

Associations between Mental Health and Health-Related Quality of Life among UKM Health Sciences Postgraduate Students  
(Perkaitan antara Kesihatan Mental dan Kualiti Hidup Berkaitan Kesihatan dalam Kalangan Pelajar Pascasiswazah Sains Kesihatan UKM)

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ABSTRACT

Mental health problems among Malaysian adults, in which the majority of cases were university students, have been increasing twofold every five years. This is alarming as it has been observed in many universities, and mental health problems are feared to influence students' quality of life. This study investigated mental health symptoms, total core healthy days, and activity limitations and examined the association between mental health symptoms and health-related quality of life (HRQOL) among postgraduate students at the Faculty of Health Sciences (FSK), Universiti Kebangsaan Malaysia (UKM). 77 postgraduate students completed a survey involving sociodemographic, Depression Anxiety Stress Scale-21 (DASS-21), and HRQOL questionnaires. Results showed an overall normal level of depression ( $8.78 \pm 0.95$ ), but a mild level of anxiety (mean scores  $8.55 \pm 0.87$ ) and stress ( $11.77 \pm 1.17$ ) among FSK postgraduate students. Of 77 respondents, only 21 (27.3%) reported limitations in various aspects and activities and the majority of them reported emotional problems  $n=5$  (23.8%) as their primary health problem. Gender, age, and research centre did not significantly affect students' levels of depression, anxiety, and stress. However, stress and anxiety significantly ( $p<0.05$ ) correlated with the total number of healthy days, accounting for 15.9% of the variability in core healthy days. This study supports the notion that the mental health status of postgraduate students affects their HRQOL. Thus, attention to these vital life domains should be given to provide appropriate supportive services for students with physical or mental health challenges.

Keywords: Psychological problems, health satisfaction, higher education, negative emotions.

ABSTRAK

Masalah kesihatan mental dalam kalangan orang dewasa di Malaysia, yang mana majoriti adalah pelajar universiti, meningkat sebanyak dua kali ganda setiap lima tahun. Perkara ini amat membimbangkan kerana telah diperhatikan berlaku di banyak universiti dan masalah kesihatan mental ini dikhuatiri mempengaruhi kualiti hidup pelajar. Kajian ini menyelidik gejala kesihatan mental, jumlah hari sihat teras keseluruhan dan had aktiviti serta mengkaji hubungan antara gejala kesihatan mental dengan kualiti hidup berkaitan kesihatan (HRQOL) dalam kalangan pelajar pascasiswazah di Fakulti Sains Kesihatan (FSK), Universiti Kebangsaan Malaysia (UKM). 77 pelajar siswazah telah melengkapkan soal selidik yang melibatkan sosiodemografi, Depression Anxiety Stress Scale-21 (DASS-21), dan HRQOL. Hasil keseluruhan menunjukkan tahap kemurungan yang normal ( $8.78 \pm 0.95$ ) tetapi tahap ringan bagi keresahan (min skor  $8.55 \pm 0.87$ ) dan tekanan ( $11.77 \pm 1.17$ ) dalam kalangan pelajar siswazah FSK. Daripada 77 responden, hanya 21 responden (27.3%) melaporkan keterbatasan dalam pelbagai aspek dan aktiviti dan majoriti responden melaporkan masalah emosi  $n=5$  (23.8%) sebagai masalah kesihatan utama mereka. Jantina, umur, dan pusat penyelidikan tidak memberi kesan yang signifikan pada tahap kemurungan, keresahan, dan tekanan pelajar. Tekanan dan keresahan berkait secara signifikan dengan jumlah hari yang sihat, mewakili 15.9% daripada variabiliti dalam bilangan teras hari sihat. Kajian ini menyokong idea bahawa status kesihatan mental pelajar pascasiswazah mempengaruhi kualiti hidup mereka yang berkaitan dengan kesihatan. Justeru, perhatian perlu diberikan kepada kedua-dua domain penting ini dalam usaha menyediakan perkhidmatan sokongan yang sesuai untuk pelajar dengan cabaran kesihatan fizikal atau mental.

Kata kunci: Masalah psikologi, kepuasan kesihatan, pendidikan tinggi, emosi negatif.

## INTRODUCTION

Mental health is one of the primary factors considered when assessing public health (WHO 2007). Stress, anxiety and depression have emerged as three predominant mental health challenges worldwide (WHO 2003). Stress can be described as a condition of worry or mental strain arising from challenging circumstances (WHO 2023), while anxiety is characterized by fear and unease, often accompanied by manifestations like fatigue, restlessness, and palpitations (Salari et al. 2020). Meanwhile, depression is described as a mood disorder, presenting symptoms including sadness, fatigue, diminished interest, and reduced appetite (Doktorchik et al. 2019).

The prevalence of mental illnesses in developing and developed countries is increasing (Das et al. 2009). Many European and Asian countries have documented poor mental health among university students, with high rates of anxiety, depression, and stress (Aronin & Smith. 2016; Brown 2018; Mey & Yin 2015; Song et al. 2008). Malaysia has not been spared from the deteriorating mental health of university students. According to the National Health and Morbidity Survey (NHMS) 2015, nearly 29% of adults in Malaysia were reported to have a mental health condition. This is alarming as this marks a threefold rise compared to the 10% prevalence rate observed in 1996 (Chua 2020; IPH 2020).

Previous studies have revealed that students with mental health problems have a poor quality of life (QOL) (Jenkins et al. 2021; Ratnani et al. 2017). Shamsuddin et al. (2013) demonstrated that students' performance in school, college and university was affected by symptoms of depression, anxiety and stress, which may impair their academic achievement, lead to deterioration in relationships, marital problems and affect future employment. Kheirabadi et al. (2015) mentioned that several factors are likely to cause anxiety, depression, and a decline in QOL for students, including living away from home, managing multiple expenses, struggling with the educational system, facing uncertainty about future employment, academic pressure, adapting to a new lifestyle, and high expectations from parents. Because of this, students' mental health has been the focus of attention in recent years (Kheirabadi et al. 2015).

Despite the current trend of increasing mental health matters along with QOL and the availability of information on healthy ways to cope with the issues, many students are still not aware of how to cope with the problems. This is important as they are the future leaders of the country. Thus, having a healthy and

stable mental health state is vital to carrying out the responsibility to serve the nation and as an initiator of good leadership quality.

Students' current mental health status and QOL are to be identified beforehand before appropriate measurements can be taken in any institution. The information could assist in necessary awareness regarding the correlation of mental health status to QOL. Thus, this study investigates mental health symptoms, total core healthy days, and activity limitations and examines the association between mental health symptoms and QOL among postgraduates at the Faculty of Health Sciences (FSK), Universiti Kebangsaan Malaysia (UKM). This research is significant and beneficial in order to identify issues relating to mental health and find ways to manage and handle it accordingly.

## METHODS

### Study Design and Participants

A cross-sectional study was conducted among postgraduate students from the FSK, UKM. A total of 77 postgraduate students aged 21 years old and above were purposively recruited from five different research centres under FSK which are the Centre for Healthy Ageing and Wellness (H-CARE), Centre for Rehabilitation and Special Needs (iCaRehaB), Centre for Diagnostics, Therapeutic and Investigative Studies (CODTIS), Centre for Community Health Studies (ReaCH), and Centre for Toxicology and Health Risk Studies (CORE). The sample size was calculated based on a table for determining the sample size of a known population by Krejcie & Morgan (1970), which is a total of 340 postgraduate students. Inclusion criteria of this study include active postgraduate research students from FSK, while participants who refuse to participate and have been formally diagnosed with any mental health problems were excluded. This study was initially conducted as a part of Biostatistics and Research Methodology course assignment hence ethical approval was not applied at the time of data collection.

### Data Collection

An online questionnaire using Google Forms was distributed to participants who met the inclusion criteria via a messaging platform, which is *WhatsApp*. The participants were given a participant information sheet and consent form, which were included in the Google Forms, prior to assessing the questionnaire.

Participation in this study is voluntary with all the participant's information and data being kept anonymous and confidential.

The questionnaire includes three sections: i) sociodemographic information (such as gender, age, ethnicity, level of study and research centres), ii) mental health symptoms (depression, anxiety and stress) and iii) QOL (healthy days module, activity limitations module and healthy days symptoms module). Participants were required to fill out all parts of the questionnaire.

#### Depression Anxiety Stress Scale-21 (DASS-21)

Mental health is defined as a state of mental well-being that enables people to cope with the stresses of life, realize their abilities, learn well and work well, and contribute to their community (WHO 2022). Information on participants' mental health symptoms was obtained using an established questionnaire, Depression Anxiety Stress Scale-21 (DASS-21) (Moya et al. 2022; Lovibond & Lovibond 1995). A total of 21 questions were included to measure participants' emotional status of depression, anxiety and stress. Each question's rating is added to every scale, based on the scoring key and multiplied by two for the final score for every scale.

#### Health-Related Quality of Life (HRQOL-14)

According to WHO, QOL is an individual's assessment and perception of their place in life within their culture and value systems (WHO 2022). Participants' QOL was obtained using the Health-Related Quality of Life (HRQOL-14) scale (Murphy et al. 2015). The HRQOL-14 scale has 14 items that give a

complete overview of a person's health and well-being throughout three modules; i) the core healthy days module, ii) activity limitations module, and iii) healthy days symptoms module with different scoring. The unhealthy days score for each participant was calculated by summing the number of physically and mentally unhealthy days. The maximum score was for 30 unhealthy days, even if the number of unhealthy days totals more than 30. The healthy days' score was calculated by subtracting the number of unhealthy days from 30.

#### Statistical Analysis

The statistical analysis was conducted using IBM SPSS for Windows version 28.0 software. Descriptive analysis was used to describe participants' characteristics in mean with standard deviation (SD) or frequency with percentages in parentheses for continuous and categorical data, respectively. The comparison of mental health symptoms between genders, age groups and research centres was examined using an independent sample t-test and one-way ANOVA. In contrast, the association between mental health symptoms and QOL was analysed using Pearson correlation and multiple linear regression. A p-value of less than 0.05 ( $p < 0.05$ ) was considered statistically significant.

## RESULTS

#### Participants Sociodemographic Data

In total, 77 postgraduate research students from FSK, UKM, were involved in this study. Participants' sociodemographic characteristics are displayed in

TABLE 1. Participants sociodemographic data

Variables	Total (n=77)
Gender	
Male, n (%)	20 (26.0)
Female, n (%)	57 (74.0)
Age Group, years n (%)	
21-25 years old	14 (18.2)
26-30 years old	24 (31.2)
31-35 years old	21 (27.3)
36-40 years old	12 (15.6)
41-45 years old	6 (7.8)
Research Centre, n (%)	
Toxicology and Health Risk Studies (CORE)	12 (15.6)
Diagnostics, Therapeutic and Investigative Studies (CODTIS)	13 (16.9)
Community Health Studies (ReaCH)	13 (16.9)
Healthy Ageing and Wellness (H-CARE)	22 (28.6)
Rehabilitation and Special Needs (iCaRehaB)	17 (22.1)

Table 1. Female students shared a larger proportion of participants (74.0%), whereas males were only 26.0%. The majority of these participants were between 26–30 years old (31.2%) and 31–35 years old (27.3%). Postgraduate students from the Centre for Healthy Ageing and Wellness (H-CARE) took part in the

survey the most (28.6%), followed by the Centre for Rehabilitation and Special Needs (iCaRehaB) (22.1%), Centre for Diagnostics, Therapeutic and Investigative Studies (CODTIS) (16.9%), Centre for Community Health Studies (ReaCH) (16.9%), and Centre for Toxicology and Health Risk Studies (CORE) (15.6%).

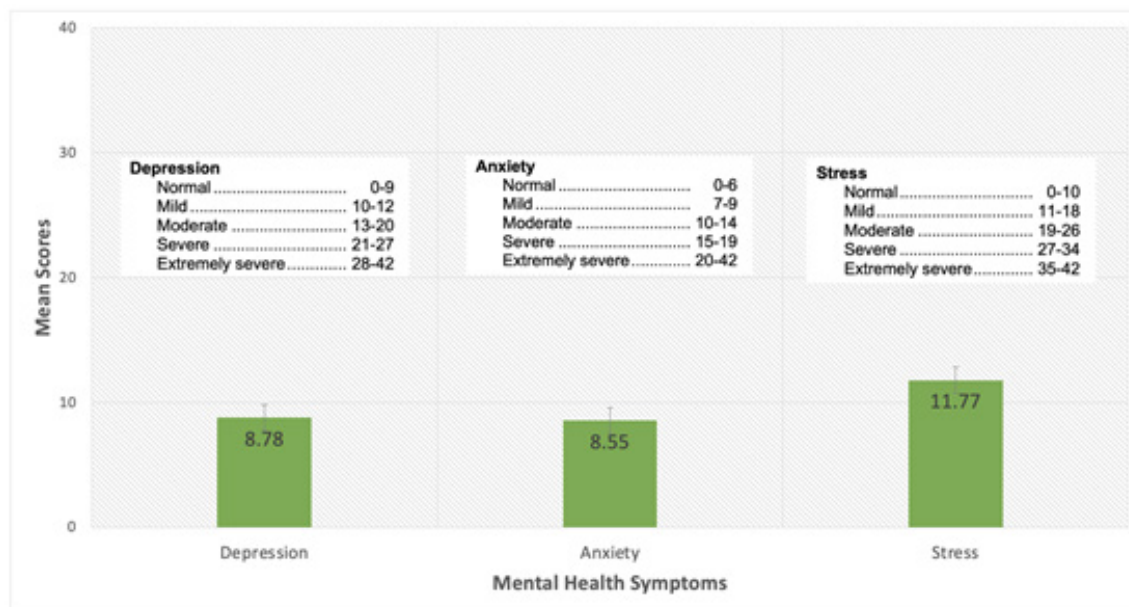


FIGURE 1. Overall Mean Scores of depression, anxiety, and stress symptoms of Postgraduate FSK students at UKM Kuala Lumpur Campus (n=77)

TABLE 2. Mean Scores of Depression, Anxiety, and Stress Symptoms Based on Variables of Gender, Age Group and Research Centre.

Variables	Mean Scores±SD		
	Depression	Anxiety	Stress
<b>Gender</b>			
Male	10.10±2.23	8.50±1.79	12.70±2.40
Female	8.32±1.02	8.56±1.00	11.44±1.28
Mean difference	1.78±2.17	0.61±2.00	1.26±2.58
p-value ( $\alpha = 0.05$ )	0.08	0.70	0.98
<b>Age Group</b>			
21-25 years old	12.14±2.26	11.29±2.08	13.71±2.90
26-30 years old	11.08±1.79	10.00±1.58	13.83±2.02
31-35 years old	6.67±1.59	6.19±1.34	9.90±1.91
36-40 years old	4.33±1.43	6.00±1.72	8.00±2.17
41-45 years old	8.00±4.56	9.67±4.88	13.00±5.95
Mean square	155.09	89.42	101.95
p-value ( $\alpha = 0.05$ )	0.06	0.18	0.39
<b>Research Centre</b>			
Toxicology and Health Risk Studies (CORE)	5.67±1.76	7.33±1.98	8.33±3.05
Diagnostics, Therapeutic and Investigative Studies (CODTIS)	10.31±2.52	11.85±1.98	16.31±2.78
Community Health Studies (ReaCH)	10.62±2.82	10.62±2.73	12.92±3.01
Healthy Ageing and Wellness (H-CARE)	10.27±1.94	7.55±1.69	13.36±2.16
Rehabilitation and Special Needs (iCaRehaB)	6.47±1.46	6.59±1.34	7.76±1.54
Mean square	82.53	75.52	188.82
p-value ( $\alpha = 0.05$ )	0.32	0.27	0.10

### Levels of Mental Health Symptoms

The overall mean of depression, anxiety, and stress levels among the postgraduate students were presented in Figure 1. The postgraduate students recorded normal levels of depression symptoms (mean scores  $8.78 \pm 0.95$ ), as well as mild levels of anxiety ( $8.55 \pm 0.87$ ) and stress ( $11.77 \pm 1.13$ ). Table 2 further specifies mean scores of depression, anxiety and stress symptoms based on different variables of gender, age group and research centres. Based on Kurtosis, the data was normally distributed. Independent samples *t-test* revealed no significant mean differences in the scores of mental health symptoms between males and females. Analysis of variance (ANOVA) also suggested no significant mean differences in the scores between age groups and research centres.

### Total Numbers of Core Healthy Days and Activity Limitations

The participants have quite a high total number of core healthy days, with a mean of  $20.95 \pm 8.88$  days in general, with a range of 0 to 30 days to report. Male students perceived a higher number of healthy days than females,  $22 \pm 8.88$  days and  $20.57 \pm 8.93$ , respectively. Based on the Mann-Whitney U test, the median number of core healthy days between males (Med=25, IQR=10) was not statistically different compared to females (Med=23, IQR=12),  $U=493.5$ ,  $p=.430$ .

From a total of 77 respondents, only a minority of them,  $n=21$  (27.3%), reported having limitations in any way and any activities because of any medical conditions. Most participants claimed emotional problems (23.8%) as their primary health problem,

TABLE 3. Number of participants with significant medical conditions

Medical conditions	Total (n=21)
Emotional problem	5 (23.8%)
Back/neck problem	4 (19%)
Walking problem	3 (14.3%)
Eye/vision problem	3 (14.3%)
Arthritis/rheumatism	2 (9.4%)
Pregnancy	1 (4.8%)
Lung/breathing problem	1 (4.8%)
Anemia	1 (4.8%)
Bone/joint injury	1 (4.8%)

followed by back or neck problems (19%), walking problems (14.3%) and eye or vision problems (14.3%) as presented in Table 3.

### Correlation and Multiple Linear Regression Model of Mental Health Symptoms with Health-Related Quality of Life

A two-tailed Pearson's correlation coefficient was computed to assess the linear association between all

three DASS domains with the number of core healthy days reported from the HRQOL questionnaire. All three domains, which are stress, anxiety and depression, have a negative correlation with the number of core healthy days reported. Referring to Table 4, stress shows a significant negative moderate correlation  $r(74)=-.40$ ,  $p<.001$ , anxiety shows significant negative weak correlation  $r(74)=-.26$ ,  $p=.026$  and depression shows no significant correlation  $r(74)=-.20$ ,  $p=.093$  with the number of core healthy days reported when  $\alpha=0.05$ .

TABLE 4. Pearson's correlation coefficient between the domain in the DASS questionnaire and the number of core healthy days reported in the HRQOL questionnaire.

Domain in DASS	r value	df (N-2)	p-value
Stress	-.40	74	<.001
Anxiety	-.26	74	.026
Depression	-.20	74	.093

A standard multiple linear regression (MLR) analysis was performed to determine the association between stress and anxiety that accounted for the number of core healthy days. Depression was excluded from MLR analysis as the correlation between depression and the number of core healthy days was not significant. Prior to interpreting the results of the MLR, several assumptions were evaluated. Each variable was normally distributed and free from univariate outliers. Second, inspection of the scatterplot of standardized residuals against standardized predicted values indicated that the assumptions of normality, linearity and homoscedasticity of residuals were met. Third, Mahalanobis distance did not exceed the critical  $\chi^2$  of 13.82 for  $df=2$  (at  $\alpha=0.001$ ) for any cases in the

data file, indicating that multivariate outliers were not of concern. Fourth, relatively high tolerances for all predictors in the regression model showed that multicollinearity would not interfere with our ability to interpret the outcome of MLR.

Regression's equation is as follows: number of core healthy days = 24.84 + 0.14 (stress) - 0.43 (anxiety). In combination, stress and anxiety accounted for a significant 15.9% variability in the number of core healthy days,  $r^2=.16$ , adjusted  $r^2=.14$ ,  $F(2,73)=6.92$ ;  $p=.002$  ( $\alpha=0.05$ ). Unstandardized ( $B$ ) and standardized ( $\beta$ ) regression coefficients and squared semi-partial (or 'part') correlation ( $sr^2$ ) for each predictor in the regression model are reported in Table 5.

TABLE 5. Unstandardized ( $B$ ) and Standardized ( $\beta$ ) Regression Coefficients and Squared Semi-Partial Correlations ( $sr^2$ ) for each predictor in a regression model predicting the number of core healthy days.

Variable	B [95% CI]	$\beta$	$sr^2$
Stress	.135 [-0.259, 0.528]	.114	.073
Anxiety	-.432 [-0.733, -0.131]	-.480	-.307

## DISCUSSION

This study explores the association of mental health FSK, UKM. Postgraduate students encounter intense academic and research demands, yet research on their mental health remains limited (Butler-Rees & Robinson 2020). The findings of these students experiencing an overall normal level of depression and mild anxiety are in line with a study by Shete & Garkal (2015) among postgraduate medical students in India. In contrast with mild results for stress levels, previous studies reported moderate stress among postgraduate students (Al-Shayea 2014; Vasugi & Hassan 2019). Different factors concerning individual, interpersonal and institutional support influence mental health conditions among postgraduate researchers (Milicev et al. 2023).

It can also be manifested from the chart that the highest percentage of respondents with a significant health problem is categorized under emotional issues which has a score of 23.8%. This signifies that academic life is inherent with perceived stress as the challenges students encounter impact the physical and psychological domains (Alkatheri et al. 2020).

The absence of variations in depression, anxiety, and stress levels across different age groups among the participants is likely since students of all

ages experience comparable workloads and share similar perspectives regarding their graduation and prospects. These results are consistent with the findings of Hassan (2019), revealing no significant difference in depression, anxiety, and stress based on students' age, suggesting that these mental health indicators affect all students equally.

Despite the variations in the mean scores of mental health domains across both genders, the current research did not find any significant differences in the levels of depression, anxiety, and stress between males and females. These results are consistent with the findings of Shamsuddin et al. (2013), suggesting that gender does not exert a significant influence on the levels of depression, anxiety, and stress among students. This could stem from the observation that postgraduate students share comparable experiences and encounter similar pressures. Essentially, all students tend to experience comparable levels of depression, anxiety, and stress during their time in college and university. However, the research landscape on this topic presents some contrasting views. In contrast, Khan et al. (2015) suggested that female students might exhibit higher levels of depression, anxiety, and stress, potentially because they are more inclined to openly express even minor depressive symptoms.

The findings of this study showed there were no significant differences in depression, anxiety, and stress levels among students across different research centres, indicating a consistent mental health experience within this academic community. This uniformity may be due to similar institutional support systems, educational demands, research pressure, and the overall campus environment across these centres. Indeed, the research centre emerges as a unique sociodemographic factor, a dimension not previously investigated in similar research contexts.

Nevertheless, it is proven throughout this study that stress and anxiety show a poor correlation towards the number of healthy days. Moreover, depression was shown to be significantly unaffected by not correlating to the number of healthy days of the students. The regression analysis data proved a weak correlation between these three domains and health-related QOL. In accordance with a previous study by (Racic et al. 2017), it was demonstrated that higher levels of perceived stress lead health professions students towards anxiety and lower QOL. In addition, this study also supported a previous study that there was no significant difference in the QOL, anxiety, and depression between students who were infected with SARS-CoV-2 and those who were not (Milošević Marković et al. 2022).

There are several limitations in this study. Firstly, due to the limited time given to collect data, there weren't many participants able to answer the questionnaire online, hence the limited number of participants in this study. Secondly, the different nature of learning among coursework students in the faculty may affect the validity of the results. Therefore, only research students have been selected as the study's focus group. Thirdly, the limited number of participants may not represent the whole population of Health Sciences students in UKM.

In a nutshell, comparing current and previous studies, in any circumstances of students of different backgrounds, especially regarding their physical health and mental health status, it is supported that depression does not impact hugely on health-related QOL. In contrast, stress and anxiety contribute to low HRQOL. Hence, this justifies the need for further research into what depression is the main factor in a person's life.

## CONCLUSION

This study supports the notion that the mental health status of postgraduate students affects their HRQOL. In sum, the results of this project highlight the negative association between mental health symptoms and

HRQOL among postgraduate university students in UKM Kuala Lumpur Campus through the deterioration of various aspects related to physical and psychological health. In addition, mental health and physical health status were also associated with students' appraisals of their age group, gender, research centres and HRQOL. In summary, the mental health symptoms of postgraduate FSK students are still concerning, and awareness of these critical life domains in health assessments and population health research should be focused on providing appropriate supportive services for students with physical or mental health challenges to avoid more serious issues in future.

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