



Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Elsevier hereby grants permission to make all its COVID-19-related research that is available on the COVID-19 resource centre - including this research content - immediately available in PubMed Central and other publicly funded repositories, such as the WHO COVID database with rights for unrestricted research re-use and analyses in any form or by any means with acknowledgement of the original source. These permissions are granted for free by Elsevier for as long as the COVID-19 resource centre remains active.



ELSEVIER

Contents lists available at ScienceDirect

Heart & Lung

journal homepage: www.heartandlung.com

Quality of work-life among advanced practice nurses who manage care for patients with heart failure: The effect of resilience during the Covid-19 pandemic

Jill Howie-Esquivel^{a,*}, Ha Do Byon^a, Connie Lewis^b, Arlene Travis^c, Casey Cavanagh^d

^a University of Virginia, Charlottesville, VA, United States

^b Franklin, TN, United States

^c Mount Sinai Health System, New York, NY, United States

^d University of Virginia School of Medicine, Charlottesville, VA, United States

ARTICLE INFO

Article History:

Received 28 January 2022

Revised 25 March 2022

Accepted 7 April 2022

Available online 11 April 2022

Keywords:

APRNs
Heart failure
Burnout
Resilience
Quality of work-life

ABSTRACT

Background Clinician burnout, stress and job dissatisfaction among Advance Practice Registered Nurses (APRNs) may have impacted work-related quality of life (WRQoL) during the COVID-19 pandemic. No studies describe burnout and resilience in APRNs who manage care for patients with HF.

Objectives Among APRNs who manage care for patients with HF, study aims included: 1) Describe burnout and WRQoL levels; 2) Determine the relationship between burnout and WRQoL; 3) Examine whether resilience moderates the association between WRQoL and burnout.

Methods: An online survey of American Association of Heart Failure Nurses and the Heart Failure Society of America APRN members were queried. Inclusion criteria: APRN's who practiced in ambulatory or inpatient cardiology settings at least 8 h weekly. Outcomes measured: Burnout, WRQoL, and resilience.

Results Participants' ($N = 101$) mean age was 50 (± 10) years and 93% identified as female. APRNs worked more than 42 h weekly and reported moderate levels of resilience, high levels of personal ($M = 51.7$, norm-referenced mean: 35.9) and work-related burnout ($M = 50.1$, norm-referenced mean: 33.0). Correlations between high levels of burnout and low WRQoL (r range: $-0.74 - -0.39$, $p < .001$) were found. Burnout moderated the relationships among resilience and WRQoL.

Conclusion APRNs had high levels of burnout during the COVID-19 pandemic. Patient-related burnout was not high. Level of burnout influenced the relationships among resilience and WRQoL suggesting that burnout is from workplace and personal sources, and that level of resilience could not overcome the effect of burnout. Interventions are needed regarding systems changes to uplift and support our workforce.

© 2022 Elsevier Inc. All rights reserved.

Abbreviations: APRNs – advanced practice registered nurses; WRQoL- work-related quality of life; HF- heart failure; CBI- Copenhagen Burnout Inventory; BRS - Brief Resilience Scale

Introduction

Heart failure (HF) is a complex syndrome characterized by an unpredictable disease trajectory,¹ high healthcare burden,² and increasing prevalence.^{2,3} Advance Practice Registered Nurses (APRNs), including Nurse Practitioners and Clinical Nurse Specialists, are increasingly managing the care of patients with HF, who have a 5-year mortality rate of more than 50%⁴ and thus a poorer prognosis than most cancers.⁵ As health care burden and costs have increased,

* Corresponding author at: University of Virginia, School of Nursing, 202 Jeanette Lancaster Way, PO Box 800782, Charlottesville, VA 22908, United States.

E-mail address: jhe9f@virginia.edu (J. Howie-Esquivel).

rates of APRNs have also risen to approximately 325,000 in 2021 as compared to only 106,000 in 2004.^{6,7} This rapid expansion in terms of rates of APRNs, expanded clinical practice,⁸ and increasing responsibility for complex disease management may contribute to psychological issues, such as clinician burnout and low work-related (WRQoL) among APRNs.⁹

Burnout, quality of work life, and resiliency

Clinician burnout and WRQoL are increasing concerns among healthcare professionals. Burnout is characterized by emotional exhaustion, depersonalization (i.e., impersonal attitude), and low sense of personal accomplishment that results from prolonged, work-related stress.^{10,11} Healthcare professionals are particularly vulnerable to burnout and low WRQoL due to the high-stakes, high-demands work environment, even before the COVID-19 pandemic. Rates of burnout have drastically increased among healthcare

professionals, with findings suggesting burnout rates as high as 70% among physicians¹² and 20–50% in nursing staff.^{13–15} Within cardiology 26.8% of cardiologists report burnout and women report higher rates of burnout as compared to men (31% vs. 24%).¹⁶ The underlying burnout that existed prior to the COVID-19 pandemic combined with prolonged exposure to work-related stress during the pandemic appears to have exacerbated burnout among healthcare professionals such that 28.6% of physicians reported burnout, although burnout was higher among nurses (38.0%).¹⁷ The consequences of burnout are widespread and serious, as clinician burnout has been linked to lower patient satisfaction,¹⁸ poor patient outcomes,^{19–21} medical errors,^{20,22,23} staff turnover,²⁴ reduced quality of life, mental health problems including posttraumatic stress disorder (PTSD), and suicidal ideation among healthcare professionals.^{25–27} Although the pandemic remains an ongoing stressor, early research involving healthcare professionals has observed similar severe consequences with 40% reporting PTSD symptoms, 6% severe depression, 11% severe anxiety, 7% problem drinking and 13% suicidal ideation.²⁸ These findings suggest that burnout has serious consequences among healthcare professionals and that it is critical for clinicians and organizations to support clinician well-being.

Similarly, WRQoL is conceptualized as the work experience of an individual and is influenced by multiple factors, including psychological distress, role stress, working conditions, and organizational policies.^{29,30} Investigators have examined WRQoL among healthcare professionals and found that WRQoL was significantly associated with burnout and job satisfaction.¹⁴ Burnout also mediated the relationship between workplace factors and turnover intention among nurses.²⁴ Although evidence supports relationships between quality of work life and burnout among nurses, research examining these factors among APRNs is limited. In one study, of APRNs and physician assistants more than 25% of APRNs reported burnout.³¹ Likewise, another study of nurse practitioners in a mechanical circulatory support program observed a negative relationship between burnout and WRQoL.²⁹

Resiliency, in contrast to burnout and WRQoL, is conceptualized as the ability to recover, or bounce back, when one encounters adversity or other negative conditions.³² As a consequence, programs aimed at resilience-building are often the target of clinician well-being programs.³³ For example, a resiliency training program has been shown to improve perceived stress, anxiety, quality of life, and health behaviors among healthcare employees.³³ Furthermore, resiliency has increasingly become the focus of research examining burnout during the COVID-19 pandemic.

Even prior to the pandemic, studies reported the interrelationships between burnout and WRQoL among healthcare professionals prior to the pandemic. The National Academy of Medicine recognized the need to address burnout and promote clinician well-being by launching the Action Collaborative.³⁴ Similarly, the Heart Failure Society of America's Nursing Committee and the American Association of Heart Failure Nurses Research Committee sought to examine burnout, WRQoL, and resiliency among APRNs given the dearth of research among this population. Therefore, this study focused on APRN's who provide care for patients with HF to address the specific aims: 1) describe level of burnout, WRQoL and resilience, 2) determine the relationship between burnout and WRQoL, and 3) examine whether resilience moderates the association between WRQoL and burnout.

Methods

Study design and sample

An exploratory correlational research design was used. A national convenience sample of APRNs who have a practice that includes direct management of patients with HF. Inclusion criteria were: APRN's who practiced in specialty areas such as cardiology clinics, ventricular assist device and mechanical circulatory support clinics, inpatient cardiology

units and intensive care settings, or home care programs for patients with HF, and who practiced at least 8 h per week. APRNs were excluded from the study if they worked with an exclusively pediatric population, and/or indirectly cared for patients and families in an exclusively administrative, educational, or research position. Institutional Review Board approval (IRB-#SBS 3773) was obtained.

Data collection and recruitment

We recruited APRN's from the membership rosters of the American Association of Heart Failure Nurses and the Heart Failure Society of America. We employed a Qualtrics survey that first provided study information and then required informed consent before the questionnaires were administered. Demographics, and questionnaires regarding burnout, quality of work life, and resilience data were collected. All data were deidentified. Of historical context, the Qualtrics survey was launched in October 2020 when the COVID-19 pandemic was well underway (7 months after the pandemic was declared) and before any vaccine was available to the public.

Measures

Burnout

We utilized the Copenhagen Burnout Inventory (CBI) to assess burnout.³⁵ The CBI is a 19-item instrument used for assessing burnout in 3 domains across a variety of professions and in differing businesses. It consists of 3 subscales: Personal (the degree of physical and psychological fatigue and exhaustion experienced by the person), Work (degree of physical and psychological fatigue and exhaustion that is perceived by the person as related to his/her work), and Client-related burnout (degree of physical and psychological fatigue and exhaustion that is perceived by the person as related to his/her work with clients). In our study, client-related burnout is equivalent to patient-related burnout. Each item is scored with 5 possible answers that apply to a scale of 0–100. Higher scores indicate higher levels of burnout. Further, the CBI has been used in APRNs who manage patients with ventricular assist devices and validity and reliability have been established.²⁹ The reliability coefficient (Cronbach's alpha) derived from the sample of this study was 0.96.

Work-related quality of life

To assess quality of life at work, we utilized the Work-Related Quality of Life Scale (WRQoL), a 23-item instrument used to assess the following 6 dimensions of WRQoL: 1) Job and career satisfaction; 2) General well-being; 3) Home-work interface that includes how to accommodate family and work responsibilities; 4) Stress at work that includes job demands; 5) Personal control including control of decision-making at work; and, 6) Working conditions including the physical work environment.³⁶ The WRQoL scale uses a 5-point Likert scale that ranges from strongly disagree to strongly agree. Higher scores indicate a higher WRQoL and previous studies have established validity and reliability. The reliability coefficient derived from the sample of this study was 0.95.

Resilience

We utilized the Brief Resilience Scale (BRS), a 6-item instrument used to assess whether an individual can bounce back or recover from stress.³² The focus of the instrument is on the ability for recovery, resistance, and adaptation to stress, rather than on assessing resources that may promote resilience as found in other resilience instruments. This is of particular importance when working in stressful environments, such as healthcare, where high-stakes decisions are required. The 6 items are rated on a 5-point Likert scale ranging from strongly disagree to strongly agree where higher scores indicate

higher resilience. The reliability coefficient derived from the sample of this study was 0.83.

Demographic and occupational characteristics

A survey of participants' demographics (age, sex, race, ethnicity, highest education level) and occupational characteristics (years of practice, percentage of hours spent by work setting [inpatient, outpatient], work hours in the past two weeks, weekly clinical hours, primary practice region, and primary practice institution type). Given the disruption in health care delivery due to the COVID-19 pandemic, additional questions were included to address the challenges that APRN's may have faced. These four questions are related to coping, personal impact of the pandemic, and how they viewed the nursing profession before and after the pandemic.

Procedures

Data were collected with the survey platform Qualtrics, LLC (2015) that was administered through the University of Virginia. The survey was sent out to membership lists using email and open for 2 weeks. Three emails were provided notifying the recipient of the opportunity to answer the survey questions. No incentives were provided to answer the survey. No personally identifiable information were collected.

Data analysis

For descriptive statistics, means and standard deviation were computed for continuous data, and frequencies and percentages for categorical data. Reverse coding was performed for the responses of the items that were keyed in the opposite direction to the rest of the items in the scale. To determine the relationship between burnout and WRQoL, Pearson correlation coefficients were estimated. To explore the moderating effect of resilience, we employed multiple linear regressions with interaction terms. The predictors of the main effect and the interaction effect were mean-centered to minimize multicollinearity. The moderating effect was further analyzed using subgroup analysis. Resilience was categorized into three subgroups: scores of less than 3 were considered 'low,' 3 to less than 4 were medium, and 4 or higher were high. Then, associations between burnout and WRQoL were examined within each subgroup. The statistical significance level was set at 0.05. Data were analyzed with the Statistical Package for Social Sciences (SPSS: IBM Corp. Released 2020. IBM SPSS Statistics for Windows, Version 27.0. Armonk, NY: IBM Corp.). If a participant had any missing responses, that participant was excluded from the analyses.

To determine whether resilience moderates the relationships among WRQoL and burnout we first placed participants into categories of resilience e.g. 1, 2, 3. Next, Pearson correlation coefficients were used to determine interrelationships of the resilience, burnout and WRQoL scores. To determine the moderating effect of resilience on the association between WRQoL and burnout the relationships among the variables was tested. Models were tested using multiple linear regression with two main effects and one interaction term; all independent variables were centered on the means; p-values of > 0.05 were considered significant.

Results

Demographic, burnout, work-related quality of life and resilience characteristics

A total sample of 101 APRNS comprised the participants with complete survey data, of the 151 surveys returned. The average participant age was 50.2 years (SD = 10.8) (Table 1). Participants were

predominantly female (93%), White (96%), and had a master's or a doctoral degree as their highest education (87.2%). On average, participants had 14.3 years (SD = 9.4) of experience in managing patients with HF. Less than half (40.3%) of their work time was spent in the inpatient setting, while 56.3% of the time was used in the outpatient setting. In the prior two weeks before the survey, their work hours amounted to 84.2 h (SD = 16.3), an average of 42.1 h per week. Of these, the majority of the participants (55.4%) reported having spent more than 32 h per week managing the care of HF patients. The geographical locations of their workplaces were evenly distributed across the West, South, Midwest, and Northwest, and about three-quarters worked primarily in academic medical centers or community hospitals.

Impact of the COVID 19 pandemic and burnout prevention

Approximately 20% of the respondents faced reduced working hours due to lay-off, furlough, or cutback of work hours, while 10% reported increased working hours (Table 2). About 30% of the participants reported they had mixed feelings of being burned out and being prouder of their profession. Three percent of the participants said they were burned out and planned to leave their profession. Sixty-four percent reported that their healthcare system, institution, or practice implemented a well-being or resiliency program or effort (s) during the COVID-19 pandemic, of which only 15% participated in

Table 1
Demographics and occupational characteristics (N = 101).

	Frequency	%	Mean (SD)	Range
Age (in years)			50.2 (10.8)	21.0–68.0
Sex				
Male	6	5.9		
Female	94	93.1		
Transgender	1	1.0		
Race				
White	97	96.0		
Bi-racial	2	2.0		
Other	1	1.0		
Prefer not to answer	1	1.0		
Ethnicity				
Hispanic/Latino	4	4.0		
Not Hispanic/Latino	97	96.0		
Highest Education				
BSN	8	7.9		
MSN	71	70.3		
DNP	12	11.9		
PhD	5	5.0		
Other	5	5.0		
Years of practice in HF			14.3 (9.4)	1.0–41.0
Work hours (%) by work setting				
Inpatient setting work hours (%)			40.3 (39.1)	0.0–100.0
Outpatient setting work hours (%)			56.3 (39.3)	0.0–100.0
Work hours in 2 weeks			84.2 (16.3)	12.0–160.0
Weekly clinical hours				
< 8 h / week	7	6.9		
8–16 h / week	18	17.8		
17–32 h /week	20	19.8		
>32 h / week	56	55.4		
Primary practice region				
West	16	15.8		
South	29	28.7		
Midwest	24	23.8		
Northeast	32	31.7		
Primary practice institution type				
Community hospital	35	34.7		
Academic medical center	40	39.6		
County/public hospital	2	2.0		
Government/veterans affairs medical center	6	5.9		
Private hospital system	18	17.8		

Note: Percentages may not add up to 100% due to rounding.

that program/effort(s). When they participated, only 13% (2/15) reported a moderate or high reduction in burnout.

Level of burnout, work-related quality of life, and resilience

Mean scores of the 3 domains of burnout, personal burnout, work-related burnout, and client (patient)-related burnout were 51.7 (SD = 21.9), 50.1 (SD = 27.8), and 27.6 (SD = 21.3), respectively (Table 3). Personal and work-related burnout scores were higher than the general (normed) population while the client (patient)-related scores were lower. The scores of WRQoL ranged from 2.7 (stress at work) to 3.7 (job career satisfaction), with the average overall WRQoL being 3.3 (SD = 0.7). The average resilience score was 3.7 (SD = 0.7).

Relationship between burnout and work-related quality of life

All Pearson correlation coefficients of the burnout and the WRQoL scores (Table 4) showed a statistically significant negative direction (e.g., higher burnout scores were associated with WRQoL scores). The magnitude of the associations of personal burnout and work-related burnout with WRQoL ranged from -0.743 to -0.551, while those of client (patient)-related burnout with WRQoL were lower and ranged from -0.515 to -0.387.

Moderating effect of resilience on between burnout and WRQoL

The moderating effects of resilience on the association between burnout and WRQoL were not found in any of the bivariate subscale relationships except on the relationship between work-related burnout and general well-being, one domain of WRQoL (p= .001; Table 5). For this significant moderating effect, the unstandardized beta coefficient was close to zero (= -0.008).

Table 2
The impact of the COVID -19 pandemic on work (N = 101).

	Frequency (%)
How has COVID-19 affected your practice hours?	
No effect	52 (51.5)
I was laid off	1 (1.0)
I was furloughed	8 (7.9)
My hours were reduced	11 (10.9)
My hours were increased to greater than full-time	10 (9.9)
Other	19 (18.8)
How has COVID-19 affected how you think about your profession? ^a	
No effect	41 (40.6)
I am burned out and leaving my profession	3 (3.0)
I am burned out, but not leaving my profession	13 (12.9)
I have mixed feelings of being burned out and more proud of my profession	31 (30.7)
I am more proud of my profession	18 (17.8)
Other	5 (5.0)
Are you more stressed while you are seeing patients due to COVID-19?	
Yes	65 (64.4)
No	36 (35.6)
Rate the effectiveness of any well-being or resiliency programs/efforts implemented during the COVID-19 pandemic on your level of burnout.	
There have been no such programs/efforts.	38 (37.6)
There have been one or more, but I did not participate in or accessed any.	48 (47.4)
No reduction in burnout	5 (5.0)
Slight reduction in burnout	8 (7.9)
Moderate reduction in burnout	1 (1.0)
High reduction in burnout	1 (1.0)

Note: Percentages may not add up to 100% due to rounding.
^a Participants were asked to check all that apply. Each percentage was computed by dividing the frequency by the sample size of 101.

Table 3
Summary statistics of used scales (N = 101).

	Mean (SD)	Range	Normative Group Values ^{30,37}
Burnout (CBI)			
Personal burnout	51.7 (21.9)	0.0 – 95.8	35.9
Work-related burnout	50.1 (27.8)	0.0 – 100.0	33.0
Client (patient)-related burnout	27.6 (21.3)	0.0 – 91.7	30.9
Work-Related Quality of Life			
General well being	3.5 (0.7)	2.0 – 5.0	3.4
Home-work interface	3.3 (1.0)	1.0 – 5.0	3.4–3.6
Job career satisfaction	3.7 (0.8)	1.3 – 5.0	3.4
Control at work	3.1 (1.1)	1.0 – 5.0	3.4
Working conditions	3.5 (0.9)	1.0 – 5.0	3.5–3.6
No stress at work ^a	2.7 (1.1)	1.0 – 5.0	2.6–2.7
Overall quality of work life	3.3 (1.1)	1.0 – 5.0	3.3–3.4
Resilience (BRS)	3.7 (0.7)	2.0 – 5.0	n/a

Note: ^aThe original subscale name is Stress at Work. However, because we reverse-coded the items, the descriptive statistics represent a lack of stress at work.

The interaction terms in the models that indicated the moderating effects were all negative in directionality, meaning that the negative effect of burnout on WRQoL was more severe among the participants who reported higher resilience. As for the statistically significant relationship between work-related burnout and general well-being (Fig. 1), high and medium resilience groups showed a negative relationship, with the high resilience group showing a greater negative effect of work-related burnout on general well-being (indicated by a steeper slope). *The low resilience group did not show a negative relationship, making this relationship difficult to explain.*

Therefore, we alternatively examined whether work-related burnout moderated the association between resilience and general well-being, one domain of WRQoL. As shown in Fig. 2, the participants with lower burnout showed a stronger positive relationship between resilience and general well-being (note steeper slope).

Discussion

This is the first study, to our knowledge to report levels of burnout, WRQoL and resilience in APRNs who manage the care of patients with HF. Notably, these data were obtained seven months after the start of the COVID-19 pandemic and prior to global vaccine availability. In summary, we found high levels of personal and work-related burnout among APRNs who manage care of patients with HF.^{30,37} These rates of burnout are higher as compared to studies reporting burnout to other health care professionals. Control at work, one domain of WRQoL, was low and APRNs reported moderate levels of resilience. On average, personal and work-related burnout was highly correlated with WRQoL, while client (patient)-related burnout was moderately correlated. We were surprised to find that resilience did not moderate the relationships among burnout and WRQoL, but our findings suggest that burnout moderated the relationships among resilience and WRQoL.

Burnout and work-related quality of life

APRNs reported higher levels of personal and work-related burnout than normative groups of health professionals such as social workers, nurses and other hospital staff.³⁰ High levels of burnout are reported in a similar study by Casida and colleagues that studied nurse practitioners in a mechanical circulatory support program.²⁹ In fact, the pattern of burnout was identical between our study data and that of Casida et al.; personal and work-related burnout levels were high while client (patient)-related burnout scores were lower, although Casida’s data were obtained pre-pandemic. The *magnitude*

Table 4
Correlation between burnout and work-related quality of life dimensions (N = 101).

WRQOL Dimensions	Personal Burnout		Work-Related Burnout		Client (Patient)-Related Burnout	
	r	p	r	p	r	P
GWB	-0.652	<0.001	-0.686	<0.001	-0.387	<0.001
HWI	-0.589	<0.001	-0.683	<0.001	-0.403	<0.001
JCS	-0.630	<0.001	-0.738	<0.001	-0.515	<0.001
CAW	-0.558	<0.001	-0.644	<0.001	-0.398	<0.001
WCS	-0.657	<0.001	-0.734	<0.001	-0.468	<0.001
SAW	-0.551	<0.001	-0.672	<0.001	-0.440	<0.001
OVL	-0.661	<0.001	-0.743	<0.001	-0.509	<0.001

Note: GWB = general well being; HWI = home-work interface; JCS = job career satisfaction; CAW = control at work; WCS = working conditions; SAW = stress at work; OVL = overall quality of work life.

of the negative associations of personal burnout and work-related burnout with WRQoL were striking; all personal, work and client (patient)-related burnout correlations were significant, however the magnitude was highest between the work-related burnout and WRQoL. The greatest magnitude was found between work-related burnout and the overall WRQoL score, followed by job career satisfaction and working condition subscales. Our findings are similar to Casida and colleagues, but the magnitude of the correlations are far greater in each subscale category. Our data that showed highly correlated relationships of job career satisfaction and working conditions with work-related burnout are a likely symptom of the pandemic's stress-producing effect on WRQOL.

Personal burnout was also highly correlated with WRQoL with the greatest magnitude found in the dimensions of general well-being and the overall WRQoL score. Our study findings are substantially different from that of Casida and colleagues in the control at work dimension; our findings demonstrated a much higher association between personal burnout and the control at work dimension of WRQoL. Likewise, our data show greater correlations in all dimensions of WRQoL compared to Casida and colleagues.

We found that client (patient)-related burnout was lower compared to other health professionals (i.e., lower magnitudes), but significant correlations with WRQoL were found. We speculate that client (patient)-related burnout was not as highly perceived during patient management as from personal and work-related situations. We speculate that burnout was not as highly perceived during patient management as from personal and work-related situations. APRNs reported higher stress while seeing patients due to COVID-19, but client (patient)-related burnout scores were not high. Therefore, high perceived stress during COVID-19 and lower client (patient)-related burnout scores further suggest that high burnout was not felt from patient management, but from other sources such as the workplace.

Casida and colleagues attributed high burnout from total weekly hours worked (over 40 h per week). While our data showed that

APRNs were also working more than full-time hours, high burnout may also be related to perceived low control in the work environment. Perceptions of low control at work were not demonstrated in Casida and colleagues' data. In our study, APRNs reported that their practice hours were affected by the COVID-19 pandemic. A disrupted work environment is likely to add stress to both the home and work environment that perhaps may explain why high personal and work-related burnout was reported.

Resilience characteristics

APRNs reported moderate levels of resilience in our study despite the pandemic. Resilience was measured nationwide using the 2-item Connor-Davidson Resilience Scale in a large group of physicians.³⁸ Mean resilience scores were higher among physicians than the general employed population. Resilience was inversely associated with burnout symptoms, but burnout rates were substantial even among the physicians with high resilience. Their findings pointed toward the need for addressing systems issues in the work/clinical environment to promote well-being. Similarly, our data show moderate resilience levels, but high levels of burnout suggesting that systems issues require critical attention.

Resilience, burnout and work-related quality of life

We did not find that resilience moderated the relationships between burnout and WRQoL. Alternatively, we found that work-related burnout moderated the association between resilience and general well-being, one domain of WRQoL. This finding underscores the importance of burnout as a core challenge in providing a work environment that supports work well-being.

Table 5
Moderating Effect of Resilience on the Relationship Between Burnout and WRQOL.

		GWB	HWI	JCS	CAW	WCS	SAW	OVL
Model 1 (PB)*	PB	-0.017 (<0.001)	-0.025 (<0.001)	-0.019 (<0.001)	-0.022 (<0.001)	-0.022 (<0.001)	-0.019 (<0.001)	-0.029 (<0.001)
	R	.264 (0.003)	.167 (0.227)	.199 (0.047)	.412 (0.006)	.281 (0.009)	.396 (0.003)	.299 (0.029)
	PB*R	-0.006 (0.081)	-0.002 (0.763)	-0.003 (0.400)	-0.002 (0.695)	.002 (0.564)	-0.003 (0.578)	-0.002 (0.761)
Model 2 (WB)*	WB	-0.015 (<0.001)	-0.024 (<0.001)	-0.019 (<0.001)	-0.022 (<0.001)	-0.020 (<0.001)	-0.020 (<0.001)	-0.027 (<0.001)
	R	.205 (0.013)	.041 (0.747)	.091 (0.311)	.298 (0.037)	.197 (0.046)	.263 (0.033)	.179 (0.154)
	WB*R	-0.008 (0.001)	-0.002 (0.539)	-0.003 (0.218)	-0.001 (0.833)	.001 (0.721)	-0.002 (0.566)	.000 (0.904)
Model 3 (CB)*	CB	-0.010 (0.005)	-0.015 (0.004)	-0.015 (<0.001)	-0.013 (0.014)	-0.012 (0.002)	-0.016 (0.001)	-0.019 (<0.001)
	R	.385 (<0.001)	.329 (0.034)	.288 (0.009)	.559 (0.001)	.434 (<0.001)	.455 (0.001)	.470 (0.003)
	CPB*R	-0.008 (0.054)	-0.001 (0.820)	.001 (0.856)	-0.001 (0.894)	.002 (0.655)	-0.008 (0.118)	.004 (0.512)

Note: The dependent variables were WRQOL; models were multiple linear regression with two main effects and one interaction term; all independent variables were centered on the means; unstandardized coefficients were followed by p-values in parenthesis.

PB = personal burnout; R= resilience; WB = work-related burnout; CB = client (patient)-related burnout; GWB = general well-being; HWI = home-work interface; JCS = job career satisfaction; CAW = control at work; WCS = working conditions; SAW = stress at work; OVL = overall quality of work life.

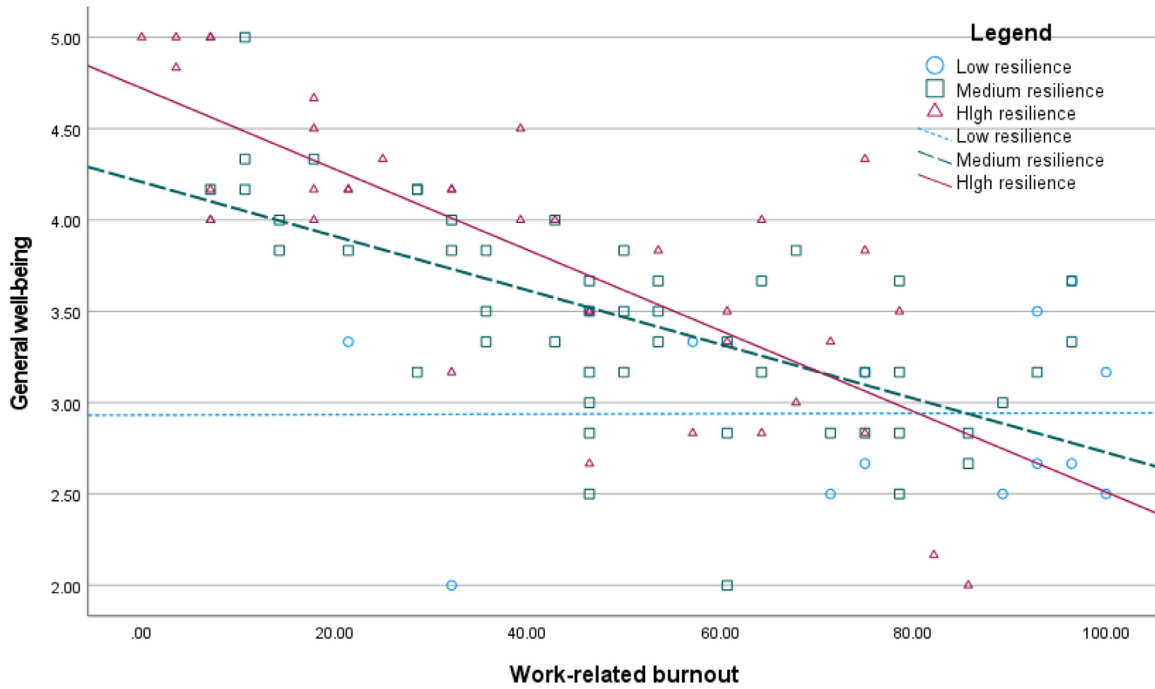


Fig. 1. Moderating effect of resilience by groups (low, medium, high resilience) on the relationship between work-related burnout and general well-being (one domain of WRQOL). Note: Brief Resilience Scale low score is < 3, medium score is 3–3.9, high score ≥ 4.

Limitations

This relatively small sample may not represent the findings across all APRNs who manage the care of patients with HF, thereby limiting the generalizability of the study findings. A major study limitation is that this survey addresses perceptions of stress during the COVID-19 pandemic, but does not address how the care of patients with HF is related general stress separately from the COVID-19 pandemic. The

data do represent all geographic US areas, but do not represent APRNs who are younger in their practice or come from underrepresented communities or men. More rigorous study designs such as randomized controlled trials that follow individuals over time with targeted institutional and personal interventions are needed. These data cannot be used to change workload or policy, but can provide a foundation for understanding which aspects of burnout, such as personal, work or client (patient)-related, are more prevalent in APRNs

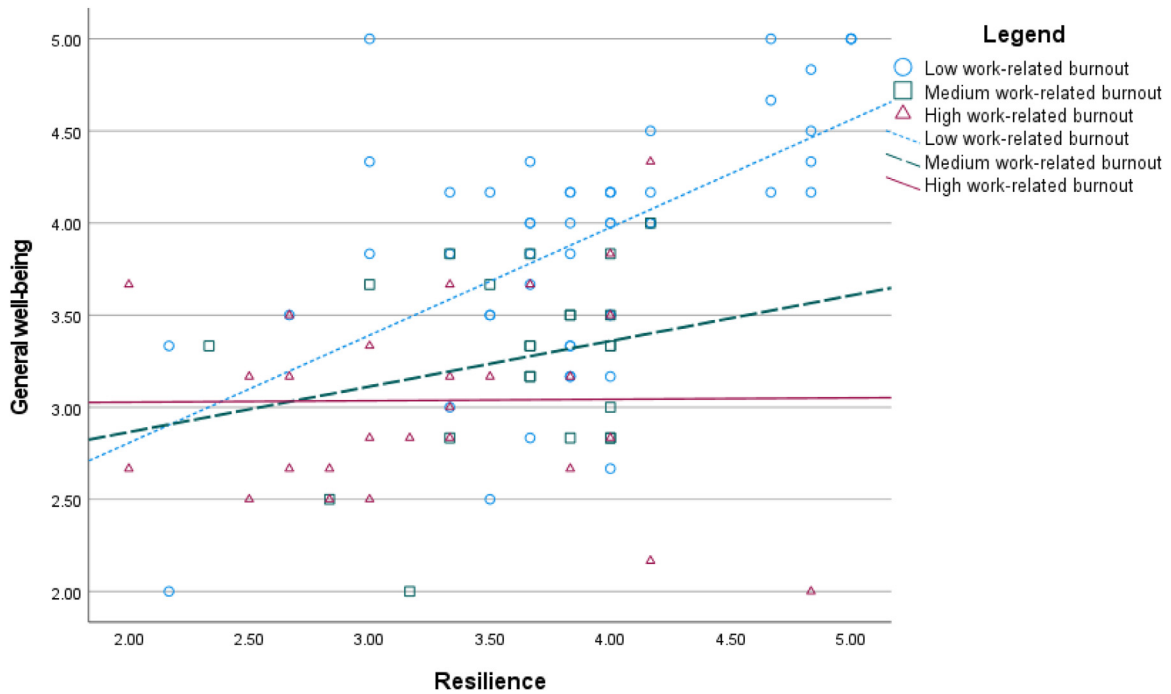


Fig. 2. Moderating effect of work-related burnout by groups (low, medium, high work-related burnout) on the relationship between resilience and general well-being. Note: In the low work-related burnout group the work-related burnout subscale score is < 50, medium work-related burnout group score is 50–74, and the high work-related burnout group score 75 or more.

so that interventions can be targeted toward the cause(s) of burnout. Our data further assist in delineating which aspects of work life, such as control at work, were most impacted. While APRNs did report moderate levels of resilience, high levels of burnout and low levels of quality of life at work were found making burnout the prime driver of WRQoL.

The consequences of burnout at work are profound with suicide and poor patient outcomes causing the most harm in healthcare. At the time of this writing, the pandemic remains an ongoing stressor with healthcare professionals leaving positions and worse, leaving their professions.^{39,40} Long-term consequences of the COVID-19 pandemic on the health care workforce and society at large are unknown. However, a healthy workforce is needed to maintain global health and the pandemic has dramatically shed light on our workforce.

Future research and practice implications

Future research that focuses on interventions to support APRNs is critical. The COVID-19 pandemic has changed the health care system of delivery and how staff at all levels work within the health care system. While the long-term effect of these changes on our health care system are not yet known, it is clear that burnout remains a challenge that must be confronted by administrators, providers and staff so that a healthy work force can best provide care to our aging population. Many studies describe the negative consequences of burnout, but now is the time to test interventions and make changes that reduce clinician burnout.

Conclusion

APRNs who manage care for patients with HF had high levels of personal, work and client (patient)-related burnout during the COVID-19 pandemic. APRNs reported higher stress while seeing patients due to COVID-19, but the client (patient)-related burnout scores were not high suggesting that high burnout was not felt from patient management, but from other sources such as the workplace and personal sources. APRNs reported a disrupted work environment and low control at work. Further, the APRNs had low levels of WRQoL and resilience did not influence, rather, level of burnout influenced the relationships among resilience and WRQoL. Future research is needed regarding systems changes to uplift and support our workforce as patient management continues to grow ever more complex and our US population ages.

Declaration of Competing Interest

JHE: American Heart Association and the Virginia Department of Health

Acknowledgements

We would like to acknowledge Charles Huffman for his assistance with the Qualtrics administration for this study. We would also like to acknowledge the leadership of the Heart Failure Society of America and the American Association of Heart Failure Nurses for their support of this study.

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

References

- Ahmad T, Pencina MJ, Schulte PJ, et al. Clinical implications of chronic heart failure phenotypes defined by cluster analysis. *J Am Coll Cardiol*. 2014;64(17):1765–1774. <https://doi.org/10.1016/j.jacc.2014.07.979>.
- Heidenreich PA, Albert NM, Allen LA, et al. Forecasting the impact of heart failure in the United States a policy statement from the American Heart Association. *Circ Heart Fail*. 2013. <https://doi.org/10.1161/HHF.0b013e318291329a>. Published online.
- Benjamin EJ, Muntner P, Alonso A, et al. Heart disease and stroke statistics—2019 update: a report from the American Heart Association. *Circulation*. 2019;139(10):e56–e528. <https://doi.org/10.1161/CIR.0000000000000659>.
- Benjamin EJ, Blaha MJ, Chiuve SE, et al. Heart disease and stroke statistics—2017 update: a report from the American Heart Association. *Circ*. 2017;135(10):e146–e459. <https://doi.org/10.1161/CIR.0000000000000485>.
- Stewart S, Ekman I, Ekman T, Odén A, Rosengren A. Population impact of heart failure and the most common forms of cancer. *Circ Cardiovasc Qual Outcomes*. 2010;3(6):573–580. <https://doi.org/10.1161/CIRCOUTCOMES.110.957571>.
- American Association of Nurse Practitioners. *NP Fact Sheet*. October 28, 2021. <https://www.aanp.org/about/all-about-nps/np-fact-sheet>. Accessed.
- National Association of Clinical Nurse Specialists. National Association of Clinical Nurse Specialists. 2020. *CNS Census*. October 28, 2021. <https://nacns.org/resources/cns-census/Accessed>.
- Kleinpell RM, Grabenkort WR, Kapu AN, Constantine R, Sicoutris C. Nurse practitioners and physician assistants in acute and critical care: a concise review of the literature and data 2008–2018. *Crit Care Med*. 2019;47(10):1442–1449. <https://doi.org/10.1097/CCM.0000000000003925>.
- Hoff T, Carabetta S, Collinson GE. Satisfaction, burnout, and turnover among nurse practitioners and physician assistants: a review of the empirical literature. *Med Care Res Rev*. 2019;76(1):3–31. <https://doi.org/10.1177/1077558717730157>.
- Maslach C. Burnout: a multidimensional perspective. In: Schaufeli W, Maslach C, Marek T, eds. *Professional Burnout: Recent Developments and Research*. Taylor & Francis; 1993:19–32.
- Maslach C, SE Jackson, Leiter MP. *Maslach Burnout Inventory*. 3rd ed. Consulting Psychologists Press; 1996.
- Kumar S. Burnout and doctors: prevalence, prevention and intervention. *Healthcare*. 2016;4(3):37. <https://doi.org/10.3390/healthcare4030037>.
- Gómez-Urquiza JL, De la Fuente-Solana EI, Albendín-García L, Vargas-Pecino C, Ortega-Campos EM, Cañadas-De la Fuente GA. Prevalence of burnout syndrome in emergency nurses: a meta-analysis. *Crit Care Nurse*. 2017;37(5):e1–e9. <https://doi.org/10.4037/ccn2017508>.
- McHugh MD, Kutney-Lee A, Cimiotti JP, Sloane DM, Aiken LH. Nurses' widespread job dissatisfaction, burnout, and frustration with health benefits signal problems for patient care. *Health Aff (Millwood)*. 2011;30(2):202–210. <https://doi.org/10.1377/hlthaff.2010.0100>.
- Aiken LH, Clarke SP, Sloane DM, Sochalski J, Silber JH. Hospital nurse staffing and patient mortality, nurse burnout, and job dissatisfaction. *JAMA*. 2002;288:1987–1993.
- Mehta LS, Lewis SJ, Duvernoy CS, et al. Burnout and career satisfaction among U.S. cardiologists. *J Am Coll Cardiol*. 2019;73(25):3345–3348. <https://doi.org/10.1016/j.jacc.2019.04.031>.
- Kok N, van Gorp J, Teerenstra S, et al. Coronavirus disease 2019 immediately increases burnout symptoms in ICU professionals: a longitudinal cohort study. *Crit Care Med*. 2021;49(3):419–427. <https://doi.org/10.1097/CCM.0000000000004865>.
- Garman AN, Corrigan PW, Morris S. Staff burnout and patient satisfaction: evidence of relationships at the care unit level. *J Occup Health Psychol*. 2002;7(3):235–241. <https://doi.org/10.1037/1076-8998.7.3.235>.
- Cimiotti JP, Aiken LH, Sloane DM, Wu ES. Nurse staffing, burnout, and health care-associated infection. *Am J Infect Control*. 2012;40(6):486–490. <https://doi.org/10.1016/j.ajic.2012.02.029>.
- Salyers MP, Bonfils KA, Luther L, et al. The relationship between professional burnout and quality and safety in healthcare: a meta-analysis. *J Gen Intern Med*. 2017;32(4):475–482. <https://doi.org/10.1007/s11606-016-3886-9>.
- Welp A, Meier LL, Manser T. Emotional exhaustion and workload predict clinician-rated and objective patient safety. *Front Psychol*. 2015;5:1–13. <https://doi.org/10.3389/fpsyg.2014.01573>.
- Hall LH, Johnson J, Watt I, Tsipa A, DB O'Connor. Healthcare staff wellbeing, burnout, and patient safety: a systematic review. *PLoS ONE*. 2016;11(7). <https://doi.org/10.1371/journal.pone.0159015>.
- Shanafelt TD, Balch CM, Bechamps G, et al. Burnout and medical errors among American surgeons. *Ann Surg*. 2010;251(6):995–1000. <https://doi.org/10.1097/SLA.0b013e3181bfdab3>.
- Leiter MP, Maslach C. Nurse turnover: the mediating role of burnout. *J Nurs Manag*. 2009;17(3):331–339. <https://doi.org/10.1111/j.1365-2834.2009.01004.x>.
- Papathanasiou IV. Work-related mental consequences: implications of burnout on mental health status among health care providers. *Acta Inform Medica*. 2015;23(1):22–28. <https://doi.org/10.5455/aim.2015.23.22-28>.
- Peterson U, Demerouti E, Bergström G, Samuelsson M, Asberg M, Nygren Å. Burnout and physical and mental health among Swedish healthcare workers. *J Adv Nurs*. 2008;62(1):84–95. <https://doi.org/10.1111/j.1365-2648.2007.04580.x>.
- Shanafelt TD, Balch CM, Dyrbye L, et al. Suicidal ideation among American surgeons. *Arch Surg*. 2011;146(1):54–62.
- Greenberg N, Weston D, Hall C, Caulfield T, Williamson V, Fong K. Mental health of staff working in intensive care during Covid-19. *Occup Med Oxf Engl*. 2021;71(2):62–67. <https://doi.org/10.1093/occmed/kqaa220>.
- Casida JM, Combs P, Schroeder SE, Johnson C. Burnout and quality of work life among nurse practitioners in ventricular assist device programs in the United States. *Prog Transplant*. 2019;29(1):67–72. <https://doi.org/10.1177/1526924818817018>.
- Easton S, Van Laar D. *User Manual for the Work-Related Quality of Life (WRQoL) Scale: A Measure of Quality of Working Life*. Portsmouth, England: University of Portsmouth; 2018. <https://researchportal.port.ac.uk/en/publications/user-manual-for-the-work-related-quality-of-life-WRQoL-scale-a-me>. Accessed October 28, 2021.
- Kapu AN, Borg Card E, Jackson H, et al. Assessing and addressing practitioner burnout: results from an advanced practice registered nurse health and well-being study. *J Am Assoc Nurse Pract*. 2021;33(1):38–48. <https://doi.org/10.1097/JXX.0000000000000324>.

32. Smith BW, Dalen J, Wiggins K, Tooley E, Christopher P, Bernard J. The brief resilience scale: assessing the ability to bounce back. *Int J Behav Med.* 2008;15(3):194–200. <https://doi.org/10.1080/10705500802222972>.
33. Werneburg BL, Jenkins SM, Friend JL, et al. Improving resiliency in healthcare employees. *Am J Health Behav.* 2018;42(1):39–50. <https://doi.org/10.5993/AJHB.42.1.4>.
34. National Academy of Medicine. *Action Collaborative on Clinician Well-being and Resiliency.* 2022. <https://nam.edu/initiatives/clinician-resilience-and-well-being/>.
35. 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. <https://doi.org/10.1080/02678370500297720>.
36. Van Laar D, Edwards JA, Easton S. The work-related quality of life scale for health-care workers. *J Adv Nurs.* 2007;60(3):325–333. <https://doi.org/10.1111/j.1365-2648.2007.04409.x>.
37. Borritz M, Rugulies R, Christensen KB, Villadsen E, Kristensen TS. Burnout as a predictor of self-reported sickness absence among human service workers: prospective findings from three year follow up of the PUMA study. *Occup Environ Med.* 2006;63(2):98–106. <https://doi.org/10.1136/oem.2004.019364>.
38. West CP, Dyrbye LN, Sinsky C, et al. Resilience and burnout among physicians and the general US working population. *JAMA Netw Open.* 2020;3:(7) e209385. <https://doi.org/10.1001/jamanetworkopen.2020.9385>.
39. Peck JL, Sonney J. Exhausted and burned out: COVID-19 emerging impacts threaten the health of the pediatric advanced practice registered nursing workforce. *J Pediatr Health Care Off Publ Natl Assoc Pediatr Nurse Assoc Pract.* 2021;35(4):414–424. <https://doi.org/10.1016/j.pedhc.2021.04.012>.
40. Maunder RG, Heeney ND, Strudwick G, et al. Burnout in hospital-based healthcare workers during COVID-19. Ontario COVID-19 science advisory table; 2021. <https://doi.org/10.47326/ocsat.2021.02.46.1.0>.