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Evaluation of the anxiety caused by the COVID-19 in medical students and its relationship with GPA (Grade Point Average) at Jundishapur University of Medical Sciences, Ahvaz

Background: One of the high-risk groups for contracting coronavirus disease 2019 (COVID-19), are students of basic sciences and internships in the field of medicine. Therefore, the study was designed to determine the anxiety level of medical students and its relationship with their GPA (grade point average) at Ahvaz Jundishapur University of Medical Sciences (AJUMS) during the Covid-19 pandemic.

Method: This descriptive-analytical study was conducted in the academic year of 2020-2021 on medical students. Required information, including demographic characteristics, educational level, and level of anxiety was collected from a standard questionnaire. The reliability of the questionnaire was using Cronbach's alpha method ($\alpha=0.919$). The significance level was deemed $p<0.05$.

Results: This study included 158 female students (47.4%) and 175 (52.6%) male participants. The average age of students was 22.65 years and the GPA was 15.36. The level of anxiety in female students was 48.1% higher than the male students 29.7% ($p=0.001$). Age had an inverse relationship with anxiety level ($P<0.001$). GPA had an inverse relationship with anxiety level ($P=0.014$) as well. The level of anxiety in basic science students was 68.5% more than internship students by 2.6% ($P<0.001$).

Conclusion: Anxiety caused by the COVID-19 in medical students at AJUMS showed an inverse relationship with GPA, and as the grade point average increased, the anxiety score decreased. Anxiety was higher in basic science students than intern students. The most concern of the students in both levels was related to the possibility of transmitting the COVID-19 to the people around them.

Keywords: Anxiety, Students, Coronavirus

تقييم القلق الناجم عن فيروس كورونا (COVID-19) لدى طلاب الطب وعلاقته بالمعدل التراكمي (GPA) في جامعة جندیساپور للعلوم الطبية، الأهواز

الخلفية: من الفئات الأكثر عرضة للإصابة بمرض فيروس كورونا 2019 (COVID-19) هم طلاب العلوم الأساسية والمتدربين في مجال الطب. لذلك، تم تصميم الدراسة لتحديد مستوى القلق لدى طلاب الطب وعلاقته بمتوسط درجاتهم في جامعة أهواز جندیساپور للعلوم الطبية (AJUMS) خلال جائحة كوفيد-19. **الطريقة:** أجريت هذه الدراسة الوصفية التحليلية في العام الدراسي 2020-2021 على طلاب الطب. تم جمع المعلومات المطلوبة، بما في ذلك الخصائص الديموغرافية والمستوى التعليمي ومستوى القلق من استبيان قياسي. تم ثبات الاستبيان باستخدام طريقة ألفا كرونباخ ($\alpha=0.919$). تم اعتبار مستوى الأهمية $P<0.05$.

النتائج: شملت هذه الدراسة 158 طالبة (47.4%) و 175 (52.6%) من الذكور المشاركين. كان متوسط عمر الطلاب 22.65 عاماً وكان المعدل التراكمي 15.36. وكان مستوى القلق لدى الطالبات أعلى بنسبة 48.1% منه لدى الطلاب 29.7% ($p=0.001$). وكان للعلمر علاقة عكسية مع مستوى القلق ($P<0.001$). وكان للمعدل التراكمي علاقة عكسية مع مستوى القلق ($P=0.014$). أيضاً، وكان مستوى القلق لدى طلاب العلوم الأساسية أكثر بنسبة 68.5% من طلاب الامتياز وبنسبة 2.6% ($P<0.001$).

الاستنتاج: أظهر القلق الناجم عن فيروس كورونا (COVID-19) لدى طلاب الطب في AJUMS علاقة عكسية مع المعدل التراكمي، ومع زيادة متوسط الدرجات، انخفضت درجة القلق. كان القلق أعلى لدى طلاب العلوم الأساسية منه لدى الطلاب المتدربين. وكان أكثر ما يثير قلق الطلاب في كلا المستويين هو إمكانية نقل فيروس كورونا (كوفيد-19) إلى الأشخاص المحيطين بهم.

الكلمات المفتاحية: القلق، الطلاب، فيروس كورونا

بررسی اضطراب ناشی از کووید-۱۹ در دانشجویان پزشکی و ارتباط آن با معدل در دانشگاه علوم پزشکی جندی ساپور اهواز

زمینه و هدف: یکی از گروه های پرخطر ابتلا به بیماری کووید ۱۹، دانشجویان مقطع علوم پایه و کارورزی رشته پزشکی هستند. این مطالعه با هدف تعیین وضعیت اضطراب دانشجویان رشته پزشکی و ارتباط آن با معدل در دانشگاه علوم پزشکی جندی ساپور اهواز طی همه گیری کووید-۱۹ طراحی شد.

روش: این مطالعه توصیفی-تحلیلی در سال تحصیلی ۱۴۰۱-۱۴۰۰ در دانشجویان رشته پزشکی انجام شد. اطلاعات مورد نیاز از جمله مشخصات دموگرافیک، مقطع تحصیلی، و میزان اضطراب از پرسشنامه استاندارد، جمع آوری شد. پایایی پرسشنامه با استفاده از روش آلفای کرونباخ ($\alpha=0.919$) بود. سطح معنی داری آزمون $p<0.05$ در نظر گرفته شد.

یافته ها: در این مطالعه ۱۵۸ نفر (۴۷/۴ درصد) از نمونه مورد مطالعه زن و ۱۷۵ نفر (۵۲/۶ درصد) دیگر مرد بودند. میانگین سن دانشجویان برابر ۲۲/۶۵ سال و معدل دانشجویان برابر ۱۵/۳۶ شده است. اضطراب در دانشجویان دختر ۴۸/۱٪ بیشتر از دانشجویان پسر ۲۹/۷٪ است ($p=0.001$). سن رابطه معکوس با سطح اضطراب دارد ($p<0.001$). معدل رابطه معکوس با سطح اضطراب دارد ($p=0.014$). میزان اضطراب در دانشجویان علوم پایه ۶۸/۵٪ بیشتر از دانشجویان مقطع کارورزی ۲/۶٪ می باشد ($p<0.001$).

نتیجه گیری: اضطراب ناشی از کووید-۱۹ در دانشجویان رشته پزشکی دانشگاه علوم پزشکی جندی ساپور اهواز ارتباط معکوس با معدل داشته است و با افزایش نمره معدل، نمره اضطراب کاهش یافت. اضطراب در دانشجویان مقطع علوم پایه نسبت به دانشجویان کارورزی بیشتر بود. بیشترین نگرانی دانشجویان در هر دو مقطع مربوط به احتمال انتقال کرونا به اطرافیان بود.

واژه های کلیدی: اضطراب، دانشجویان، کروناویروس

جندیساپور یونیورسیتی آف میڈیکل سائنسز، اهواز میں میڈیکل طلباء میں COVID-19 کی وجہ سے پیدا ہونے والی پریشانی اور GPA (گریڈ پوائنٹ اوریج) کے ساتھ اس کے تعلق کا اندازہ

پس منظر: کووید-۱۹ بیماری ۲۰۱۹ (COVID-19) کا معاہدہ کرنے کے لئے اعلیٰ خطرے والے گروپوں میں سے ایک، طب کے شعبے میں بنیادی سائنس اور انٹرن شپ کے طالب علم ہیں۔ لہذا، مطالعہ کووڈ-۱۹ وبائی امراض کے دوران ابواز جندیساپور یونیورسٹی آف میڈیکل سائنسز (AJUMS) میں میڈیکل طلباء کی پریشانی کی سطح اور ان کے GPA (گریڈ پوائنٹ اوریج) کے ساتھ اس کے تعلق کا تعین کرنے کے لیے ڈیزائن کیا گیا تھا۔

طریقہ: یہ وضاحتی تجزیاتی مطالعہ میڈیکل کے طلباء پر ۲۰۲۰-۲۰۲۱ کے تعلیمی سال میں کیا گیا تھا۔ مطلوبہ معلومات، بشمول آبادیاتی خصوصیات، تعلیمی سطح، اور اضطراب کی سطح کو ایک معیاری سوالنامے سے جمع کیا گیا تھا۔ سوالنامے کی وٹھوسنیتا Cronbach کے الفا طریقہ ($\alpha = 0.919$) کا استعمال کر رہی تھی۔ اہمیت کی سطح کو $p < 0.05$ سمجھا جاتا تھا۔

نتائج: اس مطالعہ میں ۱۵۸ طالبات (47.4%) اور 175 (52.6%) مرد شرکاء شامل تھے۔ طلباء کی اوسط عمر 22.65 سال تھی اور GPA 15.36 تھا۔ طالبات میں اضطراب کی سطح 48.1% زیادہ تھی۔ عمر کا اضطراب کی سطح ($P < 0.001$) کے ساتھ الفا تعلق تھا۔ GPA کا اضطراب کی سطح ($P = 0.014$) کے ساتھ بھی الفا تعلق تھا۔ بنیادی سائنس کے طلباء میں سے چینی کی سطح انٹرن شپ کے طلباء کے مقابلے میں 68.5% ($P < 0.001$) سے زیادہ تھی۔

نتیجہ: AJUMS میں میڈیکل طلباء میں COVID-19 کی وجہ سے ہونے والی بے چینی نے GPA کے ساتھ الفا تعلق ظاہر کیا، اور جیسے جیسے گریڈ پوائنٹ اوسط میں اضافہ ہوا، بے چینی کا سکور کم ہوا۔ انٹرن طلباء کے مقابلے بنیادی سائنس کے طلباء میں سے چینی زیادہ تھی۔ دونوں سطحوں کے طلباء کی سب سے زیادہ تشویش اپنے آس پاس کے لوگوں میں COVID-19 کی منتقلی کے امکان سے متعلق تھی۔

مطلوبہ الفاظ: بے چینی، طلباء، کرونا وائرس

INTRODUCTION

Due to the emergence of coronavirus disease in 2019 (COVID-19) for the first time in the city of Wuhan, China, and its quick spread to other countries, and due to the wide range of its symptoms and complications, this disease was declared as a global crisis (1, 2). As a result, in order to control the spread of the virus, most countries were placed in quarantine for different periods (1). Studies done before the COVID-19 pandemic have shown that the anxiety and psychological distress of medical students have been different in each year and more critical in the clinical years. There is also evidence that medical students have higher levels of anxiety and depression compared to the general population (3, 4). Previous studies have reported that clinical students suffered from psychological issues including having stress and being nervous during the COVID-19 pandemic (2). Moreover, Anxiety and depression in preclinical students were more compared to clinical students. In addition, about 90% of the medical students used the distance system for learning and training during the COVID-19 pandemic. Majority of students reported that the covid-19 pandemic has affected their curriculum, social, and physical health (5).

The rapid process of making changes in the field of learning and teaching from face-to-face to virtual education, and the lack of infrastructure with the outbreak of the pandemic resulted in many challenges and concerns for professors and students (6). Shortage of experience and familiarity in the field of electronic assessment, crowded home environment, communication and technical problems, and lack of accessing to the necessary facilities caused anxiety and stress in medical students (6). In addition to education-related changes, loneliness due to social distancing was another barrier. Being a student during quarantine created a greater risk of loneliness. Physical distancing, as well as shift to online learning might lead to isolation, which caused anxiety and depression (7). The high prevalence of mental health problems among medical students before the Covid-19 pandemic caused public health concern. It has been reported that 27.2% and 11.1% of medical students in different countries have had symptoms of depression and suicidal thoughts, and 33.8% showed anxiety symptoms (8). In general, the main stressors of medical students can be classified into three groups: academic pressure, psychosocial issues, and health-related stressor (9, 10).

Considering that few studies have been performed in Iran regarding the examination and comparison of the anxiety of medical students of different academic years during the COVID-19 pandemic, the relationship between the anxiety caused by the COVID-19 and the grade point average (GPA) of medical students during this period has not been investigated. Since the score is one of the tools for measuring academic success in students, therefore, the aim of the current study was the anxiety of medical students and its relationship with GPA during the COVID-19 pandemic, school of Medicine, Ahvaz Jundishapur University of Medical Sciences (AJUMS), academic year 2021-2022. It is hoped that its results will lead to more knowledge about the impact of pandemics on the mental state of different classes and

occupations of society and will be a factor for the planning of officials and health care workers regarding the management of mental crises caused by this pandemic.

METHODS

The current research is a descriptive-analytical study conducted in the academic year of 2021-2022. The target population included medical students (basic sciences, and interns) of AJUMS who were interested in participating in the study. In this way, 181 out of 354 basic science medical students and 152 out of 266 intern students were included in the study according to their interest. After obtaining the necessary information and making sure that the information contained in the questionnaire was safe, the students entered the study with written consent. All subjects gave informed consent (yes/no) electronically before completing the questionnaire. Students who did not agree to participate in the study and those questionnaires which were filled incompletely were excluded from the study. Also, the research unit was assured that the participation in this study was based on interest and the information recorded in the questionnaire was anonymous and confidential. Demographic variables included gender, age, and the GPA.

The data collection tool included: A standard questionnaire (Corona Disease Anxiety Scale) which was used to measure anxiety caused by the spread of the COVID-19 in Iran. The reliability of the questionnaire was using Cronbach's alpha method ($\alpha=0.919$) (11). Items 1 to 9 measured mental symptoms and items 10 to 18 measured physical symptoms. This tool is scored on a 4-point Likert scale (never = 0, sometimes = 1, most of the time = 2, and always = 3); Therefore, the highest and lowest scores obtained by respondents in this questionnaire were between 0 and 40. High scores in this questionnaire indicated a higher level of anxiety in people. The questionnaire was given to the students to fill it.

Statistical

The SPSS software was used for data analysis. The chi-square test was used to compare the level of anxiety caused by the COVID-19 between the basic science students and interns and to compare the anxiety level caused by the COVID-19 between male and female. Pearson's correlation coefficient was used to check the level of anxiety with age, and the grade point average. $p < 0.05$ was considered significant.

RESULTS

The results of the study of students' gender showed that 158 (47.4%) of the studied sample were women and 175 (52.6%) were men. The average age of the students was 22.65 years and the GPA was 15.36. According to the obtained results, the average of the answers given to all the items except (I am worried about the spread of Corona to those around me) in both the basic sciences and internships are below the average (Table 1, and 2).

Most of the students obtained low anxiety scores from the questionnaire. The total anxiety score was categorized into (occasionally or never a score less than or equal to 17) and (most of the time or always a score greater than 18). 61.6%

of students had low anxiety and other students had more anxiety. It should be noted that only 13 (3.9%) students did not have any anxiety during the COVID-19 and none of the students had constant anxiety.

The correlation between the level of anxiety and the gender of students (Table3) showed that 48.1% of female students

had high anxiety compared to 29.7% of male students, indicating more anxiety in female students than in male students ($p=0.001$).

Moreover, there were the ratio of high anxiety in basic science students 68.5% compared to internship students 2.6% ($p<0.001$) (Table 4).

Table 1. Frequency distribution of items related to anxiety caused by Covid-19 in medical students of basic sciences

Question number	Criterion	Always Number (%)	Most of the time Number (%)	Sometimes Number (%)	Never Number (%)	Mean \pm SD
1	Thinking about Corona makes me anxious.	0	78 (43.1)	72 (39.8)	31(17.1)	1.26 \pm 0.73
2	I feel tense when I think about the threat of Corona.	2(1.1)	100 (55.2)	32 (17.7)	47(26)	1.32 \pm 0.87
3	I am very worried about the spread of corona disease.	6(3.3)	76(42)	56 (30.9)	43 (23.8)	1.25 \pm 0.86
4	I'm afraid to get corona.	40(22.1)	50 (27.6)	56 (30.9)	35(19.3)	1.53 \pm 1.04
5	I think I might get corona at any moment.	10 (5.5)	84 (46.4)	51(28.2)	36 (19.9)	1.38 \pm 0.86
6	With the slightest symptoms, I think I have the corona virus and get myself checked.	10 (5.5)	79 (43.6)	63 (34.8)	29(16)	1.39 \pm 0.82
7	I am worried about the spread of corona to people around me.	60 (33.1)	45 (24.9)	53(29.3)	23(12.7)	1.79 \pm 1.05
8	Anxiety related to Corona has disrupted my activities	8(4.4)	46 (25.4)	88 (48.6)	39(21.5)	1.13 \pm 0.8
9	The media's attention to Corona worries me	0	60 (33.1)	76(42)	45 (24.9)	1.08 \pm 0.76
10	Thinking about Corona has disturbed my sleep.	0	0	106 (58.6)	75 (41.4)	0.59 \pm 0.5
11	Thinking about Corona has made me lose my appetite.	0	0	79 (43.6)	102 (56.4)	0.44 \pm 0.5
12	When I think about Corona, I get a headache.	0	0	56 (30.9)	125 (69.1)	0.31 \pm 0.46
13	I shudder when I think about Corona.	6(3.3)	0	10 (5.5)	165 (91.2)	0.58 \pm 0.16
14	When I think about Corona, my hair stands on end.	6(3.3)	2(1.1)	14 (7.7)	159 (87.8)	0.20 \pm 0.62
15	Corona has become a nightmare for me.	4(2.2)	4(2.2)	62 (34.3)	111 (61.3)	0.45 \pm 0.65
16	Due to the fear of corona, my physical activity has decreased.	8(4.4)	118 (65.2)	18 (9.9)	37(20.4)	1.54 \pm 0.87
17	It is difficult for me to talk about Corona with others.	0	38(21)	86 (47.5)	57 (31.5)	0.89 \pm 0.72
18	I get heart palpitations when I think about Corona.	0	6(3.3)	92 (50.8)	83 (45.9)	0.58 \pm 0.56

Table 2. Frequency distribution of items related to anxiety caused by Covid-19 in medical students in the internship stage

Question number	Criterion	Always Number (%)	Most of the time Number (%)	Sometimes Number (%)	Always Number (%)	Mean \pm SD
1	Thinking about Corona makes me anxious.	1(0.7)	2(1.3)	17(11.2)	132 (86.8)	0.16 \pm 0.45
2	I feel tense when I think about the threat of Corona.	1(0.7)	2(1.3)	27 (17.8)	122 (80.3)	0.22 \pm 0.49
3	I am very worried about the spread of corona disease.	5(3.3)	42 (27.6)	73(48)	32(21.1)	1.13 \pm 0.78
4	I'm afraid to get corona.	6(3.9)	42 (27.6)	85 (55.9)	19 (12.5)	1.23 \pm 0.71
5	I think I might get corona at any moment.	6(3.9)	45(29.6)	88 (57.9)	13(8.6)	1.29 \pm 0.68
6	With the slightest symptoms, I think I have the corona virus and get myself checked.	15 (9.9)	60 (39.5)	68 (44.7)	9(5.9)	1.53 \pm 0.75
7	I am worried about the spread of corona to people around me.	20 (13.2)	78 (51.3)	49(32.2)	5(3.3)	1.74 \pm 0.72
8	Anxiety related to Corona has disrupted my activities	0	4(4.6)	42 (27.6)	106 (69.7)	0.33 \pm 0.52
9	The media's attention to Corona worries me	0	3(2)	18 (11.8)	131 (86.2)	0.16 \pm 0.42

Table 2. Continued

Question number	Criterion	Always Number (%)	Most of the time Number (%)	Sometimes Number (%)	Always Number (%)	Mean ±SD
10	Thinking about Corona has disturbed my sleep.	0	2(1.3)	31 (20.4)	119 (78.3)	0.23±0.45
11	Thinking about Corona has made me lose my appetite.	0	3(2)	35(23)	114(75)	0.27±0.49
12	When I think about Corona, I get a headache.	0	2(1.3)	41(27)	109 (71.7)	0.30±0.49
13	I shudder when I think about Corona.	0	2(1.3)	9(5.9)	141 (92.8)	0.09±0.32
14	When I think about Corona, my hair stands on end.	0	1(0.7)	7(4.6)	144 (94.7)	0.06±0.26
15	Corona has become a nightmare for me.	0	1(0.7)	7(4.6)	144 (94.7)	0.06±0.26
16	Due to the fear of corona, my physical activity has decreased.	0	3(2)	11(7.2)	138 (90.8)	0.11±0.37
17	It is difficult for me to talk about Corona with others.	3(2)	12 (7.9)	38(25)	99(65.1)	0.47±0.73
18	I get heart palpitations when I think about Corona.	0	1(0.7)	8(5.3)	143 (94.1)	0.07±0.27

Table 3. Correlation between anxiety level and gender of students

Anxiety score		Never or Occasionally	Most of the times or Always	Total	P value
Gender					
Female	Number (%)	82 (51.9%)	76 (48.1%)	158	0.001
Male	Number (%)	123 (70.3%)	52 (29.7%)	175	
Total	Number (%)	205 (61.6%)	128 (38.4%)	333	

Table 4. Correlation between the level of anxiety and the educational level of the students

Anxiety score		Never or occasionally	Most of the times or always	Total	P value
Level of education					
Basic science	Number (%)	57 (31.5%)	124 (68.5%)	181	<0.001
Internship	Number (%)	148 (97.4%)	4 (2.6%)	152	
Total	Number (%)	205 (61.6%)	128 (38.4%)	333	

The students' answers to the questions of the questionnaire were shown in terms of repetition of the same answer. The most answers were never given to questions 14 (When I think about Corona, my hair stands on end.) and 13 (When I think about Corona, my body tremble). The most occasional answer to question 4 (I am afraid of getting corona) was with 141 cases (8.2%). Most of the time, the answer was related to question 6 (with the smallest symptoms, I think I have corona and I will check myself) with 139 cases (12.7%). Regarding the answer, question 7 (I am worried about the spread of the corona virus to people around me) has always been the most repeated one.

To determine the correlation between age and anxiety score, Pearson's correlation coefficient was done, and this coefficient was equal to $r = -0.33$, which indicated a significant and inverse relationship between age and anxiety

score ($p < 0.001$) (Fig.1).

In order to determine the correlation between GPA and anxiety score (Fig. 2), Pearson's correlation coefficient was performed, and this coefficient was equal to $r = -0.135$, which showed a significant inverse relationship between GPA and anxiety score ($p < 0.05$).

It should be noted that the GPA score did not show a significant relationship with age ($p = 0.95$) and as a result, the relationship between these two variables (GPA and age) with the anxiety score was a direct effect.

DISCUSSION

In this research, the anxiety caused by the COVID-19 among medical students during the C COVID-19 pandemic was investigated at AJUMS. As the results of the study showed, the level of anxiety caused by the Covid-19 was higher in basic

science students than clinical students. Also, anxiety was higher in female students than male students. There was an inverse relationship between students' GPA and anxiety level. The correlation between age and anxiety score indicated an inverse relationship between age and anxiety score, indicating the anxiety score decreased with increasing the age.

According to the results, the average answers given to each of the anxiety level items caused by the COVID-19 among medical students has become less than average during the COVID-19 pandemic except (I am worried about the spread of the corona virus to people around me). The findings of

Ansari et al.'s study showed that there was no significant difference in the level of anxiety among Iranian students before and after the outbreak of the COVID-19. While a higher GPA was associated with less anxiety among students with a higher degree, which may be due to greater awareness of the COVID-19 disease, which is consistent with the results of this study (12). The study of Husky et al. in France on students under home quarantine showed that two thirds of the studied subjects experienced increased anxiety (13). Alsofoufi et al. showed that anxiety was higher among students before entering the clinical course compared to students who entered the clinical course. In addition, about 90% of

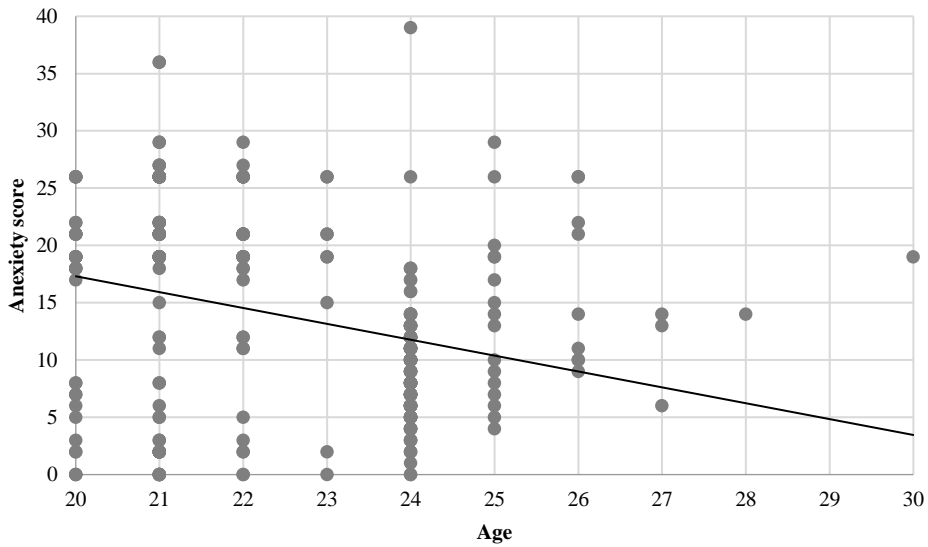


Figure 1. Linear relationship between anxiety score and students' age

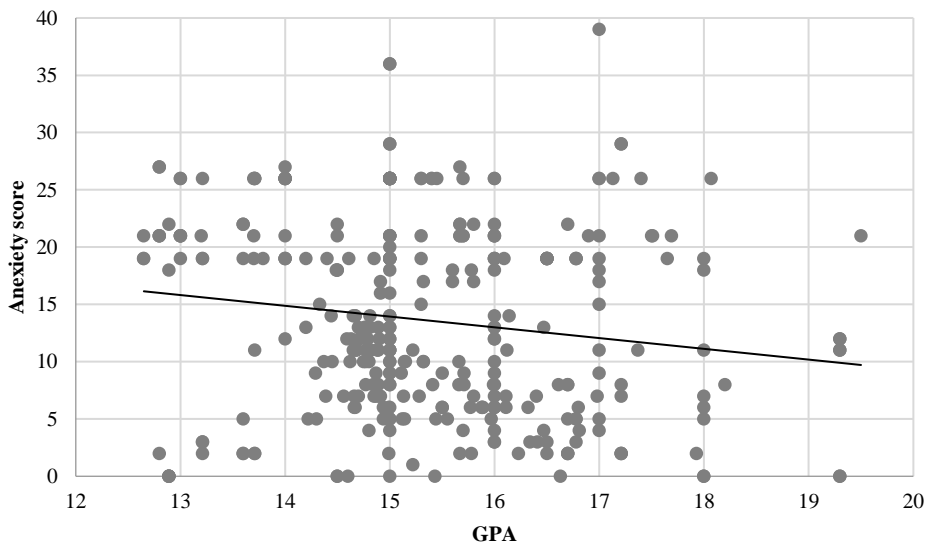


Figure 2. Linear relationship between anxiety score and GPA of students

medical students used social media for learning and teaching during the Corona pandemic. The majority of students reported that the Corona pandemic has affected their educational schedule, while many believed that the COVID-19 has affected their physical health by 41.3%, their social health by 53.4%, their mental health by 72.2%, as well as their intellectual ability (5). In addition, in a previous study that was conducted before the outbreak of the COVID-19, a lower GPA with higher anxiety was reported among medical students (14). In the current study, the level of anxiety caused by the COVID-19 in basic sciences was higher among women than men, but the level of anxiety in the internship level did not have a significant relationship with gender, which was in line with the study done by Cao et al (15). Perissotto et al found high levels of psychological burden, especially in first-year medical students. Freshman students entered the medical school shortly before the quarantine. Therefore, they could not fully experience academic life and develop new social support networks. Hence, depression and anxiety were directly related to the academic year: the lower the academic year was associated with the greater the psychological problems (16).

In this study, age and anxiety score had an inverse correlation, that is, anxiety score decreased with increasing age. Recently, another study showed that there was no significant difference between the level of anxiety caused by the COVID-19 and age among the medical students, moreover, medical students were at risk of mental health during the COVID-19 pandemic, which can lead to reduced work capacity, impaired concentration and learning, impaired performance of assigned tasks, change their quality of life, and inappropriate performance (17).

The most "always" response was related to the item "I am worried about the spread of the COVID-19 to the people around me". Therefore, the most concern of medical students was the transmission and spread of the disease to their family members. Therefore, not only for the health of medical students and medical staff, but also for the health of their family members, taking into account that there was the highest possibility of contracting the corona virus through the carriers of hospital workers, there should be measures such as providing vaccines for family members, especially sensitive groups. Like cardiovascular patients, immunocompromised patients should be considered because this will reduce the level of anxiety of interns and as a result improve their performance, and then reduce medical errors and increase services to patients, which will reduce the costs of the healthcare system.

Since this project was related to the thesis of a medical student and there was a time limitation to carry out the study, therefore, the present researchers could not examine the

level of anxiety caused by the COVID-19 on all students of different fields (nursing, dentistry, and pharmacy) at AJUMS. Owing to mental disorders can become chronic, they suggest future follow-up projects to assess the long-term psychological consequences of COVID-19 on students.

This study also considers the mental health of medical students to be important. Hence, there is a need for training to help medical students to cope with critical situation such as the COVID-19. Therefore, policy makers should adopt more appropriate solutions for the mental health and peace of medical students and other students in critical condition in future. So, it helps medical education planners to improve the quality of education in an anxiety-free environment.

According to the findings, in addition to culture building in this field, there is a need to try to raise the level of mental health of medical students. It should be considered as the wide and complex topics of medical courses to reduce the level of anxiety at AJUMS. For prevention and timely treatment, it is necessary to make an initial assessment of the incidence of the mentioned cases. Therefore, managing the treatment of the COVID-19 disease, an important part of the efforts of health officials should be planned to prevent and treat the negative effects of stress caused by the COVID-19 on the medical staff.

Ethical considerations

Ethical issues including plagiarism, informed consent, misconduct, data fabrication and/or falsification, double publication and/or submission, redundancy, etc. have been completely observed by the authors. The current research was confirmed by the human Ethics Committee of Ahvaz Jundishapur University of Medical Sciences, Iran (IRAJUMS.REC. 1400.574). People participating entered the study after obtaining the necessary explanations and finding confidence in memorizing the information contained in the questionnaire with written informed consent. The present researchers confirm that all methods were performed in accordance with the relevant guidelines, regulations and according of Declaration of Helsinki.

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