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DEPRESSION, ANXIETY, AND STRESS AMONG ALLIED HEALTH SCIENCES UNDERGRADUATES: A CROSS-SECTIONAL STUDY AT A DEFENCE UNIVERSITY IN SRI LANKA

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ABSTRACT

The mental health of university undergraduates is a critical concern globally, with challenges faced by students in unique academic environments. This study was conducted at General Sir John Kotelawala Defence University to assess the prevalence of mental health issues and identify associations with participant characteristics. A descriptive cross-sectional study involving 640 allied health sciences undergraduates was performed. The Depression, Anxiety, and Stress Scale-21 Items (DASS-21) was utilized for evaluation. Statistical analysis was performed with SPSS 23.0, and associations were explored using Spearman's correlation and Pearson's chi-square tests. Ethical approval was obtained, ensuring participant confidentiality and informed consent. The study revealed mild to extremely severe symptoms of depression (35.1%), anxiety (40.5%), and stress (27.7%) among the participants. Strong positive relationships were identified between depression and anxiety (r=0.707, p=.000), depression and stress (r=0.722, p=.000), and anxiety and stress (r=0.658, p=.000). Significant associations were found between mental health levels and participants currently receiving medical treatments and those with a history of psychological treatments. While one-third of the participants exhibited concerning levels of mental health symptoms, our study indicated comparatively lower rates than did previous research in Sri Lanka. The findings highlight the need to enhance mental health support and accessibility of services for university undergraduates. The study contributes valuable insights for future research and interventions, emphasizing the unique challenges faced by students in a defence university setting.

KEYWORDS: *Depression, Anxiety, Stress, Undergraduates, Sri Lanka*

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1. INTRODUCTION

University life marks a critical phase marked by significant lifestyle changes, new social dynamics, and potential stressors for undergraduates (Sravani et al., 2018). The challenges are intensified for those living away from home for the first time, who often lack effective coping mechanisms (Freire et al., 2020), leading to a high prevalence of mental health issues such as depression, anxiety, and stress during this transitional period (Kerebih et al., 2017; Ramón-Arbués et al., 2020). Globally, 12–50% of college students reportedly present at least one diagnostic criterion for such mental disorders (Bruffaerts et al., 2018).

Depression among undergraduate students is a significant concern that impacts their well-being and academic performance (Deng et al., 2022). Factors such as family stress, academic stress, and the transition from high school to university can contribute to depression among students, affecting their academic performance (Deng et al., 2022; Nurmina et al., 2021). Previous studies conducted in Sri Lanka have indicated a high prevalence of depressive symptoms among Sri Lankan undergraduates (Amarasuriya et al., 2015; Dahanayake et al., 2021; De Zoysa et al., 2022). A recent study conducted at the University of Jaffna, Sri Lanka, reported that a major depressive disorder was experienced by 31% of university students, 70% of whom reported some form of depression ranging from mild to severe (Wickramasinghe et al., 2023). Studies have also highlighted the high prevalence of depression among specific groups of undergraduate students, such as those in medical (Asra et al., 2022), nursing (Rosenthal et al., 2021), physiotherapy (Yakasai et al., 2022), pharmacy (Shangraw et al., 2021) and dental (Freitas et al., 2022) schools. Furthermore, research indicates that undergraduates may experience similar levels of depression as graduate students but are less likely to seek mental health services (Cooper et al., 2020).

Research indicates that a considerable portion of undergraduate students struggle with anxiety, with nursing students frequently encountering elevated levels of anxiety compared to their counterparts in other academic disciplines. (Walker, 2022). Additionally, there is an observed negative relationship between anxiety and academic performance, with higher anxiety levels correlating with lower grade point averages (GPAs)(Choudhury, 2022). A study among nursing undergraduates at the University of Peradeniya, Sri Lanka, revealed that 59.8% of the population had moderate to extremely severe levels of anxiety (Rathnayake and Ekanayaka, 2016).

Stress is a common issue among undergraduate students, affecting their academic performance and overall well-being. Various studies have identified key stressors and the impact of stress on undergraduates. Common stressors include the transition to university, academic pressure, lack of sleep, personal relationships, and poor coping skills (Ebenezer. C et al., 2020; Garett et al., 2017). The consequences of stress for students are significant, with adverse effects on their college experience and academic achievement (Morey and Taylor, 2019). Stress levels can vary among different student groups, with first-year students often facing substantial stress due to the challenges associated with change and increased responsibilities (Owusu, 2021). As revealed by a previous Sri Lankan epidemiological study, 39.8% of undergraduates are victims of stress (Kuruppuarachchi et al., 2014).

Recent literature has highlighted a significant prevalence of depression, anxiety, and stress among allied health sciences undergraduates, and those studies have consistently demonstrated that students in this field are at a greater risk for mental health issues than the general population is (Awotidebe et al., 2022; Nahas et al., 2019; Ramón-Arbués et al., 2020). Furthermore, existing studies in Sri Lanka have focused on allied health undergraduates, revealing a high prevalence and positive correlations between these mental health variables (Ilankoon and Warnakulasooriya, 2014; Rathnayake and Ekanayaka, 2016).

Despite ample research on assessing depression, anxiety, and stress among Allied Health Science undergraduates globally, few studies have been conducted in Sri Lanka, especially in the context of a defence university. General Sir John Kotelawala Defence University (KDU), which is distinct in its military setting, emphasizes discipline, commitment to service, and academic excellence. This study aimed to address this gap in the literature by assessing depression, anxiety, and stress levels among undergraduates of the Faculty of Allied Health Sciences (FAHS), KDU. Additionally, the findings from this study may inform university policies regarding mental health support for students and contribute to broader university and national policies aimed at addressing mental health issues among undergraduates.

Research Questions:

1. What are the prevalence rates of depression, anxiety, and stress among allied health sciences undergraduates at the FAHS, KDU?
2. How do demographic factors such as gender, academic year, and degree course relate to levels of depression, anxiety, and stress among allied health sciences undergraduates at the FAHS, KDU?
3. Are there significant correlations between depression, anxiety, and stress levels among allied health sciences undergraduates at the FAHS, KDU?

2. METHODOLOGY

Study Design and Participants

A descriptive cross-sectional study was conducted at the FAHS, KDU, Sri Lanka. The study included all allied health sciences undergraduates (n=640) at FAHS, representing diverse disciplines such as nursing and midwifery, physiotherapy, medical laboratory sciences (MLS), pharmacy, radiotherapy, and radiography.

Data collection

Data collection took place in the middle of the semester (from March to April 2020) to ensure a consistent academic environment for all participants. This study utilized the self-reported (0-3), 21-item Depression, Anxiety, and Stress Scale (DASS-21) for measuring negative emotional states. The DASS-21, which has been validated in Sri Lanka, has reported scores of 0.83, 0.76 and 0.80 for depression, anxiety and stress, respectively (Rekha, 2012). The severity of depression, anxiety, and stress (mild, moderate, severe, or extremely severe) of the participants was measured according to the cut-offs given on the scale (Table 1). Participant characteristics, including sex, academic year, degree course, current medical treatments, and history of psychological treatments, were also collected.

Table 1 Cut-off values for depression, anxiety, and stress according to the DASS-21

Severity levels	Depression	Anxiety	Stress
Normal	0-9	0-7	0-14
Mild	10-13	8-9	15-18
Moderate	14-20	10-14	19-25
Severe	21-27	15-19	26-33
Extremely severe	28+	20+	34+

Statistical analysis

The data were analysed using SPSS version 23.0. Descriptive statistics were employed to summarize participant characteristics. The Shapiro–Wilk test confirmed that the distributions of depression, anxiety, and stress scores were not normal ($p<0.005$). Therefore, Spearman's correlation test was used to examine relationships between depression, anxiety, and stress. Pearson's chi-square test was used to explore associations between categorical variables (e.g., gender, academic year, degree course) and mental health levels. The significance level was set at < 0.05.

Ethical Consideration

The study received ethical approval from the Ethics Review Committee (RP/S/2020/15), Faculty of Medicine, KDU, Sri Lanka. Institutional approval was obtained from the Vice-Chancellor, KDU, and the Dean, FAHS, KDU. Informed consent was obtained online from participants, who emphasized voluntary participation and the right to withdraw at any time.

3. RESULTS

Participant Characteristics

Of the total population of 679 undergraduates, 640 (94.25%) responded to the study. Most of the participants were females (75.8%) or were Sinhalese (94.4%). Nursing undergraduates constituted the majority (24.2%) (Table 2).

Table 2 Descriptive statistics for participant characteristics (n = 640)

Demographic Characteristics		Frequency	Percentage %
Gender	Male	155	24.2
	Female	485	75.8
Ethnicity	Sinhala	604	94.4
	Tamil	19	3.0
	Muslim	15	2.3
	Burgher	02	0.3
Academic Year	First-year	162	25.3
	Second year	155	24.2
	Third year	153	23.9
	Fourth year	170	26.6
Degree course	Nursing	156	24.2
	Physiotherapy	141	22.0
	MLS	128	20.0
	Pharmacy	113	17.7
	Radiography	60	9.4
	Radiotherapy	43	6.7

Study Measurements

The mean scores for depression, anxiety, and stress were 8.11±7.857, 6.93±6.764, and 11.45±8.199, respectively. Mild to extremely severe symptoms were observed in 35.1% of participants with depression, 40.5% with anxiety, and 27.7% with stress (Table 3).

Table 3 Distribution of depression, anxiety, and stress levels among the respondents

Category	Subcategory	Frequency	%	Mean ±SD
Depression	No Depression	416	64.9%	3.47±2.88
	Mild	105	16.4%	11.79±1.73
	Moderate	76	11.9%	17.21±2.92
	Severe	26	4.1%	24.23±2.36
	Extremely severe	17	2.7%	33.76±4.24
Anxiety	No Anxiety	381	59.5%	2.43±2.21
	Mild	58	9.1%	8.10±0.58
	Moderate	132	20.6%	11.95±1.66
	Severe	30	4.7%	16.60±0.93
	Extremely severe	39	6.1%	24.67±4.48
Stress	No stress	463	72.3%	7.51±4.79
	Mild	70	10.9%	16.71±0.97
	Moderate	63	9.8%	21.40±1.89
	Severe	34	5.3%	28.06±2.29
	Extremely severe	10	1.6%	38.00±3.40

Relationships among Depression, Anxiety, and Stress

A significant strong positive relationship was identified between depression and anxiety (r=0.707, p=.000), depression and stress (r=0.722, p=.000), and anxiety and stress (r=0.658, p=.000).

Table 4: Relationships between Depression, Anxiety, and Stress

Relationship	Correlation Coefficient	p value
Depression and Anxiety	0.707	0.000
Depression and Stress	0.722	0.000
Anxiety and Stress	0.658	0.000

Associations of participant characteristics

A statistically significant association was found

between depression level and Degree course (G2=34.328, p=0.023). Participants currently receiving medical treatment showed statistically significant associations with depression (p=0.002), anxiety (p=0.000), and stress (p=0.002). A history of psychological treatment was significantly associated with anxiety (p=0.009) and stress (p=0.040) (Table 5).

Table 5 Associations of participant characteristics with depression, anxiety, and stress

Characteristic	Category	Frequency	p value		
			Depression	Anxiety	Stress
Gender	Male Female	155 485	0.151	0.733	0.649
Academic year	First Year Second Year Third Year Fourth Year	162 155 153 170	0.779	0.077	0.967
Degree course	Nursing Physiotherapy MLS Pharmacy Radiography Radiotherapy	156 141 128 113 60 43	0.023*	0.367	0.384
Currently under Medical treatments	Yes No	67 573	0.002*	0.000*	0.002*
History of psychological treatments	Yes No	71 569	0.152	0.009*	0.040*

* At a significance level of 0.05

4. DISCUSSION

The findings of this study elaborate on the prevalence of depression, anxiety, and stress among undergraduates in a defence university in Sri Lanka. In interpreting these results, it is crucial to contextualize them in the broader landscape of mental health research among university students.

a) Prevalence of Mental Health Symptoms

The observed prevalence of mild to extremely severe symptoms of depression (35.1%), anxiety (40.5%), and stress (27.7%) among allied health sciences undergraduates at the General Sir John Kotelawala Defence University (KDU) raises important questions. Similarly, a study conducted in Vietnam (Pham et al., 2019) highlighted a 36.4% prevalence of depression among health sciences students. Additionally, Mahotra et al., 2021 reported notable levels of depression, anxiety, and stress among health science students in Nepal, with rates of 43%, 33%, and 29%, respectively. Although the rates from the current study are concerning, as with research conducted globally, they appear to be lower than those reported in previous studies conducted among similar populations in Sri Lanka (Ilankoon and Warnakulasooriya, 2014; Rathnayake and Ekanayaka, 2016; Wickramasinghe et al., 2023). This difference may be attributed to recent reforms in nursing education in Sri Lanka, including enhanced graduate education, curriculum evolution, and improved healthcare facilities (Jayasekara and Amarasekara, 2015; Kumara and Sudusinghe, 2021). Furthermore, the distinct academic and administrative environment of a defence university could contribute to this variation. However, further research is warranted to explore these differences comprehensively. Furthermore, it is crucial to acknowledge that challenges persist, demanding continued attention to students' mental well-being (Nair and Otaki, 2021).

b) Relationship between mental health symptoms

The identified strong positive relationships between depression and anxiety, depression, and stress, as well as between anxiety and stress (ranging from 0.658 to 0.722), underscore the interconnected nature of these mental health dimensions. This correlation suggests that undergraduates at FAHS - KDU are more likely to experience multiple symptoms simultaneously. This intricate relationship requires a

holistic approach to mental health interventions, recognizing the interdependence of depression, anxiety, and stress.

c) Associations with participant characteristics

The association between depression levels and disease severity reveals an intriguing finding. Variances in curricula and academic demands among different courses may contribute to diverse stressors, influencing mental health outcomes. Understanding these nuances is pivotal for tailoring support mechanisms for students in specific degree programs. The significant associations between participants currently receiving medical treatment and those with a history of psychological treatment highlight the impact of existing health conditions on mental health. This emphasizes the need for integrated healthcare models within educational institutions, ensuring that mental health support aligns with ongoing medical treatments (Lindsay et al., 2022).

d) Implications for mental health support

The identified mental health challenges among allied health sciences undergraduates underscore the imperative need for strong mental health support within the university environment. Frequent psychological assessments, accessible mental health services, and targeted interventions are essential components in fostering a supportive atmosphere. By proactively addressing mental health concerns, educational institutions can contribute to enhanced academic performance, personal development, and overall well-being (Pehlivan et al., 2020).

Limitations of the study

The study sample was restricted to FAHS, KDU, potentially limiting the generalizability of the results to other populations or institutions. Additionally, the use of self-report measures introduces the possibility of biases and inaccuracies. Future research should aim for larger, more diverse samples and consider incorporating multiple assessment techniques to enhance the robustness of the findings.

5. CONCLUSION

In conclusion, this study provides valuable insights into the mental health profile of allied health sciences undergraduates at FAHS, KDU. Although the prevalence of symptoms is noteworthy, the relatively lower rates than those reported in previous research in Sri Lanka suggest potential positive impacts from recent educational reforms. The findings emphasize the complex interplay between depression, anxiety, and stress, urging tailored interventions and continuous mental health support. Addressing mental health challenges among university students is paramount for cultivating a resilient and thriving academic community.

Author Contributions

DKJP, KS, VBJP, and SDHD were involved in project implementation, data collection, analysis, and preparation of the manuscript. CKWG and NFJF were involved in the conceptualization, design, project implementation, analysis, and correction of the draft.

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Competing Interests

The authors declare that they have no competing interests.

Data sharing statement

The datasets generated and analysed in the current study will not be shared publicly to preserve the privacy and confidentiality of the participants. However, the datasets from this study are available from the corresponding author upon reasonable request.

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