Prevalence and associated factors of burnout among female medical students in Taif University

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Abstract

Background: Burnout is one of the most prevalent dimensions of distress, medical students are facing during their study.

Objectives: to investigate the prevalence of burnout and its associated risk factors among female medical students in Taif University.

Methods: A cross-sectional study was done on female medical students using an online questionnaire. Data about socio-demographic characteristics were collected and the Maslach Burnout Inventory-Student Survey (MBI-SS) was used.

Results: The prevalence of burnout was about 23% of 213 participants. With 27% reporting high levels of EE, 62.4% had a high level of DP and a low level of PA was found among 8.9%. Most students who have burnout (65.3%) were studying more than 5 hours a day (0.025). Lower frequency of practicing exercise was a significant predictor of burnout (OR= 2.4, 95% CI= 1.1- 4.9, p= 0.017) as estimated by logistic regression analysis. A high percentage of DP was reported among the first year and the six year students (17.3 % and 18.8% respectively) (p=0.006).

Conclusion: Year of study, study hours, leisure time activities and exercise are factors influencing burnout among female medical students in Taif, KSA. Effective coping strategies should be considered to minimize burnout levels. Simple methods such as increased physical activity, leisure time activities and group discussion may reduce the likelihood of the development of burnout.

Key words: prevalence, factors, burnout, female, medical, Taif.

Introduction

Burnout is a syndrome that is formed of emotional exhaustion, depersonalization and low professional efficacy which occurs in some individuals who perform various kinds of work (1). The concept of the term Burnout Syndrome has been expanded to medical trainees and three factors have been noted: emotional exhaustion due to study requirements, feelings of cynicism and withdrawal from one's studies and low student academic efficacy (thought of incompetence or underachievement) (2).

Medical students go through stressful events, and they are engaged in multiple activities. They experience academic, existential and psychological stressors (3). Consequently, students who experience a high level of stress with poor coping strategies during medical school are vulnerable to develop burnout (4).

Researchers have described stressful moments/factors in the academic life of medical students, as they shift from a mostly didactic-filled schedule to one that is focused on patient care (5).

Factors that contribute to significant stress among students in medical schools include adaptation difficulties at the beginning of coursework. The excessive workload and educational content, combined with the high level of educational demands, and a lack of time for leisure, family and friends, also contribute to stress among medical students (6). Stress also occurs during the transition from the introductory clinical cycle to the clerkship cycle, where students feel limitations regarding the scientific knowledge, their changes from one stage to another, and the direct contact with seriously ill people who have a hopeless prognosis (7).

Prolonged stress is known to trigger disturbance in sleep-wake cycles, promote unhealthy lifestyles and increase propensity towards risky behavior (8). In literature regarding preclinical students, stress has also been shown to adversely impact on the efficiency of cognitive functioning that is important for learning (9).

Burnout among medical students can have serious consequences including poorer mental health, depression, suicidal ideation and thoughts of dropping out of medical school and decreased quality of life. Even beyond the impact on the student, it can affect the patients in their care. Burnout can decrease empathy for patients and affect patient care (10). It is important for medical schools, to ensure they have the right levels of support and also interventions for students who may display increased levels of stress and emotional distress during their course (11).

Medical schools now offer programs to improve or maintain student well-being. Strategies to better identify students at risk of distress and burnout are needed for successful outcomes (12). There are two critical pieces of information about burnout that need to be more fully developed. The first is to identify red flags for burnout to allow school administrators to intervene before serious consequences occur. The second piece is to identify what successful students are doing to prevent burnout during their medical school careers (10).

In the Kingdom of Saudi Arabia (KSA), a study was done in 2019 in Al Madina city to determine the prevalence of burnout and its associated factors among family residents. The study found that the significant predictors of burnout in the final model were examinations, large amount of content to be learnt, unfair assessment from superiors, work demands affecting personal/home life and lack of support from superiors (13).

A recent study was done in Jazan city in 2020 to assess the prevalence of burnout syndrome and its associated factors among medical students at Jazan University. The overall prevalence of burnout was estimated at 60.2% (14).

According to a careful literature review, studies done to assess burnout prevalence among female medical students in KSA are limited. Thus, the aim of this study was to investigate the prevalence and associated factors of stress and burnout among medical students in Taif University.

Subjects and Methods

The study was a cross-sectional study done on students of the College of Medicine, Taif University including all the female medical students from first to the sixth year, and the interns from April to May 2019.

In this study an online questionnaire was used that consisted of two sections: the first section identified socio-demographics and personal characteristics of the participants such as academic year, study hours, frequency of exercise weekly, frequency of going out weekly during leisure time, and frequency of spending time doing something fun or practicing a hobby daily. and the second section is based on Maslach Burnout Inventory-Student Survey (MBI-SS) and modification was done to be applied in our locality.

In 1981, Maslach and Jackson created the Maslach Burnout Inventory (MBI), which is currently the most commonly used scale in the world for assessing the syndrome (1). The MBI has three versions: one of them is the MBI-Human Service Survey (MBI-HSS), designed for professionals working in people-centered services, such as doctors, nurses, psychologists and students of health professions (15).

The MBI evaluates the prevalence of Burnout by exploring the three components: Emotional exhaustion (EE), depersonalization (DP) and personal achievement accomplishment (PA). High scores for EE and DP and low scores for PA lead to a high Burnout index. The PA dimension has an inverse score – the higher the score,

the better the individual's perception of their professional satisfaction and efficacy (16).

EE is the feeling of being completely drained, both emotionally and physically, due to extreme overwork. DP is a combination of a negative, skeptical behavior, and a feeling of indifference towards others. Low PA is the tendency to judge oneself badly or unfavorably especially towards one's own work (17). EE was measured using seven items, DP was measured using seven items and PA was measured using eight items. All survey items were scored on a scale from 0 to 6; (0 = Never, 1 = Few times per year, 2 = Once a month, 3 = Few times per month, 4 = Once a week, 5 = Few times per week, 6 = Everyday) (18).

Data analysis: statistical analysis was carried out using SPSS software version 22. Categorical variables were presented by simple frequency format. Standard deviation and mean scores were applied to quantitative and numerical variables. To quantify possible associations between variables and burnout subscales, Chi square test was used. Aiming to determine factors predicting burnout multiple regressions test were used with calculated odds ratios and 95% confidence interval and P value ≤ 0.05 was considered to be statistically significant for all tests.

Ethical approval: the study was approved by the Medical Research Ethics Committee of Taif University. Subjects were informed that their participation was anonymous and voluntary.

Results

A total of 213 undergraduate female medical students filled out the questionnaire and were stratified per academic year as follows; first year (n = 29), second year (n = 37), third year (n = 28), fourth year (n = 39), fifth year (n= 34), sixth year (n=35) and Internship (n=11). About half of the participants (49.3%) study more than 5 hours a day; 60% of the participants don't practice exercise and 59.6% of the participants go out once a week. About two thirds of the participants (75.1%) spend one hour a day doing something fun or practicing a hobby (Table 1).

About 30% of the students reported moderate level of emotional exhaustion (EE) and 27% reported high levels. However, about 62.4% of the students reported a higher level of depersonalization (DP). Moreover, about 8.9% of the students showed low levels of personal achievement (PA) and 23% showed moderate PA levels. The overall burnout prevalence was 23% (Table 2).

The mean subscale score of EE was 21.1± 11.04 indicating moderate levels. The DP mean subscale score was 14.9 ± 9.2 indicating a high level (Figure 1).

Most of the students who indicated a high level of EE (65.5%) were students studying more than 5 hours a day while 34.5% of students study 2-4 hours a day and 0% of students study 1 hour a day (p= 0.004). Also, half of students with a high level of EE were going out once a week and 41.4% of them don't go out during the week (p= 0.017).

The level of DP was high in all school years. High percentages were reported in the first year and the six-year students (17.3 % and 18.8% respectively) (p=0.006) (Table 4).

Analysis of association of demographic and personal characteristics with personal achievement revealed that the highest percentage of the students who reported high level 81 (55.9%), moderate 33 (67.3%) and low 13 (68.4%) level of PA were going out one day a week (p= 0.012) (Table 5).

Regarding the relation of demographic and personal characteristics with presence or absence of burnout, most of the students who have burnout 65.3% were studying more than 5 hours a day (0.025) (Table 6).

Binary logistic regression was conducted to determine the association between the burnout as dependent variables and student demographic and personal characters as independent variables. Table 7 shows that lower frequency of practicing exercise was a significant predictor of burnout (OR= 2.4, 95% CI= 1.1- 4.9, p= 0.017) as estimated by logistic regression analysis.

Table 1. Distribution of the participants according to their demographic and personal characteristics

Variable	categories	N (213)	%
Academic year	1st year	29	13.6
	2nd year	37	17.4
	3rd year	28	13.1
	4th year	39	18.3
	5th year	34	16.0
	6th year	35	16.4
	Internship	11	5.1
How many hours do you spend studying each day?	One hour	6	2.8
	2-4 hours	102	47.9
	≥5 hours	105	49.3
Do you practice exercises?	0	129	60.0
	1 (once a week)	38	17.8
	3 (3 times a week)	21	9.9
	5 (5 times a week)	10	4.7
	7 (7 times a week)	15	7.0
How many times do you go out a week during leisure time?	0	63	29.6
	1	127	59.6
	2	22	10.3
	3	1	0.5
How many hours do you spend doing something fun or practice a hobby each day?	1	160	75.1
	3	53	24.9

Table 2. Level of components of Maslach Burnout Inventory in studied group

Variable	categories		N (213)	%
Burnout	No burnout		164	77%
	Yes burnout		49	23%
Emotional exhaustion (EE)	low	≤17	91	42.7%
	moderate	18 - 29	64	30%
	high	≥30	58	27%
Depersonalization (DP)	low	≤5	37	17.3%
	moderate	6-11	43	20.1%
	high	≥12	133	62.4%
Personal achievement (PA)	high	≤33	145	68%
	moderate	34-39	49	23%
	low	≥40	19	8.9%

Figure 1: Mean ± SD of MBI subscales (emotional exhaustion (EE), depersonalization (DP) and Personal achievement (PA)).

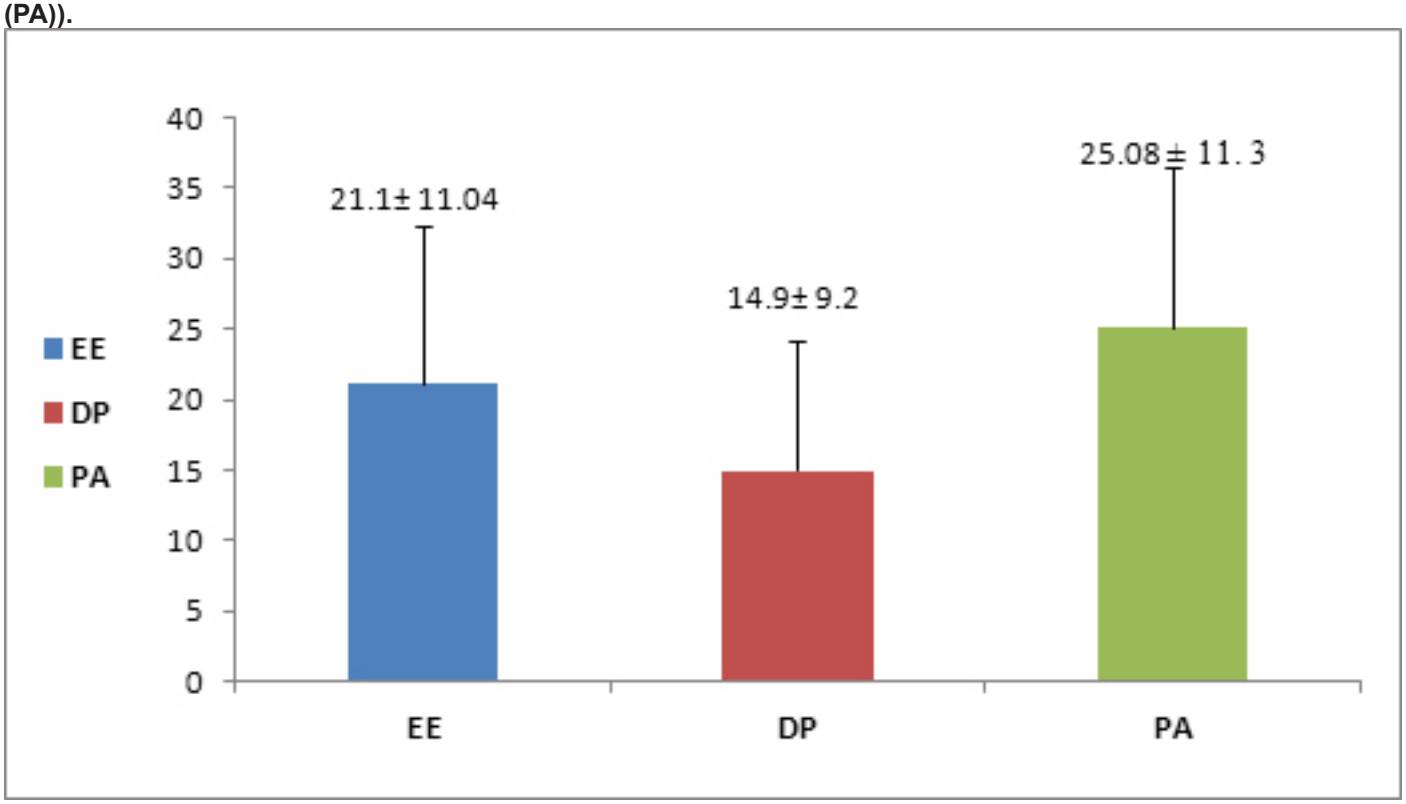

Table 3. Relation between demographic and personal characteristics and emotional exhaustion

Variable		Emotional exhaustion (EE)			X2	P-value
		≤17 (low)	18 – 29 (Moderate)	≥30 (High)		
Academic year	1st year	13 (14.3%)	7 (10.9%)	9 (15.5%)	18.369	0.105
	2nd year	14 (15.4%)	9 (14.1%)	14 (24.1%)		
	3rd year	8 (8.8%)	14 (21.9%)	6 (10.3%)		
	4th year	23 (25.3%)	9 (14.1%)	7 (12.1%)		
	5th year	15 (16.5%)	8 (12.5%)	11 (19.0%)		
	6th year	14 (15.4%)	15 (23.4%)	6 (10.3%)		
	Internship	4 (4.4%)	2 (3.1%)	5 (8.6%)		
Study hours	One hour	4 (4.3%)	2 (3.1%)	0 (0%)	15.225	0.004
	2-4 hours	55 (60.4%)	27 (42.2%)	20 (34.5%)		
	≥5 hours	32 (35.1%)	35 (54.7%)	38 (65.5%)		
Practice exercises	0	48 (52.7%)	40 (62.5%)	41 (70.7%)	8.017	0.432
	1	20 (22.0%)	10 (15.6%)	8 (13.8%)		
	3	10 (11.0%)	6 (9.4%)	5 (8.6%)		
	5	4 (4.4%)	5 (7.8%)	1 (1.7%)		
	7	9 (9.9%)	3 (4.7%)	3 (5.2%)		
Go Out a week for free time	0	15 (16.5%)	24 (37.5%)	24 (41.4%)	15.407	0.017
	1	62 (68.1%)	36 (56.2%)	29 (50.0%)		
	2	13 (14.3%)	4 (6.2%)	5 (8.6%)		
	3	1 (1.1%)	0 (0.0%)	0 (0.0%)		
Doing something fun /hobby	1	64 (70.3%)	51 (79.7%)	45 (77.6%)	2.020	0.364
	3	27 (29.7%)	13 (20.3%)	13 (22.4%)		

Table 4: Relation between demographic and personal characteristics and depersonalization

Variable		Depersonalization (DP)			X2	P-value
		≤ 5 (low)	6 - 11 (Moderate)	≥12 (High)		
Academic year	1st year	1 (2.7%)	5 (11.6%)	23 (17.3%)	27.690	0.006
	2nd year	6 (16.2%)	11 (25.6%)	20 (15.0%)		
	3rd year	1 (2.7%)	7 (16.3%)	20 (15.0%)		
	4th year	14 (37.8%)	9 (20.9%)	16 (12.0%)		
	5th year	9 (24.3%)	5 (11.6%)	20 (15.0%)		
	6th year	4 (10.8%)	6 (14.0%)	25 (18.8%)		
	Internship	2 (5.4%)	0 (0.0%)	9 (6.8%)		
Study hours	One hour	1 (2.7%)	1 (2.3%)	4 (3.0%)	2.630	0.622
	2-4 hours	20 (54.1%)	24 (55.8%)	58 (43.6%)		
	≥5 hours	16 (43.2%)	18 (41.9%)	71 (53.4%)		
Practice exercises	0	18 (48.6%)	25 (58.1%)	86 (64.7%)	10.788	0.214
	1	12 (32.4%)	6 (14.0%)	20 (15.0%)		
	3	3 (8.1%)	7 (16.3%)	11 (8.3%)		
	5	1 (2.7%)	1 (2.3%)	8 (6.0%)		
	7	3 (8.1%)	4 (9.3%)	8 (6.0%)		
Go Out a week	0	7 (18.9%)	12 (27.9%)	44 (33.1%)	12.078	0.060
	1	21 (56.8%)	29 (67.4%)	77 (57.9%)		
	2	9 (24.3%)	2 (4.7%)	11 (8.3%)		
	3	0 (0.0%)	0 (0.0%)	1 (0.8%)		
Doing something fun	1	23 (62.2%)	35 (81.4%)	102 (76.7%)	4.406	0.110
	3	14 (37.8%)	8 (18.6%)	31 (23.3%)		

Table 5. Relation between demographic and personal characteristics and personal achievement

Variable		Personal achievement (PA)			X2	P-value
		≤ 33 (High)	34-39 (Moderate)	≥40 (low)		
Academic year	1st year	16 (11.0%)	12 (24.5%)	1 (5.3%)	18.592	0.099
	2nd year	26 (17.9%)	9 (18.4%)	2 (10.5%)		
	3rd year	26 (17.9%)	1 (2.0%)	1 (5.3%)		
	4th year	26 (17.9%)	8 (16.3%)	5 (26.3%)		
	5th year	22 (15.2%)	9 (18.4%)	3 (15.8%)		
	6th year	22 (15.2%)	7 (14.3%)	6 (31.6%)		
	Internship	7 (4.8%)	3 (6.1%)	1 (5.3%)		
Study hours	One hour	3 (2.1%)	2 (4.1%)	1 (5.3%)	4.048	0.400
	2-4 hours	69 (47.6%)	27 (55.1%)	6 (31.6%)		
	≥5 hours	73 (50.3%)	20 (40.8%)	12 (63.2%)		
Practice exercises	0	98 (67.6%)	25 (51.0%)	6 (31.6%)	13.090	.109
	1	22 (15.2%)	11 (22.4%)	5 (26.3%)		
	3	12 (8.3%)	6 (12.2%)	3 (15.8%)		
	5	6 (4.1%)	2 (4.1%)	2 (10.5%)		
	7	7 (4.8%)	5 (10.2%)	3 (15.8%)		
Go Out a week	0	53 (36.6%)	7 (14.3%)	3 (15.8%)	14.297[a]	.026
	1	81 (55.9%)	33 (67.3%)	13 (68.4%)		
	2	10 (6.9%)	9 (18.4%)	3 (15.8%)		
	3	1 (0.7%)	0 (0.0%)	0 (0.0%)		
Doing something fun	1	109 (75.2%)	37 (75.5%)	14 (73.7%)	.025	.987
	3	36 (24.8%)	12 (24.5%)	5 (26.3%)		

Table 6. Relation between demographic and personal characteristics and presence or absence of burnout

Variable		Burnout		X2	P-value
		No	Yes		
Academic year	1st year	22 (13.4%)	7 (14.3%)	9.404	0.152
	2nd year	24 (14.6%)	13 (26.5%)		
	3rd year	24 (14.6%)	4 (8.2%)		
	4th year	32 (19.5%)	7 (14.3%)		
	5th year	24 (14.6%)	10 (20.4%)		
	6th year	31 (18.9%)	4 (8.2%)		
	Internship	7 (4.3%)	4 (8.2%)		
Study hours	One hour	6 (3.7%)	0 (0.0%)	7.415	0.025
	2-4 hours	85 (51.8%)	17 (34.7%)		
	≥5 hours	73 (44.5%)	32 (65.3%)		
Practice exercises	0	92 (56.1%)	37 (75.5%)	6.360	0.174
	1	33 (20.1%)	5 (10.2%)		
	3	17 (10.4%)	4 (8.2%)		
	5	9 (5.5%)	1 (2.0%)		
	7	13 (7.9%)	2 (4.1%)		
Go Out a week	0	44 (26.8%)	19 (38.8%)	2.868	0.412
	1	101 (61.6%)	26 (53.1%)		
	2	18 (11.0%)	4 (8.2%)		
	3	1 (0.6%)	0 (0.0%)		
Doing something fun	1	123 (75.0%)	37 (75.5%)	.005	0.942
	3	41 (25.0%)	12 (24.5%)		

Table 7. Logistic regression analysis of burnout and student demographic and personal characteristics

	OR	P value	95% CI
Academic year	0.22	0.07	0.04-1.1
Study hours	0.4	0.07	0.2-0.8
Practice exercises	2.4	0.017*	1.1- 4.9
Go Out a week	1.07	0.11	0.89-3.3
Doing something fun	1.02	0.94	0.49-2.1

Discussion

In this study, which included only the female students from 1st to internship year, the prevalence of burnout was about 23%. This result is slightly higher than the prevalence reported by Altannir et al., 2019 (19) who reported the prevalence of burnout was 13.4% in their undergraduate students in Riyadh, Saudi Arabia. While another study in Saudi Arabia by Almalki et al., 2019 (20) reported a burnout prevalence of 67.1% which was applied on male and female students.

Worldwide, the prevalence of burnout ranged between 28 to 61% (4,21,22,23). This difference in the level among different medical schools could be attributed to different curriculum among schools and different risk factors.

In our study the percentage of participants reporting high levels of EE was (27%) and high level of DP was (62.4%), and low levels of PA was (8.9%). The high level of depersonalization in our study is a warning sign that should be taken with great attention. Two previous studies have shown that having at least one high burnout subscale can affect medical students negatively in a way that interferes with the learning process and also causes fatigue and emotional instability (24,25).

The three dimensions of the burnout syndrome could precipitate each other; the medical students with low adaptation to difficulties could develop EE and may become indifferent and impersonalized culminating in the sense of failure and dissatisfaction (7).

It also has been stated that high EE is linked to low physical well-being (26,27). The quality of life of undergraduate medical students also seems to be influenced by burnout, which in turn affects health care (28).

Our study demonstrated an association between EE and hours of study, with students who study more than 5 hours a day indicating a high level of EE (p= 0.004). In the study of Youssef, 2016 (23) burnout was associated with studying long hours while in Albalawi et al., 2017 (29), study hours non-significantly affected burnout level. Studying long hours each day often points to academic burden placed upon the students; moreover the climate of medical schools in developed nations often exacerbates this problem by comparison with their student counterparts which makes them often feel embarrassed and harassed.

We demonstrated in this study a significant association between EE and frequency of going out a week, with little rate of going out showing a high level of EE (p= 0.017). This reflects the known advantages of relaxation and better spending of leisure time upon mental health and reducing rates of burnout and thus could also be considered as a potential intervention strategy.

This study revealed that DP was positively associated with year of study, specifically the reported high levels were in the 1st and 6th year of study. The increased percentage of DP in the 1st year medical students could be attributed to lower adaptation by the students, which is gradually improved in the subsequent years of study. While the second rise in DP scores in the six year students might be attributed to increased contact with patients and increased responsibilities (a lack of clinical continuity, poor levels of feedback from senior doctors, and hostile attitudes during training).

In support of our results Sreeramareddy et al. reported that the first year medical students have higher levels of burnout in comparison to second-year medical students, and related this to a result of the improved individual experience with time throughout their hard study circumstances (30).

Previous research by Dyrbye et al. found that DP increased with year of study in American medical schools (3), which have a potential effect in communication with patients. Moreover, Jo Cecil et al., 2014 (31) found an association with being in fifth year in comparison to first year as significant predictors of higher DP scores.

When we examined the relation between demographic and student characteristics with PA scores, low PA was associated with lower time of going out. These finding were in accordance with Shah, et al. and Sreeramareddy, et al. who have reported that among the academic factors, lack of time off, was significantly associated with burnout among medical students (30,32).

Weight et al., 2013 postulated that physical activity may be associated with a reduction in the experience of burnout in trainee doctors (33). Moreover, physical activity is extremely beneficial for mental health (34).

Salmon, 2001 reported many beneficial aspects of physical activity, including an improved sense of self-control and higher social interaction, which may have positive implications for mental health (35). Thus, the results of this study suggested that practicing exercise regularly by medical students might help to protect students from the hazardous effects of burnout.

The Gallup report states that people who exercise 2 days a week are happier, have less stress and less fatigue; moreover, just 20 minutes of exercise can improve mood for several hours (36). Studies have demonstrated that the frequency of exercise decreases throughout medical school (37), thus, if the medical students could practice exercise regularly, they might be able to reduce mental distress and subsequently prevent burnout.

In line with our results, and in support of the quality of life, Saudi universities are moving towards achieving the Kingdom's 2030 goals in seeking to raise the level of exercise in society and have worked from this logic to invest their capabilities to create the appropriate environment and sports programs for female students. At a time when the sports federation of Saudi universities is looking for the university environment to be one of the best places to practice women's sport, work is underway on a project of training incubators in universities to provide students with training environments throughout the year.

Krasner, et al. found that self-awareness exercises among primary care physicians reduced both burnout and mood disturbance in them and improved their empathy (38).

Limitations

Using a self-administered questionnaire that may have a recall bias is the limitation of the present study. In addition, the cross-sectional research used may show the associations between variables but not the causal relationships.

Conclusion

This study illustrated that the year of study, study hours, leisure time activities and exercise are factors influencing burnout among female medical students in Taif, KSA. Effective coping strategies should be considered to minimize burnout levels. Simple methods such as increased physical activity, leisure time activities and group discussion may reduce the likelihood of the development of burnout.

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