

Anxiety and obsessive-compulsive disorder among undergraduate medical students in Syria during war and COVID-19: A cross-sectional study

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Abstract

Introduction Syria has been suffering war for 10 years and COVID-19 added particular stress to people. Medical students are more prone than general population to anxiety and obsessive-compulsive disorder (OCD) which we are going to assess in this study. **Methods** This is a cross-section study that used online questionnaires were distributed in Social Media groups that included medical students. They included demographics, Zung self-Rating Anxiety Scale (SAS) and Yale-Brown OCD Scale (YBCOS). **Results** Overall, 180 participants were included, of which, 67 (37.2%) were males. Females and interns had higher OCD scores compared with males and more junior students $p < 0.05$. OCD scores were not associated with social status, work, smoking, residency status, or having chronic diseases. Factors that were associated with higher anxiety scores were female gender and smoking $p < 0.05$. In contrast, anxiety had no significant association with social status, residence status, academic year, work, and chronic diseases. Anxiety scores were not correlated with the consumption of tea, coffee, mate, or alcohol. OCD scores were also not correlated with coffee, mate, or alcohol consumption, but they were significantly correlated with tea consumption. When using regression, OCD and anxiety were associated with only sex, smoking and with each other. **Conclusion** These numbers were not higher than most of other studies. Further studies are needed for further evaluation to determine the cause whether it was from war having equal effect on mental health or COVID did not affect people as much in Syria.

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Conclusion

These numbers were not higher than most of other studies. Further studies are needed for further evaluation to determine the cause whether it was from war having equal effect on mental health or COVID did not affect people as much in Syria.

Key words:

Anxiety; Covid-19; medical student; mental health; OCD; Syria

What is already known about this topic?

- Medical students are more prone to OCD and anxiety.
- War also adds more stress on people, as Syria has been in conflict for the last 10 years.
- University age is an important phase in life and mental health disorders in this age have to be addressed.

What does this article add?

- Only gender and smoking were major contributors to OCD and anxiety.
- Study year and other factors were not significant.
- The anxiety prevalence was moderate compared to other studies.
- First study to estimate OCD and anxiety in Syria, particularly in medical students.

Introduction

Coronavirus disease (COVID-2019) pandemic has caused a worldwide increase of hospitalization from pneumonia and multiorgan failure (1). During such a difficult time, there was an increased risk of many mental disorders such as Obsessive-compulsive disorder (OCD) and anxiety among health care workers (2).

OCD is one of the common mental disorders that people have worldwide and can have a life-time prevalence of 1.1-3.3%. OCD can have a wide range of symptoms and can take many forms which might make diagnosis difficult. OCS usually develops during adolescence and late teens and the median age is usually around 20 years of age, which makes university students more susceptible to develop it. Unfortunately, undergraduate medical students have particular risk due to the nature of their curriculum that allows less time for leisure and due to the way they are taught to be more perfect and precise to the degree of obsess a little more; all these risk factors and others make medical students more prone to OCD than the general population (3-5). They are also more prone to have general anxiety disorder (GAD) and burnout from the aforementioned stressors that cause conflicts in work-life balance (6). COVID-19 adds up to their stressors by disrupting their pre-clinical and clinical training and by forcing them to adapt to the new social environment. This caused medical students to have 61% and 70% higher for anxiety and depression, respectively (7). A systematic review with meta-analysis found that anxiety prevalence was about 28% among medical students during COVID-19 (8). (7, 8)

Particularly in Syria, mental health has already been neglected for decades, and education has been significantly injured as many facilities were destroyed during the destruction of the Syrian social structure (18). There was a destruction of the health facilities and the economy deteriorated to the extent that poverty reached more than 80% which is probably worse now during COVID (2).

To study medicine in Syria through the public system which has the majority of medical students and considered the highest prestigious, students have to pass year 12 of school with high grades. Then they have to enter a preparatory school for one year. This year along with year 12 allow students to enter medical

schools across Syria as their average marks are the determinant factors. Subsequently, students must do at least 2 years of pre-clinical learning and 2 years of clinical working. Finally, they must do one year of internship that has rotation and can graduate by doing the national medical exam, so undergraduate medical school is at least 6 years in total. Medical students in this study were categorized according to these groups.

Therefore, this study aims to assess the prevalence of anxiety and OCD among medical students in Syria, during the COVID-19 pandemic after 10 years of war.

Methods:

Sampling:

This is a cross-sectional study that was conducted on medical students from Aleppo and Damascus universities during the spread of the Coronavirus. Online surveys were used and posted on Social Media groups that included these students. This study was conducted in the period between 07/2020 and 08/2020. In total, 180 responders filled in the questionnaires and the ages included were between 18 and 26 years old. The survey was administered in Arabic which is the native language in Syria.

Consent and approval for the study:

Online informed consent was taken from all participants before proceeding with the survey. The ethical aspects of the study were approved by the ethical committee of the faculty of medicine. University of Aleppo, Aleppo, Syria.

Questionnaires:

Demographic information:

The questionnaire consisted of three sections; the first one included the general demographic information which were age, sex, academic year (preparatory, preclinical, clinical and internship year), occupation if had one, regular smoking (yes or no question) and habits such as the frequency of drinking coffee, tea, and alcohol. The second one included Zung self-Rating Anxiety Scale (SAS) (9), while the third section included Yale-Brown OCD Scale (YBOCS) questions (10).

An Arabic version of SAS was used in this study which is a screening tool for anxiety (11). We also added a choice for each question that allowed the participant to declare whether they had these symptoms before COVID-19 as well. Each question had a score from 1 to 4 depending on the answer. A score of 36 or higher indicated the need for a medical assessment for GAD and the total score was 80 (9).

An Arabic version produced by native Arabic speakers of the Obsessive-Compulsive Test YBOCS was used to assess obsessive-compulsive disorder (12). YBOCS rates the severity and type of symptoms in patients with obsessive-compulsive disorder (OCD). Each option of each question of this scale was recoded into numbers from 0 to 4. The total score determines whether the participant had no OCD, mild, moderate, severe, or extreme OCD and the total score was 40 (9).

Data analysis:

We used IBM SPSS software, version 26 for Windows (IBM Corp.: Armonk, New York) for data analysis. Independent-samples t-test and one-way analysis of variance (ANOVA) were performed. Pearson correlation coefficient was also calculated and we used forward linear regression as multi-variable analysis. Values of less than 0.05 for two-tailed p values were considered statistically significant. When using the regression, we entered variables that had p value of 0.25 as setting it as 0.5 can miss some variables that might be important (13).

Results

In this study, 180 participants responded to the questioner, of which, 67 (37.2%) were males and 113 (62.8%) were females. The majority were singles (97.8%), and (83.3%) of them lived with their families. Only (14.4%) of the participants were employed, (7.2%) were smokers, (13.3%) had chronic disease(s), and (46.7%) lived

with someone with a chronic disease. Characteristics of the participants, their answers of YBCOS and Zung Self-rating Anxiety Scale with its statements that were reported to be present before covid-19 pandemic are demonstrated in (table 1). We found that (37.2%) of the participants needed further medical assessment of GAD compared to (47.8%) of the participants who had no OCD, while only (1.7%) had severe OCD due to covid-19 pandemic. However, (31.7%) and (18.9%) had mild and moderate OCD, respectively.

According to YBOCS, the mean score of females was (10.9 out of 40), which was higher than males' mean score (5.9) ($p < 0.001$). Senior students had a higher mean score (14.2) compared with other students. (table 2)

When using Zung SAS, females mean score was (36.2 out of 80) compared to males who had significantly lower mean score (32.3) ($p = 0.001$). Smokers had a significantly higher mean score (40.4) compared with non-smokers (34.3) ($p = 0.007$). (table 3)

There were no significant correlations when comparing stimulants (tea, coffee, mate, and alcohol) with Zung SAS or YBCOS, except for tea with the latter ($p = 0.002$). (table 4)

There was a moderate correlation between Zung SAS and YBCOS scores. ($p < 0.001$, $r = 0.517$). (figure 1)

We used forward linear regression to regress YBCOS on the relevant variables that had the $p < 0.25$ in table 2 which were sex, smoking, academic year, and work. We used the same forward linear regression to regress Zung SAS scores on the relevant variables that had $p < 0.25$ in table 3 which were sex, smoking and chronic diseases in the participants. The results can be found in (Table 5). When using the same regression to regress YBCOS on the significant finding of table 5 which are sex and smoking while adding Zung SAS scores, we found that only Zung SAS and sex were significant ($p < 0.001$) and they R^2 of 26.7% and 5.3%, respectively.

Discussion

This study included 180 medical students in Syria and estimated the prevalence of anxiety and OCD during the COVID-19 pandemic. It found that females and interns had higher OCD scores compared with males and more junior students. OCD scores were not associated with social status, work, smoking, residency status before or during university, having chronic diseases themselves or with a housemate. Factors that were associated with higher anxiety scores were female gender and smoking. In contrast, anxiety had no significant association with social status, residence before and during university, academic year, work, chronic disease, and chronic disease of a housemate.

When using multi-variable analysis, only sex and smoking were significant factors in OCD and anxiety. OCD was significantly affected by anxiety when using multi-variable analysis as the R^2 was 26.7%, but this does not signify that it might be the vice versa that is true OCD is the one which increases the anxiety or that they are both associated).

Anxiety scores were not correlated with the consumption of tea, coffee, mate, or alcohol. OCD scores were also not correlated with coffee, mate, or alcohol consumption, but they were significantly correlated with tea consumption. A previous study on the general Syrian population reported that shisha smoking was significantly associated with worse mental health (14).

Our study showed that 37 (20.6%) of participants had moderate to severe OCD, while 67 (37.2%) participants needed further assessment for general anxiety and they both were more frequent among females. One study in Iran found OCD prevalence was about 1.8% and was significantly higher in females compared to males (2.8% compared to 0.7%) (3). One study from Iraq during COVID-19 found that 43% of undergraduate medical students had probable OCD symptoms and it was more predominant in female students. Furthermore, 58.5% and 53.5% of participants had symptoms of worry and stress, respectively (15). Moreover, 53.6% of university students in Egypt had anxiety which was more common among females (16). Moreover, another study from the USA found that anxiety rate was 61% higher than anxiety whereas a systematic review found that it was about 28% (8). These differences between these numbers and our study might be from Syrians being exposed to chronic stress from war and the deteriorating economy.

We found a significant correlation between OCD and anxiety. This coincides with the findings reported previously concerning the COVID-19 pandemic (17). An earlier cross-sectional study performed in Saudi Arabia revealed a positive correlation between the new-onset OCD during the COVID-19 pandemic and the high perceived stress (17).

The war and economic factors harmed the mental well-being of the Syrian population before COVID-19. As reported by a previous study, about 60.8% of the adult Syrian population had at least two positive post-traumatic stress disorder (PTSD) symptoms, and 61.2% had a moderate to severe mental disorder (18). So, these factors might have affected the results when evaluating the impact of COVID-19 on mental health. Another study in Syria during the lockdown reported that about 42.7% of the adult Syrian population had at least two PTSD symptoms, and about 42.6% had moderate to severe mental disorders (19). An Indian study reported that people with insufficient supplies during the lockdown were more severely affected by anxiety, stress, and depression than the rest (20).

Several factors contributed to the psychological burden of the COVID-19 pandemic that added to the burden of direct morbidity caused by COVID-19 (14). After the lockdown in Syria, the increased living costs and the reduced capability to ensure income and provide food contributed significantly to the psychological burden of the pandemic (14, 19). Surprisingly, a deteriorating economy from COVID-19 negatively impacted mental health more than war variables and direct COVID-19 damage in Syria (14, 19). During the third week of the first lockdown and before economy deterioration, lockdown had a positive effect on mental health which was probably due to giving people a break from war and life stress in addition to not having any COVID cases at that time (19). However, after a few months as the economy deteriorated and despite lockdown termination and while the cases started to increase, economy was the major stressor surpassing all (14). Our study was conducted one to two months after the previous study while COVID cases number was rapidly increasing, and lockdown was terminated.

Doctors reported to have less stress than the general population and the other healthcare workers (14). However, another study found that being a healthcare worker, young age, difficulty concentration, fear of being infected, and work overload were identified as risk factors for anxiety during the COVID-19 pandemic (21). Students and healthcare professionals were among the most affected workgroups by anxiety, stress, and depression during the COVID-19 pandemic (20).

In a Chinese population, a study found that age, education level, health status, and personnel category (according to the persons' role in battling COVID-19) significantly affected anxiety scores. Furthermore, higher levels of anxiety were found in immature adults, lower education than junior high school, people with chronic diseases, and frontline medical personnel (22). Zhu et al. 2020 agreed that frontline medical personnel had higher anxiety levels during the COVID-19 pandemic (23). Hu et al. 2020 reported that anxiety scores were not affected by sex, region, marital status, and previously confirmed or suspected COVID-19 affection (22). Interestingly, the type of quarantine applied affected the anxiety scores; the stricter the quarantine was, the higher the anxiety scores were (22). Another study from Germany reported that the COVID-19 mental health burden was more prominent in females and younger people (24).

Previous studies reported contradicted psychological impact for the lockdown duration. Some studies reported a negative effect on mental health when being in longer quarantine duration (25), while others reported no significant impact (22). However, this might be due to the different quarantine measures and durations reported in each study.

Limitation:

This study focused on the psychological impact of COVID-19 and its related quarantine on medical students in Syria. The sample size in this study was small compared with other population-based cross-sectional studies due to the restriction of the population. Depending on online forms would exclude individuals with limited access to the internet. However, online questionnaires proved to be an effective method to reach a large population in many studies in Syria (14, 18, 19). In addition, the effect of quarantine on mental health could not be isolated from the impact of the war and other social and economic factors. Responses were

based on self-reporting tools that might be influenced by subjects' misconception of their own condition. Socio-economic status (SES) could not be assessed as it is hard to standardize salaries and there are no valid methods to determine SES in Syria, specially that it is inappropriate to ask directly about the salary (18). Also, we could not conclude a causal association depending on the results of a cross-sectional study design. Future large prospective studies using objective assessment methods would provide more conclusive results.

Conclusion

During the COVID-19 pandemic, among medical students in Syria, OCD was more prevalent among females, smokers and senior students, while anxiety was more prevalent among females and smokers. OCD and anxiety were strongly associated. Around 20% of medical students had moderate to severe OCD, while 37.2% needed further assessment for general anxiety. More studies are required to determine the reasons why OCD and anxiety was prevalent among medical students compared to the general population.

Abbreviations:

ANOVA	Analysis of variance
CI	Confidence Interval
COVID	Coronavirus disease
GAD	General Anxiety Disorder
OCD	Obsessive-compulsive disorder
PTSD	post-traumatic stress disorder
SAS	Self-Rating Anxiety Scale
SES	Socioeconomic status
SPSS	Statistical Package for the Social Sciences
YBCOS	Yale-Brown OCD Scale

Declarations:

Ethics approval and consent to participate:

Online informed consent was taken before proceeding with the survey for participating in the research, and for using and publishing the data. We assured to maintain confidentiality and asked no questions that might reveal the person's identity.

Our study protocol and ethical aspects were reviewed and approved by Aleppo University deanship, Damascus, Syria.

Consent for publication:

Online consent for using and publishing the data were taken before participating in the research.

Availability of data and materials:

The data can be made available upon reasonable request.

Competing interests:

We have no conflict of interest to declare.

Funding:

We received no funding in any form.

Authors' contributions:

- **MM:** First author; Conceptualization; Data curation; Formal analysis; Investigation; Methodology; Project administration; Supervision; Resources; Validation; original draft; Writing - review & editing.

- **MNK:** original draft & editing; Investigation; Formal analysis; data curation.
- **RH:** Writing - editing; Supervision.
- **AK:** Senior author; Conceptualization; data curation; Formal analysis; Software. Resources; Validation; original draft; Writing - review & editing.

All authors have read and approved the manuscript.

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Table 1 sample characters	Table 1 sample characters	Table 1 sample characters	Table 1 sample characters n (%) (N=180)	Table 1 sample characters n (%) (N=180)
Sex	Sex	Sex	Sex	Sex
	Male	Male	67 (37.2%)	67 (37.2%)
	Female	Female	113 (62.8%)	113 (62.8%)
Social status	Social status	Social status	Social status	Social status
	Single	Single	176 (97.8%)	176 (97.8%)
	Engaged	Engaged	2 (1.1%)	2 (1.1%)
	Married	Married	2 (1.1%)	2 (1.1%)
living	living	living	living	living
	with family	with family	150 (83.3%)	150 (83.3%)
	With others	With others	23 (12.8%)	23 (12.8%)
	University	University	7 (3.9%)	7 (3.9%)
	Housing	Housing		
Residence before the university	Residence before the university			
	City	City	144 (80.0%)	144 (80.0%)
	countryside	countryside	36 (20.0%)	36 (20.0%)

academic year				
	First year	First year	6 (3.3%)	6 (3.3%)
	Second Year	Second Year	25 (13.9%)	25 (13.9%)
	Third Year	Third Year	51 (28.3%)	51 (28.3%)
	Fourth year	Fourth year	54 (30.0%)	54 (30.0%)
	Fifth year	Fifth year	30 (16.7%)	30 (16.7%)
	Sixth year	Sixth year	14 (7.8%)	14 (7.8%)
work	work	work	work	work
	No	No	154 (85.6%)	154 (85.6%)
	yes	yes	26 (14.4%)	26 (14.4%)
Smoking	Smoking	Smoking	Smoking	Smoking
	No	No	167 (92.8%)	167 (92.8%)
	yes	yes	13 (7.2%)	13 (7.2%)
Chronic diseases				
	No	No	156 (86.7%)	156 (86.7%)
	yes	yes	24 (13.3%)	24 (13.3%)
Chronic diseases for residents with you				
	No	No	96 (53.3%)	96 (53.3%)
	yes	yes	84 (46.7%)	84 (46.7%)
statements of Zung Self-rating Anxiety Scale before covid-19	statements of Zung Self-rating Anxiety Scale before covid-19	statements of Zung Self-rating Anxiety Scale before covid-19	statements of Zung Self-rating Anxiety Scale before covid-19	statements of Zung Self-rating Anxiety Scale before covid-19
	Frequency	Frequency	Percent	Percent
0.00	104	104	57.8%	57.8%
1.00	39	39	21.7%	21.7%
2.00	11	11	6.1%	6.1%
3.00	6	6	3.3%	3.3%
4.00	6	6	3.3%	3.3%
5.00	4	4	2.2%	2.2%
6.00	5	5	2.8%	2.8%
7.00	2	2	1.1%	1.1%
8.00	2	2	1.1%	1.1%
10.00	1	1	0.6%	0.6%
Total	180	180	100.0%	100.0%
YBOCS	YBOCS	YBOCS	YBOCS	YBOCS
		Frequency	Frequency	Percent
No OCD	No OCD	86	86	47.8%
Mild OCD	Mild OCD	57	57	31.7%
Moderate OCD	Moderate OCD	34	34	18.9%
Severe OCD	Severe OCD	3	3	1.7%
Total	Total	180	180	100.0%
Zung Self-rating Anxiety Scale				
	Frequency	Frequency	Percent	Percent

Did not need further medical assessment of GAD.	Did not need further medical assessment of GAD. 113	Did not need further medical assessment of GAD. 113	Did not need further medical assessment of GAD. 62.8%	Did not need further medical assessment of GAD. 62.8%
Needed further medical assessment of GAD	Needed further medical assessment of GAD 67	Needed further medical assessment of GAD 67	Needed further medical assessment of GAD 37.2%	Needed further medical assessment of GAD 37.2%
Total	180	180	100.0%	100.0%

Table 2 - YBOCS

Sex

Social status

Residence

Residence before the university

Academic year

Work

Smoking

Chronic diseases

Chronic diseases for residents with you

a: Independent-samples T test
b: One-way ANOVA

Table 2 - YBOCS

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Chronic diseases for residents with you

a: Independent-samples T test
b: One-way ANOVA

Table 2 - YBOCS

Mean

Sex

5.9

10.9

Social status

9.1

5.5

6.0

Residence

9.1

7.8

12.3

Residence before the university

9.1

8.8

Academic year

9.7

9.3

7.9

14.2

Work

9.3

7.4

Smoking

8.8

11.7

Chronic diseases

8.8

10.4

Chronic diseases for residents with you

8.7

9.4

a: Independent-samples T test

b: One-way ANOVA

Table 3 - Zung Self-rating Anxiety Scale

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Table 3 - Zung Self-rating Anxiety Scale

		Mean
Sex	Sex	Sex
	Male	32.3
	Female	36.2
Social status	Social status	Social status
	Single	34.7
	Engaged	36.0
	Married	36.5
Residence	Residence	Residence
	with family	34.7
	With others	34.1
	University Housing	38.3
Residence before the university	Residence before the university	Residence before the uni
	City	34.9
	countryside	34.1
Academic year	Academic year	Academic year
	Preparatory year	39.0
	Preclinical Years	34.4
	Clinical Years	34.4
	Internship year	36.9
Work	Work	Work
	No	34.7
	yes	35.1
Smoking	Smoking	Smoking
	No	34.3
	yes	40.4
Chronic diseases	Chronic diseases	Chronic diseases
	No	34.3
	yes	37.5
Chronic diseases for residents with you	Chronic diseases for residents with you	Chronic diseases for resi
	No	34.3
	yes	35.3
a: Independent-samples T test	a: Independent-samples T test	a: Independent-samples T test
b: One-way ANOVA	b: One-way ANOVA	b: One-way ANOVA

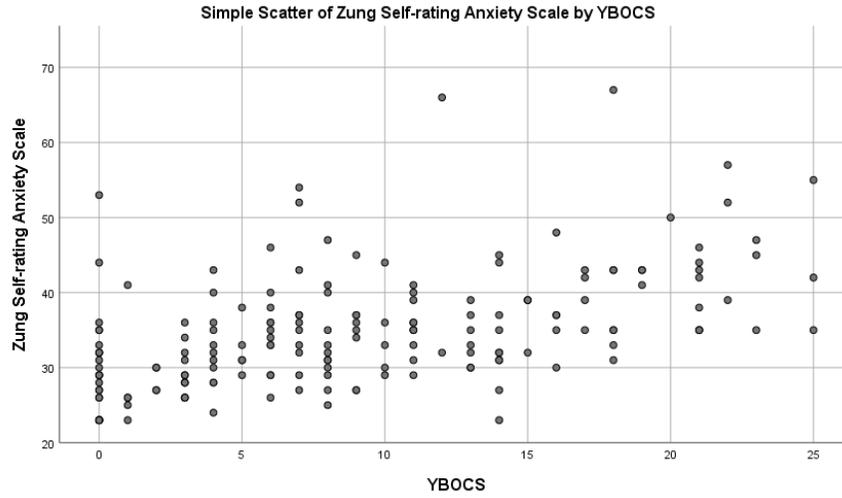
Table 4 - stimulants

Table 4 - stimulants

		Tea	Coffee	Mate	Alcohol
Zung Self-rating Anxiety Scale	Zung Self-rating Anxiety Scale				
	Pearson Correlation	0.091	0.136	0.080	0.098
	P-value	0.224	0.069	0.284	0.189
YBOCS	YBOCS				
	Pearson Correlation	0.230	0.095	0.067	0.138
	P-value	0.002	0.206	0.370	0.065

Table 5: demonstrating forward linear re- gression on YBCOS and Zung SAS scores with its relevant statisti- cally signifi- cant from Table 2 and 3. Dependent variable	Table 5: demonstrating forward linear re- gression on YBCOS and Zung SAS scores with its relevant statisti- cally signifi- cant from Table 2 and 3. Model	Table 5: demonstrating forward linear re- gression on YBCOS and Zung SAS scores with its relevant statisti- cally signifi- cant from Table 2 and 3. R²	Table 5: demonstrating forward linear re- gression on YBCOS and Zung SAS scores with its relevant statisti- cally signifi- cant from Table 2 and 3. Adjusted R²	Table 5: demonstrating forward linear re- gression on YBCOS and Zung SAS scores with its relevant statisti- cally signifi- cant from Table 2 and 3. Std. Error of the Estimate	Table 5: demonstrating forward linear re- gression on YBCOS and Zung SAS scores with its relevant statisti- cally signifi- cant from Table 2 and 3. Change Statistics R² Change	Table 5: demonstrating forward linear re- gression on YBCOS and Zung SAS scores with its relevant statisti- cally signifi- cant from Table 2 and 3. Change Statistics F Change	Table 5: demonstrating forward linear re- gression on YBCOS and Zung SAS scores with its relevant statisti- cally signifi- cant from Table 2 and 3. Change Statistics Sig. F Change
YBOCS score	Sex	0.121	0.116	6.520	0.121	24.545	<0.001
Zung SAS score	Smoking	0.158	0.149	6.399	0.037	7.801	<0.001
	Sex	0.057	0.052	7.584	0.057	10.849	0.001
	Smoking	0.127	0.117	7.319	0.070	14.125	<0.001

Figure 1



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Tables + figure.docx available at <https://aithorea.com/users/734788/articles/711555-anxiety-and-obsessive-compulsive-disorder-among-undergraduate-medical-students-in-syria-during-war-and-covid-19-a-cross-sectional-study>