

Original Research Article

Relationship between sociodemographic characteristics and mental health outcomes among university students in Malaysia

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Abstract

Purpose: To investigate sociodemographic factors associated with mental health among undergraduate students from different faculties at a Malaysian public university.

Methods: A cross-sectional study was conducted among 1556 undergraduate students of 11 faculties of Universiti Sultan Zainal Abidin (UniSZA), Malaysia. The Depression, Anxiety and Stress Scale-21 (DASS-21) and the General Health Questionnaire-12 (GHQ-12) were used to measure mental health components in the population. The sample was stratified by faculty ratios, and Chi-square test, one-way analysis of variance (ANOVA), and multiple linear regression were used to compare differences.

Results: There was a significant association between faculty and depression, anxiety, and stress ($p < 0.001$). Female students had significantly higher anxiety compared to male students ($p < 0.05$). However, ethnicity was only associated with stress ($p < 0.05$) and age was negatively related to anxiety scores ($p < 0.05$).

Conclusion: Mental health problems among university students and associated sociodemographic factors vary across specific fields of study, gender and age. This indicates the need for department- or faculty-based mental health interventions and sociodemographic approaches.

Keywords: Anxiety, Depression, Mental health, Psychosocial factors, University student

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INTRODUCTION

Mental health refers to a condition of well-being in which individuals are able to manage everyday life stresses, recognise and utilize their abilities, perform work effectively and productively, and contribute meaningfully to society. It includes emotional, psychological, social well-being, cognitive functions and relationships with others [1]. The increasing prevalence of mental health disorders such as depression, anxiety, and

stress among university students has become a growing global concern [2]. These students undergo unique challenges during this transitional phase. The prevalence of mental disorders in the Malaysian adult population has also risen in recent decades, particularly for those aged 16 years and above, from 10.7 % in 1996 to 29.2 % in more recent studies [3,4]. University students face several challenges. Academic, social, and financial difficulties encountered during higher education, together

with uncertainties regarding future employment, may be intensified by the lifestyle changes associated with transition to adulthood. These challenges are often compounded by the need to adapt to independent living, particularly for individuals residing away from home for the first time [5-7].

It has been suggested that students in demanding programmes (in technical or professional majors) with low socioeconomic backgrounds may be at greater risk of psychological distress [8-10]. Technical and professional programmes are associated with higher workloads and performance expectations, which may exacerbate symptoms of anxiety and depression [9]. Mental health problems have an impact on students' emotional state, academic performance, motivation, and engagement [10]. Gender and ethnicity also contribute to mental health. Compared to men, women are more likely to report higher rates of anxiety and depressive symptoms, possibly due to differences in stress reactivity and social pressure [11,12].

Studies have identified ethnic differences in prevalence, which may be due to disparities in social support, perceived discrimination, or cultural attitudes towards mental health, and highlight the importance of culturally sensitive mental health policies and interventions for university students [11,12].

The present study investigated the mental health status of university students across different faculties and examined the influence of demographic factors such as gender and faculty on students' psychological well-being. The findings are necessary to develop appropriate mental health interventions for university students. Furthermore, this study will contribute to a better understanding of how individual and environmental factors affect student mental health, thereby informing institutional policies and strategies aimed at promoting psychological well-being among students.

METHODS

Study design

This was a cross-sectional study to investigate the mental health status of university students across different faculties of Universiti Sultan Zainal Abidin (UniSZA) and to examine the influence of demographic factors such as gender and faculty on students' psychological well-being. Data were collected using Google Forms online survey, and participation was voluntary.

Sampling

Stratified random sampling was used to ensure that respondents from each faculty were adequately represented. Stratified random sampling based on academic discipline was initially adopted, but faculty representation was adjusted based on response availability and willingness to participate. The minimum required sample size was calculated using the Raosoft sample size calculator and the formula for cross-sectional studies, yielding an estimated sample size between 313 and 338 students at a 95 % confidence level and 5 % margin of error.

Data were obtained from 1556 students from the Faculty of Bioresources and Food Industry (FBIM), Faculty of Social Sciences and Humanities (FSSG), Faculty of Informatics and Computing (FIK), Faculty of Islamic Contemporary Studies (FKI), Faculty of Pharmacy (FF), Faculty of Medicine (FP), Faculty of Law and International Relations (FUHA), Faculty of Health Sciences (FSK), Faculty of Language and Communication (FBK), Faculty of Business Management (FPP) and Faculty of Innovative Design and Technology (FRIT).

Participants

Inclusion criteria

Undergraduate students who consented to participate in the study.

Exclusion criteria

Undergraduate students who refused consent to participate, and postgraduate students.

Ethical consideration

The study was approved by the UniSZA Human Research Ethics Committee (UHREC; UniSZA/UHREC/2024/616) prior to data collection. Informed consent was obtained electronically after the study purpose, procedure, and confidentiality were explained. A pilot study was conducted with 10 students to assess the feasibility and clarity of the questionnaire prior to commencement.

Data collection instrument

Section I of the questionnaire comprised demographic data (age, gender, faculty, ethnicity). Section II of the questionnaire focused on the Depression, Anxiety, and Stress Scale-21 (DASS-21), a 21-item self-report questionnaire that employs a 4-point Likert scale to measure

depression, anxiety and stress levels [13]. Section III used the General Health Questionnaire-12 (GHQ-12), a self-administered questionnaire, to assess general psychological status with the same 4-point response scale [14].

Data collection

Data were collected from March 18 to May 31, 2024, using a questionnaire disseminated via a self-administered Google Form on students' WhatsApp group and through email. It took about 15 min to complete the questionnaire. Only complete responses were used in the analysis.

Data analysis

Data were analysed using Statistical Package for the Social Sciences (SPSS, version 25.0; SPSS Inc., Chicago, Illinois, USA). Categorical data were presented in frequencies and percentages. Scale scores were presented using mean $\pm$ standard deviation (SD). To compare mental health outcomes by demographic levels, Chi-square tests for categorical variables were used and one-way analysis of variance (ANOVA) for continuous variables. Multiple linear regression analysis was used to determine demographic predictors of mental health scores. $P < 0.05$ was considered statistically significant.

RESULTS

Sociodemographic characteristics

A total of 1556 students participated in this study. The majority were female (854, 54.9%) and identified as Malay (1394, 89.6%). Participants were from 11 faculties, with the highest representation from the Faculty of Business Management 243 (15.6 %; Table 1).

Associations between mental health and demographic variables

Chi-square tests revealed that faculty was significantly associated with all three mental health domains (depression: $\chi^2 (22) = 379.11$, $p < 0.001$; stress: $\chi^2 (22) = 273.32$, $p < 0.001$; anxiety: $\chi^2 (22) = 164.55$, $p < 0.001$). Gender was only associated with anxiety ($\chi^2 (2) = 11.29$, $p = 0.004$) and ethnicity was only associated with stress ($\chi^2 (10) = 22.91$, $p = 0.011$).

Furthermore, participants of the Malay ethnic group reported significantly higher stress levels than other groups ($p < 0.05$). Females reported significantly higher anxiety levels compared to males ($p < 0.05$; Table 2).

Table 1: Sociodemographic characteristics (N = 1556)

Variable	Category	Frequency (N, %)
Gender	Male	702 (45.1)
	Female	854 (54.9)
Ethnicity	Malay	1,394 (89.6)
	Chinese	63 (4.0)
	Bugis	9 (0.6)
	Kenyah	22 (1.4)
	Indian	58 (3.7)
	Siam	10 (0.7)
Faculty	FPP	243 (15.6)
	FRIT	70 (4.5)
	FSK	171 (11.0)
	FBK	151 (9.7)
	FBIM	170 (10.9)
	FSSG	159 (10.2)
	FIK	113 (7.3)
	FKI	225 (14.5)
	FUHA	110 (7.1)
	FP	70 (4.5)
	FF	74 (4.8)

Faculty of Business Management (FPP) and the Faculty of Innovative Design and Technology (FRIT), Faculty of Health Sciences (FSK), Faculty of Language and Communication (FBK), Faculty of Bioresources and Food Industry (FBIM), Faculty of Social Sciences and Humanities (FSSG), Faculty of Informatics and Computing (FIK), Faculty of Islamic Contemporary Studies (FKI), Faculty of Law and International Relations (FUHA), Faculty of Medicine (FP) and the Faculty of Pharmacy (FF)

Table 2: Relationship between mental health outcomes and demographic variables

Mental health outcome	Demographic Variable	χ^2 (df)	P-value
Depression	Faculty	379.11 (22)	< 0.001*
	Gender	2.73 (2)	0.255
	Ethnicity	14.10 (10)	0.169
Stress	Faculty	273.32 (22)	< 0.001*
	Gender	5.48 (2)	0.064
	Ethnicity	22.91 (10)	0.011*
Anxiety	Faculty	164.55 (22)	< 0.001*
	Gender	11.29 (2)	0.004*
	Ethnicity	14.88 (10)	0.136

* $P < 0.05$

Comparison of mental health scores by demographic variables

Stress differed significantly across faculties ($p < 0.001$) only. However, stress did not differ significantly across gender and ethnicities ($p > 0.05$; Table 3).

Table 3: Comparison of the mental health scores by demographic variables

Demographic Variable	df (between)	df (within)	F	P-value
Faculty	21	1533	5.42	< 0.001
Gender	1	1533	2.36	0.124
Ethnicity	20	291	1.29	0.185

Table 4: Multiple linear regression predicting mental health scores

Outcome Variable	R ²	Adj. R ²	F (df=4)	P-value	Significant Predictors (Beta, $p < 0.05$)
Stress	0.044	0.031	3.50	0.008	Faculty of Pharmacy (FF; beta = -2.005) Age (beta = -0.310)
Anxiety	0.085	0.074	7.19	< 0.001	Ethnicity: Malay (beta = -0.705) Faculty of Pharmacy (FF; beta = -2.670)
Depression	0.059	0.047	4.81	0.001	Faculty of Pharmacy (FF; beta = -2.292)
GHQ	0.018	0.005	1.38	0.242	None

Note: In the dummy coding for categorical variables, the reference group for Faculty is the Faculty of Business Management (FPP)

Post hoc analysis

Bonferroni-adjusted post hoc comparisons showed that students from FF reported significantly lower stress compared to those from FSSG ($p < 0.05$). Students from FBK reported significantly higher stress compared to those from FKI and FF ($p < 0.05$). Similarly, students from FBIM reported higher stress compared to FF ($p < 0.05$). The difference between FRIT and FF was not significant ($p > 0.05$), while that between FRIT and FKI was highly significant ($p < 0.001$). Females reported higher stress levels compared to males ($p > 0.05$).

Predictors of mental health outcomes

Multiple linear regression analysis was used to determine demographic predictors of mental health scores. When compared to the reference group of FPP, being enrolled in the Faculty of Pharmacy (FF) was a significant negative predictor of stress (beta = -2.005, $p < 0.05$), anxiety (beta = -2.670, $p < 0.001$), and depression (beta = -2.292, $p < 0.001$). A negative correlation was found with age (beta = -0.310, $p < 0.05$), while identifying as Malay was a significant predictor of anxiety (beta = -0.705, $p < 0.001$). There was no significant association found using the GHQ model ($p > 0.05$; Table 4).

DISCUSSION

The current research compared university students' sociodemographic characteristics with psychosocial variables. The results revealed that students' faculty affiliation was significantly correlated with all mental health variables. Faculty was important in almost every area of mental health. Differences in student mental

health may be explained by psychosocial stressors unique to each program, academic burden, and access to support services. The results also indicated significantly lower stress levels among FF pharmacy students. In contrast, students from FBK and FBIM had higher stress levels. Similarly, health sciences students have consistently reported greater access to support and wellness resources [15].

Several studies reported that students in medicine, dentistry, and other health science fields (Mdn = 32.05 %, Range = 17.00-47.10 %) reported greater anxiety compared to students enrolled in other degree programmes (Mdn = 26.40 %, Range = 16.00 - 36.80 %) [16,17]. However, some studies have found higher anxiety levels in other disciplines [18-20]. Also, a previous study reported that female students had a higher level of anxiety than male students. This is consistent with the general trend of anxiety rates in female students, potentially due to gendered coping styles, social pressures or compounded stressors [21].

Students of Malay ethnicity reported more stress compared to other ethnicities, while no significant associations were found for depression and anxiety. This suggests that ethnicity may play a role in stress levels, potentially due to cultural factors or experiences [22], but further research is necessary to validate this finding. Age was negatively associated with anxiety, which may be due to transition and adjustment as well as younger students' lack of coping experience. However, a systematic review of the relationship between age and mental health reported mixed findings [23]. Those aged 21 and older, compared to 15 - 20 years, demonstrated fewer symptoms of depression, suicidal thoughts and

attempts, self-harm, and higher psychological resilience and wellbeing [23].

The GHQ model did not show significant associations, possibly due to the composite measurement of mental health found in the GHQ. The GHQ is a general mental health screening tool and does not measure certain constructs as accurately as individual components such as the DASS do. This study suggested the need for faculty-specific mental health interventions, as mental health issues and working conditions may differ between faculties. Programmes with a high proportion of students experiencing stress may benefit from counselling programmes, academic workload training, or peer support networks. Future research should involve qualitative studies aimed at identifying specific academic or social stressors. Furthermore, longitudinal studies should be conducted to measure the evolution of mental health symptoms and efficacy of strategies and interventions proposed above.

Limitations of the study

The study has some limitations. It is a cross-sectional design relying on self-reported data, which may be prone to response bias. Also, the use of predominantly Malay students among a faculty of diverse ethnic backgrounds limits the generalisation of ethnicity-driven findings.

CONCLUSION

The study identified important differences in the mental health status among different academic programmes, genders, and age groups of university students, suggesting the need for tailored mental health interventions specific to the academic and psychosocial contexts of the university students.

DECLARATIONS

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Ethical approval

The study was approved by the UniSZA Human Research Ethics Committee (UHREC; UniSZA/UHREC/2024/616) prior to data collection.

Use of Artificial intelligence/Large language models

The authors confirm that AI-based tools were used solely for language editing and manuscript polishing purposes (e.g., grammar, phrasing, and clarity). No AI tools were used to generate content, interpret data, or influence study design, results, or conclusions. All intellectual contributions, study analyses, and interpretations reported in the manuscript are the original work of the authors.

Availability of data and materials

The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.

Conflict of interest

No conflict of interest is associated with this work.

Contribution of authors

We declare that this work was done by the author(s) named in this article, and all liabilities pertaining to claims relating to the content of this article will be borne by the authors.

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