Original Article :

Prevalence of burnout among KSU medical students.

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Abstract

Background and aims:

Burnout in medical students shows interest that has grown significantly over the last few years. This study's aim is to know the prevalence of burnout in medical students which will help us to determine if this syndrome is common among medical students and if it needs intervention.

Methods:

This cross-sectional study was conducted with all medical students who were enrolled in the 2019/2020 year at King Saud University in Riyadh, Saudi Arabia. Socio-demographic, burnout level (Maslach Burnout Inventory-General survey for students) data were collected using a self-administered questionnaire. Data were analyzed by using Statistical Package for Social Studies, Chi-square test was used for categorical variables and univariate logistic regression was used to assess the associated factors with burnout.

Results:

In this study, 337 students were involved, the response rate was (79.2%). The mean age of the participants was 21.5 ±1.46 years, of whom males were (64.99%) while the females were (35.01%). The level of high burnout founded as (9.8%, n=33), while (25.5%, n=86) of students had high levels of emotional exhaustion, (29.4%, n=99) had high levels of cynicism and (34.4%, n=116) had a low level of professional efficacy.

Conclusion:

Prevalence of burnout was found to be less than estimated documented studies in the region. Academic year was significantly associated with the level of burnout, especially the third academic year, no statistical significance to the association of burnout with gender and age was found. There is a gap in the literature need to be fulfilled to gain more knowledge about causes and effect of burnout.

Keywords:

Burnout, Emotional Exhaustion, Cynicism, Medical students, Saudi Arabia.

Introduction:

Medical Students are the future's health-care professionals, and they have a crucial role in the delivery of healthcare, so their mental status matters to build-up successful careers[1]. They may disclose physical and mental health problems related to their long and demanding learning and may have a higher risk of developing burnout syndrome with extreme exhaustion, depersonalization, and decreased self-accomplishments[2–5].

According to the World Health Organization "Burn-out is a syndrome conceptualized as resulting from chronic workplace stress that has not been successfully managed"[6]. Burnout is an extended response to severe work-related emotional and interpersonal stressors and the inability to adapt to the demands of overloaded work[7]. Proposed that Stress and emotional exhaustion have a cyclical relationship, suggesting that increased stress levels and inadequate coping techniques could play a significant role in burnout development[8]. Furthermore, depersonalization can occur due to feelings of diminished self-accomplishment, overwork, and an emotional commitment to medicine[9,10]. Depersonalization is characterized by impaired and distorted perception of oneself, others, and of the environment, and is expressed as a lack of empathy. There may be a lack of motivation and feeling loneliness[11–14].

There are various symptoms of burnout that can be grouped into four main groups: emotional symptoms (depression, helplessness), cognitive symptoms (cognitive disorientation), behavioral symptoms (avoidance of responsibility, Tobacco, alcohol, and caffeine consumption), and social symptoms (social isolation, interpersonal conflicts)[15]. Researchers have found that having at least one burnout symptom can have a negative impact on medical students, causing not only tiredness and fatigue, but also eating disorders, headaches, emotional instability, and even the administration of illegal substances[16,17]. According to some research findings, burnout should be reduced because it has a negative impact on the individual's physical health (Acute coronary syndrome, gastrointestinal disease, chronic fatigue) and psychological health (depression, insomnia), which are negatively correlated with various work-related outcomes (for example, reduced job performance, low organizational commitment)[7,18–22]. According to the previous study, mental health conditions declined after medical students started school and remained stable after they graduated from college and began practicing[23]. Evidence suggests a link between burnout and suicidal ideation in medical students. Students experiencing burnout

were two to three times more likely to be among the 11.2 percent of responding students who considered suicide in the past, according to cross-sectional studies from seven medical schools[24]. Researchers found that the following factors are correlated with increased burnout among physicians: female sex, younger age, increased work hours, reduced satisfaction, and work-home conflict[25]. Different levels of burnout can be explained by a variety of tools used to assess levels of burnout, or by different determinants of social and circumstantial burnout determinants[26]. Different burnout levels reported among medical students across countries. Studies have shown that the prevalence of burnout among medical students ranges from 52% to 75%[10,24,27]. However, several studies conducted in Saudi Arabia ranged between 13.4% and up to 81.4%[26,28–31].

There are not enough studies about burnout that have been conducted in Saudi Arabia. So, this study will be an added value to the Saudi literature.

Methods:

Our objective in this study was to estimate the prevalence of burnout among KSU medical students and to determine the relationship between gender, age, and academic year with level of burnout. We hypothesize that the prevalence of burnout is 67.1% among medical student based on study conducted at King Saud bin Abdelaziz university, and that burnout is more in females (Alfaisal university study showed (75.7%) in females while (41.4%) in males).

Study design and setting:

Cross-sectional study included all undergraduate medical students at King Saud University (KSU) in Riyadh, Saudi Arabia during the period from September 2019 until April 2020.

Ethical consideration:

Institutional review board at King Saud University provided us the ethical approval on the 8th of December 2019 with assigned project Number E-19-4409. The informed consent was obtained, and all the participants were informed about the purpose of the study and the right of the participants to withdraw at any time without any obligation towards the study team. And their identities remained secured.

Sample size, sampling method:

Sample size was calculated using the standard Single Proportion Formula (N=Za2*P(1-P)/D2); Z=1.96, P=67.1% (based on study conducted at King Saud bin Abdelaziz university)31 at a confidence level of 95%, precision of 4%, level of significance of 0.05 with adding 10% to the original number to compensate possi-

ble losses, the sample size is 425. Using a stratified random sampling technique via Microsoft Excel, we randomly chose a sample of 425 out of 1500 students, distributed as 85 students from each year, 56 students were male while 29 were female. Subjects were asked to complete an electronical questionnaire. The inclusion criteria are both male and female medical students, while the exclusion criteria are students who are not enrolled in 2019/2020 course and interns.

In this study, 337 students were involved, the response rate was (79.2%). Most of them were males (64.99% n=219) while the females were (35.01% n=118). They were distributed according to the academic year and the response rate in the first year was (15.73%, n=53), the second year (23.44%, n=79), the third year (22.85%, n=77), the fourth year (17.8% n=60) and the fifth year (20.18%, n=68).

Data collection:

The outcome variables in our study are emotional exhaustion, cynicism, and professional efficiency. The data were collected during February 2020 by using an online survey, and a validated online scale designed for evaluating levels of burnout was used (Maslach Burnout Inventory-General survey for students). It consists of 16 questions with 7 levels of score (0/Never to 6/Every day). Permission to use the MBI scale was obtained. The MBI is validated and assesses the three components of the burnout syndrome: emotional exhaustion, cynicism, and professional efficacy.

Emotional exhaustion (EE) is defined as "a state of feeling emotionally worn-out and drained as a result of accumulated stress from personal or work lives, or a combination of both"[32]. Cynicism is "the belief that people are only interested in themselves and are not sincere"[33]. Personal accomplishment (PA) is person's beliefs about his abilities to make effects.

MBI measures a subject's level of burnout without giving a diagnosis. Absolute diagnosis requires clinical evaluation. Levels of burnout correlate with burnout components, for high levels of burnout, subjects will have high scores of emotional exhaustion, cynicism with a low score of professional efficacy.

Data analysis:

Data were analyzed by using Statistical Package for Social Studies (SPSS 22; IBM Corp, New York, USA). Continuous variables were expressed as mean ± standard deviation and categorical variables were expressed as percentages. A Chi-square test was used for categorical variables. This depends on the expected cell counts in the

contingency tables if there is anyone less than five, we use fisher exact. The Cronbach's alpha was used to assess reliability and internal consistency of the items in the questionnaire. The Cronbach's alpha value for the MBI-GS was 0.837 for exhaustion and 0.780 for cynicism. And 0.787 for professional efficacy which reflects good and acceptable reliability of the items in the questionnaire. Univariate logistic regression was used to assess the associated factors with burnout. A p-value <0.05 was considered statistically significant. Also, the odds ratio (OR) and 95% confidence intervals (95% CI) were measured.

Results

In this study, 337 students were involved, the response rate was (79.2%). The mean age of the subjects was 21.5 ±1.46 years, as shown in Table 1.

Many of them were males (64.99%) while the females were (35.01%). They were distributed according to the academic year and the response rate in the first year was (15.73%, n=53), the second year (23.44%, n=79), the third year (22.85%, n=77), the fourth year (17.8% n=60) and the fifth year (20.18%, n=68).

Table 1. Socio-demographics characteristics of the study participants (n=337)

		Number	%
Gender	Male	219	64.99
	Female	118	35.01
Medical year	1st year	53	15.73
	2nd year	79	23.44
	3rd year	77	22.85
	4th year	60	17.8
	5th year	68	20.18
Age	Mean	21.5	
	SD	±1.46	

The level of high burnout founded as (9.8%, n=33), while (25.5%, n=86) of subjects had high levels of emotional exhaustion, (29.4%, n=99) had high levels of cynicism and (34.4%, n=116) had a low level of professional efficacy as all shown in Table 2.

Table 2: Levels of Burnout components among KSU medical students (n=337)

	Exhaustion (EX)		Cynicism (CY)		Professional efficacy (PE)	
Level	Number	%	Number	%	Number	%
Low	117	34.7	123	36.5	116	34.4
Moderate	134	39.8	115	34.1	112	33.2
High	86	25.5	99	29.4	109	32.3
Burnout *	Number		Prevalence (%)			
	33		9.8			

*Definition of Burnout: High scores on cynicism, exhaustion, and low scores on professional efficacy

As shown in Table 3, Females had higher levels of high exhaustion (n=33, 28%, p=0.499, $\chi 2$=0.572), high cynicism (n=40, 33.9%, p=0.181, χ 2=1.789), low professional efficacy (n=46, 39%, p=0.196, χ 2=1.674), and burnout (n=14, 11.9%, p=0.347, χ 2=0.883).

Table 3. Association between burnout and burnout components with socio-demographic characteristics(n=337)

		High Exhaustion (EX)		High Cynicism (CY)		Low Professional efficacy (PE)		Burnout	
		Number	%	Number	%	Number	%	Number	%
Gender	Male	53	24.2	59	26.9	70	32	19	8.7
	Female	33	28	40	33.9	46	39	14	11.9
P value		0.449		0.181		0.196		0.347	
χ^2 value		0.572		1.789		1.674		0.883	
Medical year	1st year	12	22.6	11	20.8	14	26.4	3	5.7
	2nd year	23	29.1	24	30.4	26	32.9	7	8.9
	3rd year	29	37.7	30	39	26	33.8	14	18.2
	4th year	10	16.7	18	30	17	28.3	4	6.7
	5th year	12	17.6	15	22.1	29	42.6	5	7.4
P value		0.022*		0.122		0.289		0.079	
χ^2 value		11.433		7.271		4.985		8.359	
Age	< 22 years	56	32.2	53	30.5	58	33.3	20	11.5
	≥ 22 years	30	18.4	46	28.2	58	35.6	13	8
P value		0.004*		0.652		0.664		0.277	
χ^2 value		8.407		0.203		0.189		1.18	

* Significant p value

Students who are younger than 22 years had higher levels of high exhaustion (n=56, 32.2%, p=0.004, χ 2=8.407), high cynicism (n=53, 30.5%, p=0.652, χ 2=0.203) and burnout (n=20, 11.5%, p=0.277, χ 2=1.18). The third-year students had higher levels of high exhaustion (n=29, 37.7%, p=0.022, χ 2=11.433), high cynicism (n=30, 39%, p=0.122, χ 2=7.27) and burnout (n=14, 18.2%, p=0.079, χ 2=8.359). As Table 4 shows, students of 3rd year (OR=3.704; 95% CI 1.008-13.604; p-value 0.049) have the highest risk level of burnout and it is a significant predictor.

Table 4: Univariate logistic regression analysis for burnout

Variable		Odds Ratio	95% CI		P value
			Lower	Upper	
Gender	Male	0.706	0.34	1.464	0.349
	Female**	1			
Medical year	1st year**	1			
	2nd year	1.62	0.4	6.57	0.499
	3rd year	3.704	1.008	13.604	0.049*
	4th year	1.19	0.254	5.58	0.825
	5th year	1.323	0.301	5.803	0.711
Age	< 22 years	1.499	0.72	3.121	0.28
	≥ 22 years**	1			

* Significant p value ** Used as a reference

Whereas, 4th year students (OR=1.19; 95% CI 0.254-5.58; p-value 0.825) have the lowest risk level of burnout among the five years and it is insignificant statistically. Furthermore, the students who are less than age of 22 (OR=1.499; 95% CI 0.72-3.12; p-value 0.28) have a high risk of getting burnout and it's statistically insignificant. Moreover, male gender (OR=0.706; 95% CI 0.34-1.464; p-value 0.349) has a 0.3 lower risk of burnout than the female gender, but this difference is not statistically significant.

Discussion

This study conducted in Saudi Arabia at King Saud university to determine the prevalence of burnout among medical students. Compared to the reported former studies, we had lower levels of burnout. We studied the influence of (gender, age, and academic year) on the level of burnout. A lot of studies indicate that females were more likely to develop burnout compared to males. Our study shows that there is an association with gender, the results show similar findings with studies of the literature[26,28,31,34].

Our study showed that female medical students have a burnout more than male students and found that female medical students have Cynicism and Emotional exhaustion greater than male medical students. Female medical students have low Professional efficacy comparing to male medical students. There are concerns that burnout is more of an issue for women in which they are susceptible to develop it more than men[7]. In fact, despite, the nature of the gender-burnout relationship still not obvious as this interaction was examined effectively only by a handful of researchers, and empirical results were mixed. Since exaggerated statements about differences between genders can be costly for both sexes[35]. The latter problem becomes even more remarkable when one considers that both genders can experience burnout in various ways. For instance, according to a qualitative review of the burnout literature[7]. Noted that in terms of emotional fatigue, women tend to score greater than men, while men tend to score higher in terms of depersonalization than women. This is in line with the concept of gender roles[36,37]. Furthermore, other studies have published opposing findings show that males suffered from burnout more than females[29,38,39].

For female medical students to have higher risk of having burnout, this might be due to social, cultural, and spiritual factors. In addition of the longer hours spent on study and family needs, females could be working harder to achieve their goals. This may be a factor causing a higher prevalence of

stress among females compared to males[23]. The explanation for this excess risk in women is not clear yet[40].

The results showed that the third-year students had higher levels of high exhaustion, high cynicism, and burnout which could be attributed to the variation between the basic years and the clinical years in aspects of methods of teaching, exams, beside the higher expectation from the physicians and encountering real patients, compared to the fourth year which had lowest percentages of burnout. The fifth-year students showed the highest level of low professional efficacy which could be due to the need to be prepared for the postgraduate exams aside from their ongoing college studying and exams. Our results were different compared to some studies that were conducted in KSAU-HS and IMSIU in Riyadh[29,41]. which showed the highest percentages of burnout among students whom in their final year.

This study has certain limitations that should be considered. First, this research restricted by its cross-sectional design, which cannot establish causality because of that, the actual cause of burn-out among the students cannot be determined. Furthermore, it would be associated with response bias due to a self-administered questionnaire, the response rate among the first and fourth years was low compared to the others. An active reminding of the selected students was done by sending messages via email to overcome such bias. Finally, this study was done to one medical college among many in this big city, consequently, this would not accurately represent the others. Soon would be delightful to expand the research by other researchers to involve another college across Riyadh or Saudi Arabia in general.

Conclusion / Recommendations

Prevalence of burnout was found to be less than estimated documented studies in the region. Gender and academic year were significantly associated with the level of burnout, especially the third academic year, no statistical significance to the association of burnout and age was found. There is a gap in the literature need to be fulfilled to gain more knowledge about causes and effect of burnout.

No conflict of interest to report

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