vulnerability of university students to higher levels of psychological distress is evident globally, exacerbated by academic pressures, financial concerns, and uncertainties about the future. Research shows that the general population in Western societies experiences a significant level of psychological distress, with about 20% facing clinically significant burdens. However, this rate is even higher among students, particularly those in health-related disciplines (Nerdrum et al., 2009). This susceptibility is pronounced in health-related fields, like nursing, with persons experiencing significantly higher stress, anxiety, and

depression compared to their peers in other disciplines (Franzen *et al.,* 2021). Additionally, medical students face tremendous pressure to assimilate vast amounts of knowledge and skills, often sacrificing personal and social aspects of their lives to achieve academic success in a highly competitive environment (Sherina & Rampal, 2004). This intense stress can lead to severe mental health issues, including depression and anxiety. Therefore, a more holistic approach to student mental health may be necessary, one that addresses both psychological distress and well-being and considers the various stressors students face, including academic burdens and competitive pressures. Gender differences also influence the prevalence and impact of these stressors, with female students often reporting higher levels of stress and anxiety, underscoring the need for gender-sensitive mental health interventions (Franzen et al., 2021). Pancer et al. (2000) also highlighted the importance of recognising gender-specific challenges in academic settings, setting the stage for understanding unique aspects of mental health among health science students.

The university environment demands a comprehensive approach to student well-being—encompassing physical, social, emotional, spiritual, and psychological aspects—that many students find challenging to maintain. Dyrbye et al. 2005 and Othman et al. 2013 highlighted that students facing psychological issues such as depression, stress, and anxiety are less likely to perform well academically or otherwise. Additionally, many of those who seek mental health services report that their psychological conditions hinder their academic performance (Dyrbye et al., 2005). This aligns with the broader literature on mental health in university contexts, emphasising its impact on academic performance and student retention (Calicchia & Graham, 2006; Beauchemin et al., 2018; Bruffaerts et al., 2018). Exploring sex-specific patterns becomes crucial, considering the interconnected nature of mental health and the demands of university life (Pilcher et al.,1997). Understanding these dynamics is imperative for tailoring interventions and support systems to the unique needs of health science students at the University of Guyana. These investigations could provide a basis for universities to proactively enhance the psychological well-being of their students, particularly those in high-stress programs like health science training. Such efforts are vital not only for students' success but also for their overall health and future career paths. This research aims to enhance the existing body of knowledge by focusing specifically on the University of Guyana, College of Medical Sciences. It explores the intricate relationship between sex and mental health within the field of health science education. By centring on this unique academic environment, the study provides tailored insights into the mental health dynamics at the University of Guyana, effectively addressing a significant gap in the current literature.

METHODS

Study Design: This was cross-sectional and aimed to investigate the relationship between sex, psychological distress and its effect on daily living activities of College of Medical Science students at the University of Guyana. Questionnaires were digitally distributed using Google Forms throughout the faculty of health science.

Data Collection: The research team used convenience sampling to select participants who provided consent before answering a questionnaire. Under Guyana's laws, all participating students were legally eligible, above 18 years old. Demographic data collection included age, urban or rural residence and sex. The study used a modified Warwick-Edinburgh Mental Well-Being Scale (Tennant et al., 2007) to evaluate students' well-being, mental health, concerns, medication usage, and coping strategies. A pilot test of the questionnaire involving 30 students was conducted from October 6th to 17th, 2023. This was followed by reliability testing using Cronbach alpha via IBM SPSS software version 29, which was 0.866. After the reliability assessment, modifications were made to tailor the questionnaire to the study sample. The updated questionnaire was administered from October 20th to November 8th, 2023.

Sample Size: Using Cochran's formula, a sample size of 265 persons was calculated. 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.

Data Sources: The information was collected using a Google Form distributed through the University of Guyana's DECC communication channel and was only accessible via the principal researchers. Following required approvals, students received links to the form and provided consent for collecting their data. According to Guyana's laws, all participants were over 18 years old and legally permitted to consent.

Data Analysis and Statistical tests: The modified Warwick-Edinburgh Mental Well-Being Scale (Tennant et al., 2007) 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 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 explored associations between the sex and the Warwick-Edinburgh Mental Well-Being Scale category. A Shapiro-Wilk test checked the normal distribution of the Warwick-Edinburgh Mental Well-Being Scale scores. Subsequently, an independent samples T-test determined if there was a significant difference in mean scores between males and females experiencing psychological distress. Finally, an Odds ratio was calculated to ascertain which sex had a higher likelihood of psychological distress. All statistical tests were performed with 95% confidence intervals and a significance level of $p < 0.05$.

RESULTS

There was a significant association between mental health status based on Warwick-Edinburgh Mental Wellbeing Groups (Table 1) and the sex of health science students ($X^2 = 11.782$, df=1, p< 0.001). Females in the College of Medical Science were nine (9) times more likely to experience psychological distress than male students (Table 2).
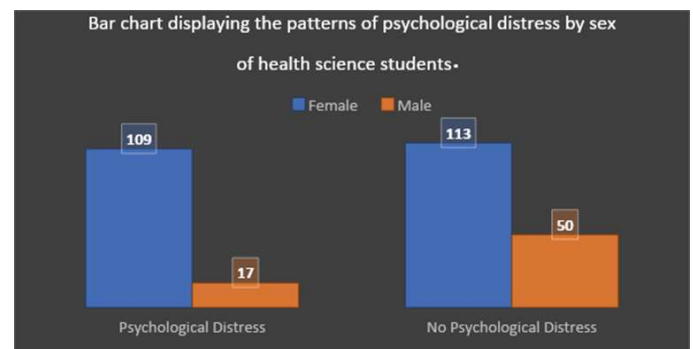
Figure 1: Sex Distribution of Students Experiencing Psychological Distress

A Shapiro-Wilk's test was also used to assess the normality of the modified Warwick-Edinburgh mental health well-being scores. 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-Edingburgh mental health well-being test scores are normally distributed.

Independent Samples T-test: The mean score for male students with psychological distress is M= 28.65, SD= 5.74. The mean score for female students with psychological distress is M=25.95, SD= 5.83. The "T-test revealed a significant difference between the two groups t (3.331), df= 287, p<0.001."

Table 1. Chi-squares test showing the association between sex and psychological distress

	Psychological distress	No Psychological distress	Totals
Sex			
Female	109(86.5%)	113(69%)	222(76.8%)
Male	17 (13.5)	50(31%)	67(23.2%)
Totals	126(100%)	163(100%)	289(100%)

Table 2. Odds ratio displaying the association between sex and psychological distress

	Outcome		
Sex	Psychological Distress	No Psychological Distress	Total
Female	109	113	222
Male	17	50	67
Total	126	163	289

Odds ratio: 9.2488 95 % CI:5.2587 to 16.2665, Z statistic 7.722 Significance level P < 0.0001

Table 3. Independent sample t-test showing the difference between the mean scores on the Warwick-Edinburgh Mental Well-Being Scale by sex

Groups	Mean	t-Value	P value	Confidence interval (CI)
Female	25.95 +/- 5.83	3.331	<0.001	4.2-1.1
Male	28.65+/- 5.74	df=287		
Effect Size Cohen's d	d = 0.464 for this difference, the effect size is small to medium			

The effect size for the difference was small to medium (d=0.464). The 95% confidence interval for the mean difference ranged from 1.1 to 4.2 (Table 3).

DISCUSSION

The statistically significant association between mental health status, as determined by the Warwick-Edinburgh Mental Wellbeing Scale, and the sex of health science students echoes existing literature on gender disparities in psychological well-being (Table 1). Similar findings are echoed in the research conducted by Owens et al. (2017) and Ghrouz *et al*. (2019), which also found significant associations between mental health status and gender among health science students, demonstrating a similar magnitude of gender disparity. This repeated observation underscores a potential systemic issue within the health sciences' academic environments that disproportionately affects female students. The calculated odds ratio of 9.2488, with a 95% confidence interval ranging from 5.2587 to 16.2665, underscores the substantial impact of sex on mental health outcomes (Table 2). This aligns with previous research emphasising the vulnerability of females to psychological distress (Beauchemin *et al*., 2018). The odds ratio indicates that females in the health science faculty are nine times more likely to experience psychological distress compared to their male counterparts. These findings align with the broader patterns observed in the study by Franzen *et al*. (2021) where psychological well-being varied significantly across different demographic parameters, including gender and age, among a diverse student body at the School of Health Sciences, Geneva.

This study also identified academic satisfaction as a potent predictor of mental health outcomes, indicating that elements of the academic environment significantly impact student well-being. In contrast, Sherina & Rampal, (2004) delved deeper into the prevalence of psychological stress among medical students, identifying high rates of stress symptoms. Although their findings highlight significant stress and its association with depressive symptoms among students, significant differences based on gender were not observed, which contrasts this study's results where gender was a significant factor. Chen *et al*. (2022) conducted a detailed analysis of psychological distress among a large cohort of nursing students. Their study examined various dimensions of mental health, including depression, anxiety, self-harm, impulsivity, and psychiatric disturbances. They reported that certain demographic factors such as age, sex, program duration, and college affiliation significantly influenced these mental health dimensions. Interestingly, their findings suggested that older students had a lower risk for most psychological distress dimensions, and females exhibited less impulsivity.

However, Chin *et al*. (2022) focused specifically on medical students, whereas this study included a broader range of health science disciplines. Differences in the student population, such as their academic demands, stress levels, and exposure to clinical environments, could influence mental health outcomes differently across genders. The z statistic of 7.722, coupled with a significance level of p < 0.0001, further describes the relation of the odds ratio statistic to the mean scores for mental health wellbeing. This further denotes the strength of the association between mental health and sex among health science students. This statistical significance aligns with studies exploring gender-specific mental health challenges in academic settings, as discussed by Pancer et al. 2000 and Nagata et al. 2019. Conversely, Bruffaerts *et al*. (2018) provide a broader examination of mental health issues among first-year university students without explicitly focusing on gender differences. However, their findings that mental health issues lead to academic underperformance suggest potential gender-related impacts, as existing literature often reports higher rates of internalising disorders such as anxiety and depression among female students, which could influence academic outcomes. Moreover, the observed ninefold higher likelihood of females experiencing psychological distress compared to male students corresponds with broader discussions on gender disparities in mental health within university contexts (Bruffaerts *et al*., 2018). Additionally, Rajapuram *et al*., (2020) provided a broader survey-based analysis from a large cohort of medical students across various geographical locations, including the US and the Caribbean. Their results illustrate a widespread issue of severe distress among medical students, with more than half of the respondents reporting severe distress levels. Their study found that non-male genders were associated with severe distress. Additionally, this study's findings of a significant difference in mean scores on the Warwick-Edinburgh Mental Wellbeing Scale between males and females strengthen the argument for recognising and addressing the unique mental health needs of each gender (Table 3). It is imperative to note that Cohen's d value, which indicates a small to medium effect size between the mean scores of each group, indicates a need to assess and quantify variables that can account for this finding.

CONCLUSION

In conclusion, our study reinforces the existing body of evidence, providing quantitative support for the substantial association between mental health status and the sex of health science students. The findings in this study emphasise that female students in the College of Medical Science, University of Guyana, are significantly more likely to experience psychological distress compared to their male counterparts. These findings underscore the urgency of gender-sensitive mental health interventions and support systems, especially

within the academic realm. These systems must not only address immediate academic pressures but also consider broader psychological and environmental factors contributing to mental health disparities. Health science programs should prioritise adequately preparing students for their future roles as healthcare professionals. Such strategies are vital for fostering an academic environment that supports the success and well-being of all students, irrespective of gender.

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