

ORIGINAL ARTICLE

# Impact of Covid-19 on dental hygiene educators: A national survey

Michelle C. Arnett MS, RDH<sup>1</sup> | Vidya Ramaswamy PhD<sup>2</sup> | Michael D. Evans MS<sup>3</sup> | Danielle Rulli MS, DHSc, RDH<sup>4</sup>

<sup>1</sup> Department of Primary Dental Care, Division of Dental Hygiene, University of Minnesota School of Dentistry, Minneapolis, Minnesota, USA

<sup>2</sup> Pre-Doctoral Studies, University of Michigan School of Dentistry, Ann Arbor, Michigan, USA

<sup>3</sup> Biostatistical Design and Analysis Center, Clinical and Translational Science Institute University of Minnesota, Minneapolis, Minnesota, USA

<sup>4</sup> Department of Periodontics and Oral Medicine, Division of Dental Hygiene, University of Michigan School of Dentistry, Ann Arbor, Michigan, USA

## Correspondence

Michelle C. Arnett, MS, RDH, Department of Primary Dental Care, Division of Dental Hygiene, University of Minnesota School of Dentistry, 515 Delaware Street South East, Room 9-372A Moos Tower, Minneapolis, Minnesota 55455, USA. Email: [marnett@umn.edu](mailto:marnett@umn.edu)

## Funding information

National Institutes of Health's National Center for Advancing Translational Sciences, Grant/Award Number: UL1TR002494

## Abstract

**Purpose:** The purpose of this study was to assess the impact of the Covid-19 pandemic on dental hygiene (DH) educators' perception of personal and professional burnout and efficacy in the online/hybrid learning environment.

**Methods:** A cross-sectional study of DH faculty members from 327 United States entry level DH programs was invited to participate in this study. A 36 item survey was disseminated in Qualtrics<sup>xm</sup> March 2021. The Copenhagen Burnout Inventory was used to measure personal, work-related, and burnout related to working with students. The Michigan Nurse Educators Sense of Efficacy for Online Teaching instrument was used to measure efficacy in online/hybrid learning.

**Results:** The survey had an institutional response rate of 46%. Personal burnout scores had a significantly higher mean as compared to work-related and burnout working with students' scores. A majority (66%) of respondents reported often feeling tired. Only personal burnout scores had a significant negative correlation with teaching efficacy scores. Administrators/program directors and full-time faculty had significantly higher mean personal and work-related burnout scores as compared to part-time/adjunct clinical faculty. There were no significant differences in teaching efficacy scores by faculty position and institutional setting.

**Conclusion:** COVID-19 had significant impact on full-time DH educators' personal and professional burnout levels. Full-time administrators/program directors/DH educators reported higher levels of personal burnout. It seems that personal burnout has a negative relationship with teaching efficacy. Faculty position rather than institution impacted personal burnout. Despite personal and professional burnout, DH faculty reported low-levels of burnout related to working with students.

## KEYWORDS

CBI, COVID-19, faculty burnout, MNESEOT, online/hybrid learning

## 1 | INTRODUCTION

Burnout is a term used to define the mental and physical trauma from professional work-related dissatisfaction.<sup>1-6</sup> Burnout has a negative impact on an individual's work performance, personal life, health, and well-being.<sup>7-9</sup> Further, work-related burnout is acknowledged in health care and education professions as a chronic condition due to emotional and personal work-related stress.<sup>1-4,8-13</sup> Burnout has been noted to manifest physically, mentally, and emotionally, causing decreased productivity and negatively impacting both personal and patient health outcomes.<sup>6,7,13-17</sup> Despite the acknowledgment of negative outcomes from burnout, there is a lack of evidence of actions taken to cultivate improved work environments.

Educator burnout is a result of imbalances in both workload and important contextual and personal factors that contribute to faculty satisfaction.<sup>18</sup> These contextual and personal factors such as sense of competence, self-efficacy, motivation, and the feeling that basic needs are being met in the workplace are the fundamental underpinnings of job satisfaction and professional identity.<sup>18,19</sup> Educator burnout has been identified as emotional exhaustion, leading to discord with students and colleagues.<sup>20</sup> This may impact inclusive work environments for faculty and students. The contributing factors of burnout coupled with Covid-19 social restrictions and quarantine guidelines increases mental health issues; specifically the rate of depression and anxiety.<sup>21</sup> It is noteworthy, women have reported a higher prevalence of depression and anxiety during Covid-19 from the imbalance of workload and family responsibilities; especially women of school-aged children.<sup>21</sup> The profession of dental hygiene (DH) education is dominated by women, and this evidence is concerning.<sup>22</sup> A focus on solutions to create balance in workload and personal time should be a strategic goal for educational institutions.

There are a number of contributors to burnout in educators. Online instruction has been noted as being particularly stressful and a significant contributor to burnout for those who teach in higher education. Online instruction adds several layers of complexity and responsibility on the educator because online instruction, unlike traditional classroom instruction, also requires a learning management system and technology skills and maintaining an online presence that includes creating a virtual learning community.<sup>23</sup> Maintaining an online presence requires instructors to model participation and expected course engagement, meaning they must make themselves available online for longer periods of time and at more nontraditional times such as evenings and weekends leading online instructors to report higher instances of burnout.<sup>23</sup>

However, some contributors are unique to health care professionals, which by nature apply to health care educators. These are professions in which individuals are frequently and consistently exposed to emotional interpersonal situations in the course of their work. Noted significant contributors to burnout and job dissatisfactions include inability to control situations, inefficient workflow, tasks that are not meaningful, a disproportionate workload, and challenges to work-life balance.<sup>18,24,25</sup> Additionally, significant changes in educational methodologies such as innovation and trying to meet a variety of learning needs all contribute to faculty burnout.<sup>18</sup>

The Covid-19 pandemic had a tremendous impact on dental educators' professional identity, didactic and clinical instruction, personal life, emotional health, and well-being.<sup>19,21,26</sup> The interruption of in-person and clinical education required dental educators to move course content to an online environment and seek innovative ways to provide clinical instruction and measure student competency.<sup>26</sup> Modifications to the current curriculum added to dental educators' workload and job dissatisfaction, which are the main contributors to emotional and work-related burnout.<sup>18-20,27</sup> Also, the use of technology requires time for dental educators to learn new platforms, and they may need to demonstrate for student application before disseminating online interactive learning activities.<sup>26</sup>

Burnout of DH educators since the shift to online/hybrid learning as of March 2020 has not been evaluated. The purpose of this study was to assess the impact of the Covid-19 pandemic on DH educators' perception of personal, work-related, and burnout working with students, and efficacy in online/hybrid learning. This study had the following four specific aims: (1) assess DH educators' perception of personal burnout, (2) identify DH educators' perception of work-related burnout, (3) discern DH educators' perception of burnout working with students, and (4) evaluate DH educators' perceived efficacy of teaching in the online or hybrid environment.

## 2 | METHODS AND MATERIALS

The University of Minnesota Institutional Review Board (IRB) determined the study involved no greater than minimal risk exempt from oversight (STUDY00012194). Participants were recruited using a listserv of 327 DH program directors' email addresses obtained from the American Dental Hygienists' Association and cross-checked with the Commission on Dental Accreditation (CODA) website for accuracy. At the time of dissemination, there were 327 accredited DH education programs in the United States per the CODA website, which determined the sample size.

Recruitment emails were sent via Qualtrics<sup>sm</sup>, describing the goal and the aims of the study to DH program directors and requested the email be shared with all DH program faculty. Enclosed in the email was an anonymous link to the informed consent and the survey. Two additional recruitment emails were disseminated via Qualtrics<sup>sm</sup> to all program directors, 2 weeks apart, in March 2021.

## 2.1 | Study design

The study design was a cross-sectional survey. The survey instrument consisted of a 36-item questionnaire consisting of three main categories including (a) demographics, (b) burnout, and (c) perceived online/hybrid teaching efficacy. The first category had five demographic questions to obtain information on participants' faculty position, courses taught, and years in DH education. Participant gender was not included in the demographic questions. According to the 2019-2020 CODA survey of allied dental education, DH educators are predominantly females.<sup>22</sup> Two questions asked the setting of the DH program and degrees conferred. The second category of questions utilized a validated modification of the Copenhagen Burnout Inventory (CBI) for teachers to evaluate the three subdimensions of burnout on two 5-point Likert scales.<sup>28</sup> The reliability of the CBI three subdimensions is as follows: personal burnout 0.89, work-related burnout 0.78, and working with students 0.78.<sup>28</sup> Operational definitions were included in the survey. The CBI has been deemed the highest level of content validity to measure burnout.<sup>28-31</sup>

One yes/no question asked participants if they taught any online or hybrid courses during March 2020 to the present day. Participants that selected "no" were taken to the open text question. The third category included 10 questions on a 5-point Likert scale from the Michigan Nurse Educators Sense of Efficacy for Online Teaching (MNESEOT) to assess perceptions of self-efficacy of student engagement, instructional strategies, classroom management, and technology.<sup>32</sup> For the five-point scale, one represented not at all, and five represented a great deal. The MNESEOT has been determined to be a reliable instrument to measure online/hybrid teaching efficacy.<sup>32-35</sup> Nurse educators who had taught three or more courses online were significantly different than nurse educators who had never taught an entire course online ( $F = 13.26$ ,  $p \leq 0.001$ ).<sup>32</sup> Further, the "no" for courses taught online in this study was positively correlated with MNESEOT scores ( $r = 0.31$ ,  $p < 0.001$ ).<sup>32</sup> Of the 10 questions used from the MNESEOT in this study, three were modified to include the term "preclinical/clinical" online/hybrid teaching in order to capture the impact of the pandemic-driven transition to online education. The last question was an open

text allowing participants to share anything else regarding burnout or perceived teaching efficacy in the current climate. Participants had the option to provide their email address to enter into a raffle for a gift card incentive for completion of the survey. Ten participants were randomly selected to win a prepaid \$100 gift card. Email addresses that were voluntarily provided were IRB approved to be retained, and participants were informed they may be contacted.

Data analysis was performed using R version 4.1.1. Descriptive statistics were calculated for an overview of the respondent's demographic information, CBI scores for personal, work, and student burnout, and perception of online/hybrid teaching efficacy. Perception of burnout and teaching efficacy scores were compared by faculty position and institution setting using analysis of variance, with pairwise comparisons between groups adjusted for multiple comparisons using the Tukey method. Responses to the qualitative, open-ended question were coded to identify overarching themes by two of the authors. Any discrepancies were then discussed and agreed upon.

## 3 | RESULTS

Of the 327 electronic surveys sent out, there were 314 participants from 152 institutions for an institutional response rate of 46%. Demographic data (Table 1) suggested that the majority of participants were either administrators/program directors (129/41%) or full-time faculty (124/40%), from a community or technical college (184/59%), who predominantly taught clinical instruction (252/80%). The group was representative of different years of experience as a DH educator. A majority of the group (262/80%) reported teaching online after March 2020.

In general, personal burnout had a significantly higher mean (3.23, standard deviation (SD) 0.80) as compared to work-related (3.10, SD 0.70,  $p < 0.05$ ) and burnout working with students (2.23, SD 0.89,  $p < 0.01$ ) on a scale of 1-5 for all respondents, regardless of position (Table 2). Work-related burnout was significantly higher than burnout working with students' ( $p < 0.01$ ). Approximately two thirds (66%/n = 206) answered often or always for the question, "How often you feel tired?," and half (50%/n = 156) answered often or always for the question, "Is your work emotionally exhausting?" More than half answered often or always for the question, "How often are you emotionally exhausted?" (58%/n = 183). Only 7% (n = 21) answered often or always for burnout working with students, "Are you tired of working with students?" The mean and SD for perceived teaching efficacy was 2.96, 0.64 on a scale of 1-5.

Overall mean burnout scores were lowest for burnout working with students' for all faculty positions. Tukey

TABLE 1 Demographics

Faculty position years dental hygiene educator	n (%)
Administrator/Program director	129 (41%)
Full-time faculty	124 (40%)
Part-time faculty/Adjunct clinical faculty	41 (13%)
Part-time/Adjunct didactic faculty	20 (6%)
Institution setting	
Community or technical college	184 (59%)
4-year college or university	77 (25%)
Dental school	41 (13%)
Proprietary program	11 (4%)
Subjects taught <sup>†</sup>	
Pre-clinic	128 (41%)
Clinical instruction	252 (80%)
Dental hygiene theory	105 (33%)
Biologic sciences (head and neck anatomy, histology, nutrition, etc.)	86 (27%)
Dental sciences (biomaterials, perio, oral pathology, radiology, dental anatomy, etc.)	159 (51%)
Community/Public health	60 (19%)
Research methods	51 (16%)
Special patients/special needs	60 (19%)
Clinical seminars	83 (26%)
Other	65 (21%)
Years as DH educator	
0.5, ≤5 years	59 (20%)
>5, ≤10	64 (21%)
>10, ≤15	67 (22%)
>15, ≤20	51 (17%)
>20, ≤50	60 (20%)
Taught online after March 2020	
Yes	262 (88%)
No	30 (10%)

<sup>†</sup>Multiple subjects selected per participant.

post hoc tests showed that administrators/program directors and full-time faculty had significantly higher mean personal and work-related burnout scores compared to part-time faculty ( $p < 0.01$ ). Similarly, full-time faculty had significantly higher burnout working with students' scores than part-time adjunct clinical faculty ( $p < 0.05$ ). There were no significant differences between administrator/program directors and full time faculty on burnout scores. There were no significant differences in mean teaching efficacy scores for different faculty positions (Table 4).

Burnout and teaching efficacy scores by institutional setting indicated mean personal and work-related burnout scores were highest for the proprietary program and low-

est for dental schools (Table 3). However, there were no significant differences between groups as indicated by the post hoc Tukey tests. Overall mean burnout scores were lowest for burnout working with students' for all institutional settings. There were no significant differences in mean perception of teaching efficacy scores for different institutional setting (Table 4). Additionally, the relationship between burnout and teaching efficacy was evaluated, and there were a positive and significant correlation between personal and work-related burnout (0.81). A positive and moderate correlation was found between burnout working with students' and personal burnout (0.51) and work-related (0.64). Only personal burnout scores had a weak and negative correlation with perception of teaching efficacy (Table 5).

A total of  $n = 115$ , 34% responded to the open-ended question, "Is there anything else regarding burnout or teaching efficacy in the current climate that you would like to share?" Two of the authors of this study (DR and MA) categorized the comments into themes. Four themes emerged as follows: Teaching efficacy/Online teaching ( $n = 42$ ), interpersonal/personal issues ( $n = 33$ ), institutional/administration ( $n = 26$ ), and additional work/overload ( $n = 19$ ) (Table 6). Theming was based on keywords and phrases including teaching, online, full-time/part-time, time, work, students, stress, administration, coworkers, and demands.

## 4 | DISCUSSION

To the authors' knowledge, this is the first study to evaluate DH educators' perception of the subdimensions of burnout and the impact on hybrid/online teaching efficacy since the Covid-19 pandemic. Three major findings were identified in this study: (1) DH faculty reported feeling exhausted, (2) work was emotionally exhausting, and (3) working with students was not the main cause of their reported exhaustion. Identifying the cause of burnout is essential to determine required changes to retain existing DH educators. According to the 2020 American Dental Educators Association (ADEA) Survey of Allied Dental Program Directors in the United States, "one-in-five faculty" left due to the Covid-19 pandemic.<sup>36</sup> A total of 23% of the respondents were from the discipline of DH.<sup>36</sup> Of the reported DH faculty that left (62% part-time and nontenured faculty; 19% full-time or tenured faculty), 27% reported Covid-19 was the reason for leaving.<sup>36</sup> This document acknowledges low salaries due to "budget constraints," and the increased workload is unknown if it is here to stay or a temporary result of the Covid-19 pandemic.<sup>36</sup> Further, exhaustion as a result of burnout is a main contributor for educators leaving the profession

**TABLE 2** Mean  $\pm$  SD for personal, work-related, and student-related burnout by faculty position

	<b>Administrator/ Program director</b>	<b>Full-time faculty</b>	<b>Part-time/ Adjunct clinical faculty</b>	<b>Part-time/ Adjunct didactic faculty</b>
<b>Personal burnout</b>				
Questions 1–6 scale: 1 = never, 2 = seldom, 3 = sometimes, 4 = often, 5 = always				
1. How often do you feel tired?	$\dagger 3.78 \pm 0.87$	$\dagger 3.81 \pm 0.84$	$3.33 \pm 0.92$	$3.55 \pm 0.94$
2. How often are you physically exhausted?	$\dagger 3.41 \pm 1.02$	$\dagger 3.46 \pm 0.83$	$2.95 \pm 1.07$	$3.00 \pm 1.12$
3. How often are you emotionally exhausted?	$\dagger 3.70 \pm 0.91$	$\dagger 3.71 \pm 0.89$	$3.22 \pm 0.86$	$3.50 \pm 0.89$
4. How often do you think “I can’t take it anymore?”	$\dagger 2.94 \pm 1.06$	$\dagger 2.80 \pm 1.17$	$2.12 \pm 1.08$	$2.65 \pm 1.09$
5. How often do you feel worn out?	$\dagger 3.60 \pm 0.91$	$\dagger 3.66 \pm 0.86$	$3.02 \pm 1.11$	$3.40 \pm 0.94$
6. How often do you feel weak and susceptible to illness?	$2.39 \pm 1.04$	$2.44 \pm 1.07$	$2.27 \pm 1.30$	$2.35 \pm 0.88$
<b>Mean personal burnout score</b>	$\dagger 3.30 \pm 0.78$	$\dagger 3.31 \pm 0.78$	$2.82 \pm 0.82$	$3.08 \pm 0.81$
<b>Worked-related burnout</b>				
Questions 7–9 scale: 1 = to a very low degree, 2 = to a low degree, 3 = somewhat, 4 = to a high degree, 5 = to a very high degree				
Questions 10–13 Scale: 1 = never, 2 = seldom, 3 = sometimes, 4 = often, 5 = always				
7. Is your work emotionally exhausting?	$\dagger 3.77 \pm 0.97$	$\dagger 3.49 \pm 1.13$	$2.67 \pm 0.94$	$3.21 \pm 0.92$
8. Do you feel burnt out because of your work?	$\dagger 3.35 \pm 1.13$	$\dagger 3.31 \pm 1.29$	$2.46 \pm 0.97$	$2.89 \pm 1.05$
9. Does your work frustrate you?	$\dagger 3.33 \pm 1.05$	$\dagger 3.14 \pm 1.25$	$2.21 \pm 1.06$	$2.68 \pm 1.00$
10. Do you feel worn out at the end of the working day?	$\dagger 3.79 \pm 0.86$	$\dagger 3.84 \pm 0.85$	$3.33 \pm 1.10$	$3.84 \pm 0.83$
11. Are you exhausted in the morning at the thought of another day at work?	$2.89 \pm 1.12$	$2.80 \pm 1.11$	$2.38 \pm 1.00$	$2.47 \pm 0.90$
12. Do you feel that every working hour is tiring for you?	$\dagger 2.60 \pm 1.15$	$2.59 \pm 1.16$	$2.20 \pm 0.99$	$2.26 \pm 0.81$
13. Do you have enough energy for family and friends during leisure time?	$3.41 \pm 0.92$	$3.10 \pm 1.00$	$3.35 \pm 1.10$	$3.53 \pm 0.90$
<b>Mean work-related burnout score</b>	$\dagger 3.20 \pm 0.66$	$\dagger 3.15 \pm 0.75$	$2.64 \pm 0.56$	$2.92 \pm 0.59$
<b>Student-related burnout</b>				
Questions 14–17 scale: 1 = never, 2 = seldom, 3 = sometimes, 4 = often, 5 = always				
Questions 18–19 scale: 1 = to a very low degree, 2 = to a low degree, 3 = somewhat, 4 = to a high degree, 5 = to a very high degree				
14. Do you find it hard to work with students?	$2.03 \pm 0.94$	$2.17 \pm 0.94$	$1.80 \pm 0.97$	$2.21 \pm 0.85$
15. Do you find it frustrating to work with students?	$2.17 \pm 1.01$	$2.26 \pm 1.03$	$1.85 \pm 0.89$	$2.26 \pm 0.87$
16. Does it drain your energy to work with students?	$2.19 \pm 1.00$	$2.48 \pm 1.02$	$2.12 \pm 0.85$	$2.37 \pm 1.01$
17. Do you feel you give more than you get back when you work with students?	$2.73 \pm 1.20$	$\dagger 3.03 \pm 1.29$	$2.31 \pm 1.20$	$3.05 \pm 1.31$
18. Are you tired of working with students?	$1.90 \pm 0.96$	$\dagger 2.01 \pm 1.05$	$1.52 \pm 0.85$	$2.11 \pm 0.94$
19. Do you sometimes wonder how long you will be able to continue working with students?	$2.06 \pm 1.07$	$2.25 \pm 1.18$	$1.76 \pm 0.95$	$1.94 \pm 1.14$
<b>Mean student-related burnout score</b>	$2.18 \pm 0.88$	$\dagger 2.36 \pm 0.92$	$1.89 \pm 0.80$	$2.32 \pm 0.85$

 $\dagger p < 0.05$  versus part-time/adjunct clinical faculty.

and may impact the recruitment of new talent entering the profession.<sup>18–20,27</sup> An open response justified this claim, “There is already a shortage of qualified educators. The effects of the past year are going to make it even harder to find qualified educators who are willing to continue teaching.”

#### 4.1 | Personal burnout

There was significantly higher personal burnout scores for both administrators/program directors and full-time faculty compared to part-time/adjunct didactic and clinical faculty. These findings align with Suedbeck et al.



TABLE 3 Mean  $\pm$  SD for personal, work-related, and student-related burnout by institution setting

	Community or technical college	4-year college or university	Dental school	Proprietary program
<b>Personal burnout</b>				
Questions 1–6 scale: 1 = never, 2 = seldom, 3 = sometimes, 4 = often, 5 = always				
1. How often do you feel tired?	3.67 $\pm$ 0.91	3.84 $\pm$ 0.7	3.65 $\pm$ 0.92	3.82 $\pm$ 1.17
2. How often are you physically exhausted?	3.37 $\pm$ 0.96	3.39 $\pm$ 0.92	3.05 $\pm$ 1.12	3.64 $\pm$ 1.0
3. How often are you emotionally exhausted?	3.61 $\pm$ 0.98	3.70 $\pm$ 0.73	3.59 $\pm$ 0.84	3.73 $\pm$ 1.01
4. How often do you think “I can’t take it anymore?”	2.76 $\pm$ 1.18	2.88 $\pm$ 1.08	2.49 $\pm$ 1.05	2.91 $\pm$ 1.04
5. How often do you feel worn out?	3.54 $\pm$ 0.95	3.64 $\pm$ 0.84	3.27 $\pm$ 1.03	3.82 $\pm$ 0.98
6. How often do you feel weak and susceptible to illness?	2.42 $\pm$ 1.06	2.40 $\pm$ 1.08	2.20 $\pm$ 1.08	2.64 $\pm$ 1.36
<b>Mean personal burnout score</b>	3.23 $\pm$ 0.82	3.31 $\pm$ 0.74	3.04 $\pm$ 0.79	3.42 $\pm$ 0.99
<b>Worked-related burnout</b>				
Questions 7–9 scale: 1 = to a very low degree, 2 = to a low degree, 3 = somewhat, 4 = to a high degree, 5 = to a very high degree				
Questions 10–13 scale: 1 = never, 2 = seldom, 3 = sometimes, 4 = often, 5 = always				
7. Is your work emotionally exhausting?	3.50 $\pm$ 1.09	3.52 $\pm$ 1.06	3.28 $\pm$ 1.13	3.73 $\pm$ 1.10
8. Do you feel burnt out because of your work?	3.17 $\pm$ 1.21	3.32 $\pm$ 1.14	3.05 $\pm$ 1.34	3.36 $\pm$ 1.12
9. Does your work frustrate you?	3.12 $\pm$ 1.18	3.13 $\pm$ 1.12	2.78 $\pm$ 1.3	3.09 $\pm$ 0.83
10. Do you feel worn out at the end of the working day?	3.77 $\pm$ 0.9	3.79 $\pm$ 0.91	3.60 $\pm$ 0.90	3.91 $\pm$ 0.70
11. Are you exhausted in the morning at the thought of another day at work?	2.78 $\pm$ 1.08	2.82 $\pm$ 1.07	2.58 $\pm$ 1.26	2.91 $\pm$ 0.94
12. Do you feel that every working hour is tiring for you?	2.57 $\pm$ 1.0	2.54 $\pm$ 1.15	2.33 $\pm$ 1.33	2.45 $\pm$ 1.13
13. Do you have enough energy for family and friends during leisure time?	3.31 $\pm$ 0.97	3.16 $\pm$ 1.03	3.52 $\pm$ 0.91	2.91 $\pm$ 0.94
<b>Mean work-related burnout score</b>	3.10 $\pm$ 0.69	3.14 $\pm$ 0.68	2.97 $\pm$ 0.82	3.18 $\pm$ 0.62
<b>Student-related burnout</b>				
Questions 14–17 scale: 1 = never, 2 = seldom, 3 = sometimes, 4 = often, 5 = always				
Questions 18–19 scale: 1 = to a very low degree, 2 = to a low degree, 3 = somewhat, 4 = to a high degree, 5 = to a very high degree				
14. Do you find it hard to work with students?	2.09 $\pm$ 0.91	2.03 $\pm$ 0.95	2.15 $\pm$ 1.12	1.82 $\pm$ 0.75
15. Do you find it frustrating to work with students?	2.16 $\pm$ 0.99	2.14 $\pm$ 0.97	2.25 $\pm$ 1.19	2.18 $\pm$ 0.75
16. Does it drain your energy to work with students?	2.28 $\pm$ 0.99	2.32 $\pm$ 0.99	2.48 $\pm$ 1.09	2.18 $\pm$ 0.75
17. Do you feel you give more than you get back when you work with students?	2.76 $\pm$ 1.23	2.79 $\pm$ 1.28	3.08 $\pm$ 1.38	3.09 $\pm$ 1.38
18. Are you tired of working with students?	1.91 $\pm$ 0.99	1.86 $\pm$ 0.91	2.00 $\pm$ 1.15	2.00 $\pm$ 1.00
19. Do you sometimes wonder how long you will be able to continue working with students?	2.12 $\pm$ 1.14	1.96 $\pm$ 0.99	2.19 $\pm$ 1.22	2.45 $\pm$ 1.04
<b>Mean student-related burnout score</b>	2.22 $\pm$ 0.88	2.18 $\pm$ 0.87	2.35 $\pm$ 1.04	2.29 $\pm$ 0.74

† $p < 0.05$ .

who reported both physical and psychological fatigue among DH program directors.<sup>11</sup> In this study, the high scores of personal burnout of feeling “tired,” “emotionally exhausted,” and “worn out” are key elements that contribute to stress and work-related burnout causing discord with students and colleagues.<sup>20</sup>

Managing daily personal burnout increases resilience and well-being; however, this cannot be achieved without the support of administration and colleagues.<sup>37</sup> The

lack of support was a common theme reported in the qualitative data in Table 6. Coffey and colleagues advocated for a “multifaceted system approach” to acknowledge the symptoms of burnout beginning in the learning environment and bridging to health care providers in their professional role.<sup>38</sup> From the results of this study and the well-documented personal burnout of educators and health care providers<sup>6–8,10,11,13,39</sup> prepandemic, personal burnout will continue and potentially increase postpandemic with

TABLE 4 Mean  $\pm$  SD for teaching efficacy

<b>Teaching efficacy by faculty position</b> Scale teaching efficacy 1 = not at all, 2 = very little, 3 = some, 4 = quite a bit, 5 = a great deal	<b>Administrator/ Program director</b>	<b>Full-time faculty</b>	<b>Part-time/ Adjunct clinical faculty</b>	<b>Part-time/ Adjunct didactic faculty</b>
How much can you do to help your students think critically in the online environment?	3.48 $\pm$ 0.88	3.43 $\pm$ 0.83	3.34 $\pm$ 1.23	3.42 $\pm$ 0.69
How much can you do to get through to disengaged students in an online class?	2.97 $\pm$ 0.75	2.81 $\pm$ 0.76	2.87 $\pm$ 0.97	2.94 $\pm$ 0.80
How much can you do to motivate students who show low interest in online work?	2.93 $\pm$ 0.71	2.83 $\pm$ 0.80	2.87 $\pm$ 0.97	2.95 $\pm$ 0.91
How much can you gauge student comprehension of what you have taught in an online course?	3.38 $\pm$ 0.82	3.35 $\pm$ 0.94	3.11 $\pm$ 1.17	3.39 $\pm$ 0.61
How well can you craft questions or assignments that require students to think by relating ideas to previous knowledge and experience?	3.69 $\pm$ 0.79	3.69 $\pm$ 0.81	3.37 $\pm$ 1.30	3.53 $\pm$ 0.70
How well can you structure an online course that provides good learning experiences for students?	3.59 $\pm$ 0.86	3.58 $\pm$ 0.85	3.33 $\pm$ 1.40	3.32 $\pm$ 0.82
How well can you demonstrate preclinical/clinical activities online?	2.58 $\pm$ 0.92	2.56 $\pm$ 0.87	2.53 $\pm$ 1.01	2.47 $\pm$ 0.61
How well can you assess student demonstrations of preclinical/clinical competence online?	2.36 $\pm$ 0.85	2.30 $\pm$ 0.93	2.36 $\pm$ 0.99	2.21 $\pm$ 0.79
How well can you give appropriate feedback on preclinical/clinical procedures online?	2.64 $\pm$ 0.99	2.59 $\pm$ 1.04	2.62 $\pm$ 1.08	2.42 $\pm$ 1.02
How well can you remediate student demonstrations of preclinical/clinical competence online?	2.38 $\pm$ 0.86	2.29 $\pm$ 0.91	2.34 $\pm$ 1.01	2.05 $\pm$ 0.85
<b>Mean teaching efficacy score</b>	3.01 $\pm$ 0.60	2.94 $\pm$ 0.63	2.90 $\pm$ 0.88	2.87 $\pm$ 0.49
<b>Teaching efficacy by institution setting</b> Scale teaching efficacy 1 = not at all, 2 = very little, 3 = some, 4 = quite a bit, 5 = a great deal	<b>Community or technical college</b>	<b>4-year college or university</b>	<b>Dental school</b>	<b>Proprietary program</b>
How much can you do to help your students think critically in the online environment?	3.43 $\pm$ 0.90	3.50 $\pm$ 0.79	3.39 $\pm$ 1.00	3.45 $\pm$ 1.13
How much can you do to get through to disengaged students in an online class?	2.90 $\pm$ 0.77	2.94 $\pm$ 0.81	2.71 $\pm$ 0.77	2.91 $\pm$ 0.94
How much can you do to motivate students who show low interest in online work?	2.95 $\pm$ 0.78	2.82 $\pm$ 0.79	2.68 $\pm$ 0.66	3.18 $\pm$ 1.17
How much can you gauge student comprehension of what you have taught in an online course?	3.31 $\pm$ 0.85	3.44 $\pm$ 0.93	3.38 $\pm$ 0.98	3.09 $\pm$ 1.04
How well can you craft questions or assignments that require students to think by relating ideas to previous knowledge and experience?	3.60 $\pm$ 0.86	3.79 $\pm$ 0.80	3.58 $\pm$ 0.92	3.55 $\pm$ 1.04
How well can you structure an online course that provides good learning experiences for students?	3.47 $\pm$ 0.90	3.71 $\pm$ 0.91	3.63 $\pm$ 0.97	3.36 $\pm$ 1.12
How well can you demonstrate preclinical/clinical activities online?	2.53 $\pm$ 0.91	2.61 $\pm$ 0.90	2.63 $\pm$ 0.85	2.55 $\pm$ 0.69

(Continues)

TABLE 4 (Continued)

Teaching efficacy by institution setting Scale teaching efficacy 1 = not at all, 2 = very little, 3 = some, 4 = quite a bit, 5 = a great deal	Community or technical college	4-year college or university	Dental school	Proprietary program
How well can you assess student demonstrations of preclinical/clinical competence online?	2.30 ± 0.87	2.35 ± 0.96	2.42 ± 0.87	2.27 ± 0.90
How well can you give appropriate feedback on preclinical/clinical procedures online?	2.61 ± 1.03	2.62 ± 1.02	2.50 ± 0.95	2.73 ± 1.19
How well can you remediate student demonstrations of preclinical/clinical competence online?	2.32 ± 0.92	2.32 ± 0.88	2.32 ± 0.94	2.30 ± 0.95
<b>Mean teaching efficacy score</b>	3.02 ± 0.61	2.94 ± 0.64	2.94 ± 0.68	2.95 ± 0.83

†*p* < 0.05.

TABLE 5 Correlation between burnout score and teaching efficacy

	Personal burnout	Work- related burnout	Student- related burnout	Teaching efficacy
Personal burnout		0.81**	0.51**	-0.14*
Work-related burnout			0.64**	-0.07
Student- related burnout				-0.12

\**p* < 0.05; \*\**p* < 0.01.

the constant unknown and fear of the Covid-19 virus cases peaking again.

It is noteworthy Suedbeck and colleagues suggested gender roles may contribute to personal burnout.<sup>11</sup> The fact that DH educators are a female dominated profession,<sup>22</sup> thus having multiple professional and personal roles was evident in this open-ended response, “Plus the stress of having children at home with their own needs and demands just put even more stress on top of all of it. I realize many of us are in the same boat but my goodness, when is the boat going to hit shore so we can get off!” Iyer et al. suggested accommodations for flexible schedules should be given to female faculty and families with young children in consideration of a lack of childcare options.<sup>27</sup> Further, personal burnout has a direct impact on work-life balance and job satisfaction.<sup>20,21,40</sup> Additionally, female educators and students who are married with young children suffer from more emotional stress and anxiety increasing personal burnout.<sup>21,41,42</sup> Although it appears educational institutions are returning to prepandemic learning environments, perhaps adopting permanent flexible schedules and remote working environments postpandemic may enhance work–life balance.

## 4.2 | Work-related burnout

There was a positive and significant relationship between personal burnout and work-related burnout in this study. This is no surprise with the existing evidence on emotional stress combined with personal burnout decreasing job satisfaction.<sup>18–20,43</sup> In a recent study, Fountain and colleagues noted a lack of camaraderie and a humanistic work environment were reported as stressors by faculty.<sup>43</sup> Examples of personal burnout contributing to inharmonious work-related interactions reported included, “The loss of comradery with your colleagues is felt and thus a source for calibration with your colleagues” and “My frustration and burnout is more from faculty calibration/noncommunication issues rather than students.” Interestingly, reported “emotional exhaustion” as it relates to work-related burnout was high across all institutional settings in this study. This is relevant information that the workload, unrealistic work expectations, and demands of students impacting job satisfaction are problematic in DH education.<sup>18,25</sup>

## 4.3 | Burnout working with students

Generally, students were not significant contributors to DH faculty burnout over the pandemic. In fact, burnout working with students had much lower mean scores compared to personal and work-related burnout, even across institution type. Unsurprisingly, full-time faculty reported higher levels of burnout working with students; however, the mean scores were still lower compared to the personal and professional burnout reported (Table 2).

While overall faculty reported lower burnout working with students, they still expressed some challenges and frustrations with students. Faculty appear to be able to separate student challenges from the larger, overarching



**TABLE 6** Selected open responses regarding burnout and teaching efficacy † *n* = 115 (34%)

Teaching efficacy/Online teaching ‡ Responses = 42	<p>“Online education is more time consuming, labor intensive, and requires constant engagement. Although, I am a seasoned online educator, this past year has been the hardest yet in my 18 years of teaching.”</p> <p>“The amount of time to convert didactic teaching and evaluative materials into an online format is completely overwhelming. What used to be a 30 h workweek has easily become 60–80 h of preparation, implementation, and follow-up per week.”</p> <p>“Online programs are usually small cohorts. Being forced to go online has not allowed vetting of students to prepare them for success in an online environment. Additionally, I have nearly 30 online students per course.”</p>
Interpersonal issues/fear/Physical ‡ Responses = 33	<p>“Personally, I feel most of the burnout has come on lately because of fears of the unknown from students, faculty, and administration.”</p> <p>“The loss of comradery with your colleagues is felt and thus a source for calibration with your colleagues.”</p> <p>“I sense many of the faculty here are emotionally exhausted and burnt-out. It has exacerbated resentment and discord within the department.”</p>
Institutional/Administration ‡ Responses = 26	<p>“Lack of administrative support I often feel will likely lead me to go back to private practice or seek another practice setting like research or public health.”</p> <p>“Very little consideration has been given by administrators for the additional workload that online education inherently creates.”</p> <p>“We are at the mercy of university committees in scheduling and staffing clinical time and space. We have had a number of last minute decisions that have led us having to reconfigure clinic, and leading to staffing problems, and a high level of student frustration, which they take out on faculty.”</p>
Additional work/Overload ‡ Responses = 19	<p>“I feel like during this time, the stress put on faculty coupled with the increased time in clinic, faculty is dealing with a mental exhaustion they have never truly experienced before.”</p> <p>“There is already a shortage of qualified educators. The effects of the past year are going to make it even harder to find qualified educators who are willing to continue teaching.”</p> <p>“Being a faculty member is more than showing up to campus or online courses, and the extra hours spend preparing, answering questions/emails, and grading should always be considered when offering a schedule and compensation.”</p>

† A total of 127 participants responded, and 12 responses were omitted (“no,” “N/A,” or “not at this time”); participants included *n* = 115 (34%). ‡ Responses applied to more than one theme.

challenges presented by the pandemic. This was clear in the following response, “Most of the frustrations I have come from excessive administrative burden NOT from students.” In relation to some of the challenges working with students during the pandemic, some faculty recognize the impact of students on their burnout is not necessarily something students could control. One respondent stated, “My high degree of frustration with students’ inexperience, unwillingness, or inability to control their home learning environment.”

However, others felt students needed to take more responsibility, stating, “It often feels like I’m working harder for student success than the students,” and “Students have changed over the years – more needy!”

#### 4.4 | Perception of teaching efficacy

The Covid-19 pandemic necessitated a significant shift in how DH education was delivered, requiring a swift pivot. Many DH educators did not have time or support in the

rush to convert in-person courses to deliver online learning experiences that follow best practices,<sup>26</sup> and this transition and learning curve for DH educators ultimately impacted their perception of teaching efficacy.

While there were no correlations between institution type, burnout scores, and perception of teaching efficacy, there was a small but significant negative correlation between personal burnout and teaching efficacy suggesting that personal burnout has a negative impact on teaching efficacy. Faculty were overwhelmed in the chaotic transition to online teaching and learning. Putting the impact of the pandemic on DH educators into perspective, one respondent wrote, “Online education is more time consuming, labor intensive, and requires constant engagement. Although, I am a seasoned online educator, this past year has been the hardest yet in my 18 years of teaching.” Another noted that work hours more than doubled stating, “The amount of time to convert didactic teaching and evaluative materials into an online format is completely overwhelming. What used to be a 30 hour work week has easily become 60–80 hours of preparation, implementation,

and follow-up per week.” The more hours faculty were putting into their work, the more their personal burnout increased.

As previously noted, educators also felt they were taking on an additional role in supporting students who were also struggling with adjusting to distance learning and managing their own personal and professional burnout escalated by Covid-19 pandemic. Indeed, expectations for online instructors include additional roles including technology expert, instructional designer, process facilitator, and perhaps most relevant, advisor/counselor.<sup>44</sup> One respondent noted, “Students need us at all hours because they too are trying to find a school-life balance. Though I want to be there for them, after nearly a year, it is taking a toll on my family and I often find myself resenting the students.” While making efforts to support students and keep their education moving forward, full-time faculty heavily sacrificed their own personal well-being. This highlights the need for attention to faculty wellness and support.

A limitation of any survey research is the potential to introduce bias due to the self-reporting nature of questionnaires. Relying on administrators/program directors to share the survey invitation may have resulted in self-selection and nonresponse bias. There may be a high probability that there were multiple respondents from individual programs; however, the breakdowns by faculty position (Table 2) and institution setting (Table 3) are generally representative. Additionally a convenience sample may not provide a generalized representation of DH educators. The findings in this study indicate personal, work-related, and burnout working with students are significantly correlated with each other. Future research should focus on faculty wellness and coping strategies to manage trauma. The impact of Covid-19 isolation, lack of human contact, and restrictions on social behavior may contribute to personal trauma. The impact on faculty and students mental, emotional, and well-being requires further research. Mechanisms to support faculty with families and provide guidance to manage burnout will be needed. Especially with the anticipated demands to support students suffering from the impact of Covid-19 and trauma. Furthermore, how to create and maintain an inclusive humanistic work environment for faculty and students post-Covid-19 need exploration.

## 5 | CONCLUSION

This study assessed the impact of the Covid-19 pandemic on DH educators’ perception of personal, work-related, and burnout working with students’ and perceived efficacy in online/hybrid learning. Personal and work-related burnout was significantly higher for administrator/program directors and full-time faculty compared to

part-time didactic and clinical faculty. The results of this study suggest that emotional exhaustion from personal burnout had a positive relationship to work-related and burnout working with students. Additionally, imbalances in work-life, a lack of support, and work load to shift to hybrid/online learning can be related to faculty burnout. Only personal burnout scores had a positive and significant correlation with teaching efficacy, suggesting a negative impact on perceptions of teaching efficacy. Policies to support female faculty with families and guidance to manage burnout may be needed to retain and recruit DH faculty. Further, qualitative focus groups are being conducted with a randomized sample of this survey’s respondents to better understand the findings.

## ACKNOWLEDGMENT

This research was supported by the National Institutes of Health’s National Center for Advancing Translational Sciences (grant number: UL1TR002494).

## CONFLICT OF INTEREST

The authors declare that there is no conflict of interest that could be perceived as prejudicing the impartiality of the research reported.

## REFERENCES

1. Schonfeld IS, Bianchi R. Burnout and depression: two entities or one?. *J Clin Psychol*. 2016;72(1):22-37.
2. Windover AK, Martinez K, Mercer MB, et al. Correlates and outcomes of physician burnout within a large academic medical center. *JAMA Intern Med*. 2018;178(6):856-858.
3. Mudallal RH, Othman WM, Al Hassan NF. Nurses’ burnout: the influence of leader empowering behaviors, work conditions, and demographic traits. *Inquiry*. 2017;54:46958017724944. <http://doi.org/10.1177/0046958017724944>.
4. Bianchi R, Boffy C, Hingray C, et al. Comparative symptomatology of burnout and depression. *J Health Psychol*. 2013;18(6):782-787.
5. Bridgeman PJ, Bridgeman MB, Barone J. Burnout syndrome among healthcare professionals. *Am J Health Syst Pharm*. 2018;75(3):147-152.
6. O’Connor K, Muller Neff D, Pitman S, et al. Burnout in mental health professionals: a systematic review and meta-analysis of prevalence and determinants. *Eur Psychiatry*. 2018;53:74-99.
7. Deeb GR, Braun S, Carrico C, et al. Burnout, depression and suicidal ideation in dental and dental hygiene students. *Eur J Dent Educ*. 2018;22(1):e70-e74.
8. Bercasio LV, Rowe DJ, Yansane A-I. Factors associated with burnout among dental hygienists in California. *J Dent Hyg Winter*. 2020;94(6):40-48.
9. Thrush CR, Guise JB, Gathright MM, et al. A one-year institutional view of resident physician burnout. *Acad Psychiatry*. 2019;43(4):361-368.
10. Raudenská J, Steinerová V, Javůrková A, et al. Occupational burnout syndrome and post-traumatic stress among healthcare professionals during the novel coronavirus disease 2019 (COVID-19) pandemic. *Best Pract Res Clin Anaesthesiol*. 2020;34(3):553-560.

11. Suedbeck J, Ludwig EA, Tolle SL. The prevalence of burnout among entry-level dental hygiene program directors. *J Dent Hyg.* 2021;95(1):67-75.
12. Dyrbye LN, West CP, Johnson PO, et al. Burnout and satisfaction with work-life integration among nurses. *J Occup Environ Med.* 2019;61(8):689-698.
13. Calvo JM, Kwatra J, Yansane A, et al. Burnout and work engagement among US dentists. *J Patient Saf.* 2021;17(5):398-404.
14. World Health Organization. Burn-out an “occupational phenomenon”: international classification of diseases. 2019. Accessed September 13, 2021. <https://www.who.int/news/item/28-05-2019-burn-out-an-occupational-phenomenon-international-classification-of-diseases>
15. Peterson U, Demerout E, Bergstrom G, et al. Burnout and physical and mental health among Swedish healthcare workers. *J Adv Nurs.* 2008;62(1):84-95.
16. Shanafelt TD, Hasan O, Dyrbye LN, et al. Changes in burnout and satisfaction with work-life balance in physicians and the general US working population between 2011 and 2014. *Mayo Clin Proc.* 2015;90(12):1600-1613.
17. Boamah SA, Read EA, Spence Laschinger HK. Factors influencing new graduate nurse burnout development, job satisfaction and patient care quality: a time-lagged study. *J Adv Nurs.* 2017;73(5):1182-1195.
18. Shah DT, Williams VN, Thorndyke LE, et al. Restoring faculty vitality in academic medicine when burnout threatens. *Acad Med.* 2018;93(7):979-984.
19. Chen H, Liu F, Pang L, et al. Are you tired of working amid the pandemic? The role of professional identity and job satisfaction against job burnout. *Int J Environ Res Public Health.* 2020;17(24):9188.
20. Skaalvik EM, Skaalvik S. Dimensions of teacher burnout: relations with potential stressors at school. *Soc Psychol Educ.* 2017;26(7-8):775-790.
21. Llorca-Pellicer M, Soto-Rubio A, Gil-Monte PR. Development of burnout syndrome in non-university teachers: influence of demand and resource variables. *Front Psychol.* 2021 Mar 9;12:644025.
22. Marel C, Mills KL, Teesson M. Substance use, mental disorders and COVID-19: a volatile mix. *Curr Opin Psychiatry.* 2021;34(4):351-356.[CrossRef]
23. Health Policy Institute, Commission on Dental Accreditation. *Survey of allied dental education. 2019-20 Report 1. Dental hygiene education programs. Table 17 a. Faculty of accredited dental hygiene programs by age, ethnicity/race and gender.* Accessed August 4, 2021. <https://www.ada.org/en/coda/find-a-program/program-surveys>.
24. Hogan RL, Mcknight MA. Exploring burnout among university online instructors: an initial investigation. *Internet Higher Educ.* 2007;10(2):117-124.
25. West CP, Dyrbye LN, Shanafelt TD. Physician burnout: contributors, consequences and solutions. *J Intern Med.* 2018;283(6):516-529.
26. Sinclair S, Raffin-Bouchal S, Venturato L, et al. Compassion fatigue: a meta-narrative review of the healthcare literature. *Int J Nurs Stud.* 2017;69:9-24.
27. Iyer P, Aziz K, Ojcius DM. Impact of COVID-19 on dental education in the United States. *J Dent Educ.* 2020;84(6):718-722.
28. Fiorilli C, De Stasio S, Beneven P, et al. Copenhagen burnout inventory (CBI) a validation study in an Italian teacher group. *Test Psychom Methodol Appl Psychol.* 2015;22(4):537-551.
29. Borritz M, Rugulies R, Bjorner JB, et al. Burnout among employees in human service work: design and baseline findings of the PUMA study. *Scandinavian J Public Health.* 2006;34(1):49-58.
30. Kristensen TS, Borritz M, Villadsen E, Christensen KB. The Copenhagen Burnout Inventory: a new tool for the assessment of burnout work stress. 2005;19(3):192-207.
31. Shoman Y, Marca SC, Bianchi R, et al. Psychometric properties of burnout measures: a systematic review. *Epidemiol Psychiatr Sci.* 2021;30:e8.
32. Robinia KA, Anderson ML. Online teaching efficacy of nurse faculty. *J Prof Nurs.* 2010;26(3):168-175.
33. Corry M, Stella J. Teacher self-efficacy in online education: a review of the literature. *Res Learn Tech.* 2018;26:2047.
34. Hampton D, Culp-Roche A, Hensley A, et al. Self-efficacy and satisfaction with teaching in online courses. *Nurse Educ.* 2020;45(6):302-306.
35. Horvitz BS, Beach AL, Anderson ML, Xia J. Examination of faculty self-efficacy related to online teaching. *Innov High Educ.* 2014;40:305-316.
36. American Dental Education Association. *ADEA Allied Dental 2020: An Analysis of the Results of the 2020 ADEA Survey of Allied Dental Program Directors in the United States.* American Dental Education Association; 2021;16.
37. Ong AD, Bergeman CS, Boker SM. Resilience comes of age: defining features in later adulthood. *J Pers.* 2009;77(6):1777-1804.
38. Coffey DS, Eliot K, Goldblatt E, et al. *A Multifaceted Systems Approach to Addressing Stress in Education and Beyond.* National Academy of Medicine; 2017.
39. Bajaj AK. Work/life balance: it is just plain hard. *Ann Plast Surg.* 2018;80(5S):S245-S246.
40. Hakami Z, Khanagar SB, Vishwanathaiah S. Psychological impact of the coronavirus disease 2019 (COVID-19) pandemic on dental students: a nationwide study. *J Dent Educ.* 2021;85(4):494-503.
41. Van Doren EJ, Lee JE, Breitman LS, et al. Students' perceptions on dental education in the wake of the COVID-19 pandemic. *J Dent Educ.* 2020;85:1187-1189. <http://doi.org/10.1002/jdd.12300>.
42. Patel BM, Boyd LD, Vineyard J, LaSpina L. Job satisfaction, burnout, and intention to leave among dental hygienists in clinical practice. *J Dent Hyg.* 2021;95(2):28-35.
43. Fountain AC, Roberts EP, Schuster G, et al. Dental faculty, student, and alumni perceptions of happiness and life satisfaction in dental school: foundations for resilience and well-being. *J Dent Educ.* 2020;84(3):336-342.
44. Martin F, Budhrani K, Kumar S, Ritzhaupt A. Award-winning faculty online teaching practices: roles and competencies. *Online Learn J.* 2019;23(1):184-205.

**How to cite this article:** Arnett MC, Ramaswamy V, Evans MD, Rulli D. Impact of Covid-19 on dental hygiene educators: A national survey. *J Dent Educ.* 2022;86:781–791. <https://doi.org/10.1002/jdd.12877>