

Exploring the Relationship between Student Engagement and Burnout Syndrome among Undergraduate Medical Students at the Faculty of Medicine, Suez Canal University (A Cross-Sectional Analytical Study)

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Abstract

Background: Burnout is a psychological syndrome that is considered an amalgamation of exhaustion, cynicism, and inefficacy. It is well known that mental well-being of medical students is heavily affected. Student engagement can be defined as a positive state of mind in terms of studying, where the student tends to be more determined. Engaged students are more resilient to academic stress with a sense of well-being and less feeling of burn out in the future. **Aim:** The study aims at assessing the prevalence of burnout syndrome among undergraduate medical students at the Faculty of Medicine, Suez Canal University (FOM-SCU) and to explore the relationship between student engagement and burnout levels. **Subjects and Methods:** 300 students from all study years participated in the study. The Utrecht Work Engagement Scale–Student Survey (UWES–S) was used to assess the level of student engagement while the Maslach Burnout Inventory–Student Survey (MBI–SS) was used to gauge the extent of burnout syndrome among medical students. **Results:** According to our results, 77.3% of the total study population had two-dimensional burnout and 61.7% of them had three-dimensional burnout. Moreover, 49.7% of the total study population had average student engagement level with the highest prevalence in year three with 54.4%. Overall, student engagement levels were moderately negatively correlated with burnout levels. **Conclusion:** Most of the study population had high levels of burnout. Nearly half of them considered themselves averagely engaged in their studies. Student engagement levels were moderately negatively correlated with burnout levels, denoting the importance of enhancing engagement and preventing burnout.

Keywords: Well-being, Adaptive strategies, Self-efficacy

Introduction

Student engagement can be defined as a positive state of mind where the individual favors to be more determined and con-

stant and of sheer focus on studies and work, undistracted by objects, occasions, individuals, or conduct⁽¹⁾. Engagement can be characterized by three core dimensions: vigor, dedication, and absorption.

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Vigor is defined as immense vitality and mental resilience while studying and aptitude for studying persistently. Dedication alludes to a feeling of significance, enthusiasm, inspiration, and pride in one's studies and opting to challenge oneself to improvement. For absorption, it is the merit of sheer focus and engrossment in one's studies, allowing the utmost utilization of one's time and study⁽²⁾. Academic engagement is a metric that describes students' involvement with their studies, as indicated by the amount of energy students devote to their studies. Engagement is usually gauged by multiple indicators such as how much students enjoy their studies (academic orientation), how consistent they are throughout the course of study (academic application), and how much time and energy they invest in their studies⁽³⁾. Engaged students are willing to adapt to academic stress and maintain well-being and less feeling of burn out, a syndrome which traditionally has been dealt with by health care professionals⁽⁴⁾. Engagement was defined earlier as the contradiction of burnout, which is a psychological syndrome characterized by exhaustion, cynicism, and inefficacy. Burnout in the student population is characterized by (a) exhaustion that can be caused by study demands, (b) a cynical and detached attitude towards studying, and (c) feelings of inefficacy and incompetence⁽⁵⁾. There is a high frequency of poor mental well-being within medical students. Studies postulate that burnout syndrome is a typical form of student distress that affects up to half of the students which could be caused by a wide variety of challenges whether they are related to the training experience that they encounter every day of their study life or not⁽⁶⁾. Burnout seems to have severe consequences on university students like diminished academic performance, impaired

memory ability, reduced confidence, and increased likelihood of premature study dropout⁽⁷⁾. It is found to be also related to low self-efficacy⁽⁸⁾. It may be of great benefit to encourage and improve medical students' engagement in their studies by improving curriculum and using diverse methods of instruction together with providing a motivating environment for learning. Also, medical educators need to be informed with the prevalence of burnout in students and thus to design programs that address this problem, facilitate the educational process of the students, and teach the students to predict the symptoms of burnout and how and where to seek help⁽⁹⁾. As the Faculty of Medicine, Suez Canal University (FOM-SCU) is adopting unique and interactive educational strategies, it may be of great value to assess burnout levels among undergraduate medical students as well as their engagement levels and explore the relationship between these two variables. This study could answer the following questions: What is the prevalence of burnout syndrome among undergraduate medical students at FOM-SCU? What is the level of undergraduate medical students' academic engagement at FOM-SCU? What is the relationship between student engagement and burnout at FOM-SCU? This study aims to assess the prevalence of burnout syndrome among undergraduate medical students at the FOM-SCU and to explore the relationship between students' academic engagement and burnout levels. The Study objectives were 1) To measure the prevalence of study burnout syndrome in undergraduate medical students using the Maslach Burnout Inventory–Student Survey (MBI–SS). 2) To assess the level of student engagement among undergraduate medical students using the Utrecht Work Engagement Scale–Student Survey (UWE–SS). 3) To explore the rela-

tionship between student engagement and burnout syndrome among FOM-SCU medical students

Subjects and Methods

Type of the Study: A cross-sectional analytical design was conducted to assess the prevalence of burnout syndrome among undergraduate medical students at the FOM-SCU and to explore the relationship between students' academic engagement and burnout levels.

Site of the Study: The study was conducted at the FOM-SCU, in Ismailia governorate during the academic year 2017–2018.

Target Population: The study population included the undergraduate medical students in both academic and clinical years at FOM-SCU.

Sample Size and Type of Sample

Three hundred stratified randomly selected participants from all college years were invited to participate in this study. By calculation, the sample size was equal to 50 subjects per batch. The sample was divided proportionately according to the number of the students in each batch as follows: 49 students from the 1st year, 56 students from the 2nd year, 68 students from the 3rd year, 40 students from the 4th year, 44 students from the 5th year, and 43 students from the 6th year.

Data Collection and Instrumentations

1). *Utrecht Work Engagement Scale–Student Survey (UWES–SS):* UWES–S was used to evaluate the student engagement of undergraduate medical students. The Utrecht Work Engagement Scale–Student Survey (UWES–SS) consists of 17 items that assess the three underlying factors of student engagement: vigor (six items), dedication (five items), and absorption (6 items). Each item of this self-report ques-

tionnaire features a seven-point response scale anchored at the extremes by the values of 0 = never and 6 = always. Previous research has proved evidence for the scales' reliability and validity in university students⁽¹⁾.

2) *Maslach Burnout Inventory–Student Survey (MBI–SS)*

MBI–SS was used to measure the burnout syndrome in undergraduate medical students. Previous research has given evidence for the scales' reliability and validity in university students. The Maslach Burnout Inventory–Student Survey is a modified version of the Maslach Burnout Inventory–General Survey (MBI–GS) and evaluates three factors of the burnout syndrome: exhaustion, cynicism, and academic efficacy. The items are fulfilled by students on a seven-point frequency scale ranging from values of 0 = never to 6 = always⁽⁹⁾. It consists of 15 items: five items that measure exhaustion (low is within 0–9, moderate 10–14, and high > 14), four items that measure cynicism (low is within 0–1, moderate 2–6, and high > 6), and six items that measure academic efficacy (low is 22, moderate 23–27, and high ≥ 28). The two-dimensional criteria (high scores for emotional exhaustion and cynicism) and three-dimensional criteria (high scores for emotional exhaustion and cynicism and low scores for academic efficacy) were used as the criteria for the diagnosis of burnout⁽¹⁰⁾. High scores in exhaustion, cynicism, and low scores on academic efficacy are indicative of burnout (academic efficacy items are reversely scored)⁽¹¹⁾. UWES–SS and MBI–SS were distributed to students in paper format to assess their engagement and burnout levels. Ethical considerations were followed by obtaining consent from the Vice Dean for students' affairs and education at FOM-SCU, also acceptance from the research ethics committee at FOM-SCU

were obtained. All participants of the study will be given explanation about the nature of the study, they had the right to refuse to be included in the study. Confidentiality regarding the responses of the participants was guaranteed by the anonymity of questionnaires.

Statistical Analysis

Data analysis in this study was done using Statistical Package for the Social Sciences (SPSS version 23). Data were tested for normality using the Kolmogorov-Smirnov test which showed study variables were not normally distributed. Therefore, we

used nonparametric test for data analysis. Data was presented in the form of the mean and standard deviation of each item and factor. Tables and figures were used when appropriate. A p-value of < 0.05 was statistically significant.

Results

1-Demographic Data of the Study Population

The gender difference as well as number of responses according to the year of study was mentioned in figure 1.

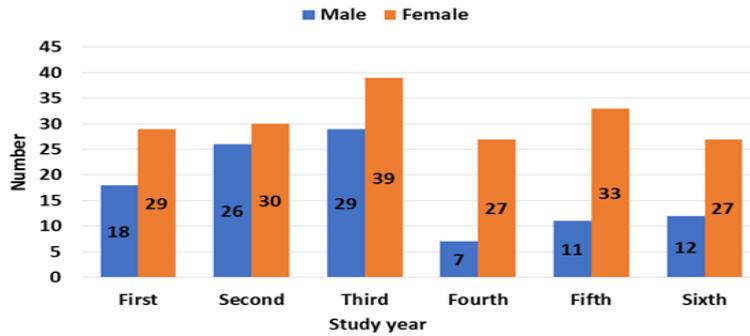


Figure 1: Gender distribution among study population (n = 300)

2- Prevalence of Student Burnout among Undergraduate Medical Students

Table 1 shows that 77.3% of the total study population had 2D burnout with the high-

est prevalence in year two as 83.9% of it had 2D burnout. Followed by year six with 83.7% and year five with 81.8% 2D-burnout levels.

Table 1: Two-dimensional and Three-dimensional Burnout Prevalence									
Year		First	Second	Third	Fourth	Fifth	Sixth	Total	P
Variable	Attribute	n (%)							
2D Burnout	No	13 (26.5)	9 (16.1)	18 (26.5)	13 (32.5)	8 (18.2)	7 (16.3)	68 (22.7)	0.29
	Yes	36 (73.5)	47 (83.9)	50 (73.5)	27 (67.5)	36 (81.8)	36 (83.7)	232 (77.3)	
	Total	49 (100)	56 (100)	68 (100)	40 (100)	44 (100)	43 (100)	300 (100)	
3D Burnout	No	24 (49)	22 (39.3)	24 (35.3)	17 (42.5)	13 (29.5)	15 (34.9)	115 (38.3)	0.46
	Yes	25 (51)	34 (60.7)	44 (64.7)	23 (57.5)	31 (70.5)	28 (65.1)	185 (61.7)	
	Total	49 (100)	56 (100)	68 (100)	40 (100)	44 (100)	43 (100)	300 (100)	

Years one and three had the same 2D-burnout levels of 73.5% and year four was with the lowest 2D-burnout levels as 67.5% of its students had 2D burnout. In addi-

tion, 61.7% of the total study population had 3D-Burnout with the highest prevalence in year five as 70.5% of it had 3D burnout. Followed by year six with 65.1%

and year three with 64.7% 3D-burnout levels. Years two and four had 60.7% & 57.5% 3D-burnout, respectively. Year one was with the lowest 3D-burnout levels as 51% of its students had 3D burnout. There were no statistically significant differences between the study years regarding

2D- & 3D-burnout levels in each study year and the total study population.

3- Student Engagement Levels among Undergraduate Medical Students

Table 2 shows that student engagement distribution prevails among each year of.

Table 2: Student Engagement Prevalence (UWES-SS)

Year		First	Second	Third	Fourth	Fifth	Sixth	Total	p-
Variable	Attribute	n (%)							
Student Engagement (UWES-SS)	Very low	1 (2)	3 (5.4)	3 (4.4)	1 (2.5)	3 (6.8)	4 (9.3)	15 (5)	0.232
	Low	9 (18.4)	12 (21.4)	12 (17.6)	9 (22.5)	14 (31.8)	8 (18.6)	64 (21.3)	
	Average	22 (44.9)	25 (44.6)	37 (54.4)	21 (52.5)	21 (47.7)	23 (53.5)	149 (49.7)	
	High	15 (30.6)	14 (25)	14 (20.6)	8 (20)	3 (6.8)	3 (7)	57 (19)	
	Very high	2 (4.1)	2 (3.6)	2 (2.9)	1 (2.5)	3 (6.8)	5 (11.6)	15 (5)	
	Total		49 (100)	56 (100)	68 (100)	40 (100)	44 (100)	43 (100)	

the study population. The highest levels in each study year and the total study population were shown in average values of student engagement. 49.7% of the total

study population had average student engagement values with the highest prevalence in year three as 54.4% of it had average values of student engagement.

Table 3: Significant Correlations between Levels of Components in Study

Variable 1	Variable 2	ρ	p-Value
Total Burnout	Total Engagement	-0.642	≤ 0.001

Finally, came year six with 53.5% and year four with 52.5% average values of student engagement levels. Years five and one had 47.7% & 44.9% average values of student engagement. Year two maintained the average value of student engagement as 44.6% of its students had average levels of student engagement. There were no statistically significant differences between the study years regarding student engagement levels in each study year and the total study population.

4- Correlations between Variables Using

Spearman's Rank Correlation Coefficient

The Spearman's correlation between the two questionnaires revealed that the relationship was a moderately negative statistically significant correlation between student engagement and student burnout in FOM-SCU students. The Spearman's correlation coefficient was -0.642 as shown in table 3. Table 4 shows the significant correlations between the study variables and the totals of the UWES-SS & MBI-SS questionnaires using the Spearman's rank correlation coefficient.

Table 4: Significant Correlations between Study Variables

Study Variables	Vigor	Dedication	Absorption	Total Engagement	Exhaustion	Cynicism	Efficacy	Total Burnout
Vigor								
Dedication	0.656							
Absorption	0.713	0.625						
Total Engagement	0.883	0.855	0.881					
Exhaustion			0.158	0.129				
Cynicism		-0.235		-0.157	0.534			
Efficacy	0.584	0.659	0.493	0.645	0.229			
Total Burnout	-0.579	-0.659	-0.491	-0.642	-0.229			

Correlations are significant at the 0.05 level (2-tailed)

Discussion

According to the two-dimensional criteria of burnout (high exhaustion + high cynicism), our study proposed that 77.3% of the total study population had burnout with the highest prevalence in year two and then year six. We believe that this is worrying as burnout is a gradual process that builds up over the years and for academic years students to have the highest levels means that the stress imposed on them may be due to high curriculum content. In year two for example, students study new subjects within complex modules e.g., cardiovascular, and respiratory modules. Additionally, students go through complicated skills that are studied in the clinical skill labs and primary health care units (PHC) as abdominal examination and chest examination. While year six exhibits the second highest prevalence is quite explainable as burnout is cumulative and additionally, they face the increased stress and preparations for graduation and final exams including multiple oral exams and Objective Structured Clinical Examination (OSCE) in different disciplines. These findings are matching with those of Dos Santos Boni et al⁽¹⁰⁾ whose study population included all the study years at the Barretos School of

Health Sciences, a private college in Brazil founded by Dr. Paulo Prata in 2012 and is divided into four years of academic and clinical content and concluded that 44.9 % of students had burnout and the highest prevalence was in year one (academic phase). The same study showed that the second-highest prevalence was in year four (the last clinical year). Using the stricter and the recommended tridimensional criteria of burnout (high exhaustion + high cynicism + low efficacy), our study indicated that 61.7% of the total study population had 3D-burnout with the highest prevalence found in year five. This can be explainable as when adding the efficacy dimension to the equation we find that the clinical years would have the highest burnout levels as the students would perceive themselves not ready enough to deal with patients and be responsible physicians who will be able to manage different cases successfully. Additionally, in our medical school, in year five students are exposed to new complicated disciplines (as ophthalmology, orthopedics and dermatology) that requires long study hours with short duration of each module. Using the tridimensional criteria, our results are to some extent different from other studies as they indicated higher prevalence and are not congruent with

those of Costa et al⁽¹¹⁾, another study that was done randomly on medical students in 2009 at the Universidade Federal de Sergipe, Brazil (12-semester study) and showed that only 10.3% of students had burnout levels. Our study showed that 49.7% of the total study population had average overall student engagement with the highest levels in year three, followed by year six. This could be explained by the fact that these years are final phase years and students had better understand of each discipline and are aware of all requirements. The previous finding is comparable with those of Asghar⁽¹²⁾, another study that was performed on private university students and showed that 57% of participants had average engagement levels. The previous findings are also congruent with another study on various higher education and university students which showed that 44% experienced adequate engagement levels⁽¹³⁾. Our study revealed that exhaustion had a weak positive correlation with both absorption and total engagement level which may be explained by the probability that when students get actively engrossed in their studies and spend most of their time studying, they get exhausted and this will lead also to decreased absorption and eventually will affect their engagement; however, exhaustion is only one dimension of it. These results are inconsistent with other studies which explored the relationship between engagement and burnout like a study on medical students and a study on undergraduate hospitality and tourism students at the Eastern Mediterranean University in Northern Cyprus^(14,15). Both showed a weak-to-moderate negative correlation between exhaustion and absorption. Additionally, our study showed that cynicism (depersonalization) had a weak negative correlation with dedication and total engagement level which could

be attributed to the fact that as the students are dedicated and attached to their studies, they will experience less depersonalization which highlights the importance of enhancing the involvement of the students and their engagement with their studies and not ignoring this fundamental concept. Our results are similar to those of those of Schaufeli et al⁽¹⁾ who conducted a study on 314 undergraduate university students at the University of Castellón, Spain that showed a moderate negative correlation between cynicism and dedication. Collectively, our study also showed that student engagement levels were moderately negatively correlated with burnout levels which is consistent with another study that showed a negative moderate correlation between them which stresses the importance of enhancing engagement and preventing burnout⁽¹⁾.

Limitations of the Study

- This research was conducted at only one medical school in Egypt (FOM-SCU) which might limit the generalizability of the findings.
- Some of our results regarding the engagement prevalence were compared with other studies including nonmedical university students due to a lack of studies measuring the engagement prevalence in medical students.
- This research measured students' engagement and burnout levels from the students' point of view; therefore, the researchers must assume that the students responded truthfully.
- This research did not investigate the possible causes (study load, stressors, heavy curriculum, peer support, or teachers' training) and the consequences (improved per-

formance, failure, dropout, or addiction) of engagement and burnout in undergraduate medical students.

- Reliance is only on quantitative analysis. However, a combination of quantitative and qualitative analysis might permit further investigation of current obstacles standing in the way of student engagement and possible causes of student burnout.

Conclusion

This is the first study to evaluate the medical students' student engagement and explored the relationship between it and student burnout in Egypt. The researchers used valid instruments used (UWES-SS and MBI-SS) that were tested for reliability. The results could be representative of all undergraduate medical students as the sample included students from all the six study years. It can be concluded from our study that the majority of the medical students under study had high burnout levels: including exhaustion, cynicism, and low-level academic efficacy. Our study also concluded that nearly 50% of the medical students under study perceived themselves as averagely engaged in their studies as they had average vigor, absorption, and dedication. An important conclusion from the current study is the existence of significant relationships between academic efficacy and engagement levels including all the subscales of vigor, dedication, and absorption. Academic efficacy had also a moderate positive correlation with vigor, dedication, absorption, and total engagement scales. Overall, student engagement was found to be moderately negatively correlated with burnout which stresses the importance of enhancing engagement and preventing burnout. There-

fore, burned-out students could have decreased engagement levels and vice versa.

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Conflict of Interest: The authors report no conflicts of interest. The authors alone are responsible for the content and writing of this article

Ethical approval: This research was approved by the FOM-SCU research ethics committee

Informed consent: Informed consent was collected from all participants in the study

References

1. Schaufeli WB, Salanova M, Gon Alez-ro VA. et al. the Measurement of Engagement and Burnout: a Two Sample Confirmatory Factor Analytic Approach. *J Happiness Stud* 2002; (3):71–92.
2. Schaufeli WB, and Bakker AB. Job demands, job resources, and their relationship with burnout and engagement: A multi-sample study. *J Organ Behav* 2004;(25):293–351.
3. Stoeber J, Childs JH, Hayward JA. et al. Passion and motivation for studying: Predicting academic engagement and burnout in university students. *Educ Psychol* 2011;31(4):513–28.
4. Casuso-Holgado MJ, Cuesta-Vargas AI, Moreno-Morales N. et al. The association between academic engagement and achievement in health sciences students. *BMC Med Educ* 2013;13:33.
5. Morgan B, De Bruin GP, De Bruin K. Operationalizing burnout in the Maslach Burnout Inventory-Student Survey: Personal efficacy versus personal inefficacy. *South African J Psychol* 2014;44(2):216–27.
6. Dyrbye LN, Thomas MR, Harper W. et al. The learning environment and medical student burnout: a multicentre study. *Med Educ*

- 2009;43:274–82.
7. Schaufeli WB, Martínez IM, Pinto AM. et al. Burnout and Engagement in University Students. *J Cross Cult Psychol* [Internet] 2002;33(5):464–81. Available from: <http://journals.sagepub.com/doi/10.1177/0022022102033005003>
 8. Yang H-J, and Farn CK. An investigation the factors affecting MIS students' burnout in technical vocational college. *Comput Human Behav* 2005;21(6):917–32.
 9. Salmela-Aro K, and Kunttu K. Study Burnout and Engagement in Higher Education. *Unterrichtswissenschaft* 2010;38:318–33.
 10. Dos Santos Boni RA, Paiva CE, De Oliveira MA. et al. Burnout among medical students during the first years of undergraduate school: Prevalence and associated factors. *PLoS One* 2018;13(3):1–15.
 11. Costa DO, Santos SA, Santos ATR de A. et al. Burnout Syndrome and associated factors among medical students: a cross-sectional study. *Clinics* 2012;67(6):573–9.
 12. Asghar HM. A Preliminary Investigation of Student's Work Engagement and Anxiety. Chapter 25 *Patterns of Engagement and Anxiety in University Students: First Year to Senior Year. Students' work engagement & anxiety: Are they related?* *InScience* 2014;248–59.
 13. Salmela-aro K, and Read S. Study engagement and burnout profiles among Finnish higher education students. *Burn Res* [Internet] 2017;7(August):21–8. Available from: <https://doi.org/10.1016/j.burn.2017.11.001>
 14. Liu H, Yansane AI, Zhang Y. et al.. Burnout and study engagement among medical students at Sun Yat-sen University, China. *Medicine (Baltimore)* 2018;97(15).
 15. Uludag O, and Yaratan H. The effect of burnout on engagement : An empirical study on tourism students. *J Hosp Leis Sport Tour Educ* 2010;9(1):13–23.