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Burnout Syndrome and Its Predictors Among Female Medical Students at Al-Azhar University

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ABSTRACT

Introduction: Burnout is a condition resulting from chronic stressful work environment that hasn't been efficiently controlled. It is composed of three dimensions; depletion of emotional resources, negative attitude towards colleagues or patients and reduced academic achievement. It is expressed by many medical students due to stressful nature of their study.

The aim of the work: The current study aimed to estimate the prevalence of burnout among female medical students and to explore the association between educational variables, general self-efficacy [GSE] and burnout.

Subjects and Methods: A cross sectional study was conducted from October 2019 to March 2020 among students of the Faculty of Medicine for Girls [Al-Azhar University] from the first to six grades. The sample was taken by stratified random sampling technique, from 480 students 471[98.1%] responded to the questionnaire. Burnout was assessed using the Maslach Burnout Inventory-Student Survey [MBI-SS]. Socio-demographic, educational variables, general self-efficacy [GSE] were also included as possible predictors of burnout.

Results: The study results revealed that burnout was prevalent [42.9%, n=202]; expressing high exhaustion [90.9%, n=428], high cynicism [65.8%, n=310], and low academic efficiency [58.4%, n=275]. Burnout was higher among those in clinical stage [75.7%]. Most of burnout students [91.1%] express uncomfortable feeling with teaching activities. A significant positive correlation was found between GSE and academic efficiency.

Conclusion: Burnout is prevalent among female medical students. Clinical academic stage, difficulty in achieving academic goals, dissatisfaction with teaching strategy, dissatisfaction with medical study, and lower grade point average are predictors of burnout among them.

Keywords: Burnout; Predictors; Medical students; Self efficacy; Maslach Burnout Inventory-Student Survey.

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* Main subject and any subcategories have been classified according to the research topic.

INTRODUCTION

The medical students' mental health is a field of great important. Curricula in medical school aim to graduate qualified and trained physicians. Unfortunately, any impairment in their mental health may adversely affect the development of these skills [1].

Being transited from novice student to an expert one and going to the clerkship cycle represents severe anxiety and stress among students [2].

Burnout is syndrome resulting from chronic stressful work environment when job requirement didn't match with workers abilities [3].

It characterized by emotional exhaustion [EE], cynicism [CY], and low academic efficacy [AE] [4]. Previous studies among medical studies reported varying degree of burnout ranging from 10.3% to 67% [2,5].

A study conducted in Tanta University; Egypt found 79.9% prevalence of burnout among their medical students [6].

Burnout is increasingly reported among medical students due to academic demand, tasks overload, stressful schedules, in addition to future patient care [7].

It is a serious problem with educational adverse effects such as lack of academic issues interest, disaffiliation in class activities, absenteeism, and impaired ability for the acquisition of new skills [1].

It also negatively impacts decision making ability, relation-ships with colleagues and doctor patient relationship [8].

In addition, burnout leads to health problems like drowsiness, fatigue, eating disorders, migraine, drug abuse and emotional liability [9]. Therefore, students' mental health should be a priority of medical educators and health care providers and receive more attention [5].

Aside from academic stressors that contribute to burnout, the individual self-regulatory factors facilitate coping with these stressors and also important to be taken into consideration. Self-efficacy beliefs represent a modifiable self-regulatory factor that protect from negative outcomes of academic stressors [10].

Self-efficacy is the belief that one can do something successfully. Previous studies concluded that self-efficacy negatively correlated with de-personalization and emotional exhaustion and was positively correlated with decreased academic efficacy among students [11-13].

Given the major consequences of medical student burnout, it is important to understand predictors that positively and negatively influence it to raise level of awareness and protect vulnerable students.

Therefore, the study investigates the relations between self-efficacy [internal environment], and teaching environment [external environment] with burnout. Up to our knowledge, there is a scarcity of Egyptian studies that investigated general self-efficacy [GSE] as predictor of burnout.

AIM OF THE WORK

To assess the prevalence of burnout among students of Faculty of Medicine for Girls, Al-Azhar University, to identify association between burnout and students' perception toward educational environment, and also to investigate relation between burnout and students' GSE.

SUBJECTS AND METHODS

The current study was a cross sectional study that was conducted on undergraduate students of faculty of medicine for Girls Al-Azhar University from October 2019 to March 2020. The study was conducted on all 6 grades; these include three pre-clinical years [first, second, and third grades] and three clinical years [fourth, fifth, and sixth grades].

Sampling technique and sample size:

The total number of the students from all academic grades in the academic year 2019/2020 was 2519. We used Epi-info program to calculate sample size using 45.1% as a prevalence of burnout [average of different studies that reported [10.3%-79.9%] [2,6] with 95% Confidence Level. The estimated sample size was 331 [we increased sample size by 20% to reach 398 to overcome sample error].

The sample was achieved by a stratified random sampling technique, students were stratified according to their academic grade, and then from each grade a section or lecture room

[cluster] was chosen randomly. Students who were available during the time of data collection and also agreed to participate were included in the study, while those with a history of any psychological disturbance were excluded from the study. The response rate was 98.1% [471 responded out of 480].

Study tools:

Study participants responded to self-administered, closed-ended questionnaire that was designed by the research team after reviewing of literature. The questionnaire was distributed at break time between lectures or practical sessions, to be returned to authors on the next day. It composed of 3 sections;

The *first section* includes the following items:

-Socio-demographic characteristics including [age- residence- education of father and mother- academic stage- grade point average [GPA].

-Perception of medical students toward educational environment including [feeling about teaching activities, thoughts about dropping out of year, satisfaction with the used teaching strategies, achieving academic goals, satisfaction with medical study, the acquisition of skills, time for extracurricular activities, over thinking about specialty choice in the future, emotionally supportive environment, sense of never-ending competition.

The *second section*: MBI-SS which is validated tool to assess burnout among students [14].

It consists of 15 items which assess dimensions of burnout; EE [5 items], CY [4 items], and AE [6 items]. Emotional exhaustion is perception of depleted emotional resources to maintain assisting people. Cynicism is the negative feelings towards patients or colleagues. The third dimension is low academic efficacy, which is a feeling of incompetent as a student [8].

The response was assessed using a Likert scale ranging from [0=Never] to [6 = Always]. The score of EE was [low from 0-9; moderate from 10-14 and high > 14], CY was [low from 0-1; moderate from 2-6 and high > 6], while AE score was scored as low when ≤ 22; moderate which ranges from 23-27 and high ≥ 28].

High emotional exhaustion, cynicism, and low academic efficacy suggest burnout [2].

The third section is a general self-efficacy scale [GSE] which is a self-report measure of self-efficacy. GSE consisted of 10 questions. Each question response ranges from [1=not at all true] to [4= exactly true]. The total score ranges between 10 and 40, rising the score indicate greater self-efficacy [15].

Statistical analysis:

Analysis of data was done using Statistical Package for Social Science, version 21 [SPSS Software, SPSS Inc., Chicago, USA]. Qualitative data represented by frequencies and percentages, Chi-square [χ^2] used for comparison between groups. Quantitative data represented by the mean and standard deviation; independent t test used for comparison between two groups. *Pearson* correlation analysis performed to detect an association between general self-efficacy scale and domains of burnout. Binary logistic regression analysis performed to find the predictors of burnout. The significance level was taken at $p < 0.05$.

Ethical consideration:

An oral consent obtained from students to participate in the study after clarification of the purpose and procedure of the study. The study was approved by the ethical committee of Al-Azhar University of Medical sciences, Cairo, Egypt.

RESULTS

Our study includes 471 female medical students, 70.3% of them aged ≥21 years with an average age 20.9± 1.4 years, 55.4% lived in rural areas, 65.6% have highly educated father and 51.4% have a highly educated mother.

Regarding the academic stage, 68.8% were in clinical stage. Additionally, 50.7% of them get grade point average excellent score **[Table 1].**

It was found that 42.9 % of studied students fit the tridimensional diagnostic criteria for burnout. However, when analyzing each subscale separately, we found that 90.9%, 65.8% and 58.4% had high emotional exhaustion, high cynicism, and low academic efficacy respectively **[Figure 1].**

Burnout was significantly more prevalent among students aged ≥ 21yrs [76.2%], those in clinical stage [75.7% vs 63.6%] which means that burnout seems to worsen as students approached graduation. There are no statistically significant differences between burnout students and other group in relation to residence, education of their fathers and mothers **[Table 2].**

Concerning variables related to the educational environment, we found that 91.1% of students with burnout express uncomfortable feeling with teaching activities compared to 83.3% of students without burnout, 87.6% have fear about dropping out of year compared to 79.6% of the normal group. Moreover, students who express burnout feel more dissatisfied with used teaching strategy than their normal counterparts [57.9% vs 44.6%]. Also 81.2% of burnout students experienced difficulty in achieving their academic goals compared to 58.4% of the other group.

Burnout student's express dissatisfaction with medical study in higher figure than normal ones [50.0% vs 24.9%]. Regarding the acquisition of necessary skills to become a good physician, 58.9% of students feeling burnout perceived that they not qualified with necessary skills in comparison to 47.6% of normal students, while inadequate time for extracurricular activities reported in 79.2% with burnout versus 71.0% among other group with statistically significant differences [p<0.05].

A significantly higher level of burnout [88.1%] was seen among students who reported over thinking about specialty choice in the future compared with 74.3%, and 49.0% thought that they are in never-ending competition. The emotionally supportive environment seems to be protective from burnout, 78.8% of the normal students have emotionally supportive environment versus 69.8% of students with burnout with p<0.05 **[Table 3].**

GSE is significantly lower among students with burnout symptoms [p<0.05] **[Table 3].**

Additionally, a significant positive correlation was found between GSE and AE [r=0.5, P=0.000], and weak significant negative correlation with emotional EE [r= -0.3, P=0.000], and CY [r= -0.4, P=0.000] **[Table 4].** Logistic regression analysis reveals a significant correlation between high burnout and clinical academic stage [OR= 2.1, 95% CI 1.2-3.4.], difficulty in achieving academic goals [OR= 1.8, 95% CI 1.1-3.1], dissatisfaction with the teaching strategy [OR= 1.8, 95% 1.1-2.8], dissatisfaction with medical study [OR= 1.9, 95% 1.2-3.2], additionally, the risk of burn-out decreases with increase GPA and increase GSE as shown in **[Table 5].**

Table [1]: General characteristics of the study students

	Variables	NO =471	%
Age[years]	<21 ≥ 21	140 331	29.7 70.3
Residence	Urban Rural	210 261	44.6 55.4
Education of Father	Not highly educated Highly educated	162 309	34.4 65.6
Education of Mother	Not highly educated Highly educated	229 242	48.6 51.4
Academic Stage	Preclinical Clinical	147 324	31.2 68.8
Grade Point Average [GPA]	Passed Good Very good Excellent	31 63 138 239	6.6 13.4 29.3 50.7

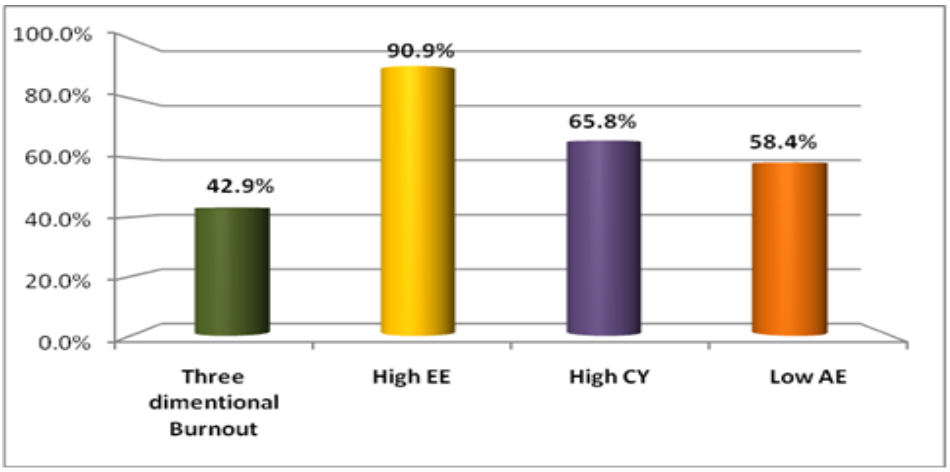

Figure [1]: Distribution of burnout components in studied students [note: *EE: Emotional exhaustion, CY: Cynicism, AE: academic efficacy]

Table [2]: Association between socio-demographic characteristics of students and burnout

Items		Burnout Level		P value
		No [n=269]	Yes [n=202]	
Age [years]	<21 ≥ 21	92[34.2] 177[65.8]	48 [23.8] 154[76.2]	0.01*
Residence	Urban Rural	122[45.4%] 147[54.6%]	88[43.6] 114[56.4]	0.7
Education of Father	Not highly educated Highly educated	95[35.3] 174[64.7]	67[33.2] 135[66.8]	0.6
Education of Mother	Not highly educated Highly educated	133[49.4] 136[50.6]	96[47.5] 106[52.5]	0.7
Academic Stage	Preclinical Clinical	98[36.4] 171[63.6]	49[24.3] 153[75.7]	0.005*

Table [3]: Association between educational environment, students' general self- efficacy and burnout

Items		Burnout Level		P value
		No [n=269]	Yes [n=202]	
Feeling about teaching activity	Comfortable Uncomfortable	45[16.7] 224[83.3]	18[8.9] 184[91.1]	0.01*
Thoughts about dropping out of year	No Yes	55[20.4] 214[79.6]	25[12.4] 177[87.6]	0.02*
Satisfaction with used teaching strategy	Satisfied Not satisfied	149[55.4] 120[44.6]	85[42.1] 117[57.9]	0.004*
Achieving academic goals	Easy Difficult	112[41.6] 157[58.4]	38[18.8] 164[81.2]	0.001*
Satisfaction with medical study	Satisfied Not satisfied	202[75.1] 67[24.9]	101[50.0] 101[50.0]	0.001*
Acquisition of skills	Confident Not confident	141[52.4] 128[47.6]	83[41.1] 119[58.9]	0.01*
Time for extracurricular activity	Adequate Inadequate	78[29.0] 191[71.0]	42[20.8] 160[79.2]	0.04*
Over thinking about specialty choice in the future	No Yes	69[25.7] 200[74.3]	24[11.9] 178[88.1]	0.000*
Emotionally supportive environment	Yes No	212[78.8] 57[21.2]	141[69.8] 61[30.2]	0.03*
Sense of never-ending competition	Rare Frequent	179[66.5] 90[33.5]	103[51.0] 99[49.0]	0.001*
General self-efficacy	mean±SD	25.7±4.8	20.3±4.5	<0.001*

Table [4]: Correlation between General self-efficacy and components of burnout

Item	EE		CY		PA	
	r	*p*	*r*	*p*	*r*	*p*
GSE	-0.3	<0.001*	-0.4	<0.001*	0.5	<0.001*

* GSE: general self-efficacy, EE: Emotional exhaustion, CY: Cynicism, PA: academic efficacy

Table [5]: Significant predictors of burnout among studied medical students.

Predictors of burnout	β	Wald	Sig.	Exp[β]	95% C. I
Academic stage [preclinical]	0.7	8.1	0.004*	2.1	1.2-3.4
Easy achieving academic goals[yes]	0.6	4.8	0.03*	1.8	1.1- 3.1
Satisfaction with teaching strategy [satisfied]	0.6	6.1	0.01*	1.8	1.1 – 2.8
Satisfaction with medical study [satisfied]	0.7	7.7	0.006*	1.9	1.2- 3.2
Grade point average [Excellent]					
Passed	1.5	8.8	<0.001*	4.6	1.7 – 12.6
Good	1.4	15.4	<0.001*	4.1	2.0 - 8.4
Very good	0.6	4.5	0.03*	1.8	1.1 - 3.2
General self-efficacy	-0.2	70.7	<0.001*	0.79	0.75 - 0.84

DISCUSSION

No doubt that those who enrolled in the medical field are subjected to excess workload, lack of support, and loss of control at many, associated major changes in their lifestyles and disturbance in social communications which may lead to emotional exhaustion and diminished passionate responsibility towards studying medicine.

Varying level of burnout among medical students reported in different setting. In the current study we found that burnout was prevalent among 42.9 % of our studied students, 90.9% expressed high emotional exhaustion, 65.8% suffered high cynicism, and 58.4% reported low academic efficacy. This agrees with an American study in University of Illinois College of Medicine at Rockford that reported burnout among 39.2% of respondents [8]. Besides, the Saudi Arabian study found that the rate of burnout was [38.2%], [77.8%] expressing high emotional exhaustion, [65.7%] high cynicism, and low academic efficiency [45.5%] [16].

On the contrary, an alarming level of burnout reported by Almalki *et al*. [5] in their study at King Saud bin Abdulaziz University for Health Sciences [KSAU-HS] in Saudi Arabia. 67.1% of students suffered burnout, [62.3%] had high cynicism, 58.6% had high emotional exhaustion, and 60.2% had low professional efficacy. Additionally, a study conducted in Tanta University, Egypt using The Copenhagen Burnout Inventory [CBI] found 79.9% prevalence of burnout among the studied students and burnout subscales, were 56.8 % and 60% for personal and work-related burnout respectively [6].

Although the current study burnout was lower than Almalki *et al*. [5] and Atlam [6], it reported a high level of emotional exhaustion. EE is considered the first step for occurrence of burnout which means that those students in their way to burnout.

On the other side, Elkholy *et al*. [17] found that 38.2% of medical students at Cairo University experienced high emotional exhaustion, 32.4% had high cynicism, and 31.1% observed low academic efficacy. Additionally, Costa *et al*. [2] reported 10.3% prevalence of burnout among medical students at the Universidade Federal de Sergipe-Brazil.

These varieties of results may be due to differences in burnout assessment tool, study design, and study setting, underlying causes of burnout and socioeconomic status. In addition, may be due to sample differences as some of these studies only included early undergraduate and students from both sexes. While our study included only female students from all grades and most of them living away from their families which make them more prone to burnout.

There is a relation between students' age and academic stage. Older students [clinical stage] have burnout symptoms higher than younger ones [in preclinical stage], as clinical years represent the point of transition from basic study to clinical study

where students interact with physically and/or psychologically impaired individuals which put them under greater responsibility and emotional strain also burnout may be appeared with increase duration of exposure to stressors. Aside from that, low prevalence of burnout in preclinical stage may be due to the application of an integrated system for teaching rather than traditional teaching method that still applied on clinical grades students.

This finding was in line with Muzafar *et al*. [1] who reported that 58.1% of students with burnout were in the clinical stage versus 41.9% in the preclinical stage.

On the contrary Costa *et al*. [2] reported a higher prevalence of burnout among pre-clinical year students than those of other years.

The current study found that the residence of students has no effect on developing burnout. However, Atlam [6] reported that burnout is significantly related to the residence of students, this difference may be due that most of our students live away from their home.

Lower GPA serves as stressors on the student, lower GPA students had significantly higher level of burnout, as academic grades play a major role in their career choices in the future and that was in agreement with Shadid *et al*. [16].

In agreement with previous studies [1,2,7,9], we found that clinical academic stage, difficulty in achieving academic goals, dissatisfaction with the teaching strategy, dissatisfaction with the medical study, and lower GPA were predictors of students' burnout.

The findings of Shadid *et al*., also support our findings and that support the academic nature of burnout among students [16].

On the other side, not all students exposed to educational stressors express burnout. Self-efficacy beliefs affect students' feelings, thoughts, emotional reaction, adjustment and resistance. Thus, high self-efficacy tends to establish calmness when facing hard tasks. While, students with low self-efficacy tend to magnify problems, fail to cope with hard situations which lead to vulnerability to stress, burnout [10].

We found that GSE had significant positive correlations with AE, while, it had significant inverse correlations with EE and CY and that was in agreement with Charkhabi *et al*. [11], Rahmati [12] and Naderi *et al*. [13]. Therefore, it is of critical importance to develop and implement counseling programs to improve students' GSE to reduce academic burnout.

The results of this study put emphasis on developing methods to prevent and deal with academic burnout among medical students who will directly deal with the society's physical and mental health.

Conclusion and recommendations: The study found that burnout is prevalent among studied student. There are several predictors of burnout; some are part of extrinsic educational environment such as clinical academic stage, dissatisfaction with teaching strategy, dissatisfaction with studying medicine and others are part intrinsic environment such as GSE.

We recommend that teaching staff should be aware with signs and causes of burnout among their students. In addition, it should enhance students' self-efficacy. Additionally, medical colleges should create healthy teaching environment that control stress and prevent burnout. Another study design other than cross sectional one is needed to establish a causal relationship among the identified factors.

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