Burnout Among University Students During Distance Learning Period due to the COVID-19 Pandemic: A Cross Sectional Study at the University of Jordan

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Abstract

Objective: The COVID-19 pandemic led to a deviation from classical face-to-face learning to distance learning. Few studies examined burnout among university students during the distance learning period due to the COVID-19 pandemic. This study that aims to investigate the prevalence of burnout among university students during distance learning and the factors associated with it.
Method: A cross-sectional study was conducted among undergraduate students at the University of Jordan. The modified version of the Maslach Burnout Inventory for students (MBI-SS) was used to assess burnout.
Results: The total number of participants was 587 and the mean total of MBI-SS score was 63.34 ± 8.85. Based on the MBI-SS definition, 6.6% of the study participants were found to have symptoms of burnout. Practicing hobbies, level of satisfaction with distance learning, and thoughts about quitting courses were significant predictors of burnout.
Conclusion: This study showed a relatively low prevalence of burnout among students during the distance learning period with several factors associated with it. As a result,

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identifying these factors will help both students and educational institutions to implement strategies that are needed for the primary and secondary prevention of burnout.

Keywords
Human; Burnout; Distance Learning; COVID-19

Introduction

Burnout is a worldwide phenomenon that was previously defined as the situation of physical and mental breakdown caused by overwork or stress [1]. Emotional exhaustion; feeling exhausted by the activity demand [2], cynicism; the attitude of coldness and distancing of interpersonal relationships and reduced personal efficiency; feeling of lack of self-efficacy are considered the three dimensions of burnout [1]. The primary tools that used these dimensions to assess burnout were The Maslach Burnout Inventory (MBI) and the Shirom-Melamed Burnout Measure (SMBM) [3]. Previously, the definition of burnout was limited to employees in the work environment. However, it was subsequently broadened to include students due to the impact of rigid exam-based curricula supported by the latest findings of the increased prevalence of burnout among the student population [1].

It was well established that academic burnout can affect both students and teachers at any educational level and institution [2]. Studies that investigated burnout among university students showed that exhaustion was the most important and sometimes the only dimension of burnout. Despite the variability across different educational systems, the levels of burnout remained comparable, suggesting shared core principles that lead to increased levels of burnout [4]. Similar characteristics were found to contribute to burnout in both university students and employees as in both of them, burnout is attributed to variables related to socio-professional causes and background [2].

There were several internal and external factors implicated in the increased prevalence of student burnout including perceived workload and stress, examination anxiety, and academic performance, that resulted in both internal and external consequences [4]. It was well established that burnout detrimentally affected life and academic satisfaction, resulting in low academic performance[4]. Furthermore, the aftermath of burnout has negatively impacted various aspects of health such as; mental, cardiovascular, gastrointestinal, musculoskeletal and respiratory health. The most notable of which were depression, sleep disorders, alcohol abuse, suicidal ideation, obesity, fatigue, diabetes, hypercholesterolemia and coronary heart disease. In addition to that, burnout was associated with mortality below the age of 45 [5].

Coronavirus Disease of 2019 (COVID-19) pandemic led to a deviation from the ordinary, enforcing a change from classical face-to-face learning to distance learning and the implementation of mandatory confinement. Several studies examined the psychological impact of the COVID-19 pandemic on university students. Most of these

studies showed significant psychological sequelae of the pandemic in this population group. The most important of which were stress, anxiety and depression, with females, young adults, and students living away from their families being disproportionately affected [6-8]. These outcomes were also found to be correlated with lower levels of student satisfaction with distance learning [9].

Although burnout is related to the aforementioned mental outcomes [1], few studies examined burnout during the pandemic period. As a result, we decided to conduct this study that aims to 1) investigate the prevalence of burnout among university students during the distance learning period due to the COVID-19 pandemic and 2) examine the contributing factors associated with it.

Methods

Design and Setting

An online-based cross-sectional study was conducted among undergraduate students at the University of Jordan from May 26, 2021 to September 25, 2021. The University of Jordan (UJ) is a public university located in Amman, Jordan. It offers more than 250 programs from 24 schools in various disciplines. Moreover, the student body within the university is composed of diverse ethnic and socioeconomic backgrounds. The University of Jordan implements the GPA scale as a part of its educational system. The cumulative grade point average (GPA) is out of four, and is described as: (4.00–3.65: Excellent, 3.64–3.00: Very good, 2.99–2.5: Good, 2.49–2.00: Pass and less than 2.00: Fail).

The sample size was determined using Raosoft software with the assumption of 50% prevalence of burnout, 5% margin of error, 95% confidence level, and a population size of 46,025. A prevalence of 50% was to be used to maximize the sample size since there was no previous study conducted in UJ. The calculated sample size was 381, and the total number of responses was 632, recruited via convenience sampling. Forty-five responses were excluded due to the absence of consent and incomplete entries of the burnout tool. All the university students were eligible for participation in this study except higher degree students and medical field clinical students because they experienced some form of face-to-face education.

Outcome Measures

An online, self-administered questionnaire was created using Google forms and shared on various groups for each faculty on social media platforms, with an average time of 5 minutes for completion. The questionnaire was designed in English, translated to Arabic, then back-translated by another author to English in order to ensure the retained meaning of the original questionnaire. It consisted of 41 questions divided into two sections. The first section evaluated the sociodemographic and academic characteristics of university students, as well as their impressions of the educational process during the

distance learning period. The second section was the Maslach Burnout Inventory-Student Survey (MBI-SS) which was used to assess burnout dimensions.

The MBI-SS, a modified version of the Maslach Burnout Inventory (MBI) is a reliable and validated tool used to assess the risk of burnout in university students [10-14]. The MBI-SS tool is a 15-item instrument measuring the three domains of burnout, namely Emotional Exhaustion (EE), Cynicism (CN) and Personal Efficiency (PE). It is composed of five items measuring EE, four items measuring CN, and six items measuring PE [15,16]. Each survey item was scored using a six-point Likert scale to indicate the frequency of certain feelings experienced by the student. Participants were positive for EE, CN, and PE if they scored >12.5, >7.5, and <10.5, respectively. Participants fulfilled the criteria for burnout if they were positive in all three domains [13,16]. The aforementioned cut off points are considered clinically valid with a sensitivity of 91.9% (95% CI = 82.5–96.5%), and specificity of 93.2% (95% CI = 87.5–96.4%) [13].

Data Analysis

The participants' data was entered using Microsoft Office Excel 2019, then imported into IBM SPSS v.25 software which was used to conduct the analysis. Percentages and counts were used to describe the general and educational demographics of the study participants. Similarly, the interpretation of burnout scores and its components was presented as counts and percentages. The continuous variables of the participants' demographics as well as the MBI-SS burnout scores were analyzed using mean, median, standard deviation, minimum and maximum.

To identify the predictors of burnout and each of its components, univariate and multivariate binary logistic regression were used. Predictors that were significantly associated with burnout or any of its components were reexamined using multivariate binary logistic regression to adjust for confounders. Any significant predictor in the univariate analysis was considered a confounding variable in the multivariate logistic regression analysis. Results of univariate binary logistic regression were expressed using crude odds ratio (COR) and its corresponding 95% confidence intervals (95% CIs). On the other hand, multivariate binary logistic regression models were expressed using adjusted odds ratio (AOR) and its corresponding 95% confidence intervals (95% CIs). All the variables with a p-value < .05 in the univariate and multivariate logistic regression models were considered statistically significant.

Declaration of Helsinki

This research was conducted in accordance with the Helsinki Declaration. The Institutional Review Board (IRB) at our institution has reviewed and approved the conductance of this study. The questionnaire opened with a brief introduction about the aims of the study and a consent statement was presented and confirmed by the participants. Confidentiality was maintained at all times.

Results

General Demographics

The sociodemographic characteristics of the 587 students who participated in this study are presented in Table 1. Participants were primarily females (75.6%), single (63.2%), and living with their families (97.3%). The mean age of the participants was 20.5 ± 2.6 years with a minimum age of 18 and a maximum age of 62 (Table 2). Due to the fact that most of the bachelor's degree programs in UJ are offered by accredited four-years, the sample was representative for the first four years of study, but only a few were in their fifth or sixth year. Participants' grades tended to be high, as around half of them had a very good GPA (3.00–3.64). The highest participation rate was from the Faculty of Medicine (27.8%), followed by the Faculty of Engineering (15.5%) and the Faculty of Pharmacy (14.0%). The mean number of courses taken was 15.5 ± 6.7 courses ranging between 0 and 35 courses (Table 2). The majority of the participants were non-smokers (84%), did not consume energy drinks (88.6%), but two-thirds consumed caffeinated drinks. Most of the participants did not use sleeping medications (95.5%), and had an average of 6–8 hours of sleep (47.2%). More than half of the participants (56.4%) had hobbies, mainly in the field of sports and voluntary work. About 57.9% of participants spent more than six hours on their smartphones and electronic devices and the majority exercised rarely (33.4%) (Table 1).

Educational attitudes and emotional experiences

The majority spent more than 4 hours studying (42.2%) and 3–4 hours attending lectures per day (38.6%) during the distance learning period. Furthermore, more than a third (37.3%) were very dissatisfied with the online learning experience. More than two-thirds of the participants (67.6%) believed that their level of studying got worse and only 15.1% of participants achieved better academic grades. In addition, most of the participants (93.7%) perceived themselves as being burned out with the majority (85.3%) attributing it to distance learning. The emotional experiences participants have had during the distance learning period are described in Table 2. Among the 587 participants, 78.3% had study overload ($n = 459$), 74.6% were bothered by the educational system ($n = 437$), 73.5% were worried about the future ($n = 431$) and 65.2% experienced academic pressure ($n = 382$) (Table 2).

Burnout and its components

Based on the MBI-SS definition, 6.6% ($n = 39$) of the study participants were found to have symptoms of burnout and the total mean of MBI-SS burnout score was 63.34 ± 8.85. Concerning the sub-scales of MBI-SS, 97.4% ($n = 572$) of the study participants were positive for emotional exhaustion and the mean score for this component was 24.57 ± 4.82. Whereas, 90.8% ($n = 533$) of the study participants were positive for

Table 1. The General Demographics of the Participants

Variable	Response	Frequency (n = 587)	Percentage (%)
Sex	Male	143	24.4
	Female	443	75.6
Year of study	First Year	166	28.3
	Second Year	127	21.6
	Third Year	150	25.6
	Fourth Year	127	21.6
	Fifth Year	13	2.2
	Sixth Year	4	.7
GPA	Less than 2.00	4	.7
	2.00–2.49	18	3.1
	2.50–2.99	87	14.9
	3.00–3.64	274	47.1
	3.65–4.00	199	34.2
Faculty	Faculty of Medicine	163	27.8
	Faculty of Nursing	7	1.2
	Faculty of Pharmacy	82	14.0
	Faculty of Dintistry	25	4.3
	Faculty of Rehabilitation Sciences	16	2.7
	Faculty of Arts and Designing	11	1.9
	Faculty of Science	28	4.8
	Faculty of Agriculture	13	2.2
	Faculty of Engineering	91	15.5
	Faculty of Information Technology	28	4.8
	Faculty of Bussiness	30	5.1
	Faculty of Law	12	2.0
	Faculty of Educational Sciences	5	.9
	Faculty of Physical Education	5	.9
	Faculty of Islamic Studies	23	3.9
	Faculty of International Studies	2	.3
	Faculty of Foreign Languages	31	5.3
	Faculty of Archeology and Tourisim	5	.9
	Faculty of Arts	10	1.7
Smoking Status	Yes	93	16.0
	No	490	84.0
Caffiene Drinks Usage	Yes	379	64.9
	No	205	35.1
Energy Drinks Usage	Yes	67	11.4
	No	519	88.6
Hobbies	Yes	330	56.4
	No	255	43.6

Table 1. (continued)

	Arts	62	19.4
	Sports	112	35.0
	Voluntary Work	65	20.3
	Music	35	10.9
	Cooking	8	2.5
	Gaming	13	4.1
	Progpraming	1	.3
	Watching TV	4	1.3
	Writing/Reading	20	6.3
Living Partner	Family	569	97.3
	Colleagues	3	.5
	Alone	13	2.2
Sleeping Hours	Less than 4 Hours	27	4.6
	4-6 Hours	142	24.2
	6-8 Hours	277	47.2
	8-10 Hours	115	19.6
	More than 10 Hours	26	4.4
Sleeping Medications	Yes	26	4.5
	No	558	95.5
Smart Phone Use	Less than 1 Hour	5	.9
	1-2 Hours	21	3.6
	3-4 Hours	95	16.2
	5-6 Hours	126	21.5
	More than 6 Hours	340	57.9
Exercise	Never	101	17.2
	Rarely	196	33.4
	Sometimes	176	30.0
	Often	88	15.0
	Always	25	4.3
Variable	Mean	SD	Range
Age (years)	20.5	2.6	18.0–62.0
Courses	15.5	6.7	0–35

Cynicism and the mean of this component was 16.62 ± 6.14. In addition, 6.6% ($n = 39$) of the study participants were positive for reduction in Professional Efficiency and the mean of this component was 22.16 ± 7.02 (Table 3 and Figure 1).

Determinants of burnout and its components

Univariate logistic regression models showed that the GPA categories of 2.00–2.49 and 2.50–2.99, lack of hobbies, studying for less than one hour per day, being dissatisfied/neutral with the quality of distance learning and sometimes/rarely/never thinkinh about quitting courses were significantly associated with burnout (p-value < .05). After

Table 2. The Educational Demographics of the Participants

Variable	Response	Frequency (n = 587)	Percentage (%)
Studying Hours	Less than 1 Hour	76	12.9
	1-2 Hours	105	17.9
	3-4 Hours	158	26.9
	More than 4 Hours	248	42.2
Hours Spent in Attending Lectures	Less than 1 Hour	65	11.1
	1-2 Hours	106	18.1
	3-4 Hours	226	38.6
	More than 4 Hours	188	32.1
Level of Satisfaction on Distance Learning	Very Dissatisfied	219	37.3
	Dissatisfied	181	30.8
	Neutral	144	24.5
	Satisfied	33	5.6
	Very Satisfied	10	1.7
Burnout Perceiving	Yes	549	93.7
	No	37	6.3
Distance Learning is the cause of their burnout	Yes	500	85.3
	No	86	14.7
Thinking of Quitting Courses	Never	184	31.5
	Rarely	94	16.1
	Sometimes	129	22.1
	Often	113	19.3
	Always	65	11.1
Comparison between their level of studying during distance learning with their previous level	Worse than Before	317	67.6
	Same as Before	91	19.4
	Better	61	13.0
Comparison between their academic grades during distance learning with their previous grades	Worse than Before	196	42.2
	Same as Before	199	42.8
	Better	70	15.1
Bothered from Educational System	Yes	437	74.6
	No	149	25.4
Study Overload	Yes	459	78.3
	No	127	21.7
Academic Pressure	Yes	382	65.2
	No	204	34.8

(continued)

Table 2. (continued)

Variable	Response	Frequency (n = 587)	Percentage (%)
Fear of Failure	Yes	351	59.9
	No	235	40.1
Enough Entertainment Time	Yes	290	49.5
	No	296	50.5
Worried about Future	Yes	155	26.5
	No	431	73.5

adjusting for confounding variables, it was found that lack of hobbies, being dissatisfied/neutral with the quality of distance learning and never/sometimes thinking about quitting courses were significantly associated with burnout. According to multivariate logistic regression models, students who did not practice any hobbies were around twice as likely to develop burnout than their practicing colleagues (AOR = 2.1; 95% CI: 1.0–4.4). Additionally, students who reported being neutral with the quality of distance learning were 90% less likely to develop burnout than those who were very satisfied (AOR = .1; 95% CI: .0 – .5). In spite of that, those who reported being dissatisfied with the quality of distance learning were also 90% less likely to develop burnout than students who were very satisfied (AOR = .1; 95% CI: .0 – .7). The analysis showed that students who had never thought of quitting courses were 80% less likely to develop burnout than those who always thought about it (AOR = .2; 95% CI: .0 – .6). In comparison, students who sometimes experienced thoughts of quitting their courses had a 70% less chance to develop burnout than those who always experienced such thoughts (AOR = .3; 95% CI: .1 – .8) (Table 4).

Male gender, a GPA of 3.00–3.64, consumption of caffeinated drinks, smartphone usage of 3–4 hours, attending less than one hour of lectures per day, being very dissatisfied with the quality of distance learning, study overload and academic pressure were found to be significantly associated with emotional exhaustion (p-value < .05). After adjusting for confounding variables, having a GPA between 3.00–3.64, consumption of caffeinated drinks, smartphone usage of 3–4 hours, attending less than one hour of lectures per day and study overload were significantly associated with emotional exhaustion. Students with a GPA between 3.00–3.64 were around 11 times more likely to develop emotional exhaustion than their colleagues with a GPA between 3.65–4.00 (AOR = 10.6; 95% CI: 1.9–57.7). Additionally, students who did not consume caffeinated drinks were 80% less likely to develop emotional exhaustion than those who did (AOR = .2; 95% CI: .1 – 1.0). The analysis showed that smartphone usage of 3–4 hours was associated with an 80% reduction in the risk of developing emotional exhaustion as compared to those who had a smartphone usage of more than 6 hours (AOR = .2; 95% CI: .0 – .8). Moreover, students who attended less than 1 hour of lectures per day were 90% less likely to develop emotional exhaustion than those who attended more than 4 hours per day (AOR = .1; 95% CI: .0 – .9). Students who reported

Table 3. The Analysis of Maselbach Burnout Inventory for Students and Its Components Scores

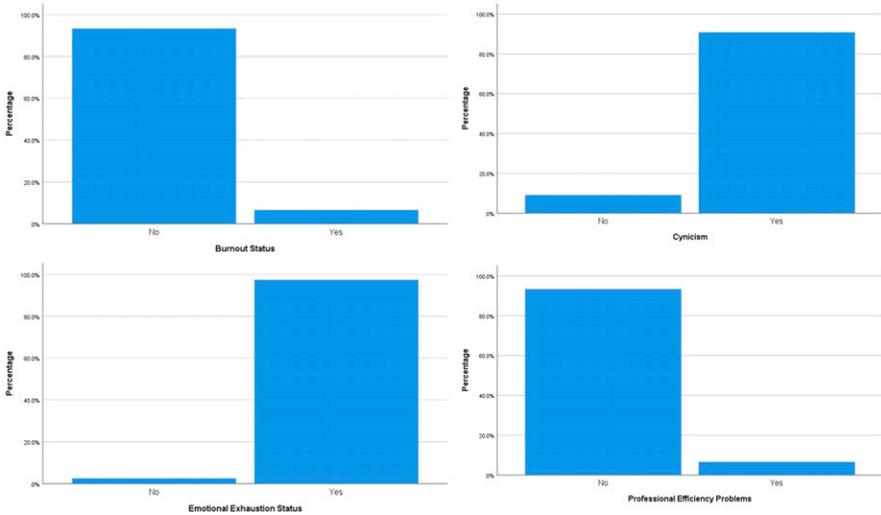| Variable	Mean	SD	Median	Minimum	Maximum
Emotional Exhaustion Score	24.57	4.818	25.0	4	30
Cynicism Score	16.62	6.140	18.0	0	24
Professional Efficiency Scpre	22.16	7.019	23.0	0	36
MBI-SS Total Score	63.34	8.848	64.0	27	89

Figure 1. Percentage of Burnout and its Components among the Participants

experiencing no study overload were 80% less likely to develop emotional exhaustion than those who reported feeling of study overload (AOR = .2; 95% CI: .0 – 1.0) (Table 5).

Univariate logistic regression analysis showed that age, a GPA of 2.50–2.99, lack of hobbies, smartphone usage for less than 1 hour, studying for less than 1 hour, being very dissatisfied/ dissatisfied with the quality of distance learning, never thinking about quitting courses, grades and a studying level worse than before distance learning period, being bothered from the educational system, academic pressure and fear of failure were significantly associated with the cynicism component of the MBI-SS (p-value < .05). However, after adjusting for confounding variables in the multivariate logistic regression, only studying for 1–2 hours and fear of failure were significantly associated with the cynicism component of the MBI-SS (p-value = .05). Students who studied 1–2 hours were around three times more likely to experience cynicism compared to those who studied more than 4 hours (AOR = 3.3; 95%CI:1.1–10.1). In

Table 4. Logistic Regression Analysis for Maselbach Burnout Inventory.

Variable	Response	COR (95%CI)	p-value	AOR (95%CI)	p-value
GPA	Less than 2.00	7.0 (0.7–74.5)	.10	3.3 (0.2–46.6)	.38
	2.00–2.49	4.2 (1.0–17.3)	.04	1.8 (0.3–11.0)	.50
	2.50–2.99	3.4 (1.4–8.3)	.01	2.5 (0.9–7.1)	.08
	3.00–3.64	1.1 (0.5–2.7)	.77	0.9 (0.3–2.1)	.74
	3.65–4.00	R		R	
Hobbies	No	2.3 (1.2–4.6)	.01	2.1 (1.0–4.4)	.05
	Yes	R		R	
Studying Hours	Less than 1 Hour	3.7 (1.6–8.4)	.00	2.1 (0.8–5.3)	.12
	1-2 Hours	0.9 (0.3–2.6)	.85	0.9 (0.3–2.9)	.91
	3-4 Hours	1.0 (0.4–2.4)	.94	1.2 (0.5–3.3)	.66
	More than 4 Hours	R		R	
Level of Satisfaction	Very Dissatisfied	.5 (0.1–2.5)	.39	0.2 (0.0–1.2)	.08
	Dissatisfied	0.2 (0.0–0.9)	.04	0.1 (0.0–0.7)	.02
	Neutral	0.1 (0.0–0.7)	.02	0.1 (0.0–0.5	.01
	Satisfied	0.3 (0.0–2.1)	.21	0.2 (0.0–1.5)	.11
	Very Satisfied	R		R	
Quitting Courses	Never	0.2 (0.0–0.5)	.00	0.2 (0.0–0.6)	.00
	Rarely	0.3 (0.1–0.8)	.02	0.3 (0.1–1.1)	.08
	Sometimes	0.2 (0.1–0.7)	.01	0.3 (0.1–0.8)	.02
	Often	0.5 (0.2–1.3)	.17	0.5 (0.2–1.4)	.20
	Always	R		R	

addition, students who had not experienced fear of failure were 70% less likely to experience cynicism compared to students who had such thoughts (AOR = .3; 95%CI: .1 − .8) (Table 6).

Lack of hobbies, the GPA categories of 2.00–2.49 and 2.5–2.99, studying for less than 1 hour, being dissatisfied/neutral about the quality of distance learning, never/ rarely/sometimes thinking about quitting courses, grades and a studying level worse than before distance learning period, being bothered by the educational system, academic pressure and fear of failure were significantly associated with a reduction in the professional efficiency component of the MBI-SS according to the univariate logistic regression. Nevertheless, only lack of hobbies, being dissatisfied/neutral about the quality of distance learning, never/sometimes thinking about quitting courses and fear of failure were significantly associated with the professional efficiency component of burnout. Moreover, students who reported being dissatisfied (AOR = .1; 95%CI: .0 − .7) or neutral (AOR = .1; 95%CI: .0 − .5) with the quality of distance learning were 90% less likely to experience reduction in the professional efficiency component of the MBI-SS. Similarly, students who reported they never (AOR = .2; 95%CI: .1 − .6) or sometimes (AOR = .3; 95%CI: .1 − .8) encountered thoughts about quitting courses were 20% and 30% less likely to experience reduction in the professional efficiency component of the MBI-SS, respectively compared to students who did not encounter

Table 5. Logistic Regression Analysis for Emotional Exhaustion Component of Maselbach Burnout Inventory

Variable	Response	COR (95%CI)	p-value	AOR (95%CI)	p-value
Gender	Male	0.3 (0.1–0.8)	.01	0.4 (0.1–1.5)	.19
	Female	R			
GPA	Less than 2.00	9.5E7 (0.0-.)	1.0	2.2E7 (0.0-.)	1.0
	2.00–2.49	1.0 (0.1–8.2)	1.0	2.3 (0.2–25.1)	.5
	2.50–2.99	9.5E7 (0.0-.)	1.0	1.1E8 (0.0-.)	1.0
	3.00–3.64	5.285 (1.5–19.2)	.01	10.6 (1.9–57.7)	.0
	3.65–4.00	R		R	
Caffeine Drinks	No	0.3 (0.1–0.8)	.02	0.2 (0.1–1.0)	0.05
	Yes	R		R	
Smart Phone Use	Less than 1 Hour	3.4E7 (0.0-.)	1.0	2.3E6 (0.0-.)	1.0
	1-2 Hours	3.4E7 (0.0-.)	1.0	4.7E7 (0.0-.)	1.0
	3-4 Hours	0.3 (0.1–1.0)	.04	0.2 (0.0–0.8)	.02
	5-6 Hours	1.3 (0.3–6.4)	.74	1.1 (0.2–7.0)	.9
	More than 6 Hours	R		R	
Lectures Hours	Less than 1 Hour	0.2 (0.0–0.9)	.04	0.1 (0.0–0.9	.04
	1-2 Hours	0.4 (0.1–2.2)	.28	0.4 (0.0–3.9)	.45
	3-4 Hours	0.4 (0.2–2.0)	.26	0.5 (0.1–4.0)	.49
	More than 4 Hours	R		R	
Level of Satisfaction	Very Dissatisfied	12.1 (1.0–145.6)	.05	7.5 (0.1–437.2)	.33
	Dissatisfied	3.9 (0.4–37.1)	.24	2.8 (0.1–133.7)	.61
	Neutral	3.9 (0.4–38.5)	.25	3.8 (0.1–197.2)	.51
	Satisfied	1.1 (0.1–12.0)	.93	1.0 (0.0–75.8)	.99
	Very Satisfied	R		R	
Study Overload	No	0.1 (0.0–0.4)	.00	0.2 (0.0–1.0)	.04
	Yes	R		R	
Academic Pressure	No	0.1 (0.0–0.5)	.00	0.2 (0.0–1.2)	.08
	Yes	R		R	

such thoughts. In addition, students who had not experienced fear of failure were 30% less likely to experience a reduction in professional efficiency compared to students who had such thoughts (AOR = .3; 95%CI: .1 – .8). Students who reported that they did not practice hobbies were 2.1 times more likely to develop a reduction in professional efficiency compared to their practicing counterparts (AOR = 2.1; 95%CI: 1.0–4.4) (Table 7).

Discussion

The aim of this study was to investigate burnout and its determinants among university students amid the distance learning period due to the COVID-19 pandemic. The results

Table 6. Logistic Regression Analysis for Cynicism Component of Maselbach Burnout Inventory

Variable	Response	COR (95%CI)	p-value	AOR (95%CI)	p-value
Age	-	0.9 (0.8–1.0)	.02	0.9 (0.8–1.1)	.37
GPA	Less than 2.00	1.8E8 (0.0-.)	1.0	0.7 (0.1–11.0)	.83
	2.00–2.49	1.9 (0.2–15.0)	.5	1.8 (0.3–9.8)	.5
	2.50–2.99	4.7 (1.1–20.8)	.04	0.4 (0.2–1.1)	.07
	3.00–3.64	0.9 (0.5–1.7)	.8	0.6 (0.3–1.2)	.17
	3.65–4.00	R		R	
Hobbies	No	2.1 (1.1–3.9)	.02	2.0 (0.8–5.0)	0.11
	Yes	R		R	
Smart Phone Use	Less than 1 Hour	0.1 (0.0–0.9)	.04	0.1 (0.0–5.2)	.28
	1-2 Hours	0.6 (0.2–2.1)	.41	0.4 (0.1–2.5)	.36
	3-4 Hours	0.7 (0.4–1.5)	.42	0.9 (0.3–2.7)	.85
	5-6 Hours	1.4 (0.6–3.2)	.39	1.9 (0.6–6.0)	.24
	More than 6 Hours	R		R	
Studying Hours	Less than 1 Hour	9.9 (1.3–74.2)	.03	1.1E8 (0.0-.)	1.00
	1-2 Hours	1.4 (0.6–3.1)	.39	3.3 (1.1–10.1)	.04
	3-4 Hours	1.3 (0.7–2.4)	.49	2.3 (0.9–5.6)	.08
	More than 4 Hours	R		R	
Level of Satisfaction	Very Dissatisfied	10.0 (2.2–45.2)	.00	1.8 (0.2–18.0)	.63
	Dissatisfied	6.0 (1.4–26.4)	.02	2.7 (0.3–24.6)	.39
	Neutral	2.4 (0.6–9.9)	.23	0.9 (0.1–6.6)	.89
	Satisfied	1.3 (0.3–6.4)	.71	0.4 (0.0–3.4)	.38
	Very Satisfied	R		R	
Quitting Courses	Never	0.14 (0.0–0.6	.01	0.3 (0.0–2.3)	.22
	Rarely	0.3 (0.1–1.4)	.13	0.3 (0.0–2.8)	.27
	Sometimes	0.4 (0.1–2.0)	.28	0.4 (0.0–3.5)	.38
	Often	5.1E7 (0.0-.)	1.00	3.3E7 (0.0-.)	1.00
	Always	R		R	
Comparing Level of Studying their Previous Level	Less than Before	3.8 (1.8–8.4)	.00	1.3 (0.4–4.2)	.65
	As Same as Before	1.6 (0.7–3.9)	.29	1.3 (0.4–4.0)	.71
	Better than Before	R		R	

(continued)

Table 6. (continued)

Variable	Response	COR (95%CI)	p-value	AOR (95%CI)	p-value
Comparing Marks to their Previous Level	Less than Before	3.5 (1.4–8.6)	.01	1.4 (0.4–5.3)	.65
	As Same as Before	1.5 (0.7–3.3)	.31	0.9 (0.3–3.0)	.93
	Better than Before	R		R	
Bothered from the Educational System	No	0.3 (0.2–0.6)	.00	0.9 (0.4–2.2)	.84
	Yes	R		R	
Academic Pressure	No	0.4 (0.2–0.7)	.00	0.6 (0.2–1.3)	.18
	Yes	R		R	
Failure of Fear	No	0.2 (0.1–0.4)	.00	0.3 (0.1–0.8)	.01
	Yes	R		R	

showed that only 6.6% of the students were positive for burnout according to the established cut off points. Furthermore, practicing hobbies, level of satisfaction with distance learning, and thoughts about quitting courses were significant predictors of burnout. Additionally, the positive prevalence for the dimensions of burnout were 97.4%, 90.8% and 6.6% for emotional exhaustion, cynicism and reduction in professional efficiency, respectively. The same factors that were significant predictors for burnout were also significant predictors for reduction in professional efficiency. Moreover, GPA, caffeine consumption, smartphone usage, hours spent attending lectures and study overload were significant predictors of emotional exhaustion. However, only hours spent studying and fear of failure were significant predictors of cynicism.

A worldwide meta-analysis showed that the global prevalence of burnout among university students was 12.1%, which was double the prevalence reported in this article [17]. In addition, studies conducted in the Arabian region showed that the prevalence of burnout ranged between 19% in Syria [18] and 80% in Egypt [19] and both were higher than the prevalence we reported in this article. The low burnout prevalence in this study could be explained by the emergence of distance learning as studies showed that distance learning was associated with a reduction in burnout [20]. Furthermore, similar to this study, previous studies showed that demographic factors like year of study, gender and age were not significant predictors of the burnout status. Yet, in other studies, females were more prone to develop burnout [21, 22]. In addition, studies showed that burnout was associated with thoughts about course quitting [23]. Another study showed that burnout was the most consistent predictor for the intention of dropping courses [5]. Consequently, this suggests that the relationship between burnout and intentions to quit courses could be bidirectional. Moreover, comparable to this study's results, studies revealed that hobbies were associated with fewer chances to develop burnout [24]. In spite of previous studies showing a significant association between the consumption of

Table 7. Logistic Regression Analysis for Professional Efficiency Component of Maselbach Burnout Inventory

Variable	Response	COR (95%CI)	*p*-value	AOR (95%CI)	*p*-value
GPA	Less than 2.00	7.0 (0.7–74.5)	.11	3.3 (0.2–46.6)	.38
	2.00–2.49	4.2 (1.0–17.3)	.05	1.8 (0.3–11.0)	.50
	2.50–2.99	3.4 (1.4–8.3)	.01	2.5 (0.9–7.1)	.08
	3.00–3.64	1.1 (0.5–2.7)	.77	0.9 (0.3–2.1)	.74
	3.65–4.00	R		R	
Hobbies	No	2.3 (1.2–4.6)	.01	2.1 (1.0–4.4)	.05
	Yes	R		R	
Studying Hours	Less than 1 Hour	3.7 (1.6–8.4)	.00	2.1 (0.8–5.3)	.12
	1-2 Hours	0.9 (0.3–2.6)	.85	0.9 (0.3–2.9)	.91
	3-4 Hours	1.0 (0.4–2.4)	.94	1.2 (0.5–3.3)	.66
	More than 4 Hours	R		R	
Level of Satisfaction	Very Dissatisfied	0.5 (0.1–2.5)	.39	0.2 (0.0–1.2)	.08
	Dissatisfied	0.2 (0.0–0.9	.04	0.1 (0.0–0.7)	.02
	Neutral	0.1 (0.0–0.7)	.02	0.1 (0.0–0.5)	.01
	Satisfied	0.3 (0.0–2.1)	.21	0.2 (0.0–1.5)	.11
	Very Satisfied	R		R	
Quitting Courses	Never	0.2 (0.1–0.5)	.00	.177 (0.1–0.6)	.01
	Rarely	0.3 (0.1–0.8	.02	0.3 (0.1–1.1)	.08
	Sometimes	0.2 (0.1–0.7)	.01	0.3 (0.1–0.8)	.02
	Often	0.5 (0.2–1.3)	.17	0.5 (0.2–1.4)	.20
	Always	R		R	
Comparing Level of Studying their Previous Level	Less than Before	3.8 (1.8–8.4)	.00	1.3 (0.4–4.2)	.65
	As Same as Before	1.6 (0.7–3.9)	.29	1.3 (0.4–4.0)	.71
	Better than Before	R		R	
Comparing Marks to their Previous Level	Less than Before	3.5 (1.4–8.6)	.01	1.4 (0.4–5.3)	.65
	As Same as Before	1.5 (0.7–3.3)	.31	0.9 (0.3–3.0)	.93
	Better than Before	R		R	
Bothered from the Educational System	No	0.3 (0.2–0.6)	.00	0.9 (0.4–2.2)	.84
	Yes	R		R	
Academic Pressure	No	0.4 (0.2–0.7)	.00	0.6 (0.2–1.3)	.18
	Yes	R		R	
Failure of Fear	No	0.2 (0.1–0.4)	.00	0.3 (0.1–0.8)	.01
	Yes	R		R	

caffeinated products and burnout, this study found no such association [25]. It did however, find an association between the consumption of caffeinated products and emotional exhaustion. Furthermore, fewer hours of studying and attending lectures were associated with higher emotional exhaustion and cynicism. These findings suggests that low hours of studying and attending lectures were a consequence of emotional exhaustion and cynicism. Our results revealed that only participants who were neutral or dissatisfied with the quality of distance learning had significantly less burnout than very satisfied participants. Also, participants who never or sometimes thought about quitting courses had a significantly lower risk for burnout compared to participants who always thought about it. These findings indicate that a lower satisfaction with distance learning as well as a lower frequency of thinking about quitting courses were associated with lower burnout. However, this finding was not consistent in all categories of satisfaction with distance learning and desire to quit courses, which can be explained by the fact that satisfaction with distance learning and the desire to quit courses were not assessed using validated tools.

Studies showed that burnout did not only affect students from a health perspective but also from an academic one. To begin with, burnout was proven to increase the perceived stress, as well as the examination anxiety among Chinese and Finnish students [4]. Moreover, previous studies established that academic dissatisfaction resulted in decreased performance and burnout [26]. Similarly, this study supported these findings by demonstrating a significant association between low levels of satisfaction with distance learning and burnout. Furthermore, a previous meta-analysis showed that burnout was correlated with lower academic achievements [27].

The introduction of distance learning during the period of mandatory confinement was found to be associated with students experiencing variable degrees of the constituents of burnout. Several strategies could be implemented in order to reduce burnout [28]. These strategies were divided in the literature into preventive and therapeutic ones. In addition, such strategies to mitigate burnout could be either person-directed, organizational directed or combined [29]. The efficacy of multiple strategies to reduce burnout had been proved in clinical trials in a work-centered environment such as group discussions, stress management, voluntary work, participatory problem solving and decision making, cognitive behavioral therapy (CBT), work engagement, building resilience, mindfulness techniques, exercise programs, relaxation techniques and music and art therapy [28, 30-37]. Although the studies examining the efficacies of such strategies on the student population were limited, some strategies have been proven to be effective in reducing burnout. Among these strategies, mindfulness, relaxation and meditation techniques, music therapy, extracurricular activities and the conversion to a pass/fail grading system demonstrated a reduction in burnout or one of its constituents [16, 38]. On the other hand, cognitive behavioral therapy showed inconsistent results in clinical trials. Furthermore, Studies revealed that organizational and combined interventions resulted in longer lasting reduction in burnout in comparison to person-directed interventions[33]. Additionally, combined interventions were much more effective in reducing burnout compared to organization-directed interventions [29]. Furthermore,

studies suggested screening students for burnout[39] and recommending effective methods of mitigating burnout such as: CBT and mindfulness techniques in students who screen positive for burnout [40]. Our findings suggested that low burnout levels were detected among students during the distance learning period, thus we also recommend shifting to distance learning for students who screen positive for burnout as an adjunctive method to reduce burnout along with the aforementioned interventions. Additionally, institutions are recommended to address the factors that were associated with burnout or its components such as hobbies and hours spent in attending lectures. Moreover, we found a large discrepancy between self- perceived burnout and the percentage of burnout detected using the MBI-SS, which indicates a lack of awareness about the definition of burnout and necessitates the use of validated tools in screening for burnout to accurately assess burnout. As a result, we recommend the implementation of combined methods that proved to be effective in the reduction of burnout among university students, such as mindfulness programs. In addition, we recommend carrying out further well conducted and high-quality clinical trials to assess the effectiveness of the aforementioned potential interventions in reducing burnout among university students.

Limitations

The cross-sectional design of this study limits inferences about causality and temporality between burnout and its determinants. This was a single institution study conducted in a single country, hence, future studies are recommended to be multi-central and multi-national. Although regression models were used to adjust of confounding variables, the risk for confounding bias cannot be totally excluded. As a result, future studies are recommended to address more confounding variables. Furthermore, the use of convenience sampling methods in this study may increase the risk for selection bias. Lastly, the use of self-administered questionnaires is considered a limitation because it carries the risk of recall bias.

Conclusion

To conclude, this study aimed to assess burnout during the distance learning period due to the COVID-19 pandemic and showed a relatively low prevalence of burnout among students during that period. Several factors were found to be significantly associated either with burnout as a whole or with one of its constituents such as practicing hobbies, level of satisfaction with distance learning, thoughts of quitting courses, GPA, caffeine consumption, smartphone usage, hours spent in attending lectures and studying, study overload and fear of failure. As a result, identifying these factors will help both students and educational institutions to implement the strategies needed for the primary and secondary prevention of burnout.

Author's Contributions

AAT and HMK were involved in Conceptualization; AAT, MMH, JSA and TAH were involved in Data curation, Formal analysis, Investigation, Methodology, Project administration, Resources, Software, Validation, Visualization, and Writing the original draft; HMK was involved in Supervision and Reviewing & Editing the manuscript.

Declaration of Conflicting Interests

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Ethical Approval

The Institutional Review Board (IRB) at the University of Jordan has reviewed and approved the conductance of this research (10–2020–8570).

Data Availability

The author confirms that all data generated or analyzed during this study are available from the corresponding author upon reasonable request.

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