PREVALENCE OF DEPRESSION, ANXIETY AND STRESS AMONG PREPARATORY YEAR PROGRAM STUDENTS IN QASSIM UNIVERSITY

Ibrahim Algosair[1], Faisal Almishali[1], Fahad Alolayan[1], Abdulaziz Alharbi[1], Majed Wadi[2]

[1]Medical student, College of Medicine, Qassim University, Saudi Arabia, 51452, Qassim
[2]Medical Education Department, College of Medicine, Qassim University, Saudi Arabia, 51452, Qassim

*Corresponding author: Ibrahim Saleh Algosair, Email:IbrahimAlgosair@gmail.com

ABSTRACT

Introduction: The mental health status of college students has become an important topic of public health, given the ever-increasing number of students in all developed countries. Student life, especially during the first year, is a period of vulnerability during which young students establish, test, and adjust to new emotions, stresses, and new psychological states. Mental health problems (MHPs) and mental distress such as changes in mood, anxiety, and depression can significantly impair quality of life and empathy, unprofessional, and burnout. From this perspective, MHPs may have a serious impact on a college student's life, affecting the capacity to organize highly demanding study hours, socialize, and perform academically, for which epidemiological data and studies are required and should be addressed as a priority.

Objective: To determine and assess the prevalence of depression, anxiety, and stress among preparatory-year students.

Methods: This cross-sectional study assessed the preparatory year program students in 2019. We invited them to volunteer in The Depression, Anxiety, and Stress Scale - 21 items self-reported questionnaire.

Results: The participant shows a high prevalence of extremely severe to severe psychological states. In depression and anxiety scales, there was statistical significance between gender and depression and anxiety, in which females have a higher incidence of extremely severe depression and severe anxiety. Regarding the stress scale, older students are having more stress than younger students.

Conclusion: Our study showed that the students have extremely severe depression, severe anxiety, and stress and female students showed a higher level of stress than males. These findings suggest that when preparatory year program students enter the university, special care has to be taken and find out psychiatric morbidity or psychological stress.

INTRODUCTION

The mental health status of college students has become an important topic of public health, given the ever-increasing number of students in all developed countries. Student life, especially during the first year, is a period of vulnerability during which young students establish, test, and adjust to new emotions, stresses, and new psychological states [1]. Mental health problems (MHPs) and mental distress such as changes in mood, anxiety, and depression can significantly impair quality of life and empathy, unprofessional, and burnout. From this perspective, MHPs may have a serious impact on a college student's life, affecting the capacity to organize highly demanding study hours, socialize, and perform academically, for which epidemiological data and studies are required and should be addressed as a priority [2]

Worldwide, many studies have been done to evaluate depression, anxiety, and stress and their effect on university students mental health state. In Malaysia, a study was done to identify the effect of stress on first-year medical students and the effect on academic performance, the study reported that students with a high level of stress have an increased risk of failing their first year [3]. Additionally, another study was done in China to correlate the prevalence of mental health problems and their predictors in Chinese college freshmen from Shanghai and reported that out of 1048 freshmen students, approximately 65.55% had depression, and 46.85% had anxiety [4].

Students in a highly competitive environment with many potential stressors have a higher rate of anxiety than others, study was done to assess academic stress among the preparatory year program (PYP) students in a total of 171 students from King Saud University (KSU) which implements competition-based Health Science Preparatory Program (HSPP) learning model showed that the mean scale for assessing academic stress (SAAS) score was 8.37 [5]and the same study was done in a total of 119 students from Mohammad bin Saud Islamic University (IMSU) which implements non-competition-based HSPP learning model showed that the mean SAAS score was 7.97 [5], which is less than that among KSU students who are in a more competitive environment. However, stress-inducing factors and the degree of their effect differ from one college to another. In Alfaisal University in Riyadh, a study in a multi-ethnic setting showed that students who had attended a premedical university preparatory program (UPP) had higher Depression, Anxiety, and Stress Scale - 21 Items (DASS-21) scores than those who hadn't [6]. The stressors in the Preparatory Year Program are thought to be continuous over the year and are not related to the beginning of the year only, a prospective study that followed the perceived stress scores over the preparatory year for 110 students found that there were no changes [7]. It has been reported that the prevalence of anxiety and depression among the medical students at Qassim University is 66.6% for females and 44.4% for males [8]. But little is known about these values among the PYP students at the same university. This study aims to determine and assess the prevalence of depression, anxiety, and stress

among preparatory-year students at Qassim University.

Methodology:

We established this cross-sectional study to examine the student in the preparatory year program at Qassim University. It is an orientation program for all first-year students in the university to prepare them for the university setting. This program provides a foundation for students' knowledge in science, medicine, mathematics, and English. Students are assigned to suitable colleges according to their GPA during the PYP. All male and female students during the academic year 2018-2019 of this program were included and invited to fill Depression, Anxiety, and Stress Scale - 21 Items (DASS-21) self-reported questionnaire. It is a set of three self-report scales designed to measure the emotional states of depression, anxiety, and stress. Each of the three DASS- 21 scales contains 7 items, divided into subscales with similar content. The depression scale assesses dysphoria, hopelessness, devaluation of life, self-deprecation, lack of interest, involvement, anhedonia, and inertia. The anxiety scale assesses autonomic arousal, skeletal muscle effects, situational anxiety, and subjective experience of anxious affect. The stress scale is sensitive to levels of chronic nonspecific arousal. It assesses difficulty relaxing, nervous arousal, and being easily upset, agitated, irritable, over-reactive, and impatient. Scores for depression, anxiety, and stress are calculated by summing the scores for the relevant items. The DASS-21 is based on a dimensional rather than a categorical conception of psychological disorder. The assumption on which the DASS- 21 development was based (and which was confirmed by the research data) on the differences between the depression, anxiety, and stress experienced by normal subjects and clinical populations are essentially differences of degree. The DASS-21, therefore, has no direct implications for the allocation of patients to discrete diagnostic categories postulated in classificatory systems such as the Diagnostic and Statistical Manual of Mental Disorders (DSM) and the International Classification of Diseases (ICD).

The cutoff score of each sub-scales as follows: for depression, the normal range between scores 0 to 9, the mild score is between 10 to 13, the moderate score is between 14 to 20, and the severe form between 21 to 27, and anything above 28 is considered extremely severe. For anxiety, the normal range between scores 0 to 7, the mild score is between 8 to 9, the moderate score is between 10 to 14, and the severe form between 15 to 19, and anything above 20 is considered extremely severe. For stress, the normal range between scores 0 to 14, the mild score is between 15 to 18, the moderate score is between 19 to 25, and the severe form between 26 to 33, and anything above 34 is considered extremely severe.

We used the following equation $N = [DEFF*Np(1-p)]/ [(d2/Z21-\alpha/2*(N-1) +p*(1-p)]$ to determine the needed sample size of 2700 students. This equation revealed the minimum sample size was 337. Thus, we did a convenience sampling method and sent the Google form link to our questionnaire to 500 students via social media platforms, we excluded 75 participants who did not complete the questionnaire. The total

response was 425 participants. Data were entered and analyzed by IBM SPSS Statistics for Windows, Version 25.0. The categorical data were set as frequency and percentages and the quantitative data were set as mean and standard deviation. The difference between intragroup categorical variables was tested by using the chi-square test and Fisher's exact test. Additionally, the difference between categorical variables and quantitative variables using a one-way - ANOVA test. Statistical significance was set at P-Value < 0.05. Ethical approval of this research was obtained from a subcommittee of Health Research Ethics, Deanship of Scientific Research, Qassim University (19-02-01).

Results:

The overall number of participants was 425, the males 239 (56.2%) and females are 186 (43.8%), and the mean of their age is 18.9 (Standard deviation is 0.4). The majority of the participant are Saudi 415 (97.6%) and the mean of their high school education is 87.89. Regarding their college performance, since most of them were fresh students, about 289 (68) students haven't yet been graded because it was their first semester in college (Table 1).

Regarding the prevalence of Depression, Anxiety (Table 2)., the mean score of the prevalence of depression was 24.45 out of 42 which is identified as extremely severe depression. However, the anxiety mean in the preparatory year program student was 18.81 out of 42 and identified as severe. The stress mean score was 24.7 which is identified as a moderate psychological state.

Depression, anxiety, and stress have been divided into a subgroup. The normal psychological state is normal and mild. Also, moderate, severe, and extremely severe are identified as pathological psychological states. The participant shows a high prevalence of extremely severe psychological states as shown (Table 3).

Data demonstrates statistical significance between gender and depression, in which females have a high incidence of extremely severe depression. Regarding age, there was no statistical significance between it and depression (Table 4). In the high school grades before entering college, the student with high grades shows a statistical significance of not having depression. However, student with a high GPA shows a higher incidence of severe and extremely severe depression. In addition, it shows a statistical significance between gender and anxiety, in which females have a high incidence of extremely severe anxiety (Table 4). There is no other statistical significance between the sociodemographic factors of the participant and anxiety. The data demonstrate statistical significance between gender and stress, in which females have a high incidence of extremely severe stress. Regarding age, there was also statistical significance between it and stress, older students were having more stress than younger students. In the high school grades before entering college, there was no statistical significance with stress. However, the student with a high GPA shows very strong statistical significance with severe and extremely severe stress.

Table 1. Sociodemographic information of the participants

Variable	N(%)
Gender	
Male	239 (56.2)
Female	186 (43.8)
Age (mean $\pm$ SD)	18.9 $\pm$ 0.4
Nationality	
Saudi	415 (97.6)
Non-Saudi	10 (2.4)
High school grades (mean $\pm$ SD)	87.89 $\pm$ 4.77
College grade (out 0f 5)	
Not yet graded (first semester)	289 (68)
Less than 2	9 (2.1)
2 – 2.5	21 (4.9)
2.5 – 3	18 (4.2)
3 – 3.5	26 (6.1)
3.5 – 4	25 (5.9)
4 – 4.5	18 (4.2)
4.5 - 5	19 (4.5)

Table 2. Mean and standard deviation of Depression, Anxiety and Stress

Depression	24.45 $\pm$ 12.54
Anxiety	18.81 $\pm$ 13
Stress	24.73 $\pm$ 12.1

Table 3. prevalence of Depression, Anxiety and Stress in preparation year program based in DASS-21 score, N (%)

Psychological state	Depression	Anxiety	Stress
Normal	67 (15.8)	101 (23.8)	69 (16.2)
Mild	29 (6.8)	21 (4.9)	63 (14.8)
Moderate	61 (14.4)	69 (16.2)	92 (21.6)
Severe	65 (15.3)	36 (8.5)	97 (22.8)
Extremely severe	203 (47.8)	198 (46.6)	104 (24.5)

Discussion:

Using the DASS-21 scale, this cross-sectional study of 425 PYP students revealed that, on average, the PYP student was identified with extremely severe depression, severe anxiety, and moderate stress. There was a significant statistical association between depression and female gender and students with low high school grades. There was a significant statistical association between anxiety and the female gender. There was a significant statistical association between stress and female gender, older age, and high GPA. Our study shows that the mean score of the prevalence of depression was 24.45 out of 42 (24.45 $\pm$ 12.54), which was identified as extremely severe depression. This result is consistent with studies done nationally that also have shown high depression levels among first-year students [6,8]. The vast majority of the students have a level of extremely severe depression (47.8%) which is different from a study that used the same scale in Bangladesh and found that 14.3% of the students suffered from extremely severe depression [9]. However, the students were not in as highly competitive an environment as our sample, which might be one of the important contributors to the high level of extremely severe depression. Our study shows that the mean score of the prevalence of anxiety was 18.81 out of 42 (18.81 $\pm$ 13) which was identified as severe anxiety, and it was found

Table 4. The statistical association between depression, anxiety, and stress subscales and sociodemographic factors of the participant

Factors	Normal	Mild	Moderate	Severe	Extremely severe	P-value
Depression subscale						
Gender						
Male	42	21	37	41	98	0.025**
Female	25	8	24	24	105	
Age (mean)	18.78	18.76	18.8	18.92	18.99	0.449
High school grade	89.41	87	88.39	87.28	87.56	0.32**
University grade						
Not yet graded	55	24	49	37	124	
Less than 2	0	1	0	2	6	
2 to 3	1	2	1	8	27	0.011**
3 to 4	4	1	6	10	30	
4 to 5	7	1	5	8	16	
Anxiety subscale						
Gender						
Male	71	12	44	26	86	0.001**
Female	30	9	25	10	112	
Age (mean)	18.75	18.9	18.86	18.97	18.98	0.434
High school grade	87.78	8.02	88.1	87.45	88.16	0.362
University grade						
Not yet graded	83	16	45	28	117	
Less than 2	2	0	1	1	5	
2 to 3	5	3	5	1	25	0.79
3 to 4	6	2	10	3	30	
4 to 5	5	0	8	3	21	
Stress subscale						
Gender						
Male	51	39	50	50	49	0.007**
Female	18	24	42	47	55	
Age (mean)	18.78	18.65	18.93	18.86	19.14	0.021**
High school grade	80.05	87.75	88.01	88.07	87.6	0.948
University grade						
Not yet graded	58	51	65	59	56	
Less than 2	1	1	4	0	3	
2 to 3	0	5	5	15	14	0.001**
3 to 4	4	4	14	11	18	
4 to 5	6	2	4	12	13	

similar to studies done in other regions in Saudi Arabia also have shown high depression levels in the first-year students [5]. Both the studies were conducted on PYP students which showed high anxiety scores which are most likely due to its highly competitive environment, and because students study in a foreign language for the first time and compete in specialties with few seats compared to the large numbers of applied students. In this study stress among PYP students was very prevalent. This

finding is consistent with similar studies that measure the psychological stress of first-year students and freshmen [10,11]. This could be due to the high demand for adaptation to changes that happens in the first year which is described by Alonoso et al., 2018 [11]. Another important factor to consider is the competitive academic nature of PYP as students chose their desired specialty based on their performance, this could be one of the major stressors in this study the average DASS-21 score of stress in PYP (12.36 out of 42) is high compared with other studies. In one study conducted in China that measured the Psychological Well-Being of undergraduate students, they estimated the average DASS-21 score of stress at 10.6 [1]. In another study from Syria that investigated the Psychological distress of students in conflict, they estimated the average DASS-21 score of stress at 10 [2]. Our study showed that females have higher incidents of extremely severe anxiety than male students. This finding is compatible with the study conducted in Hong Kong, which found that female students had significantly higher anxiety than male students [12]. Also, our study shows that female students have a high incidence of extremely severe depression than male students. This finding is in contrast with a study conducted in Hong Kong which finds that male students have higher depression [12]. In addition, our study finds that females have a high incidence of extremely severe stress than males. This finding is associated with the study finding conducted in two PYP in two Saudi universities found that females are more stressed than males [5], more stressed, depressed and anxious females could be done

to the fewer seats available for entering the specific colleges leading to the more competitive environment than males.

Conclusion:
Our study showed that the students have extremely severe depression, severe anxiety, and stress and female students showed a higher level of stress than males. These findings suggest that when PYP students enter the university, special care has to be taken and find out psychiatric morbidity or psychological stress.

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