Stress and its effect on medical students Performance in Tikrit University College of Medicine

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Abstract

Background: Medical education is perceived as being stressful, & a high level of stress may have a negative effect on cognitive functioning & learning of students in a medical school. Objectives: To determine the prevalence of perceived stress among medical students & to observe an association between the levels of stress & their academic performance, including the sources of their stress & their coping strategies. Methodology: This cross-sectional study was conducted on one hundred eighty medical students from first stage to sixth stage from the Tikrit were enrolled in the study. The study was conducted using Kessler10 psychological distress inventory, which measures the level of stress according to none, mild, moderate, & severe categories. The prevalence of stress was measured & compared with the six study variables, such as gender, living accommodation, academic year, regularity to course attendance, academic grades, & perceived physical problems Result: The response rate among the study subjects was 100% (n=180). The total prevalence of stress was 57.2%, & the prevalence of severe stress was 12.8%. The prevalence of stress was higher among females (69.9%) than among males(42.9%). 2=16.34, p<0.001). The prevalence of stress was higher in students living at dormitory (31.6%) than students live at parental home (25.5%) but the severity of stress was higher in those students. The prevalence of stress was higher during the preclinical group mostly in third year students (76.7%) & in students who attend irregularly (73.9%). Exams (73%) & load of study (49.5%) are the most powerful stressors. Spend time with friends, sleeping, prayer, music, going into isolation or sports are various coping mechanisms. The academic performance was decline with increase stress level. Physical problems are associated with high stress levels. Conclusion: The prevalence of perceived stress seems to be high among medical students & in all level was higher in female than male. Preclinical group of students had more stress than clinical group & most of students who attend irregularly had high level of stress, which tends to affect not only their academic performances but also all aspects of health. Recommendation: Review of academics & exam schedules, more leisure time activities, better interaction with the faculty & proper guidance, advisory services & peer counseling at the campus could do a lot to reduce the stress.

Introduction

Stress is the psychological and physical state that results when the resources of the individual are not sufficient to cope with the demands and pressure of the situation (1). Despite its diffuse perception, most of the well-known definitions emphasize stress as any factor that threatens the health of an individual or has an adverse effect on the functioning of the body (2). As such, stress is a normal, desirable, and beneficial part of our lives that can help one learn and grow. Most people are more active, invigorated, creative, and productive because of stress. Conversely, stress can cause significant problems. Prolonged, uninterrupted, unexpected and unmanageable stress is damaging (3). Stress, health and emotional problems increase during the period of undergraduate medical education. This can lead to mental distress and has a negative impact on cognitive functioning and learning (4). Medical education is identified as full of stress and it is characterized by many psychological changes as well in students (5). It constitutes various stressors, which may cause impaired judgment, reduced concentration, loss of self-esteem, increased anxiety & depression (6). A student s life is subjected to different kinds of stressors, such as the pressure of academics with an obligation of success, uncertain future and difficulties envisaged for integration into the system. These students face social, emotional, physical, and family problems, which may affect their learning ability and academic performance (7, 8). It is noteworthy that stress on medical students need to be recognized, and strategies developed to improve it should be focused on both individual and situational factors (9). Park and Adler reported that effective and appropriate coping strategies might buffer the impact of newly encountered stressful situations on physical health. Therefore, using coping strategies effectively and as appropriate will undoubtedly help medical students in reducing their stress level (10). Students revert to different coping strategies, harmful as well as constructive. There have been very few studies done so far to assess the perceptions of stress among students, and still fewer are those done on medical student population (11,12). In many medical schools, the environment itself is an all prevailing pressure situation, providing an authoritarian and rigid system, one that encourages competition rather than cooperation between learners (13). High levels of stress may have a negative effect on mastery of the academic curriculum, by impeding concentration, problem solving, decision making, completion of work and other abilities necessary for student learning (4, 14). It is not just the undergraduate study period, which brings stress, but it may continue during the internship, postgraduate study period, and later into physician spractical life (15, 16). The estimated prevalence of emotional disturbance found in different studies on medical students was higher than that in the general population. In three British universities, the prevalence of stress was31.2% (17); other studies showed that the prevalence of stress was 41.9% and 57% in Malaysian (18), and Saudi Arabian (19) medical schools respectively. Stress in medical school is likely to predict later mental health problems but students seldom seek help for their problems (20). It is important for medical educators to know the prevalence, causes, and levels of stress among students, which not only affect their health but also their academic achievements at

different points of time of their study period. Nevertheless, there are few studies
in the medical schools of our country. This study achieved to evaluate stress and its effects on medical students. The objectives
are To assess the level of stress among medical students. To identify the prevalence of stress according to gender, residence, stage, and regular attendance among medical students. To identify reasons of stress among medical students and their coping strategies. To identify the relationship between the level of stress and students performance and presence of perceived physical problems. This information may aid in designing appropriate intervention strategies and planning modifications in the medical curriculum to enhance students' learning abilities.

Subjects and Methods

Instrument

A wide range of different measures hasbeen used for addressing psychological distress & depressive symptomatology among medical students. The Kessler10 Psychological Distress instrument (K10) developed by Kessler and colleagues (21) was used addressing psychological distress. This instrument has been used widely in population-based epidemiological studies to measure current (1-month) distress and to measure the level of stress and severity associated with psychological symptoms in population surveys. The World Mental Health Survey of the World Health Organization (WHO) used it as a clinical outcome measure (22-25). The K10 consists of 10 questions in the form of how often in the past month did you feel ... and offers specific symptoms, such as tired out for no good reason , nervous , and sad or depressed . The five possible responses for each question range from none of the time to all of the time and were scored from 1 to 5 respectively. All the questions were collated to obtain a total score. The total score was interpreted as follows: a score of less than 20 was considered not to represent stress of any level while a score of 20-24 represented mild stress, 25-29 represented moderate stress, and 30-50 represented severe stress [(23)].

The questionnaire had also additional questions relating to demographic data such as students' gender, year of study, type of living accommodation academic achievement, sources of stress, and any perceived medical illness. Study design This was a cross sectional study conducted on under graduated medical students in Tikrit University College of Medicine in Iraq. Study subjects A total of 180 students where selected randomly by stratified random sampling dividing the college into 6 stage and 30 students where selected from each stage. Data collection The study was carried out from January to April 2012. Collection of data takes two weeks in January and completed questionnaires were collected before midyear examination period so that actual examination stress would not affect the responses of the students. Responses to additional questions relating to demographic data such as students' sex, year of study, type of living accommodation, academic achievement, sources of stress, medical illness in the past four weeks, and how many days a student was not able to work were also collected. Data Analysis and Presentation All data management and analyses was done using internet location (Chi squared for cross table relationship). As most of the questions were of multiplechoice types, chi square (2) and p values have been

quoted where applicable. A suitable tables and figures have represented data.

Result

Prevalence of stress

In 180 students completed the questionnaires in Tikrit university (response rate 100%), there were 96 female (53.3%) and 84 male (46.7%). The K10 score range was (12-46). The prevalence of stress all level was about (57.2%). Severe stress was reported in about (12.8%) of them, moderate stress was reported in (14.4%) of them, while mild stress was (30%). [Figure-1]

Gender

The proportion of female students who had stress (69.9%) was higher than their counterpart males (42.9%). Among female who had stress, mild stress was reported in about (32.3%) of females and (27.3%) of males, moderate stress was reported in (18.7%) of females and (9.5%) found in males, while severe stress was reported in about (18.8%) of females and (6%) of males. [Table-1] Type of living accommodation The prevalence of stress in relation to type of living accommodation was higher in students living at dormitory (31.6%) than students live at parental home (25.5%). Severs stress was more prevalent among students living at home (18.9%) than those who live at dormitory (8.5%), while moderate stress was higher among students living at dormitory (16%) than students living at home (12.2%), while mild stress was slightly higher among students living at home (30.1%) in compare to (29.3%) in students living at dormitory. [Table-2]

Stage

The prevalence of stress in relation to stage of study was higher in 3rd stage (76.7%); (33.3%) suffered mild stress, (20%) moderate stress and (23.3%) severe stress. Followed by second stage (60%); (36.7%) suffered mild stress, (13.3%) moderate stress and (10%)severe stress. Then Followed by fourth, fifth and sixth stages, which show the same prevalence of, stress (53.3%). Nevertheless, the severity was more in fifth and sixth stages (16.7% suffered severe stress). The lowest rate of stress was among students of first stage (46.7%); (33.3%) suffered mild stress, (3.3%) moderate stress and (10%) severe stress. [Figure-2]

Regular attendance

The prevalence of stress in relation to regular attendance was higher in students who attend irregularly (73.9%), while its (54.8%) in students who attend regularly. In students who attend regularly (prevalence 87.3%), of them (29.9%) suffered mild stress, (14.1%) moderate stress and (10.8%) severe stress. While in students who attend irregularly (prevalence 12.7%); (30.4%) suffered mild stress, (17.4%) moderate stress and (26.1%) severe stress. [Table-3] Sources of stress The main sources of stress stated by the medical students were the exam (73.0%) followed by load of study (49.5%), homesickness (16.7%), stress among medical students (15%), and relationship problems (12.9%). The lowest rate as a source of stress was the family problems (12.2%). [Figure-3] . Coping strategies Various coping strategies practiced by medical students, the commonest one was spend time with friends (43.9%), followed by sleeping (43.3%), prayer (35.6%), music (34.4%), isolation (22.2%), sports (20%), change eating habits (11.7%), and visit relative (10%) which was the lowest one. [Figure-4]

Academic performance

Overall students, the academic performance were decline with increase severity of stress. In students who had very good academic score (5.4%) of all students, of them (50%)

had no stress, (30%) suffered mild stress, (20%) moderate stress and no severe stress. While students who had good score (32.8%), of them (37.3%) had no stress, (25.4%) suffered mild stress, (16.9%) moderate stress and (20.3%) severe stress. In students who had intermediate score (38.4%) ;(49.3%) had no stress, (29%) suffered mild stress, (14.5%) moderate stress and (7.2%) severe stress. While in students accepted score (23.3%); (38.2%) had no stress, (38.1%) suffered mild stress, (9.5%) moderate stress and (14.3%) severe stress. [Figure-5]

Physical problems

The prevalence of self reported physical problems were (33.9%); of them (6.7%) had no stress and (27.2%) had stress. Among stressed students, (47.6%) had physical problems; (38.8%) of them reported having mild to moderate problems and (8.8%) had severe problems. All students had not sought medical care for their feeling. [Table-4]

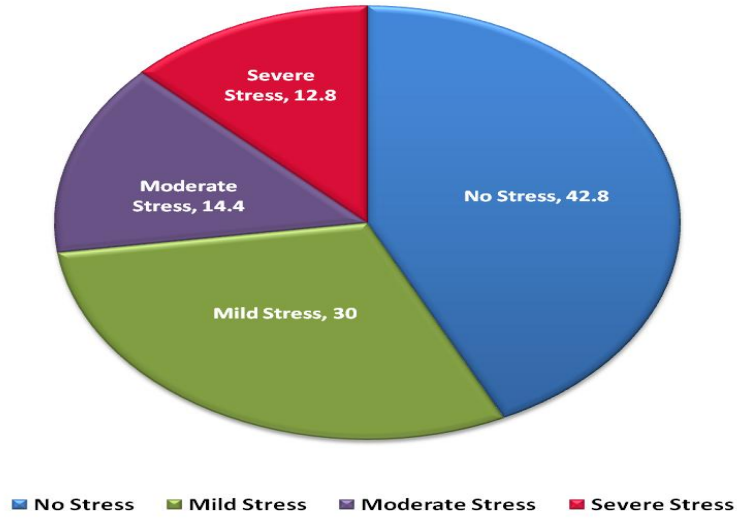

Figure (1):- Stress level among medical students in Tikrit University College of Medicine at 2012

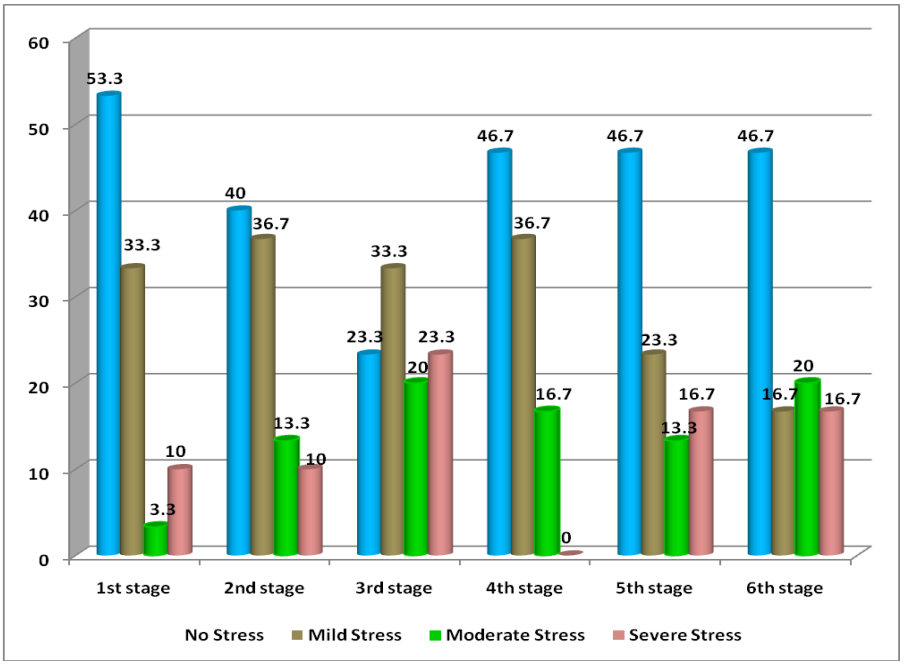

Figure (2): Level of stress in relation to stage of stude among medical students in Tikrit University College of Medicine at 2012

Table (1): Prevalence of Stress in relation to gender among medical students in Tikrit University College of Medicine at 2012

Gender / Level of Stress	Female		Male		Total	
	No	%	No.	%	No.	%
No Stress	29	30.2	48	57.1	77	42.8
Mild	31	32.3	23	27.4	54	30
Moderate	18	18.75	8	9.5	26	14.4
Severe	18	18.75	5	6	23	12.8
Total	96	100	84	100	180	100%

Table (2):- Prevalence of stress in relation to living accommodation among medical students in Tikrit University College of Medicine at 2012

Level of Stress	Living accommodation				Total	
	Home		Dormitory			
	No	%	No	%	No.	%
No Stress	28	37.8	49	46.2	77	42.8
Mild	23	31.1	31	29.3	54	30
Moderate	9	12.2	17	16	26	14.4
Severe	14	18.9	9	8.5	23	12.8
Total	74	100	106	100	180	100%

Table (3):- Prevalence of Stress in relation to regular attendance among medical students in Tikrit University College of Medicine at 2012

Regular Attendance / Level of Stress	Yes		No		Total	
	No.	%	No.	%	No.	%
No Stress	71	45.2	6	26.1	77	42.8
Mild	47	29.9	7	30.4	54	30
Moderate	22	14.1	4	17.4	26	14.4
Severe	17	10.8	6	26.1	23	12.8
Total	157	100	23	100	180	100%

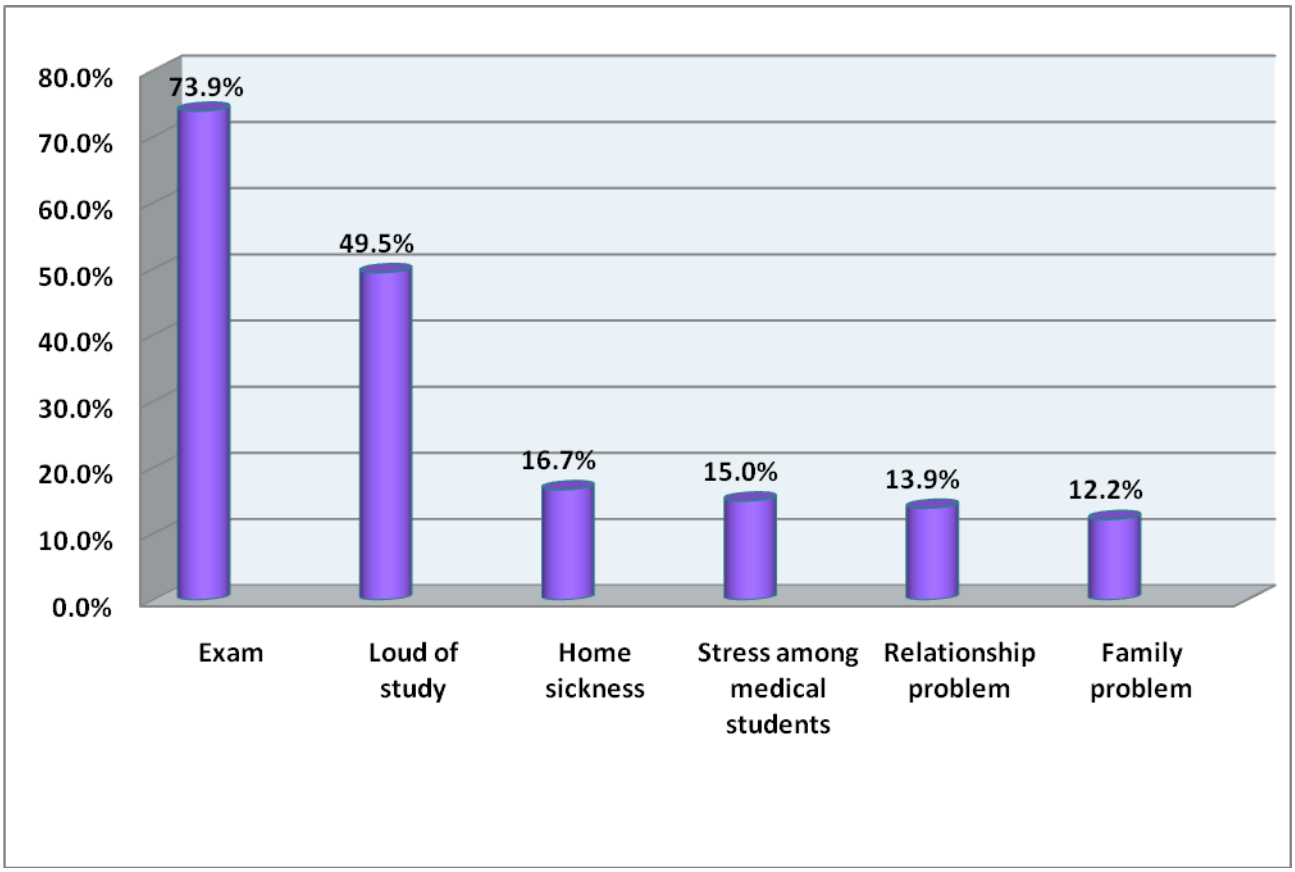

Figure (3): Most common reasons for stress among medical students in Tikrit University College of Medicine at 2012

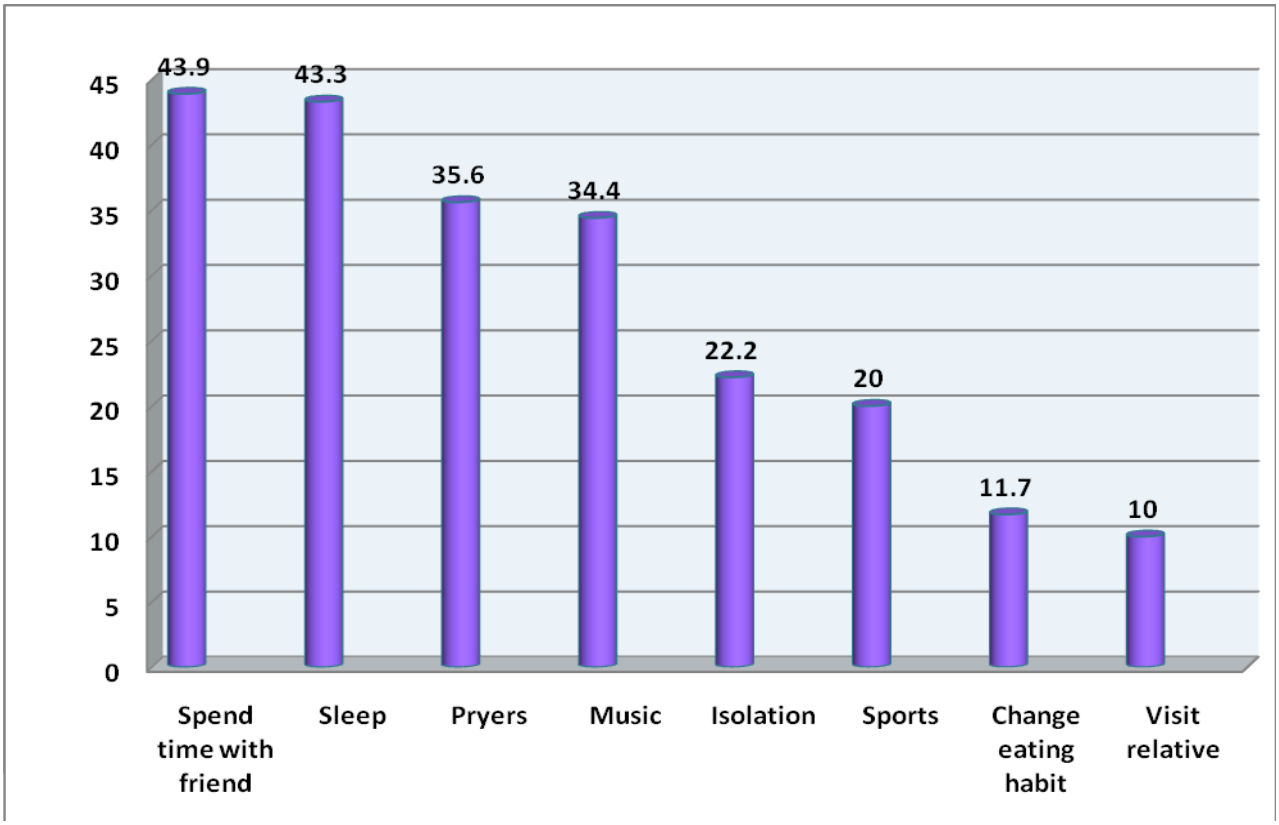

Figure (4):- Most common coping strategies among medical students in Tikrit University College of Medicine at 2012

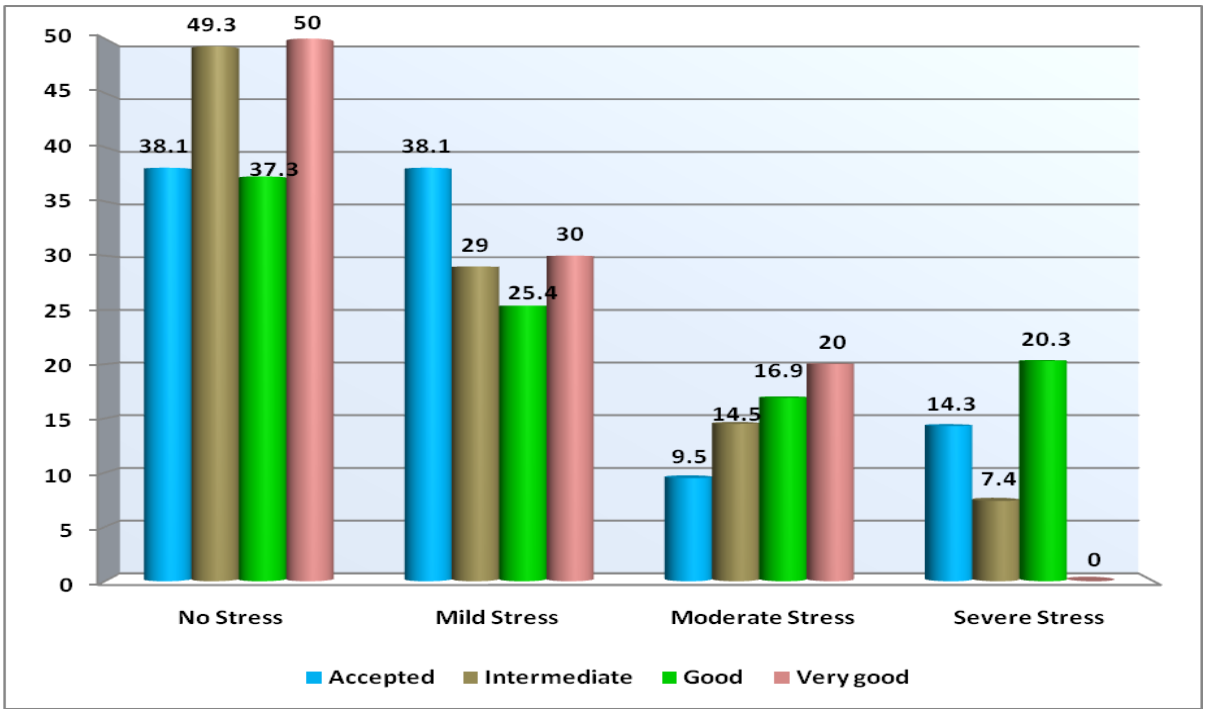

Figure (5):- Stress level in relation to student's performance among medical students in Tikrit University College of Medicine at 2012

Table (4):- Association between stress on the K10 and physical problems suffered among medical students in Tikrit University College of Medicine at 2012

Physical Problem	No Stress		Stress		Total	
	No.	%	No.	%	No.	%
No	65	84.4	54	52.4	119	66.1
Mild to Moderate	12	15.6	40	38.8	52	28.9
Severe	0	0	9	8.8	9	5
Total	77	100	103	100	180	100

Discussion

The result of this study revealed a high level of stress among medical students in Tikrit medical college. The overall prevalence of scores above the cut-off for stress was 57.2%, which is similar to another study in the Saudi Arabia (19) and a study in Islamic Republic of Iran (26) (57% and 61.3% respectively). Both of the above studies used the K10 stress scale. This result could be explained by that the Students in pursuit of higher professional education in a highly competitive environment such as that found in medical academia are more vulnerable to stress. The prevalence of stress was higher among female students (69.9%) than their counterpart males (42.9%); this similar to result of study done in Saudi Arabia, which showed that stress among females, was (75.7%) while in males (57%) (5). This may be due to susceptible nature of female in our communities and to less educational facilities and recreational opportunities. This study showed that prevalence of stress was higher among students living in dormitory (31.6%) than the students living in home. This disagree with the result of study in Pakistani medical school which show that day scholars appear more stressed than hostellites (27). Moving away from home, family and childhood friends to an unfamiliar place and poor facilities at dormitory constitute an additional factors predispose to stress among those students. It was shown that the 3rd year students had relatively higher level of stress in comparism to other stages, followed by the second (60%) then clinical stages, in which prevalence of stress were equal in the three stages (53.3%), and the 1st stage students had the lowest rate of stress (46.7%). This was strongly disagree with other study in Interior Sindh and a study in Saudi Arabia which showed that the stress were more prevalent in 1st year students and declined as the year of study progress except final year which show high stress level again (28, 5). This may be attributable to higher academic workload in 3rd year followed by 2nd year. The equal rate of stress among clinical students may be due to that, those students they face high expectations to become competent doctors and to acquire good academic results to enable them to obtain places for postgraduate training.

The lowest rate of stress in 1st year students may be due to that, those students attain what they aspired for it (entering the medical college), and at time of data collection they had not done exams and the study starts gradually not loaded to make them cope with the new environment. The current study showed an association between the prevalence of stress and regularity of attending the course; the stress was higher among those who attend irregularly (73.9%), while (54.8%) in students who attend regularly. This was similar to study of Saudi Arabia, which show no significant association between regularity of attendance and stress (5). This finding may be attributed to that stress may impair student interest on attendance and class lectures.The study shows that the main source of stress among medical students were exam (73%) followed by load of study (49.5%), homesickness, stress among medical students, relationship problems and the lowest rate was the family problems. This was similar to some extend to the study of Pakistani medical school, which showed that the most common source of stress were exams, academics, relationship problems, family problems and the lowest rate was stress among medical students (27). This could be due to fear of failing or falling behind, worries about their future and becoming good doctors. The study showed that the students prefer spending time with friends as main coping strategies (43.9%) followed by sleeping (43.3%), prayer, music, isolation, sports, change eating habits and the lowest rate was visiting relative. This was similar to some extend to the study of Pakistani medical school, which showed that the most common coping strategies were spending time with friends, isolation and sports [(27)] . This finding is not fully understood but may be due to that friends are the closest and best one whom understanding student s feelings. The overall student s academic performance was decline with increase severity of stress. This disagrees with the study in Saudi Arabia, which show no statistical significant association between academic grade and stress (19). The finding of this study may be due to that high level of stress may impair student s professional effectiveness by decreasing their attention span, reducing their concentration levels, affecting their decision-making skills and reducing their ability to establish strong physician-patients relationships and it may have direct relationship with feeling of hopelessness [(29-33)]. Stress was associated with students self-reported physical problems, with higher rate of stress scores among students who reported suffering from physical problems. It may due to stress causing physical problems or vice versa. Abdulghani et al. in Saudi Arabia reported similar findings (19) but Marjani et al. study in Islamic Republic of Iran found no statistically significant relationship between students stress levels and physical problems (34). While there could be multiple causes leading to deterioration of physical health, frequent stress in medical students could be one of them. Moreover, unhealthy life-styles such as lack of exercise, insufficient sleep and poor self-health care, which were more common features among medical students, could well have contributed to their worse physical status. Often the high pressure of studies and limited time to acquire vast knowledge prevent medical students from adopting a healthy life-style. This study shows that all students had not seen a doctor for their feeling and this was similar to some extend to a study in Islamic Republic of Iran (26) in which almost

all students had not seen a doctor for their feeling. This may be due that; those students neglect their feeling because of the nature our community, which look the psychiatric patient as a stigma.

Conclusion

The medical students who complain of stress mostly had mild stress. The prevalence of stress in all level is higher in female than male. The prevalence of stress is more in students living in dormitory but it is more severe in students living at home. Preclinical group of students have more stress than clinical students. Most of students who attend irregularly had high level of stress. Regardless types of curriculum implemented in medical schools, the stressors were almost similar. Most of students prefer to talk to someone and need rest time by sleep during stress. The academic performance is reduced with increase stress. High stress level may affect not only the academic performance but also all students health. The stress level interferes with physical health problems of students. None of students had seen medical care for their feeling.

Recommendation

Encourage interactive and friendly relationship between faculty and students. The need for more effective student advisors was clearly highlighted. Better hostel and commuting facilities provided by the college for the students. Medical students should be offered more opportunities for recreational and leisure time activities such as sports and music could be made a part of the optional curriculum . Faculty can help students in improving studying habits, managing time wisely, learning positive self-talk and learning how to relax. Stress management and Time management taught along with first and second year curricula might assist students in dealing with stress due to study loads. Health education programs and extracurricular activities can be important strategies to enable undergraduates cope better with the demands of this tertiary level of education. There is a definite need for regular surveys to be undertaken to monitor the levels of health among youth, especially the students, whose wellbeing guarantees the future.

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