Research Article

Open Access

The Prevalence and Factors Associated with Depression Among Preclinical and Clinical Medical Students at King Saud bin Abdulaziz University for Health Sciences, Jeddah

Sameer Yousof Rizg*, Saleh Hani Alkhalid, Eiman Ramli Saleh, Rafeef Omar Jarwan and Raghad Khalid Alwagdani

King Saud bin Abdulaziz University for Health Sciences, Jeddah, Saudi Arabia

ABSTRACT

Objectives
- To assess the prevalence of major depression among medical students.
- To assess the risk factors of major depression among medical students.

Background: Depression, a common mental disorder which has been considered a serious problem worldwide. Depression has a great negative impact on different aspects of a person's life such as school performance, work productivity, relationships with family and friends, and ability to participate and become an active member in the community

Design: cross sectional study.

Review Methods and Data Sources: A survey has been conduct seeking respondents' level of agreement rating scale with a series of statements of two questionnaire sections: Depression Anxiety Stress Scale (DASS21), and Medical Student Stressor Questionnaire (MSSQ). Data gathered through an online questionnaire that designed through method mentioned above and distributed to preclinical and clinical medical students at King Saud bin Abdulaziz University for Health Sciences, Jeddah. The study will be conducted at King Saud Bin Abdulaziz University for Health Sciences- Jeddah, Saudi Arabia.

Results: The prevalence of depression anxiety stress for study participants 11.6%. The prevalence of medical student stressor scale rich about 6.1%. There is significant different depression anxiety stress scale according to gender of participants.
Top 10 Statements out of 21 of depression anxiety stress scale according to respondents' opinions are:
1. I felt that I was using a lot of nervous energy.
2. I found it difficult to work up the initiative to do things.
3. I found it hard to wind down.
4. I found it difficult to relax.
5. I found myself getting agitated.
6. I was worried about situations in which I might panic and make a fool of myself.
7. I felt downhearted and blue.
8. I experienced trembling (eg, in the hands).
9. I was unable to become enthusiastic about anything.
10. I was aware of dryness of my mouth.

Conclusion: This study was prompted by the rise in depression anxiety disorder is considered the leading cause of disability worldwide. The results and discussion sections presented high prevalence of depression anxiety stress rich 11.6% within the study sample of the preclinical and clinical medical students at King Saud bin Abdulaziz University for Health Sciences, Jeddah. Since the prevalence of medical student stressor rich 6.1% for same sample size.

*Corresponding author
Sameer Yousof Rizg, King Saud bin Abdulaziz University for Health Sciences, Jeddah, Saudi Arabia. Mobile No: +966 503360050, E-mail: rizqsa@ngha.med.sa; dr.sameerrizq@hotmail.com

Introduction

Depression, a common mental disorder which has been considered a serious problem worldwide. It differs from the usual mood swings, mood fluctuations, or the short-term emotional responses that can be experienced in everyday life due to day-to-day challenges [1]. Depression is characterized by lack of interest and/ or persistent sadness in addition to changes in appetite, sleep disturbance, fatigue, low energy, poor concentration, feeling guilty,

worthlessness, psychomotor agitation or suicide. Based on the Diagnostic and Statistical Manual of Mental Disorders 5th (DSM-5), the presence of five or more of the mentioned symptoms with mandatory presence of lack of interest or persistent sadness fit the diagnostic criteria for major depressive disorder. However, having past manic or hypomanic episodes, another medical condition, or substance use in addition to symptoms of depression unfit the diagnostic criteria for major depressive disorder. Depressive patients often fail to be diagnosed and treated for many reasons that prevent them from seeking help like stigma, lack of mental health literacy, and negative attitude towards people with mental health disorders [2]. Depression has a great negative impact on different aspects of a person's life such as school performance, work productivity, relationships with family and friends, and ability to participate and become an active member in the community [3]. Additionally, it can be a recurrent disease or a long-term disease, and it can drastically affect both the ability to function and the quality of life. Fortunately, both moderate and severe forms of depression can be managed effectively with psychological therapies such as cognitive behavioral therapy (CBT) and interpersonal psychotherapy (IPT), behavioral activation, or it can be managed by antidepressant medications including selective serotonin reuptake inhibitors (SSRIs), and tricyclic antidepressants (TCAs). While providing depression treatments, patient preferences, the ability to deliver the medical intervention, and possible side effects of antidepressant medications should be acknowledged and considered (1). Also, different types of psychological therapies can be provided in different formats such as having psychological therapy sessions individually and/or in groups. In case of mild forms of depression, psychosocial therapies are considered also effective. However, antidepressant medications are not the first line treatment of mild cases of depression or, children and adolescents with depression [1]. The causes of depression constitute a compound of interactions between psychological factors, biological factors, and social factors, and genetic factors [3,4]. Adverse life events such as physical abuse during childhood, bereavement, unemployment, and psychological trauma increase the risk of depression [1,4]. It was found that risk factors including job strain, having 4–5 metabolic risk factors, obesity, and sexual dysfunction have convincing evidence in six prospective studies. According to the World Health Organization (WHO), depression is affecting more than 264 million people worldwide and around 800,000 people per year die as a result of suicide. Between the years 2005 and 2015, the percentage of people with depression has increased by 18.4% [4]. In addition, the WHO has stated that depression is considered the leading cause of disability worldwide and it has a great contribution to the global disease burden [3]. Worldwide, it has been considered that psychological and mental health issues among university students are an escalating public health problem and medical students have a higher risk of developing depression [2]. In a meta-analysis of 77 studies, it was found that the prevalence of depression among medical students around the globe estimated to be 28.0 % [5]. It was reported in the literature that medical students have a poorer psychosocial wellbeing compared to non-medical students of the same age and have a greater prevalence of depression when compared to general population [6]. According to recent research, the most likely causes or stressors of this increase of depression in medical students are excessive workload, academic pressure, peer pressure, competitiveness, stressful environment, sleep deprivation, financial hardships [5,6]. These stressors have a negative impact on medical students that can lead to low school performance, dropping out of school, impairment of clinical practice, substance abuse in addition to higher rates of suicide [5,7]. In a cross-sectional study

that was conducted in Puducherry, India, it was found that 48.4% of the medical students had depressive symptoms with the prevalence being higher among those with interpersonal problems [7]. In Cameroon, a cross sectional study showed that 30.6% was the prevalence of depression among medical students and this percentage was similar to the global prevalence percentage which is 33.0% as reported in a systematic review study. Moreover, the high depression rate in medical students was associated with clinical level students, being a female, chronic diseases, and major life events [8]. In a survey based Vietnamese study, it was found that 15.2% out of 494 medical students were suffering from depressive symptoms and 7.7% of them reported having suicidal ideation. The two most prominent risk factors in the Vietnamese medical students that were financial burden and non-self-determined motivation [9]. In Albaha, Saudi Arabia, a cross-sectional study which included 161 medical students and 21 interns from Albaha University showed the depression prevalence to be 53.8% with no significant risk factor. However, severe forms of depression were found more in medical students and interns with a history of past major trauma, past psychiatric events, domestic abuse or violence [10]. In a cross-sectional study that was conducted in the eastern province of Saudi Arabia, the prevalence of depression was found to be 39.27% in 527 clinical-year medical students. The study showed that severe depression was found more in females and students who stated that they were not ready yet for their future specialties [11]. In the year of 2020, a systematic review that was conducted in Saudi Arabia was published. It reviewed 18 studies published between January 2010 and March 2019 from a digital data base fitting the PICO criteria (population, intervention, control, and outcomes). The analysis of the data showed that the prevalence of depression in medical students ranged from 30.9% to 77.6% and the mean prevalence was estimated to be 51.5% [2]. Also, it was found that females and first year medical students are at higher risk of developing depression [1]. Factors like sleep disturbances, usage of stimulants, eating a single meal per day, and being single had a significant association with depression [2]. As explained earlier, depressive and stressed medical students are at increased risk of suicide and function impairment [8]. Throughout the years of medical school, the responsibilities increase each year, the difficulties and complexity associated with the expanding knowledge needed to learn are increasing year by year leading to stress accumulation due to not being able to fulfil the required tasks and objectives causing concern and depression among medical students [2]. In addition, these medical students will be the future health care providers and it has been noticed that higher patient management errors are associated with depressed physicians. Therefore, risk factors of depression associated with medical students need to be identified and recognized in order to prevent and decrease the prevalence of depression among medical students [8]. In Saudi Arabia, depression is a common problem among medical students, thus the aim of this study is to investigate the prevalence and factors associated with depression among preclinical and clinical medical students at King Saud bin Abdulaziz University for Health Sciences, Jeddah.

Problem of the Study

The problem of this study generated from the hypothesis if there is ability to differentiate between the preclinical and clinical medical students at King Saud bin Abdulaziz University for Health Sciences, Jeddah by factors associated with depression. Moreover, to measure the prevalence and factors associated with depression among preclinical and clinical medical students at King Saud bin Abdulaziz University for Health Sciences, Jeddah.

Aim of the Study

To assess the prevalence and factors associated with depression among preclinical and clinical medical students at King Saud bin Abdulaziz University for Health Sciences, Jeddah.

Objectives of the Study

Specific objectives of the study consist of following points:
- To assess the prevalence of major depression among medical students.
- To assess the risk factors of major depression among medical students.

Materials and Methods
Methods

In order to elicit and measure the prevalence and factors associated with depression among preclinical and clinical medical students at King Saud bin Abdulaziz University for Health Sciences, Jeddah. A survey has been conduct seeking respondents' level of agreement rating scale with a series of statements of two questionnaire sections: Depression Anxiety Stress Scale (DASS21), and Medical Student Stressor Questionnaire (MSSQ).

Data gathered through an online questionnaire that designed through method mentioned above and distributed to preclinical and clinical medical students at King Saud bin Abdulaziz University for Health Sciences, Jeddah.

Study Area/Setting

The study will be conducted at King Saud Bin Abdulaziz University for Health Sciences- Jeddah, Saudi Arabia.

Study Subjects

All medical students from 1st to 6th year studying at King Saud Bin Abdulaziz University for Health Sciences- Jeddah will be included in the study.
Inclusion Criteria:
- Gender
- Academic year
- Questionnaire statements

Exclusion criteria:
- Incomplete data.
- Students who refused to participate.

Study Design

Cross-sectional and prevalence studies. Cross-sectional studies analyze data collected on a group of subjects at one time rather than over a period of time. Cross-sectional studies are designed to determine "What is happening?" right. Cross-sectional studies may be designed to address research questions raised by a case–series, or they may be done without a previous descriptive study (Dawson, Beth; Trapp, Robert G., 2004).

The Study Tool

Two validated questionnaires to diagnose depression and identify its risk factors will be used in this study. The diagnosis will be made using Depression Anxiety Stress Scale (DASS-21) which consist of 21 questions divided into 3 sets of self-report scales to measure the emotional states of depression, anxiety and stress [12]. To identify sources of stress and evaluate its stress level, Medical Student Stressor Questionnaire (MSSQ) will be used. It consists of 40 items measuring 6 categories: academic related stressors, intrapersonal and interpersonal related stressors, teaching and learning-related stressors, social related stressors, drive and desire related stressors, and group activities related stressors [13]. The

online questioner contains of two sections had been distributed through google form, and respondents from targeted population have answered the questions.

Statistical Methods

To analyze the data of structured questionnaire under title: The prevalence and factors associated with depression among preclinical and clinical medical students at King Saud bin Abdulaziz University for Health Sciences, Jeddah. We used IBM Statistics SPSS version 26 to illustrate statistical computing techniques. The details of analysis based on many measures and procedures include the fallowing command:

Descriptive Statistics

Frequency command to illustrate frequency table and show variables by frequency and percentage for participants' demographic characteristics (e.g. gender and academic year).

Charts

We used bars chart to illustrate the bars of demographic data such as gender and academic year. In addition, to illustrate the mean responses of depression anxiety stress scale & medical student stressor questionnaire.

Sample Technique and Population

A cluster sampling method have been used. In total, 2213 participants consist the population from of medical students at KSAU-HS, Jeddah in 2020-2021 were invited to participate in the survey; the sample comprised individuals in key levels of academic year from 1st to 6th Educational level at KSAU-HS, Jeddah KSA. Exactly about 294 sample participants' response to the questionnaire statements, and consist the sample of the study.

Data Analysis

The purpose of this section of data analysis is to analyzing the quantitative data that measuring Depression Anxiety Stress Scale and Medical Student Stressor within KSAU-HS, Jeddah KSA; the data generated online and sent to SPSS software for analysis and conducting findings. All the demographic and 61 variables of a structured questionnaire to gather information of 294 participants should be entered to Statistical Software and processing with SPSS Program. The data analysis ran the detailed analysis depends on the research title and constructed questionnaire of two sections.

Demographic Data Analysis
Table 1: Respondents Characteristics

	Frequency (n)	**%**
Gender		
Male	134	45.6
Female	160	54.4
	294	100.0
Academic Year		
1st year	33	11.2
2nd year	48	16.3
3rd year	61	20.7
4th year	36	12.2
5th year	38	12.9
6th year	45	15.2
Internship	33	11.2
Total	294	100.0

From the table (1) above, 294 responses were received, little under half (134, 45.6%) are males and little over half (160, 54.4%) are females. All the sample clusters of educational level were presented. A few students from 1st year of medical student cluster (33, 11.2%) response to the study tool, (48, 16.3%) from the 2nd year of educational level, (61, 20.7%) approximately one-fifth of total 3rd year of educational level, (36, 12.2%) 4th year of educational level, (38, 12.9%) 5th year of educational level, (45, 15.2%) 6th year of educational level, and (33, 11.2%) internship. illustrated on (figure 1&2) below:
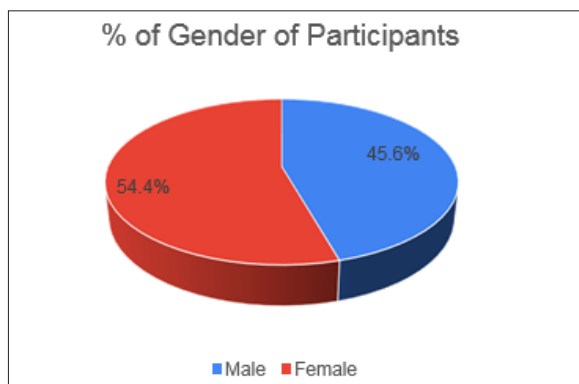
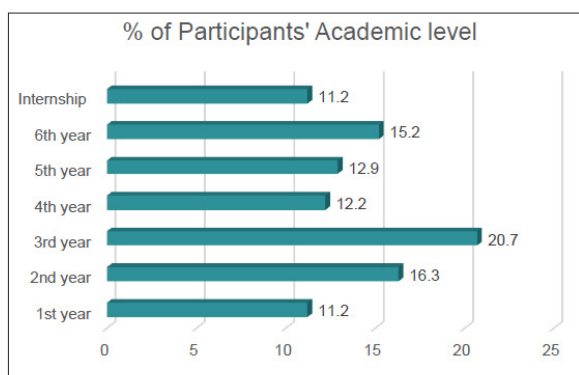

Figure 1: Percentage of Sample' Gender

Figure 2: Percentage of Sample' Academic Year

Test of Normality
Various methods exist for the essential step of testing normality, which ensures that the data represent the target population and is particularly important for factor analysis. The most common and reliable method is through the calculation of kurtosis and skewness (usually done using SPSS) (Al Thobaity, 2016, page 166). Kurtosis and skewness were calculated to identify the normality of the data and to select the right statistics for the study. Normality is one of the most important requirements for statistical analysis in general, to making sure that all research data valid for analysis. However, the most common and reliable method calculates kurtosis and skewness, usually via IBM SPSS. The normal range indicates that the normal distribution of data is between +2 and -2 for skewness, while the normal range for kurtosis is between -2 and +7. High skewness values indicate that the data are shifted to the left (if the value is less than -2) or shifted to right if the value is more than +2, while kurtosis presents the peak and tail of the distribution, thus revealing a flattering distribution if the result is less than -2 or a peaked distribution if the value is greater than +7 (Al Thobaity, 2016 pages 119-120).

Table 2: Descriptive Statistics of Experiments

Statistics	Depression Anxiety Stress Scale (DASS21)	Medical Student Stressor Questionnaire (MSSQ).
Mean	1.31	1.83
Std. Deviation	0.759	0.787
Std. Error	0.06	1.84
Median	2.0	2.0
Skewness	0.228	-.004
Kurtosis	-0.931	-0.209

Table 1 above described that on average the mean values of Depression Anxiety Stress Scale was 1.57, SD = 0.759 the median = 2.0 that means tend to category "Applied to me to a considerable degree, or a good part of time". While the mean values of Medical Student Stressor Questionnaire was 1.83, SD = 0.787 the median = 2.0 that means tend to category "Causing mild stress".

The measurement of distribution Skewness and Kurtosis appear the normality test of two scales of questionnaire Depression Anxiety Stress Scale (DASS) and Medical Student Stressor Questionnaire (MSSQ).

Skewness for DASS 0.228 kurtosis -0.931; Skewness for MSSQ -0.004 kurtosis -0.209. From these results, the range of skewness data (between +2 and -2) interprets the data distributed normally for DASS & MSSQ. Kurtosis data, the normal range for kurtosis as we mentioned ranged between -2 and +7, all above ranged within normal.

Fig. 3 & 4 illustrate the normal distribution of Depression Anxiety Stress Scale and Medical Student Stressor Questionnaire.
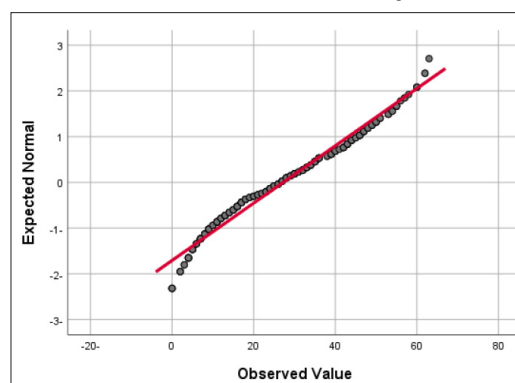

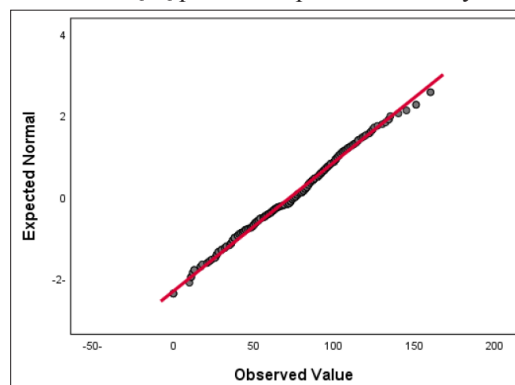**Figure 3:** Normal Q-Q plot for Depression Anxiety Stress Scale

Figure 4: Normal Q-Q plot for Medical Student Stressor Questionnaire

Analysis of Questionnaire Scales
Table 3: The rating scale of Depression Anxiety Stress Scale (DASS)

Category	Option	Weighted average
0	Did not apply to me at all	0 - 0.75
1	Applied to me to some degree, or some of the time	0.075 – 1.50
2	Applied to me to a considerable degree, or a good part of time	1.50 – 2.25
3	Applied to me very much, or most of the time	0.25 – 3.0

Table 4: Respondents agreement with each of statements regarding option for Depression Anxiety Stress Scale (DASS)

Item #	Statements		0	1	2	3	Mean	SD	order
1	I found it hard to wind down	Freq.	49	87	98	60	1.57	0.995	3
		%	16.7	29.6	33.3	20.3			
2	I was aware of dryness of my mouth	Freq.	99	81	56	58	1.25	1.12	10
		%	33.7	27.6	19.0	19.7			
3	I couldn't seem to experience any positive feeling at all	Freq.	89	105	66	34	1.15	0.985	18
		%	30.3	35.7	22.4	11.6			
4	I experienced breathing difficulty (eg, excessively rapid breathing, breathlessness in the absence of physical exertion)	Freq.	143	69	48	34	0.91	1.05	21
		%	48.6	23.5	16.3	11.6			
5	I found it difficult to work up the initiative to do things	Freq.	49	85	77	83	1.66	1.06	2
		%	16.7	28.9	26.2	28.2			
6	I tended to over-react to situations	Freq.	138	77	43	36	0.92	1.05	20
		%	46.9	26.2	14.6	12.2			
7	I experienced trembling (eg, in the hands)	Freq.	74	87	78	55	1.39	1.06	8
		%	25.2	29.6	26.5	18.7			
8	I felt that I was using a lot of nervous energy	Freq.	48	69	84	93	1.76	1.07	1
		%	16.3	23.5	28.6	31.6			
9	I was worried about situations in which I might panic and make a fool of myself	Freq.	90	67	64	73	1.41	1.16	6
		%	30.6	22.8	21.8	24.8			
10	I felt that I had nothing to look forward to	Freq.	111	69	49	65	1.23	1.18	11
		%	37.8	23.5	16.7	22.1			
11	I found myself getting agitated	Freq.	71	79	77	67	1.48	1.09	5
			24.1	26.9	26.2	22.8			
12	I found it difficult to relax	Freq.	59	82	82	71	1.56	1.07	4
		%	20.1	27.9	27.9	24.1			
13	I felt downhearted and blue	Freq.	92	69	57	76	1.40	1.18	7
		%	31.3	23.6	19.4	25.9			
14	I was intolerant of anything that kept me from getting on with what I was doing	Freq.	121	74	59	39	1.05	1.07	19
		%	41.3	25.3	20.1	13.3			
15	I felt I was close to panic	Freq.	100	81	69	44	1.19	1.07	14
			34.0	27.6	23.5	15.0			
16	I was unable to become enthusiastic about anything	Freq.	81	84	66	63	1.38	1.10	9
		%	27.6	28.6	22.4	21.4			
17	I felt I wasn't worth much as a person	Freq.	124	61	36	73	1.20	1.23	12
		%	42.2	20.7	12.2	24.8			
18	I felt that I was rather touchy	Freq.	106	75	60	53	1.20	1.12	13
		%	36.4	20.4	26.5	18.7			

19	I was aware of the action of my heart in the absence of physical exertion (eg, sense of heart rate increase, heart missing a beat)	Freq.	107	78	66	54	1.19	1.12	15
		%	36.4	26.5	18.7	18.4			
20	I felt scared without any good reason	Freq.	117	63	57	57	1.18	1.16	16
		%	39.8	21.4	19.4	19.4			
21	I felt that life was meaningless	Freq.	127	60	38	69	1.17	1.22	17
		%	43.2	20.4	12.9	23.5			
Total of statements							1.30	1.10	

Table (4) above shows respondents' participating on the scale of depression anxiety stress. The mean average of statements scale was 1.3 and standard deviation SD 1.10 that mean respondents agreeing "Applied to me to some degree, or some of the time" against all statements of scale.

Statements have sorted descending from top to down and the top statements of depression anxiety stress scale are:
1. I felt that I was using a lot of nervous energy.
2. I found it difficult to work up the initiative to do things.
3. I found it hard to wind down.
4. I found it difficult to relax.
5. I found myself getting agitated.
6. I was worried about situations in which I might panic and make a fool of myself.
7. I felt downhearted and blue.
8. I experienced trembling (eg, in the hands).
9. I was unable to become enthusiastic about anything.
10. I was aware of dryness of my mouth.
11. I felt that I had nothing to look forward to.

Table 5: The rating scale of Medical Student Stressor Questionnaire (MSSQ)

Category	Option	Weighted average
0	Causing no stress at all	0 - 0.80
1	Causing mild stress	0.80 – 1.60
2	Causing moderate stress	1.60 – 2.40
3	Causing high stress	2.40 – 3.20
4	Causing severe stress	3.21 – 4.0

Table 6: Respondents agreement with each of statements regarding option for Medical Student Stressor Questionnaire (MSSQ)

#	Statements		0	1	2	3	4	Mean	SD	order
1	Tests/examinations	Freq.	11	32	69	76	106	2.80	1.15	3
		%	3.7	10.9	23.5	25.9	36.1			
2	Falling behind in reading schedule	Freq.	32	43	85	66	68	2.32	1.28	9
		%	10.9	14.6	28.9	22.4	23.1			
3	Large amount of content to be learnt	Freq.	14	35	37	86	122	2.91	1.20	1
		%	4.8	11.9	12.6	29.3	41.5			
4	Having difficulty understanding the content	Freq.	21	41	63	72	97	2.62	1.27	6
		%	7.1	13.9	21.4	24.5	33.0			
5	Getting poor marks	Freq.	31	57	87	59	60	2.20	1.26	12
		%	10.5	19.4	29.6	20.1	20.4			
6	Quota system in examinations	Freq.	31	42	52	63	106	2.58	1.37	7
		%	10.5	14.3	17.7	21.4	36.1			
7	Lack of time to review what have been learnt	Freq.	61	67	84	37	45	1.79	1.33	20
		%	20.7	22.8	28.6	12.6	15.3			
8	Need to do well (self-expectation)	Freq.	26	27	56	61	124	2.78	1.32	4
		%	8.8	9.2	19.0	20.7	42.2			
9	Learning context – full of competition	Freq.	16	42	44	57	135	2.86	1.29	2
		%	5.4	14.3	15.0	19.4	45.9			

No	Item										
10	Unable to answer the questions from the teachers	Freq.	95	71	65	36	27	1.42	1.30	31
		%	32.3	24.1	22.1	12.2	9.2			
11	Heavy workload	Freq.	18	33	68	84	91	2.67	1.20	5
		%	6.1	11.2	23.1	28.6	31.0			
12	Participation in class discussion	Freq.	89	74	64	28	39	1.50	1.36	30
		%	30.3	25.2	21.8	9.5	13.3			
13	Participation in class presentation	Freq.	79	64	66	39	46	1.69	1.40	24
		%	26.9	21.8	22.4	13.3	15.6			
14	Need to do well (imposed by others)	Freq.	47	58	48	57	84	2.25	1.46	11
		%	16.0	19.7	16.3	19.4	28.6			
15	Feeling of incompetence	Freq.	29	57	57	61	90	2.43	1.36	8
		%	9.9	19.4	19.4	20.7	30.6			
16	Unjustified grading process	Freq.	40	53	56	67	78	2.31	1.38	10
		%	13.6	18.0	19.0	22.8	26.5			
17	Not enough medical skill practice	Freq.	71	60	73	44	46	1.78	1.38	21
		%	24.1	20.4	24.8	15.0	15.6			
18	Lack of time for family and friends	Freq.	49	52	79	44	70	2.12	1.39	14
		%	16.7	17.7	26.9	15.0	23.8			
19	Teacher – lack of teaching skills	Freq.	53	51	68	57	65	2.10	1.40	15
		%	18.0	17.3	23.1	19.4	22.1			
20	Not enough study material	Freq.	60	63	77	47	47	1.86	1.35	18
		%	20.4	21.4	26.2	16.0	16.0			
21	Unable to answer questions from patients	Freq.	81	54	57	47	55	1.80	1.47	19
		%	27.6	18.4	19.4	16.0	18.7			
22	Inappropriate assignments	Freq.	68	69	73	51	33	1.70	1.30	23
		%	23.1	23.5	24.8	17.3	11.2			
23	Talking to patients about personal problems	Freq.	144	57	49	25	19	1.04	1.26	34
		%	49.0	19.4	16.7	8.5	6.5			
24	Facing illness or death of the patients	Freq.	106	42	60	40	46	1.59	1.48	26
		%	36.1	14.3	20.4	13.6	15.6			
25	Conflicts with other students	Freq.	53	48	54	66	73	2.20	1.44	13
		%	18.0	16.3	18.4	22.4	24.8			
26	Poor motivation to learn	Freq.	167	44	38	21	24	0.95		
		%	56.8	15.0	12.9	7.1	8.2			
27	Verbal or physical abuse by other student (s)	Freq.	157	41	38	30	28	1.09	1.39	33
		%	53.4	13.9	12.9	10.2	9.5			
28	Verbal or physical abuse by teacher(s)	Freq.	166	42	38	26	22	0.97	1.31	37
		%	56.5	14.3	12.9	8.8	7.5			
29	Verbal or physical abuse by personnel(s)	Freq.	150	54	53	19	18	0.98	1.23	36
		Freq.	51.0	18.4	18.0	6.5	6.1			
30	Conflict with personnel(s)	%	163	47	48	19	17	0.91	1.22	39
		Freq.	55.4	16.0	16.3	6.5	5.8			
31	Conflict with teacher(s)	%	157	45	45	24	23	1.02	1.31	35
		Freq.	53.4	15.3	15.3	8.2	7.8			
32	Unwillingness to study medicine	%	109	52	46	46	41	1.52	1.47	28
		Freq.	37.1	17.7	15.6	15.6	13.3			
33	Parental wish for you to study medicine	%	141	54	52	16	31	1.12	1.34	32
		Freq.	48.0	18.4	17.7	5.4	10.5			

34	Lack of guidance from teacher (s)	%	88	52	63	45	46	1.69	1.44	25
		Freq.	29.9	17.7	21.4	15.3	15.6			
35	Not enough feedback from teacher(s)	%	87	59	71	52	25	1.55	1.31	27
		Freq.	29.6	20.1	24.1	17.7	8.5			
36	Uncertainty of what is expected of me	%	63	52	57	53	69	2.04	1.47	16
		Freq.	21.4	17.7	19.4	18.0	23.5			
37	Lack of recognition for work done	Freq.	83	51	61	59	40	1.73	1.41	22
		%	28.2	17.3	20.7	20.1	13.6			
38	Working with computers	Freq.	174	37	47	12	24	0.89	1.28	40
		%	59.2	12.6	16.0	4.1	8.2			
39	Frequent interruption of my work by others	Freq.	103	47	67	41	36	1.52	1.40	29
		%	35.0	16.0	22.8	13.9	12.2			
40	Family responsibilities	Freq.	60	58	65	52	59	1.97	1.41	17
		%	20.4	19.7	22.1	17.7	20.1			
Total of statements								**1.83**	**1.34**	

Table (6) above shows respondents' participating on the scale of medical student stressor. The mean average of statements scale was 1.83 and standard deviation SD 1.34 that mean respondents agreeing totally about statements' scale "Causing moderate stress"

against all statements of scale.

Statements have sorted descending from top to down. The selecting statements here ranged from (2.91 to 1.79) which faced categories causing high stress to Moderate stress. Therefore the top statements of medical student stressor scale are:
1. Large amount of content to be learnt.
2. Learning context – full of competition.
3. Tests/examinations.
4. Need to do well (self-expectation).
5. Heavy workload.
6. Having difficulty understanding the content.
7. Quota system in examinations.
8. Feeling of incompetence.
9. Falling behind in reading schedule.
10. Unjustified grading process.
11. Need to do well (imposed by others).
12. Getting poor marks.
13. Conflicts with other students.
14. Lack of time for family and friends.
15. Teacher – lack of teaching skills.
16. Uncertainty of what is expected of me.
17. Family responsibilities.
18. Not enough study material.
19. Unable to answer questions from patients.
20. Lack of time to review what have been learnt.

The prevalence of interested factors
To calculate the prevalence and factors associated with depression among preclinical and clinical medical students at King Saud bin Abdulaziz University for Health Sciences, Jeddah researcher ran analysis of category "Applied to me very much, or most of the time" across all Depression Anxiety Stress Scale then calculated prevalence through known formula as following:

$$\text{Prevalence formula} = Persons\ having\ a\ particular\ \frac{attribute}{total}\ population * 100$$

To calculating prevalence of DASS counting the category 3 responses for each participant's who mostly answered option "3" in the constructed questionnaire, the same analysis procedure ran for MSSQ by counting the option "4" which faced "Causing Severe stress"
DASS prevalence = 34/294*100 = 11.6%

MSSQ prevalence = 18/294*100 = 6.1%

Table 7: Calculating Prevalence

Scale	Prevalence
Depression Anxiety Stress Scale	11.6
Medical Student Stressor	6.1

Table (7) above shows that the prevalence of depression anxiety stress for study participants 11.6% and prevalence of medical student stressor only 6.1%. The prevalence calculation may include little bias due to sample study variation, Prevalence bias can result whenever a time gap occurs between exposure and selection of study subjects and the worst cases have died.

The Prevalence Distributed By Gender & Academic Year
Table 8: Crosstabulation Table of Depression Anxiety Stress Scale and Sex

Depression Anxiety Stress						
			Normal	High depression	Total	Chi Square Sig.
Gender	Male	Count	128	6	134	
		%	95.5%	4.5%	100.0%	
	Female	Count	132	28	7	0.001
		%	82.5%	17.5%	100.0%	
Total		Count	260	34	294	
		%	88.4%	11.6%	100.0%	

Table 8 shows clearly the crosstabulation of depression anxiety stress scale sex. Out of 134 males there is only 6 male participants have highly depression anxiety stress represent (4.5%) of total males percentage versus 28 female participants represent (17.5%) of total female percentage.

P value of chi square test was 0.001 which less than $\alpha = 0.05$, that means there is significant different depression anxiety stress scale according to gender of participants.

Table 9: Crosstabulation Table of Depression Anxiety Stress Scale and Academic Year

Depression Anxiety Stress						
			Normal	High depression	Total	Chi Square Sig.
Academic year	1st year	Count	25	8	33	
		%	75.8%	24.2%	100.0%	
	2nd year	Count	45	3	48	
		%	93.7%	6.3%	100.0%	
	3rd year	Count	58	3	61	
		%	95.1%	4.9%	100.0%	
	4th year	Count	32	4	36	
		%	88.9	11.1	100.0%	0.126
	5th year		32	6	36	
			88.9%	15.8%	100.0%	
	6th year		39	6	45	
			86.7%	13.3%	100.0%	
	Internship	Count	29	4	33	
		%	87.9%	12.1%	100.0%	
Total		Count	260	34	294	
		%	88.4%	11.6%	100.0%	

Table (9) shows clearly the crosstabulation of depression anxiety stress scale and academic year level. Out of 33 of participants in first year there is only 8 students have highly depression anxiety stress represent (24.2%) of total level percentage, only 3 students of 2nd year have highly depression anxiety stress represent (6.3%) of total level percentage, 3 students of 3rd year have highly depression anxiety stress represent (4.9%)

of total level percentage, 6 students of 4th year have highly depression anxiety stress represent (15.8%) of total level percentage, 6 students of 5th year have highly depression anxiety stress represent (13.3%) of total level percentage, and only 4 students of internship student have highly depression anxiety stress represent (12.1%) of total level percentage.

P value of chi square test was 0.126 which greater than $\alpha = 0.05$, that means there is no significant different depression anxiety stress scale according to academic level of participants.

Table 10: Crosstabulation Table of Medical Student Stressor Scale and Sex

Medical Student Stressor			Normal	Severe	Total	Chi Square Sig.
Gender	Male	Count	130	4	134	0.078
		%	97.0%	3.0%	100.0%	
	Female	Count	145	15	160	
		%	90.6%	9.4%	100.0%	
Total		Count	275	19	294	
		%	93.5%	6.1%	100.0%	

Table (10) shows clearly the crosstabulation of medical student stressor scale. Out of 134 males there is only 4 male participants have severe stress represent (3.0%) of total males percentage versus 15 female participants represent (9.4%) of total female percentage.

P value of chi square test was 0.078 which greater than $\alpha = 0.05$, that means there is no significant different medical student stressor scale according to gender of participants.

Table 11: Crosstabulation Table of Medical Student Stressor Scale and Academic Year

medical student stressor scale			Normal	High depression	Total	Chi Square Sig.
Academic year	1st year	Count	29	4	33	0.441
		%	87.9%	12.1%	100.0%	
	2nd year	Count	47	1	48	
		%	97.9%	2.1%	100.0%	
	3rd year	Count	57	4	61	
		%	93.4	6.6	100.0%	
	4th year	Count	33	3	36	
		%	91.7%	8.3	100.0%	
	5th year	Count	37	1	38	
		%	97.4%	2.6%	100.0%	
	Internship	Count	41	4		
		%	91.1%	8.9%	100.0%	
Total		Count	275	19	294	
		%	93.5%	6.5%	100.0%	

Table (11) shows clearly the crosstabulation of medical student stressor scale and academic year level. P value of chi square test was 0.441 which greater than $\alpha = 0.05$, that means there is no significant different medical student stressor scale according to academic level of participants.

Herein below the charts that showed percentage distribution of prevalence according to gender and academic year of sample participants:
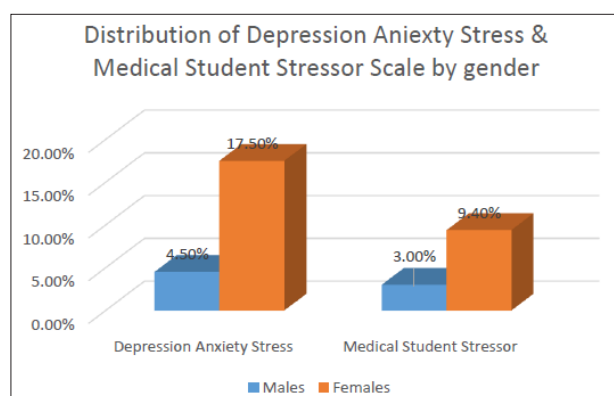
Figure 5: Percentage Distribution of Depression Anxiety Stress & Medical Student Stressor by Gender
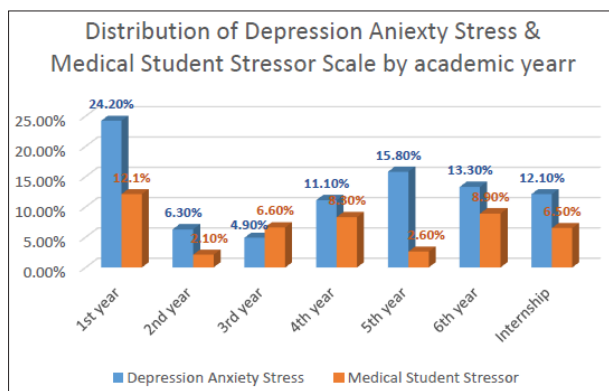
Figure 5: Percentage Distribution of Depression Anxiety Stress & Medical Student Stressor by Academic Year

Results

From the analysis section, we conclude that:

1. The prevalence of depression anxiety stress for study participants 11.6%.
2. The prevalence of medical student stressor scale rich about 6.1%.
3. There is significant different depression anxiety stress scale according to gender of participants.
4. Top 10 Statements out of 21 of depression anxiety stress scale according to respondents' opinions are:

1. I felt that I was using a lot of nervous energy.
2. I found it difficult to work up the initiative to do things.
3. I found it hard to wind down.
4. I found it difficult to relax.
5. I found myself getting agitated.
6. I was worried about situations in which I might panic and make a fool of myself.
7. I felt downhearted and blue.
8. I experienced trembling (eg, in the hands).
9. I was unable to become enthusiastic about anything.
10. I was aware of dryness of my mouth.

5. Top 20 Statements out of 40 of medical student stressor scale according to respondents' opinions are:

1. Large amount of content to be learnt.
2. Learning context – full of competition.
3. Tests/examinations.
4. Need to do well (self-expectation).
5. Heavy workload.
6. Having difficulty understanding the content.
7. Quota system in examinations.
8. Feeling of incompetence.
9. Falling behind in reading schedule.
10. Unjustified grading process.
11. Need to do well (imposed by others).
12. Getting poor marks.
13. Conflicts with other students.
14. Lack of time for family and friends.
15. Teacher – lack of teaching skills.
16. Uncertainty of what is expected of me.
17. Family responsibilities.
18. Not enough study material.
19. Unable to answer questions from patients.
20. Lack of time to review what have been learn

Discussion

The purpose of this quantitative data of cross-sectional study, correlational study was to test and assess the prevalence and factors associated with depression among preclinical and clinical medical students at King Saud bin Abdulaziz University for Health Sciences, Jeddah. The factors that can be classified to usual mood swings, mood fluctuations, or the short-term emotional responses that can be experienced in everyday life due to day-to-day challenges therefore could affect students' life and personal life.

The quantitative data used two scales of Depression Anxiety Stress Scale (DASS-21) and Medical Student Stressor Questionnaire (MSSQ). Thereafter, IBM Statistics SPSS version 26 had been used to illustrate various statistical computing techniques such as descriptive statistics, central tendency and dispersion, in addition Chi square test and crosstabulation as statistical tests.

The study sample size rich exactly 294 medical students and internship from KSAU-HS, Jeddah KSA, the demographic analysis shows that little under half of sample participants (134, 45.6%) are males and little over half of them (160, 54.4%) are females. Moreover, the sample categories of educational level showed that 33 students (11.2%) from 1st year, 48 (16.3%) from the 2nd year, 61 approximately one-fifth of total 3rd year (20.7%), 36 (12.2%) from 4th year of educational level, 38 students (12.9%) 5th year of educational level, and 45 (15.2%) 6th year of educational level, and (33, 11.2%) internship.

The participants' agreements about depression anxiety stress scale the mean average of statements scale was 1.3 rich the category of "Applied to me to some degree, or some of the time" against all statements of scale and standard deviation appears that the responses are homogeneous. While in the same line, the participants' agreements about the scale of medical student stressor the mean average of statements scale was 1.83 rich the category of statements' scale "Causing moderate stress".

The top statements of medical student stressor scale according to participants' opinion are large amount of content to be learnt, learning context – full of competition, and test/examinations.

The statistical tests of prevalence of two scales illustrated that the prevalence of depression anxiety stress for study participants was 11.6% and prevalence of medical student stressor only 6.1%. The prevalence of males with highly depression anxiety stress represent (4.5%) while the prevalence of female participants represent (17.5%) Sig P value of chi square test was 0.001 shows there is significant different depression anxiety stress scale according to gender of participants.

The prevalence of medical student stressor was 6.1% classified as follow the male participants have severe stress represent (3.0%) and female prevalence participants represent (9.4%).

The prevalence of 1st year highly depression anxiety stress rich 24.2%, prevalence of 2nd year with highly depression anxiety stress represent (6.3%), prevalence of 3rd year with highly depression anxiety stress represent (4.9%), prevalence of 4th year with highly depression anxiety stress represent (11.5%) of total level percentage, prevalence of 5th year with highly depression anxiety stress represent (15.8%) of total level percentage, prevalence of 6th year with highly depression anxiety stress represent (13.3%), prevalence of internship student have highly depression anxiety stress represent (12.1%) of total level percentage.

Conclusions and Recommendations

This study was prompted by the rise in depression anxiety disorder is considered the leading cause of disability worldwide. The results and discussion sections presented high prevalence of depression anxiety stress rich 11.6% within the study sample of the preclinical and clinical medical students at King Saud bin Abdulaziz University for Health Sciences, Jeddah. Since the prevalence of medical student stressor rich 6.1% for same sample size.

The general problem addressed in this study was that if there is ability to differentiate between the preclinical and clinical medical students at King Saud bin Abdulaziz University for Health Sciences, Jeddah by factors associated with depression. In addition, to assess the prevalence and factors associated with depression and stress within sample study.

The analysis appears that depression anxiety stress scale found more in females participants than males and the statistical procedures test showed significant statistical between gender groups trend to females. The result leads to females influence with depression anxiety stress while the results did not appear significant different within medical student stressor scale according to gender groups of participants.

The statistical procedures also did not appear significance different between depression anxiety stress and medical student stressor against gender groups and academic year level clusters. The study conclude that due to the prevalence percentage King Saud bin Abdulaziz University for Health Sciences, Jeddah should address the increasing of depression anxiety and medical student stressor. In addition, the university should developed programs work tower decreasing the depression anxiety within females as important needs.

References

1. Depression (2020) Who.int. Available from: https://www.who.int/news-room/factsheets/detail/depression.
2. AlJaber M (2020) The prevalence and associated factors of depression among medical students of Saudi Arabia: A systematic review. Journal of Family Medicine and Primary Care. 9: 2608 https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7491843/.
3. Depression (2020) Who.int. Available from: https://www.who.int/health-topics/depression#tab=tab_2.
4. Köhler C, Evangelou E, Stubbs B, Solmi M, Veronese N, et al. (2018) Mapping risk factors for depression across the lifespan: An umbrella review of evidence from meta-analyses and Mendelian randomization studies. Journal of Psychiatric Research. 103: 189-207. Available from: https://www.sciencedirect.com/science/article/abs/pii/S0022395617310920?via%3Dih.
5. Brenneisen Mayer F, Souza Santos I, Silveira P, Itaqui Lopes M, de Souza A, et al. (2016) Factors associated to depression and anxiety in medical students: a multicenter study. BMC Medical Education. 16: 1 Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5080800/.
6. Pacheco J, Giacomin H, Tam W, Ribeiro T, Arab C, et al. (2017) Mental health problems among medical students in Brazil: a systematic review and meta-analysis. Revista Brasileira de Psiquiatria. 39: 369-378 Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7111407/.
7. Kumar S, Kattimani S, Sarkar S, Kar S (2017) Prevalence of depression and its relation to stress level among medical students in Puducherry, India. Industrial Psychiatry Journal. 26: 86. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5810174/.
8. Ngasa S, Sama C, Dzekem B, Nforchu K, Tindong M, et al. (2017) Prevalence and factors associated with depression among medical students in Cameroon: a cross-sectional study. BMC Psychiatry. 17: 1 Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5466797/.
9. Pham T, Bui L, Nguyen A, Nguyen B, Tran P, Vu P et al. (2019) The prevalence of depression and associated risk factors among medical students: An untold story in Vietnam. PLOS ONE. 14: e0221432 Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6701769/.
10. Bakarman M, Albajjar M (2019) Prevalence and correlates of depression among male medical students and interns in Albaha University, Saudi Arabia. Journal of Family Medicine and Primary Care. 8: 1889 Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6618237/.
11. AlShamlan N, AlShamlan R, AlShamlan A, AlOmar R, et al. (2020) Prevalence of depression and its associated factors among clinical-year medical students in Eastern Province, Saudi Arabia. Postgraduate Medical Journal. 96: 343-348 Available from: https://pubmed.ncbi.nlm.nih.gov/32303582/.
12. Depression Anxiety Stress Scales - DASS (2018) Www2.psy.unsw.edu.au. Available from: http://www2.psy.unsw.edu.au/dass//.
13. The Medical Student Stressor Questionnaire (MSSQ) Manual (2021) Research Gate. Available from: https://www.researchgate.net/publication/200640404_The_Medical_Student_Stressor_Questionnaire_MSSQ_Manual.
14. Dawson Beth, Trapp Robert (2004) Basic & Clinical Biostatistics, 4th edition. G. Copyright © McGraw- Hill.
15. Abdulellah Al Thobaity, (2016) Exploring disaster nursing core competencies and roles in Kingdom of Saudi Arabia (KSA). Monash University Faculty of Medicine, Nursing and Health Sciences School of Nursing and Midwifery. Pages 166: 119-120.