Educational Research article

Stress among Isfahan medical sciences students

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Background: This study was undertaken to determine the prevalence of psychological stress among Isfahan medical sciences students. **Methods:** Cross-sectional, questionnaire-based survey was carried out among the 387 medical sciences students (medicine, pharmacy, and dentistry) of Isfahan, Iran through census. In academic year 2010–2011, Kessler-10 questionnaire was given to the students a month before semester examinations. Scores ≥20 were considered as indicative of positive stress symptoms. **Results:** The overall prevalence of stress among medical sciences students was found to be about 76.1%. The prevalence of stress among medicine students was 22.7% mild, 23% moderate and 21.4% severe while 32.8% showed no stress. The prevalence of stress among pharmacy students was 22.22%, 22.22%, 26.19%, and 29.36% mild, moderate, and severe and no stress, respectively. The prevalence of stress among dentistry students was 25% mild, 27% moderate, and 10% severe while 37.5% showed no stress. The prevalence of stress was higher (70.6%) in pharmacy students when compared with medicine (66.1%) and dentistry (62.5%) students. The odds of student having stress is higher in dentistry students (OR: 1.44, P= 0.33), where as the odds are decreasing in pharmacy student (OR: 1.16, P= 0.66). There is no statistically significant association between gender, ages, and term and having stress symptoms. **Conclusions:** The high level of stress necessitates interventions like social and psychological support to improve the student's well-being. A prospective study is needed to study the association of psychological morbidity with sources of stress and coping strategies.

Key words: Isfahan, Kessler, medical sciences students, stress, student support

INTRODUCTION

It is usually observed that medical students undergo tremendous stress during various stages of the medical education. It is described precisely by many psychological changes in students.[1] In addition to coping with the normal stressors of everyday life, medical sciences students must deal with stressors specific to medical school, which include information and input overload, financial indebtedness, lack of leisure time, and pressures of work, work relationships and career choices.[2-4] Although some degree of stress is a normal part of medical training and can be a stimulator for some individuals, not all students find stress helpful.[5] For many persons, stress stimulates feelings of fright, lack of ability, not being beneficial, anger and culpability and can be associated with both psychological and physical morbidity.[6-10]

Studies have shown that medical sciences students live through a high incidence of personal distress during their undergraduate course. High levels of stress may have a negative effect on proficiency of the academic study program and courses suggested by a school. Stress, health, and emotional problems may be increased during the period of undergraduate medical education. This can lead to mental distress and has a negative effect on attentive functioning and learning.[11] Study of Firth in three British universities in 1986 showed that the prevalence of stress was 31.2%.[3] Study of Sherina *et al.*[12] and Saipanish[13] showed that the prevalence of stress was 41.9% and 61.4% in a Malaysian and Thai medical school, respectively. Study of Assadi *et al.* showed that the prevalence of psychiatric disorders among Iranian medical students was 44%.[14] Medical school stress is probably to prophesy later mental health problems, but students rarely ask for help for their problems.[15] Dahlin *et al*. showed that the prevalence of depressive symptoms among Swedish students was 12.9% and a total of 2.7% of students had made suicidal attempts.[11]

It is important for medical educators to pay attention and know the prevalence and causes of students' distress, which not only affects their health, but also their academic achievement and future career. However, such studies are less done in medical schools of Iran. Therefore, we

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carried out this study to estimate the prevalence of stress among medical sciences students in Isfahan University of Medical Sciences. This information may help in designing appropriate intervention strategies to enhance the student's learning abilities through stress attenuation.

METHODS

This cross-sectional, questionnaire-based survey was carried out on a sample of 387 medical (medicine, pharmacy, and dentistry) sciences students of Isfahan, Iran who were selected by census during the academic year 2010–2011. They were asked to complete the standard Kessler-10 self-administrated Persian version questionnaire. The Farsi version of K 10 had very good reliability that was confirmed by Cronbach's alpha (α= 0.91) at the pilot phase.

Isfahan University of Medical Sciences has a 7-year study MD program and 6-year study program for doctorate degrees on pharmacy and dentistry. Questionnaires were given to the students, a month before end-semester examinations, to minimize the extra stress symptoms. A verbal agreement with assurance of confidentiality was informed to the subjects and names were not registered. The students were permitted to answer in their own time and privacy. The subjects that had psychological disorders were excluded. Psychological disorder was defined by medical history and current psychological treatment (self-reported).

The Kessler-10 Psychological Distress (K10) was developed by Kessler and colleagues, to measure current (1-month) distress. It has been designed to measure the level of distress and severity associated with psychological symptoms in population studies.[16] The K10 comprises ten questions of the form, "how often in the past month did you feel...?" and suggests specific symptoms such as "tired out for no good reason," "nervous," and "sad or depressed." The five possible answers range from "none of the time" to "all of the time" and are scored from 1 to 5; the items are supposed to acquire a total score. A score of less than 20 was considered not to represent a "case" possibility of mental disorder. A score of 20–24 was considered to present a mild stress, 25–29 was considered to present moderate stress and scores ≥30 was considered to represent as severe stress. Therefore, all cases with total scores ≥20 were considered as positive cases. These coding were used according to the instructions of the authors.[16]

Data were entered using SPSS version 11.5 statistical software. In logistic regression analysis, stress was considered as a binary variable (yes/no). Prevalence of an outcome variable was calculated. Logistic regression test was fitted to data in univariate and multiple models. In the univariate model, each variable was entered separately in the model. In the multiple regression model, all variables were entered simultaneously the in model with the Enter method. The results of logistic regression are shown by using the odds ratio and 95% CI. Student's t-test and Chi square also were used. A *P*-value of less than 0.05 was considered statistically significant.

RESULTS

The overall response rate was 100%. Their ages ranged between 18–30 years, with a mean and SD of 21.86±2.20 years. The participants' demographic characteristics are shown in [Table 1].

The prevalence of stress (K10 scores≥20) among all medical sciences students were found to be about 76.1%. The prevalence of stress among different subgroups of medical sciences students is shown in [Table 2]. The prevalence of stress among medicine students was 22.7% mild, 23% moderate, and 21.4% severe while 32.8% showed no stress. The prevalence of stress among pharmacy students was 22.22% mild, 22.22% moderate, 26.19% severe, and 29.36% showed no stress. The prevalence of stress among dentistry students was 25% mild, 27% moderate, and 10% severe while 37.5% showed no stress. The prevalence of stress was higher (70.6%) in pharmacy students followed by medicine (66.1%) and dentistry (62.5%) students.

Table 1: Demographic profile of students participated in the study

Classification	n	%
Gender		
Male	217	56.1
Female	170	43.9
Marital Status		
Unmarried	352	90.7
Married	36	10.3
Major		
Medicine	221	57.1
Pharmacy	126	32.6
Dentistry	40	10.3
Term		
2	40	10.3
3	20	5.3
4	52	13.4
5	26	6.8
6	52	13.4
7	37	9.6
8	50	12.9
9	14	3.6
10	40	10.3
11	12	3.1
12	20	5.2
13	12	3.1
14	12	3.1

Table 3 shows the odds ratios (OR) of 1.16 and 1.44 for pharmacy and dentistry students, when medicine is considered as reference category indicates no statistically significant association between students' major and having stress symptoms. The odds of student having stress is higher in dentistry students, where as the odds are decreasing in pharmacy students as shown in [Table 3]. There is no statistically significant association between students' gender, age, and study term and having stress symptoms.

DISCUSSION

This study confirmed that the prevalence of stress symptoms is considerable in students at Isfahan University of Medical Sciences. Stress was found to be more prevalent in pharmacy students rather than medical and dentistry students. Overall prevalence of stress in this study was 76.1% that was higher than the Thai (61.4%),[13] Saudi Arabia (57%),[1] Malaysian (41.9%),[12] Iran (40%),[14] and British study (31.2%).[3] Our study showed no differences in mean scores among male and female students. This finding was in consisting with Moffat,[7] Miller,[2] Firth,[3] Guthrie,[6] but Dahlin studies in Sweden showed gender differences, with women scoring more highly than men.[11] Esfandiari in his study concluded that female students have more stress that caused undesirable effects on their general health. So, it is essential to determine the students at risk and help them.[17]

Table 2: Distribution of stress levels among medical sciences students

Classification	Number	Percent (%)
In all medical sciences students		
Not stressed	127	32.8
Mild	88	22.7
Moderate	89	23
Severe	83	21.4
Total	387	100
Medicine		
Not stressed	75	33.9
Mild	50	22.62
Moderate	50	22.62
Severe	46	20.81
Total	221	100
Pharmacy		
Not stressed	37	29.36
Mild	28	22.22
Moderate	28	22.22
Severe	33	26.19
Total	126	100
Dentistry		
Not stressed	15	37.5
Mild	10	25
Moderate	11	27
Severe	4	10
Total	40	100

The results of this study showed that the level of stress differs between medical sciences students. The results of this study are not in agreement with the findings of other studies.[1,3,12-14] This result suggests that pharmacy students who have higher stress scores, possibly due to more difficult courses, should be supported well by faculty and program directors to cope with stress. With early diagnosis, case finding and effective psychological services, possible future illness may be prevented.[6,18] In the UK, the General Medical Council recommends that Medical schools should have mechanisms in place to identify symptoms of stress that might be early signs of mental illness.[19] Medical schools in the USA and Canada tackle the problem at an earlier stage by undertaking prevention in the form of health promotion programs.[20]

Other finding did not show significant differences in stress levels between medical sciences students according to the other variables. This may be related to the common factors causing high stress among medical sciences students.

Psychological stress could be due to excessive load of science subjects, and low leisure time. Medical sciences students in Isfahan may need to be provided more time and facilities for recreation and sports. The inadequate social activity was linked to impaired psychological health among medical sciences students,[21] and that leisure activities can reduce stress in medical schools as reported by Shaikh *et al*.[22] Although these facilities are available in Isfahan University

Table 3: Relationship between stress and independent variable

Classification	Stress no (%) No	Stress No (%) Yes	*P*-value	Odds ratio (OR)	95% CI
Majors	—	—	—	—	—
Medicine	75 (33.9)	146 (66.1)	—	1	—
Pharmacy	37 (29.4)	89 (70.6)	0.66	1.16	0.58–2.34
Dentistry	15 (37.5)	25 (62.5)	0.33	1.44	0.68–3.04
Gender	—	—	—	—	—
Males	74 (34.1)	143 (65.9)	—	1	—
Females	53 (31.2)	117 (68.8)	0.54	1.14	0.74–1.75
Age (year)	21.61 ± 2.03	21.98 ± 2.27	0.13	1.08	0.97–1.2
Term (year)	6.29 ± 3.14	6.75 ± 3.55	0.2	1.04	0.97–1.11

of Medical Sciences, they may not be used adequately by the students. Medical sciences students also may be able to cope stress with the help of student support center.

The other reason for stress could be excessive curriculum load. Medical sciences students must pass national comprehensive exams to be able to continue the preclinical study.

In general, in Iran education is free and small amount of monthly stipend is given to each student during their study (it is funded by the Ministry of Health and Medical Education), while in other foreign medical schools, students are concerned by financial worries, which is an important cause of their stress.[23]

The length of medical courses provides the contrary effect on the psychological status of medical sciences students that have been reported in many studies. A study in the United Kingdom showed that one-third of psychologically ill students did not graduate from the college.[24] This change probably is significant during admission for medical education. Medical sciences students can refer to student counseling center to prevent possible future illness. Debra reported by stress management workshop, the students became increasingly aware of the stresses they were currently facing and those that might be in the future. It also provided them with useful tools of stress management and helpful insights into themselves.[18] Medical schools in the United States and Canada have started health promotion programmers and have reported positive results in reducing the negative effects of stress upon medical sciences student's health and academic performance.[19,25,26]

Our results suggest that the overall prevalence of stress symptoms in Medical Sciences students is high. Therefore, all of them, specially pharmacy students who have higher level of stress should be supported by the student counseling center as they may be able to struggle successfully with stress in later years. The higher level of stress needs for interventions such as social and psychological support to improve the student's well-being.

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