




# The Job Demands in Predicting Burnout During COVID-19 Among Teaching Faculty at KSAU-HS, Jeddah, Saudi Arabia

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**Purpose:** This study aimed to assess the burnout among faculty members of King Saud bin Abdulaziz University for Health Sciences (KSAU-HS), Jeddah, during the COVID-19 pandemic and investigate their adaptations to online teaching.

**Patients and Methods:** The study utilized a survey research design, and a validated questionnaire was e-mailed to faculty members. The Maslach Burnout Inventory – Educators Survey was used to assess burnout in three domains (emotional exhaustion, depersonalization, and personal accomplishment), in addition to their adaptations to online teaching.

**Results:** A total of 112 faculty members completed the survey with a response rate of 25%. Females comprised 50.9% of the sample. Burnout assessment among faculty showed moderate emotional exhaustion and personal accomplishment. In contrast, the level of depersonalization was low. When assessing the impact of the shift to online education during the pandemic, 87.5% of the respondents reported increased confidence in online teaching and learning effectiveness.

**Conclusion:** Faculty members at KSAU-HS reported moderate emotional exhaustion. Fortunately, this had a moderate impact on students' intellectual development and well-being. Most of the faculty feedback supported online teaching during the pandemic.

**Keywords:** emotional exhaustion, burnout, stress, job demands, COVID-19

## Introduction

Job demands are those physical, psychological, social, or organizational aspects of the job that require sustained physical and psychological effort and are associated with specific physiological and psychological costs.<sup>1,2</sup> High work pressure and unfortunate encounters with clients or customers are two examples. On the other hand, Job resources refer to those physical, psychological, social, or organizational aspects of the job that are functional in achieving work goals, reducing job demands and the associated physiological and psychological costs, or stimulating personal growth, learning, and development.<sup>3,4</sup> Autonomy, skill variety, performance feedback, and improvement opportunities are examples of job resources. According to Maslach and Jackson (1981), burnout is characterized by emotional exhaustion, depersonalization, and a loss of a sense of personal accomplishment. Individuals who work in human services such as education, social work, police, and emergency services are more likely to develop this condition.<sup>5</sup> Working as an education instructor in the health profession is demanding and stressful because of the job activities, including student education, supervising student projects, evaluating student work, and planning classes. Additionally, research, clinical practice, and other medical administrative duties could lead to serious health problems and burnout in the long run.<sup>6–8</sup>

The challenge of modeling all job demands, job resources, and burnout in one overall structural equation model was initiated by Demerouti et al in 2001. They conducted a study on employees in human services, industry, and transport in Oldenburg, Germany, to investigate the structure of the work environment and its link with burnout. Job demands were shown to be the most important correlate of exhaustion in these analyses.<sup>1,9</sup> Moreover, a survey of over 1000 employees at a large higher education institution showed that work overload, job demands, and work-home conflict are all risk factors for job burnout. Furthermore, a review on occupational stress found that stressful events at work have substantial effects on employees, including decreased worker satisfaction and productivity, physical health, absenteeism, financial impact, depression, and other psychological issues.<sup>10</sup> However, job resources such as job autonomy, social support, supervisor relationship quality, and performance feedback can mitigate the undesirable influence of job demands on burnout.<sup>11</sup> This interaction effect has been proven in numerous investigations, for example, a study involving more than 12,000 employees from 148 organizations in the Netherlands found that 88% of all possible interactions between many job demands and job resources were statistically significant. These findings suggest that employees who have various job resources may cope better with the demands of their jobs.<sup>12,13</sup>

The World Health Organization (WHO) declared COVID-19 a pandemic in March 2020 as its rapid spread over the globe. Accordingly, Health Professions Educators (HPEs) and their students must adapt their educational provision to rapidly changing circumstances in a state of ongoing uncertainty.<sup>14</sup> Many HPEs are concerned about the burden placed on them during this unprecedented crisis. Subsequently, HPEs aim to maintain their pedagogical approach as simple as possible while innovating and converting their teaching strategies and assessments from face-to-face to virtual formats or repeatedly delivering face-to-face teaching to smaller groups.<sup>9,14,15</sup>

The support for teaching, learning, and assessment is critical, yet it is often overlooked and undervalued. While there is much focus on supporting students through this tough time, the burden on staff must also be acknowledged.<sup>14</sup> In accordance with the results of the previous research and due to the lack of local studies on stress and burnout among teaching faculty, it is vital to assess the pandemic's psychological consequences on HPEs, so that the knowledge acquired may be applied in future pandemics. Given the likelihood of further COVID-19 waves, this research aims to describe the association of these job-related demands, and burnout among the faculty members of King Saud bin Abdulaziz University for Health Sciences (KSAU-HS) - Jeddah during the COVID-19 crisis and their adaptations to online teaching arrangements. Hence, the objectives of the study were:

- To assess the burnout and stress among faculty members of KSAU-HS, Jeddah, during the COVID-19 pandemic.
- To investigate challenges towards their adaptations to online teaching arrangements during the COVID-19 pandemic.
- To find the association between job-related demands of faculty members and their online teaching arrangements during the COVID-19 pandemic.

## Materials and Methods

Ethical approval for this study was obtained from the Institutional Review Board (IRB) of the King Abdullah International Medical Research Center (KAIMRC), National Guard Health Affairs, Riyadh, Saudi Arabia, No. IRBC/2272/21.

### Study Area/Setting

The study was held at KSAU-HS, targeting faculty members of four colleges, namely: College of Science and Health Professions (COSHP), College of Medicine (COM), College of Applied Medical Sciences (CAMS), and College of Nursing (CON) – Jeddah.

### Study Subjects

The study involved the faculty members teaching at KSAU-HS, Jeddah.

### Inclusion Criteria

- Professors, Associate Professor, Assistant Professor.
- Lecturer, Teaching Assistant.

### Exclusion Criteria

- Laboratory Custodian, Laboratory Technician
- Administrative Assistant
- Respondents who did not complete the two parts of the questionnaire (n=18).

## Study Design

A survey research (cross-sectional) study design was utilized to achieve the aim of the study.

## Sample Size

The sample size was calculated using the ClinCalc sample size calculator accessed from the website <https://clincalc.com/stats/samplesize.aspx>.<sup>16</sup> The mean stress rating among the Canadian population was adapted from another study<sup>9</sup> and it was 6.82 on a scale of 1 to 10, with ten indicating high stress. The standard deviation was not mentioned in the study. It is calculated by considering this formula,  $SD = (max-min)/4$ , where the maximum stress score is ten and the minimum is zero. The difference between max and min is divided by four, and the SD is 2.5. The required sample size was estimated at the power of the study as 80%, with an estimated 7.5 mean stress in the study group (with a mean difference of 0.68). The required minimum sample size was determined to be 106 faculty members.

## Sampling Technique

Because only faculty members who responded to the study survey and were involved in teaching during the pandemic were included, a non-probability convenient sampling technique was used.

## Data Collection Instrument

An online survey in English was used for collecting the required data between September and November 2021. An introductory e-mail was sent to members of the target population using the institutional e-mail system that requested their participation by accessing the survey's web link. The survey comprised an introductory paragraph that informed participants about the aim of the study, the disguise of their responses, and the freedom not to answer any question or withdraw from the study altogether. Informed consent was embedded in the survey's web link, so faculty members were consenting to participate by completing the questionnaire. The survey was divided into the following sections ([Appendix](#)):

### Demographic Data

Age group, gender, college name, education level, academic position, and years of experience group. The individual teacher characteristics were the independent variables.

### Burnout Assessment

The instrument used to determine the frequency of burnout among the faculty members was the Maslach Burnout Inventory - Educators Survey.<sup>5</sup> It has been known as the leading measure of burnout and validated by extensive research conducted over a long period. The survey had 22 questions about an individual's feelings because of being over-stressed or burned out. Respondents were asked to indicate the frequency at which they experienced these feelings by selecting from a 7-point Likert scale indicating the frequency with which educators agree with the statements: 0 (never); 1 (a few times since beginning teaching at home); 2 (once a month or less); 3 (a few times a month); 4 (once a week); 5 (a few times a week) 6 (every day).

The MBI-ES measured burnout on three sub-scales: Emotional Exhaustion – Chronic emotional fatigue resulting from counseling and teaching many individuals on a continual basis, eg, “I feel emotionally drained from work”; Depersonalization (Cynicism) – An indifferent and negative attitude toward students characterized by the use of disparaging labels to describe students, eg, “I don't care what happens to some students”; and Personal

Accomplishment – The contribution a teacher makes for the well-being and intellectual advancement of students, eg, “I have accomplished many worthwhile things in this job.” The scores from these three sub-scales are further categorized into high, moderate, and low according to the following description:

Emotional Exhaustion: 0–16 = Low, 17–26 = Moderate, >27 = High.

Depersonalization: 0–6 = Low, 7–12 = Moderate, >13 = High.

Personal Accomplishment: >39 = Low, 32–38 = Moderate, 0–31 = High. Feelings of low personal achievement can lead to burnout. Therefore, the response scale for personal accomplishment is different from the other two sub-scales because the scoring is reversed. A score of less than 32 on the personal accomplishment sub-scale means a high degree of personal accomplishment.

Furthermore, stress and coping are measured using two global statements, as validated by Eddy et al, 2019.<sup>17</sup> These questions are, “How stressful is your job right now?” and “How well are you coping with the stress of your job right now?” (Measured on a 10-point Likert scale with one being low and ten being high).

### Challenges of Online Teaching Questionnaire

A validated structured closed-ended questionnaire adapted from other studies was used.<sup>18,19</sup> Participants’ experiences before and during the COVID-19 pandemic were explored in the closed-ended questions. Also, there were questions designed to measure faculties’ preparedness and acceptance for using online teaching on a five-point Likert scale with a range of answer options that go from strongly agree to strongly disagree.

An introductory e-mail was sent to members of the target population using the institutional e-mail system that requested their participation by accessing the survey’s web link. A serial number was given to each faculty. All data collected were held in a workplace PC within National Guard Health Affairs premises, password-protected until five years after publication. The research team only can access the data.

## Data Management and Analysis Plan

Data entry was done on an Excel sheet, and any errors were cleaned up before the statistical analysis, which was done with the statistical program SPSS version 20.0. Descriptive statistical analyses were carried out by calculating the frequencies and percentages for categorical variables such as gender, academic position, and education level. In contrast, numerical data (for example, questionnaire score) were presented as mean  $\pm$  standard deviation.

Some inferential statistics were done to describe variations among different groups. For example, independent samples *t*-test was used to evaluate the difference in the mean stress scores between male and female groups. ANOVA test assessed the association between other independent variables such as educational level and academic position with the mean stress scores. The level of significance ( $\alpha$ ) in the study was set as 0.05 for all the statistical tests.

## Results

A total of 112 faculty members completed the survey with a response rate of 25%, and females made up 50.9% of the sample. Age and experience with teaching were distributed across several categories (Table 1). Faculty with a Ph.D. education level comprised most of the respondents (62.5%), whereas 37.5% had either master’s or bachelor’s degrees. More than two-thirds of the faculty in the sample (67.9%) were Assistant Professors, while more than one-half of the respondents (53.6%) were from the College of Medicine.

## Burnout and Stress Among Faculty Members of KSAU-HS During the COVID-19 Crisis

In terms of global stress ratings, the median for self-reported rating was 7 (interquartile range IQR= 5–8) on a scale of 1 to 10, with ten indicating high stress. The mean self-reported rating for coping was 8 (IQR= 6–9) on a scale of 1 to 10, with ten denoting high coping.

**Table 1** Demographic Characteristics of Respondents

Demographic Characteristics		n=112	%
<b>Gender</b>	Male	55	49.1
	Female	57	50.9
<b>Age Group</b>	≤35	21	18.8
	36–40	34	30.4
	41–45	22	19.6
	46–50	20	17.9
	≥51	15	13.4
<b>Years of teaching</b>	1–5	46	41.1
	6–10	37	33.0
	11–15	14	12.5
	≥16	15	13.4
<b>College Name</b>	College of Medicine	60	53.6
	College of Science & Professional Health	30	26.8
	College of Applied Medical Sciences	13	11.6
	College of Nursing	9	8.0
<b>Education Level</b>	Bachelor	8	7.1
	Masters'	34	30.4
	PhD	70	62.5
<b>Academic Position</b>	Teaching Assistant/Lecturer	30	26.7
	Assistant Professor	76	67.9
	Associate Professor	6	5.4

### Maslach Burnout Inventory – Educator’s Survey

Using Maslach’s subcategories scale as described earlier, almost 79% of the respondents reported a high degree of Emotional Exhaustion from their work. At the same time, about 16% and 5% of participants experienced moderate and low degrees, respectively. The median score for respondents was 17 (IQR= 10–28), indicating moderate emotional exhaustion. Regarding the extent to which faculty members experienced Depersonalization, the results showed that 87.5% of respondents reported experiencing a low degree of depersonalization in their relationship with others. In comparison, 8% reported moderate degrees of depersonalization, and 4.5% reported high degrees of depersonalization. The overall median score for respondents was 2 (IQR= 0–5), indicating a low degree of depersonalization. When it came to the level of Personal Accomplishment among faculty members, the scores varied (37.5%, 34.85%, 27.7%) across high, moderate, and low levels, respectively. Respondents’ median score was 35 (IQR= 28–40), indicating a moderate degree of personal accomplishment (Table 2).

### The Effect of Demographic Variables on Three Burnout Subscales

Females showed significantly greater mean burnout scores than males in the emotional exhaustion subcategory, according to statistical analysis using an independent *t*-test, and this outcome was statistically significant with  $P= 0.002$ . Similarly, statistical analysis using the ANOVA test revealed that respondents from CON had significantly greater mean burnout scores in the emotional exhaustion subcategory only than respondents from other colleges, and this finding was statistically significant with  $P= 0.018$ . However, other faculty characteristics such as age groups, educational level, academic position, and years of experience had no significant effect on respondents’ emotional exhaustion, depersonalization, or personal accomplishment (Table 3).

**Table 2** The Extent to Which Faculty Members Experienced Burnout Subcategories

Burnout Subcategories	n=112	%	Median	IQR
<b>Emotional Exhaustion (Max score = 54)</b>				
Low	6	5.4	17	10–28
Moderate	18	16.1		
High	88	78.6		
<b>Depersonalization (Max score = 30)</b>				
Low	98	87.5	2	0–5
Moderate	9	8.0		
High	5	4.5		
<b>Personal Accomplishment (Max score = 48)</b>				
High	42	37.5	35	28–40
Moderate	39	34.8		
Low	31	27.7		

**Note:** Emotional Exhaustion: 0–16 = Low, 17–26 = Moderate, >27 = High. Depersonalization: 0–6 = Low, 7–12 = Moderate, >13 = High. Personal Accomplishment: >39 = Low, 32–38 = Moderate, 0–31 = High.  
**Abbreviation:** IQR, interquartile range.

**Table 3** The Effect of Demographics on the Three Burnout Subcategories

Demographics	n=112	Emotional Exhaustion (Max Score:54)		Depersonalization (Max Score:30)		Personal Accomplishment (Max Score:48)	
		Mean (SD)	Overall	Mean (SD)	Overall	Mean (SD)	Overall
<b>Gender</b>							
Male	55	15.5 (10.5)	19.2 (12.5)	2.6 (3.1)	3.3 (3.8)	32.9 (8.5)	32.9 (9.1)
Female	57	22.8 (13.3)		3.9 (4.4)		32.9 (9.7)	
P-value		<b>0.002*</b>		0.079		0.990	
<b>College Type</b>							
COM	60	18.9 (12.0)	19.2 (12.5)	3.2 (3.3)	3.3 (3.8)	31.6 (8.2)	32.9 (9.1)
COSHP	30	15.9 (12.9)		2.7 (3.6)		35.7 (9.6)	
CAMS	13	19.9 (9.5)		3.1 (3.0)		33.6 (8.0)	
CON	9	30.9 (13.5)		5.9 (7.4)		31.8 (9.1)	
P-value		<b>0.018*</b>		0.183		0.233	
<b>Age Group</b>							
≤35	21	20.4 (11.5)	19.2 (12.5)	3.9 (4.5)	3.3 (3.8)	36.3 (9.3)	32.9 (9.1)
36–40	34	21.8 (14.8)		3.9 (4.6)		30.5 (10.0)	
41–45	22	16.0 (11.3)		2.6 (3.0)		33.6 (8.9)	
46–50	20	20.2 (11.3)		3.0 (3.3)		32.4 (8.3)	
≥51	15	15.1 (11.0)		2.4 (2.7)		33.4 (7.0)	
P-value		0.305		0.579		0.227	

(Continued)

**Table 3** (Continued).

Demographics	n=112	Emotional Exhaustion (Max Score:54)		Depersonalization (Max Score:30)		Personal Accomplishment (Max Score:48)	
		Mean (SD)	Overall	Mean (SD)	Overall	Mean (SD)	Overall
<b>Educational Level</b>							
Bachelor	8	15.0 (9.2)	19.2 (12.5)	1.6 (1.9)	3.3 (3.8)	30.9 (7.7)	32.9 (9.1)
Masters'	34	17.6 (13.4)		3.2 (4.5)		32.8 (10.6)	
PhD	70	20.5 (12.4)		3.5 (3.6)		33.2 (8.5)	
P-value		0.336		0.428		0.788	
<b>Academic Position</b>							
TA/Lecturer	30	16.4 (13.2)	19.2 (12.5)	3.2 (4.8)	3.3 (3.8)	33.6 (10.3)	32.9 (9.1)
Asst Professor	76	20.6 (12.0)		3.4 (3.4)		32.5 (8.7)	
Asso Professor	6	16.0 (15.4)		2.0 (4.0)		34.5 (8.1)	
P-value		0.247		0.704		0.775	
<b>Year of Experience</b>							
1–5	46	20.6 (12.7)	19.2 (12.5)	3.8 (3.9)	3.3 (3.8)	33.3 (9.2)	32.9 (9.1)
6–10	37	20.4 (12.4)		3.5 (4.3)		31.1 (9.4)	
11–15	14	18.0 (11.7)		2.1 (2.3)		33.7 (9.5)	
≥16	15	13.1 (12.5)		2.1 (3.5)		35.4 (7.5)	
P-value		0.198		0.310		0.430	

**Note:** Emotional Exhaustion: 0–16 = Low, 17–26 = Moderate, >27 = High. Depersonalization: 0–6 = Low, 7–12 = Moderate, >13 = High. Personal Accomplishment: >39 = Low, 32–38 = Moderate, 0–31 = High. By ANOVA test, \*P < 0.05 significant (bold).

**Abbreviations:** TA: Teaching Assistant, Asst: Assistant, Asso: Associate.

## Challenges and Adaptation to Online Teaching Arrangements During the COVID-19 Crisis

### Online Teaching/Learning Experience Before and After the COVID-19 Pandemic

The second section of the questionnaire provided details about faculties' experience using e-learning/teaching before and after COVID-19. The participants were asked whether they had used e-learning to deliver lectures or sessions before face-to-face teaching was suspended because of the COVID-19 pandemic. Faculty members revealed that more than half (58%) were novices with no prior experience before the pandemic. Only 7 (6.3%) had advanced online teaching expertise, while 40 (35.7%) were intermediate. According to statistical analysis utilizing the Fisher exact test, males and females had no statistically significant difference ( $P = 0.087$ ). Age group ( $P = 0.666$ ), teaching experience categories ( $P = 0.068$ ), academic position ( $P = 0.291$ ) and education level ( $P = 0.890$ ) all showed the similar pattern (Table 4).

Additionally, they were asked about their teaching/learning preference. The responses showed that 69 (61.6%) preferred combining online with traditional face-to-face instruction, 40 (35.7%) preferred traditional face-to-face instruction, and only 3 (2.7%) preferred online instruction alone.

The participants were again asked how they used e-learning after all face-to-face meetings were banned. The results showed that about 60% of faculty members utilized live lectures, while 40% used a combination of live and recorded lectures/sessions.

**Table 4** Online Teaching/Learning Experience Before and After the Coronavirus Pandemic

Demographics	Beginner		Intermediate		Advanced		p
	n=65	58%	n=40	35.7%	n=7	6.3%	
<b>Gender</b>							0.087
Male	28	50.9	21	38.2	6	10.9	
Female	37	64.9	19	33.3	1	1.8	
<b>Age Group</b>							0.666
≤35	14	66.7	7	33.3	0	0.0	
36–40	19	55.9	13	38.2	2	5.9	
41–45	9	40.9	10	45.5	3	13.6	
46–50	14	70.0	5	25.0	1	5.0	
≥51	9	60.0	5	33.3	1	6.7	
<b>Teaching Experience Group</b>							0.068
1–5	32	69.6	14	30.4	0	0.0	
6–10	17	45.9	17	45.9	3	8.1	
11–15	7	50.0	5	35.7	2	14.3	
≥16	9	60.0	4	26.7	1	13.3	
<b>Educational Level</b>							0.890
Bachelor	6	75.0	2	25.0	0	0.0	
Masters'	21	61.8	11	32.4	2	5.9	
PhD	38	54.3	27	38.6	5	7.1	
<b>Academic Position</b>							0.291
TA/Lecturer	21	70.0	8	26.7	1	3.3	
Asst Professor	40	52.6	31	40.8	1	6.6	
Asso Professor	4	66.7	1	16.7	1	16.7	

Note: By Fisher exact test,  $P < 0.05$ .

Abbreviations: TA, Teaching Assistant; Asst, Assistant; Asso, Associate.

### Challenges and Impact of a Sudden Shift to Online Education During the Pandemic

When assessing the impact of the shift to online education during the pandemic, 87.5% of the study respondents reported increased confidence in online teaching and learning effectiveness. According to the Fisher exact test, this confidence was statistically significant among females compared to males ( $P = 0.049$ ), but not among age groups ( $P = 0.440$ ), teaching experience groups ( $P = 0.495$ ), academic position ( $P=0.750$ ) or educational levels ( $P = 0.843$ ) (Table 5).

### The Association Between Job-Related Demands of Faculty Members and Their Online Teaching Arrangements During the COVID-19 Pandemic

The use of e-learning/teaching by faculty members during the COVID-19 pandemic (beginners, intermediate, advanced) was associated with burnout subcategories as well as global stress and coping levels. According to statistical analysis using the ANOVA test, respondents' experience with e-teaching/learning had no significant impact on respondents' burnout subcategories, global stress, or coping levels (Table 6).

Faculty members' teaching/learning preferences (face to face, blended) were assessed in the same manner. According to statistical analysis using the ANOVA test, respondents' preference for the teaching/learning method only had a statistically significant impact on emotional exhaustion. Respondents who preferred blended learning scored



**Table 5** The Impact of the Sudden Shift to Online Education During the Pandemic

	It Delays the Adoption of Online Education by Producing Doubt About its Efficacy		It Advances the Adoption of Online Education by Increasing Confidence in its Efficacy		p
	n=12	12.5%	n=98	87.5%	
<b>Gender</b>					<b>0.049*</b>
Male	9	17.0	44	83.0	
Female	3	5.3	54	94.7	
<b>Age Group</b>					0.440
≤35	2	9.5	19	90.5	
36–40	2	5.9	32	94.1	
41–45	5	22.7	17	77.3	
46–50	2	11.1	16	88.9	
≥51	1	6.7	14	93.3	
<b>Years of teaching</b>					0.495
1–5	5	10.9	41	89.1	
6–10	5	14.3	30	85.7	
11–15	2	14.3	12	85.7	
≥16	0	0.0	15	100.0	
<b>Educational Level</b>					0.843
Bachelor	0	0.0	8	100.0	
Masters'	4	11.8	30	88.2	
PhD	8	11.8	60	88.2	
<b>Academic Position</b>					0.750
TA/Lectures	2	6.7	28	93.3	
Asst Professor	10	13.5	64	86.5	
Asso Professor	0	0.0	6	100.0	

Note: By Fisher exact test, \*P < 0.05 significant (bold).

Abbreviations: TA, Teaching Assistant; Asst, Assistant; Asso, Associate.

**Table 6** Comparison of Online Teaching/Learning Experience with Burnout Subcategories

	Beginner		Intermediate		Advanced		p
	n=65	Mean (SD)	n=40	Mean (SD)	n=7	Mean (SD)	
<b>Emotional Exhaustion</b>	19.6 (12.9)		18.7 (11.7)		18.7 (15.6)		0.930
<b>Depersonalization</b>	3.4 (4.2)		3.2 (3.4)		2.9 (3.4)		0.930
<b>Personal Accomplishment</b>	32.7 (9.6)		33.1 (8.3)		34.1 (9.3)		0.916
<b>Global Stress Level</b>	6.5 (2.2)		6.6 (2.3)		6.4 (2.6)		0.991
<b>Global Coping Level</b>	7.2 (1.8)		7.7 (1.8)		7.1 (2.1)		0.426

Note: By Fisher exact test, P < 0.05.

statistically higher than those who preferred face-to-face learning. Other subcategories of burnout, global stress, and coping levels had no statistical significance (Table 7).

Lastly, an ANOVA test was used to compare faculty members who utilized live lectures versus those who used a combination of live and recorded lectures/sessions and its impact on subcategories of burnout, global stress, and coping

**Table 7** Comparison of Online Teaching/Learning Preference with Burnout Subcategories

	Face to Face		Blended		p
	n=40	Mean (SD)	n=69	Mean (SD)	
<b>Emotional Exhaustion</b>	15.9 (12.2)		21.1 (12.4)		<b>0.036*</b>
<b>Depersonalization</b>	2.8 (2.9)		3.5 (4.2)		0.386
<b>Personal Accomplishment</b>	32.2 (10.1)		33.3 (8.5)		0.535
<b>Global Stress Level</b>	6.1 (2.5)		6.8 (2.0)		0.151
<b>Global Coping Level</b>	7.7 (1.9)		7.2 (1.8)		0.191

Note: By Fisher exact test, \*P < 0.05 significant (bold).

**Table 8** Comparison of the Utilization of Live or Recorded Lectures/Sessions with Burnout Subcategories

	Live		Live + Recorded		p
	n=67	Mean (SD)	n=45	Mean (SD)	
<b>Emotional Exhaustion</b>	17.5 (10.6)		21.8 (14.7)		0.071
<b>Depersonalization</b>	2.6 (3.0)		4.2 (4.7)		<b>0.041*</b>
<b>Personal Accomplishment</b>	33.4 (8.0)		32.2 (10.6)		0.468
<b>Global Stress Level</b>	6.7 (2.1)		6.3 (2.4)		0.434
<b>Global Coping Level</b>	7.5 (1.7)		7.1 (2.0)		0.217

Note: By Fisher exact test, \*P < 0.05 significant (bold).

levels. The findings revealed that the effect was significantly limited to depersonalization, with no statistical significance for other burnout characteristics. Faculty members who gave both live and recorded lectures had a significantly negative attitude toward students than those who only conducted live lectures (Table 8).

## Discussion

Medical and health professions education has undergone many changes in recent decades. Still, the most significant transformation occurred during the COVID-19 pandemic lockdown, where the transition toward e-learning delivery was inevitable.<sup>18</sup> Furthermore, HPEs are employing various information and communication technology methods to ensure that medical education proceeds in the presence of the pandemic. For example, teachers and students prefer online collaboration tools and social media to university websites as they are more convenient and engaging, allowing for collaborative discussions on acute care themes.<sup>20</sup> On the other hand, HPEs faced the unanticipated challenges of exclusively teaching online. They faced numerous issues, including frustration, fear, and uncertainty, as well as challenges in time management and maintaining students' interest, an increase in cheating on exams/quizzes, and difficulties in maintaining a healthy work-life balance.<sup>18,19,21–25</sup> It's also worth noting that shifting to an online learning environment can lead to isolation and difficulties establishing boundaries between home and work environments. This may be an opportunity to extend communities of practice to include support staff and develop innovative approaches to staff development.<sup>13</sup> Additionally, provisions must be made to consider the mental health of health professionals directly affected by the current issue.<sup>20</sup>

Since little is known about HPEs' perceptions and competencies regarding e-learning readiness, the findings of the current study described the job-related demands and burnout that may affect the faculty members working in KSAU-HS during the pandemic. The results highlight a significant level of burnout among faculty members where the median global ratings of stress and coping were high, and this indicates an improved ability of faculty members to adapt to online teaching environments. Likewise, when the level of burnout among faculty was assessed using MBI-ES, almost 79% of

the respondents reported a high degree of emotional exhaustion from their work. Yet, the median score indicated moderate emotional exhaustion. Fortunately, faculty members' stated levels of emotional exhaustion had little effect on their attitudes toward their students since respondents indicated a low level of depersonalization. Similarly, when it came to personal accomplishment and contribution to students' well-being, teaching faculty reported a moderate level of personal accomplishment, reflecting their better potential to adapt to online teaching environments. Similar findings were obtained from a study in Pakistan.<sup>26</sup>

On the other hand, a Korean study was done among clinical faculty members of the School of Medicine, and the results of the Korean study showed lower burnout values which opposed the results of our study. This was attributed to higher scores of professional self-concept which means a perception of oneself as a member of the profession. It has an impact on a person's thoughts, actions, and emotions. The stronger the self-esteem in the profession, the more positive the professional self-concept, which can help to reduce burnout. Moreover, the results showed that professional self-concept is strongly and positively related to the personal accomplishment sub-scale of the MBI. High personal accomplishment reflects greater competence at work, which in turn affects the effectiveness of work, leading to increased quality of healthcare services delivered.<sup>8</sup>

According to an ANOVA analysis of variables affecting burnout in our study, only gender and college type significantly affected burnout scores among the sample group, with females and faculty from CON having reported higher scores in the emotional exhaustion subcategory. A study done in Eurasia showed that higher levels of emotional exhaustion in women were related to women's double responsibilities, which burdened them with professional commitments as well as household tasks and childcare responsibilities as mandated by their social positions.<sup>27</sup> Burnout was prevalent among multinational nurses in Saudi Arabia, according to Al-Turki et al<sup>28</sup> Another study conducted in Egypt found equally high levels of burnout among nurses. The nursing staff is the most prone to experience burnout due to the nature of their profession, which includes a variety of activities, increased proximity and time spent with patients, and emotional demands.<sup>29</sup>

All HPEs were unexpectedly forced to accommodate e-learning as the only available teaching and assessment approach. Our study examined the experience of the faculty in using e-learning/teaching before and after COVID-19. More than half of the respondents had no prior experience before the pandemic. Similar findings were also obtained from the Alanazi et al study, where 35.9% of respondents did not use e-learning, and 18.2% rarely used it.<sup>18</sup> Next, faculty members have quickly transitioned to e-learning, and this transition allowed faculties to navigate and utilize several telecommunication applications for teaching live and recorded lectures. Based on the findings of Ahmed et al, conditions created by the COVID-19 pandemic proved the effectiveness of online learning and have shown teaching faculty the new dimensions of doing their work.<sup>21</sup> Therefore, when our faculty were asked about the impact of the shift to online education during the pandemic, the majority of the study respondents reported increased confidence in online teaching and learning effectiveness. Similarly, Other studies showed that educators had positive experiences with e-learning and enjoyed engaging with new tools.<sup>21,30</sup> Others acknowledged the promotion of self-discipline and responsibility as additional benefits of online learning during the pandemic.<sup>19</sup> Yet, this confidence in online teaching was statistically significant among females compared to males but not among other independent variables. This may result from poor computer literacy skills or resistance to change by some faculty members.

Specific patterns and challenges have emerged in the context of online teaching during the pandemic, such as teaching practical sessions and conducting clinical exams. Many studies have suggested the use of blended learning as an effective learning experience.<sup>18,21,31-33</sup> Hence, about two-thirds of the respondents of this study preferred combining online with traditional face-to-face instruction, and they even suggested a post-pandemic blended strategy.

Based on what has been discussed earlier about the burden that has been placed on faculty members due to the unprecedented shift to online teaching during the COVID-19 pandemic, our study examined the association between job-related demands of faculty members and their online teaching arrangements during the pandemic. The comparison revealed that the respondents' experience with e-teaching/learning (beginner, intermediate, advanced) had no significant impact on their burnout assessment. Based on this inference, computer literacy skills and utilization of telecommunication applications are not significant factors for job demands among the study group. Faculty who preferred blended learning, on the other hand, reported higher levels of emotional exhaustion than those who preferred face-to-face

learning. Data extracted from a systematic review of the literature on barriers to e-learning in the health field are organized under several templates. Examples of these templates are economic barriers, such as the cost of e-learning, which would increase class sizes; technical and administrative support barriers; and psychological barriers, such as motivation and motivators, technophobia, computer anxiety, and dissatisfaction with the loss of the benefits and enjoyment of personal contact with learners and other trainers. It was also determined that change management is required to support organizations, trainers, and learners in transforming their pedagogical approaches.<sup>31</sup> Such psychological barriers could be reflected in our study population. The final comparison demonstrated that faculty members who gave both live and recorded lectures had a significantly negative attitude toward students than those who only conducted live lectures. This tendency could be explained by the findings of Ahmed et al's study. With the exponential rise in network usage during COVID-19, students complained of networking issues at their end. This obstacle was overcome by recording the lectures so that students may listen to them whenever they wanted. On the other hand, this has resulted in a loss of student motivation and engagement, as well as a high percentage of absenteeism.<sup>21</sup>

## Limitations

Nonetheless, we must acknowledge the limitations of the current study in order to suggest future research approaches. One of our study's limitations is its low generalizability. The findings cannot be extrapolated to other health profession institutes because it is a cross-sectional study at one educational institute. Likewise, the analyses done are associational, and no causal relationships can be predicted based on these findings. It is important to undertake follow-up studies with larger samples in a wider number of medical schools. Moreover, the faculty member who took part were self-selected, and it is possible that those who did not participate would have responded differently. The overall measurement of burnout, as well as the application of quantitative instruments to measure the psychodynamic aspects of this psychological phenomenon, are both limitations. In-depth interviews and qualitative studies are required to understand the burnout problem better. Although there are certain limitations, however, information obtained from the study can be utilized to help faculty members become more engaged in their work.

## Recommendations

The findings of this study offer stakeholders useful insights into how faculty members interact with e-learning. When faculty members are in the initial phases of emotional exhaustion, reducing job demands, providing specific resources and administrative support, as well as both physical and emotional self-care practices, may be the best way to mitigate the condition. (Another research can determine these effects). Moreover, increased work engagement is linked to job resources such as social support from coworkers, performance feedback, and learning opportunities. Employees that are engaged are more likely to have positive emotions, be in better health, and share their enthusiasm with people around them. We also recommend health education interventions during pre-employment training programs to prevent burnout; and periodic screening during work for early detection and management of burnout among healthcare professionals. While pandemics have historically created challenges, identifying these challenges is the first step in converting them into opportunities and engaging faculty in transforming the current situation into an evidence-based paradigm.

## Conclusion

Faculty members at KSAU-HS reported moderate emotional exhaustion and contributed moderately to students' well-being and accomplishment. Fortunately, this had no detrimental consequences on their attitude toward students. Most of the faculty feedback supported online teaching during the pandemic. However, emotional exhaustion was found to be significantly higher among faculty members who preferred blended teaching over face-to-face instruction.

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