



Anxiety and depression among Greek undergraduate students in the University of Patras

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ABSTRACT

Background

There is an increase in the prevalence of depression and anxiety in university students, reducing their capability of taking care themselves and coping with daily life's demands. The aim of the present study was to assess the prevalence of and investigate risk factors for anxiety and depression in undergraduate students at the University of Patras, Greece.

Methods

An analytical cross-sectional study was conducted on a representative sample of 1.233 (553 male and 680 female) undergraduate university students. The instrument used to assess the anxiety and depression levels was the in Greek translated and validated Hospital Anxiety and Depression Scale (HADS). Statistical analyses were performed using the SPSS v. 17.0.

Results

Anxiety was present in 423 (34.2%, 20.3% borderline and 13.9% clinical) students and depression in 215 (17.4%, 12.7% borderline and 4.7% clinical) students. Both were found concomitantly in 152 (12.3%) students. Higher age ($p=0.014$), female gender ($p<0.001$), higher year of study ($p<0.001$), school and city being not the first choice ($p<0.001$), reduction in income ($p<0.001$) and ignorance of support services available to students were significantly associated with anxiety. Depression was significantly associated with higher age and year of study ($p<0.001$), school and city being not the first choice ($p<0.001$), growing up with one parent ($p<0.001$), having more than three siblings ($p<0.001$), reduction in income ($p<0.001$) and ignorance of support services available to students.

Conclusions

This study indicates that students in the University of Patras experience anxiety and depression which are associated with various sociodemographic and educational factors.

Keywords: Anxiety, Depression, Hospital Anxiety and Depression Scale, HADS, University Students, Prevalence

INTRODUCTION

Several studies indicate that there is an increased rate of mental health disorders like depression and anxiety among university students around the world,¹ reducing their capability of taking care themselves

and coping with daily life's demands.² University environment is recognized as stressful and quite often has a negative effect on students' life including physical and mental health, academic performance and psychosocial well-being.¹ Undergraduate students are a special group of people that are

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enduring an important transient life stage from adolescence to adulthood and most mental disorders have their onset during that age.³ In this crucial stage, they probably face one of the most stressful times of their life due to multiple reasons like accommodation and environmental changes, being away from home for the first time, new social contacts, taking responsibility for their own life, academic pressure, financial concerns and sleep deprivation.³

Studies have shown that university students' mental health conditions are poorer compared with their peers and higher rates of depression and anxiety are observed.^{1,4} Three of the ten leading causes of disability in people between the ages of 15 and 44 are mental disorders,⁵ that limit activity and productivity and cause a significant burden to society and health services.¹⁻⁵ In a national survey that took place in the USA in college counseling centers, in 86% an increased rate of depression and anxiety among university students was reported.⁶ In a study that was conducted in a very large sample of university students between 23 countries with high, middle and low income, wide variations in prevalence of depressive symptoms were observed. Lower rates of depression were estimated in South-North America and Western-Southern Europe, medium levels in Central and Eastern Europe and higher rates in Pacific-Asian countries.⁷ University students with depressive symptoms are more likely to quit their studies, to achieve lower grades,⁸ and thoughts of suicide or even a plan to commit suicide are often noticed.^{9,10} On the other hand, students' anxiety appears to adversely impact academic performance and achievement,^{11,12} and leads to alcohol and drugs abuse.¹³ The mental health action plan for 2013–2020 by WHO, demonstrated the need for a collective evidence based effort to improve mental health among university students.¹⁴

The aim of the present study was to estimate the prevalence of depression and anxiety in a representative sample of Greek university students and to examine the socio-demographic correlates of depression and anxiety in a specific group of undergraduate students in the University of Patras, Greece.

MATERIAL AND METHODS

The study was conducted in Patras, which is the capital of the Achaia Prefecture in West Greece. Patras is ranked as the third largest city in Greece, and University of Patras is serving as the scientific, cultural and communications center of western Greece.

An analytical cross-sectional study was conducted on a representative sample (5% of each school and 5% of each year) of undergraduate university students in Patras, from October to December 2012. At first, a pilot study was conducted among 17 medical and other students. Thirteen of them completed the survey without any kind of difficulty. Each selected student was personally contacted through the Schools of university. Participants were informed about the aims and procedures of the study and provided written informed consent for participation. All of the responders were ensured of confidentiality and participation was completely voluntary, with no economic or other motivation. All participants were recruited either directly in their classrooms or in public areas of the university campus such as courtyards, canteens and cafeterias.

An appropriate questionnaire, a 31- item scale was designed for the purpose of the present study. The instrument used to assess the anxiety and depression levels was the - in Greek translated and validated - Hospital Anxiety and Depression Scale (HADS) by Mihopoulos et al,¹⁵ which was found to have high internal consistency (Cronbach's $\alpha = 0.884$) and reliability (test retest Intraclass Correlation Coefficient 0,944). HADS was first developed by Zigmond and Snaith in 1983,¹⁶ and has been commonly used in many countries to determine the levels of depression and anxiety that a patient is experiencing in the last two weeks in general hospitals, as well as in the general population. A review of over 700 studies using the HADS found it to have good psychometric properties and to perform well in assessing anxiety and depressive symptoms in health settings and in the general population.¹⁷ Hospital Anxiety and Depression Scale is a brief questionnaire, a 14- item scale that generates ordinal data. Seven of the items relate to anxiety (HADS-A) and seven relate to depression (HADS-D). Each item

on the questionnaire is scored from 0-3 which means that score is between 0 and 21 for either anxiety or depression. For anxiety HADS-A has a specificity of 0.78 and a sensitivity of 0.9 and for depression HADS-D has a specificity of 0.79 and a sensitivity of 0.83. According to the developers of the scale a score of between 8 and 10 identifies possible cases (borderline depression or anxiety) and a score of 11 or more the probable presence of a clinically meaningful anxiety or depressive condition.

Furthermore, an anonymous questionnaire was administered to collect basic demographic data including questions regarding socioeconomic and educational characteristics, such as age, gender, year

of study, school of choice, number of siblings, and monthly expenditure.

The chi-square test was applied at 5% level of significance to determine associated factors for anxiety and depression respectively. Statistical analyses were performed using the SPSS v. 17.0.

The study was approved by the plenary meeting of the Medical School of Patras and the Ethics Committee of the University of Patras, Greece.

RESULTS

A total of 1.233 (553 male and 680 female) students took part in the study. Table 1 presents the demographic characteristics of the study population.

Table 1 Demographic Characteristics of the Study Population

	Total		Males		Females	
	N	%	N	%	N	%
Total Number of Participants	1233	100	554	44.8	680	55.2
Gender						
Male	554	44.8				
Female	680	55.2				
Age in Years						
<=20	731	59.2	302	41.3	429	58.6
>20	502	40.7	251	50	251	50
Average Degree						
First Year College	181	14.6	73	40.3	109	60.2
>6.5	540	43.7	320	59.2	220	40.7
<= 6.5	479	38.8	157	32.7	322	67.2
>=8.5	20	1.6	13	65	7	35
Father's Education Level						
Primary school	64	5.1	25	39	39	60.9
Secondary school	133	10.8	59	44.3	74	55.6
High school	454	36.9	202	44.4	252	55.5
University	578	47	266	46	312	53.9
Mother's Education Level						
Primary school	70	5.7	26	37.1	44	62.8
Secondary school	141	11.5	67	47.5	74	52.4
High school	512	41.6	240	46.8	272	53.1
University	508	41.3	219	43.1	289	56.8
Family Type						
Natural	1073	87	481	44.8	592	55.1
Monoparental	53	4.3	24	45.2	29	54.7
Divorced	103	8.3	47	45.6	56	54.3
Other	5	0.4	2	40	3	60
Number of Brothers and Sisters						

None	163	13.3				
Study of Choice						
Yes	974	78.9	447	45.8	527	54.1
No	252	20.4	103	40.8	149	59.1
City of Patras as the First Choice						
Yes	685	55.5	309	45.1	376	54.8
No	547	44.3	244	44.6	303	55.3
Living Conditions						
Alone	713	57.8	317	52	396	55.5
With a roommate (s)	208	16.9	98	47.1	110	52.8
At dorm	39	3.2	15	38.4	24	61.5
With Family	273	22.1	124	45.4	149	54.5
Work with Study at the Same Time						
Yes	202	16.4	101	50	101	50
No	1027	83.2	450	43.8	577	56.1
Monthly Income						
<400€	992	88.7	437	44	558	56.2
>=400€	127	11.3	68	53.5	59	46.4
Reduction of the Monthly Income						
Yes	618	53.2	272	44	346	56
No	543	46.8	250	46	293	54
Frequency of Attending Courses						
Every day	685	55.5	254	37	431	62.9
3-4 per week	352	28.5	187	53.1	165	46.8
Less than once a week	1037	84.1	63	6	58	5.6
1-2 per week	73	5.9	48	65.7	25	34.2
Knowledge of Counseling Center						
Yes	286	23.4	115	40.2	171	59.7
No	801	65.6	364	45.4	437	54.5
Don't know/No answer	134	11	68	50.7	66	49.2

Anxiety was present in 423 (34.2%, 20.3% borderline and 13.9% clinical) students and depression in 215 (17.4%, 12.7% borderline and 4.7% clinical) students. Both were found concomitantly in 152 (12.3%) students. Specifically, in 58 students with clinical depression, clinical and borderline anxiety was observed in 32 (55.2%) and 15 (25.9%) students respectively, and in 157 students with borderline depression, clinical and borderline anxiety was found in 46 (29.3%) and 59 (37.5%) students, respectively.

Higher age ($p=0.014$), female gender ($p<0.001$), higher year of study ($p<0.001$), school and city being not the first choice ($p<0.001$), reduction in income ($p<0.001$) and ignorance of support services available

to students were significantly associated with anxiety (Table 2).

Depression was significantly associated with higher age and year of study ($p<0.001$), school and city being not the first choice ($p<0.001$), growing up with one parent ($p<0.001$), having more than three siblings ($p<0.001$), reduction in income ($p<0.001$) and ignorance of support services available to students (Table 2).

Additionally, depression and anxiety in males was significantly associated with low educational level of father ($p<0.001$ and $p=0.029$, respectively) whereas in women anxiety was associated with higher educational level of mother ($p=0.026$) (Table 2).

Table 2 Associations of Anxiety and Depression with Various Variables

Anxiety				
Characteristics	Normal	Borderline	Clinical	p-value
Age				0.0048
<=20 (n= 731)	68.5	18.7	12.7	
>20 (n= 502)	61.8	22.7	15.5	
Gender				<0.001
Male (n= 554)	73.3	17.5	9.2	
Female (n=680)	59.6	22.6	17.8	
Study of Choice				<0.001
Yes (n=974)	68.3	19.2	12.5	
No (n=252)	56	25.4	18.7	
City of Choice				<0.001
Yes (n=685)	71.5	17.7	10.8	
No (n=547)	58.3	23.8	17.9	
Number of Brothers and Sisters				0.288
none (n=163)	65.6	21.5	12.9	
1-3 brothers (n=1044)	66.1	20	13.9	
> 3 brothers(n=22)	45.5	27.3	27.3	
Father's Education Level				0.336
Primary school (n= 64)	56.3	28.1	15.6	
Secondary school (n=133)	68.4	15.8	15.8	
High school (n=454)	68.1	19.8	12.1	
University (n=578)	64.4	20.8	14.9	
Mother's Education Level				0.15
Primary school (n= 70)	75.7	11.4	12.9	
Secondary school (n=141)	70.2	17.7	12.1	
High school (n=512)	66.6	18.9	14.5	
University (n=508)	62.2	23.6	14.2	
Reduction of the Monthly Income				<0.001
Yes (n=618)	58.9	24.1	17	
No (n=543)	70.9	17.7	11.4	
Knowledge of Counseling Center				0.014
Yes(n=286)	71.3	19.6	9.1	
No (n=801)	62.8	21	16.2	
Don't know (n= 134)	71.2	17.2	11.2	
Depression				
Characteristics	Normal	Borderline	Clinical	p-value
Age				<0.001
<=20 (n= 731)	85.9	11.1	3	
>20 (n= 502)	77.7	15.1	7.2	
Gender				0.702
Male (n= 554)	81.6	13.5	4.9	
Female (n=680)	83.4	12.1	4.6	
Study of Choice				0.006
Yes (n=974)	84.4	11.6	4	
No (n=252)	76.2	16.3	7.5	

City of Choice				<0.001
Yes (n=685)	86.3	10.2	3.5	
No (n=547)	77.9	15.9	6.2	
Number of Brothers and Sisters				<0.001
none (n=163)	78.5	15.3	6.1	
1-3 brothers (n=1044)	83.9	12	4.1	
> 3 brothers(n=22)	50	27.3	22.7	
Father's Education Level				0.004
Primary school (n= 64)	67.2	20.3	12.5	
Secondary school (n=133)	81.2	16.5	2.3	
High school (n=454)	83.3	11.5	5.3	
University (n=578)	84.4	11.8	3.8	
Mother's Education Level				0.515
Primary school (n= 70)	74.3	17.1	8.6	
Secondary school (n=141)	80.9	14.2	5	
High school (n=512)	84.2	11.7	4.1	
University (n=508)	82.9	12.6	4.5	
Reduction of the Monthly Income				<0.001
Yes (n=618)	77.7	15.9	6.5	
No (n=543)	86.6	10.1	3.3	
Knowledge of Counseling Center				0.049
Yes(n=286)	87.1	11.2	1.7	
No (n=801)	81	13.1	5.9	
Don't know (n= 134)	82.8	13.4	3.7	

Overall mean HADS scores were 6.302 (males 5.634, females 6.845) for anxiety and 4.743 (males 4.811, females 4.690) for depression. Among schools, mean anxiety scores ranged between 3.50 and 8.61 and mean depression scores between 3.89 and 6.90, with highest depression scores being observed in the school of engineering (architecture 6.903, electrical and computer engineering 5.461, mechanical engineering and aeronautics 5.312, chemical engineering 5.257) and school of natural sciences (material of science 5.775, geology 5.3). Prevalence of depression ranged between 5.0% (business administration) and 35.5% (architecture) among the departments.

DISCUSSION

The present study is one of the largest epidemiological studies about depression and anxiety among Greek university students and indicates that undergraduate students in the University of Patras experience anxiety and depression which are associated with various sociodemographic and educational factors.

One in three (34%) and one in five (17%) students screened positive to suffer from both clinical and borderline anxiety and depression respectively.

Prevalence of depression in university students shows wide variation in many countries. In detail, the prevalence of depression among Spanish university students estimated 9% for major type and 33% for mild depressive episodes.^{18,19} In Japan, the prevalence ranges from 21% for major to 33% for mild depressive symptoms too.^{20,21} A study that was conducted among Turkish university students in 2008 demonstrated 27.1%, 47.1% and 27% rates of depression, anxiety and stress, respectively.²² In another study in Pakistan very high prevalence of depression 40.9%, anxiety 74.2% and stress 50% were estimated.²³ A recent study in Saudi Arabia, reported one in five students (18%) to screen positive for any type of anxiety (panic and generalized anxiety disorder).²⁴ Furthermore, in a comparison study between Albania and Kosovo university students, 14.3% (Albania) and 32.3 % (Kosovo) of

participants reported mild to moderate levels of anxiety but only 12.9 % Kosovo sample had marked to severe level of anxiety.²⁵ The reported variations of prevalence of depression and anxiety among university students around the world may be attributed to the use of different assessments to estimate depression, non-representative or small group of participants and cultural differences.

We found no significant differences in depressive symptoms between male and female students. Some previous studies findings among university or college students are contrary to our results and found higher rates of depression among female students.^{26,27} However, studies that are in line with our results showed no differences according to gender in terms of depressive symptoms.²⁸ Findings on gender differences in prevalence of anxiety are also similar with current research suggesting that levels of anxiety are higher in female students in comparison to male.^{29,30}

The prevalence of both depression and anxiety varies significantly among the schools in University of Patras. In details, we found that individuals who were studying in the School of Engineering and School of Natural Sciences had higher mean depression scores. Our findings are contrary to results of others studies that found higher scores of depression and anxiety among medical students.²⁸ On the other hand, a study reported no difference regarding stress and depression among medical students and law students.³¹ It has to be noticed that it is difficult to generalize these results due to methodological issues, limited interpretation and use of different measuring instruments.

Higher age and year of study is strongly associated with depression and anxiety among this representative sample of students in Patras University. These results are similar with other studies findings.^{32,33}

Our study also support that there was a negative correlation between a single parent family and depressive symptoms. In addition, male students with lower educated fathers had higher depression and anxiety and in females anxiety was associated

with higher educational level of their mother. This result shows that the family condition and educational level of parents affect students' emotional state and mental health.³³ Further studies may help to explain these findings.

CONCLUSIONS

Students' mental health is a global issue; the high rates of depression and anxiety among university students have major implications, deteriorating their quality of life, health and academic achievements. Alarming minor signs of depression, anxiety and stress, remain as a neglected public health concern in university or colleges. The solution lies in being aware of it, intervening earlier with designed prevention programs and providing support with adequate and appropriate services in order to minimize the overall burden among the students. Our study findings highlight the need for counseling and support center available to vulnerable students in the University of Patras, Greece. Additional research to improve our understanding of the causes and consequences of university student's mental health and to investigate potential solutions is likely to benefit not only the affected students, but also their own families, institutions and even other people's lives.

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