

Boise State University

**ScholarWorks**

---

Respiratory Therapy Faculty Publications and  
Presentations

Department of Respiratory Therapy

---

2-14-2023

## **Assessing Burnout and Well-Being in Higher Education Health Science Faculty**

Kristen McHenry

*Boise State University*

Megan Koster

*Boise State University*

Gen Ludwig

*Boise State University*

Yong Gao

*Boise State University*

Jennifer Eichmeyer

*Boise State University*

---

Kristen McHenry and Megan Koster contributed equally to this work.

Research Article

## Assessing Burnout and Well-Being in Higher Education Health Science Faculty

Kristen McHenry<sup>1,†,\*</sup>, Megan Koster<sup>1,†</sup>, Gen Ludwig<sup>2</sup>, Yong Gao<sup>2</sup>, Jennifer Eichmeyer<sup>3</sup>

1. Department of Respiratory Care, Boise State University, Boise, ID, United States; E-Mails: [kristenmchenry@boisestate.edu](mailto:kristenmchenry@boisestate.edu); [megankoster@boisestate.edu](mailto:megankoster@boisestate.edu)
2. Department of Kinesiology, Boise State University, Boise, ID, United States; E-Mails: [genludwig@boisestate.edu](mailto:genludwig@boisestate.edu); [yonggao@boisestate.edu](mailto:yonggao@boisestate.edu)
3. School of Allied Health Sciences; Genetic Counseling, Boise State University, Boise, ID, United States; E-Mail: [jennifereichmeyer@boisestate.edu](mailto:jennifereichmeyer@boisestate.edu)

† These authors contributed equally to this work.

\* **Correspondence:** Kristen McHenry; E-Mail: [kristenmchenry@boisestate.edu](mailto:kristenmchenry@boisestate.edu)**Academic Editor:** Brandis Ansley**Special Issue:** [Stress, Burnout, and Trauma in Schools: Coping Strategies for Teachers, Staff, and Students](#)*OBM Integrative and Complementary Medicine*  
2023, volume 8, issue 1  
doi:10.21926/obm.icm.2301014**Received:** October 25, 2022**Accepted:** February 09, 2023**Published:** February 14, 2023

### Abstract

This study aimed to examine and compare the extent of burnout among health science faculty at a higher education institution and their self-reported perception of well-being during the COVID-19 pandemic. The design of the study was cross-sectional, descriptive survey research. An electronic questionnaire was developed to measure the constructs of burnout and well-being. Validated instruments used in the survey included the Oldenburg Burnout Inventory (OLBI) and the World Health Organization-5 Well-being Index. The Qualtrics<sup>®</sup> platform was used to distribute the survey to all full-time faculty within the College of Health Sciences. 45 respondents from nursing, community and environmental health, kinesiology, social work, respiratory care, allied health sciences, and radiologic sciences completed the survey.



© 2023 by the author. This is an open access article distributed under the conditions of the [Creative Commons by Attribution License](#), which permits unrestricted use, distribution, and reproduction in any medium or format, provided the original work is correctly cited.

Significant differences were observed in the extent of burnout and perception of well-being between faculty members who had clinical teaching responsibilities within their faculty role compared to those who did not,  $p = 0.005$ , Partial Eta Squared = 0.318. Faculty with a 9-month contract appointment had significantly lower OLBI-Disengagement scores ( $p = 0.024$ ) and OLBI-Full Burnout scores ( $p = 0.047$ ) compared with those with another contract length. There was a significantly negative relationship between the extent of burnout and perception of well-being. In this sample of health science faculty, burnout, as characterized by increased exhaustion and disengagement, was moderately prevalent and associated with poorer well-being.

### **Keywords**

Medical education; clinical teaching; teacher burnout; faculty well-being; health science

## **1. Introduction**

Burnout is a syndrome resulting from unmanaged chronic workplace stress [1]. This phenomenon typically follows increased work demand and a lack of resources, which in turn causes exhaustion and disengagement from one's work and others [2]. Though not yet considered a medical condition by disease standards, burnout can impact the physical and mental well-being of anyone, especially those in a service-oriented profession [1-3]. These characteristics can ultimately lead to a decrease in professional performance and overall job satisfaction. Because of the potential impact burnout can have on individual professionals and the people they serve, efforts should be made to address, alleviate and avert these occurrences.

Medical or healthcare-associated disciplines have been referred to as "helping professions" because of the nature of their patient-centered, service-oriented work. Compared to the general U.S. population, physicians and medical students have historically had greater burnout rates and depressive symptoms [4, 5], which may translate to other types of healthcare providers and clinical educators. Due to the specialized nature of the disciplines, clinically-focused academic programs often rely on the recruitment of clinical experts into a faculty role; however, as Lee et al. [6] described, this transition is often made without formal training or guidance on how to be an effective educator. Additionally, many faculty members of clinically-focused programming continue to hold medical or clinical credentials/responsibilities in concert with their educator role. A percentage of these faculty may also be tasked with identifying, coordinating, and facilitating clinical opportunities for students. Given the multifaceted nature of their roles, this subpopulation of individuals may be distinctly prone to experiencing burnout as a result of 'role strain' [6].

Role strain is the stress that occurs when individuals experience higher-than-expected demands from fulfilling numerous roles and responsibilities. Adding to the role strain of these faculty was the COVID-19 pandemic. Circumstances related to the pandemic resulted in an abrupt shift in both logistic operations and instructional pedagogy throughout higher education. Faculty were asked to transition classes to an online format and/or alter face-to-face course offerings to ensure adequate social distancing. This was a necessity and one that most educators did willingly to protect themselves, students, and their colleagues from the spread of COVID-19. However, the stress of

increased faculty expectations combined with the new barriers faced in educating and training future front-line healthcare workers underscores the unique challenges that may influence this population's well-being.

Not only was faculty workload affected by these changes (i.e., new course preparations, increase in student advising, limitations on access to on-campus resources), additional burdens were placed on those responsible for ensuring the clinical education of students; such as difficulty in meeting accreditation and competency standards when access to laboratories and the clinical environment was extremely limited. Without additional support, these professionals are at risk for negative impacts on both physical and psychological well-being, including post-traumatic stress symptoms, anxiety, depression, and a decrease in global functioning [7].

Many clinical faculty members practice teaching and delivering patient care [8]. As a result of the COVID-19 pandemic, several of these faculty were reassigned to roles different from those which they traditionally fulfilled. On occasion, faculty members were reallocated to provide direct patient care in response to critical shortages across clinical disciplines. Naturally, this transition redirected both time and energy from faculty educating future healthcare professionals. Furthermore, hospital administrators were forced to suspend all clinical learning experiences for students to preserve personal protective equipment (PPE), decrease the number of potential exposures, and decrease the workload burden of clinicians [9]. This often-meant students were not allowed to provide direct patient care, potentially resulting in delayed graduation until clinical rotations resumed. In some cases, although it may have been possible to graduate, students may not have been as well prepared for entry into professional practice.

Well-being as a metric has implications for personal health and professional productivity [10]. A difficult construct to define, well-being refers to feelings of being happy and healthy. There are many dimensions of well-being, such as physical, emotional, social, economic, and overall life satisfaction [10]. It can be inferred that individuals experiencing symptoms of burnout may have more negative emotions; which directly affects the perception of 'being well'. This is an important concept, as individual well-being influences the well-being of a population. Institutions across industries must understand how employee wellness translates to the collective health and associated costs of doing business in the wake of an evolving professional landscape [10].

### **1.1 Theoretical Framework**

The constructs of burnout and well-being, and how those variables are related, could be considered through the theoretical framework of the Job Demands-Resource (JD-R) Model [2]. First described by Demerouti et al, the model suggests that working conditions can be compartmentalized into two categories: job demands and job resources. Through the analysis of this model, it was found that job demands are linked to the exhaustion component of burnout and a lack of resources (real or perceived) is associated with disengagement [2]. Furthermore, this model highlights that job stressors and stress reactions are similar among various professions. Mudrak et al. [11] expand on the JD-R model by further classifying burnout into two distinct components; the motivational process (resources) and the health impairment process (demands).

Sabagh et al. [12] noted a lack of resources included minimal social support, less control over work activities, and fewer rewards. The greater the degree of burnout, the more affected the faculty's performance and commitment to work; adversely affecting general well-being. Job

demands in the form of workload and value conflicts also result in clear detrimental effects [2]. Job dissatisfaction, typically described as having a heavy workload, multiple roles, and insufficient time, is also a strong predictor of burnout [6, 13]. These factors likely lead to high emotional exhaustion and depersonalization; both of which are associated with nursing faculty vacating academic positions [14]. As noted by Alves et al. [15], who examined burnout and quality of life among a moderate sample of faculty (n = 366), more than a third of faculty members experienced burnout. In addition to the detrimental interpersonal effects of burnout, the number of affected faculty throughout higher education is not conducive to a sustainable model of quality education and must be addressed by institutions.

### **1.2 Purpose and Hypothesis**

The purpose of this study was to examine and compare the extent of burnout occurrence among health science faculty at a higher education institution as well as the self-reported perception of well-being. Differences between specific participant groups were also assessed. Though burnout has been studied in both academics and healthcare professionals, no study regarding burnout and well-being in an interprofessional group of health science faculty could be located at the inception of this project. Based on the JD-R Model, it can be hypothesized that an external stressor, such as the COVID-19 pandemic and the subsequent demands placed on health science faculty during this time, may result in negative physical and cognitive consequences as reflected in the self-reported perception of burnout and well-being. In addressing the presence of burnout and/or the lack of well-being across healthcare disciplines, more outreach efforts, training, and counseling support could be developed and perhaps even coordinated toward the goal of supporting faculty engagement. To address this growing issue, three primary research questions guided this study. First, what is the extent of burnout among an interprofessional group of higher education health science faculty? Second, what is the self-reported perception of well-being among an interprofessional group of higher education health science faculty? And finally, are there differences in the extent of burnout or perception of well-being between an interprofessional group of higher education health science faculty?

### **1.3 Measuring Burnout and Well-Being**

To best address the questions related to this research, the Oldenburg Burnout Inventory (OLBI) was selected. In a systematic review of psychometric properties of burnout measures, Shoman et al. [16] reported the OLBI to have the most complete validation (structural, construct, and internal consistency) of the instrument with moderate evidence for sufficient content validity. The Oldenburg Burnout Inventory is the second most used patient-reported outcome measure for measuring occupational burnout, with the Maslach Burnout Inventory (MBI) being the first [16]. The inventory is brief, concise, and envelopes a broader conceptualization of burnout because it is not specific to service-oriented professionals, like the MBI. There are also fewer dimensions being measured (exhaustion and disengagement) when compared to other instruments and wording is both positive and negative for each dimension, potentially resulting in less wording bias [16]. The factors of exhaustion and disengagement resemble that of emotional exhaustion (EE) and depersonalization (DP) found in the MBI, respectively, with similar variance [10].

Although concise, the WHO-5 Well-Being index is among the most relied-upon questionnaires in the assessment of subjective psychological well-being [17]. In a 2015 systematic review, Topp et al found that the tool had high clinimetric validity and could be used effectively as a non-invasive, subjective measure of well-being [17]. Previous research has also reported structural and construct criterion validity using the WHO-5 Index in numerous countries and populations [18, 19]. Cronbach alphas ranged from 0.81-0.90 in a study of medical educators concluding the instrument to be a psychometrically sound tool for measuring well-being [18]. However, in a study of adolescent mental well-being spanning 15 countries, the elimination of the first item on the questionnaire (“I have felt cheerful and in good spirits”) resulted in better psychometric properties in that population [20]. As the goal of this investigation was to examine and compare the incidence of perceived burnout and its influence on/relationship with participant well-being, a combination of established clinimetric and psychometric tools was utilized.

## **2. Materials and Methods**

The design of the study was observational, descriptive survey research with group comparison of major demographic variables. The study was cross-sectional, taking place after more than one year of altered teaching practices due to the COVID-19 pandemic. An electronic questionnaire was developed following a thorough review of the literature and evaluation of available instruments measuring the constructs of burnout and well-being. The Qualtrics<sup>®</sup> platform was used to distribute the survey to all full-time faculty within the College of Health Sciences.

### **2.1 Data Collection**

Before any data collection, the study protocol was submitted to the investigator’s Office of Research Compliance and was granted Institutional Review Board (IRB) approval on May 5, 2021. Access to and permission to survey faculty was granted by the College’s Assistant Dean of Research and was coordinated with the Communication Specialist. An email invitation to participate in the study was sent on June 4, 2021, which included the informed consent document, cover letter, and link to the survey. Reminder emails were sent and responses were accepted until July 30, 2021.

### **2.2 Survey Instrument**

The electronic survey consisted of 40 total questions including fourteen (14) demographic questions, the sixteen-item (16) Oldenburg Burnout Inventory (OLBI), the World Health Organization (WHO)-5 Well-Being Index, three (3) questions regarding mindfulness sessions and wellness strategies yielding quantitative data, and two (2) qualitative questions that required a written narrative response to the prompts. The OLBI used a four-point Likert scale (strongly agree-1, agree-2, disagree-3, strongly disagree-4) with eight items being reverse-scored due to the negative wording of those questions. Sample items from the inventory are included below. Scores range between 16-64, with higher scores indicating more burnout [2].

1. I always find new and interesting aspects in my work (disengagement construct; normal scoring).
2. There are days when I feel tired before I arrive at work (exhaustion construct; reverse scoring).

The WHO-5 Well-Being Index used a six-point Likert scale (all the time-5, most of the time-4, more than half of the time-3, less than half of the time-2, some of the time-1, and at no time-0) to indicate the closest corresponding feeling to the statement over the last two weeks. The five items from the index are located below. Scores on this index represent the quality of life of the responder and if poor well-being is reported (Score <13) further testing for depression is indicated [21].

1. I have felt cheerful and in good spirits.
2. I have felt calm and relaxed.
3. I have felt active and vigorous.
4. I woke up feeling fresh and rested.
5. My daily life has been filled with things that interest me.

Directions for how to respond to each section of the questionnaire were provided. Finally, respondents could provide their email addresses to receive a \$20 digital gift card as an incentive for participation. The survey was constructed collaboratively among investigators for face and content validity. The instrument was also piloted to a group [seven] of both full and part-time faculty who were not part of the study population, which yielded valuable information and changes to the survey.

### **2.3 Participants**

Study participants were full-time faculty in the College of Health Sciences as of June 2021. Faculty were included in the study if they voluntarily completed the electronic survey after reading the informed consent. One hundred seventeen (117) faculty were sent the invitation email with the survey link. Forty-five (45) faculty members completed components of the survey (questions could be left unanswered) for a response rate of 38.46%. Given the timing of the survey, some faculty members were “off-contract” and did not have a teaching workload in the summer semester, thereby influencing the response rate. Due to the potential for psychosocial stress as a result of reflecting on personal burnout and well-being, information on how to contact a professional counselor at University Health Services was provided.

### **2.4 Statistical Analysis**

Descriptive statistical analyses (e.g., frequency, means, and standard deviations) were conducted for all the study variables whenever appropriate. The MANOVA assumptions (e.g., normality, multivariate outliers) were first checked using Shapiro-Wilk tests, scatter plots, and the Mahalanobis distance test. When the MANOVA assumptions were met, MANOVAs were run to compare the differences in burnout subtotal and total scores (disengagement, exhaustion, and full scale) and well-being total scores across different demographic and academic-related groups. Correlation and regression analyses (for continuous data) were conducted to determine if there was a relationship between the extent of burnout on disengagement, exhaustion, and full scale and well-being. Partial Eta Squared was calculated as a measure of effect size, where Partial Eta Squared = 0.01 is considered a small effect size, 0.06 medium effect size, and 0.14 or higher large effect size. Significant levels were set at 0.05 and SPSS 27 was used for all data analysis.

### 3. Results

#### 3.1 Sample Characteristics

Among a total of 45 Health Sciences faculty members who responded to the survey in this study, 67.4% (n = 29) of participants identified as female, 95.6% (n = 43) were White or Caucasian, 51.2% (n = 22) were 41-55 years of age, 30.2% (n = 13) were 56-70 years of age, and 18.6% (n = 8) were 26-40 years old. Around 54.8% of the respondents reported they had a full-time faculty appointment within the College of Health Science for either 0-5 years (28.6%, n = 12) or 6-10 years (26.2%, n = 11), followed by 20+ years (19%, n = 8). Nineteen (43.2%) participants also held an administrative position within the College. More than 50% of participants were either in a tenure track position (20.5%, n = 9) or already tenured (31.8%, n = 14), while 47.7% (n = 21) were an instructor/lecturer or on a clinical track. A little over 50% of the participants had a 9-month contract appointment (n = 25). Table 1 provides an overview of respondents' demographic categorization and professional designation.

**Table 1** Demographic Analysis of Survey Respondents.

Variables	n	%	Disengagement OLBI-D Mean ± SD	Exhaustion OLBI-E Mean ± SD	Burnout OLBI-F Mean ± SD	Wellbeing WHO-5 Mean ± SD
<b>Overall</b>	45		18.71 ± 4.43	20.38 ± 4.23	39.09 ± 8.3	16.24 ± 5.15
<b>Sex</b>						
Male	14	32.6	18.43 ± 3.84	19 ± 3.16	37.43 ± 6.6	16.79 ± 3.33
Female	29	67.4	18.31 ± 4.39	20.52 ± 4.28	38.83 ± 8.32	16.14 ± 5.9
<b>Age Group</b>						
26-40 Years	8	18.6	19.13 ± 3.76	20.63 ± 2.72	39.75 ± 5.85	17.25 ± 3.49
41-55 Years	22	51.2	18.68 ± 4.6	20.91 ± 4.22	39.59 ± 8.42	15.23 ± 4.99
56-70 Years	13	30.2	18.77 ± 5.1	19.92 ± 5.09	38.69 ± 10.07	16.38 ± 6.02
<b>Race/Ethnicity</b>						
Caucasian/White	43	95.6	18.35 ± 4.17	20.02 ± 3.98	38.37 ± 7.75	16.35 ± 5.17
<b>FT Appointment</b>						
0-5 years	12	28.6	18.75 ± 4.07	20.75 ± 3.17	39.5 ± 6.57	17.67 ± 4.12
6-10 years	11	26.2	16.82 ± 3.06	18.36 ± 3.47	35.18 ± 6.05	14 ± 5.14
11-15 years	5	11.9	21 ± 3.54	22.8 ± 4.82	43.8 ± 8.29	16.2 ± 7.46
16-20 years	6	14.3	20.67 ± 2.94	21.33 ± 2.66	42 ± 5.25	15 ± 4.65
20+ years	8	19.0	18.5 ± 6.14	20.63 ± 5.55	39.13 ± 11.34	18.25 ± 5.37
<b>Type of Faculty Position</b>						
Instructor/Lecturer/Clinical Track	21	47.7	17.9 ± 3.86	19.86 ± 4.03	37.76 ± 7.44	16.19 ± 5.19
Tenure Track	9	20.5	20 ± 3.54	22.11 ± 2.98	42.11 ± 5.84	14 ± 3.97
Tenured	14	31.8	18.43 ± 5.18	19.43 ± 4.59	37.86 ± 9.57	18.21 ± 5.28
<b>Type of Contract</b>						
9-month	25	55.6	17.12 ± 3.48 <sup>*a</sup>	18.88 ± 3.67 <sup>*a</sup>	36 ± 6.72 <sup>*a</sup>	16.8 ± 5.03



11-month	12	26.7	20 ± 5.38	22.33 ± 4.52	42.33 ± 9.5	16.5 ± 5.16
Other	8	17.8	21.75 ± 3.73	22.13 ± 4.05	43.88 ± 7.62	14.13 ± 5.62

Note: OLBI-D: Oldenburg Burnout Inventory Disengagement Scores; OLBI-E: Oldenburg Burnout Inventory Exhaustion Scores; OLBI-F: Oldenburg Burnout Inventory Full Burnout Scores; WHO-5: World Health Organization-5 Well-Being Index Scores. \*: p < 0.05; \*\*: p < 0.01; \*\*\*: p < 0.005; <sup>a</sup>: Comparison between 9-month and Other contract groups.

The majority of respondents were faculty members from various programs in the School of Allied Health Sciences (37.8%, n = 17), which includes Respiratory Care, Radiologic Sciences, Kinesiology, and Genetic Counseling; or the School of Nursing (31.1%, n = 14), and the rest were from Community and Environment Health (17.8%, n = 8) also located within the SAHS, and School of Social Work (13.3%, n = 6). Most participants primarily teach in either an undergraduate program (46.7%, n = 21) or a graduate program (37.8%, n = 17), and only 7 (15.6%) teach in both undergraduate and graduate programs (Table 2).

**Table 2** Responses by Department and Workload Allocation.

Variables	n	%	Disengagement	Exhaustion	Burnout	Wellbeing
			OLBI-D Mean ± SD	OLBI-E Mean ± SD	OLBI-F Mean ± SD	WHO-5 Mean ± SD
<b>Related Program</b>						
Allied Health Sciences	17	37.8	19.29 ± 4.33	20.88 ± 3.69	40.18 ± 7.66	15.76 ± 4.13
Comm & Environ. Health	8	17.8	15.38 ± 3.07	17.88 ± 4.22	33.25 ± 6.56	20 ± 3.78
Nursing	14	31.1	20.43 ± 4.16	21.79 ± 4.46	42.21 ± 8.35	14.36 ± 6.25
Social work	6	13.3	17.5 ± 5.05	19 ± 4.34	36.5 ± 9.12	17 ± 4.82
<b>Degree Level</b>						
Undergraduate	21	46.7	19.14 ± 3.98	21.1 ± 3.66	40.24 ± 7.08	15.48 ± 5.03
Graduate	17	37.8	17.41 ± 4.69	19.18 ± 4.76	36.59 ± 9.15	16.18 ± 5.19
Both	7	15.6	20.57 ± 4.79	21.14 ± 4.45	41.71 ± 9.18	18.71 ± 5.41

\*OLBI-D: Oldenburg Burnout Inventory Disengagement Scores; OLBI-E: Oldenburg Burnout Inventory Exhaustion Scores; OLBI-F: Oldenburg Burnout Inventory Full Burnout Scores; WHO-5: World Health Organization-5 Well-Being Index Scores. \*: p < 0.05; \*\*: p < 0.01; \*\*\*: p < 0.005.

Table 3 illustrates the classification of the primary modality of respondents’ teaching workloads. During the pandemic, participants’ primary means of teaching was at least 80% online (42.2%, n = 19) or hybrid (37.8%, n = 17), and only 20% (n = 9) taught 80% in person.

**Table 3** Primary modalities of teaching workload among respondents.

Variables	n	%	Disengagement	Exhaustion	Burnout	Wellbeing
			OLBI-D Mean ± SD	OLBI-E Mean ± SD	OLBI-F Mean ± SD	WHO-5 Mean ± SD

Teaching Delivery						
80% Online	19	42.2	17.68 ± 4.51	20 ± 4.43	37.68 ± 8.62	15.63 ± 4.94
80% In-person	9	20.0	20.78 ± 3.46	21.89 ± 3.14	42.67 ± 6.02	14.67 ± 3.87
Blended/Hybrid	17	37.8	18.76 ± 4.63	20 ± 4.54	38.76 ± 8.84	17.76 ± 5.8

\*OLBI-D: Oldenburg Burnout Inventory Disengagement Scores; OLBI-E: Oldenburg Burnout Inventory Exhaustion Scores; OLBI-F: Oldenburg Burnout Inventory Full Burnout Scores; WHO-5: World Health Organization-5 Well-Being Index Scores. \*: p < 0.05; \*\*: p < 0.01; \*\*\*: p < 0.005.

Eighteen respondents (48.6%) had clinical teaching responsibilities as part of their faculty workload; all taught in a program that has a clinical education component. Seventeen (42.5%) respondents also had clinical practice outside of their faculty work (Table 4).

**Table 4** Teaching Responsibilities Central to Respondent’s Workload.

Variables	n	%	Disengagement	Exhaustion	Burnout	Wellbeing
			OLBI-D Mean ± SD	OLBI-E Mean ± SD	OLBI-F Mean ± SD	WHO-5 Mean ± SD
<b>Clinical Teaching</b>						
Yes	18	48.6	20.83 ± 4.03***	21.89 ± 4.28**	42.72 ± 8.04***	14.28 ± 5.28**
No	19	51.4	16.37 ± 4.39	18.26 ± 3.71	34.63 ± 7.65	18.74 ± 4.36
<b>Clinical Practice</b>						
Yes	17	42.5	19.29 ± 4.45	20.88 ± 3.94	40.18 ± 8.03	16 ± 4.61
No	23	57.5	18.13 ± 4.87	19.91 ± 4.77	38.04 ± 9.28	16.52 ± 5.85
<b>Administrative Position</b>						
Yes	19	43.2	19.47 ± 4.39	21.05 ± 3.17	40.53 ± 7.17	16 ± 4.53
No	25	56.8	18.12 ± 4.55	19.88 ± 4.97	38 ± 9.22	16.72 ± 5.54

\*OLBI-D: Oldenburg Burnout Inventory Disengagement Scores; OLBI-E: Oldenburg Burnout Inventory Exhaustion Scores; OLBI-F: Oldenburg Burnout Inventory Full Burnout Scores; WHO-5: World Health Organization-5 Well-Being Index Scores. \*: p < 0.05; \*\*: p < 0.01; \*\*\*: p < 0.005.

Most participants reported a strong support system outside of work (95.6%, n = 43), while around 51% (n = 23) reported providing care for someone outside of work responsibilities. Table 5 shows the extent of burnout among an interprofessional group of higher education health science faculty.

**Table 5** Extent of Burnout and Well-being Across Respondents.

Variables	n	%	Disengagement	Exhaustion	Burnout	Wellbeing
			OLBI-D Mean ± SD	OLBI-E Mean ± SD	OLBI-F Mean ± SD	WHO-5 Mean ± SD
<b>Strong Support System</b>						
Yes	43	95.6	18.44 ± 4.34	20.14 ± 4.17	38.58 ± 8.13	16.35 ± 5.17
No response	2	4.4	24.5 ± 0.71	25.5 ± 2.12	50 ± 2.83	14 ± 5.66

<b>Care for Someone</b>						
Yes	23	51.1	17.39 ± 3.93	19 ± 3.18	36.39 ± 6.6	17.83 ± 4.26
No	20	44.4	20.05 ± 4.59	21.85 ± 4.68	41.9 ± 8.97	14.75 ± 5.59
No response	2	4.4	20.5 ± 6.36	21.5 ± 7.78	42 ± 14.14	13 ± 7.07
<b>Wellbeing</b>						
Poor	12	26.7	21 ± 3.77*	23.17 ± 3.97**	44.17 ± 7.52*	9.5 ± 1.51*
Good	33	73.3	17.88 ± 4.41	19.36 ± 3.9	37.24 ± 7.88	18.7 ± 3.52
<b>Disengagement</b>						
Low	10	22	12.8 ± 1.14	16.2 ± 2.39	29 ± 2.83	19.6 ± 4.06
Medium	26	58	18.69 ± 1.87	19.96 ± 2.9	38.65 ± 4.19	15.5 ± 4.73
High	9	20	25.33 ± 1.58	26.22 ± 2.22	51.56 ± 3.5	14.67 ± 6.22
<b>Exhaustion</b>						
Low	10	22	14 ± 2.36	15.1 ± 1.29	29.1 ± 3	19 ± 4.9
Medium	27	60	18.59 ± 2.98	20.37 ± 2.26	38.96 ± 4.54	15.85 ± 4.35
High	8	18	25 ± 2.51	27 ± 1.31	52 ± 3.46	14.13 ± 7
<b>Burnout</b>						
Low	7	16	12.71 ± 1.25	15 ± 1.41	27.71 ± 2.29	20.14 ± 3.67
Medium	30	67	18.3 ± 2.69	19.93 ± 2.78	38.23 ± 4.64	15.8 ± 4.7
High	8	18	25.5 ± 1.6	26.75 ± 1.67	52.25 ± 3.01	14.5 ± 6.63

\*OLBI-D: Oldenburg Burnout Inventory Disengagement Scores; OLBI-E: Oldenburg Burnout Inventory Exhaustion Scores; OLBI-F: Oldenburg Burnout Inventory Full Burnout Scores; WHO-5: World Health Organization-5 Well-Being Index Scores. \*: p < 0.05; \*\*: p < 0.01; \*\*\*: p < 0.005.

### **3.2 What Is the Extent of Burnout Among an Interprofessional Group of Higher Education Health Science Faculty?**

The average subtotal/total score for this study’s participants was 18.71 ± 4.43 for the disengagement subscale, 20.38 ± 4.23 for the exhaustion subscale, and 39.09 ± 8.3 for the burnout scale. Based on scores above or below 1 standard deviation of the means of Oldenburg Burnout Inventory Disengagement (OLBI-D), 58% (n = 26) of Health Sciences faculty members were identified as having medium OLBI-D scores, and 22% (n = 10) as having low and 20% (n = 9) as having high OLBI-D scores. Similarly, 60% (n = 27) of Health Sciences faculty members were identified as having medium Oldenburg Burnout Inventory Exhaustion (OLBI-E) scores, 22% (n = 10) as having low, and 18% (n = 8) as having high OLBI-E scores. A similar pattern can also be observed on Oldenburg Burnout Inventory full (OLBI-Full) scores, where a majority of the respondents (67%, n = 30) were identified as having medium OLBI-Full scores, while 16% (n = 7) and 18% (n = 8) as having low and high OLBI-Full scores, respectively.

### **3.3 What Is the Self-Reported Perception of Well-Being Among an Interprofessional Group of Higher Education Health Science Faculty?**

As shown in Table 5, the average well-being total score is  $16.24 \pm 5.15$ . Among the 45 participants who responded to the well-being scale, 26.7% ( $n = 12$ ) were identified as having poor well-being (the WHO-well-being total score lower than 13), and 73.3% ( $n = 33$ ) were in good well-being.

### **3.4 Are There Differences in Either the Extent of Burnout or Perception of Well-Being Between an Interprofessional Group of Higher Education Health Science Faculty?**

Almost all Shapiro-Wilk tests within groups of the independent variables had  $p$  values  $> 0.05$ , and Scatter plots for OLBI-E, OLBI-D, and OLBI-F, and well-being showed either straight lines or elliptical. Such results support the normality of the data. The maximum Mahalanobis distance within the data is  $< 8$ , which is far below the threshold of 14.86 for the significance of 0.05, indicating no multivariate outliers were presented in the data that may significantly influence the MANOVA results (Detailed results of MANOVA assumptions tests will be provided upon request).

#### **3.4.1 The Extent of Burnout and Perception of Well-being Across Gender and Age Groups**

MANOVA analysis revealed that there were no significant gender ( $p = 0.371$ , Partial Eta Squared = 0.09) or age group ( $p = 0.853$ , Partial Eta Squared = 0.039) differences in the extent of burnout (OLBI-D, OLBI-E, and OLBI-Full scores) or perception of well-being observed among the higher education health science faculty in this study.

#### **3.4.2 The Extent of Burnout and Perception of Well-being Across Academic Units and Groups**

Significant differences were observed in the extent of burnout (OLBI-D, OLBI-E, and OLBI-Full scores) and perception of well-being between faculty members who have clinical teaching responsibilities within their faculty role compared to those who do not have clinical teaching responsibilities ( $p = 0.005$ , Partial Eta Squared = 0.318). Further univariate analysis revealed faculty members who have clinical teaching responsibilities within their faculty role had significantly higher OLBI-D ( $p = 0.003$ , Partial Eta Squared = 0.228), OLBI-E ( $p = 0.009$ , Partial Eta Squared = 0.178), and OLBI-Full ( $p = 0.003$ , Partial Eta Squared = 0.218) scores, and significantly lower well-being total scores ( $p = 0.008$ , Partial Eta Squared = 0.184) compared to those who do not have clinical teaching responsibilities.

MANOVA also revealed significant differences in the extent of burnout among faculty with different contract appointments ( $p = 0.049$ , Partial Eta Squared = 0.146). Further univariate analyses indicate the statistical differences were mainly for the extent of burnout ( $p = 0.015$ , Partial Eta Squared = 0.182 for OLBI-D scores;  $p = 0.026$ , Partial Eta Squared = 0.160 for OLBI-E scores; and  $p = 0.015$ , Partial Eta Squared = 0.181 for OLBI-Full scores). Faculty who have a 9-month contract appointment had significantly lower OLBI-D scores ( $p = 0.024$ ) and OLBI-Full scores ( $p = 0.047$ ) compared with those who have other lengths of contract (such as 10-month or 12-month contract), and OLBI-E scores ( $p = 0.029$ ) compared to those who have an 11-month contract, while no differences in the extent of burnout were observed between faculty with 11-month and those with other (such as 10-month or 12-month) contract appointments ( $p > 0.05$ ). No significant difference

was observed in the perception of well-being between faculty with different contract appointments, ( $p = 0.442$ , Partial Eta Squared = 0.038).

No statistical differences were observed between academic units, degree levels of primary teaching, primary means of teaching and delivering content, whether or not having clinical practice outside of faculty work, whether holding an administrative position within health sciences, years of full-time faculty appointment in higher education, or type of faculty position.

### 3.4.3 Relationship Between Extent of Burnout and Perception of Well-being

There was a significantly negative relationship between the extent of burnout and perception of well-being, with Pearson correlation coefficient  $r = -0.354$  and  $p = 0.017$  for OLBI-D and well-being scores,  $r = -0.455$  and  $p = 0.002$  for OLBI-E and well-being scores, and  $r = -0.421$  and  $p = 0.004$  for OLBI-Full and well-being scores. MANOVA analysis also indicated the higher the burnout scores, the lower the well-being scores, where there was a significant difference in the extent of burnout between poor and good well-being groups ( $p = 0.024$ , Partial Eta Squared = 0.163). Faculty members who identified as having poor well-being had significantly higher OLBI-D scores ( $p = 0.035$ , Partial Eta Squared = 0.099), OLBI-E scores ( $p = 0.006$ , Partial Eta Squared = 0.161), and OLBI-Full scores ( $p = 0.012$ , Partial Eta Squared = 0.139).

## 4. Discussion

The majority of our study population was found to have medium (67%) to high (18%) levels of burnout, as characterized by nearly equal parts disengagement and exhaustion, and nearly half (48.6%) had clinical teaching responsibilities and/or participated in clinical practice (42.5%). These results are consistent with findings published by Alves et al. [15] and Gewin [22] which demonstrated that the number of faculty reporting burnout in 2020 (70%) was a sharp increase from the roughly 33% of faculty who reported those feelings in 2019. The relatively high degree of burnout in this population could stem from exhaustion related to the increased demands of their professional roles and lack of resources during the COVID-19 pandemic [2, 11, 12]. It is speculated that when greater burnout is present, performance and commitment to one's work, along with well-being are adversely affected [12].

The lack of resources in this study population could be related to working remotely (less on-campus access) and limited clinical placement options for students. The perception of inadequate resources required to perform duties effectively is likely a contributor to lowered motivation, job satisfaction, and productivity [11, 13, 23]. Resources are aspects of a job that help individuals achieve work goals, reduce job demands or facilitate personal growth and development [24]. In a large study of higher education employees, the highest degree of exhaustion and depersonalization was reported when elevated job demands coincided with low job resources [24]. However, resources, such as social support, autonomy, performance feedback, and collegial relationship with one's supervisor had a buffering effect on burnout.

Unique demands placed on this group of faculty members may also be attributed to the abrupt transition to remote learning, the need for greater student outreach, and clinical hurdles such as the need to monitor vaccination requirements and procure sufficient personal protective equipment (PPE) in rapidly changing environments. Additionally, faculty seemingly lost a great deal of control or influence over their work during the pandemic. Control or decision latitude is

considered an area of work-life that can positively or negatively influence the presence and/or extent of burnout. An employee who has increased autonomy and less ambiguity in his or her role tends to have less burnout [3].

The majority of participants (73.3%) reported perceptions of good well-being, while the remainder reported poor (26.7%) perceptions of well-being. This corresponds to prior research, where twenty percent of academic physicians had significant depressive symptoms, (i.e., a raw score below 13 (poor) on the WHO-5 Well-Being Index) [23]. Although faculty age did not have a significant impact on the presence/extent of burnout or well-being in this population, previous studies have associated younger age with increased burnout [24, 25]. This reflects a need for greater burnout awareness and support of early-career faculty in academia.

Faculty with clinical teaching responsibilities and/or oversight of student clinical rotation facilitation had statistically significant higher levels of total burnout (increased disengagement and exhaustion) and reported poorer well-being. This finding could be related to the role strain experienced as a result of the pandemic's pressure on healthcare professionals or the increased distance from campus/higher education colleagues, lending to feelings of disconnection [6, 26]. Furthermore, clinical teaching faculty may have had to assume additional responsibilities within the clinical environment while overseeing students to help address extreme staffing shortages and instances of crisis standards of care [7]. These findings highlight the importance of supervisor and institutional support in the prevention of exhaustion and demotivation in faculty with clinical teaching responsibilities [11, 27].

Additional consideration of the degree of faculty burnout should include regional influences and practices regarding COVID-19 safety, which may have impacted the roles of clinical faculty. For example, although many of the clinical sites central to this study had similar COVID-19 protocols as did the university, this was not true of all fieldwork sites. The variability of expectations and, again, resources, likely presented a challenge to some faculty members. The added stress of feeling unprotected while in the line of duty and the associated implications of exposure (i.e., quarantine, illness, interruption of course delivery) likely contributed to their reported burnout.

Faculty on a nine-month contract were found to have lower total burnout scores and disengagement scores when compared to faculty on longer contracts. The time off (typically in the summer months) likely afforded these faculty members time to actively recover from a challenging academic year that had been significantly impacted by the COVID-19 pandemic. Those on longer contracts (10-12 months) may be more likely to hold tenure-eligible or administrative appointments; additional responsibilities which could contribute to the perception of burnout.

As hypothesized, an increased presence or extent of burnout correlated to a poorer perception of overall well-being. Furthermore, when well-being was poor, levels of disengagement, exhaustion, and total burnout were higher. This finding corresponds to research by Sabagh et al. [12] and emphasizes the continued need for faculty support (whether administrative, peer, or familial), resumed control over work demands/resources, and recognition of, and potential rewards for salient efforts during a tumultuous time. Without focused support for each faculty type, job performance, and organizational commitment (i.e., retention) could be affected. Deng et al expanded on the empirical research of job demands, control, and support by examining the stress reactivity of nurses as reflected by the biomarker cortisol. As job demands were higher, emotional exhaustion increased, as did measured cortisol levels. Conversely, increased support led to enhanced personal accomplishment, and lower cortisol levels [28].

An area of complementary medicine that may help prevent or alleviate burnout and anxiety is mindfulness-based stress reduction [5]. In our survey, we asked participants to disclose whether or not they attended Midday Mindfulness Sessions offered through an institution-sponsored initiative to create healthy learning environments for all faculty, staff, and students. These 15-minute sessions were offered bi-weekly throughout the Fall 2020 and Spring 2021 semesters. None of the respondents reported having attended one of these sessions due to not knowing about them, not having the time to attend, or scheduling conflicts. This finding further validates the workload barriers faced by health science faculty during the pandemic.

#### **4.1 Limitations**

Limitations of the study include a small sample size, data collection from only one college (Health Sciences) within one institution and the population was not widely diverse (95.6% Caucasian/White). This may result in our findings having limited transferability to faculty with various ethnic backgrounds, whose experiences bring about different levels of burnout and well-being. Marginalized groups have been increasingly adversely affected during the pandemic, which may not have been captured. The small sample size and relatively low response rate (38.46%) were likely a combination of timing (many 9-month faculty were off-contract) and increased job demands, which influences generalizability to the entire population of higher education health science faculty. This leads to the possibility of an institution-specific phenomenon, versus widespread occurrence. A larger confirmatory study that is sufficiently powered should be performed in outside institutions. The decision to use the Oldenburg Burnout Inventory (OLBI) over other instruments that measure the construct, may have under or over-reflected true measures of burnout, despite consistent measures of validity and reliability. The WHO-5 Well-Being Index does not encapsulate occupation-related dimensions of health, but rather overall quality of life, therefore sole determinants of individual and collective well-being cannot be extrapolated. The incentive to take part in the study (i.e. gift card) could have encouraged those who were more or less likely to experience feelings of burnout to participate.

#### **5. Conclusions**

To better understand the effects of burnout and well-being on a sample of health professions faculty at one institution, this study aimed to identify specific factors which may influence the perceptions of both wellness and burnout. For those faculty who continue to practice clinically in addition to their teaching responsibilities, the COVID-19 pandemic has potentially contributed to both burnout and lower perceptions of well-being. Though a small sample was studied, the findings have practical significance in those departments that facilitate programs with a clinical component and should consider opportunities to support faculty who navigate, facilitate, and/or coordinate clinical roles. This information is essential as institutions struggle to strategically plan ways to support faculty well-being, and by proxy, retention.

As higher education continues to shift in response to the effects of the COVID-19 pandemic, it is clear the impacts related to role strain (i.e., added demand, inadequate resources, unclear or changing expectations) likely contribute to the increasing rates of faculty turnover. Because programs with clinical components already struggle to identify qualified faculty to facilitate program requirements, sponsoring institutions must consider the added stressors, which may be unique to

this population of clinical academics. Opportunities such as ensuring contracted time off, clear delineation of roles, clearer workload allocation, and increased access to resources to support effective course delivery should be considered by academic institutions as ways to not only prevent burnout but also support faculty well-being.

## **Acknowledgments**

We would like to acknowledge and thank both the College of Health Sciences for their participation in the study and the Department of Respiratory Care for providing monetary support for this project.

## **Author Contributions**

McHenry: Study conceptualization, study design, survey creation, data collection, interpretation of the data, drafting/revising the manuscript, and final approval of the work. Koster: Study conceptualization, study design, survey creation, data collection, interpretation of the data, drafting/revising the manuscript, and final approval of the work. Ludwig: Study design, survey creation, interpretation of the data, drafting/revising the manuscript. Gao: Study design, data analysis, interpretation of the data, drafting/revising the manuscript. Eichmeyer: Survey creation and manuscript revision.

## **Funding**

Department of Respiratory Care at Boise State University.

## **Competing Interests**

The authors have declared that no competing interests exist.

## **References**

1. World Health Organization. Burn-out an “occupational phenomenon”: International classification of disease [Internet]. Geneva: WHO; 2019. Available from: <https://www.who.int/news/item/28-05-2019-burn-out-an-occupational-phenomenon-international-classification-of-diseases>.
2. Demerouti E, Bakker AB, Nachreiner F, Schaufeli WB. The job demands-resources model of burnout. *J Appl Psychol*. 2001; 86: 499-512.
3. Maslach C, Leiter MP. The truth about burnout: How organizations cause personal stress and what to do about it. San Francisco, CA: Jossey-Bass; 1997.
4. Dyrbye LN, West CP, Satele D, Boone S, Tan L, Sloan J, et al. Burnout among U.S. medical students, residents, and early career physicians relative to the general U.S. population. *Acad Med*. 2014; 89: 443-451.
5. Wild K, Scholz M, Ropohl A, Bräuer L, Paulsen F, Burger PH. Strategies against burnout and anxiety in medical education-implementation and evaluation of a new course on relaxation techniques (Relacs) for medical students. *PLoS One*. 2014; 9: e114967.



6. Lee P, Miller MT, Kippenbrock TA, Rosen C, Emory J. College nursing faculty job satisfaction and retention: A national perspective. *J Prof Nurs.* 2017; 33: 261-266.
7. Carmassi C, Dell'Oste V, Bui E, Foghi C, Bertelloni CA, Atti AR, et al. The interplay between acute post-traumatic stress, depressive and anxiety symptoms on healthcare workers functioning during the COVID-19 emergency: A multicenter study comparing regions with increasing pandemic incidence. *J Affect Disord.* 2022; 298: 209-216.
8. Dunn M, Sheehan M, Hordern J, Turnham HL, Wilkinson D. 'Your country needs you': The ethics of allocating staff to high-risk clinical roles in the management of patients with COVID-19. *J Med Ethics.* 2020; 46: 436-440.
9. Peneza D, White-Edwards KY, Bricker C, Mahabee-Betts M, Wagner VD. Perioperative nurse educators: Rapid response to the COVID-19 pandemic. *AORN J.* 2021; 113: 180-189.
10. Centers for disease control and prevention. Health-related quality of life: Well-being concepts [Internet]. CDC-INFO. Available from: <https://www.cdc.gov/hrqol/wellbeing.htm>.
11. Mudrak J, Zabrodska K, Kveton P, Jelinek M, Blatny M, Solcova I, et al. Occupational well-being among university faculty: A job demands-resources model. *Res High Educ.* 2018; 59: 325-348.
12. Sabagh Z, Hall NC, Saroyan A. Antecedents, correlates and consequences of faculty burnout. *Educ Res.* 2018; 60: 131-156.
13. Coetzee N, Maree DJ, Smit BN. The relationship between chronic fatigue syndrome, burnout, job satisfaction, social support, and age among academics at a tertiary institution. *Int J Occup Med Environ Health.* 2019; 32: 75-85.
14. Aquino E, Lee YM, Spawn N, Bishop-Royse J. The impact of burnout on doctorate nursing faculty's intent to leave their academic position: A descriptive survey research design. *Nurse Educ Today.* 2018; 69: 35-40.
15. Alves PC, Oliveira AD, Paro HB. Quality of life and burnout among faculty members: How much does the field of knowledge matter? *PLoS One.* 2019; 14: e0214217.
16. Shoman Y, Marca SC, Bianchi R, Godderis L, Van der Molen HF, Canu IG. Psychometric properties of burnout measures: A systematic review. *Epidemiol Psychiatr Sci.* 2021; 30: e8.
17. Topp CW, Østergaard SD, Søndergaard S, Bech P. The WHO-5 well-being index: A systematic review of the literature. *Psychother Psychosom.* 2015; 84: 167-176.
18. Chan L, Liu RK, Lam TP, Chen JY, Tipoe GL, Ganotice FA. Validation of the World Health Organization well-being index among medical educators in Hong Kong: A confirmatory factor analysis. *Med Educ Online.* 2022; 27: 2044635.
19. Lara-Cabrera ML, Betancort M, Muñoz-Rubilar A, Rodríguez-Novo N, Bjerkeset O, Cuevas CD. Psychometric properties of the WHO-5 well-being index among nurses during the COVID-19 pandemic: A cross-sectional study in three countries. *Int J Environ Res Public Health.* 2022; 19: 10106.
20. Cosma A, Költő A, Chzhen Y, Kleszczewska D, Kalman M, Martin G. Measurement invariance of the WHO-5 well-being index: Evidence from 15 European countries. *Int J Environ Res Public Health.* 2022; 19: 9798.
21. World Health Organization. Wellbeing measures in primary health care/the DepCare project: Report on a WHO meeting: Stockholm, Sweden, 12-13 February 1998. Stockholm, Sweden: WHO Regional Office for Europe: Copenhagen; 1998.
22. Gewin V. Pandemic burnout is rampant in academia. *Nature.* 2021; 591: 489-492.

23. Schindler BA, Novack DH, Cohen DG, Yager J, Wang D, Shaheen NJ, et al. The impact of the changing health care environment on the health and well-being of faculty at four medical schools. *Acad Med.* 2006; 81: 27-34.
24. Bakker AB, Demerouti E, Euwema MC. Job resources buffer the impact of job demands on burnout. *J Occup Health Psychol.* 2005; 10: 170-180.
25. Nassar AK, Reid S, Kahnemouli K, Tuma F, Waheed A, McConnell M. Burnout among academic clinicians as it correlates with workload and demographic variables. *Behav Sci.* 2020; 10: 94.
26. Seipel MT, Larson LM. Supporting non-tenure-track faculty well-being. *J Career Assess.* 2018; 26: 154-171.
27. Larson LM, Seipel MT, Shelley MC, Gahn SW, Ko SY, Schenkendfelder M, et al. The academic environment and faculty well-being: The role of psychological needs. *J Career Assess.* 2019; 27: 167-182.
28. Deng H, Zhuo Y, Qi X, Wu H, Liu Y, Li J, et al. The role of personal biological resource in the job demands-control-support model: Evidence from stress reactivity. *Front Psychol.* 2021; 12: 658180.