

Prevalence of stress and its associated factors among students of Al-Maarefa Colleges of Riyadh, Saudi Arabia: A comparative cross-sectional study

Norah Alqomaizi, Atyaf Alfarraj, Hagar Alrefy, Maha Altwair, Dana Almaaz, Syed Mohammed Basheeruddin Asdaq, Mohammed Al-Yamani

Department of Pharmacology and Therapeutics, College of Pharmacy, Al-Maarefa Colleges for Science and Technology, Riyadh, Saudi Arabia

Abstract

Background and Objectives: It is an unequivocal fact that the stress is a threat to the physical, emotional, and mental health of an individual. University students are exposed to enormous threat due to ever increasing load of the studies that might not match with their academic outcomes. The present study was designed to achieve a knowledge on the prevalence of stress and its associated factors among students of Al-Maarefa Colleges, Riyadh, Saudi Arabia. **Materials and Methods:** A self-administered, validated, pretested, and structured questionnaire was completed by 402 students of the College of Medicine, College of Pharmacy, and College of Applied Sciences from Al-Maarefa Colleges of Science and Technology, Riyadh, Saudi Arabia. The questionnaire consisted of demographic data, Perceived Stress Scale, stressors, and stress relievers in addition to soliciting their opinions on the need for stress management education in the curriculum. The collected data were analyzed using analysis of variance and *post hoc* tests (Fisher's least significant difference test). The level of statistical significance was defined as $P \leq 0.05$. **Results:** Most of the respondents (66%) of the current study were in the age group of 18–22 years, mainly 80% from the female section with balanced distribution of participants from the College of Medicine (39%) and College of Pharmacy (43%), but the College of Applied Sciences (17%) participants were almost half of the other colleges. This sample size corresponds with the population size of the university where study was carried out. As per our findings, the stress level was significantly high among the College of Medicine students when compared to the College of Applied Sciences. Further, students from both College of Pharmacy and College of Medicine expressed stress of higher magnitude in the Perceived Stress Scale. Academic stressors contributed immensely for inducing stress among most of the students. **Conclusion:** Students from all three fields of education were exposed to stress; however, it seems that the applied science college students carry low level of stress compared to medical and pharmacy students. Academic factors are the most important stressors; hence the need for specific and targeted measures is necessary to decrease substantially the burden of stress on the students. Teaching techniques and college environments should be adapted to the needs of the students. Finally, regular study habits and adequate preparation can help students to avoid stress.

Key words: College of applied science, college of medicine, college of pharmacy, stress management, stress relievers, stress, university students

INTRODUCTION

Stress is any challenge to homeostasis where the individual will not be able to cope up with the demand posed on him.^[1] It may lead to poor decision-making with an increased prevalence of psychological problems such as depression, anxiety, substance abuse, and suicide ideation.^[1] Excessive stress can lead to physical and mental health problems. It can reduce students' self-esteem and may affect academic achievement and personal

Address for correspondence: Dr. Syed Mohammed Basheeruddin Asdaq, Department of Pharmacology and Therapeutics, College of Pharmacy, Al-Maarefa Colleges of Science and Technology, PO Box: 71666, Dariyah, Riyadh-11597, KSA.
Fax: 00966-4903501.
E-mail: sasdaq@gmail.com/sasdaq@mst.edu.sa

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or professional development.^[2-5] Further, an equal degree of prevalence was reported among males and females^[6] with significantly lower stressors among rural than urban population exhibiting enhanced family bonding in rural areas.^[7] Furthermore, impact of races and ethnicity^[8] is documented to variable degree of stress with a higher prevalence among working females than working males.^[9,10]

Impact of stress is well documented among different sectors of the society. Students being in the forefront to receive stressors in the form of changing learning resources, going through the frequent transitional phases, high expectation of the society, and availability of immediate academic measures are regularly tested for stress inducing and relieving factors. A study conducted in Saudi Arabia reported no perceived stress over time among students of both the sexes in their 1st year of university education,^[11] and on the other hand, prevalence of stress with depression and anxiety was reported in girls during their secondary school studies.^[12] Moreover, there are numerous studies that conclude the high prevalence of stress in different parts of the world among university students which has detrimental effect on their academic performance.^[4,13-16] Examinations^[3] and higher academic needs^[17] are major attributes among university students for the development of stress with high incidence in senior level of education at pre-clinical stage in both the genders.^[18-21]

It is an indisputable fact that the stress is an integral part of every success. It is the ability to overcome the stress that is considered as bridging gap between success and failure. Since university students are exposed to higher stress, there is a need to elucidate its actual existence and design strategies to curb them. Although there are number of studies done in Saudi Arabia and abroad to determine the occurrence of stress among medical students,^[3,4,15-17] there are very few strategies proposed to manage them. Furthermore, most of the studies available in the literature on university health science students emphasize on medical stream, and there were no efforts to elucidate the pattern of perceived stress among non-medico health university students.^[22-25] Therefore, the current research was carried to determine the prevalence of stress and its associated factors among students of Al-Maarefa Colleges and compare the extent of stress among College of Medicine, College of Pharmacy, and College of Applied Sciences.

MATERIALS AND METHODS

Subjects and methods

The present study was based on a cross-sectional survey among students of Al-Maarefa Colleges in Riyadh, Saudi Arabia. The study was conducted at the Colleges, from March to June 2017. The study employed a predesigned validated structured questionnaire to collect the data. Participation in this study survey was completely voluntary,

and full confidentiality and anonymity were maintained always, with no identifying information being recorded in the survey results. A consent form was added at the beginning of the questionnaire explaining the purpose of the study and requesting their participation. Required permission was obtained from the Committee of Research Seminar, College of Pharmacy, Al-Maarefa Colleges, Riyadh.

Study design

The current research was carried out by cross-sectional comparative study design. It was a time bound study to be completed in a short span of time, and hence, we selected cross-sectional design. It needs a comparison of College of Medicine cohort with cohort of College of Pharmacy and Cohort of the College of Applied Science to make a comparison among them; therefore, it is a comparative study. The study was done with the help of a questionnaire design to answer research questions. The questionnaire is developed by thorough literature review in addition to the discussion with the experts in the field. The questionnaire after its validation was subjected for pilot study involving few study samples. Final refinement and fine tuning of the questionnaire were done based on the pre-test report.

Study setting/location

The study is a single-centered study and was carried out at Al-Maarefa College by a personal interview of the respondents by researchers of this research during March–May 2017.

Study population

The study population was divided into three cohorts based on their area of the study. They are

1. College of Medicine.
2. College of Pharmacy.
3. College of Applied Science.

There was further subgrouping among them based on the year of their study and gender.

Eligibility criteria

Inclusion criteria for our study:

The following criteria were included in this study:

- a. Regular students of Al-Maarefa Colleges.
- b. Residents of Saudi Arabia.

The following exclusion criteria were applied for this study:

- a. Not studying at Al-Maarefa Colleges.
- b. Not residing but a visitor.

Data collection

The questionnaire consisted of five parts. The first part documented the demographic data of the participants: Age, gender, colleges/departments, study level, Grade point average (GPA), marital status, location, nationality, working status, educational level of father and mother, and occupation of father and mother.

Questions in the second part pertained to assess students' stress using Standard Perceived Stress Scale. The response to the questions are taken based on Likert response scale from 0 to 4 (0 = never; 1 = almost never; 2 = sometimes; 3 = fairly often; and 4 = very often). This section included 10 statements about feelings and thoughts of participants during the past 1 month. The average of the response is calculated as mean that represents the overall response of each cohort. The statements included in this section were upset because of something that happened unexpectedly, felt that you were unable to control the important things in your life, felt nervous, and "stressed," felt confident about your ability to handle your personal problems, felt that things were going your way, could not cope with all the things that you had to do, able to control irritations in your life, felt that you were on top of things, angered because of things that were outside of your control, and felt that difficulties were piling up so high that you could not overcome them.

The study questionnaire also included questions about the stressors that might be attributed for provoking/precipitating/triggering stress. The stressors were classified into three subcategories, namely, academic factors, health and lifestyle factors, and environmental factors. There were eight statements in academic factors such as admission to this program was not my choice, self-satisfaction with study efforts, quality of the educational process at the college, presence of study-related problems, overloaded syllabus, satisfaction with the methods of teaching, frequent examinations, and presentation in front of audience. Nine possible triggers for stress were included in the health and lifestyle factors. They were mood breakdown, examination phobia, frustration and self-care, exercise, diet, financial problem, changes in sleep pattern, substance abuse, and current minor and major illness. There were three stressors given in the environmental factors such as relationship with other students, lack of recreational activities, and high expectation regarding academic achievement. The response were rated using Likert response scale ranging from 0 to 3, where 0 expresses not stressful, 1 denotes mild stress, 2 shows moderate stress, and 3 denotes severe stress.

To understand the current practices of stress relievers used by students, a list of common relievers were gathered based on the current literature and presented to the respondents for their feedback. The relievers mentioned in the questionnaire were coffee and tea, smoking, sleeping, television watching, playing sport, talking with others, listen to music, taking bath, reading and listening to Quran, shopping, reading books, and

visiting family and friends. The final section was to enquire the respondents whether they would like to have stress management education to be included in the curriculum.

Statistical analysis

The collected data were entered and analyzed using Statistical Package for the Social Science, version 23 (IBM SPSS Inc., Chicago, IL, USA). Data were presented using frequencies and percentage as appropriate. The students' perceived stress, stressors, and stress relievers were assessed, analyzed, and compared by the students' colleges using analysis of variance (ANOVA) and post-ANOVA test LSD for multiple comparisons. For all purposes, the criteria of significance were considered at a P-value of #0.05.

RESULTS

Demographic characteristics

As given in Table 1, most of the respondents (66%) of the current study were in the age group of 18–22 years, whereas only 29% of them were in the age group from 23 to 26 years. The study population were mainly 80% from the female section of Al-Maarefa Colleges, while male students constitute only 20%. There was fairly balance distribution of participants from College of Medicine (39%) and College of Pharmacy (43%), but College of Applied Science (17%) participants were almost half of the other colleges. This sample size corresponds with the population size of Al-Maarefa College students.

Majority of the surveyors of this study were students at level 5 and above, and they possess a GPA more than 3 of 4 indicating more experienced and knowledge views of them. Most of students were single (88%), whereas only 11% were married. Urban students occupy a higher percentage in Al-Maarefa Colleges (90 %), while rural students are only 9% and most of them are Saudi (77%) and only 21% were non-Saudis. The analysis appears a high percentage of educational level of their fathers (72%) of college or higher, 17% of secondary school, 6% of primary school, and 3% are not educated.

Determination of Perceived Stress Scale

As shown in Table 2, Perceived Stress Scale was used to analyze the extent of stress participants who are undergoing in the past 1 month. The survey was carried out when students returned from midterm vacation and they had no additional stress during the past 30 days before this survey.

There was a significant difference between College of Medicine and College of Pharmacy in comparison to the

Table 1: Demographic characteristics

Characteristics	Frequency (%)
Age (years)	
18–22	266 (66.7)
23–26	116 (29.1)
27–30	17 (4.3)
Gender	
Female	325 (80.8)
Male	77 (19.2)
College	
College of Medicine	164 (39.8)
College of Pharmacy	177 (43.0)
College of Applied Science	71 (17.2)
Study level	
1–2	42 (10.9)
3–4	64 (16.7)
5–6	90 (23.4)
7–8	105 (27.3)
More than or equal to 9	82 (21.4)
GPA	
Up to 1	3 (0.9)
Up to 2	60 (18.4)
Up to 3	146 (44.8)
Up to 4	117 (35.9)
Marital status	
Married	44 (11.0)
Single	355 (88.8)
Location	
Urban	342 (90.5)
Rural	36 (9.5)
Nationality	
Saudi	303 (77.3)
Non-Saudi	86 (21.9)
Educational level of father	
Not educated	16 (3.9)
Primary school	27 (6.6)
Secondary school	71 (17.2)
College or higher	298 (72.3)
Educational level of mother	
Not educated	22 (5.4)
Primary school	46 (11.2)
Secondary school	124 (30.2)
College or higher	219 (53.3)
Occupation of father	
Health science professional	63 (17.6)
Non-health science professional	294 (82.1)
Occupation of mother	
Working	122 (35.3)
Not working	223 (64.5)

College of Applied Science when we asked about being upset during the past 1 month. The average score from the College of Applied Sciences and College of Pharmacy is “sometimes”, whereas the College of Medicine expresses “fairly often.”

In most of the students, irrespective of the college, they are affiliated to said that only “sometimes” they were unable to control the important things in their life during the past 1 month. The students who were surveyed in this study felt nervous and stressed “fairly often” during the past 1 month from the College of Medicine and College of Pharmacy when compared to the College of Applied Sciences, who experienced similar condition only “sometimes.”

There is no significant difference between College of Medicine and College of Pharmacy in comparison to the College of Applied Science when we asked “how often have you felt confident about your ability to handle your personal problems”. The average score from the College of Applied Sciences, College of Pharmacy, and College of Medicine is “sometimes.”

There is no significant difference between College of Medicine and College of Pharmacy in comparison to College of Applied Science when we asked about the how often have you felt that things were going your way. The average score from the College of Applied Sciences and College of Pharmacy and College of Medicine expresses “fairly often.”

There was a significant difference between College of Medicine and College of Pharmacy in comparison to College of Applied Science when we asked about not cope with all the things that they had to do. The average score from the College of Applied Sciences and College of Pharmacy and College of Medicine expresses “sometimes.”

Further, there was no significant difference was found among three colleges when we enquired about “how often have you been able to control irritations in your life?”. The overall response was only “sometimes”.

There is no significant difference between College of Medicine and College of Pharmacy in comparison to College of Applied Science when we asked about the felt that you were on top of things. The average score from College of Applied Sciences, College of Pharmacy, and College of Medicine expresses “sometimes.”

There is a significant difference between College of Medicine and College of Pharmacy in comparison to College of Applied Science when we asked about the have you been angered because of things that were outside of your control. The average score from College of Applied Sciences and College of Pharmacy was “sometimes,” whereas the College of Medicine expresses “fairly often.” There is no significant difference between College of Medicine and College of

Table 2: Frequency distribution of Perceived Stress Scale

Sl.No	Questions	Colleges	0	1	2	3	4	Average	P
	In the past month, how often have you been upset because of something that happened unexpectedly?	M	5	20	50	61	28	2.53	0.035
		P	5	20	72	52	27	2.43	
		A	5	15	28	12	10	2.1	
	In the past month, how often have you felt that you were unable to control the important things in your life?	M	8	38	44	49	25	2.27	0.653
		P	14	29	54	52	26	2.26	
		A	5	17	23	16	8	2.07	
	In the past month, how often have you felt nervous and "stressed"?	M	1	15	35	59	54	2.91	0.002
		P	1	17	53	52	51	2.77	
		A	3	17	12	20	18	2.47	
	In the past month, how often have you felt confident about your ability to handle your personal problems?	M	5	15	64	56	24	2.48	0.480
		P	6	26	71	45	26	2.33	
		A	5	10	23	21	10	2.30	
	In the past month, how often have you felt that things were going your way?	M	17	42	66	26	11	1.82	0.502
		P	22	42	72	30	7	1.75	
		A	6	16	26	13	9	2.04	
	In the past month, how often have you found that you could not cope with all the things that you had to do?	M	7	31	64	44	14	2.16	0.016
		P	6	34	77	49	10	2.13	
		A	11	16	27	14	2	1.71	
	In the past month, how often have you been able to control irritations in your life?	M	7	32	70	41	13	2.12	0.419
		P	6	30	86	43	10	2.12	
		A	6	9	28	23	3	2.11	
	In the past month, how often have you felt that you were on top of things?	M	16	35	77	19	14	1.87	0.056
		P	10	46	78	36	6	1.89	
		A	6	11	30	18	5	2.07	
	In the past month, how often have you been angered because of things that were outside of your control?	M	10	22	49	60	23	2.39	0.105
		P	3	21	68	56	28	2.48	
		A	3	13	22	16	16	2.41	
	In the past month, how often have you felt difficulties were piling up so high that you could not overcome them?	M	11	36	51	43	22	2.02	0.714
		P	10	40	48	52	25	2.24	
		A	7	17	24	12	10	2.01	

Perceived Stress Scale using Likert response scale from 0 to 4 (0 - never, 1 - almost never, 2 - sometimes 3 - fairly often, and 4 - very often). M: College of Medicine; P: College of Pharmacy; A: College of Applied Sciences

Pharmacy in comparison to College of Applied Science when we asked about the have you felt difficulties were piling up so high that you could not overcome them. The average score from College of Applied Sciences and College of Pharmacy and College of Medicine expresses "sometimes."

Determination of stressors - academic factors

Table 3 depicts the analysis of academic triggers for stress. Admission to the program was not stressful or mildly stressful among all surveyed students. Self-satisfaction with study efforts is in higher status of stress among the college of medicine and Pharmacy students when compared to applied science college. The quality of educational process was moderately stressful among all respondents. Table 3 depicts

the analysis of academic triggers for stress. Admission to the program was not stressful or mildly stressful among all surveyed students. Self-satisfaction with study efforts is in higher status of stress among College of Medicine and Pharmacy students when compared to College of Applied Science. The quality of educational process was moderately stressful among all respondents. The presence of study-related problems was moderately or extremely stressful among pharmacy and medicine students when compared to applied science college. An overloaded syllabus was extremely stressful among pharmacy students when compared to the other colleges. Satisfaction with the methods of teaching was moderately stressful among pharmacy and medicine students when compared to applied science college. Frequent examination was extremely stressful among pharmacy

Table 3: Frequency distribution of stressors - academic factors

Sl. No	Questions	Colleges	0	1	2	3	Average	P value
Admission to this program was not my choice		M	89	32	20	20	0.8	0.449
		P	90	46	19	20	0.8	
		A	35	13	8	15	1	
Self-satisfaction with study efforts		M	34	37	47	45	1.63	0.087
		P	23	59	57	37	1.61	
		A	17	16	23	15	1.50	
The quality of the educational process at the college		M	25	41	59	37	1.66	0.441
		P	18	37	68	52	1.88	
		A	9	16	22	24	1.85	
The presence of study-related problems		M	18	48	45	53	1.81	0.037
		P	10	37	66	63	2	
		A	12	16	23	19	1.7	
An overloaded syllabus		M	18	37	47	60	1.91	0.152
		P	10	35	49	81	2.14	
		A	11	18	16	26	1.80	
Satisfaction with the methods of teaching		M	25	44	52	42	1.68	0.206
		P	17	49	68	42	1.76	
		A	14	23	19	13	1.44	
Frequent examinations		M	15	37	35	77	2	0.000
		P	4	16	36	119	2.5	
		A	6	14	11	38	2.17	
Presentation in front of audience		M	39	46	31	47	1.52	0.043
		P	21	58	39	57	1.75	
		A	12	13	16	28	1.86	

Triggers for stress were analyzed scale using Likert response scale from 0 to 3 (0 - not stressful, 1 - mild stress, 2 - moderate stress, and 3 - extremely stressful). M: College of Medicine; P: College of Pharmacy; A: College of Applied Sciences

students when compared to the medicine and applied science colleges. Presentation in front of audience was mildly or extremely stressful among all three colleges.

Determination of stressors - health and lifestyle factors

Table 4 shows the determination of health and lifestyle factors as triggers for stress. Mood breakdown, examination phobia, and frustration are considered as triggers with moderate stress scale for all students who were surveyed in this study irrespective of their affiliated colleges. Exercise, diet, financial problem, substance abuse, current minor, or major illness is considering mild stress of all students in all colleges with small variation. Students of the College of Applied Sciences expressed exercise as stressor to a higher degree than their counterparts in other colleges. Diet was considered as stress provoking factor by more number of College of Medicine students than other colleges. The students of College of Pharmacy reported less substance abuse and minor and major illness as stress inducers than other colleges.

Determination of stressors - environmental factors

A significant ($P = 0.091$) difference was found among students of various colleges of Al-Maarefa when we analyze "relationship with other students" as triggers for inducing stress. College of Pharmacy students seems to fairly enjoy good relationship among their friends when compared to students of other colleges. However, average response in the Likert response scale for all colleges is tilted toward "not stressful" scale. There was a non-significant ($P = 0.460$) difference between students of Al-Maarefa Colleges regarding the lack of recreational activities as a stress trigger. College of Medicine students consider a lack of recreational activities more stressful compared to College of Pharmacy and College of Applied Sciences students. Yet, average response in the Likert response scale for all colleges is skewed toward "mild stress" scale. Again, a non-significant ($P = 0.433$) difference was found among students of Al-Maarefa Colleges when we asked about high expectation regarding academic achievement as a stress trigger. In fact, high expectation regarding academic achievement is the

Table 4: Frequency distribution of stressors - Health and lifestyle factors

Sl. No	Questions	Colleges	0	1	2	3	Average	P value
	Mood breakdown	M	14	40	49	61	1.95	0.018
		P	16	29	66	64	2	
		A	15	15	15	26	1.7	
	Examination phobia	M	27	31	48	58	1.8	0.124
		P	20	40	52	65	1.9	
		A	6	12	16	35	2.1	
	Frustration and self-care	M	26	36	41	60	1.8	0.661
		P	27	48	49	52	1.7	
		A	9	14	21	27	1.9	
	Exercise	M	65	40	25	32	1.14	0.184
		P	80	41	37	19	1	
		A	25	16	18	11	1.2	
	Diet	M	47	44	31	41	1.4	0.172
		P	70	38	40	29	1.15	
		A	22	16	19	13	1.3	
	Financial problem	M	44	43	43	33	1.39	0.793
		P	50	42	43	39	1.408	
		A	22	14	15	20	1.46	
	Changes in sleep pattern	M	25	34	28	76	1.95	0.169
		P	18	25	47	85	2.137	
		A	9	9	20	33	2.08	
	Substance abuse	M	81	22	19	39	1.099	0.037
		P	117	12	17	30	0.772	
		A	35	12	9	14	1.028	
	Current minor or major illness	M	48	48	45	23	1.262	0.002
		P	72	50	36	19	1.011	
		A	22	17	16	16	1.366	

Triggers for stress were analyzed scale using Likert response scale from 0 to 3 (0 - not stressful, 1 - mild stress, 2 - moderate stress, and 3 - extremely stressful). M: College of Medicine; P: College of Pharmacy; A: College of Applied Sciences

Table 5: Frequency distribution of stressors- environmental factors

Sl. No	Questions	Colleges	0	1	2	3	Average	P value
	Relationship with other students	M	48	48	45	23	1.26	0.091
		P	72	50	36	19	1.011	
		A	22	17	16	16	1.366	
	Lack of recreational activities	M	27	39	47	51	1.74	0.460
		P	41	49	36	49	1.531	
		A	17	17	17	20	1.563	
	High expectation regarding academic achievement	M	21	29	51	63	2.191	0.433
		P	25	35	45	71	1.920	
		A	11	11	13	36	2.042	

Triggers for stress were analyzed using Likert response scale from 0 to 3 (0 - not stressful, 1 - mild stress, 2 - moderate stress, and 3 - extremely stressful). M: College of Medicine; P: College of Pharmacy; A: College of Applied Sciences

most environmental stress factor among students of various colleges of Al-Maarefa in a comparable manner. Therefore,

the average response in the Likert response scale for all colleges is tilted toward moderate stress scale [Table 5].

Table 6: Percentage distribution of stress relievers

Sl. No	Questions	Colleges	Frequency (%)		P
			Yes	No	
	Coffee and Tea	M	79 (49.3)	81 (50.6)	0.166
		P	108 (61.3)	68 (38.6)	
		A	34 (47.8)	37 (52.1)	
	Smoking	M	32 (19.8)	129 (80.1)	0.006
		P	16 (9)	161 (90)	
		A	6 (8.4)	65 (91.5)	
	Sleeping	M	90 (55.9)	71 (44)	0.382
		P	112 (63.2)	65 (36.7)	
		A	43 (60.5)	28 (39.4)	
	T.V watching	M	44 (27.3)	117 (72.6)	0.726
		P	44 (24.8)	133 (75.1)	
		A	21 (29.5)	50 (70.4)	
	Playing sport	M	49 (30.4)	112 (69.5)	0.323
		P	52 (29.3)	125 (70.6)	
		A	15 (21.1)	56 (78.8)	
	Talking with others	M	60 (37.2)	101 (62.7)	0.551
		P	75 (42.3)	102 (57.6)	
		A	26 (36.6)	45 (63.3)	
	Listen music	M	65 (40.3)	96 (59.6)	0.797
		P	74 (42)	102 (57.9)	
		A	27 (38)	44 (61.9)	
	Taking bath	M	51 (31.6)	110 (68.3)	0.557
		P	62 (35)	115 (64.9)	
		A	20 (28.1)	51 (71.8)	
	Reading and listening Quran	M	66 (40.9)	95 (59)	0.972
		P	71 (40.1)	106 (59.8)	
		A	28 (39.4)	43 (60.5)	
	Shopping	M	27 (16.7)	134 (83.2)	0.009
		P	54 (30.5)	123 (69.4)	
		A	21 (29.5)	50 (70.4)	
	Reading book	M	37 (22.9)	124 (77)	0.551
		P	30 (17)	146 (82.9)	
		A	13 (18.3)	58 (81.6)	
	Visiting family and friends	M	55 (34.1)	106 (65.8)	0.449
		P	67 (37.8)	110 (62.1)	
		A	21 (29.5)	50 (70.4)	
	Others	M	92 (58.2)	66 (41.7)	0.750
		P	107 (61.4)	67 (38.5)	
		A	44 (62.8)	26 (37.1)	

Stress relievers are expressed as frequency and percentage. M: College of Medicine; P: College of Pharmacy; A: College of Applied Sciences

Determination of stress reliever

Drinking coffee or tea and sleeping in addition to miscellaneous activities has been practiced by most of the

students for getting relieved from stress (50 to 65%). Reading Quran, talking to friends, listening music and visiting family/friends are second line stress relieving habits considered by many respondents of the study (35–49%). Lesser number of

students has practiced TV watching, playing sport, taking bath, and shopping for stress reliving (20–34%), while smoking and reading books were the least practiced activities by the students for stress reliving (5–19%).

Stress management studies

As shown in Figure 1, there was almost equal representation among all colleges across Al-Maarefa for the need to have a stress management activities or education to be incorporated as an integral part of the curriculum.

DISCUSSION

The current study was carried out to determine the level of stress, common provocation for stress, and current practices of stress relievers and to elucidate students' view on the importance of including stress management education in their curriculum. The data obtained were analyzed and compared among different colleges of Al-Maarefa, namely, College of Medicine, College of Pharmacy, and College of Applied Sciences. The study outcome shows the prevalence of stress of higher magnitude among students of College of Medicine and College of Pharmacy when compared to college of Applied sciences.

Most of the respondents (66%) of the current study were in the age group of 18–22 years, mainly (80%) from the female section with fairly balance distribution of participants from College of Medicine (39%) and College of Pharmacy (43%), but College of Applied Sciences (17%) participants were almost half of the other colleges. This sample size corresponds with the population size of Al-Maarefa College students. Majority of the surveyors of this study were students at level 5 and above, and they possess GPA more than 3 of 4 indicating more experienced and knowledge views of them. The perceived scale was used to determine the extent of stress they carry based on their experience during

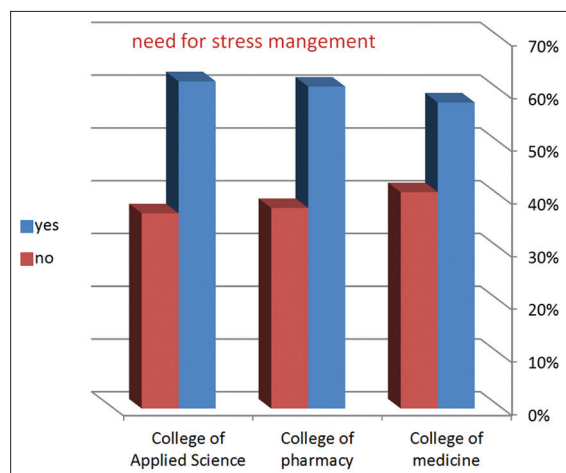


Figure 1: Percentage distribution of students' feedback on stress management education in their curriculum

the past 30 days. The survey was carried out when students returned from midterm vacation and they had no additional stress during the time of this survey. As per our findings, the stress level was significantly elevated among College of Medicine students when compared to College of Applied Sciences, and similarly, students of College of Pharmacy also expresses stress of higher magnitude in the perceived stress scale; however, stress level is non-significantly lower than the College of Medicine. Our findings agree with other reports available in literature domain.^[23] It was found in our study that the students of Al-Maarefa were unable to control the important things in their life and felt nervous at times due to extremely high academic demand. This is generally seen among all professional programs.^[26]

Among academic, environmental, health and lifestyle stressors, academic stressor was found to be a key stressor. This finding is similar to the previous studies.^[16,25] Most academic stressors appear to be the quality of the educational process, presence of study-related problems, an overloaded syllabus, and frequent examinations. This result is consistent with several studies found in the literature.^[3,14,27] Students of various colleges of Al-Maarefa express these stressors as “moderate stress” with slight increase in the score for College of Pharmacy. On the other hand, most health and lifestyle stressors are mood breakdown, examination phobia, frustration and self-care, and changes in sleep pattern. These stressors reported by previous studies as stress triggers as well.^[27,3] This might be because of inadequate free time and high pressure that limits students' ability to implement healthy lifestyle. Although in our study, other stress triggers such as exercise, diet, financial problems, and minor and major illness considered as mild stressors, numerous studies emphasize on their contribution as stress triggers.^[22] Specifically, the major and minor illness is considered as most common trigger for stress reported in many studies^[22,28] while one study contradict its impact in inducing stress.^[25] Finally, among environmental stressors, high expectation regarding academic achievement was the most stress trigger in a comparable manner between students of various colleges of Al-Maarefa. In our study, lack of recreational activities expressed as mild stressor by different colleges of Al-Maarefa. There are several studies reported similar result as well.^[3,27]

In this study, current practices of stress relievers by the different Colleges of Medicine, Pharmacy, and Applied Science showed that most of the students look for stress relievers as drinking coffee or tea and sleeping in addition to miscellaneous activities. While all other activities mentioned in Table 6 were also practiced as stress relievers in lesser frequencies. A study by Oku *et al.* 2015^[4] in a Nigerian medical school showed that students used smoking as a stress reliever the least, similar to our study. In contrast, the same study just mentioned above showed that they had a higher rate of social withdrawal from friends and family as a coping up strategy. However, our study showed higher social interaction as one of the remedial step to relieve stress by

students of al-Maarefa colleges. This difference could be due to cultural variation between countries where studies done earlier and Saudi Arabia involvement by unlike our study which had a higher prevalence of talking and visiting family and friends to relieve stress.

Limitation and recommendation for future studies

Although our research accomplished its aims, the study has also number of limitations. First, the results obtained in this study is based on self-reported questionnaire. Therefore, there is a potential for reporting bias or misunderstanding of the questions. Second, perceived stress scale includes statements about feeling and thoughts of participants during the past month and consequently relies on participants' ability to recall. Furthermore, there were a small number of male participants compared to female participants. This variation is mainly due to separated campus and limited access to male participants. In addition, limited time was an obstacle to obtain responses from different levels in a comparable ratio. Finally, other stress factors may have not identified and measured.

CONCLUSION

Students from all three fields of education were exposed to stress; however, it seems that College of Applied Science students carry less stress compared to medical and Pharmacy students. It might be due to their lower academic demands and decrease learning load. It might be even due to better teaching environment. Academic, environmental, social, and health problems all play an important role in the development of stress. Academic factors are the most important stressors; hence, the need for specific and targeted measures to decrease substantially the burden of stress on the students. Teaching techniques and college environments should be adapted to the needs of the students. The productive utilization of existing student welfare systems, development of more "student-friendly" environments, and regular periodic extracurricular activities with universal participation can prove to be useful stress-busters. The majority of students were in favor of stress management education being included in the curriculum, and hence, steps should be taken for its incorporation. Health is a major concern of students, and therefore, the promotion of healthy dietary and lifestyle habits should be encouraged. In addition, teachers, parents, and even students themselves should be aware that undue expectations about academic achievement can lead to stress. Finally, regular study habits and adequate preparation can help students to avoid stress.

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REFERENCES

1. Waghachavare VB, Dhumale GB, Kadam YR, Gore AD. A study of stress among students of professional colleges from an urban area in India. *Sultan Qaboos Univ Med J* 2013;13:429-36.
2. Yusoff MS, Rahim AF, Yaacob MJ. Prevalence and sources of stress among Universiti Sains Malaysia medical students. *Malays J Med Sci* 2010;17:30-7.
3. Loubir DB, Serhier Z, Diouny S, Battas O, Agoub M, Othmani MB. Prevalence of stress in Casablanca medical students: A cross-sectional study. *Pan Afr Med J* 2014;19:149.
4. Oku AO, Owoaje ET, Oku OO, Ikpeme BM. Prevalence of stress, stressors and coping strategies among medical students in a Nigerian medical school. *Afr J Med Health Sci* 2015;14:29-34.
5. Kuhlmann SM, Buerger A, Esser G. A mindfulness-based stress prevention training for medical students (MediMind): Study protocol for a randomized controlled trial. *Trials* 2015;16:40.
6. Glise K, Ahlberg G, Jonsdottir IH. Prevalence and course of somatic symptoms in patients with stress-related exhaustion: Does sex or age matter. *BMC Psychiatr* 2014;14:118.
7. Webb SD, Collette J. Rural-urban differences in the use of stress-alleviative drugs. *Am J Sociol* 1977;83:700-7.
8. Alegria M, Fortuna LR, Lin JY. Prevalence, risk, and correlates of posttraumatic stress disorder across ethnic and racial minority groups in the US. *Med Care* 2013;51:1114.
9. Wiegner L, Hange D, Björkelund C, Ahlberg GJ. Prevalence of perceived stress and associations to symptoms of exhaustion, depression and anxiety in a working age population seeking primary care-an observational study. *BMC Fam Pract* 2015;16:38.
10. Zaletel-Kragelj L, Pahor M, Bilban M. Identification of population groups at very high risk for frequent perception of stress in Slovenia. *Croat Med J* 2005;46:137-45.
11. Al-Daghri NM, Al-Othman A, Albanyan A. Perceived stress scores among Saudi students entering universities: A prospective study during the first year of university life. *Int J Environ Res Public Health* 2014;11:3972-81.
12. Al-Gelban KS, Al-Amri HS, Mostafa OA. Prevalence of depression, anxiety and stress as measured by the depression, anxiety, and stress scale (DASS-42) among secondary school girls in Abha, Saudi Arabia. *Sultan Qaboos Univ Med J* 2009;9:140.
13. Phang CK, Sherina MS. Prevalence of psychological stress among undergraduate students attending a health programme in a Malaysian University. *Pertanika J Sci Technol* 2015;23:29-35.
14. Teh CK, Ngo CW, Zulkifli RA, Vellasamy R, Suresh K.

- Depression, anxiety and stress among undergraduate students: A cross sectional study. *Open J Epidemiol* 2015;5:260-8.
15. Ludwig AB, Burton W, Weingarten J, Milan F, Myers DC, Kligler B, *et al.* Depression and stress amongst undergraduate medical students. *BMC Med Educ* 2015;15:141.
 16. Eva EO, Islam MZ, Mosaddek AS. Prevalence of stress among medical students: A comparative study between public and private medical schools in Bangladesh. *BMC Res Notes* 2015;8:327.
 17. Othman CN, Farooqui M, YusoffMS, Adawiyah R. Nature of stress among health science students in a Malaysian University. *Proc Soc Behav Sci* 2013;105:249-57.
 18. Al Sunni A, Latif R. Perceived stress among medical students in preclinical years: A Saudi Arabian perspective. *Saudi J Health Sci* 2014;3:155-9.
 19. Sani M, Mahfouz MS, Bani I, Alsomily AH, Alagi D, Alsomily NY, *et al.* Prevalence of stress among medical students in Jizan University, Kingdom of Saudi Arabia. *Gulf Med J* 2012;1:19-25.
 20. Rahman AG, Al Hashim BN, Al Hiji NK, Al-Abbad Z. Stress among medical Saudi students at college of medicine, King Faisal University. *J Prev Med Hyg* 2013;54:195.
 21. Sultan SA, Alhosaini AA, Sheerah S, Alrohaily AA, SaeedHM, Al-RaddadiNM, *etal.* Prevalence of depression among medical students at Taibah University, Madinah, Saudi Arabia. *Int J Acad Sci Res* 2016;4:93-102.
 22. Abdulghani HM, AlKanhil 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;29:516-22.
 23. Al-Dabal BK, Koura MR, Rasheed P, Al-Sowielem L, Makki SM. A comparative study of perceived stress among female medical and non-medical university students in Dammam, Saudi Arabia. *Sultan Qaboos Univ Med J* 2010;10:231-40.
 24. Kulsoom B, Ali Afsar N. Stress, anxiety, and depression among medical students in a multiethnic setting. *Neuropsychiatr Dis Treatment* 2015;11:1713.
 25. SaeedAA, Bahnassy AA, Al-Hamdan NA, Almudhaibery FS, Alyahya AZ. Perceived stress and associated factors among medical students. *J Fam Community Med* 2016;23:166-71.
 26. Chowdhury R, Mukherjee A, Mitra K, Naskar S, Karmakar PR, Lahiri SK. Perceived psychological stress among undergraduate medical students: Role of academic factors. *Indian J Public Health* 2017;61:55-7.
 37. Abdel Rahman AG, Al Hashim BN, Al Hiji NK, Al-Abbad Z. Stress among medical Saudi students at College of medicine, King Faisal university. *J Prev Med Hyg* 2013;54:195-9.
 38. Koochaki GM, Charkazi A, Hasanzadeh A, Saedani M, Qorbani M, Marjani A. Prevalence of stress among Iranian medical students: A questionnaire survey. *Eastern Mediterr Health J* 2011;17:409-16.

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