



RESEARCH ARTICLE

FACTOR ASSOCIATED WITH STRESS, ANXIETY, AND DEPRESSION AMONG MEDICAL STUDENTS IN TABUK CITY, 2022

Alhawiti¹, Asma M.¹, Elbadawi¹ and Abdullateef²

1. Resident in Saudi Board of Preventive Medicine.
2. Consultant Preventive Medicine, Ministry of Health, Tabuk.

Manuscript Info

Manuscript History

Received: 30 January 2023

Final Accepted: 28 February 2023

Published: March 2023

Key words:-

DASS-21, Depression Anxiety Stress Scale, Medical Students, Tabuk, Saudi Arabia

Abstract

Introduction: Stress, anxiety, and depression can be associated with severe harmful consequences to the physical, mental and social well-being of the affected populations. This study was conducted to determine the prevalence of stress, anxiety, and depression among medical students at Tabuk University and to identify the associated risk factors.

Methods: Cross-sectional study, self-administered questionnaire distributed among medical students at Tabuk University.

Results: The complete questionnaires were received from 241 participants giving a response rate of 62.7%. Prevalence of depression among medical students was 28.6%, anxiety 46.05%, and stress 13.2%. Prevalence of depression among basic years was 38%, anxiety 53%, and stress 7.7% while the prevalence is less in clinical years at 27%, 44%, and 5.6% for depression, anxiety and stress respectively. The prevalence of depression was higher among female medical students at 41.1% while the prevalence in males was 21.9%. Anxiety is also higher in females 56.6% and 38.1% and males. Stress was 9.5% in female and 2.5% in male medical students. In our study, the factors that affected stress, anxiety, and depression among medical students. Gender, previous history of depression or anxiety, family history of suicidal attempts, and mental illness were determinant factors for stress, depression, and anxiety. Also, stress was significantly affected by academic performance. Students with good, very good, and excellent academic performance tended to have no stress.

Conclusions: Our findings in this study suggest that anxiety and depression are prevalent among Tabuk University medical students. The prevalence more in female and basic years medical students. Other risk factors include previous history of mental illnesses, a family history of suicidal attempts, and academic performance.

Copy Right, IJAR, 2023,. All rights reserved.

Introduction:-

Depression is a common disorder globally, with an estimated 3.8% of the population affected, including 5.0% among adults and 5.7% among adults older than 60 years (1). Around 280 million people in the world have depression (1).

Corresponding Author:- Alhawiti

Address:- Resident in Saudi Board of Preventive Medicine.

A feeling of being overwhelmed or unable to cope with mental or emotional pressure is the definition of stress (3). Anxiety, furthermore, is defined by persistent excessive worries that do not go away even in the absence of stressors. Although, their symptoms are nearly identical (6). Constant exposure to anxious and stressful situations may increase susceptibility to different health problems (7). Effects may range from mild, moderate to severe health problems depending on the stressor's duration and the individual's ability to cope (8).

The medical school environment has been recognized as anxious and stressful for the students due to the curricular and extra-curricular situations (9). Long working and study hours, full-time commitment, responsibility regarding academic tasks and care provided to patients, sleep deprivation, as well as factors interfering in everyday personal life are common during this period. The perceived stress and anxiety among medical students have negative consequences on their academic performances, physical and psychological well-being (9).

Literature Review:-

Depression, also known as major depressive disorder or clinical depression, is a common and dangerous mood disorder. People with depression experience persistent feelings of hopelessness, sadness and lose interest in activities they once enjoyed. Depression may become a serious health condition. It can affect a person's function at work, at school, and in the family. Suicide can result from depression at its worst. Every year, around 700,000 people commit suicide. For people aged 15 to 29, suicide is the fourth most common cause of death. Although there are known, effective treatments for mental disorders, More than 75% of people in low- and middle-income countries do not obtain treatment for mental problems even though there are well-established, efficient treatments for them (2). Depression is characterized by many symptoms like sadness, excessive loss of interests and/or pleasure, feeling guilty or low self-esteem, tribulations in sleep and/or appetite, feeling tired, and decreased ability to concentrate (13).

The prevalence of depression is recognized as high among medical students. a systematic review of 37 articles found that the prevalence of depression in medical students ranged from 2.9% to 38.2%, suicidal ideation from 4.4% to 23.1%, and suicidal attempts from 0.0% to 6.4%. Studies indicate that the prevalence of depression is higher in female medical students, younger students, and lower years in medical schools (10).

Risk factors found among medical students according to a meta-analysis that evaluated the global prevalence of depression amongst medical students, as well as risk factors to identify high-risk groups founds that the highest rates of depression were among first-year students at 33.5% (95% CI 25.2–43.1%); this rate gradually decreased to reach 20.5% (95% CI 13.2–30.5%) at Year 5. This trend represented a significant decline ($B = -0.324$, $p = 0.005$) (11).

Associated factors of depression and suicidal behavior were assessed in a cross-sectional study in Portugal. Higher depression scores were noted in female medical students, students who lived alone, those with poor physical health, or poor economic status, students with a psychiatric diagnosis, students with a family history of psychiatric disorders, and students with high levels of anxiety. Suicidal behaviour was higher in medical students who lived alone or who had poor physical health, poor economic status, who are/were in psychopharmacology treatment, who had high alcohol use, severe depression, and high anxiety levels (12).

Stress is our body's response to help us deal with pressure or threats. This fact is sometimes called a "fight or flight" response (4). Many different situations or life events can lead to stress. It is often started when we experience something new, sudden, or that threatens our sense of self, or when we feel we have little control over a situation (3). Stress hormone levels usually return to normal once the pressure or threat has ended. A small amount of stress can be beneficial. It can encourage us to take action and get tasks completed. It can also make us feel alive and excited. But excessive stress can cause negative effects such as a change in mood, change in the body, and relationship issues (4). high continuous levels of stress may have a negative consequence on the cognitive functioning and learning of students in a medical school (5).

A cross-sectional study was conducted to determine the prevalence of stress among medical students and to observe an association between the levels of stress and their academic performance, including the sources of their stress. The total prevalence of stress was 63%. Females (75.7%) had a higher prevalence of stress ($p < 0.5$) than males (57%). With the exception of the final year, the stress considerably decreased as the study year lengthened. Being a woman ($p < 0.0001$), the year of study ($p < 0.001$), and the presence of reported physical issues ($p < 0.0001$) are among the study's variables (14).

Anxiety disorders are the most prevalent psychiatric disorders (with a current worldwide prevalence of 7.3% [4.8%-10.9%]. Among them, specific phobias are the most common, with a prevalence of 10.3%, then panic disorder (with or without agoraphobia) is the next most common with a prevalence of 6.0%, followed by social phobia (2.7%) and generalized anxiety disorder (2.2%). In general, women are more likely than men to experience emotional problems that first appear during adolescence; they are 1.5 to 2 times more likely to experience an anxiety disorder than males (16) Stress and anxiety are mostly sequential (5), But stress is often caused by an external trigger and it can be a short time (6)

A Meta-Analysis aimed to study the global prevalence of anxiety among medical students and the associated factors predisposing medical students to anxiety they found The global prevalence rate of anxiety among medical students was 33.8% (95% Confidence Interval: 29.2–38.7%). Middle Eastern and Asian medical students experienced anxiety the most frequently. Subgroup analyses by gender and year of the study found no statistically significant differences in the prevalence of anxiety. About one in three medical students globally have anxiety, a prevalence rate that is substantially higher than the general population (19).

Rationale:

Barriers to seeking mental health care among medical students include concerns about time, confidentiality, stigma, and the potential negative effects on their careers (18)

There were few studies investigating the prevalence of depressive and anxiety symptoms among medical students and the potential sociodemographic characteristics that were associated with high prevalence rates in different cities in Saudi Arabia.

Research questions

1. What are the prevalence of depression, anxiety, and stress among medical students at Tabuk University?
2. What are the risk factors for depression, anxiety, and stress among the medical students at Tabuk University?

General objective:

Determine the magnitude of the mental problem among medical students and factors affecting their mental well-being.

Specific objectives:

1. To estimate the prevalence of depression, anxiety, and stress among the medical students at Tabuk University, 2022.
2. To identify the risk factors of depression, anxiety, and stress among medical students at different levels of education, taking gender differences into account at Tabuk University, 2022

Study Methodology:-

Study design:

This is a cross-sectional study with an analytical approach.

Study area/ setting:

This study was conducted among 241 medical students at Tabuk University, College of Medicine, Tabuk city. It is the only college of medicine in the region. There are more than 1659 faculty members in the university, of whom 40% are female, and the number of students exceeds 36,000 students. The main campus of the university is located in the city of Tabuk, which is located in the northwest of the Kingdom. And based on the university's commitment to serving the people of the region.

The medical students in college were around 1200 students in 2021-2022 academic year.

The study will be carried out among medical students (male and female) at Tabuk University.

Study period:

The study was conducted from Jan 2022 to Aug 2022.

Study population and Inclusion/Exclusion criteria:

Medical students of Tabuk University who enrolled in the academic year 2021-2022. Involved adult male and female medical students who agreed to participate in the study. The exclusion criteria involved any medical students who did not complete 6 months period of stay in college, new transfers, and students who in vacation.

Sample size:

The sample size was calculated using the formula $n = Z^2 \times P \times Q / D^2$ (where n: Calculated sample size, Z: The z-value for the selected level of confidence= 1.96 at 95% confidence; p 50%, assumed proportion of participants for maximum sample size calculation; q = 1-p= 50%; d = absolute allowable error (precision around the proportion to estimate; i.e. how wide the 95% confidence interval should be). For this study, we assumed maximum possible variability (i.e. p = 0.5; q = 0.5) and precision (d) $\pm$ 5% (i.e. the 95% confidence interval will have a width of 5%). A total of 384 participants were targeted but only 241 participated making the response rate 62.7%.

Sampling technique:

Medical students were invited to participate after finishing their classes or courses.

Data Collection Tool and Technique:

A paper-based self-administered questionnaire consisting of three parts was used in this study. The first part included questions on sociodemographics, risk factors, and education characteristics. The second part assessed stress and depression by using the stress and depression subscales of the validated Depression, Anxiety, and Stress Scale-21 item (DASS-21). The reliability of DASS-21 showed that it has excellent Cronbach's alpha values of 0.81, 0.89, and 0.78 for the subscales of depression, anxiety, and stress respectively. It was found to have excellent internal consistency, discriminative, concurrent, and convergent validities. The Stress subscale contains seven items and assesses difficulty relaxing, nervous arousal, being easily upset/agitated, irritable/over-reactive, and impatient. The anxiety scale assesses autonomic arousal, skeletal muscle effects, situational anxiety, and subjective experience of anxious affect. Depression subscale contains seven items and measures dysphoria, hopelessness, devaluation of life, self-deprecation, lack of interest/involvement, anhedonia, and inertia. Each item is scored on a four-point Likert scale ranging from zero (Did not apply to me at all over the last week) to three (Applied to me very much, or most of the time over the past week). The total score of stress, anxiety, and depression was obtained by summing up the relevant questions of each subscale.

Data was recorded on an excel sheet and analyzed by Statistical Package for the Social Sciences Sciences (SPSS®) (version 23.0, IBM, Armonk, NY).

Data analysis:

Statistical analysis was conducted using Statistical Package for Social Sciences (SPSS) software version 23.0. categorical data were presented in frequency and percentages. Analytic statistics using a chi-square test were applied. Other statistical tests will be used as appropriate to fulfill the study objectives and p-values ≤ 0.05 will be considered statistically significant.

Ethical consideration:

The study was conducted following the regulations and ethics followed at Ministry Of Health. The study received ethical approval from the Institutional Review Board (IRB) of the Ministry Of Health (On 10 June 2022) and after that university approve it.

Results:-

The questionnaire was distributed to medical students. complete questionnaires were received from 241 participants giving a response rate of 62.7%.

The socio-demographic characteristics of participants are illustrated in table1. There were 159(66 %) with age $\geq$ 21 years and 82(34%) with age less than 21 years. Females were more dominant compared to males; 136(56.4%) Vs. 105(43.6%), respectively. Most of the participants were single 236 (97.9%), and 5 (2.1%) were married. The largest proportion was in the second academic year 52 (21.6%) and the lowest was in the first academic year 28 (11.6) (figure1). There were 67(27.8%) students who reported excellent performance, very good performance 65(27%) followed by those who had good performance 85(35.3%) while poor performance only 24(10%).

The majority of students, 208(86.3%), reported living with family, furthermore, most of them were non-smokers 206(85.5%). The medical history of students showed that more than half 139(57.7%) had previous history of anxiety, followed by those with previous depression 74(30.7%), and those who reported a family history of mental diseases and family history of suicidal attempts were 39(16.2%) 22(9.1%) respectively (figure2).

Only 32(13.3%) reported having chronic conditions. The largest proportion of students had a normal BMI of 94(39%), whereas the least proportion had obesity class II 21(8.7%) (figure3). More than one-half of students reported rare physical exercise 127(52.7%), whereas only 63(26.1%) reported 1-2 times per week (figure4).

Table 1:- Demographics and socio-demographic characteristics.

		n	%
Age	<21	82	34.0%
	≥ 21	159	66.0%
Gender	Male	105	43.6%
	Female	136	56.4%
Marital status	Single	236	97.9%
	Married	5	2.1%
Academic year	First	28	11.60%
	Second	52	21.60%
	Third	36	14.90%
	Fourth	44	18.30%
	Fifth	34	14.10%
	Sixth	47	19.50%
Academic performance	Poor	24	10.00%
	Good	85	35.30%
	Very Good	65	27.00%
	Excellent	67	27.80%
Living Situation	Alone	27	11.20%
	With family	208	86.30%
	Student Housing	6	2.50%
Smoking status	Non-smoker	206	85.50%
	Smoker	35	14.50%
Previous history of depression	No	167	69.30%
	Yes	74	30.70%
Previous history of anxiety	No	139	57.70%
	Yes	102	42.30%
Family history of suicidal attempt	No	219	90.90%
	Yes	22	9.10%
Family history of mental illness	No	202	83.80%
	Yes	39	16.20%
Chronic medical conditions	No	209	86.70%
	Yes	32	13.30%
BMI	Normal BMI	94	39.00%
	Obese I	25	10.40%
	Obese II	21	8.70%
	Overweight	72	29.90%
	Underweight	29	12.00%
Physical exercise per week	>5 times	15	6.20%
	1-2 times	63	26.10%
	3-5 times	36	14.90%

	rarely	127	52.70%
--	--------	-----	--------

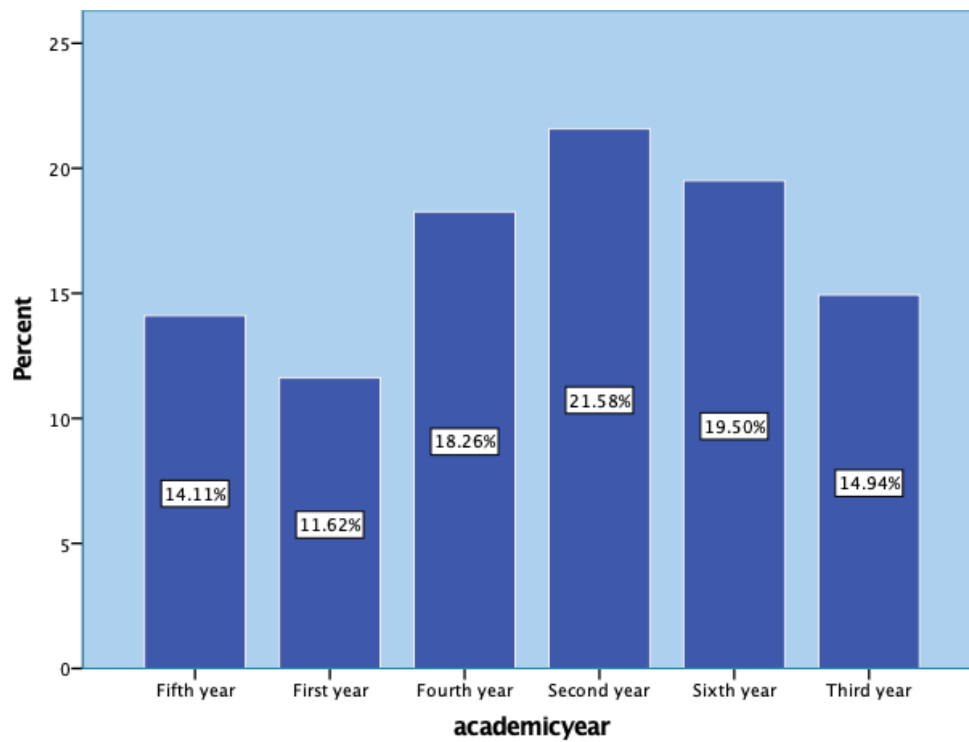


Figure1:- Bar graph showing the percentage of respondents among academic years.

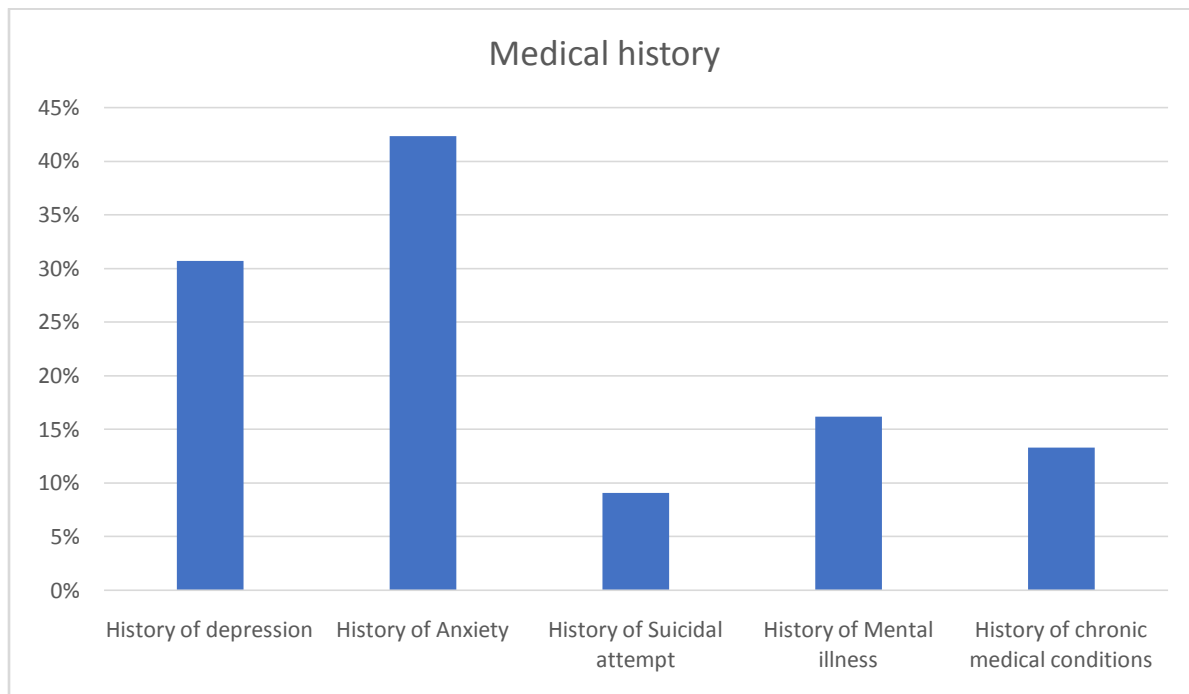


Figure 2:- Bar chart showing medical history among study participants.

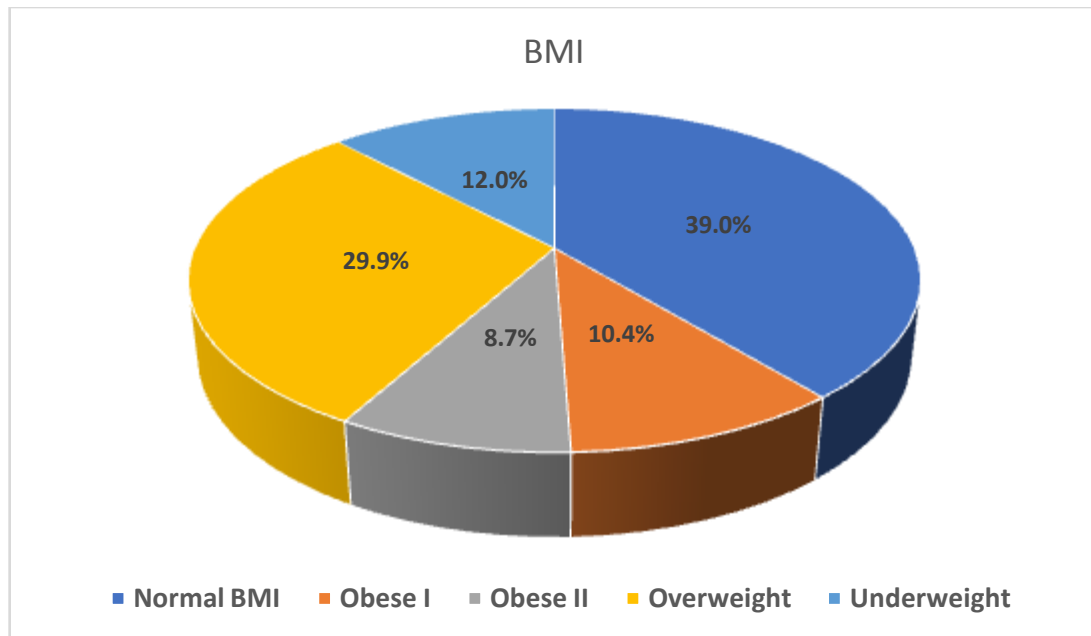


Figure 3:- Pie chart BMI distribution among respondents.

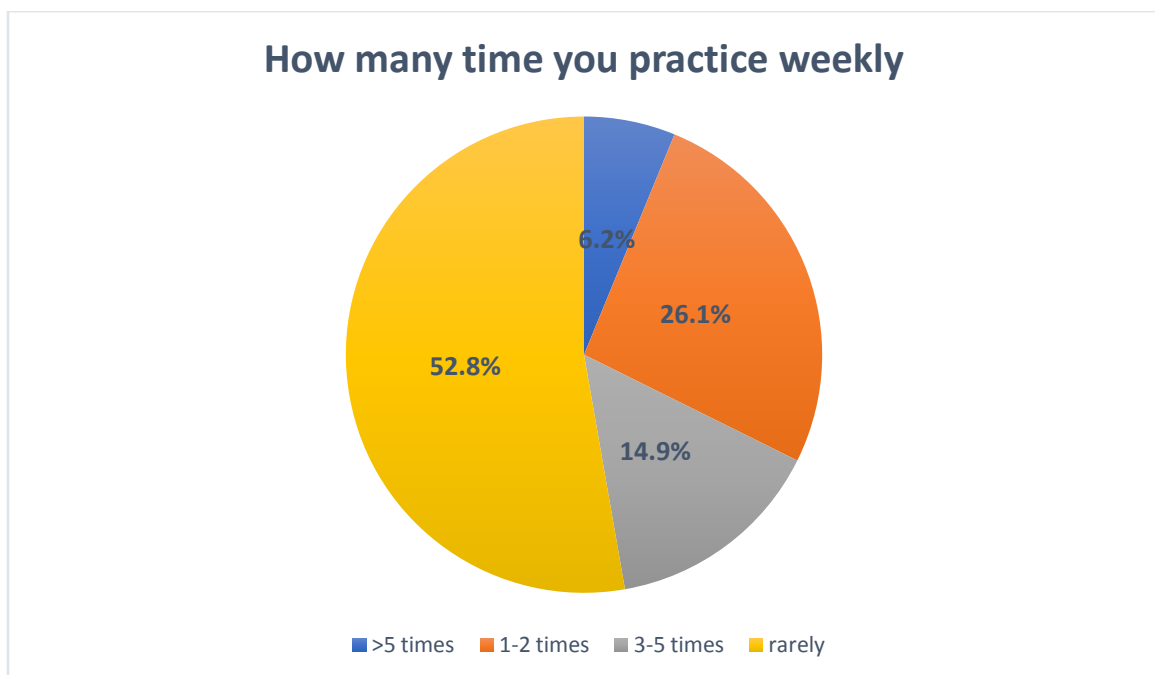


Figure 4:- Pie chart showing the frequency of doing sports weekly among respondents.

The stress of students was investigated through seven questions with multiple answers; the questions on stress and answers of students are shown in table2

Table2:- Stress component of DASS-21.

		Count	Column N %
I found it hard to wind down	Did not apply to me at all	73	30.30%
	Applied to me to some degree, or some of the time	104	43.20%

	Applied to me very much or most of the time	42	17.40%
	Applied to me very much or most of the time	22	9.10%
I tended to over-react to situations	Did not apply to me at all	101	41.9%
	Applied to me to some degree, or some of the time	75	31.1%
	Applied to me very much or most of the time	38	15.8%
	Applied to me very much or most of the time	27	11.2%
I felt that I was using a lot of nervous energy	Did not apply to me at all	93	38.6%
	Applied to me to some degree, or some of the time	84	34.9%
	Applied to me very much or most of the time	43	17.8%
	Applied to me very much or most of the time	21	8.7%
I found myself getting agitated	Did not apply to me at all	123	51%
	Applied to me to some degree, or some of the time	56	23.2%
	Applied to me very much or most of the time	44	18.3%
	Applied to me very much or most of the time	18	7.5%
I found it difficult to relax	Did not apply to me at all	72	29.9%
	Applied to me to some degree, or some of the time	86	35.7%
	Applied to me very much or most of the time	59	24.5%
	Applied to me very much or most of the time	24	10%
I was intolerant of anything that kept me from getting on with what I was doing	Did not apply to me at all	71	29.5%
	Applied to me to some degree, or some of the time	87	36.1%
	Applied to me very much or most of the time	56	23.2%
	Applied to me very much or most of the time	27	11.2%
I felt that I was rather touchy	Did not apply to me at all	113	46.9%
	Applied to me to some degree, or some of the time	70	29%
	Applied to me very much or most of the time	45	18.7%
	Applied to me very much or most of the time	13	5.4%

The anxiety component of DASS-21 was investigated by seven questions with multiple answers; the questions and answers of students are shown in table3.

Table 2:- Anxiety component of DASS-21.

		n	%
I was aware of dryness of my mouth	Did not apply to me at all	65	27

	Applied to me to some degree, or some of the time	74	30.7
	Applied to me very much or most of the time	71	29.5
	Applied to me very much or most of the time	31	12.9
I experienced breathing difficulty (e.g. excessively rapid breathing, breathlessness in the absence of physical exertion)	Did not apply to me at all	90	37.3
	Applied to me to some degree, or some of the time	67	27.8
	Applied to me very much or most of the time	46	19.1
	Applied to me very much or most of the time	38	15.8
I experienced trembling (e.g. in the hands)	Did not apply to me at all	98	40.7
	Applied to me to some degree, or some of the time	69	28.6
	Applied to me very much or most of the time	43	17.8
	Applied to me very much or most of the time	31	12.9
I was worried about situations in which I might panic and make a fool of myself	Did not apply to me at all	84	34.9
	Applied to me to some degree, or some of the time	74	30.7
	Applied to me very much or most of the time	56	23.2
	Applied to me very much or most of the time	27	11.2
I felt I was close to panic	Did not apply to me at all	82	34
	Applied to me to some degree, or some of the time	81	33.6
	Applied to me very much or most of the time	40	16.6
	Applied to me very much or most of the time	38	15.8
I was aware of the action of my heart in the absence of physical exertion	Did not apply to me at all	96	39.8
	Applied to me to some degree, or some of the time	58	24.1
	Applied to me very much or most of the time	52	21.6
	Applied to me very much or most of the time	35	14.5
I felt scared without any good reason	Did not apply to me at all	93	38.6
	Applied to me to some degree, or some of the time	91	37.8
	Applied to me very much or most of the time	33	13.7
	Applied to me very much or most of the time	24	10

The third component of DASS-21 was depression and included seven questions to assess depression among students. The answers of students regarding depression questions are shown in table4.

Table 4:- Depression component of DASS-21.

		n	%
I couldn't seem to experience any positive feeling at all	Did not apply to me at all	50.6	50.6
	Applied to me to some degree, or some of the time	19.9	19.9
	Applied to me very much or most of the time	19.5	19.5
	Applied to me very much or most of the time	10	10
I found it difficult to work up the initiative to do things	Did not apply to me at all	104	43.2
	Applied to me to some degree, or some of the time	67	27.8
	Applied to me very much or most of the time	40	16.6
	Applied to me very much or most of the time	30	12.4
I felt that I had nothing to look forward to	Did not apply to me at all	125	51.9
	Applied to me to some degree, or some of the time	48	19.9
	Applied to me very much or most of the time	28	11.6
	Applied to me very much or most of the time	40	16.6
I felt down-hearted and blue	Did not apply to me at all	102	42.3
	Applied to me to some degree, or some of the time	54	22.4
	Applied to me very much or most of the time	42	17.4
	Applied to me very much or most of the time	43	17.8
I was unable to become enthusiastic about anything	Did not apply to me at all	110	45.6
	Applied to me to some degree, or some of the time	60	24.9
	Applied to me very much or most of the time	42	17.4
	Applied to me very much or most of the time	29	12
I felt I wasn't worth much as a person	Did not apply to me at all	107	44.4
	Applied to me to some degree, or some of the time	58	24.1
	Applied to me very much or most of the time	41	17
	Applied to me very much or most of the time	35	14.5
I felt that life was meaningless	Did not apply to me at all	117	48.5
	Applied to me to some degree, or some of the time	55	22.8

	Applied to me very much or most of the time	34	14.1
	Applied to me very much or most of the time	35	14.5

The degree of the three components (depression, anxiety, and stress) among students are shown in table5, (figure5). Most of the students had no depression and were normal 172 (71.4%). Regarding anxiety, almost one-half of were normal 124(51.5%), whereas 29 (12%) and 6(2.5%) had severe and extremely severe anxiety, respectively. The majority of the students haveno stress and were normal, 209(86.7%), only seven students suffered moderate stress (2.7%), and 25 students (10.4%) had mild stress.

Table 5:- DASS-21 total score.

	Depression		Anxiety		Stress	
Normal	172	71.4%	124	51.5%	209	86.7%
Mild	48	19.9%	33	13.7%	25	10.4%
Moderate	20	8.3%	49	20.3%	7	2.9%
Severe	1	0.4%	29	12.0%	0	0
Extremely severe	0	0	6	2.5%	0	0

Overall, Prevalence of depression among medical students was 28.6%, anxiety 46.05%, and prevalence of stress 13.2%. prevalence of depression in basic years was 38%, anxiety 53%, and stress 7.7% while the prevalence is less in clinical years. Depression was 27%, anxiety was 44%, and stress was 5.6%.

The prevalence of depression among female medical students was 41.1% while the prevalence in males was 21.9%. anxiety is also prevalent in females more than males 56.6%, and 38.1% respectively. Stress was 9.5% in female and 2.5% in male medical students.

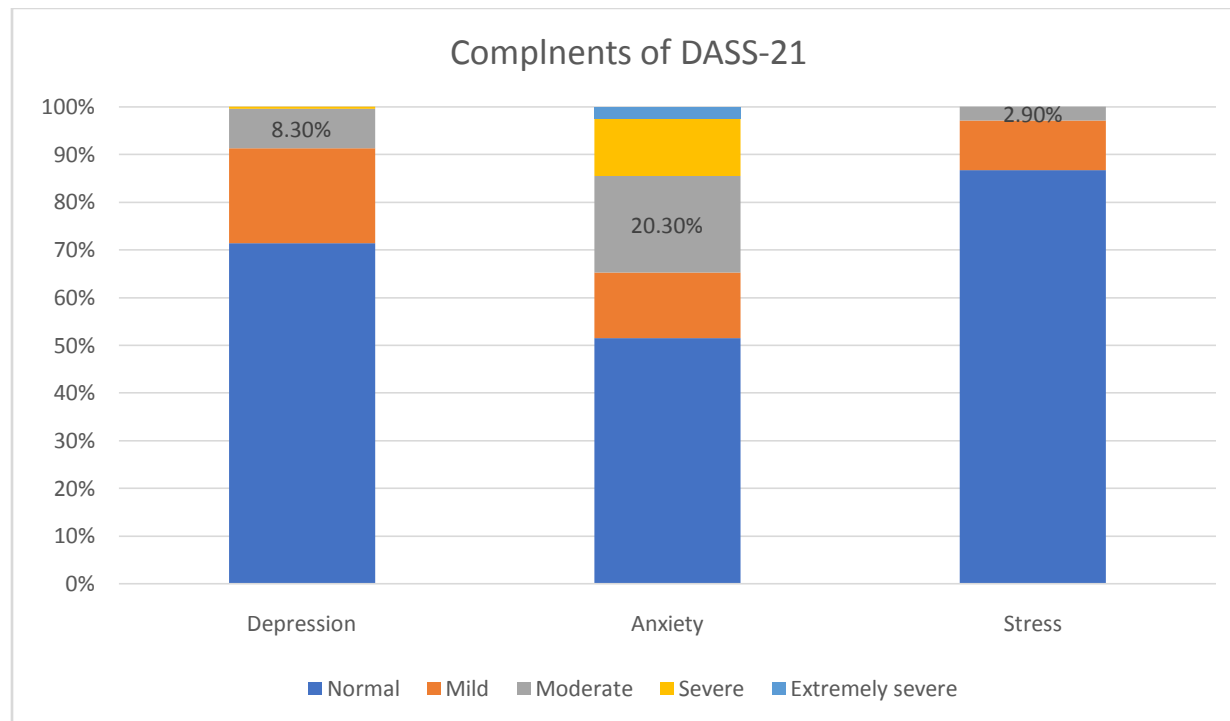


Figure 5:- Staked bar chart showing the grade of depression, anxiety, and stress among respondents.

The association between stress among students and their demographics is shown in table6. There was a significant association between stress and gender of students ($P=0.038$), history of depression ($P=0.02$), history of anxiety ($P=0.001$), and family history of mental illness ($P=0.002$).

Table 6: Association between stress prevalence and socio-demographic characteristics.

	stress			
	No	Yes	χ^2	p-value
gender				
Female	123	13	4.293	0.038
Male	102	3		
	225	16		
Age				
<21	77	5	0.59	0.808
≥ 21	148	11		
	225	16		
marital status				
Married	5	0	0.363	0.547
Single	220	16		
	225	16		
Academic year				
First	26	2	4.72	0.451
Second	50	2		
Third	31	5		
Fourth	42	2		
Fifth	31	3		
Sixth	45	2		
	225	16		
Academic performance				
Poor	22	2	3.967	0.265
Good	77	8		
Very Good	64	1		
Excellent	62	5		
	225	16		
Living Situation				
Alone	26	1	0.912	0.634
With family	193	15		
Student Housing	6	0		
	225	16		
smoking status				
Non-smoker	192	14	0.056	0.812
Smoker	33	2		
	225	16		
BMI				
Underweight	27	2	6.774	0.148
Normal BMI	85	9		
Overweight	71	1		
Obese I	24	1		
Obese II	18	3		
	225	16		
Physical exercise per week				
Rarely	118	9	1.396	0.955
1 – 2 times	59	4		
3 – 5 times	33	3		
>5 times	15	0		
	225	16		

chronic medical conditions				
No	195	14	0.0009	0.924
Yes	30	2		
	225	16		
Previous history of depression				
No	160	7	5.256	0.02
Yes	65	9		
	225	16		
Previous history of anxiety				
No	136	3	10.638	.001
Yes	89	13		
	225	16		
Family history of suicidal attempt				
No	206	13	1.912	0.167
Yes	19	3		
	225	16		
Family history of mental illness				
No	193	9	9.602	0.002
Yes	32	7		
	225	16		

The association between anxiety and demographics of students is shown in (table7). The factors that affected the anxiety of students included gender ($P=0.04$), academic performance ($P=0.001$), previous history of depression ($P=0.0001$), previous history of anxiety ($P=0.0001$), family history of suicidal attempt ($P=0.001$), and family history of mental illness ($P=0.005$).

Table 7:- Association between anxiety prevalence and socio- demographics characteristics.

anxiety				
	no	yes	x2	p-value
gender				
Female	59	77	8.138	0.04
Male	65	40		
	124	117		
Age				
<21	43	39	0.048	0.826
>=21	81	78		
	124	117		
marital status				
Married	2	3	0.268	0.605
Single	122	114		
	124	117		
Academic year				
First	15	13	9.646	0.086
Second	27	25		
Third	12	24		
Fourth	24	20		
Fifth	15	19		
Sixth	31	16		
	124	117		
Academic performance				
Poor	5	19		0.001
Good	38	47		
Very Good	39	26		
Excellent	42	25		

	124	117		
Living Situation				
Alone	13	14	0.142	0.932
With family	108	100		
Student Housing	3	3		
	124	117		
smoking status				
Non-smoker	104	102	0.531	0.466
Smoker	20	15		
	124	117		
BMI				
Underweight	15	14	1.552	0.817
Normal BMI	46	48		
Overweight	40	32		
Obese I	11	14		
Obese II	12	9		
	124	117		
Physical exercise per week				
Rarely	60	67	4.349	0.63
1 – 2 times	35	29		
3 – 5 times	23	13		
>5 times	7	8		
	124	117		
chronic medical conditions				
No	106	103	0.34	0.56
Yes	18	14		
	124	117		
Previous history of depression				
No	103	64	22.762	.0001
Yes	21	53		
	124	117		
Previous history of anxiety				
No	89	50	20.796	.0001
Yes	35	67		
	124	117		
Family history of suicidal attempt				
No	120	99	10.729	0.001
Yes	4	18		
	124	117		
Family history of mental illness				
No	112	90	7.968	0.005
Yes	12	27		
	124	117		

The association between depression and the demographics of students is shown in (table8). There was a significant association found between depression and the gender of students ($P=0.002$). Also, there was a significant association between depression and the academic performance of students ($P=0.0001$). Other factors affected the previous history of depression ($P=0.0001$), previous anxiety history ($P=0.0001$), family history of suicidal attempt ($P=0.007$), and family history of mental illness ($P=0.001$).

Table 8:- Association between depression and socio- demographics characteristics.

Depression				
	no	yes	x2	p-value
gender				

Female	80	56	9.987	0.002
Male	82	23		
	162	79		
Age				
<21	55	27	0.001	0.972
>=21	107	52		
	162	79		
marital status				
Married	3	2	0.121	0.728
Single	159	77		
	162	79		
Academic year				
First	15	13	7.72	0.172
Second	36	16		
Third	20	16		
Fourth	31	13		
Fifth	23	11		
Sixth	37	10		
	162	79		
Academic performance				
Poor	7	17	24.897	0.0001
Good	52	33		
Very Good	53	12		
Excellent	50	17		
	162	79		
Living Situation				
Alone	13	14	5.044	0.080
With family	145	63		
Student Housing	4	2		
	162	79		
smoking status				
Non-smoker	137	69	0.329	0.566
Smoker	25	10		
	162	79		
BMI				
Underweight	21	8	2.281	0.684
Normal BMI	62	32		
Overweight	51	21		
Obese I	14	11		
Obese II	14	7		
	162	79		
Physical exercise per week				
Rarely	82	45	2.647	0.852
1 – 2 times	44	19		
3 – 5 times	27	9		
>5 times	9	6		
	162	79		
chronic medical conditions				
No	140	69	0.039	0.843
Yes	22	10		
	162	79		
Previous history of depression				
No	133	34	38.08	0.0001

Yes	29	45		
	162	79		
Previous history of anxiety				
No	113	26	29.527	0.0001
Yes	49	53		
	162	79		
Family history of suicidal attempt				
No	155	64	13.77	0.0001
Yes	7	15		
	162	79		
Family history of mental illness				
No	145	57	11.791	0.001
Yes	17	22		
	162	79		

Discussion:-

In this study, we assessed stress, anxiety, and depression among medical students. In our study, stress was less prevalent compared to depression and anxiety. The large majority of the students had no stress, and few students experienced mild and moderate stress. On the other hand, almost one-half had no anxiety, whereas the remaining percentage experienced various degrees of anxiety. Few proportions of students experienced severe and extremely severe anxiety, whereas almost one-third experienced moderate and mild anxiety. More than one-half of students were free-of depression; therefore, anxiety was more common among medical students in this study, followed by depression and then stress.

In a previous Saudi study that included 575 medical students from five years of study, it was found that students had high baseline traits of stress, anxiety, and depression (20). Another Saudi study compared medical and non-medical students regarding stress, depression, and anxiety. The study showed that for all students, depression was highly prevalent among students at 54%, followed by anxiety at 53 and then stress at 38%. Surprisingly, non-medical students significantly experienced a higher level of anxiety, whereas no significant difference was found regarding depression and stress between the two groups of students. Among medical students, there were 55.84% had depression; 12.99% had extremely severe, 8.66% severe, and 45.89% had anxiety; 13.42% had extremely severe, 6.93% severe, and 37.66% had stress; 11.26% had extremely severe and 7.36% severe (21). The previous findings were varied from ours, where medical students in our study had no severe or extremely severe stress or depression. Also, anxiety was more prevalent among medical students in our study, which was in contrast to the previous study.

In agreement with our study, an Egyptian study conducted on first-year medical students using DASS-21 showed that the prevalence of anxiety was the highest (78.4%), followed by depression (63.6%) and stress (57.8%) (22). Another Egyptian study conducted on 442 medical students reported that the prevalence of anxiety was the highest (64.3%), followed by stress (62.4%) and depression (60.8%) (23). The previous studies reported a high prevalence of anxiety, depression, and stress, whereas our study showed that the prevalence of these items was low and the majority had no depression, stress, or anxiety.

In our study, we investigated the factors that affected stress, anxiety, and depression among medical students. Gender, previous history of depression, anxiety, family history of suicidal attempts, and mental illness were determinant factors for stress, depression, and anxiety. Also, stress was significantly affected by smoking status and academic performance. Students with good, very good, and excellent academic performance tended to experience no stress.

Anxiety among students in this study was significantly associated with academic performance. Students with a previous history of anxiety, and family mental illness tended to experience extremely severe anxiety. Depression additionally was significantly affected by the academic year. Students with a previous history of depression tended to experience moderate depression, whereas those with no history of anxiety were more predisposed to have no depression (20).

From the findings of our study, we found that previous history of depression was a significant factor affecting experiencing stress, anxiety, and depression in medical students. Hence, perhaps previous mental history affects the current mental status of medical students.

The higher level of depression, anxiety, and stress was associated with smoking and female gender among Saudi medical students, as reported in a previous study (20). In our study, smoking was not associated with stress among students, whereas gender was a determinant factor for depression, stress, and anxiety and females were more predisposed to suffer depression, anxiety, and stress which was in agreement with the previous study.

Another Saudi study that reported depression and anxiety together among medical students revealed that a significantly higher proportion of females experienced depression and anxiety and a significant proportion of those in the first-year experienced depression and anxiety (24). The previous findings were in line with ours regarding the impact of the female gender in experiencing depression and anxiety. On the other hand, academic year had an impact on depression only, but not anxiety.

A previous Egyptian study conducted on medical students reported that chronic physical illness significantly affected depression and stress(22), but in our study, we didn't find any correlation between chronic illness and any stress or depression. However, these variations can be attributed to the variation in chronic illness between Egyptians and Saudi students. Also, the Egyptian study investigated factors different from ours.

A study conducted on medical students from Fayoum, Egypt, showed that stress was significantly associated with age, academic years, and marital status. Anxiety was associated with age, academic year, and body weight, whereas depression was associated with age and academic years only (23). In our study, age, marital status, and academic years had no impact on stress, and none of the factors that affected anxiety in the Egyptian study was found to affect the anxiety of students in our study. The agreement was regarding the impact of the academic year on depression, but age had no significant effect on depression in our study (23).

Limitation:

This study is not without limitations. First, the study sample will be selected only from one city, which could impact the generalizability of the results. Second, only the selected variables will be studied so there might be other risk factors that we don't know until now. Moreover, we cannot exclude the probability of reporting bias from self-reported data. Finally, the compliance of students is also another possible limitation.

Strength:

Despite these limitations, the study expanded our knowledge of the prevalence and factors associated with stress, anxiety, and depression among medical students of Tabuk University. It also provides an understanding for the Tabuk University administrators and stakeholders to address the problem. Additionally, the current finding may help as baseline data for further studies with advanced methods.

Conclusion and Recommendations:-

Conclusions:-

Our findings in this study suggest that anxiety and depression are prevalent among Tabuk University medical students. The prevalence more in female and basic years medical students. Other risk factors include previous history of mental illnesses, a family history of suicidal attempts, and academic performance.

Recommendation:-

Decision-makers in public health and educational authorities should consider addressing this issue of concern. Interventions designed to improve mental health, improve study conditions, and the availability of counseling to improve coping strategies could be helpful in reducing symptoms of depression and anxiety among medical students.

Future studies are still needed to investigate if these interventions could be useful in reducing depressive and anxiety symptoms among medical students.

References:-

1. Institute of Health Metrics and Evaluation. Global Health Data Exchange (GHDx). (Accessed 1 May 2021).
2. Evans-Lacko S, Aguilar-Gaxiola S, Al-Hamzawi A, et al. Socio-economic variations in the mental health treatment gap for people with anxiety, mood, and substance use disorders: results from the WHO World Mental Health (WMH) surveys. *Psychol Med.* 2018;48(9):1560-1571.
3. Mentalhealth Foundation, stress. <https://www.mentalhealth.org.uk/a-to-z/s/stress>. Last updated: 17 September 2021.
4. Rethink Mental Illness organization. <https://www.rethink.org/advice-and-information/living-with-mental-illness/wellbeing-physical-health/stress-how-to-cope>.
5. Maurer J, Rebbapragada V, Borson S, et al. Anxiety and depression in COPD: current understanding, unanswered questions, and research needs. *Chest.* 2008;134(4):43S-56S. doi:10.1378/chest.08-0342
6. Association. AP. What's the Difference Between Stress and Anxiety?; 2020.
7. Tabalipa F, Souza M, Pfützenreuter G, Lima VC, Traebert E, Traebert J. Prevalence of anxiety and depression among medical students. *Revista Brasileira De Educação Médica.* 2015;39(3):388-394. doi:10.1590/1981-52712015v39n3e02662014
8. Shin LM, Liberzon I. The neurocircuitry of fear, stress, and anxiety disorders. *Neuropsychopharmacology.* 2010;35(1):169-191.
9. Solanky P, Desai B, Kavishwar A, Kantharia S. Study of psychological stress among undergraduate medical students of government medical college, Surat. *Int J Med Sci Public Health.* 2012;1(2):38-42. doi:10.5455/ijmsph.2012.1.38-42
10. Coentre R and Figueira ML (2015): Depression and suicidal behavior in medical students: a systematic review. *Current Psychiatry Reviews*, 11: 86-111
11. Puthran R, Zhang MWB, Tam WW and Ho RC (2016): Prevalence of depression amongst medical students: a meta-analysis. *Med Educ.*, 50(4):456-468.
12. Coentre, Ricardo & Faravelli, Carlo & Figueira, Maria Luisa. (2016). Assessment of depression and suicidal behaviour among medical students in Portugal. *International Journal of Medical Education.* 7. 354-363. 10.5116/ijme.57f8.c468.
13. Shawahna R, Hattab S, Al-Shafei R, Tab'ouni M. Prevalence and factors associated with depressive and anxiety symptoms among Palestinian medical students. *BMC Psychiatry.* 2020 May 19;20(1):244. doi: 10.1186/s12888-020-02658-1. PMID: 32429889; PMCID: PMC7236464.
14. Abdulghani HM, AlKanhali AA, Mahmoud ES, Ponnampuruma GG, Alfaris EA. Stress and its effects on medical students: a cross-sectional study at a college of medicine in Saudi Arabia. *J Health Popul Nutr.* 2011 Oct;29(5):516-22. doi: 10.3329/jhpn.v29i5.8906. PMID: 22106758; PMCID: PMC3225114.
15. Thibaut F. The role of sex and gender in neuropsychiatric disorders. *Dialogues Clin Neurosci.* 2016;18(4):351-352.
16. Almalki, A., Almalki, A., Kokandi, A., Aldosari, B., Bin Baz, A., Alfadhel, S., Alsuwayyigh, A., Alsadoun, R., & Haddad, B. (2019). Depression Among First- and Fifth-Year Medical Students in Riyadh, Saudi Arabia. *Galen medical journal*, 8, e1497. <https://doi.org/10.31661/gmj.v8i0.1497>
17. Wolf T.M. Stress, coping and health: Enhancing well-being during medical school. *Med. Educ.* 1994;28:8-17. doi: 10.1111/j.1365-2923.1994.tb02679.x.
18. Hope V., Hendersony M. Medical student depression, anxiety and distress outside North America: A systematic review. *Med. Educ.* 2014;48:963-979. doi: 10.1111/medu.12512.
19. Quek TT, Tam WW, Tran BX, Zhang M, Zhang Z, Ho CS, Ho RC. The Global Prevalence of Anxiety Among Medical Students: A Meta-Analysis. *Int J Environ Res Public Health.* 2019 Jul 31;16(15):2735. doi: 10.3390/ijerph16152735. PMID: 31370266; PMCID: PMC6696211.
20. Kulsoom B, Afsar NA. Stress, anxiety, and depression among medical students in a multiethnic setting. *Neuropsychiatric disease and treatment.* 2015;11:1713.
21. Mirza AA, Milaat WA, Ramadan IK, Baig M, Elmorsy SA, Beyari GM, Halawani MA, Azab RA, Zahrani MT, Khayat NK. Depression, anxiety, and stress among medical and non-medical students in Saudi Arabia: An epidemiological comparative cross-sectional study. *Neurosciences Journal.* 2021 Apr 1;26(2):141-51.
22. Abdallah AR, Gabr HM. Depression, anxiety and stress among first-year medical students in an Egyptian public university. *Int Res J Med Med Sci.* 2014 Feb;2(1):11-9.
23. Wahed WY, Hassan SK. Prevalence and associated factors of stress, anxiety, and depression among medical Fayoum University students. *Alexandria Journal of medicine.* 2017;53(1):77-84.
24. Inam SB. Anxiety and depression among students of a medical college in Saudi Arabia. *International journal of health sciences.* 2007 Jul;1(2):295.