

Burnout and the Nurse Anesthetist: An Integrative Review

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The rapid changes in the US healthcare system have resulted in collateral damage to many healthcare providers. Many of these changes have increased demands placed on providers, resulting in high prevalence rates of burnout throughout various healthcare specialties. One healthcare specialty that has reported a recent surge in burnout in the United States is the Certified Registered Nurse Anesthetist (CRNA). Despite these concerns, most of the burnout research

on anesthesia providers has focused on anesthesiologists and CRNA-equivalent anesthesia providers from other countries. This is particularly concerning given CRNAs' critical role in the future of US healthcare delivery. The purpose of this integrated review was to examine, discuss, and synthesize the burnout construct related to CRNAs practicing in the United States.

Keywords: Burnout, CRNA, interventions, measurement.

Stress is a mental, emotional, and physical strain due to an interaction between personal and professional traits.¹ Occupational stress in the healthcare profession is inevitable; however, when the provider uses appropriate coping strategies, stress can exert beneficial effects such as increased motivation to face challenging situations. When exposure occurs over a prolonged time, it can result in a psychological syndrome known as burnout. Since its first published description in the 1970s, burnout has been extensively studied and recognized as a direct occupational hazard for healthcare providers, with implications for colleagues, patients, and organizations.^{1,2} For example, various cross-sectional studies have demonstrated that provider burnout can result in physical and mental health problems (eg, depression, headaches, cardiovascular disease), work/family relationship problems, and increased mental health problems (eg, depression, anxiety, substance abuse).^{3,4} Burnout has also been found to have negative consequences on the health of the organization (eg, increased turnover, decreased job satisfaction, and absenteeism) as well as decreased quality and satisfaction of patient care.⁵⁻⁷ Despite the healthcare industry's attempts to embrace strategies to improve the overall well-being of healthcare providers, interventions to mitigate burnout have been largely unsuccessful, with recent surveys⁸ demonstrating burnout trends increasing toward greater than 50% of healthcare providers.¹ This increase in burnout has become particularly concerning given that the US healthcare industry is rapidly changing in efforts to improve overall patient delivery of care while decreasing per capita costs.

Among the changes occurring in the healthcare landscape is the increased utilization of highly trained, highly skilled professionals called advanced clinical providers.

Among advanced clinical providers, one particular group that may be prone to a higher incidence of burnout is Certified Registered Nurse Anesthetists (CRNAs). For more than 150 years, CRNAs have been providing anesthesia services in the United States and are considered the primary providers in the military and most rural hospitals.⁹ Research continues to demonstrate CRNAs' ability to provide safe, high-quality, and cost-effective anesthesia services.¹⁰ However, the increasing demands from political and bureaucratic healthcare changes combined with the demands of a stressful occupation may jeopardize this profession's invaluable contribution. Although it may seem pragmatic to manage this syndrome through interventions aimed at the individual CRNA, the lack of conceptual clarity has created confusion and debate around the phenomenon's prevalence rates, its factors, and its outcomes. Furthermore, because burnout is understood as an individual's response to stressors specific to a given work environment, any cultural and occupational factors further limit the concept's external validity.^{5,11,12} Although studies evaluating the anesthesia profession have increased over the past 2 decades, there seems to be a paucity of research focusing on CRNAs practicing in the United States. Therefore, the purpose of this integrated review was to examine and discuss burnout in CRNAs practicing in the United States. This review will examine and discuss ongoing conceptual and methodological inconsistencies that have resulted in confusion and debate around the burnout context and its measurements as it relates to the CRNA profession. A review of literature to identify common conceptual and methodological applications and an evaluation of current burnout research related to the anesthesia profession including CRNA providers practicing in the United States are conducted to identify common trends and gaps. This

review will include these issues, and their implications for future measurement, analysis, and interventions toward addressing CRNA burnout.

Review of Literature

• **Conceptualization of Burnout.** Despite voluminous literature on burnout, conceptually, the term remains vague and overinclusive. For this reason, it seems appropriate to review the concept's key characteristics. A review of consensually accepted characteristics about the concept may help clarify some of its underpinnings, creating a better understanding in evaluating burnout among CRNA providers. Burnout is generally viewed as a psychological phenomenon that emerges from a prolonged response to chronic interpersonal job-related stressors.² Although the psychological symptoms of burnout were described as early as the 1950s, the concept was adapted into the psychological literature in the 1970s by Freudenberger (1974) and Maslach (1976).² Despite more than 4 decades of extensive research, the burnout context still provokes much controversy between burnout scholars, which has resulted in confusion and doubt among researchers and practitioners.^{2,13} Burnout scholars believe some of the concept's fragmented state may stem from how it was originally introduced into the literature.² For instance, researchers initially took an inductive methodological approach derived from either a social (eg, Maslach) or clinical (eg, Freudenberger) psychological perspective.² This approach allowed researchers to describe the phenomenon as well as demonstrate it existed well beyond a few observations; however, its introduction as a social and clinical phenomenon also resulted in a lack of attention to its theoretical foundation, leaving researchers struggling to integrate and evaluate a construct without boundaries.² This resulted in varied meanings of the term, lack of empirical research, and an overexpansion of the concept.²

Despite this early limitation, burnout's popularity as a topic of research grew and shifted away from its more descriptive phase and toward a more empirical one.² The shift in research created advancements in theory and methods that provided researchers with more precise definitions and methodological tools for understanding and evaluating burnout.¹³ With a more enriched understanding of burnout and an expanding literature, various measures were proposed.¹³ The Maslach Burnout Inventory (MBI) was the first standardized measure that helped shape burnout research and remains one of the most utilized scales in burnout research in the healthcare profession.¹⁴ However, researchers have continued to question the need for MBI's 3-dimensional approach (emotional exhaustion, depersonalization, and personal accomplishment), which has resulted in other measures being proposed that conceptualize burnout as a 1-dimensional (eg, the Burnout Measure¹⁵) or 2-dimensional (Oldenburg

Burnout Inventory¹⁶) view.¹³ Proponents of the single dimensional assessment tend to argue that studies have predominantly demonstrated the exhaustion dimension having the strongest correlation with burnout, and the additional dimensions are predicated on incidental findings that create redundancy, confusion, and lengthy surveys.² Critics of the single dimensional view argue that empirical studies have provided greater support for a multidimensional approach; conceptualizing burnout as unidimensional fails to distinguish it from related constructs such as exhaustion, work-related stress, and depression, and would lose the ability to properly identify specific factors and outcomes related to burnout.^{2,13,17} A result of this debate is that the measures used to assess burnout are often closely linked to the author's assumptions of the construct.^{2,13} Therefore, when selecting an appropriate instrument to evaluate burnout, the practitioner and researcher must look beyond the instrument's face value and understand the scale's conceptual meaning.¹³ Although some scholars and practitioners still call the MBI and its operational definition the gold standard of burnout measurement, it is important to note that only the exhaustion domain has had general acceptance among scholars as the core representation of burnout.^{2,13}

The increase in standardized measures combined with the contributions from the industrial-organizational psychology field has provided conceptual models addressing the complex relationships between various factors and dimensions of burnout.^{2,17} Given that burnout is generally accepted as a job-related construct, most of these conceptual models focus on job factors such as job stress (workload, role conflict, and role ambiguity), job satisfaction, supervision (social support on the job), and withdrawal (turnover, absenteeism).² More recently, conceptual models have been based on stress theories, and researchers have started to focus more attention on personality variables (hardiness, locus of control), personal health, and relationships with friends and family.^{12,13} The increase in attention to the theoretical foundations of burnout has allowed researchers to integrate empirical results within conceptual frameworks. For instance, models such as the Conservation of Resources theory¹⁸ and the Job Demands-Resources model¹⁹ are used frequently in the healthcare profession and have consistently demonstrated that burnout is a result of prolonged job-related stress stemming from a mismatch between the demands of the job and the resources available to the healthcare provider.² As burnout became more theory driven, these models became the cornerstone in empirical research on common etiologic factors of burnout: interpersonal, individual, and organizational.^{2,13,17}

The development of such models has generated empirical research with stronger theoretical foundations that posit several common characteristics of the causes

and consequences of burnout. First, the consensus has viewed causes of burnout to be situational (eg, job-related), as well as individually related. Additionally, decades of research have found that job-related factors, compared with individual-related factors, have a stronger correlation to burnout, particularly in the exhaustion domain.^{2,12,13,17} Second, burnout's harmful effects on the individual, healthcare organizations, and patient health are recognized by many scholars. At the individual level, stress-related health concerns among workers (eg, cardiac disease, headaches) are strongly correlated with the exhaustion dimension.^{2,5} Organizationally, studies have consistently demonstrated strong correlation between burnout and withdrawal behaviors such as absenteeism, incivility, and high turnover.^{6,9} Finally, from a patient care standpoint, the research has been limited and highly variable; however, decreased patient satisfaction and increased medical errors have been shown to have strong correlation with burnout.^{11,13}

Despite burnout's popularity in the literature, conceptual overlap with other constructs continues to cause confusion among providers.^{2,17} One of the major problems with burnout continues to be construct proliferation, which usually occurs when "new" constructs are theoretically or empirically indistinguishable from existing constructs.²⁰ Although professional use of the term *burnout* began more than 40 years ago, the concept continues to overlap conceptually with terms that preceded it, such as depression, anxiety, and occupational stress. Although integrating burnout into larger conceptual models (eg, stress models) has created some clarity, debates on the construct's appropriate dimensions continue to undermine its empirical distinctiveness.² Discriminant validity refers to the extent to which measures of distinct constructs are empirically unrelated.²⁰ Despite some studies using psychometric tests (eg, multitrait-multimethod or confirmatory factor analysis) to empirically demonstrate burnout's distinctiveness, interpretations can be highly subjective and variable because it is operationalized through measures that predominantly estimate the relationship through correlation studies; thus, confusion persists.²⁰ An example is the burnout-depression overlap debate. Depression is clinically defined as feelings of sadness, emptiness, hopelessness, helplessness, and low energy; however, from a theoretical perspective, depression is generalized distress that entails all life's domains. Burnout, on the other hand, is a work-related phenomenon involving worker's complete depletion of energetic resources.²¹ Criticisms of burnout's singularity still elicits hundreds of articles and article responses that argue for a more inconclusive construct. This debate represents the extent of confusion about burnout among producers and consumers of the literature.

- **Burnout Among Anesthesia Providers.** Advancements that have helped improve patient safety combined with

healthcare reforms have resulted in highly demanding, stressful work environments that can expose the anesthesia provider to numerous stressors.^{3,11,22} Concerns about burnout's impact on anesthesia providers and their patients have led to an increased empirical focus on burnout by both practitioners and scholars.⁵ Some of these studies have demonstrated that anesthesia providers not only are experiencing this syndrome but are at a particularly higher risk than other healthcare specialties. For example, a 2016 Medscape physician lifestyle report found that anesthesiologists ranked third, behind critical care physicians and emergency medicine physicians, in burnout symptoms.¹¹ Most studies of burnout among anesthesia providers have relied on self-reported surveys; the results have yielded wide variation in burnout prevalence rates, determinants, and consequences. However, there have been some obvious factors that seem to have a higher correlation toward burnout in the profession. Nyssen et al²² completed a systematic review that demonstrated time constraints, work overload, clinical task complexity, fear of harming the patient, workplace environment, lack of job control, and family constraints as common factors that contributed to anesthesia provider burnout. In a systematic review, Sanfilippo et al¹¹ found high workload to be a primary factor toward burnout among anesthesiologists, residents, and CRNAs. Other studies have demonstrated that burnout negatively affects the anesthesia provider's mental and physical health, giving rise to various psychosomatic symptoms. De Oliveira et al²³ surveyed more than 1,500 residents from various US hospitals and found burnout to be positively correlated with alcohol and cigarette consumption. Studies that evaluated how burnout affects the anesthesia provider's occupation demonstrated that burnout negatively affected healthcare systems in ways that were associated with poorer patient safety and quality of care. Kluger et al²⁴ and de Oliveira et al²³ found burnout to be negatively correlated with job satisfaction and positively correlated with lower quality of care. Sociodemographic characteristics that can contribute to anesthesia provider burnout include hospital type, gender, age, and support network. Results have not been consistent; for example, the review by Sanfilippo et al¹¹ found only one study that reported women being at higher risk of burnout, whereas other studies either found no correlation or higher risk of burnout in men.

Despite research demonstrating several common themes among various anesthesia providers, burnout is an individual experience that is specific to the work context and influences such as the occupational environment (eg, work setting, managerial support), professional background (eg, nurses, advanced clinical providers, physicians), demographic variables (eg, sex, race, experience), and personality traits, all of which can vastly influence data outcomes.^{2,5} For example, Chiron and colleagues⁶ demonstrated that junior French anesthesiolo-

PICOS	Characteristics of studies included for the comprehensive search
Participants	CRNAs actively practicing in the United States in any setting
Intervention	Assessment of burnout
Comparison	None
Outcomes	Risk of burnout evaluated either by subscales or overall burnout
Study design	Empirical studies that used a burnout measurement scale

Table 1. PICOS: Population, Intervention, Comparison, Outcomes, and Study Design

Abbreviation: CRNAs, Certified Registered Nurse Anesthetists.

(Adapted with permission from Torraco,²⁷ 2005.)

gists scored higher on emotional exhaustion compared with senior anesthesiologists, whereas Meeusen and coworkers²⁵ demonstrated older Dutch nurse anesthetists scored higher on emotional exhaustion compared with younger nurse anesthetists. Although organizational factors are considered the primary factors resulting in burnout among anesthesia providers, various types of factors can be dependent on situational variables. For example, Lederer et al²⁶ found that job-related factors leading to burnout among Austrian anesthesiologists included limited complexity of work, lack of time control, and lack of ability to participate; in contrast, the study by Morais et al¹ found job-related factors such as strained work relationships, unskilled leaders, work overload, and surgeon attitudes resulted in burnout among Portuguese anesthesiologists. Therefore, valid concerns can be raised of the possibility that situational variables can act as moderators and create inaccurate assumptions and interventions of burnout without greater context-specific research. For these reasons, we sought articles that examined burnout among practicing CRNAs.

Review of CRNA Burnout

• **Method of Literature Search.** The reviewers undertook a comprehensive literature search using the following databases: PubMed, Cumulative Index to Nursing and Allied Health Literature (CINAHL), PsycINFO, PsycARTICLES, and Google Scholar. We followed Torraco's²⁷ suggestions for an integrated review. We used the PICOS approach (Population, Intervention, Comparison, Outcomes, and Study Design; Table 1) to guide our criteria for our primary search. This included empirical burnout research that focused specifically on CRNAs practicing in the United States. Additionally, the criteria included English-language articles published in peer-reviewed journals from January 1974 to February 2018. The wide date range was reflective of burnout articles appearing as early as 1974 and the hope to capture the extent of empirical studies since burnout was first introduced. Our search focused around keywords and medical subject headings (MeSH) that included *perioperative wellness*, *perioperative burnout*, *perioperative stress*, *anesthesia wellness*, *anesthesia burnout*, *anesthesia stress*, *anae* AND burnout*, *anae* AND stress*, *anes* AND burnout*, and *anes**

AND stress. Additional searches included secondary literature reviews and primary journals: *AANA Journal*, *Anesthesia & Analgesia*, *Current Opinion in Anesthesiology*, and *Anesthesia*.

The initial search revealed 38 potential articles based on keywords and MeSH terms. Additional sources were then reviewed and, as displayed in the Figure, a total of 46 potential articles were found. The abstracts were reviewed for eligibility, and 28 articles were removed because they were outside the United States, involved anesthesia trainees, or included only anesthesiologists. The remaining 18 articles were reviewed in their entirety to ensure they met our strict criteria, and 3 systematic review articles and 13 articles that assessed burnout with instruments that measured occupational stress were removed. Although the exhaustion dimension of burnout has been theoretically linked to occupational stress, empirical research has demonstrated these authors' measures tend to have different dimensions.² For this reason, we believed it was best practice to exclude articles that measured burnout through stress measures.

• **Results.** The results of the literature search yielded only 2 studies—Hyman et al⁵ and Elmblad et al²⁸—that directly measured burnout of CRNAs in the United States (Figure).

Hyman et al⁵ examined work-related factors and resources correlated with burnout in various perioperative providers, such as surgeons, resident physicians, nurses, CRNAs, and anesthesiologists, who worked in the same operating room. They used an online survey that consisted of a modified MBI-Human Services Survey¹⁴ and the Social Support and Personal Coping Survey. Of the 145 respondents, 20% were CRNAs, with an average age of 44 years and 51% male. The results of the survey demonstrated the CRNA median burnout score (2.45) was higher compared with nursing (2.2) and other personnel (2.1), was that of similar to physicians (2.45), and lower compared with residents (4.05). Of the 3 dimensions, CRNAs scored lower on depersonalization (1.25) than emotional exhaustion (2.45). Several limitations of this study are worth mentioning. First, Hyman and colleagues⁵ did not mention the score cutoff for burnout. Second, the authors modified the MBI-Human Services Survey by asking providers to focus on the past 2 to 4 weeks vs the past year as recommended by Maslach.¹⁴ They also increased the

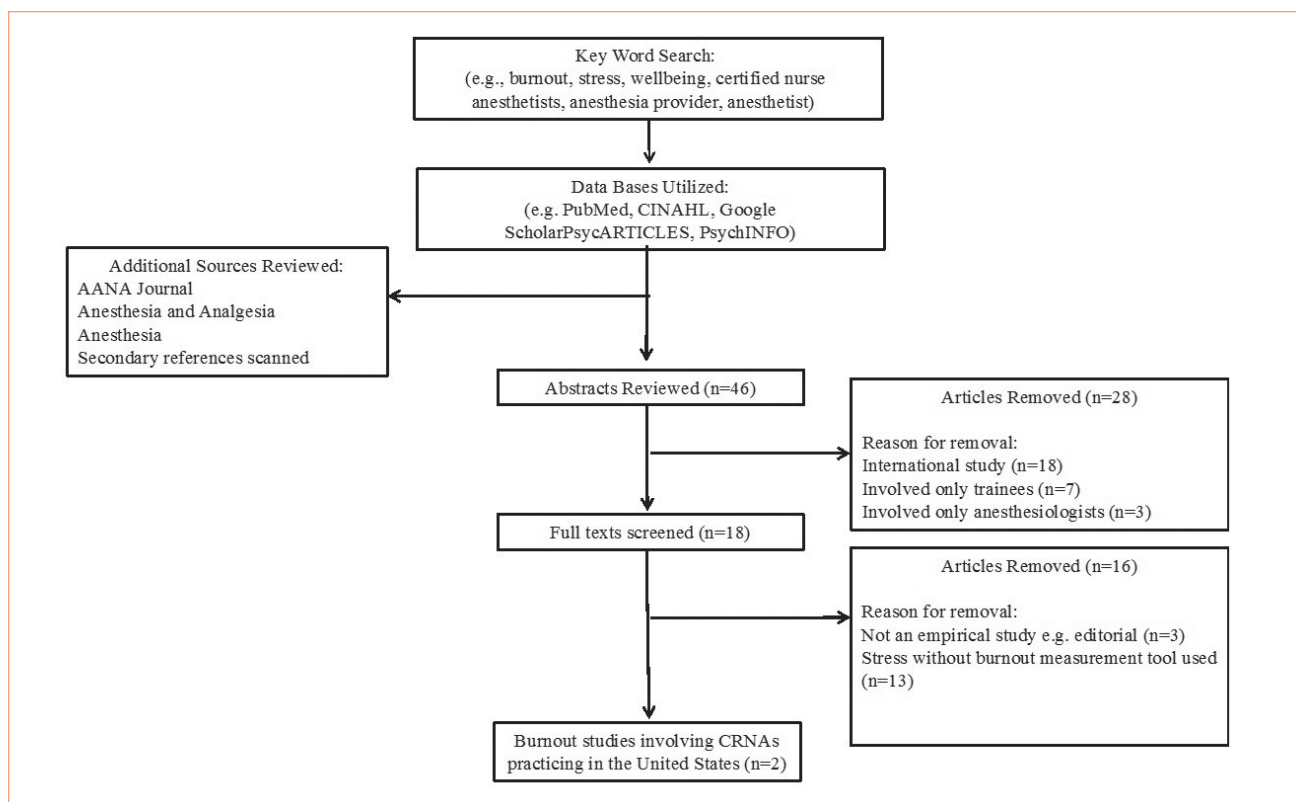


Figure. PRISMA Diagram of CRNA Burnout Empirical Study Search^a

Abbreviations: AANA, American Association of Nurse Anesthetists; CINAHL, Cumulative Index to Nursing & Allied Health Literature; CRNAs, Certified Registered Nurse Anesthetists; PRISMA, Preferred Reporting Items for Systematic Reviews and Meta-Analyses.

^aPsychINFO.

interval range from 6 to 9. Both these changes can cause reliability and validity issues with the instrument. Third, it was unclear how work-related factors and resources correlated with the MBI dimensions for CRNAs or with the demographics (eg, age, gender).

In the study by Elmlblad et al,²⁸ the authors used the Copenhagen Burnout Inventory²⁹ and the Nursing Incivility Scale to evaluate the influence of workplace incivility on burnout in 385 Michigan CRNAs. The survey respondents primarily consisted of women (69%), more than half (52%) of whom worked greater than 40 hours per week in hospital settings (76%). The authors demonstrated that CRNAs experienced “moderate” burnout levels (median = 42.8) and found the correlation between workplace incivility and burnout to be statistically significant ($P < .0001$).²⁸ Elmlblad et al²⁸ demonstrated a direct linear relationship between workplace incivility and burnout. The study’s limitations that are worth noting included a limited response rate (22.6%) as well as whether other work-related factors or provider demographics had influence on the providers’ burnout levels were not mentioned.

Discussion

The burnout context has been extensively studied for more than 4 decades and is no longer considered an

emerging problem but an occupational hazard in the healthcare industry. Given public expectations that healthcare delivery should be seamless, safe, and free from adverse events combined with administrative production pressures and the complex management for an aging population, the anesthesia provider is particularly prone to burnout. CRNAs are critical to the success of US healthcare reform. However, provider burnout may have a negative impact not only on this profession’s ability to manage the increasing demands of such changes, but to the healthcare system as a whole. Furthermore, the CRNA profession may be prone to additional and unique stressors such as ongoing political battles that question the profession’s integrity coupled with an occupational setting that tends to place CRNA providers between the field of nursing and medicine; these stressors can ultimately lead to one feeling undervalued. For example, a 2016 American Association of Nurse Anesthetists (AANA) survey demonstrated that 43% of their members found the political nature of the occupation to be stressful and 33% felt they were treated with a lack of respect.³⁰ Therefore, the primary objective of our integrated review was to evaluate the potential impact that burnout may have on CRNAs in the United States. Although in the past 2 decades an increasing amount of burnout literature

Measure	Burnout definition	Dimensional view	Format	Psychometric quality	Key features
Staff Burnout Scale for Health Professionals, 1980 ³⁴	Physical and emotional exhaustion involving the development of negative job attitudes, poor professional self-concept, and loss of empathetic concern for patients	One dimension that assesses the adverse cognitive, psychophysiological, behavioral, and affective reactions of burnout	Thirty items on a 6-point, Likert-type scale; 20 items assess burnout and 10 items assess truthfulness of answers. Single composite score.	Internal consistency coefficient ranges from 0.82 to 0.93. Validity studies found burnout correlated positively with turnover, absenteeism, tardiness, discipline, and alcoholism.	Lacks theoretical foundation. Not widely used. Sample sizes of validity studies were small. Correlation coefficients substantially differed across studies.
Maslach Burnout Inventory, 1986 ¹⁴	A syndrome of emotional exhaustion, depersonalization, and reduced personal accomplishment that can occur among individuals who do "people" work	Three dimensions that assess emotional exhaustion (EE), depersonalization (DP), and personal accomplishment (PA)	Twenty-two items on a 7-point, Likert-type scale; each dimension is evaluated individually. Authors recommend scoring separately, but studies have used an averaged single composite score.	Internal consistency coefficient ranges from 0.71 to 0.90. Validity studies predominantly found EE negatively correlated with job satisfaction and control and positively correlated with various work factors (workload).	Lacks theoretical foundation. Most highly used and compared measure of burnout. Designed specifically for human services profession.
The Burnout Measure, 1988 ¹⁵	A state of physical, emotional, and mental exhaustion caused by long-term involvement in situations that are emotionally demanding	One dimension that assesses emotional exhaustion	Twenty-one items scored on a 7-point, Likert-type scale. Single composite score.	Internal consistency coefficients 0.88-0.95. Validity studies found burnout correlated negatively with job satisfaction, perceived control, and social support and had a positive correlation with poor health, job demands, and stressors.	Lacks theoretical foundation. Second most widely used scale with thousands of subjects. Debates exist whether scale measures only 1 dimension. Has a short 10-item version called Burnout Measure-S. ³⁵

Table 2. Summary of Common Burnout Measurement Tools

has focused on the anesthesia provider, to the best of our knowledge, this is the first article that takes a more focused review.

Based on the search criteria (See Figure), our literature inquiries yielded only 2 studies of burnout in CRNAs in the United States, thus validating our assumption of the paucity of burnout research that focuses on CRNAs who deliver anesthetic care in the United States. Although these results were not surprising given that the profession has historically focused more on the clinical aspects of patient care, this gap is particularly concerning when considering that an estimated 34% of the AANA membership in 2016 reported experiencing work-related stress.³⁰ To help address this gap, we took a more pragmatic approach toward reviewing burnout's conceptualization, its methods, and its effects on the anesthesia profession as a whole. We identified several consensual agreements among burnout scholars related to the construct's under-

pinnings. First, burnout is the result of prolonged stress at work caused by a mismatch between the demands associated with the job and the resources of the provider. Second, burnout causes are generally divided into situational (job-related) and individual factors. Third, compared with individual-related factors, job-related factors have a stronger correlation with the dimensions of burnout that result in various negative outcomes affecting the providers' professional and personal relationships as well as their overall health and the health of their organization and patients. Fourth, regardless of one's theoretical view of burnout, exhaustion is widely considered the central quality of burnout and the most obvious manifestation of this negative trait affect. Finally, selection of burnout measures is directly linked to how the researcher views burnout; therefore, selection of measures should be viewed beyond the scale's face value.

- **Measurement Considerations.** Many of the criticisms

Copenhagen Burnout Inventory, 2005 ²⁹	State of physical, emotional, and mental exhaustion that results from long-term involvement in work situations that are emotionally demanding	Three dimensions that assess personal burnout (PB), work-related burnout (WRB), and client-related burnout (CRB)	Nineteen items scored on a 5-point Likert-type scale. PB (6 items), WRB (7 items), and CRB (6 items) Single composite score.	Internal consistency coefficient of 0.85. Validity studies found positive correlation between burnout and job satisfaction, absenteeism, sleep disturbances, drug use, and intention to quit.	Based on "Situational Model of Illness." Instrument developers believe that core of burnout is fatigue and exhaustion. Designed to measure burnout over time. Primarily used in international studies. Free.
Oldenburg Burnout Inventory, ¹⁶ 1999	Psychological syndrome that may emerge when employees are exposed to a stressful working environment, with high job demands and low resources	Two dimensions that assess exhaustion (affective, physical, and cognitive) and disengagement.	Sixteen items scored on a 4-point Likert-type scale. Exhaustion (8 items) and disengagement (8 items). Single mean score.	Internal consistency coefficient ranges from 0.85 to 0.87. Positive correlation with job demands and negatively correlated with job resources. Score high in exhaustion indicates poor coping; high in disengagement indicates poor working conditions.	Based on the Job-Demands Resources (JD-R) model. Uses both positively and negatively worded items. Highly debated on engagement and burnout relationship. Free.
Shirom-Melamed Burnout Measure, ³³ 2003	Affective reaction to prolonged exposure to occupational stress in which job demands exceed an individual's adaptive resources	Three dimensions that assess emotional exhaustion (EE), physical fatigue (PF), and cognitive weariness (CW)	Fourteen items scored on a 7-point Likert-type scale. Each subscale is averaged and scored separately.	Internal consistency coefficient ranges from 0.85-0.87. Validity studies found that burnout has a positive correlation with physical and mental illness and is negatively correlated with job resources.	Based on Conservation of Resources (COR) theory. Evaluates how individual has felt in past 30 days. Limited studies on reliability and validity. Strong correlation evaluating health outcomes related to burnout.

Table 2. Summary of Common Burnout Measurement Tools (continued)

of burnout as a construct have yet to be convincingly resolved. This ongoing lack of agreement has left the field without definitive boundaries and with a wide variation in measurement tools that are commonly seen in today's literature. A lack of a common operational definition of burnout complicates efforts to establish criterion validity. To advance the understanding of any organizational construct, we must also be able to appropriately measure and analyze it. A focus on core research principles, such as building on existing models and frameworks with strong psychometric properties, may provide an easier path toward understanding burnout in the CRNA profession.³¹ For instance, one aspect to consider is related to the amount of psychometric research (eg, inter-item reliability, test-retest consistency, factor analysis) involved in developing the measures (ie, questions). The Burnout Measure¹⁵ and the MBI¹⁴ are 2 of the few measures of burnout that have undergone numerous psychometric validity studies.² Additional measures are sometimes reported; however, many of them have limited to no

psychometric testing, which limits their accuracy in measuring burnout.² For example, the widespread establishment of do-it-yourself instruments that have appealing headings such as "how burned out are you?" or "what's your burnout score?" Likewise, modification (eg, adding or deleting) of validated scales can also have an impact on the scale's psychometric properties and the potential loss of its accuracy.³² Therefore, providers should use common healthcare-specific measurement scales (Table 2^{14-16,29,33-35}) that are grounded in strong foundational theory and psychometric evaluation.^{2,31,32}

Despite the pleas to use well-validated scales to measure burnout, even the scales mentioned in Table 2 pose limitations that continue to create a diverse group of risk factors and consequences, which result in a clouded delineation of the concept from similar negative effects (eg, depression, anxiety). For instance, without definitive conceptualization of burnout, each scale is based on how the author conceptualizes burnout, and selection of a particular scale implies acceptance of the definition provided by

the test authors. For example, use of the Shirom-Melamed Burnout Measure³³ implies a multidimensional view of burnout that consists of emotional exhaustion, physical fatigue, and cognitive weariness. Another caution to consider is that most empirical research heavily relies on correlational studies that collect subjective, self-reported data. Although some strong and interesting findings have come from this research, it is prone to various limitations of response bias, such as the inability to validate one's true feelings or the lack of introspective ability of the provider.^{2,32} Because burnout is considered a progressive process, a third caution worth mentioning is related to researchers predominantly using a cross-sectional study design, which does not permit a test of causal hypotheses, even though these links are usually assumed and discussed. Ultimately, no scale is perfect; however, by following the common concept ideas of burnout, strong core research principles, and selection of a measurement tool that best fits to that provider's work environment may help mitigate some of these limitations.

• **Interventions and Future Implications.** Despite the advancements and ongoing interests in burnout research, large systematic reviews³⁰⁻³² continue to demonstrate inconsistent results in alleviating provider burnout. Although there is a general consensus among burnout scholars that occupational stressors are the primary factors of provider burnout, most interventional approaches use an individual-directed strategy.^{36,37} The current hierarchal nature of healthcare organizations places providers in an environment with limited control over stressors, which limits the effect of individual-directed strategies.² Panagioti et al³⁸ demonstrated that organizational strategies such as increasing control over schedule or reducing one's workload had moderate effects in decreasing burnout; however, because these types of interventions tend to involve greater complexity and costs, they remain limited. Without effective interventions, burnout may continue to rise, causing reduced quality of care and patient satisfaction and having detrimental effects on the provider and healthcare system as a whole. Therefore, research must first focus on CRNA burnout to identify and evaluate how key occupational and professional characteristics correlate with burnout factors, its consequences, and its prevalence before attempting interventional approaches.

Our review illustrates that not only is research related to the CRNA profession vastly limited but also a wide variation of burnout factors and consequences greatly hinders the accuracy of appropriate interventions. Therefore, future research will benefit from conducting context-specific research that incorporates unique CRNA job-related characteristics. For instance, CRNAs function in a variety of practice models, which can create such qualitative job-related stressors as role ambiguity, role conflict, and various social dynamics (eg, incivility, social

support). Additionally, CRNAs function in a variety of occupational settings, which also has been shown to have variable burnout characteristics and prevalence rates. Although much of burnout research has focused on job-related factors, people do not simply elicit a response to the job, but rather bring unique qualities to the job.² Therefore, future research must also evaluate how individual characteristics such as demographics (eg, gender, age, family life) and personality (eg, hardiness, resilience, self-esteem) influence burnout. A major limitation to current empirical research is the high reliance on cross-sectional design; therefore, future research must also focus on more direct statistical methods, such as multivariate analyses, in the hope of evaluating and analyzing the extent to which hypothesized variables contribute to provider burnout. As previously mentioned, most burnout studies use self-reported surveys, so future studies would benefit from also including objective assessments to avoid influencing factors such as a provider's current emotional affective state. Having a greater understanding of the direct relationship between causes and consequences of burnout will allow greater management of interventions.

Conclusion

Although theoretical and empirical work related to both the burnout context and the CRNA profession paints a daunting and discouraging picture, the profession has shown its resilience through its 150-year history of delivering anesthesia services in a safe and high-quality fashion. Our overall findings support our initial presumption of the gaps in burnout research in CRNAs, which suggest there is much work to be done. Because theoretical knowledge tends to transfer from academics to practitioners at the concept level, the ongoing criticisms related to the construct's conceptualization will only continue to create empirical redundancies. Our literature review, however, clearly shows enough evidence supporting that the phenomenon has widespread negative impact. An effective way to improve CRNA burnout, from an organizational standpoint, is to measure it, develop and implement interventions, and then measure again. However, for burnout research to advance in the CRNA profession, it must not only increase but also provide context-specific data of how this phenomenon affects CRNAs practicing in the United States. This research becomes even more imperative when one examines the current and future direction of healthcare. The healthcare industry is undergoing a massive and sweeping culture change. Healthcare organizations are merging to form large, volume-based accountable care organizations. In hopes of maintaining relevance, the profession must look beyond the ability of providing cost-effective, high-quality care and must enhance our individual well-being through identifying such hindrances as burnout.

After all, if we cannot take care of ourselves, who will take care of our patients?

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