Journal Homepage: - www.journalijar.com

INTERNATIONAL JOURNAL OF ADVANCED RESEARCH (IJAR)

Article DOI: 10.21474/IJAR01/14856
DOI URL: http://dx.doi.org/10.21474/IJAR01/14856

RESEARCH ARTICLE

CORRELATION OF BURNOUT DIMENSIONS AND SUBSTANCE USE AMONG TAIBAH UNIVERSITY MEDICAL STUDENTS IN AL-MADINAH AL-MUNAWARAH, SAUDI ARABIA

Afaf Mubarak Al Johani[1], Eyas Abdulqader Alrehaili[3], Faisal Essam Khalil[2], and Ohood Mubarak Aljohani[4]

1. Family Medicine Academy of Medina, Saudi Arabia.
2. Program of Family Medicine Postgraduate Studies, Saudi Arabia.
3. Faculty of Medicine, Taibah University, Saudi Arabia.
4. Pharmacy Department, King Faisal Specialist Hospital & Research Center, Saudi Arabia.

Manuscript Info

Manuscript History
Received: 05 April 2022
Final Accepted: 08 May 2022
Published: June 2022

Key words:-
Burnout, Medical Students, Saudi Arabia, University

Abstract

Objectives: To assess the level of burnout dimensions and investigate their correlation with substance abuse among undergraduate medical students at Taibah University in Al-Madinah Al-Munawarah, Saudi Arabia.

Methods: This was an analytical study conducted at Taibah University, Al-Madinah, from January 2021 to July 2021. A self-administered questionnaire consisted of two sections. The first section identified the socio-demographic and personal characteristics of the participants. The second section presented the Maslach Burnout Inventory-Student Survey (MBI-SS). SPSS v26 was used for data analysis.

Results: Of the 534 participants, 53.9% were females. The students' mean (SD) age was 21.4 (1.59) years. Findings showed that 6% of the medical students had once used one or more types of substances, of which the majority (53.3%) used sleeping pills or sedatives. The average emotional exhaustion mean score of students in the survey population was 3.65 (1.46) out of 5. The students' perceived emotional exhaustion scores were correlated significantly and positively with the total number of abused substances, $p<0.050$. The medical students' total number of substance-used materials correlated significantly but negatively with their sense of personal study effectiveness, $p<0.050$. Students who had a positive history of substance use showed significantly higher cynicism (M=3.88) compared to students who had never abused substances (M=3.00) on average, $p<0.001$.

Conclusion: Medical students at Taibah University demonstrated higher mean scores for emotional exhaustion and cynicism but a lower mean score for personal effectiveness. The students' top burnout indicator was emotional exhaustion, followed by personal efficacy and cynicism.

Introduction:-

Burnout is a mental condition defined as a prolonged response to chronic emotional and interpersonal stressors on the job [1]. The three key dimensions or subscalesof burnout are emotional exhaustion (EX), feelings of cynicism (CY), lack of accomplishment and reduced professional efficacy (PE) [1, 2]. The exhaustion component represents

Corresponding Author:- Afaf Mubarak Al Johani
Address:- Family Medicine Academy of Medina, Saudi Arabia.

the fundamental individual stress dimension of burnout. It refers to feelings of being overextended and depleted of one's emotional and physical resources. At the same time, cynicism, also known as depersonalization, represents the interpersonal context dimension of burnout that refers to an excessively detached response to different aspects of the job [1]. The element of reduced efficacy or accomplishment represents the self-evaluation dimension of burnout. It refers to feelings of incompetence and a lack of achievement and productivity at work [1]. Burnout was initially investigated among employees and restricted to those who work in human services and educational institutions [2,3]. In recent years, burnout research has not only been expanded to a wide range of occupations, but it has also included students. Students' core duties are structured, persistent and directed toward specific goals, for example, passing examinations and attaining adegree.They may become exhausted and cynical about their studies, resulting in burnout [4].Yang (2004) defines student burnout as students in the learning process who, because of course stress, course load or other psychological factors, display a state of emotional exhaustion, a tendency to depersonalization and a feeling of low personal accomplishment [5]. It has been shown that burnout is prevalent among residents and practicing physicians due to prolonged exposure to high levels of work-related stress [6]. The theory that burnout at work has its roots in students' academic studies increases the importance of understanding the phenomenon since medical students are trained to be future physicians [7]. Studies have also shown that medical students have a poorer mental quality of life compared to individuals of the same age in the general population [8]. Stress, burnout and sleep disorders might slowly develop during the academic years. These problems are interconnected and can influence each other and lead to serious health consequences, such as anxiety, depression, suicidal ideation, substance use, thoughts of dropping out, reduced empathy, low motivation for learning and low academic performance [9,10]. A diverse range of burnout levels among medical students has been reported internationally. Recent studies indicate a high prevalence of burnout, reaching 71% and 75% [11,12]. Drug use by medical students has been studied in many countries [13]. A study in the United States reported that 78% of medical students had used psychoactive drugs at some point in their lives. A Turkish study found that 22% of junior students, 20% of senior students and 9% of residents used sedative drugs. A study in the Republic of Macedonia found that over 50% of students had used alcohol, specifically to relieve stress, and 12% had used hypnotics. Other studies conducted in Brazil, Nigeria, Vietnam, Norway, Canada, the United States and other countries reported similar results. Between 3% and 7% of Saudis are illicit drug users and the Saudi government spends, on average, 3.6 billion riyals annually on their treatment and rehabilitation. Most of the users (70%) are young, with age between 12 and 22 years old [14]. In viewing the literature, it is essential to understand students' mental health better since it has implications and is involved in their wellbeing and education process. The purpose of this study was to assess the level of burnout dimensions and investigate their correlation with substance abuse among undergraduate medical students at Taibah University in Al-Madinah Al-Munawarah, Saudi Arabia.

Methodology:-

This was an analytical study conducted at Taibah University, Al-Madinah, from January 2021 to July 2021. A self-administered questionnaire consisted of two sections. The first section identified the socio-demographic and personal characteristics of the participants, such as age, gender, marital status and academic year. The second section presented the Maslach Burnout Inventory-Student Survey (MBI-SS), which is the modified version of the Maslach Burnout Inventory-General Survey (MBI-GS), which has been considered the gold standard for measurement of burnout [2]. It has been validated by Schaufeli, demonstrating adequate reliability among Spanish, Portuguese and Dutch students [21]. The MBI-SS has been shown to have sufficient reliability and factorial validity among Chinese students [14]. It consists of 16 questions focusing on the triad of exhaustion (5 items), cynicism (5 items) and professional efficacy (6 items). Examples are: "I feel emotionally drained by my studies" in the EX items, "I have become less enthusiastic about my studies" in the CY items, and "I can effectively solve the problems that arise in my studies" in the PE items. Items on the burnout score according to a reported frequency on a seven-point Likert scale from 0 to 6: 0 = never; 1 = once a year or less; 2= once a month or less; 3 = once a month; 4 = once a week; 5 = once a week; and 6 = every day.High scores on cynicism and exhaustion, and low scores on professional efficacy (professional efficacy items are reverse scored) indicate high burnout levels. In the 2016 publication of the MBI Manual, 4th edition, the cut-off scores were removed due to their having no diagnostic validity [15]. Different substances are listed, and medical students answer with Yes/No whether they have previously abused any substance.

Statistical Methods

For data analysis, SPSS v.26 was used. Mean and standard deviation were used to describe continuously measured variables, and frequency and percentages were used for categorically measured variables. Pearson's correlation test was applied to assess correlations between metric variables and the independent t-test. One-way ANOVA tests were

used to determine statistical significance for mean differences across the levels of binary and categorical variables of more than two levels. Corrections to bivariate analysis tests and p-values were applied when the equal variance statistical assumption was found to be violated for the t-test and the One-way ANOVA tests alike. Multivariate Linear Regression analysis was used to assess the statistical significance of predictors of students' measured burnout concepts. As a secondary analysis, the medical students' odds of having a previous history of substance abuse were analyzed with Multivariate Logistic Binary Regression Analysis. The association between students' related factors and substance abuse was expressed as an odds ratio with an associated 95% confidence interval. The alpha significance level was considered at 0.050.

Results:-

The number of medical students enrolled at Taibah University at the time of the survey administration was 686. Five hundred thirty-four students completed the survey, resulting in a 77.8% response rate. Of the 534 participants, 53.9% were females, and 46.1% were male students. The students' mean (SD) age was 21.4 (1.59). 2.1% of the student population were married, and 0.9% had children. Percentages of students in each year of study are demonstrated in Table 1 with the sociodemographic characteristics.

Table 1:- Descriptive analysis of students' demographic characteristics (n=534).

Variables	Frequency	Percentages
Gender		
Male	288	53.9%
Female	246	46.1%
Age (mean±SD)	21.46±1.59 years	
Age group		
≤20 years	174	32.6%
21-23 years	317	59.4%
≥24	43	8.1%
Marital status		
Single	523	97.9%
Married	11	2.1%
Having children		
No	529	99.1%
Yes	5	0.9%
Year of study		
2nd year	113	21.2
3rd year	95	17.8
4th year	102	19.1
5th year	119	22.3
6th year	105	19.7

The medical students answered with Yes/No whether they had previously abused any substances. Findings showed that 6% of the medical students had once used one or more types of substance. 18.8% of them had used cannabis, 18.8% had used prescription stimulants, and 3.1% used methamphetamines, but 6.2% had used inhalant gases like nitrous oxide, glue and paint diluents. 53.1% had used sleeping pills and sedatives, and another 9.4% had used hallucinogens. 6.2% used prescription opioids and 9.4% used substances like alcohol and antidepressants (Table 2).

Table 2:- Reported substance use.

	Frequency	Percentage(%)
Substance use		
No	502	94
Yes	32	6
Type of substance used		
Cannabis (marijuana, Pot, Grass, Hash, etc.)	6	18.8
Prescription stimulants (Ritalin, concerta, Dexedrine, Adderall, Diet pills, etc.)	6	18.8

Methamphetamine (speed, crystal meth, ice, etc.)	1	3.1
Inhalants (nitrous oxide, glue, gas, paint thinner, etc.)	2	6.2
Sedatives or sleeping pills (valium, serepax, Ativan, Xanax, Librium, Rohypnol, GHB, etc.)	17	53.1
Hallucinogens (LSD, acid, mushrooms, PCP, Special K, ecstasy, etc.)	3	9.4
Prescription opioids (fentanyl, oxycodone, hydrocodone, methadone, buprenorphine, etc.)	2	6.2
Other substances (antidepressants, alcohol)	3	9.4

GBH: Gamma-hydroxybutyric Acid. LSD: Lysergic Acid Diethylamide. PCP: Phenylcylohexyl Piperidine

Descriptive statistics of the burnout subscales are presented in Table 3. Mean scores are reported to gauge an average student's score on a given scale range. For example, the average emotional exhaustion meansa score of students in the survey population was 3.65 (1.46) out of 5.

Table 3:- Perceived burnout subscale mean scores.

	Mean	**Standard deviation (SD)**
Perceived exhaustion mean score	3.65	1.46
Perceived personal effectiveness mean score	3.46	1.12
Perceived cynicism meanscore	3.05	1.37

The Bivariate Pearson's correlation test showed that the students' perceived emotional exhaustion score correlated significantly and positively with their total number of abused substances, $r=0.10$, $p<0.050$. Although emotional exhaustion correlated weakly and positively with the substances used by the medical students, the results indicate that as the students' level of emotional exhaustion tended to rise, their corresponding substance abuse types tended to vary on average. Also, the medical students' total number of substance-used materials correlated significantly but negatively with their sense of personal study effectiveness, $r=-0.11$, $p<0.050$. More personally effective medical students reported slightly less substance use on average. The students' perceived cynicism correlated significantly and positively with the total number of substance use.

An independent samples t-test showed that students who had a positive history of substance use measured significantly higher cynicism (M=3.88) compared to students who had never abused substances (M=3.00) on average, $p<0.001$. The individual abuse of cannabis, stimulants, methamphetamines, inhalant gases, hallucinogens and prescription opioids did not correlate significantly with their mean perceived cynicism. Still, students who had previously abused sedatives and sleeping pills measured significantly greater cynicism (M=4.10) compared to students who never used these materials on average (M=3.02), $p=0.001$ according to an independent t-test (Table 4).

Table 4:- Descriptive bivariate analysis of the medical students' mean CY.

	Mean(SD) - CY	**Test statistic**	**P value**
Reported substance use			
No	3.00 (1.36)	T(532)=3.55	<0.001
Yes	3.88 (1.28)		

The students' history of illicit substance abuse, in general, did not correlate significantly with their mean perceived personal effectiveness, $p=0.119$(Table 5).

Table 5:- Descriptive bivariate analysis of the medical students' mean PE.

	Mean(SD) - PE	**Test statistic**	**P value**
Reported substance use			
No	3.48 (1.16)	t(532)=1.56	0.119
Yes	3.16 (1.10)		

The students' positive history of substance use of any materials correlated positively with their mean perceived emotional exhaustion, students who are known to have abused any substance measured significantly higher mean emotional exhaustion (M=4.41) compared to the medical students known to not have used substance (M=3.60),

p=0.003, according to the independent sample t-test in table 6.In particular,students who had previously used sedatives or sleeping pills measured significantly higher mean emotional exhaustion (M=4.79) compared to those who never used such substances (M=3.62), p<0.001, but the abuse of other substances may not necessarily correlate significantly with the medical student's perceived emotional exhaustion when analyzed with the independent t-test.

The students' positive history of substance use of any material correlated positively with their mean perceived emotional exhaustion. Students who were known to have abused any substance measured significantly higher mean emotional exhaustion (M=4.41) compared to the medical students known to not have used substances (M=3.60), p=0.003, according to the independent sample t-test in table 6. In particular, students who had previously used sedatives or sleeping pills measured significantly higher mean emotional exhaustion (M=4.79) compared to those who had never used such substances (M=3.62), p<0.001, but the abuse of other substances may not necessarily correlate significantly with the medical student's perceived emotional exhaustion when analyzed with the independent t-test.
The students' positive history of substance use of any material correlated positively with their mean perceived emotional exhaustion. Students who were known to have abused any substance measured significantly higher mean emotional exhaustion (M=4.41) compared to the medical students known to not have used substances (M=3.60), p=0.003, according to the independent sample t-test in table 6. In particular, students who had previously used sedatives or sleeping pills measured significantly higher mean emotional exhaustion (M=4.79) compared to those who had never used such substances (M=3.62), p<0.001, but the abuse of other substances may not necessarily correlate significantly with the medical student's perceived emotional exhaustion when analyzed with the independent t-test.

Table 6:- Descriptive bivariate analysis of medical students mean EX.

	Mean(SD) - EX	**Test statistic**	**P value**
Reported substance use			
No	3. 60(1.46)	t(532)=3.04	0.003
Yes	3.16 (1.26)		

The medical students' odds of previous illicit substance abuse were analyzed via multivariate binary logistic regression analysis. The analysis model showed that the students' year of study correlated significantly but negatively with their odds of having previously used some form of substance; as the students' year of study rose by one year, their odds of substance abuse declined by a factor equal to 100*(1-0.607)= 39.3% times less, p=0.039, accounting for the other predictor variables in the analysis model. To illustrate the impact of study years on the medical students' probability of substance abuse, the model-predicted likelihood of student's abuse of substances is represented on the y-axis and their study years on the x-axis in figure A, which makes it even more evident that as students' years of study rose, their corresponding predicted probability of substance abuse declined. The students' perceived cynicism correlated significantly and positively with greater odds of having previously used some form of substance, 1.56 times more or 56% times higher. As the students' mean perceived cynicism rose by one point on the Likert scale, their corresponding odds of substance abuse increased by a factor equal to 56% times more, p=0.034. Considering the other predictors in the analysis model, the student's year of study predicted fewer odds of substance abuse, but greater cynicism predicted greater odds of substance abuse (Table 7).

Table 7:- Multivariate logistic binary regression analysis of the medical students'odds of previous substance use abuse.

	Multivariate adjusted Odds Ratio	**95% C.I. for OR**		**P-value**
		Lower	Upper	
Sex=Male	0.873	0.372	2.049	0.755
Age group	2.035	0.716	5.787	0.182
Year of study	0.607	0.378	0.975	0.039
Exhaustion mean score	1.318	0.854	2.034	0.212
Personal effectiveness mean score	0.950	0.670	1.349	0.776
Cynicism mean score	1.563	1.035	2.360	0.034
Constant	0.003			<0.001

Discussion:-

Burnout is a mental condition defined as a prolonged response to chronic emotional and interpersonal stressors on the job. The three key dimensions or subscales of burnout are: emotional exhaustion, feelings of cynicism, lack of accomplishment or reduced professional efficacy [1]. To the best of our knowledge, this is the first study that has investigated the correlation between burnout subscales and substance use among medical students at Taibah University, Al-Madinah Al-Munawarah. An objective of this study was to measure the level of burnout dimensions in medical students. According to the Maslach Burnout Inventory Manual, high scores on cynicism and emotional exhaustion, and low scores on professional efficacy indicate high burnout. Comparing the respondents' scores to the scores of others leaves the responsibility for making judgments about whether the experience of each aspect of burnout is sufficiently frequent to be of concern to the respondent or other people who are in a position to take corrective steps [15]. When comparing the scores of the burnout subscales of the Schaufeli and the Leiter Database (N = 47,800) (1996-2018) [15], medical students in our sample demonstrated higher mean scores for both exhaustion and cynicism subscales but a low mean score for personal effectiveness. For instance, the medical students' overall emotional exhaustion mean score was 3.65 (1.46) out of 5, which highlights a substantially high level of emotional exhaustion perceived by these students; this is equivalent to 73.05% out of a maximum of 100% emotional exhaustion. This was particularly clear when compared to the combined mean scores of the exhaustion subscale in the Schaufeli and the Leiter Database, which was 2.26 (1.47). The student's overall level of personal effectiveness was measured at 3.46 (1.12) out of 5, which is equivalent to a 69.2% level of personal effectiveness, denoting a generally good level of personal efficacy perceived by the medical students on average. However, it is a lower score in comparison with the Schaufeli Database and the Leiter Database, which both had 4.34 (1.17). The students' level of cynicism was measured with a mean of 3.1 (1.37) out of 5, which is equal to 61.1%, indicating an overall substantial but low level of cynicism perceived by the medical students. Nevertheless, in the Schaufeli Database and the Leiter Database, the mean score of cynicism was 1.74 (1.36). These scores can be used to compare future studies that investigate burnout in medical students. In this study, the students' top burnout indicator was exhaustion, followed by personal effectiveness and cynicism. In 2017, Alshmrani mentioned that around 7 to 8% of Saudis report using drugs [14]. In the present study, 6% of the medical students had previously used one or more types of substances, which is consistent with the previous data, denoting that the percent of reported substance use didn't change over the past few years in this study sample. In contrast, a study conducted with medical students in New Zealand showed that 39% of medical students reported substance use, which is a much higher rate than ours [16]. In agreement with another study conducted in 2013 [17], this could be explained by the fact that Saudi Arabia is an Islamic country, and the values and societal norms are deeply rooted in religion. It could also be attributed to the high stigma associated with recreational substance use in Saudi culture. It is possible that some participants in this sample were not comfortable disclosing their substance use. Moreover, there are religious and legal prohibitions against the possession or consumption of alcohol and narcotic substances [17], yet a portion of Saudis still consume drugs. The most commonly abused substances among Saudis are amphetamines, heroin, alcohol and cannabis, and a majority of people who use drugs are addicted to multiple substances [18]. However, most of those who reported using substances in this study, 53.1%, had abused sleeping pills and sedatives. Cannabis use was reported by 18.8%, alcohol and antidepressants were reported by 9.4%, and 3.1% used amphetamines. Another objective of our survey was to investigate the correlation between burnout subscales and substance use. The present study showed a significant positive correlation between the perceived emotional exhaustion by the medical students and the total number of abused substances, $r=0.10$, $p<0.050$. The medical students' total number of substance-used materials correlated significantly but negatively with their sense of personal study effectiveness, $r=-0.11$, $p<0.050$. More personally effective medical students reported slightly less substance use. Similarly, Oglesby et al. found that emotional exhaustion was significantly positively correlated with binge drinking. Also, the sense of personal accomplishment was significantly negatively associated with binge drinking [19]. Students who had previously abused sedatives or sleeping pills measured a significantly higher mean emotional exhaustion of 4.79. Most researchers would agree that substance use and academic performance are most likely related bidirectionally, such that substance use both influences and is influenced by academic performance [20]. The students' perceived cynicism correlated significantly and positively with the student's total number of substances abused, $r=0.157$, $p<0.010$, suggesting that the more cynical medical students will likely report a history of substance use. Furthermore, students who had a positive history of substance use measured a significantly higher mean of cynicism ($M=3.88$) compared to students who had never abused substances ($M=3.00$) on average, $p<0.001$. As the students' year of study rose by one year, their odds of substance abuse declined by 39.3%, $p=0.039$. This result stood in stark contrast to what Talih et al.'s study paper said; it showed a significant difference between the four years of medical school in alcohol use, illicit substance use and cannabis use. First-year medical students had lower alcohol, illicit substance and cannabis use rates than second, third and fourth-year students [21]. 70% of all people who use drugs

are 12–22 years old [14]. It is essential to mention that all the participants (N=172) were > 20 years old, and 56% of them were > 25 years old, whereas nearly 33% of our participants (N=534) were < 20 years. Taking this into account could explain the contrasting results.

Conclusion:-

Compared to the Schaufeli and the Leiter databases in the MBI statistical manual, medical students at Taibah University demonstrated higher mean scores for emotional exhaustion and cynicism but a lower mean score for personal effectiveness. The students' top burnout indicator was emotional exhaustion, followed by personal efficacy and cynicism. There was a significant positive correlation between emotional exhaustion and the total number of abused substances, and a significant positive correlation between cynicism and the number of abused substances. However, the medical students' total number of substance abuse materials correlated significantly but negatively with their sense of personal study effectiveness; the more personally effective medical students reported slightly less substance use. Hopefully, this study will provide critical insights into a better understanding of the mental health of medical students. It will help direct more attention from medical educators and health care personnel toward this aspect. Adequate facilities should be available, and students should be encouraged to seek help.

References:-

1. Maslach C, Schaufeli WB, Leiter MP. Job Burnout. Annual Review of Psychology 2001;52:397–422.
2. Maslach C, Jackson SE, Leiter MP. Maslach Burnout Inventory: Test Manual. 3rd ed. Palo Alto, CA: Consulting Psychologists Press;1996.
3. Maslach C. Burnout: the cost of caring. Los ALtos, CA: Malor Books;2003.
4. Schaufeli WB, Taris TW. The conceptualization and measurement of burnout: Common ground and worlds apart The views expressed in Work &StressCommentaries are those of the author(s) and do not necessarily represent those of any other person, organization, or the journal. Work & Stress 2005;19:256–62
5. YangH-J.Factorsaffectingstudentburnoutandacademicachievementinmultiple enrollment programs in Taiwan's technical-vocational colleges. International Journal of Educational Development2004;24:283–301.
6. McCray LW, Cronholm PF, Bogner HR, Gallo JJ, Neill RA. Resident physician burnout: Is there hope? Fam Med2008;40:626-32.
7. Dyrbye LN, Thomas MR, Huntington JL, Lawson KL, Novotny PJ, Sloan JA, et al. PersonalLifeEventsandMedicalStudentBurnout:AMulticenterStudy.Academic Medicine2006;81:374–84.
8. Chang E, Eddins-Folensbee F, Coverdale J. Survey of the prevalence of burnout, stress, depression, and the use of supports by medical students at oneschool. Acad Psychiatry.2012;36(3):177–182.
9. Pagnin D, Queiroz V. Influence of burnout and sleep difficulties on the quality of life among medical students. Springerplus.2015;4(1):676.
10. Pagnin D, de Queiroz V, Carvalho YT, Dutra AS, Amaral MB, Queiroz TT. The relation between burnout and sleep disorders in medical students. AcadPsychiatry.2014;38(4):438–444
11. Mazurkiewicz R, Korenstein D, Fallar R, Ripp J. The prevalence and correlations of medical student burnout in the pre-clinical years: A cross-sectional study. Psychology, Health & Medicine2012;17:188–95
12. Fares J, Saadeddin Z, Tabosh HA, Aridi H, Mouhayyar CE, Koleilat MK, et al. Extracurricular activities associated with stress and burnout in preclinical medical students. Journal of Epidemiology and Global Health2016;6:177–85.
13. Al-Sayed A, Al-Rashoudi A, Al-Eisa A, Addar, A. et al. Sedative drug use among King Saud University Medical Students: A cross-sectional sampling study. Depression Research and Treatment, 2014, 1–7.
14. Alshmrani S. 7% of Saudis are drug users [internet]. Saudi Arabia: Al-Hayat; Newspaper 2017. http://www.alhayat.com/article/812946/. It was accessed on Dec 2020.
15. Maslach C, Jackson SE, Leiter MP. Maslach Burnout Inventory Manual. 4th ed. Published by Mind Garden, Inc. www.mindgarden.com. 1996-2018.
16. Farrell, S. M., Moir, F., Molodynski, A., &Bhugra, D. (2019). Psychological Wellbeing, Burnout and substance use amongst medical students in New Zealand. International Review of Psychiatry, 31(7-8), 630–636. https://doi.org/10.1080/09540261.2019.1681204
17. Bassiony M. Substance use disorders in Saudi Arabia: review article. J Subst Use. 2013;18(6):450–66.
18. Ibrahim Y, Hussain SM, Alnasser S, Almohandes H, Sarhandi I. Patterns and sociodemographic characteristics of substance abuse in Al Qassim, Saudi Arabia: a retrospective study at a psychiatric rehabilitation center. Ann Saudi Med. 2018;38(5):319–25.

19. Oglesby, L. W., Gallucci, A. R., Wynveen, C. J., Ylitalo, K. R., & Benson, N. F. Burnout and substance use in collegiate athletic trainers. Journal of Athletic Training, 2020. 55(7), 744–751.
20. Bachman JG, O'Malley PM, Schulenberg JE, Johnston LD, Freedman-Doan P, Messersmith EE. The Education-Drug Use Connection: How Successes and Failures in School Relate to Adolescent Smoking, Drinking, Drug Use, and Delinquency. New York, NY: Lawrence Erlbaum Associates/Taylor & Francis; 2008.
21. Talih, F., Daher, M., Daou, D., &Ajaltouni, J. Examining Burnout, depression, and attitudes regarding drug use among Lebanese medical students during the four years of Medical School. Academic Psychiatry 2018; 42(2), 288–29.