

Burnout syndrome in Nova Scotia dental hygienists during the COVID-19 pandemic: Maslach Burnout Inventory

S Kimberly Haslam^{*}, BA, MEd, RDH; Alma Wade^{*}, BSc, MEd, RDH; Lindsay K Macdonald^{*}, BA, RDH; Jennifer Johnson[§], DipDH, RDH; Leigha D Rock^{*†,Δ,∅}, BDS, PhD, RDH

ABSTRACT

Background: Burnout syndrome is the result of prolonged occupational stress. The syndrome has 3 dimensions: emotional exhaustion (EE), depersonalization (DP), and reduced personal accomplishment (PA). This study aimed to examine the prevalence of the 3 dimensions of burnout in dental hygienists in Nova Scotia, Canada, (N = 745) as they returned to work during the COVID-19 pandemic following a furlough; to explore the effect of burnout during COVID-19 on dental hygienists' professional lives; and to determine the tools and methods that dental hygienists use to overcome burnout. **Methods:** In this cross-sectional study, participants were asked to complete an anonymous survey inclusive of demographic information, employment characteristics, the Maslach Burnout Inventory Human Services Survey for Medical Personnel (MBI-HSS [MP]), and 2 open-ended questions. **Results:** The response rate was 34.9% (n = 260). Approximately one-third (36.2%) of respondents met the criteria for burnout. Contributors to burnout were time, providing dental hygiene care, expectations of dentists, physical and mental health, lack of autonomy, and the COVID-19 pandemic. Reported mechanisms to overcome occupational stress centred on work-life balance, social support networks, working in a positive environment, and physical activity. **Discussion:** This study took place during the first wave of the COVID-19 pandemic, which may have influenced the rate of burnout among dental hygienists, particularly within the EE domain where scores were twice as high as those reported in pre-COVID-19 studies. **Conclusion:** Dental hygienists may be at risk for burnout. Recognizing the signs and symptoms of burnout and implementing healthy behaviours may reduce its detrimental effects.

RÉSUMÉ

Contexte : La prolongation du stress professionnel entraîne le syndrome de l'épuisement professionnel. Le syndrome comporte 3 volets : l'épuisement émotionnel (ÉÉ), la dépersonnalisation (DP) et la diminution de l'épanouissement personnel (ÉP). La présente étude visait à examiner la prévalence des 3 volets de l'épuisement professionnel chez les hygiénistes dentaires en Nouvelle-Écosse, Canada, (N = 745) à leur retour au travail après avoir eu un congé pendant la pandémie de la COVID-19; à explorer l'effet de l'épuisement professionnel sur la vie professionnelle des hygiénistes dentaires pendant la COVID-19; et à établir quels outils et méthodes les hygiénistes dentaires utilisent pour remédier à l'épuisement professionnel. **Méthodologie :** Les participants ont été invités à répondre à un sondage anonyme pour cette étude transversale, comprenant les données démographiques, les caractéristiques d'emploi, le sondage *Maslach Burnout Inventory Human Services pour le personnel médical* (MBI-HSS [PM]) et 2 questions ouvertes. **Résultats :** Le taux de réponse était de 34,9 % (n = 260). Environ le tiers (36,9 %) des répondants a satisfait aux critères de l'épuisement professionnel. Les facteurs qui y ont contribué étaient le temps, la prestation de soins d'hygiène dentaire, les attentes des dentistes, la santé physique et mentale, le manque d'autonomie et la pandémie de la COVID-19. La conciliation travail-vie personnelle, les réseaux de soutien social, travailler dans un environnement positif et l'activité physique étaient cités comme mécanismes qui permettent de surmonter le stress professionnel. **Discussion :** Cette étude a été effectuée pendant la première vague de la pandémie de la COVID-19, ce qui peut avoir influencé le taux d'épuisement professionnel chez les hygiénistes dentaires, particulièrement en matière d'ÉÉ où les cotes étaient 2 fois plus élevées que celles signalées dans les études d'avant la COVID-19. **Conclusion :** Les hygiénistes dentaires peuvent être à risque d'épuisement professionnel. Reconnaître les signes et les symptômes de l'épuisement professionnel et mettre en œuvre des comportements sains peuvent réduire ses effets adverses.

Keywords: burnout; burnout interventions; burnout syndrome; COVID-19; dental hygiene; depersonalization; diminished personal accomplishment; emotional exhaustion; Maslach Inventory; occupational stress

CDHA Research Agenda category: risk assessment and management

^{*}School of Dental Hygiene, Faculty of Dentistry, Dalhousie University, Halifax, NS, Canada

[§]Alumna, School of Dental Hygiene, Faculty of Dentistry, Dalhousie University, Halifax, NS, Canada

[†]Department of Pathology, Faculty of Medicine, Dalhousie University, Halifax, NS, Canada

^ΔBeatrice Hunter Cancer Research Institute, Halifax, NS, Canada

[∅]Department of Anatomical Pathology, Nova Scotia Health Authority, Halifax, NS, Canada

Correspondence: S Kimberly Haslam; khaslam@dal.ca

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PRACTICAL IMPLICATIONS OF THIS RESEARCH

- Dental hygienists are at risk of developing burnout syndrome and must learn to recognize the signs and symptoms.
- Emotional exhaustion is the most common dimension of burnout for dental hygienists.
- Mitigation of burnout syndrome among dental hygienists and retention in the profession can be aided by the implementation of identified coping strategies.

INTRODUCTION

In December 2019, the world first learned of the coronavirus (COVID-19) outbreak occurring in Wuhan, China. On March 11, 2020, the World Health Organization (WHO) declared COVID-19 a global pandemic.¹ A significant increase in burnout, anxiety, and depression has subsequently been reported among health care workers.²⁻⁴ Returning to work during a pandemic has also brought challenges to the oral health professions. Existing and new pandemic-related occupational stress may place oral health care providers at a higher risk for psychological symptoms such as anxiety, stress, and depression.⁵⁻⁷

Outside of the pandemic context, the health professions are identified as high-stress occupations due to the numerous physical and psychological pressures of the clinical environment.^{8,9} Long-term stressors, such as clinical work, time constraints, a lack of autonomy and scheduling control, and complex personnel dynamics, contribute to occupational burnout.⁸ This phenomenon was first described in 1974 by Freudenberger who coined the term “burnout,” defining it as a state of mental and physical exhaustion caused by the work environment in the “helping” professions.⁹ The concept has since evolved; in 2019, WHO classified burnout as a syndrome “conceptualized as resulting from chronic workplace stress that has not been successfully managed.”¹⁰ This classification validated the work of Maslach, who defined burnout syndrome as a 3-dimensional construct categorized by emotional exhaustion (EE), depersonalization (DP), and reduced personal accomplishment (PA).^{11,12} These dimensions are intertwined and may not always move in a linear fashion from EE to DP and then finally to PA. Therefore, each element needs to be studied individually.^{8,13}

EE is the most frequently reported and thoroughly analysed dimension. It consists of emotional signs, as well as physical and behavioural symptoms.¹² Emotional signs include diminished personal motivation, a sense of failure, helplessness, negative outlook, decreased job satisfaction or sense of accomplishment.¹² Physical symptoms include feelings of being habitually drained, lowered immunity, frequent illness, gastrointestinal disorders, frequent headaches, and negative changes in sleeping and eating patterns.^{10,11} Behavioural symptoms are using food, drugs or alcohol to cope, exhibiting frustration or anger, withdrawing from responsibilities, feeling isolated, procrastination, and missing work.^{10,11}

EE does not measure the aspects of burnout that go beyond the manifestations of fatigue.^{12,13} Unlike EE, DP and PA focus on the relationship people have with their work environment, including their dissatisfaction and loss of physical connection to their work.^{12,13} DP is characterized by an individual’s attempts to distance themselves from their clients.¹² In this dimension the practitioner experiences negativity, loss of idealism, and withdrawal, and demonstrates a lack of compassion when dealing with

clients, often seeing them as impersonal objects.¹⁰⁻¹³ DP alone may not be detrimental but when it is combined with EE, a deterioration of professional satisfaction may occur.⁸

The third dimension, reduced PA, is the self-evaluative component of burnout.^{12,14} It is defined by reduced productivity, ineffectiveness, feeling a lack of accomplishment, exhibiting low morale, poor self-esteem, and an inability to cope.^{10,11,14} The other 2 dimensions contribute to PA, as it is difficult to feel accomplished while simultaneously exhausted and disengaged.¹⁴ Decreased PA may result in the person believing they chose the wrong career, leaving their profession, having reduced self-confidence, and experiencing depression.¹⁴

While the dimensions of burnout explain the effects of the syndrome, they do not describe causes. There are various reasons people become disenchanted at work, inclusive of work that is monotonous, not intellectually stimulating or challenging, and lack of recognition or reward.^{12,15} Symptoms of burnout may arise when employees feel overworked, lack adequate time to complete tasks, lack control over their work, work in high-pressure environments, experience restrictions to time off, and feel undervalued.^{12,15}

Besides work imbalance, lifestyle, personality traits, and demographics can contribute to burnout.^{12,15} Individuals who are prone to burnout include high achieving, perfectionist and/or Type A personalities, and those with a pessimistic outlook, a need for control, and a reluctance to delegate responsibilities.^{12,15} Demographic data such as sex, age, and education also influence an individual’s susceptibility to burnout.¹² While sex itself is not a predictor of burnout, females often score slightly higher in the EE dimension and men score slightly higher in DP.¹² Young adults are at a higher risk for burnout than people in their 30s and 40s, as individuals tend to suffer from burnout earlier in their career.¹²

As burnout progresses, so do the negative long-term health effects. These unresolved stressors can activate a chronic “fight or flight” response and may be a predictor of a variety of health consequences, including endocrine, cardiovascular, neural, gastrointestinal, and musculoskeletal issues, and an increased mortality rate among those below the age of 45 years.^{16,17} Furthermore, burnout may produce sleep, depressive, and psychological disorders.¹⁷ Prolonged burnout may trigger post-traumatic stress disorder, substance abuse, depression, and suicidal ideation.¹⁷

Burnout is significant to health care professionals as it can affect the quality, safety, and performance of the practitioner, leading to client harm.^{9,18} Within the oral health professions, burnout in dentistry has been studied. However, there is minimal evidence of the prevalence of the 3 dimensions of burnout among dental hygienists; only 2 recent studies using validated tools were found in the literature.^{19,20} In addition, the impact of the COVID-19 pandemic and related protocols on the incidence of burnout

in dental hygienists is unexplored. As burnout can have serious implications for the care dental hygienists provide to their clients, this is an explicit gap in the literature. This study aimed to 1) examine the prevalence of the 3 dimensions of burnout in practising Nova Scotia dental hygienists as they returned to work following service interruption due to the COVID-19 pandemic; 2) further explore how burnout affects dental hygienists' professional lives; and 3) determine the tools and methods that dental hygienists are using to overcome burnout.

METHODS

Study design

This study collected quantitative cross-sectional survey data using the Maslach Burnout Inventory Human Services Survey for Medical Personnel (MBI-HSS [MP]), which is considered the gold standard in establishing the risk and severity of burnout.²¹ The instrument uses a Likert scale ranging from 0 to 6 and asks 22 questions pertaining to occupational burnout within 3 dimensions: 1) a 9-item EE scale, on which higher scores correspond to greater experienced burnout; 2) a 5-item DP scale, on which higher scores correspond to greater degrees of experienced burnout; and 3) an 8-item PA scale, on which lower scores correspond to greater experienced burnout. The tool has been validated and its reliability has been established.^{22,23} In addition, demographic information on age, gender, number of years in practice, type of practice, and how many hours per week worked was collected from each participant. Lastly, 2 open-ended questions (Q31: "What is the most stressful thing as a dental hygienist?" and Q32: "How do you deal with work stress?") were included to provide context and to further understand the role that stress plays in burnout within the profession. The demographic and open-ended questions were developed and vetted by the research team and were pilot tested on a subset of participants prior to recruitment and implementation of the survey.

Study protocol and ethics approvals were obtained from the Dalhousie University Research Ethics Board (REB# 2020-5085) and followed the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) reporting guidelines.

Population and setting

The study population consisted of dental hygienists working in Nova Scotia (NS), Canada. Inclusion criteria consisted of being registered with the College of Dental Hygienists of Nova Scotia (CDHNS) and holding a licence in the practising category (which includes actively practising members who are clinicians, educators, researchers, administrators, health promoters, and/or consultants). Exclusion criteria were non-practising dental hygienists, dental hygienists registered outside NS, and non-dental hygienists. Based on 745 dental hygienists licensed with CDHNS in the practising category, a sample size of 254 was calculated to achieve 95% confidence with allowance for 5% error.²⁴

The timing of this survey was significant in that it occurred during the COVID-19 pandemic. By March 2020, all provinces and territories in Canada had declared a state of emergency.²⁵ On March 24, all oral health services in NS were mandated to cease operations by public health authorities with the exception of emergency care (limited to a small cluster of offices within the province). This forced shutdown resulted in dental hygienists across the province being furloughed from their positions. Oral health services in NS resumed on June 20, 2020. On June 29, all licensed dental hygienists (N = 745) registered with CDHNS were sent an email from the college inviting them to participate in the survey. As an incentive for participation, one draw for a \$50 gift card was offered. The anonymous survey was conducted through Opinio, an online research tool that is hosted and supported in Canada and thus complies with the Personal Information International Disclosure Protection Act and Dalhousie University's *Policy for the Protection of Personal Information from Access Outside Canada*. The survey was open for 3 weeks, closing on July 23, 2020.

Data analysis

Data were analysed using SPSS® Version 25.0 software (Armonk, NY: IBM Corp). The threshold for significance was set at $p < 0.05$, and all statistical tests were 2-tailed. A descriptive analysis was performed to report absolute and relative frequencies of respondent characteristics and the 3 subdomains of the MBI-HSS (MP). EE was defined as a sum score of ≥ 27 , DP was defined as a sum score ≥ 10 , and reduced PA was defined as a sum score of ≤ 33 in the questions from each of the respective subdomains. Association between respondent characteristics and median scores of the 3 subdomains of the MBI-HSS (MP) was assessed using a Mann-Whitney U test for variables with 2 categories or a Kruskal-Wallis 1-way ANOVA for variables with 3 or more categories. Odds ratios and 95% CI were reported for characteristics that were significantly associated with a positive subdomain score. Burnout was defined as a composite score of an EE ≥ 27 plus either a DP score of ≥ 10 or a PA score of ≤ 33 . A Chi-square analysis (or a Fisher's Exact test when more than 20% of cells contained expected frequencies of < 5) was used to examine the association between respondent characteristics and burnout.

For the analysis of the 2 open-ended questions (Q31 and Q32) 2 members of the research team were each assigned to 1 question for interpretation, followed by review and discussion by all members. Individual responses for each question were entered in a spreadsheet and were subsequently analysed and coded based on emergent themes and corresponding subthemes. From this thematic analysis, a summative analysis table was used to identify the dominant themes of survey responses for both questions. The following criteria formed the basis of the summative report: general theme; subtheme(s); number of times theme emerged; summary description; notable

supporting quotations; and extra notes for purposes of additional context and clarification of researcher findings. A similar template was used to analyse the qualitative responses against the quantitative data; notable quotations were selected as they related to the 3 identified dimensions of burnout EE, DP, and PA.

RESULTS

Of the 745 dental hygienists who were invited to participate in the survey, 298 responded. Of those, 260 completed the MSI-HSS (MP) portion of the survey (n = 260), for a response rate of 34.9% and a margin of error of 4.8%. There were no statistically significant differences in the characteristics of those who completed the MBI-HSS (MP) portion of the survey compared to those who did not (n = 38, p > 0.05), thus participants with missing MSI-HSS (MP) data were excluded and a complete-case analysis was performed.

A summary of the sociodemographic responses of the participants is provided in Table 1. The majority of participants were female (99.2%), married (78.5%), with children (56.2%). The number of years of experience ranged from 1 year to greater than 40 years and was evenly distributed amongst the respondents. Two-thirds (65.8%) of the participants reported that they worked in an urban setting, while only one-third (33.8%) indicated that they worked in a rural setting. Most participants reported that they worked an average of 31 to 40 hours per week (72.2%), with 81.1% working in a general practice setting.

Sixty-five percent of respondents (n = 168) were positive for EE, scoring above the threshold sum score of 27 (median score = 32.0). However, the majority scored negative for DP or reduced PA, with only 34% (n = 88) and 24% (n = 62) scoring positive in these dimensions (median score = 6.0 and 38.0, respectively) (Table 2). Gender, marital status, number of children, and practice setting were not associated with EE, DP or PA. Interestingly, number of practice hours per week was significantly associated with EE. Those who worked 16 hours per week or greater were significantly more likely to score positive for EE compared to those who worked fewer hours (OR 4.50; 95% CI 1.35–15.05; p = 0.01) (Figure 1). Additionally, those who worked greater than 40 hours per week were more likely to experience a positive score in the DP dimension (OR 4.27; 95% CI 1.02–17.00; p = 0.03). When combining all 3 dimensions together into a composite score, approximately one-third (36.2%) of respondents met the criteria for burnout (n = 94). Respondent demographics were not associated with burnout.

In addition to the quantitative results, the 2 open-ended questions were used to qualify and provide context to the quantitative data. There were 241 responses for Q31 (“What is the most stressful thing as a dental hygienist?”) and 235 responses for Q32 (“How do you deal with work stress?”) Each question had 8 associated themes.

Table 1. Demographic characteristics of the study participants

		Participants N = 260 (%)
Gender	Male	2 (0.8)
	Female	258 (99.2)
Marital status	Single	42 (16.2)
	Married	204 (78.5)
	Divorced	12 (4.6)
	Widowed	2 (0.8)
Number of children ^a	None	114 (43.8)
	1	38 (14.6)
	2	92 (35.4)
	3	13 (5.0)
	4 or more	2 (0.8)
Number of years of practice	0 to 5 years	59 (22.7)
	6 to 10 years	43 (16.5)
	11 to 15 years	33 (12.7)
	16 to 20 years	30 (11.5)
	21 to 30 years	47 (18.1)
	31 to 40 years	45 (17.3)
	41+ years	3 (1.2)
Practice setting	Rural	88 (33.8)
	Urban	171 (65.8)
	Both	1 (0.4)
Number of practice hours per week ^a	1 to 5 hours	4 (1.5)
	6 to 15 hours	9 (3.5)
	16 to 20 hours	7 (2.7)
	21 to 30 hours	45 (17.3)
	31 to 40 hours	185 (71.2)
	41 to 50 hours	9 (3.5)
Practice specialty ^b	General practice	229 (88.1)
	Orthodontics	18 (6.9)
	Periodontics	14 (5.4)
	Prosthodontics	2 (0.8)
	Other ^c	10 (3.8)

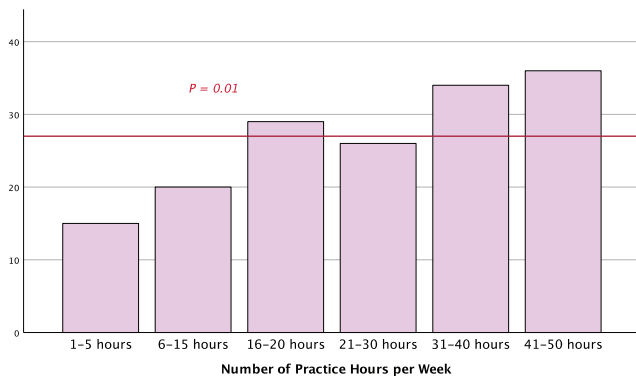
^a Data missing for 1 participant

^b 13 participants reported working in more than 1 practice specialty

^c Geriatrics, public health, health policy, education, research, regulatory

The major themes of Q31 were time, dental hygiene care, expectations and acknowledgment by the dentist, COVID-19 protocols, physical and mental health, lack of voice, toxic work environment, and lack of autonomy in the profession (Table 3). Time emerged in 49% of the responses, although time was often cited as a contributing or exacerbating factor to other identified themes. The 3 main subthemes related to time were 1) staying on schedule (23%); 2) insufficient time booked for clients (22%); and 3) not having time to provide optimal care (6%). “Not

Figure 1. Median score of emotional exhaustion based on the MBI-HSS (MP) significantly increases with the number of practice hours per week ($p = 0.01$)



having enough time for each patient to properly provide treatment/care; being rushed and only worried about staying ‘on time’” exemplifies time as a stressor.

Under the theme of providing dental hygiene care (34%), the most prevalent response (10%) was related to limitations in providing optimal care. This theme overlapped with time, specifically as having a lack of time to perform optimal client care. Other concerns that arose were clients’ treatment outcomes, unrealistic expectations and attitudes, and the challenges of maintaining client comfort: “Managing patient expectations of care. They expect fast treatment on occasion which is not realistic and become upset at the time and cost.” Underappreciation and expectations by the dentist (16%) had 3 subthemes: 1) unrealistic workloads; 2) verbal treatment; and 3) sentiments of feeling undervalued in relation to amount of output, value, and money brought to the practice. “The way I’m treated by the dentists, [and the] lack of respect” contribute to sentiments of underappreciation. Furthermore, respondents found production pressure and the current business model of dentistry to contribute to stress.

Fourteen percent of respondents considered pressure to bill for services or production goals and budgetary

constraints to be stressors. This was coupled with responses where respondents felt production was prioritized over client care and education: “I chose dental hygiene as a career because I was led to believe that it was a health profession, but I quickly learned that in private practice it is very much a business.” Eleven percent of the study population reported physical injuries or mental strain as a cause of stress.

Stress from the recent COVID-19 pandemic was also cited by 11% of the participants as the introduction of new infection control protocols and returning to work after being furloughed brought new challenges:

At this time...the “new normal”. It’s mentally draining & demanding!

Although we had a lot of information and research to read on COVID-19 I feel there was a disconnect when we returned to our practice.

I like to decompress at lunchtime with a 1/2 [hour] walk. Unfortunately, now with all the additional things to do at the office due to the COVID-19, this is no longer possible.

In Q32, the major themes were work–life balance, physical activity, psychological strategies, health care interventions, substance use, social support, office environment, and problems coping. (Table 4). Fifty-nine percent of respondents reported mitigating stress by striving to find a work–life balance: “Trying to achieve a work/life balance by making time to exercise/meal plan, have a hobby and spend time with friends and loved ones.” Due to the vast number of comments on this theme, it was divided into 5 subthemes:

1. Hobbies (27%): “Working on hobbies that give me joy like painting and music.”
2. Spending time with family, friends, and pets (12.7%): “I have a great family/support system. I lean on them a lot.”
3. Leaving work at work (10.2%)

Table 2. Association between respondent characteristics and 3 subdomains of the MBI-HSS (MP)

	Emotional exhaustion ^a		Depersonalization ^b		Reduced personal accomplishment ^c		Burnout ^d	
	No (%)	Yes (%)	No (%)	Yes (%)	No (%)	Yes (%)	No (%)	Yes (%)
N = 260	92 (35)	168 (65)	172 (66)	88 (34)	198 (76)	62 (24)	166 (64)	94 (36)
Median (IQR)	32.0 (20.0–41.0)		6.0 (2.0–11.8)		38.0 (34.0–42.0)			

^aEmotional exhaustion (EE) is defined as sum score ≥ 27

^bDepersonalization (DP) is defined as sum score ≥ 10

^cReduced personal accomplishment (PA) is defined as sum score ≤ 33

^dAn individual is considered to have burnout if they have an EE score ≥ 27 plus either a DP score of ≥ 10 or a reduced PA score ≤ 33

Table 3. Summary of major themes reported for Q31

What is the most stressful thing as a dental hygienist?	
Theme	Subthemes
Time	<ul style="list-style-type: none"> • Providing high quality care within time constraints • Staying on schedule/running behind • Insufficient time booked for clients • Dentist and client appointment expectations • Lack of breaks
Dental hygiene care	<ul style="list-style-type: none"> • Personal caring related to treatment outcomes • Client expectations and negative attitudes • Clients not valuing interventions such as OHI • Client discomfort • People pleasing • Clients unloading personal problems • Maintaining positive attitude
Expectations and acknowledgement by dentist	<ul style="list-style-type: none"> • Unrealistic workloads • Verbal treatment • Sentiments of feeling undervalued
COVID-19	<ul style="list-style-type: none"> • Stress related to new protocols • Financial impact of the epidemic (personal and professional)
Physical and mental health	<ul style="list-style-type: none"> • Physical ailments and injuries related to work • Mental strain
Lack of voice	<ul style="list-style-type: none"> • No input regarding scheduling • No input regarding treatment planning • No opportunity to bring issues and concerns forth to management • Fear of reprisal for voicing concerns • Pressure to bill for services/production goal
Toxic work environment	<ul style="list-style-type: none"> • Office gossip • Co-worker attitudes • Treatment of staff by management
Lack of autonomy	<ul style="list-style-type: none"> • No employment protection or union • Losing identity as health professionals

4. Taking work breaks (3%)
5. Working part time (3%)

Reducing work hours was another strategy reflected in participant responses. Work-life balance may overlap with the theme of social supports (34.9%); being able to vent to family, friends, other dental hygienists, and co-workers were commonly cited in responses to Q32: “I vent to family about it, I like talking about it as it makes me feel like I am getting it off my chest.” The next strategy was physical activity (44.3 %), with walking outdoors being the most common form. Physical activity was followed by psychological strategies (9.8%), such as mindfulness, meditation, and breathing exercises: “Try to practise yoga, meditation, mindfulness and breathing and counting to 10.” Approximately 5.5% of responses were related

Table 4. Summary of major themes reported for Q32

How do you deal with work stress?	
Theme	Subthemes
Work-life balance	<ul style="list-style-type: none"> • Spending time with family/friends/pets • Leaving work at work • Hobbies/activities/ways to relax/self-care • Taking breaks at lunch or during workday • Working part time
Social support	<ul style="list-style-type: none"> • Venting/communicating to family/friends • Venting/communicating to other dental hygienists • Venting/communicating to co-workers/boss/manager
Physical activity	<ul style="list-style-type: none"> • Yoga • Walking • Running • Other
Psychological strategies	<ul style="list-style-type: none"> • Mindfulness, which includes deep breathing exercises and meditation • Personal coping/self-talk • Attitude and humour
Health care interventions	<ul style="list-style-type: none"> • Massage/chiropractic/physiotherapy • Medication
Substance use	<ul style="list-style-type: none"> • Alcohol (glass of wine in the evening, drink with a friend, etc.) • Cannabis (CBD for pain or edibles for relaxation)
Office environment (positive)	<ul style="list-style-type: none"> • Changing office environments • Working with a positive group
Problems coping	<ul style="list-style-type: none"> • Cannot deal • Struggling to cope

to managing pain: “I try to eat well, exercise, and make time for self-care via chiropractor visits and massages.” Substance use was not commonly reported. However, 7.2% of respondents did refer to having the occasional alcoholic drink, cannabis or prescribed medication to help them relax: “Weed. Alcohol. Venting” and “take[ing] anti-anxiety medication.” These themes were followed by personal coping skills, attitude and humour (4.7%), and self-talk (2.5%): “I try and maintain a positive outlook in my work practices and be a voice of reason and calmness which helps myself, and others I hope.” A change in work environment (3.8%) was also indicated: “I did move to a different practice a few months ago, which helped a lot.” Concerningly, 12.3% of respondents indicated they were not coping with work stress and were quitting their jobs and/or going on stress leave due to their work environment: “I couldn’t, and ultimately ended up [on] medical leave and then resigned. I’m not sure I will continue in the career.”

DISCUSSION

This study evaluating the phenomenon of burnout in Nova Scotia dental hygienists took place during the first wave of the COVID-19 pandemic. As such, it is difficult to determine if the rate of reported burnout would have differed if this study had been conducted prior to March 2020. In the current study, 36% of respondents suffered from burnout syndrome with 65% reporting high scores in EE (median score = 32), 34% had high DP (6), and 24% had reduced PA (38). When compared to the scores defined by Maslach,²¹ the NS cohort exhibited higher EE (32 vs ≥ 27), lower DP (6 vs ≥ 10), and higher PA than the norm (38 vs ≤ 33). A recent study by Bercasio et al.¹⁹ of dental hygienists living in California prior to the pandemic (survey sent May 2019) also used the MBI-HSS (MP). In that study, the percentage of burnout among dental hygienists was similar (41%) to the 36% reported in the current study. However, the NS study participants exhibited significantly higher EE (65% vs 30%) and DP scores (34% vs 11%) while fewer participants experienced a reduced PA (24% vs 41%) compared to participants in the Bercasio et al. study. These percentages were confirmed when comparing the mean scores: EE (32 vs 20), DP (6 vs 4), and the mean PA (38 vs 40). Bercasio et al.'s mean scores in all dimensions demonstrated a lower experience of burnout than NS, with EE having the greatest disparity. The only inconsistency was in the reduced PA score. Even though the NS mean for reduced PA corresponded closely with Maslach's mean score to satisfy this dimension the number of dental hygienists suffering from a reduced PA in the Bercasio et al. study was twice as high. This phenomenon needs to be further explored.

Patel et al.²⁰ studied dental hygienists in the United States prior to the pandemic (published September 2020; survey schedule was not indicated) using another validated tool, the Oldenburg Burnout Inventory (OBI), which contains exhaustion and disengagement subscales.¹⁸ The study found that participants did not demonstrate significant signs of burnout on either subscale.²⁰ Similar to the Bercasio et al.¹⁹ study, the subscales fell below the neutral midpoint, whereas for the NS study, EE surpassed this point. As both the Bercasio et al. and Patel et al. studies were conducted pre-pandemic, the array of added stressors on oral health professionals during the first wave^{4,26,27} may have negatively influenced the 3 dimensions of burnout as reported by NS dental hygienists, with EE being the most affected.

Since 98.2% of the current study's respondents were female, it was expected that EE would be higher than the other 2 dimensions.¹² However, EE was considerably higher than in previous studies. One hypothesis for this finding is the elevated psychological distress related to the COVID-19 pandemic.^{5,26,27} Stress relating to new protocols was prevalent among respondents, particularly in relation to the lack of time for donning and doffing personal

protective equipment (PPE) and set-up of the operator. For example:

I feel total patient care & treatment is being compromised b/c of all of the new steps & procedures we now must follow but yet in a timely manner!

Evidence from the literature coupled with survey responses suggest that the hypothesis of the COVID-19 pandemic increasing the incidence of EE is a reasonable assumption.^{5-7,26,27}

EE was the most prevalent dimension of burnout in the study population, prompting the articulation of multiple factors in the responses to Q31 (Table 3). One such factor was the overwhelming emotional demand of working one-on-one with clients²⁸⁻³⁰: "The responsibilities of always being energetic, engaged and ultra-professional." Other factors included the lack of recognition of dental hygienists' knowledge and proficiency by dentists, coworkers, and the public^{31,32}: "Patients who don't respect me, undervalue my education and profession[al] opinions." Decreased satisfaction in work, lack of autonomy, and "giving a lot to my workplace but feeling unappreciated" are also related to EE and were reflected in responses.^{31,33} The most commonly reported physical symptoms of EE were headaches, tiredness, and insomnia.^{16,34,35} The final aspect of EE—behavioural symptoms—had the fewest responses, which is congruent with the literature.²⁷ However, this theme did emerge in open-ended question Q32 where behaviours such as "Weed. Alcohol. Venting" and "take[ing] anti-anxiety medication" were cited.

While DP was not as prevalent as EE in this study, both the quantitative data and open-ended questions established the number of hours worked as a predictor of EE and DP: "I now only work 3 days a week due to full time work just being 'too much.'" Quotations related solely to DP were primarily attributed to the work environment: "I love what I do but wish it wasn't an assembly line of patients, never ending, one right after the other." The themes of personal coping skills, attitudes, humour, and self-talk were often cited in relation to overcoming the effects of depersonalization by maintaining a positive outlook. Literature has indicated that, when an individual's personality is not aligned with their workplace, they are at increased risk for burnout.^{8,16,30}

Under the PA domain, comments from participants revealed a spectrum of experiences. On the one hand, there were positive comments such as "I really am enjoying the last few years and realize even with some years of feeling burnt out, that I truly did choose a wonderful profession." On the other hand, several respondents communicated that they were quitting their jobs and/or going on stress leave as a result of their work environment, leading to attrition of the dental hygiene workforce: "I ended up so sick...I had to go on stress leave...I have since quit and currently have

no job and fear I will never be able to work in my chosen career again due to the PTSD...”

This study determined that 36% of Nova Scotia dental hygienists suffered from burnout during the first wave of the pandemic, which may pose a risk of harm to clients’ oral health. While this study did identify trends in preventing burnout, it is not a comprehensive list. One hope is that the impact of reported stressors related to the COVID-19 pandemic on burnout prevalence among dental hygienists will dissipate as new protocols become the norm.

Strengths and limitations

The strength of this cross-sectional study is the internal validity of using the MBI-HSS (MP) validated survey tool and the significant response rate. The volume of data collected by the open-ended questions was substantial and the study could have been further strengthened by using a mixed methodology with the appropriate theoretical framework. This study adds to the knowledge of burnout in dental hygienists during the COVID-19 pandemic in Canada. However, the findings of this study are based on data from one province and, although the sample size and diversity of participants increase confidence in the data, the extent to which these findings may be generalizable to other dental hygienists is unknown and requires further research.

The explanatory potential of this study is limited due to its cross-sectional design, which did not allow for temporal or causal interpretations. While previous studies have established validity of using the MBI-HSS (MP), the use of self-reporting scales still poses a risk for recall bias as participants may not remember previous events or experiences accurately or they may omit details. Self-selection is another bias, as participants demonstrating signs and symptoms of burnout may have been predisposed to complete the survey. Respondents’ interpretation of the open-ended questions and confidence in completing a web-based survey may be additional limitations.

While this research was conducted within the context of the COVID-19 pandemic, burnout as it relates to the COVID-19 experience remains an area meriting further research. As COVID-19 will have a lasting impact on the practice of dental hygiene, national studies are warranted. Research is required to help dental hygienists prevent and overcome burnout arising from new infection control measures implemented in response to COVID-19. The findings of this study justify the development of future research on this topic.

CONCLUSION

Dental hygienists need to be able to recognize the signs and symptoms of burnout and implement healthy behaviours to decrease its detrimental effects. Recommendations include targeting dental hygiene education programs to initiate stress management and mitigation training at the onset of students’ dental hygiene training to promote positive coping strategies for the future. Implementation of these strategies

throughout their careers is conducive to longevity in the profession and the delivery of optimal client care.

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CONFLICT OF INTEREST

The authors declare no known conflicts of interest.

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