Content Validity Assessment of Items Associated with CRNA Turnover: An Index Development Study

by

Michael Christopher Lambert

Master of Health Science Nurse Anesthesia, 2010 Texas Wesleyan University

Master of Science Social Work, 2004 University of Texas Arlington

Bachelor of Science Social Work, 2003 West Texas A&M University

Associate in Applied Science Nursing, 2002 Amarillo College

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Michael Christopher Lambert

Dissertation approved:

Jonathan Dru Riddle, PhD, DNP, CRNA, Associate Professor

Robyn Ward, PhD, CRNA, Associate Professor

Amanda Wiese, PhD, Associate Research Scientist

Dedication

This dissertation is dedicated to my partner, Dr. Nada Liza Elias-Lambert, PhD, LMSW. Without your support and love over this journey, I could not have accomplished this. Thank you for unconditionally picking up everything I dropped over the last four years and loving me through the stress, anxiety, and busyness of school. I love you so much Nada.

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Abstract

CONTENT VALIDITY ASSESSMENT OF ITEMS ASSOCIATED WITH CRNA TURNOVER: AN INDEX DEVELOPMENT STUDY

by

Michael Christopher Lambert

Doctor of Philosophy in Health Sciences, 2024

Jonathan Dru Riddle, PhD, DNP, CRNA, Associate Professor

Objective: To establish content validity for instrument items associated with occupational turnover for certified registered nurse anesthetists (CRNAs).

Methods: A panel of content experts in the field of nurse anesthesiology rated items as essential, useful but not essential, and not necessary. Items which displayed statistically significant agreement among experts were retained.

Results: In total, 49 items displayed statistically significant content validity.

Conclusion: This study suggests compensation, leadership, working conditions, and the clinical practice environment are important content domains associated with CRNAs choosing to quit their jobs.

Key Words: content validity, burnout, job satisfaction, leadership, occupational turnover.

Chapter I: Introduction

Certified registered nurse anesthetists (CRNAs) provide a significant number of anesthetics each year[1] and are critical component of access to healthcare in the United States. In the wake of the COVID-19 pandemic, occupational turnover amongst healthcare providers reached unprecedented levels in 2021[2], impacting the profession of nurse anesthesiology. The level of turnover experienced in healthcare after COVID was significant in terms of its impact on access to anesthesia services, financial costs, and healthcare outcomes. With growing demand for anesthesia services[3], and evidence indicating inadequate CRNAs to meet current demand[4], significant CRNA turnover can impair an organization's ability to provide anesthesia services.

Occupational turnover in healthcare is associated with significant financial costs. Research has shown that turnover in healthcare can account for 3-6% of a hospital's annual budget[5]. At the individual employee level, turnover cost estimates range from one to two times the employee's annual salary[6]. Based on these estimates, the financial cost of CRNA turnover to healthcare organizations is potentially in the millions of dollars.

Evidence suggests that turnover in healthcare, and resultant staffing shortages, are associated with an increase in errors and mortality, as well as a decrease in quality outcomes and patient safety[7]. Given the impact of CRNA turnover on access to anesthesia services, costs, and decrement to quality of care and patient safety, research in this focus area is needed to ensure sustainable access to anesthesia services in the U.S.

This dissertation is the beginning of a research agenda focused on the creation of a measurement that quantifies CRNA attrition risk. To begin this body of research, establishing

content validity for measurement items associated with CRNA turnover content domains is the first step.

Definition of Occupational Turnover and Turnover Intention

A variety of terms are used in the literature to describe an employee voluntarily choosing to end their employment relationship with an employer. Terms like quitting[8], organizational withdrawal[9], and turnover[10] are commonly used to describe this behavior. The Oxford English Dictionary[11] defines turnover as, "the rate at which employees leave a workforce and are replaced." The term occupational turnover was selected so as not to be confused with turnover, which in healthcare can also refer to productivity measures, or work done within a given time frame. In summary, occupational turnover refers to the voluntary behavior of an employee to withdraw from, or end their employment relationship with, an organization[9]. For the purposes of this research, the terms occupational turnover, turnover, and attrition will be used interchangeably.

Another term important to define is turnover intention. Turnover intention can be defined as the cognitive process associated with turnover but is differentiated from turnover in that turnover is a behavior[10]. Turnover intention, or intent to quit, is often used as a surrogate variable for turnover[12], with evidence suggesting that turnover intention accounts for 9% to 25% of turnover[10].

Contribution of Dissertation to Field

This dissertation study will address gaps in the literature related to understanding and predicting turnover and turnover intention for CRNAs. Specifically, this study will begin the process of developing a measurement towards this purpose. Even though scales have been developed or adapted to address workforce issues amongst CRNAs[13,14,15], validation for these

instruments has not been demonstrated. In order to address this gap, establishing content validity for items associated with CRNA turnover will allow for future research addressing construct and criterion validity for measures or instruments based on this study. The long-term goal for this line of research is to develop and validate a measurement tool, specific to CRNAs, that quantifies turnover intention (or attrition risk), while also providing practical information on what the primary drivers of turnover are.

Purpose Statement

The primary purpose of this study will be to establish content validity for instrument items developed towards the creation of an index that quantifies occupational turnover risk amongst CRNAs in clinical practice in the U.S. This study will develop an instrument whose purpose is to examine the relationship between the dependent aggregate variable, occupational turnover, and causal indicators (or independent variables) associated with CRNA turnover in the literature. By developing a causal formative measure, future research aimed at validating the index's ability to predict attrition, as well as regression analysis for which indicators are most predictive of turnover, will be possible. The long-term objective of this line of research will be to provide healthcare organizations with a measurement tool that provides actionable data towards interventions aimed at improving CRNA retention.

Aim 1

To develop instrument items that display a significant level of content validity.

Aim 2

Through content expert review, confirm content domains associated with CRNA turnover.

Research Question

Which indicators are valid representations of content domains associated with occupational turnover and turnover intention amongst CRNAs, as determined by statistically significant agreement between a panel of experts using the content validity ratio (CVR) statistical method[16].

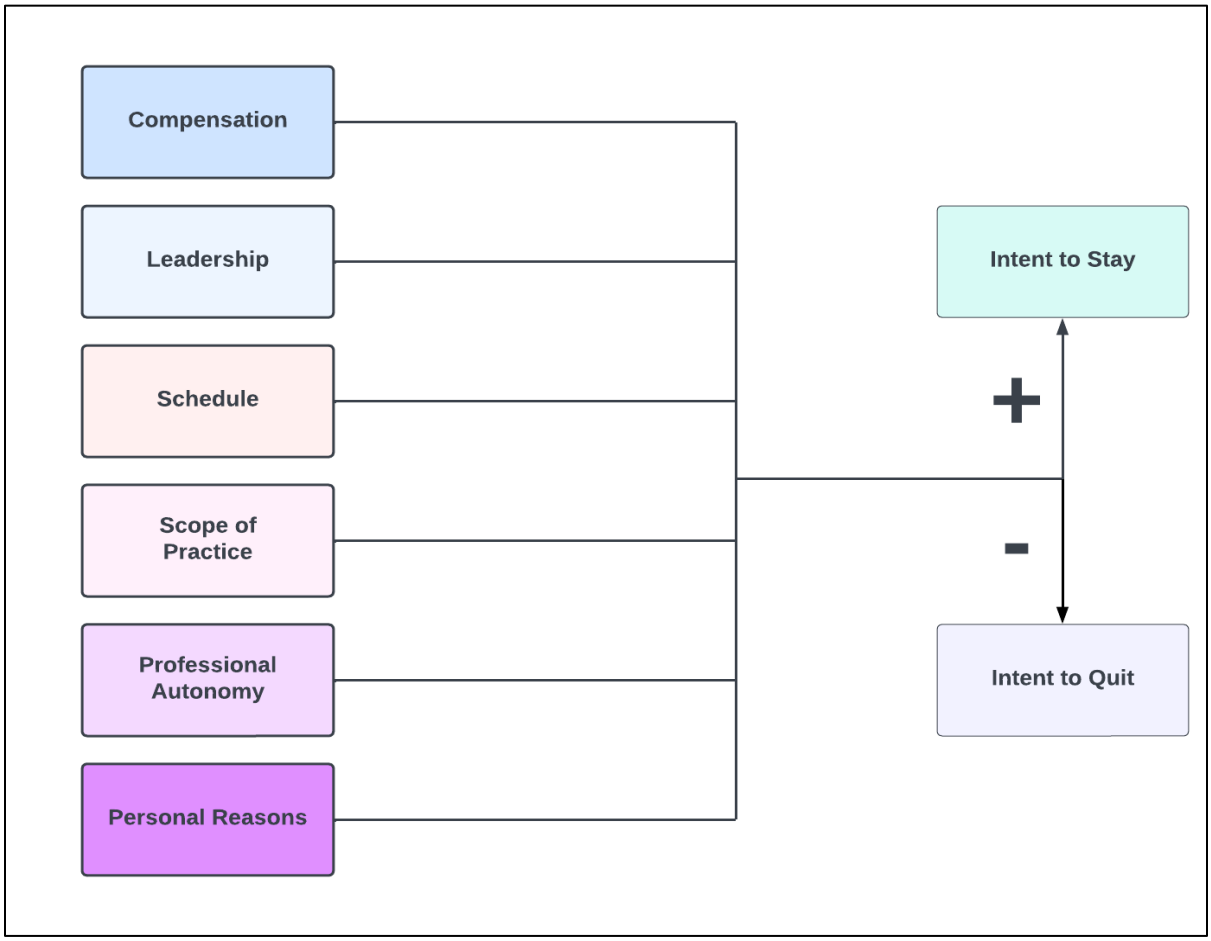
Theoretical Framework

The theoretical framework for this research is the Job Demands-Resources (JDR) model [17,18]. The JDR model posits that every job possesses stressors that can be categorized as "job demands" and "job resources"[18(p312)]. Bakker & Demerouti[18(p312)] describe job demands as, "those physical, psychological, social, or organizational aspects of the job that require sustained physical and/or psychological (cognitive and emotional) effort or skills and are therefore associated with certain physiological and/or psychological costs". Job resources are, "physical, psychological, social, or organizational aspects of the job that are either/or: functional in achieving work goals, reduce job demands and the associated physiological and psychological costs, stimulate personal growth, learning, and development"[18(p312)]. High job demands, when coupled with low job resources, can result in negative employee outcomes in terms of increased burnout, disengagement, and turnover intention[18].

The JDR model was selected as the theoretical framework due to its broad applicability across professions[17]. In the healthcare arena, the JDR model has been supported by research with both physicians[19] and nurses[20], showing that negative employee and organizational outcomes are associated with jobs whose demands outstrip available resources. The flexibility of the model allows for the application of any number of

professional or job specific factors to be analyzed in terms of their impact on turnover (See Figure 1).

Figure 1. Job Demands-Resource Model Applied to Nurse Anesthesia



Factors on the left can be categorized as resources or demands. The sum of demands and resources influences turnover intention.

Further support for the JDR model is found in research identifying work-life fit conflict as an outcome of unresolved tension between job demands and resources[19,20]. Bakker et al.[19] reported that partners of medical residents rated work-home interference as significant when their partner's job demands were high, and resources were low. Moloney et al.[20] found that work-life interference resulted in high levels of burnout and was one of the strongest predictors of turnover intention in nurses. The findings of these studies corroborate research

showing work-life fit conflict as factoring significantly in CRNAs choosing to quit their jobs[21], supporting the JDR model's ability to account for this factor's influence on turnover.

Literature Overview

The primary finding from review of the literature is that drivers of turnover and turnover intention amongst CRNAs are multifactorial[21,22]. This is supported by research where CRNAs who quit their jobs provided an average of three reasons for quitting[23].

Another finding from review of the literature is that concepts often associated with turnover are broad and share significant overlap. For example, job satisfaction and burnout are concepts frequently associated with turnover[6,24]. The overlap between job satisfaction and burnout results in differentiating each's independent contribution to turnover challenging. To illustrate this, consider that burnout has been attributed to job demands that outstrip resources available to the employee to meet those demands, leading to turnover[18]. However, job demands that outstrip resources available to workers can also lead to a decrease in job satisfaction[25], which in turn leads to turnover. The vague boundaries between these concepts, and their unique relationship with turnover, is a suggested area for future research.

Several gaps in the literature were identified through the review process. First and foremost is that data specific to CRNA turnover is limited. Based on data obtained in 2017, Dexter et al.[23] indicate that yearly turnover amongst CRNAs averages 14%, with turnover intention averaging 38%. To the authors' knowledge, data on CRNA turnover and/or turnover intention since the COVID-19 pandemic has yet to be published. The cost of CRNA turnover is also an area where further research is needed, with most of the literature on this topic referencing findings from research with registered nurses or physicians.

Another gap in the literature relates to the lack of qualitative research on this topic. Given the overall scarcity of research on the topic, qualitative research to provide a rich narrative from which to draw factors associated with turnover would be useful in proving a more complete understanding of factors in CRNAs choosing to quit their jobs. Lambert et al.[21] somewhat address this gap, but the findings are limited by all participants being female. Further qualitative research with male CRNAs is needed to address this limitation.

Relationship Between Manuscripts

Manuscript 1[22] is a scoping review of the literature surrounding CRNA turnover and turnover intention. The importance of Manuscript 1[22] is the identification of the content domains associated with CRNA turnover.

Manuscript 2[21] is a qualitative study, exploring the lived experience of CRNAs choosing to quit their jobs. The contribution of Manuscript 2[21] to this body of work is the description of work-life fit as a turnover domain for CRNAs. Manuscript 2[21] also provides supporting data for domains identified in the literature review conducted in Manuscript 1[22]. The connection between Manuscript 1[22] and Manuscript 2[21] is that Manuscript 2[21] addresses a gap in the literature in terms of qualitative research, identified in Manuscript 1[22].

Manuscript 3 addresses a gap in the literature in terms of validated measurement tools quantifying or predicting CRNA turnover risk. Manuscript 3 will use the domains identified in Manuscripts 1[22] and 2[21] to develop items for each domain related to CRNA turnover. Content validity for those items will be demonstrated through statistically significant agreement between content experts that each item included in the final instrument demonstrates significant overlap with its content domain.

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Chapter II: Manuscript 1

Occupational Turnover Factors for Certified Registered Nurse Anesthetists: A Scoping Review

Michael C. Lambert[1], CRNA, MSW, PhD Student

Robyn Ward[2], PhD, CRNA, Associate Professor

Dru Riddle[3], PhD, DNP, CRNA Associate Professor

Texas Christian University

Author Information

1. Primary Author: Michael C. Lambert is a PhD student in the Harris College of Nursing & Health Sciences PhD Program, with an emphasis in nurse anesthesia, at Texas Christian University. Harris College of Nursing & Health Sciences PhD Program, Texas Christian University, 2800 W. Bowie St, Fort Worth, Texas, 76109. Email: michael_lambert@hotmail.com.
2. Secondary Author: Robyn Ward, PhD, CRNA is the Director of the School of Nurse Anesthesia, and associate professor, at Texas Christian University. Texas Christian University, 2800 W. Bowie St, Fort Worth, Texas, 76109
3. Secondary Author: Dru Riddle, PhD, DNP, CRNA is an associate professor in the School of Nurse Anesthesia, Texas Christian University. Texas Christian University, 2800 W. Bowie St, Fort Worth, Texas, 76109.

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No conflicts of interest to declare.

Abstract

The objective of this scoping review is to understand the extent and type of evidence related to occupational turnover factors for certified registered nurse anesthetists (CRNA) in the United States. Demand for anesthesia services is increasing dramatically. CRNAs provide a significant number of anesthetics each year and are crucial to accessible anesthesia in the U.S. Understanding occupational turnover factors for CRNAs is vital to providing cost effective, reliable anesthesia services for Americans. Studies relevant to CRNA turnover in the U.S. were included for this review. Due to differences in education, scope of practice, and practice environment, studies involving nurse anesthetists outside the U.S. were excluded. Studies with mixed provider populations including physicians, registered nurses, other advanced practice providers, and students were also excluded. Five studies were included for data extraction. All the studies employed electronic or mailed questionnaires. Common factors associated with occupational turnover were compensation, retirement, job satisfaction, and burnout. Findings suggest that occupational turnover factors are multifactorial and include broad concepts such as job satisfaction, burnout, and organizational climate.

Keywords: job satisfaction; occupational stress; organizational climate; organizational commitment; turnover intention

Introduction

According to the U.S. Bureau of Labor Statistics[1], demand for advanced practice nurses, including certified registered nurse anesthetists (CRNA), is projected to increase by 45% between 2020 and 2030. In the U.S., CRNAs deliver upwards of 50 million anesthetics annually and are vital to accessible anesthesia services[2]. In the aftermath of the SARS-CoV-2 (COVID-19) pandemic, resignations among healthcare providers have reached unprecedented levels[3]. Given the tremendous cost of occupational turnover (hereafter referred to as turnover) in healthcare[4], as well as evidence that turnover impacts the quality of healthcare delivery[5], exploring the evidence related to turnover factors for CRNAs is important.

A preliminary search of MEDLINE Complete and Embase was conducted and no current or underway systematic reviews or scoping reviews on the topic were identified. Results of the preliminary search indicated literature on the topic that met inclusion criteria and justified conducting a review. Exploring the available evidence in a scoping review format was deemed appropriate given the body of literature specific to CRNAs. The objective of this scoping review is to understand the extent and type of evidence in relation to turnover factors for CRNAs in the U.S.

Review Question

What factors are associated with turnover for CRNAs in the U.S.?

Eligibility Criteria

Participants of interest for this scoping review are CRNAs in the U.S. No exclusion criteria were set for demographic variables such as gender, age, practice type, or geographical location within the U.S. If the study focused on practicing CRNAs in the US, it

was eligible for inclusion. Exclusion criteria in the participant realm included studies focusing on a mix of provider type. For example, studies were identified that included data related to turnover for physicians and CRNAs. To keep within the boundaries of the objective for this study, literature including physicians, advanced practice providers other than CRNAs, registered nurses (RN), and students were excluded.

Concept

Occupational turnover is the conceptual foundation for this review. Hanisch and Hulin[6] conceptualized turnover as voluntary employee withdrawal from an organization. Turnover intention is also included as a concept as it is correlated with turnover behavior[7]. Turnover intention varies from turnover in that the latter is defined by the behavior of voluntary organizational withdrawal, while the former is a cognitive intention[8]. Research has shown that turnover intention accounts for 9%-25% of turnover[7,9]. Given the correlation between turnover intention and turnover, studies addressing turnover and turnover intention for CRNAs were eligible for inclusion.

In the literature, turnover and turnover intention have been linked with a variety of factors. Occupational stress, job satisfaction, burnout, organizational climate, and workplace civility are examples of factors that have been linked to turnover[10,11,12,13]. Literature focusing on factors outside of turnover, while maintaining some connection to turnover, were excluded to maintain fidelity to the objective of this review.

Context

Contextual inclusion criteria for this literature review were limited to the study setting being in the U.S. For this scoping review, "CRNAs" refers to nurse anesthetists practicing in the U.S., and "nurse anesthetists" refers to nurse anesthetists internationally. Preliminary

review of the literature identified significant differences between CRNAs and nurse anesthetists in other countries. Examples of some of those differences are degree of training, scope of practice, and role overlap with physicians delivering anesthesia. Given that turnover factors for nurse anesthetists might not universally apply, studies addressing turnover and turnover intention in nurse anesthetist populations outside of the U.S. were excluded. Dissemination date was considered as an eligibility criterion, but no limitations were set on date of publication. Given the relative newness of the nurse anesthesia profession, any article related to turnover factors for CRNAs was considered for inclusion.

Types of Sources

This scoping review considered both experimental and quasi-experimental study designs including randomized controlled trials, non-randomized controlled trials, before and after studies and interrupted time-series studies. In addition, analytical observational studies including prospective and retrospective cohort studies, case-control studies and analytical cross-sectional studies were considered for inclusion. This review also considered descriptive observational study designs including case series, individual case reports and descriptive cross-sectional studies for inclusion. Qualitative studies were considered that focus on qualitative data including, but not limited to, designs such as phenomenology, grounded theory, ethnography, qualitative description, action research and feminist research. In addition, systematic reviews that met the inclusion criteria were also considered, depending on the research question. Text and opinion papers were not considered for inclusion in this scoping review. The rationale here was preliminary review of the literature indicated a sufficient research-based body of literature to exclude text and opinion papers.

Methods

The proposed scoping review was conducted in accordance with the JBI methodology for scoping reviews[14].

Search Strategy

The search strategy's aim was to locate published studies. An initial limited search of MEDLINE Complete and Embase was undertaken to identify articles on the topic. The text words contained in the titles and abstracts of relevant articles, and the index terms used to describe the articles were used to develop a full search strategy for MEDLINE Complete and Embase. Keywords for the search included nurse anesthetist, CRNA, burnout, job satisfaction, occupational stress, turnover, turnover intention, intent to quit, moral injury, moral distress, job retention, and job engagement. The search strategy, including all identified keywords and index terms, was adapted for each included database and information source. The reference list of all included sources of evidence were also screened for additional studies. Studies published in English were included. No date range limitations were set for study inclusion. Databases searched include MEDLINE Complete and Embase.

Study/Source of Evidence Selection

Following the search, all identified citations were collated and uploaded into EndNote 20.4.1/2021 (Clarivate Analytics, PA, USA) and duplicates removed. Following a pilot test, titles and abstracts were then screened independently by each of the authors for assessment against the inclusion criteria for the review. Potentially relevant sources were retrieved in full. The full text of selected citations was assessed in detail against the inclusion criteria by each of the authors. Reasons for exclusion of sources of evidence at full text that did not meet

the inclusion criteria were recorded and are reported below. Any disagreements that arose between the reviewers at each stage of the selection process was resolved through discussion.

Data Extraction

Data was extracted from papers included in the scoping review by two independent reviewers using the Joanna Briggs Institute (JBI) scoping review data extraction template[15]. The data extracted included specific details about the participants, concept, context, study methods and key findings relevant to the review questions. Methodological quality or risk of bias was not appraised, consistent with guidelines for scoping review conduct[16].

Results

Initial results of the search returned a total of 508 items. After removal of duplicates, 317 articles were screened. 247 articles were excluded as not related based on appraisal of title or abstract. 70 articles were obtained in full for review. Of the 70, 34 articles were excluded due to a focus on nurse anesthetists outside of the U.S. Of the remaining 36, 22 were excluded after review of the full text due to not relating to turnover factors. 9 articles were excluded after review, due to either the inclusion of other types of providers or focusing on factors loosely related to turnover (e.g., occupational stress or job satisfaction). In total, five articles underwent data extraction for inclusion in this review.

Characteristics of Sources of Evidence

Three of the articles were disseminated between 2020 and 2022[17,18,19]. One was published in 2007[20], with the final article being published in 1990[21]. Four of the five studies were based on data obtained from mailed or electronic surveys[18,19,20,21], with one being secondary analysis of data collected via electronic survey[17]. All the studies were based in the U.S., dealt with turnover and/or turnover intention, and the studied population was limited to

practicing CRNAs. Two of the studies included data from CRNAs across the U.S.[17,19], two were limited to geographical regions in the U.S.[18,21], with one being limited to CRNAs practicing in the Department of Veterans Affairs[20].

Factors Associated with Turnover and Turnover Intention

Each article presented factors associated with turnover and or turnover intention differently. Factors are presented here in order of number of articles associating it with turnover. This order is not intended to indicate ranking or level of importance as not each article ranked factors in terms of impact on turnover or turnover intention. Turnover factors for CRNAs most frequently cited in the literature included for this review were compensation, retirement, job satisfaction, and burnout.

Compensation was a factor associated with turnover or turnover intention in each of the articles[17,18,19,20,21]. "Better pay" was the terminology used in three of the studies[17,18,19], with "pay satisfaction"[21] and "non-competitive salaries"[20] being other terms used. Compensation was the only factor identified in each of the articles.

Retirement as a factor for turnover or turnover intention was identified in four of the articles[17,18,19,20]. Job satisfaction was associated with turnover in three of the articles[18,19,21]. Burnout was identified as a factor in turnover, or turnover intention, in three of the articles[17,18,19]. Career advancement as a factor for turnover was identified in three of the articles[17,19,21]. The terminology associated with career advancement varied, with the following terms being represented in the studies included in this review: "promotion" and "career advancement"[17], "advance position"[19] (as a reason for leaving), and "promotion satisfaction"[21]. Better working conditions was identified as a factor for turnover in two of the

articles[18,19]. Finally, geographic relocation was listed as a factor for turnover in two articles[17,19].

Other factors associated with turnover and/or turnover intention were more specific and did not share categorization similarities between studies. The list of all these factors is too broad to incorporate here, but examples are role ambiguity and role restraints, incompetent leadership, limited scope of practice, dissatisfaction with schedule, stressful work environment, and inadequate staffing[17,19]. Broader concepts like job satisfaction and burnout were also associated with turnover[19].

Discussion

The major finding of this scoping review is that turnover factors for CRNAs are multifactorial. Compensation, retirement, job satisfaction, burnout, career advancement, and geographic relocation were cited across the literature as turnover factors for CRNAs in the U.S. However, this evidence indicates that not just one of the above factors alone is responsible for turnover or turnover intention in CRNAs. For example, Dexter et al[17(p487)] found that CRNAs who had left their position provided 2.5 "primary" reasons for quitting, and CRNAs who had considered leaving their positions had an average of 3.7 primary reasons.

Another finding of this scoping review is that the broad concepts of job satisfaction and burnout have a multitude of indicators that impact turnover and turnover intention. Mahoney et al[19] found that burnout and job satisfaction were determined by job and personality characteristics. Examples of some of those characteristics were autonomy, skill variety, agreeableness, age, and hours worked per week. Lea et al[18] reported that burnout was associated with a decrease in job satisfaction, which contributed to turnover intention.

Factors identified by Lea et al[18] as contributing to burnout were job feedback (more feedback decreasing burnout), CRNA and administration relations (better relations decreasing burnout), and work and personal responsibility conflicts (conflicts resolved in favor of work increasing burnout).

Organizational climate is another concept that deserves mention. Lea et al[18] and Szigeti et al[21] both mention organizational conditions or climate as a factor in turnover. Sein Myint et al[22(p175)] define organizational climate as, "a shared perception about an organization by its workforce". Lea et al[18(p145)] tie this concept into turnover in the following statement, "The degree to which an organizational climate values, supports, communicates, and collaborates with CRNAs was a significant predictor of burnout and resultant changes in job satisfaction and turnover intention". Szigeti et al[21(p324)] state, "The organizational or work conditions variables—i.e., role ambiguity, opportunity to participate, and performance constraints—were moderately related to intention to quit". What these statements suggest is that the concept of organizational climate, with its varied indicators, plays a role in turnover intention. These findings have implications for practice.

Perhaps the biggest implication for practice is that preventing turnover requires a multifaceted approach from organizations. To synthesize the findings into practice implications, categorization of the myriad factors might be useful. For example, retirement and geographical relocation could be categorized as personal factors. Factors such as better pay, career advancement, job satisfaction, and burnout could be categorized under the umbrella concept of organizational climate. Even though organizations might not ultimately be able to prevent attrition secondary to personal factors (i.e., retirement or employees choosing to relocate), this evidence suggests that efforts to ensure competitive compensation,

and an organizational climate that minimizes burnout and maximizes job satisfaction, are valuable considerations to mitigate turnover.

These findings are also useful as they suggest future directions for research. Exploring the overlap between the concepts of job satisfaction, burnout, and organizational climate would help define conceptual boundaries and areas of overlap, as well as elucidate their relationship with turnover. To our knowledge, no qualitative studies have been conducted on turnover and turnover intention for CRNAs in the U.S. Qualitative research, with its exploration of the lived experience of participants, may be useful in providing a more textured understanding in this area.

This scoping review is not without limitations. First, the studies included in this review used disparate approaches to address factors associated with turnover, thus, the findings are not generalizable beyond the scope of the initial study. Second, CRNA populations studied in this body of literature varied, resulting in findings that may not apply to CRNAs in the U.S. at large. Finally, all but one of the studies[18], was based on data collected prior to the COVID-19 pandemic, the impact of which on turnover in healthcare is still an area of active research, and thus may not reflect COVID-19 associated factors involved in the unprecedented turnover currently being experienced in healthcare.

Conclusion

The objective of this study was to explore the extent and type of literature related to turnover factors for CRNAs in the U.S. To that end, this scoping review found that turnover factors for CRNAs are myriad, with compensation, retirement, job satisfaction, and burnout being the most frequently mentioned factors in the literature included for this review. Broad concepts such as burnout, job satisfaction, and organizational climate were also associated

with turnover in this body of literature. The broad nature of these concepts, with overlap between them, suggests the value of future research in this area. Qualitative research in this area might also be of value in addressing gaps in the qualitative body of literature. Finally, practice implications from this scoping review indicate that organizational efforts in the areas of competitive compensation and a positive organizational climate may be rewarded with a decrease in turnover for CRNAs they employ.

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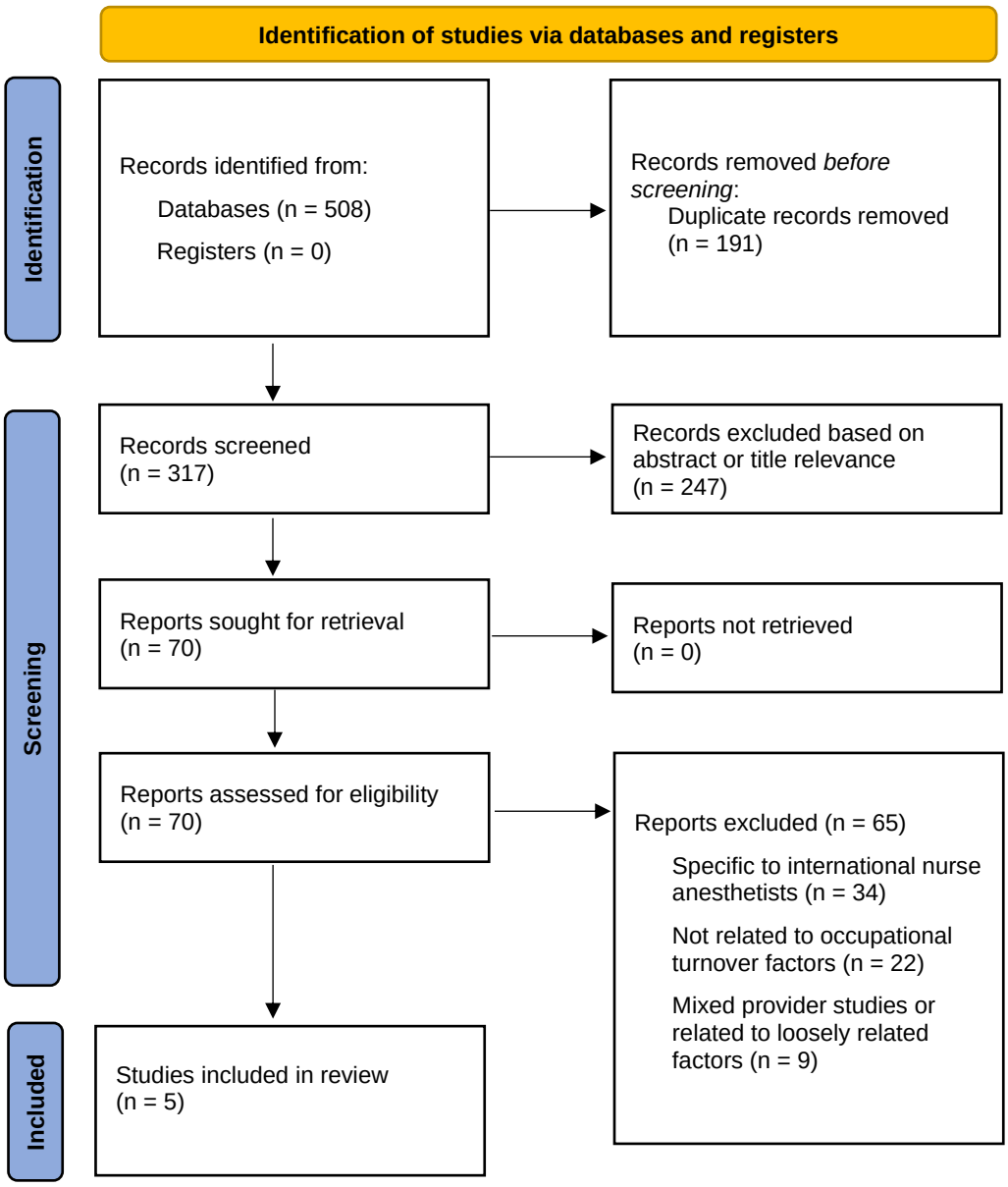
Appendix A

Figure 1. Prisma Diagram



From: Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. BMJ 2021;372:n71. doi: 10.1136/bmj.n71

Appendix B

Table 1. Factors Associated with CRNA Occupational Turnover

Study	Factors
Dexter et al, 2021[17]	Better pay/benefits, burnout, lack of good management/leadership, inability to practice to the full extent of my license, retirement, scheduling, interpersonal differences, stressful work environment, promotion, inadequate staffing, geographic relocation, lack of advancement opportunities, career change, physical demands of the job
Leah et al, 2022[18]	Burnout, job satisfaction, better working conditions, better pay, retirement
Mahoney et al, 2020[19]	Better working conditions, retirement, better pay, geographic relocation, promotion, job satisfaction, burnout
United States, Government Accountability Office, 2007[20]	Salaries not competitive
Szigeti et al, 1990[21]	Overall satisfaction, pay, promotion, role ambiguity, role constraints

Chapter III: Manuscript 2

Exploring the Experience of CRNAs Choosing to Quit Their Jobs: A Qualitative Study

Michael C. Lambert[1], CRNA, MSW, PhD Student

Robyn Ward[2], PhD, CRNA, Associate Professor

Dru Riddle[3], PhD, DNP, CRNA Associate Professor

Texas Christian University

Author Information

1. Primary Author: Michael C. Lambert is a PhD student in the Harris College of Nursing & Health Sciences PhD Program, with an emphasis in nurse anesthesia, at Texas Christian University. Harris College of Nursing & Health Sciences PhD Program, Texas Christian University, 2800 W. Bowie St, Fort Worth, Texas, 76109. Email: michael_lambert@hotmail.com.
2. Secondary Author: Robyn Ward, PhD, CRNA is the Director of the School of Nurse Anesthesia, and associate professor, at Texas Christian University. Texas Christian University, 2800 W. Bowie St, Fort Worth, Texas, 76109
3. Secondary Author: Dru Riddle, PhD, DNP, CRNA is an associate professor in the School of Nurse Anesthesia, Texas Christian University. Texas Christian University, 2800 W. Bowie St, Fort Worth, Texas, 76109.

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Declaration of Conflicting Interests:

No conflicts of interest to declare

Abstract

Objective: To explore the experience of certified registered nurse anesthetists (CRNAs) choosing to quit their primary place of employment.

Methods: Interpretative phenomenological analysis (IPA) is the qualitative framework for this study. Ten CRNAs were interviewed about their experience of quitting their job. Interview transcripts were analyzed for common themes.

Results: Common themes were the desire for better work-life fit, the impact of stressful work intensity, and exposure to poor leadership.

Conclusion: This study suggests that a focus on ensuring job fit for personal goals outside of work may improve CRNA retention. This study also provides practice implications for hospital leadership, as well as direction for future qualitative and quantitative research.

Key Words: burnout, job satisfaction, leadership, occupational turnover, qualitative research.

Introduction

In 2021, The Bureau of Labor Statistics reported that the number of healthcare workers quitting their jobs reached record levels[1]. With research indicating demand for anesthesia providers outstripping supply[2], as well as the projected growth in demand for certified registered nurse anesthetists (CRNAs)[3], understanding factors impacting the CRNA workforce is critical to ensuring sustainable access to anesthesia services. The purpose of this study is to explore the experience of CRNAs choosing to quit their jobs to better understand drivers of turnover and strategies for CRNA retention.

Background

Turnover Concept

Turnover is one of many terms used in the literature to describe an employee voluntarily withdrawing or ending their relationship with an employer[4]. Turnover intention is often used as a surrogate variable for turnover but is distinguishable by its definition as a cognitive process[5], compared to the behavior that defines turnover. Turnover and turnover intention are related in that research suggests 9-25% of those who consider leaving their job end up quitting[6].

Cost of Turnover

Healthcare costs associated with turnover are both financial and outcome related. At the macro level, research has estimated turnover accounting for 3-6% of a hospital's annual operating budget[7]. At the micro level, studies have estimated the cost of turnover at one to two times the employee's annual salary[8]. Based on these estimates, the financial cost of turnover for hospitals is in the millions of dollars, with nationwide costs potentially in the billions.

Quality outcomes are also impacted by turnover. Evidence suggests that turnover can result in an increase in mortality and medical errors, as well as a decrease in patient safety and quality of care[9].

Literature Review

A review of the literature was conducted to examine factors associated with turnover in CRNAs[10]. Results of the literature review indicate that CRNA turnover is multifactorial, with CRNAs providing multiple reasons for leaving a job[10,11]. Common factors in the literature associated with CRNA turnover are: compensation, job satisfaction, burnout, career advancement, better working conditions, and geographic relocation[10] (Table 1). Missing in the literature were data related to current turnover rates for CRNAs, as well as research on the impact of the SARS-CoV-2 (COVID-19) pandemic on CRNA turnover. In reviewing the literature, no qualitative research on CRNA turnover or turnover intention was identified. This study addresses this gap in the literature through a qualitative exploration of CRNAs voluntarily quitting their jobs after the COVID-19 pandemic began.

Table 1. Factors Associated with CRNA Turnover

Study	Factors
Dexter et al, 2021[11]	Better pay/benefits, burnout, lack of good management/leadership, inability to practice to the full extent of my license, retirement, scheduling, interpersonal differences, stressful work environment, promotion, inadequate staffing, geographic relocation, lack of advancement opportunities, career change, physical demands of the job
Leah et al, 2022[12]	Burnout, job satisfaction, better working conditions, better pay, retirement
Mahoney et al, 2020[8]	Better working conditions, retirement, better pay, geographic relocation, promotion, job satisfaction, burnout
United States, Government Accountability Office, 2007[13]	Salaries not competitive
Szigeti et al, 1990[14]	Overall satisfaction, pay, promotion, role ambiguity, role constraints

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Methods

Conceptual Framework

The conceptual framework for this study was interpretative phenomenological analysis (IPA)[15]. Smith et al[15(p1)] describe IPA as, "a qualitative research approach committed to the examination of how people make sense of their major life experiences." Interpretative phenomenological analysis is intended to explore human experiences in a way that allows for it to be expressed in the words of participants instead of using prior knowledge or categorization[15]. Given the gaps in the literature addressing CRNA turnover, qualitative inquiry was selected as an introductory method of research into this phenomenon. The rationale for beginning with a qualitative study can be found in the words of Francis

Galton[15(p25)], a leader in establishing the science of statistics, who said, "Acquaintance with particulars is the beginning of all knowledge – scientific or otherwise … starting too soon with analysis and classification, we run the risk of tearing mental life into fragments and beginning with false cleavages that misrepresent the salient organizations and natural integrations in personal life."

Recruitment

Participants were recruited via CRNA groups on Facebook. This recruitment method was selected due to the significant number of CRNAs active on Facebook, as well as for purposeful sampling convenience. Inclusion criteria for participation in the study were participants who worked full-time as a CRNA, and who quit their jobs after the onset of the pandemic (March 2020). No exclusion criteria were included. Once ten CRNAs had committed to participating in the study, recruitment ended.

Data Collection

Interviews were conducted virtually[16]. Data was gathered using a semi-structured interview approach, with the primary author using an interview guide developed by the authors to guide the conversation. The questions were open-ended, with the goal being for the participant to describe the experience of quitting their job in their own words, free of guiding or leading by the researcher. Duration of the interviews varied from thirty minutes to an hour-and-a-half. Interviews were recorded[16], and then professionally transcribed[17]. Transcript accuracy was verified by the authors prior to commencing analysis.

Data Analysis

Transcripts were analyzed using qualitative data analysis software[18]. The analysis process began with identifying experiential statements (ESs)[15] in each transcript. Experiential

statements can be defined as participant statements that, "relate directly to the participant's experiences…, or to the experience of making sense of things that happened to them."[15(p86)] Once ESs had been identified, they were thematically organized into personal experiential themes (PETs)[15]. Personal experiential themes represent connections between ETs that become "analytic entities"[15(p94)], which can be used to connect themes across participant experiences, also called group experiential themes (GETs)[15].

Approach to Validity and Reliability

The concepts of validity and reliability, as understood in quantitative research, cannot be literally applied to qualitative inquiry[19]. Qualitative research is an exploration of, or journey through, human experience and thus validity and reliability, intended to demonstrate rigor, quality, and reproducibility, cannot be measured in the same way[19]. Instead, the trustworthiness framework for ensuring rigor and quality in qualitative research, first suggested by Lincoln and Guba[20], was applied. Authors immersed themselves in the participant's narratives, , independently analyzed transcripts, and selected GETs that were agreed upon by each author (also referred to as triangulation). Immersion in the narratives consisted of rereading each transcript shortly after being recorded, verifying the accuracy of transcripts, rewatching recorded interviews, and finally, sharing the results of the analysis with participants to ensure a shared meaning between researchers and participant (also called member checks). Care to limit author bias was observed through reflexive journaling and bracketing. Outside consultation with qualitative researchers was conducted to confirm GETS. Member checks were conducted to ensure shared meaning between participants and authors. Finally, thematic saturation of GETs identified in this study were agreed upon by the authors after analysis of the data.

Results

Participants

Demographic data collected from participants was limited to practice information (Table 2). The rationale for not collecting other demographic variables, such as race, ethnicity, age, etc., was made to maintain fidelity with the qualitative approach, the intent of which is to encourage understanding of a human experience. Including demographic variables such as race, ethnicity, or age, encourages generalizations to the broader CRNA population, which is not supported by qualitative methodology[21].

All ten participants were women. The median time practicing as a CRNA was 11 years, with participants ranging in practice experience from 4 to 21 years. The median amount of time worked at the jobs participants quit was seven years, with the range being 2 to 16 years. Finally, every participant quit a job where they were employees (W2), with 50% of participants' next job being W2, and 50% moving on to work as independent anesthesia contractors (1099). Practice settings varied from urban to rural hospital settings. Clinical practice was primarily centered on general and obstetric anesthesia, with some participants solely providing pediatric anesthesia.

Table 2. Participant Demographics (n = 10)						
Sex	CRNA experience (years)	Number of jobs[a]	Tenure at job quit (years)	Type of employment[b]	Current employment type	Practice environment[c]
Female = 10 Male = 0	Median: 11 Range: 4-21	>3 = 3 2 = 2 1 = 5	Median: 7 Range: 2-16	W2 = 10 1099 = 0	W2 = 5 1099 = 5	Setting: urban, rural Practice environment: independent, anesthesia care team (supervised and directed) Anesthesia service: general, obstetric, pediatric

[a]Since licensure as CRNA
[b]For job quit
[c]Practice environment for prior and current job.

Group Experiential Themes

Three main GETs were identified in the data. First was the need for work-life fit; second was the impact of stressful work intensity; and third was exposure to poor leadership.

The need for work-life fit. Work-life balance is a term familiar in American vocabulary. It can be defined as "the amount of time you spend doing your job compared with the amount of time you spend with your family and doing things you enjoy"[22]. Even though this definition embodies what participants were desiring when they quit their jobs, the word *balance* often evokes conflict or action. The word *fit* deemphasizes the actions associated with *balance* in favor of a passive congruence or synergy, which is faithful to the experience of participants, whose desire was for their jobs to be a welcome part of their lives.

For some participants, their place of employment was not problematic, but they chose to change jobs to meet needs outside of work.

Participant 1: *"[Quitting] was nothing to do with work … I felt like the big city was affecting my daughter more than anything else. It was just the big city. I wanted out of there."*

Participant 2: *"I remember my family was leaving, pulling out of our driveway, and I was in tears. It was really more a family pull. Just being able to spend time together and being closer to where we can do more things."*

Participant 5: *"I was like, 'you did this [quit] because you realize your mom, with all the things she was able to accomplish in her life, there was one particular dream she had that she never got a chance to [fulfill] just because she chose the comfortable life.' For whatever reason, after we got older, she stuck with that comfortable life and never got around to doing something that was a big dream of hers. And I was like, 'Well, if you don't make a change now, that will be you as well.'"*

Other participants attributed a lack of work-life fit to their job:

Participant 8: *"I loved what I did, but I also realized how I felt. Like how tired [I was] and the stress level from working sixteens. That pressure of doing cardiac babies, or brain surgery, or NICU babies, getting up at 04:45 in the morning to drive to work."*

Participant 9: *"We ended up losing a bunch of people, getting super short-staffed, and burning out the remaining people. I wasn't getting enough time [off] and I wanted to have more flexibility to take more downtime. It got to the point where I wanted my [family] to come visit and there were already two people off. Neither one of them were able to switch with me and so I gave my notice."*

Participant 10: *"I started realizing how important summertime was. [One year] I only got one week of vacation in the summertime and that's when I started being like, this is not right. The fact that I can't get this one week off that is very important for me, that was the cutoff point. I was like, I am done with this".*

Participant 6: *"We got a brand-new hospital that increased our volume from eleven rooms to sixteen rooms. We were spread very thin and very understaffed. We jumped up in the requirement of what we needed to be able to cover and we were unable to recruit new CRNAs. It was significantly longer hours. And I just felt like I needed to be reliably home in the afternoon for my son in elementary school, to shuffle him to practices, or just get him off the bus from school."*

After changing jobs, participants described having more time to commit to their personal lives and talked about the perceived benefits.

Participant 8: *"Life is about spending time with people you love and getting to pursue other things that aren't just work. I am in multiple Bible studies now. I just have so much more time to do whatever I need."*

Participant 9: *"My husband says I seem much more relaxed. Now I have more flexibility and I can do stuff whereas I always felt too overwhelmed with things before. [I have] come to a season in my life where I can try to have anesthesia be a portion of my life as opposed to have anesthesia be my life."*

Participant 10: *"When my kids said to me six months after not working [at my previous job], 'Mom, you are not as grumpy anymore.' That was kind of an aha moment. They said they liked the fact that I was home for dinner a lot more and around a lot more. So that was good."*

Impact of stressful work intensity. Another GET was participants describing the negative effects of being short staffed and resultant impact on work intensity. In this context, work intensity refers to ratio of time spent delivering anesthesia compared to hours worked.

> Participant 3: *"[We were] chronically understaffed and to the point of basic needs not being met as a human being, not being able to eat or go to the bathroom or things like that. It is difficult when you are so understaffed and there are not enough people to cover cases. It is not unreasonable to be asked to stay late fairly regularly, but I feel there was an aspect of guilt associated with that. In their minds [leadership], they had this group of people who regularly stayed past their shift and there was a negative connotation to the people who wouldn't stay. But when kids enter the picture and there are childcare situations, you don't want to be uncertain of when you are going to leave. It is unreasonable to put people in a negative category just because they have a life outside of work that they have responsibilities for."*
>
> Participant 4: *"Healthcare overall is just so tumultuous. [Hospital] administration have taken COVID as an opportunity to screw us harder. There is less staff because they [leadership] are like, 'Oh, we can run on less staff than we had before COVID. We are going to do that.' Meanwhile, everybody is miserable because we are running on less staff, and we have less resources in general."*
>
> Participant 8: *"When I went to [working] sixteens [hours per shift] it was okay, but staffing was very critical. Sixteens used to not be this crazy shift, but it became where you would finish a case and you're immediately in something else. It became one of those things where it is just nonstop all day long and then you are exhausted the day after."*

Poor leadership. Leadership's inability to effectively address concerns, or dismissive attitudes, were an experience that was instrumental in participants choosing to quit.

Participant 4: *"What is happening to these C-suite people that they are just screwing up over and over again [in relation to being short staffed]? They besmirch me for being so expensive, and I am like, I wouldn't be needed if you all could get your heads out of your ass and treat the people that you sign paychecks for like they are human beings and they have lives outside of this damn hospital".*

Participant 6: *"We were constantly asking administration for help and consistently being brushed off. Like we weren't being given information as to how things were going to move forward. It didn't make sense to anybody how we added an additional six operating rooms and no additional staff. The more questions we asked, the more were kind of put off, and for lack of a better term, we were told to put our heads down and not to worry about it, even though we could all see some glaring problems with the system".*

Participant 7: *"There was one manager who told the whole staff blatantly in a meeting, 'If you don't like it, leave. It is not problem finding other CRNAs.' As an employee, when your boss tells you that you are of no value and you are easily replaced, it starts to put a sour taste in your mouth."*

Participant 9: *"When you would go to administration about stuff, they were like, 'Well, we don't know what to do.' They [leadership] would say, 'we want this to be the best place and the best job', but they wouldn't do any of the stuff that was necessary to actually support you on that. Things were frustrating and perpetually*

frustrating and not changing. And would not change. And that was the stuff that in the end was the straw that broke my back and made me step away.".

Participant 10: *"I tried [to make things better] for four years. I was like, 'We can make it better. Let us present this idea, let's present that idea, let's try to do this, let's try to figure it out.' I felt like I was just banging my head against the wall. It was more just a lack of communication with leadership and lack of really trying to figure things out. I did have one manager say, 'Well if you don't like it, just leave.' I was like, 'Okay then, maybe I will leave. If you are not wanting to have this conversation and try to figure things out, then maybe we are done here.'"*

Discussion

The stories shared by participants paint a picture of CRNAs resolving work-life fit issues in favor of their lives outside of work. Implications from these results can be translated to the clinical setting in terms of addressing work-life fit, work intensity, and leadership (Table 3).

Work-life fit

Represented in the data were reasons for quitting a job that fall in the employee domain, outside of the influence of employers or leadership. For example, choosing to pursue different career interests after a loved one passes away, wanting a rural setting in which to raise a child, or wanting to be closer to family, are factors difficult to mitigate in terms of retention. However, juxtaposed to these types of experiences were narratives that centered the primary determinant for quitting in the employer domain. For example, participants raising variable work schedules that made life outside of work difficult, the inability to use paid-time-off, or work being so stressful that it consumed too much energy in their personal

lives, are within the sphere of organizational influence. Implications of these findings suggest that interventions targeting work-life fit, in favor of the employee, may improve retention. Support for this approach was expressed by participants when considering what would have influenced them to stay in their job.

> Participant 3: *"If we were in a situation where it was ideal staffing, I think I would honestly have had to look and see over time how that impacted my job, and maybe that could have kept me there longer, just because that makes such a big impact. But I would have had to see how that played out."*
>
> Participant 6*: "100%, I would have stayed if they could have given me a set schedule."*
>
> Participant 10: *"If they had said, 'Yes, you can have a set schedule. Yes, you are guaranteed three weeks of in the summer.' I would have been like, 'Sweet. Okay, I can maybe handle that.'"*

Work intensity and staffing

Staffing shortages were identified by most participants as influencing their decision to quit. These data suggest that working conditions that involve continuous and stressful demands may increase intent to quit and subsequent turnover. Staffing levels that result in longer hours, increased call burden, unpredictable shift duration, increased pressure to extend work commitments, and that decrease employee benefits like ability to use time off, were part of why participants in this study chose to quit. Implications for employers are that while acute staffing shortages may be tolerated, chronic staffing shortages may result in significant attrition. Future research that compares revenue generated by high intensity work models

with costs of turnover may be useful in innovating models that balance revenue generation with retention associated savings.

Impact of COVID-19

With staffing issues featuring prominently in the data, the impact of the COVID-19 pandemic on turnover is warranted. In analyzing the data, participant perspectives on the pandemic were not thematic. Despite this, statements made about the pandemic suggest some ways in which COVID-19 influenced employee turnover.

> Participant 10: *Quite a few people got really burnt out with COVID and started reassessing lifestyle and what they wanted to do. I started realizing that the money they're touting, 'When you work 24 hours, you'd get this extra money', but you start realizing that money's not the whole thing. And I would like to maybe be guaranteed two to three weeks off in the summertime. Maybe guaranteed that I have a certain set schedule because I'm senior and I'm at the top. And lifestyle: I started to realize that lifestyle might be a little bit more important than the money aspect of things. And when there was no budging on the lifestyle aspects, it was like, 'Okay, I need to reassess this.'"*
>
> Participant 3: *"I think COVID sort of helped me realize you have to take care of yourself. I can't count on anybody else to take care of my needs. So, I sort of have to put my own guilt about leaving a place to the side if it is no longer serving me."*

One suggestion from these data is that the pandemic was influential in CRNAs reprioritizing personal needs over work demands, resulting in turnover. Participants did not associate worsening working conditions after COVID-19 with the pandemic, but rather associated higher levels of burnout post-pandemic with attrition. Again, a suggestion is that

in the wake of the COVID-19 pandemic, employer tolerance for staffing shortages may unintentionally result in further turnover that significantly impairs healthcare delivery.

Leadership

The two sub-themes from the leadership GET are the ability to effectively address employee concerns and attitudes toward employee driven change efforts. Participants in this study worked at the jobs they quit for significant periods of time, with many expressing engaging with leadership over years, to change qualities of the job that did not fit with personal life needs. Hospital, physician, or CRNA leadership's inability to resolve these conflicts in favor of the employee were a part of some participants choosing to quit. Participants perceiving leadership as being dismissive, devaluing, or uncaring in response to their efforts was an inflection point towards committing to finding a different job.

Implications for leadership are related to successfully navigating employee desire to have work fit with their personal lives, instead of the other way around. Innovation in terms of scheduling flexibility, work demands around the holiday, call burden, weekend work, shift length variability, and ensuring reasonable work intensity are suggestions from these data to improve CRNA retention. The 24/7 nature of hospital anesthesia delivery indicates that innovation in staff modeling to decrease night, weekend, call, and holiday work demands for a majority of CRNAs in a given department may be required to compete with non-hospital anesthesia jobs that offer these perks. Compensation structures that incentivize a small number of CRNAs to work the majority of night, weekend, call, and holiday coverage, allowing the rest of the department to work shifts that fit with non-work pursuits or family life, are one consideration to address this challenge.

Another implication is how lack of communication or transparency on the part of leadership allowed for negative attribution by employees. One example is a participant stating that leadership tolerated short staffing conditions to secure bonuses or to increase revenue. Another example was the participant who took issue with the hospital increasing operating room capacity without having a plan to increase personnel. It is possible that employee perceptions in these situations were inaccurate, but the inability of leadership to effectively address these perspectives allowed for these perceptions to go unaddressed. Leadership addressing perceptions like these may be impactful in reducing negative attributions and resultant turnover.

Finally, these data suggest that employers are not wholly disadvantaged when it comes to retention. Each of the participants spent years at the job they ended up quitting, with the shortest period in this sample being two years. Participants described their decision to quit as difficult due to factors such as comfort level with the clinical or practice environment, loyalty to the organization, personal friendships at work, and the unknowns of changing jobs. For participants who quit because of dissatisfaction with aspects of their job, each described engaging with leadership to find solutions, only to end up frustrated and losing hope that anything would change. The implication for leadership is that employee engagement to improve work-life fit may indicate increased risk for eventual attrition should the employee efforts prove unsuccessful.

Other factors

Factors associated with CRNA turnover in the literature (Table 1), such as compensation, conflict with physician anesthesiologists, promotion, etc., were represented in participant narratives, but were not GETs. Prior research identifying that turnover is

multifactorial[11], is supported by these data. For example, several participants talked about inability to get time off, leadership response, and practice environment changes as reasons for quitting. One participant who identified limited scope of practice and poor care team environment for leaving, also identified leadership attitudes as playing a factor. A final example is a participant who described their commute, childcare difficulty, stress level at work, and better compensation as influencing their decision to quit. Within the sphere of influence available to employers and leadership to impact retention, these data suggest that multiple aggregated negative factors result in turnover intention, and that interventions aimed at retention may not need to address every employee concern to successfully mitigate attrition risk.

Future research

Multiple directions for future research are suggested by this study. Measurement research to develop scales or indices that identify turnover risk and associated factors is one suggestion. Research to quantify costs of CRNA attrition in terms of dollars, as well as impact to quality care is another. Finally, intervention research aimed at improving retention is suggested by these results.

Limitations

The lack of male participants in this study is a limitation. Research has shown gendered differences in turnover[23], which limits the transferability of these findings to male CRNAs. Duplicating this study with male CRNAs would be useful in addressing this limitation. However, this limitation must be digested in the context of over half of the CRNA workforce being female[24]. Another limitation is recruitment of participants occurring only on

Facebook. Selection bias in recruiting may skew results in favor of CRNAs who are active on the social platform.

Table 3. Practice Implications

Group Experiential Themes (GETs)	Practice Implications
Work-life fit	Address schedule flexibility; ensure reasonable ability to use time off; limit indeterminant or variable shift length; minimize general staff requirements for holiday, night, call, weekend work.
Impact of stressful work intensity	Match or limit demand for anesthesia to available personnel; ensure reasonable [a]work intensity to decrease associated stress; address acute staffing shortages before condition becomes chronic.
Poor leadership	Ensure effective communication when addressing employee concerns; recognize need for innovative solutions and tolerate risk to explore options; recognize employee driven change efforts in work-life arena as potential for attrition if not effectively resolved.

[a]Work intensity definition: ratio of billable time to hours worked

Conclusion

With healthcare workers transitioning out of hospital settings in record numbers, and no sign that demand for anesthesia services will decrease, understanding how to retain CRNAs is critical to ensuring access to anesthesia services. Turnover amongst CRNAs is multifactorial, with this study indicating that work-life fit factors such as schedule flexibility, ability to get time off from work, and stress related work intensity are important to consider when developing retention strategies. Also, leadership attitudes and effectiveness in addressing employee work-life conflicts, chronic staffing issues, and effective communication may also aid in improving retention. The benefits of this study are the practice implications for hospital leadership in terms of retention of CRNAs.

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Chapter IV: Manuscript 3

Content Validity Assessment of Items Associated with CRNA Turnover: An Index Development Study

Michael C. Lambert[1], CRNA, MSW, PhD Candidate

Amanda Wiese[2], PhD, Associate Research Scientist

Robyn Ward[3], PhD, CRNA, Associate Professor

Dru Riddle[4], PhD, DNP, CRNA Associate Professor

Texas Christian University

Author Information

1. Primary Author: Michael C. Lambert is a PhD candidate in the Harris College of Nursing & Health Sciences PhD Program, with an emphasis in nurse anesthesia, at Texas Christian University. Harris College of Nursing & Health Sciences PhD Program, Texas Christian University, 2800 W. Bowie St, Fort Worth, Texas, 76109. Email: michael_lambert@hotmail.com.
2. Secondary Author, Dissertation Committee Member: Amanda Wiese is an associate research scientist with the Institute of Behavioral Research at Texas Christian University. Institute of Behavioral Research, 3034 Sandage Ave, Fort Worth, Texas, 76109.
3. Secondary Author, Dissertation Committee Member: Robyn Ward, PhD, CRNA is the Director of the School of Nurse Anesthesia, and associate professor, at Texas Christian University. Texas Christian University, 2800 W. Bowie St, Fort Worth, Texas, 76109
4. Secondary Author, Dissertation Committee Chair: Dru Riddle, PhD, DNP, CRNA is an associate professor in the School of Nurse Anesthesia, Texas Christian University. Texas Christian University, 2800 W. Bowie St, Fort Worth, Texas, 76109.

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Background

Certified registered nurse anesthetists (CRNAs) provide a significant number of anesthetics each year[1] and are critical component of access to healthcare in the United States. In the wake of the COVID-19 pandemic, occupational turnover amongst healthcare providers reached unprecedented levels in 2021[2], impacting the profession of nurse anesthesiology. The level of turnover experienced in healthcare after COVID is significant in terms of its impact on access to anesthesia services, financial costs, and healthcare outcomes. With growing demand for anesthesia services[3], and evidence indicating inadequate CRNAs to meet current demand[4], significant CRNA turnover can impair an organization's ability to provide anesthesia services.

Occupational turnover in healthcare is associated with significant financial costs. Research has shown that turnover in healthcare can account for 3-6% of a hospital's annual budget[5]. At the individual employee level, turnover cost estimates range from one to two times the employee's annual salary[6]. Based on these estimates, the financial cost of CRNA turnover to healthcare organizations is potentially in the millions of dollars.

Evidence suggests that turnover in healthcare, and resultant staffing shortages, are associated with an increase in errors and mortality, as well as a decrease in quality outcomes and patient safety[7]. Given the impact of CRNA turnover on access to anesthesia services, costs, and decrement to quality of care and patient safety, research in this focus area is needed to ensure sustainable access to anesthesia services in the U.S.

This study is the beginning of a research agenda focused on the creation of a measurement that quantifies CRNA attrition risk. To begin this body of research, establishing

content validity for measurement items associated with CRNA turnover content domains is the first step.

Definition of Occupational Turnover and Turnover Intention

A variety of terms are used in the literature to describe an employee voluntarily choosing to end their employment relationship with an employer. Terms like quitting[8], organizational withdrawal[9], and turnover[10] are commonly used to describe this behavior. The Oxford English Dictionary[11] defines turnover as, "the rate at which employees leave a workforce and are replaced." The term occupational turnover was selected so as not to be confused with turnover, which in healthcare can also refer to productivity measures, or work done within a given time frame. In summary, occupational turnover refers to the voluntary behavior of an employee to withdraw from, or end their employment relationship with, an organization[9]. For the purposes of this research, the terms occupational turnover, turnover, and attrition will be used interchangeably.

Another term important to define is turnover intention. Turnover intention can be defined as the cognitive process associated with turnover but is differentiated from turnover in that turnover is a behavior[10]. Turnover intention, or intent to quit, is often used as a surrogate variable for turnover[12], with evidence suggesting that turnover intention accounts for 9% to 25% of turnover[10].

Contribution of Dissertation to Field

This dissertation study will address gaps in the literature related to understanding and predicting turnover and turnover intention for CRNAs. Specifically, this study will begin the process of developing a measurement towards this purpose. Even though scales have been developed or adapted to address workforce issues amongst CRNAs[13,14,15], validation for these

instruments has not been demonstrated. In order to address this gap, establishing content validity for items associated with CRNA turnover will allow for future research addressing construct and criterion validity for measures or instruments based on this study. The long-term goal for this line of research is to develop and validate a measurement tool, specific to CRNAs, that quantifies turnover intention (or attrition risk), while also providing practical information on what the primary drivers of turnover are.

Purpose Statement

The primary purpose of this study will be to establish content validity for instrument items developed towards the creation of an index that quantifies occupational turnover risk amongst CRNAs in clinical practice in the U.S. This study will develop an instrument whose purpose is to examine the relationship between the dependent aggregate variable, occupational turnover, and causal indicators (or independent variables) associated with CRNA turnover in the literature. By developing a causal formative measure, future research aimed at validating the index's ability to predict attrition, as well as regression analysis for which indicators are most predictive of turnover, will be possible. The long-term objective of this line of research will be to provide healthcare organizations with a measurement tool that provides actionable data towards interventions aimed at improving CRNA retention.

Aim 1

To develop instrument items that display a significant level of content validity.

Aim 2

Through content expert review, confirm content domains associated with CRNA turnover.

Research Question

Which indicators are valid representations of content domains associated with occupational turnover and turnover intention amongst CRNAs, as determined by statistically significant agreement between a panel of experts using the content validity ratio (CVR) statistical method[16].

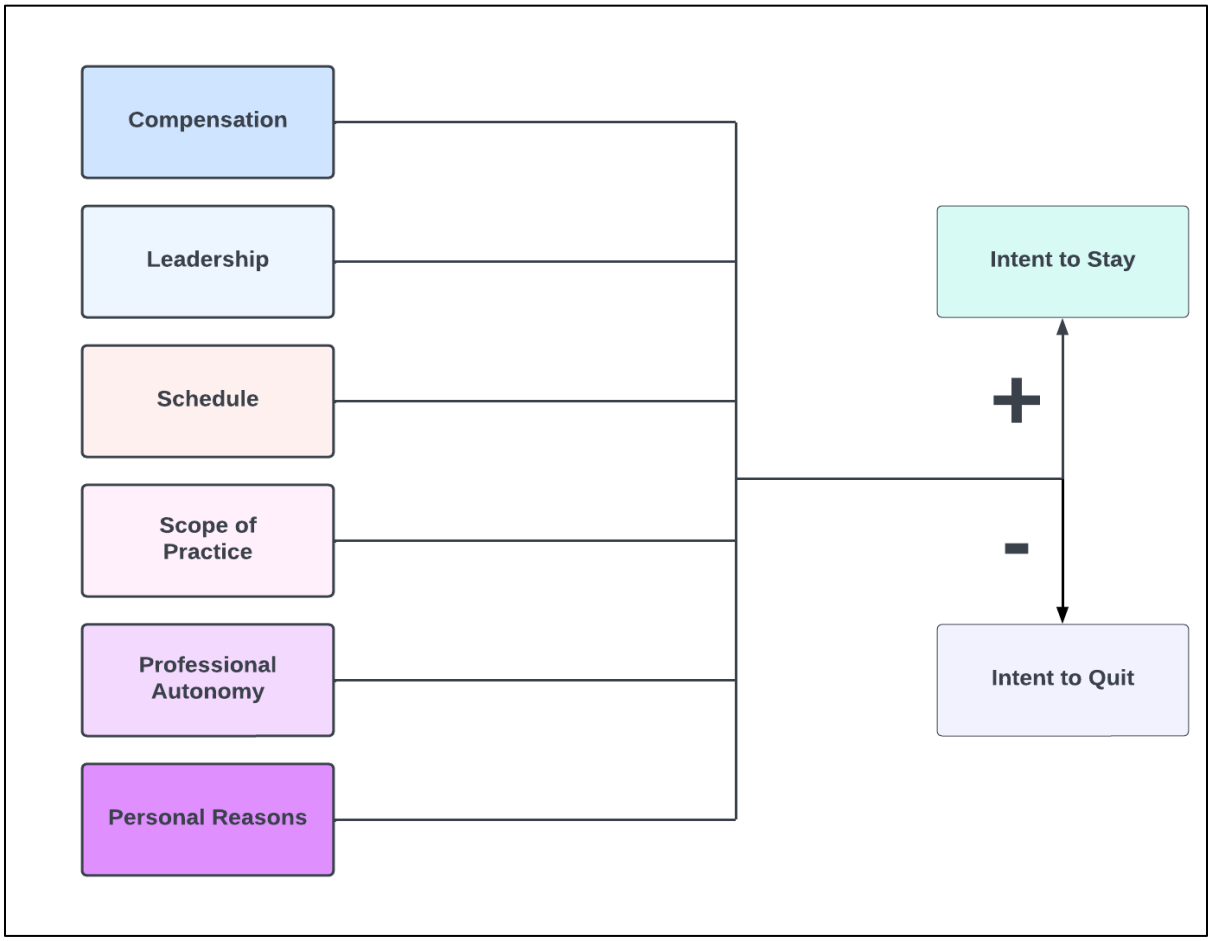
Theoretical Framework

The theoretical framework for this research is the Job Demands-Resources (JDR) model [17,18]. The JDR model posits that every job possesses stressors that can be categorized as "job demands" and "job resources"[18(p312)]. Bakker & Demerouti[18(p312)] describe job demands as, "those physical, psychological, social, or organizational aspects of the job that require sustained physical and/or psychological (cognitive and emotional) effort or skills and are therefore associated with certain physiological and/or psychological costs". Job resources are, "physical, psychological, social, or organizational aspects of the job that are either/or: functional in achieving work goals, reduce job demands and the associated physiological and psychological costs, stimulate personal growth, learning, and development"[18(p312)]. High job demands, when coupled with low job resources, can result in negative employee outcomes in terms of increased burnout, disengagement, and turnover intention[18].

The JDR model was selected as the theoretical framework due to its broad applicability across professions[17]. In the healthcare arena, the JDR model has been supported by research with both physicians[19] and nurses[20], showing that negative employee and organizational outcomes are associated with jobs whose demands outstrip available resources. The flexibility of the model allows for the application of any number of

professional or job specific factors to be analyzed in terms of their impact on turnover (See Figure 1).

Figure 2. Job Demands-Resource Model Applied to Anesthesia



Factors on the left can be categorized as resources or demands. The sum of demands and resources influences turnover intention.

Further support for the JDR model is found in research identifying work-life fit conflict as an outcome of unresolved tension between job demands and resources[19,20]. Bakker et al.[19] reported that partners of medical residents rated work-home interference as significant when their partner's job demands were high, and resources were low. Moloney et al.[20] found that work-life interference resulted in high levels of burnout and was one of the strongest predictors of turnover intention in nurses. The findings of these studies corroborate research

showing work-life fit conflict as factoring significantly in CRNAs choosing to quit their jobs[21], supporting the JDR model's ability to account for this factor's influence on turnover.

Literature Overview

The primary finding from review of the literature is that drivers of turnover and turnover intention amongst CRNAs are multifactorial[21,22]. This is supported by research where CRNAs who quit their jobs provided an average of three reasons for quitting[23].

Another finding from review of the literature is that concepts often associated with turnover are broad and share significant overlap. For example, job satisfaction and burnout are concepts frequently associated with turnover[6,24]. The overlap between job satisfaction and burnout results in differentiating each's independent contribution to turnover challenging. To illustrate this, consider that burnout has been attributed to job demands that outstrip resources available to the employee to meet those demands, leading to turnover[18]. However, job demands that outstrip resources available to workers can also lead to a decrease in job satisfaction[25], which in turn leads to turnover. The vague boundaries between these concepts, and their unique relationship with turnover, is a suggested area for future research.

Several gaps in the literature were identified through the review process. First and foremost is that data specific to CRNA turnover is limited. Based on data obtained in 2017, Dexter et al.[23] indicate that yearly turnover amongst CRNAs averages 14%, with turnover intention averaging 38%. To the author's knowledge, data on CRNA turnover and/or turnover intention since the COVID-19 pandemic has yet to be published. The cost of CRNA turnover is also an area where further research is needed, with most of the literature on this topic referencing findings from research with registered nurses or physicians.

Another gap in the literature relates to the lack of qualitative research on this topic. Given the overall scarcity of research on the topic, qualitative research to provide a rich narrative from which to draw factors associated with turnover would be useful in proving a more complete understanding of factors in CRNAs choosing to quit their jobs. Lambert et al.[21] somewhat address this gap, but the findings are limited by all participants being female. Further qualitative research with male CRNAs is needed to address this limitation.

Instrument Description

The instrument developed for this study can be described as a causal formative measure or index[26]. DeVellis and Thorpe[26(p185)] define a causal formative measure as a set of indicators (or variables) which possess conceptual unity, referring to a "single, coherent concept". The dependent variable, CRNA turnover, is an aggregate variable that reflects the cumulative effects of a host of indicators associated with turnover. Independent variables are described as indicators in that they reflect underlying or latent variables[26].

Justification for development of an index (over other types of measures) is rooted in the nature of the variables included for this study. No single variable is solely responsible for turnover. Because drivers of turnover have been shown to be multifactorial[21,22,23], it can be said that each of these factors aggregate to share a common effect (turnover). Measures, such as a scale, are not appropriate because scale indicators reflect a common cause instead of a common effect (e.g., depression is evidenced by indicators sharing depression as the causal variable)[26]. Another argument in support of creating an index is that common methods of scale validation (e.g., covariance amongst items), are not applicable to turnover. For example, factors associated with turnover such as retirement and job satisfaction may not have any relationship to each other within a department of CRNAs. However, CRNAs within

a given department may be considering leaving the department for those reasons, which aggregated, comprise turnover risk for the department.

Study Variables

Dependent Variable

Occupational turnover is the dependent variable whose cause can be described as an aggregation of multiple independent variables or indicators. For the purposes of this study, *indicator* is used interchangeably with *independent variable*. Of note is that this study is not intended to assess the relationship between the dependent variable and indicators, rather, the purpose is to demonstrate content validity.

Independent Variables

Indicators associated with turnover are derived from review of the literature[22]. These indicators can be said to possess "conceptual unity"[26(p185)]. In the words of DeVellis and Thorpe[26(p185)], "For a set of indicators to possess conceptual unity, all the individual elements must refer to a single, coherent concept". In the context of this study, individual elements such as burnout, job satisfaction, and compensation for example, can be treated as independent variables impacting turnover.

The content domains associated with each indicator have not been uniformly categorized in the literature. Compensation, retirement, job satisfaction, burnout, career advancement, better working conditions, geographic relocation, work-life fit, work intensity, ethical leadership, role ambiguity, role constraints or limited scope of practice, inadequate staffing, work stress, schedule dissatisfaction, interpersonal conflict or differences, physical demands of the job, career change, organizational climate, and relationships with colleagues, such as nurses, physicians, and other organizational stakeholders are examples of reasons

CRNAs have provided for leaving their jobs[21,22,23]. Overlap between some of these reasons, for example work intensity and work stress, can be confusing in terms of actionable data towards intervention. A suggestion for future research is uniform categorization of variables to enhance communicating drivers of turnover for organizational stakeholders.

Reliability and Validity

Because the instrument to be developed for this study is not derived from previous research, data on the reliability and validity of the index is not applicable. However, validity of the methodology for this study will be addressed through demonstrating content validity.

Content validity. Content validity, defined as the completeness with which instrument items represent content domains[26], will be addressed through content expert assessment. Expert evaluation will also lend itself to ensuring conceptual unity between the items[26].

Construct and criterion validity. Based on the purpose of this study, construct and criterion validity are applicable to future stages in this line of research. For example, construct validity, defined as, "the extent to which a measure 'behaves' the way that the construct it purports to measure should behave"[26(p82)], cannot be achieved in the context of this study, which is developmental in nature. For example, to demonstrate construct validity, one would have to show that the product of this instrument correlates with other related constructs. Given the scope of this study, this would be a step for future research. Criterion validity, or predictive validity, also cannot be established at this stage. Validating the predictive ability of the instrument would require a longitudinal research approach to validate.

Reliability. Like construct and criterion validity, reliability cannot be assessed based on the aims of this study. However, because the relationship between reliability and validity requires congruence between the two, validation of the index in future research will address reliability[26].

Statistcal Analysis

The statistical analysis method employed to demonstrate content validity was first described by Lawshe[16]. Lawshe's content validity ratio (CVR) is a quantitative approach to demonstrating content validity for an instrument. The underlying principle for the CVR is that when a majority of an expert panel agrees an item is valid, the item demonstrates significant overlap with the content domain it intends to represent[16]. Lawshe used a three-point scale for experts to rate instrument items[16(p567)]: "essential", "useful but not essential", and "not necessary". To distinguish between chance level of agreement between experts, Lawshe published a table[16] where critical CVR ($CVR_{critical}$) values indicated what proportion of the expert panel needed to agree an item was essential for the level of agreement to be above chance. For this study, Ayre and Scally's[28] research, which reported the statistical method underlying Lawshe's table is used (Table 1, Appendix A).

Methods

To demonstrate content validity, a widely accepted practice is the recruitment of subject matter experts to validate that instrument items display significant overlap with their associated domains[26]. The population content experts were drawn from is CRNAs in active practice in the U.S. Participants in this study consisted of subject matter experts chosen for their experience in the field of nurse anesthesiology, as well expertise in areas relevant to the purpose of this study.

Eligibility Criteria

Eligibility criteria for participation required participants to meet generally accepted qualities of a subject matter expert. Grant and Davis[27] describe content expert qualifications as individuals with the relevant training, clinical experience, academic experience related to the area of inquiry, or expertise in the theoretical framework employed by the study. Operationalizing these areas for this study includes the following.

Relevant Training

Relevant training consisted of CRNAs certified by the National Board of Certification & Recertification of Nurse Anesthetists (NBCRNA).

Clinical Experience

Eligibility criteria related to clinical experience was limited to clinical nurse anesthesia practice within the U.S. Content experts whose inclusion was based on their clinical experience included two subsets: CRNAs with less than 10 years of experience and CRNAs with greater than 10 years of experience. The rationale for including subsets within the clinical experience eligibility criteria is based on recommendations that categorical subsets may be beneficial when dealing with a heterogenous population[27]. Years of experience has been shown to be a differentiating factor in turnover intention for CRNAs, with CRNAs under 10 years of experience reporting higher turnover intention compared to CRNAs with greater than 10 years of experience[6].

Another subset within the clinical experience category was CRNAs with administrative experience. CRNAs who have experience as managers or department chiefs within nurse anesthesia are exposed to the hiring process, as well as interacting with CRNAs voluntarily resigning from their positions. Within this subset, a further stratification would be

CRNAs with executive leadership experience. CRNAs in executive leadership positions may have a broad organizational overview of the CRNA workforce, resulting in a macro perspective from which to approach CRNA turnover.

Academic Experience

Certified registered nurse anesthesiologists in academia, with research interests aligned with this study, were also eligible to participate as content experts. Examples of related interest are CRNA academics with published research in turnover, turnover intention, job satisfaction, burnout, and organizational climate.

Theoretical Framework Expertise

Faculty with research interests related to or inclusive of the JDR model were also eligible for inclusion. Examples of related research are application of the JDR model in the field of nursing or nurse anesthesiology, as well as analysis of the JDR model in the same fields.

Exclusion Criteria

No exclusion criteria were included for this study. Inclusion criteria were mutually exclusive of characteristics that would invalidate participation by a content area expert.

Sample

Based on Lawshe's[16] research on demonstrating content validity, the target sample for this study was up to 30 content experts. Table 1[28] (Appendix A) shows how panel size determines the number of experts required to agree that an item is necessary to reach statistical significance, and thus inclusion in the instrument. The rationale for limiting the expert panel to 30 was made due to diminishing returns in terms of statistical significance

with a larger panel[16,28,29], as well as challenges associated with executing the study with a larger sample.

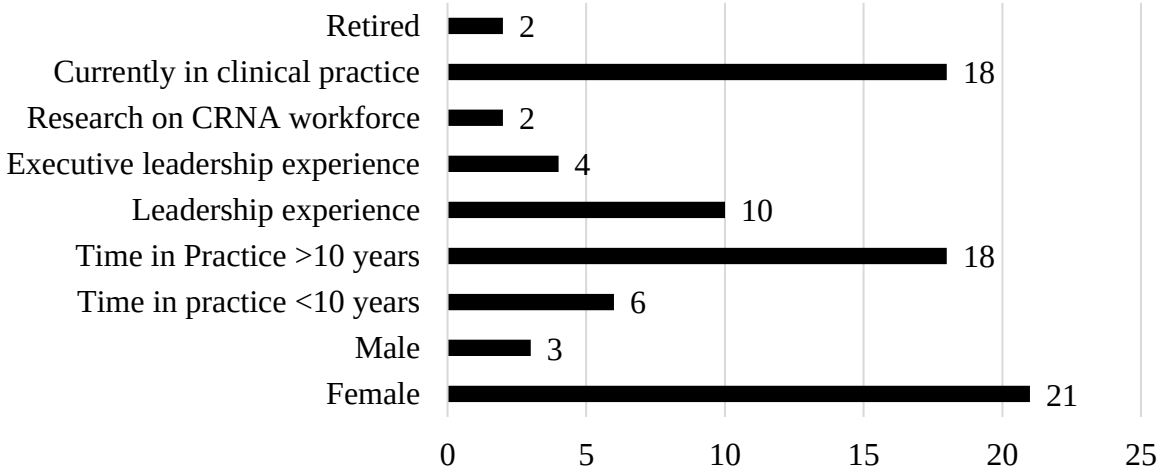
The sample method for this study was a combination of purposive and convenience sampling. The rationale for purposive sampling is expressed by Sarfo et al.[30(p59)] in the following statement, "Researchers often use purposive sampling when they want respondents […] who meet eligibility criteria or may be knowledgeable about the issues under investigation." Given the specificity to CRNAs in the U.S. for this study, purposive selection of expert panelist by the authors was an appropriate means of identifying participants knowledgeable in this area of research. For purposive sampling, participants were drawn from the authors' personal network within the leadership and academic arenas. Participants selected by the authors to participate in the study were chosen based on their experience in executive CRNA leadership, or for academics with research interests in the CRNA workforce. Purposive sampling was chosen to ensure participants in these categories were represented in the sample.

Convenience sampling was used for most participants. Recruitment was conducted via Facebook (Menlo Park, CA), with one generic recruitment notice posted to the *CRNAs and SRNAs* Facebook group[31]. This method of recruitment was chosen due to the number of group members (29,058)[31], all of whom have been verified as either being a CRNA or student registered nurse anesthetists (SRNAs), which represent a significant portion of the CRNA population (61,000)[2]. The recruitment post described the study, participation requirements, as well as inclusion criteria for participation. Any CRNA who met inclusion criteria was eligible to participate. Participants were blinded to who the other participants in the study were. The rationale for blinding participants was related to the CRNA community

being relatively small. With the potential for participants to know each other outside of the study, blinding was implemented to decrease the risk of participant bias based on interacting with other study participants.

A total of 30 CRNAs participated in the first survey, providing qualitative feedback on the content domains. For the second round, 24 CRNAs (of the original 30) participated as content area experts. Three participants were recruited by the authors. Twenty-one participants were recruited via the *CRNAs and SRNAs* Facebook group page. Table 2 lists relevant demographic information for participants.

Table 2. Sample Demographics (n= 24)



Results

Item Development

Items development began with the primary author creating a list of items associated with each content domain drawn from review of the literature[22]. Items were grouped under the following content domains, Compensation (7 items), Working Conditions (33 items), Leadership (15 items), Clinical Practice Environment (7 items), and Personal Reasons (11 items), for a total of 73 items. Some of the content domains had subcategories (Table 3).

The framework used to develop items was based on the process described by DeVellis and Thorpe[26]. Step one was developing items for each content domain, with the initial goal being to ensure all relevant domains were represented. Once the initial item pool was completed, each item was evaluated for clarity (e.g., avoidance of double negatives, double-barreled items, etc.), appropriate reading level, avoidance of bias or leading questions, and structural cohesion[26].

Data Collection

Data collection was done in two steps. The first part of data collection consisted of creating a Qualtrics (Provo, UT) survey with the 73 items. This survey was sent to the expert panel, who were asked to provide qualitative feedback on the items, and to identify if, based on their experience, any content domains were missing. Once each participant had responded to the survey, analysis of the qualitative data resulted in the creation of an additional 85 items, for a total of 158 items (see Table 5 for examples of qualitative feedback provided by participants). The addition of items based on qualitative feedback resulted in the expansion of several of the original categories. Compensation went from 7 items to 16 items. Working Conditions went from 33 items to 71 items. Leadership was expanded from 15 items to 45 items. Clinical Practice Environment went from 7 items to 12 items. Finally, Personal Reasons went from 11 items to 14 items.

Table 5. Examples of Qualitative Feedback

"There is little focus on experience pay where I work, and in fact, new grads make nearly what I make and I've been there for 21 years. So, I would say... 'Lack of adequate compensation for experience,' or something like that."
"Is it possible to add a question about value-based compensation? For example, CRNAs that do more challenging work, take care of sicker patients, are compensated with a bonus based on RVU."
"Job demands could be broken down into additional questions. Not having support staff for turnover or stocking of the cart is something specific to call out from having necessary supplies."
"Workplace culture. A spiraling workplace culture leads to people leaving."
"[Add] suffocating micromanagement by MD anesthesiologists in care team setting."
"Anesthesia assistants should be somewhere in the survey in terms of how they might contribute to a negative practice environment."

The approach to adding items was based on the chosen statistical analysis method for this study. Lawshe's[16] content validity ratio (CVR) method is based on a statistically significant percentage of an expert panel agreeing an item is valid. As such, any qualitative feedback suggesting a missing item or content domain was included to eliminate researcher bias by subjective selection of qualitative feedback to incorporate into the survey.

Stage 2 of data collection consisted of sending a second Qualtrics (Provost, UT) survey, with 158 items. Participants were asked to rate each item as *Essential*, *Useful but not essential*, or *Not essential*. Once all 24 participants had completed the second survey, data collection ended.

Of the 158 items evaluated by the expert panel, 49 items met criteria for inclusion in the instrument (Appendix C, Table 4). Based on the panel size (n = 24), 17 members of the panel had to agree an item was "essential" for inclusion in the instrument (or 70.8% of the

panel)[28]. Categorical changes in the number of items resulted in the following changes. Compensation went from 16 items to 6 items. Working Conditions went from 71 items to 21 items. Leadership was reduced from 45 items to 6 items. Clinical Practice Environment went from 12 items to 7 items. Finally, no items in the Personal Reasons category met criteria for inclusion (see Table 3 for content domains and associated number of items, Appendix B).

Discussion

The primary purpose of this study was to establish content validity for items developed towards an instrument quantifying attrition risk for CRNAs in the U.S. Utilizing the CVR method developed by Lawshe[16], 49 items demonstrated content validity through statistically significant agreement between content experts. The 49 items also aligned with the content domains associated with CRNA turnover described in the literature[22] (Table 3).

Qualitative feedback by participants resulted in the addition of four subcategories to the content domain list. The subcategories added were Safety & Quality, Nursing Leadership, Physician Anesthesiologist Leadership, and Operating Room Leadership. Interestingly, only items associated with Physician Anesthesiologist Leadership and Safety and Quality displayed significant content validity, with no items associated with Nursing Leadership and Operating Room Leadership being retained. This may suggest the lack of influence leaders in these categories may have on CRNA turnover intention for a majority participants in this study. Further research may be helpful in determining how many CRNAs indicate that nursing or operating room leadership impact their jobs to the degree that turnover intention is affected.

Another interesting observation in the data is differences in participant responses based on years of experience. In analyzing responses between CRNAs with less than ten

years of experience compared to CRNAs with more than ten years of experience and applying the CVR method for significant agreement beyond chance, differences were noted in certain content domains. For example, in the Working Conditions, Schedule subcategory, CRNAs with less than ten years of experience rated more items related to schedule as essential compared to CRNAs with more than ten years of experience. Another example is CRNAs with less than ten years of experience rating every item related to the CRNA Leadership subcategory as essential, compared to CRNAs with more than ten years of experience listing less than half of those items as essential. Significant analysis in this regard is not possible as there were fewer participants with less than ten years of experience (n=6) compared to CRNAs with greater than ten years of experience (n=18). However, these data suggest that significant differences may exist between CRNAs when it comes to turnover intention based on years in practice. This data also supports prior research[6] indicating differences in turnover and turnover intention based on years in practice for CRNAs.

Implications for Research and Practice

Results from this study indicate that piloting this instrument with CRNAs in practice would be useful. Piloting these items with CRNAs would allow for a more rigorous look at potential differences in drivers of turnover intention between CRNAs based on years of experience. Construct validity could also be explored in a pilot study, with CRNAs taking validated scales related to constructs such as burnout, job satisfaction, and turnover intention (for example), to determine if covariance among related constructs is present in these items. Piloting these items would also allow for the development of an index scoring system that provides data helpful in quantifying attrition risk.

Long term, the implications for research are the development of an index quantifying attrition risk that could then be validated in a longitudinal study. Index scores indicating high risk for quitting could be compared to individual CRNAs quitting their jobs, over multiple years, to determine the criterion validity of the measurement. Longitudinal data related to turnover would also allow for multiple regression analyses to determine which items are most predictive of CRNA turnover.

Another suggestion for future research is the standardization of content domain categories. Overlap between categories in this study, for example work-life fit and schedule, increases the risk for confusion or duplication of items, as well as increasing the risk for overrepresentation of certain factors based on this overlap. Research aimed at the definition and structure of content domains associated with CRNA turnover would be useful in comparing and communicating research in this area.

Practice implications from this study are largely confirmatory in nature. The items retained in this study confirm that CRNA dissatisfaction with compensation, working conditions, leadership, and the clinical practice environment are important drivers of turnover and turnover intention in this population. Anecdotal evidence related to differences in primary factors of turnover between CRNAs based on years of experience also indicates that different approaches to retention may be important.

Limitations

There are several limitations to this work. First, most participants were female (female = 21; male = 3). Although this is not uncommon in research of this nature, with studies finding that females are more likely to participate in online research compared to males[32], confidence that the content domains and retained items are representative of male

CRNAs is limited. Using Facebook as a recruitment tool is also a limitation, with evidence that females are more likely to be Facebook users compared to males[33]. Finally, lack of a standard categorization method for content domains associated with CRNA turnover limits the findings due to potential overlap between content domains and their associated items.

Conclusion

This research provides a foundation for creating an index that quantifies CRNA attrition risk, while also providing data on the primary drivers of turnover intention. Forty-nine items displayed statistically significant content validity and would be useful in a measure quantifying CRNA turnover risk. Further research is needed to establish criterion and construct validity for a measure employing items from this study. Limitations associated with this research are related to most participants being female, as well as a lack of agreement on how to categorize content domains associated with CRNA turnover.

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Appendix A

Table 1. Panel Size for Content Validity Ratio Calculation

Table 1. $CVR_{critical}$ One-Tailed Test ($\alpha = .05$) Based on Exact Binomial Probabilities.

N (Panel Size)	Proportion Agreeing Essential	$CVR_{Critical}$ Exact Values	One-Sided *p* Value	$N_{critical}$ (Minimum Number of Experts Required to Agree Item Essential)—Ayre and Scally, This Article	$N_{critical}$ Calculated From CRITBINOM Function—Wilson et al. (2012)
5	1	1.00	.031	5	4
6	1	1.00	.016	6	5
7	1	1.00	.008	7	6
8	.875	.750	.035	7	6
9	.889	.778	.020	8	7
10	.900	.800	.011	9	8
11	.818	.636	.033	9	8
12	.833	.667	.019	10	9
13	.769	.538	.046	10	9
14	.786	.571	.029	11	10
15	.800	.600	.018	12	11
16	.750	.500	.038	12	11
17	.765	.529	.025	13	12
18	.722	.444	.048	13	12
19	.737	.474	.032	14	13
20	.750	.500	.021	15	14
21	.714	.429	.039	15	14
22	.727	.455	.026	16	15
23	.696	.391	.047	16	15
24	.708	.417	.032	17	16
25	.720	.440	.022	18	17
26	.692	.385	.038	18	17
27	.704	.407	.026	19	18
28	.679	.357	.044	19	18
29	.690	.379	.031	20	19
30	.667	.333	.049	20	19
31	.677	.355	.035	21	20
32	.688	.375	.025	22	21
33	.667	.333	.040	22	21
34	.676	.353	.029	23	22
35	.657	.314	.045	23	22
36	.667	.333	.033	24	23
37	.649	.297	.049	24	23
38	.658	.316	.036	25	24
39	.667	.333	.027	26	25
40	.650	.300	.040	26	25

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Appendix B

Table 3. Content Domains & Item Development

Content Domain	Subcategories	Survey 1 Items	Survey 2 Items	Items Retained
Compensation				
	Pay/Benefits	2	7	4
	Retention Pay	5	9	2
Working Conditions				
	Job Demands	9	18	4
	Work Environment	8	10	4
	Schedule	8	11	5
	Work-Life Fit	3	3	0
	Interpersonal Dynamics	5	19	6
	Safety & Quality	0	10	2
Leadership				
	Administration	6	10	3
	CRNA Leadership	9	13	8
	Nursing Leadership	0	8	0
	Physician Anesthesiologist Leadership	0	8	4
	Operating Room Leadership	0	6	0
Clinical Practice Environment		7	12	7
Personal Reasons		11	14	0
Total Number of Items		73	158	49

Appendix C

Table 4. Content Validity for Items Associated with CRNA Turnover

	Number Agreeing Essential	Percentage Agreeing Essential
Compensation: Base Salary & Benefits		
My base salary or hourly rate	21*	87.50%
My job not paying overtime for hours worked over 40 in a work week	19*	79.17%
The inability to work overtime to make extra money at my job	10	41.67%
My health benefits	14	58.33%
The lack of guaranteed hours, resulting in too few hours worked	17*	70.83%
The amount of vacation time provided by my employer	20*	83.33%
The amount of continuing medical education (CME) provided by my employer	7	29.17%
Compensation: Retention Compensation		
Sign-on bonuses offered elsewhere in the market	12	50.00%
Lack of scheduled raises	16	66.67%
Lack of retention bonuses or pay	16	66.67%
Lack of cost of living raises	13	54.17%
Lack of salary market adjustments	19*	79.17%
Lack of adequate compensation for years of experience	12	50.00%
Lack of compensation for specialty or high acuity anesthesia (e.g., cardiac, transplant, etc.)	11	45.83%
Lack of adequate compensation for call/nights/weekend/holidays	20*	83.33%
Lack of physician associated perks (e.g., paid parking, provided meals, access to physician lounge, etc.)	9	37.50%

Working Conditions: Job Demands	Number Agreeing Essential	Percentage Agreeing Essential
An unreasonable workload	16	66.67%
Chronic pressure to work overtime	15	62.50%
The requirement to work nights	17*	70.83%
The requirement to work weekends	14	58.33%
The requirement to work call	17*	70.83%
The requirement to work holidays	12	50.00%
Lack of routine breaks (food/bathroom)	14	58.33%
Shift-end variability, resulting in me routinely working long hours	19*	79.17%
Chronic lack of available relief at shift end is factor in me	18*	75.00%
Pressure to move fast and turnover cases quickly	6	25.00%
Pressure to accept add-ons	5	20.83%
Pressure to do cases I would prefer to delay or cancel	16	66.67%
Routine lack of downtime during my shift	0	0.00%
The physical demands of my job	5	20.83%
Lack of support staff (e.g., for turnover, stocking carts, etc.) at work	9	37.50%
Lack of adequate supplies at work	16	66.67%
Lack of equipment to do my job	16	66.67%
Lack of protective personal equipment (PPE) is a factor in me	15	62.50%

Working Conditions: Work Environment	Number Agreeing Essential	Percentage Agreeing Essential
The culture at work is a factor in me	19*	79.17%
A chronically stressful work environment	15	62.50%
Frequently feeling anxious at work	9	37.50%
Patient acuity at work	10	41.67%
Working non-stop, all day long	6	25.00%
My job posing a risk to my personal health	17*	70.83%
Vaccine requirements at work	4	16.67%
My job posing a risk to my family's health	4	16.67%
Feeling burnt out at work	17*	70.83%
Low job satisfaction	18*	75.00%

Working Conditions: Schedule		
My schedule	20*	83.33%
Working too many hours per week	14	58.33%
Lack of scheduling flexibility	17*	70.83%
Lack of flexibility in finding someone to cover my shift(s)	13	54.17%
Inability to find shift coverage	12	50.00%
Inability to get time off	20*	83.33%
Inability to use personal days/paid time off/vacation when desired	20*	83.33%
Not having a guaranteed out time each day	12	50.00%
Insufficient time off around holidays	6	25.00%
Unequal distribution of call/night/weekend/holidays shifts between CRNAs	16	66.67%
My schedule being different than I expected when I accepted this position	19*	79.17%

Working Conditions: Work-Life Fit	Number Agreeing Essential	Percentage Agreeing Essential
Work interfering with my personal life	15	62.50%
Work-related stress negatively impacting my personal life	14	58.33%
My commute	8	33.33%
Working Conditions: Interpersonal Dynamics		
Negative interactions with CRNAs at work	15	62.50%
Lack of collaboration between CRNAs at work	14	58.33%
Negative interactions with physician anesthesiologists (MDAs) at work	18*	75.00%
Negative interactions with physician surgeons or proceduralists at work	16	66.67%
Negative interactions with registered nurses (RNs)at work	10	41.67%
Negative interactions with ancillary staff at work	8	33.33%
Negative interactions with anesthesia assistants (AAs) at work	11	45.83%
Negative interactions with CRNA leadership at work	21*	87.50%
Negative interactions with physician anesthesiologist (MDA) leadership at work	19*	79.17%
Negative interactions with physician leadership (MDA) at work	16	66.67%
Negative interactions with nursing leadership at work	12	50.00%
Negative interactions with hospital administration at work	11	45.83%
Lack of communication between healthcare professionals at work	11	45.83%
Lack of respectful communication between healthcare professionals at work	17*	70.83%
Lack of collaboration between healthcare professionals at work	15	62.50%
Lack of professional respect from registered nurses (RNs) at work	9	37.50%
Lack of professional respect from anesthesia assistants (AAs) at work	8	33.33%
Lack of professional respect from physician anesthesiologists (MDAs) at work	17*	70.83%
Lack of professional respect from surgeons and proceduralists at work	17*	70.83%

Working Conditions: Safety & Quality	Number Agreeing Essential	Percentage Agreeing Essential
The safety environment at work	17*	70.83%
The quality of care delivered at my job	20*	83.33%
The approach to diversion detection and prevention at work	7	29.17%
My competence at delivering anesthesia at work	16	66.67%
The clinical competence of my CRNA colleagues at work	11	45.83%
The clinical competence of my anesthesiologist assistant (AA) colleagues at work	7	29.17%
The clinical competence of my physician anesthesiologist (MDA) colleagues at work	14	58.33%
The clinical competence of my registered nurse (RN) colleagues at work	8	33.33%
The clinical competence of surgeons and proceduralists at work	16	66.67%
The competence of ancillary staff at work	7	29.17%
Leadership: Administration		
The quality of administration at work	8	33.33%
The level of value administrators express towards CRNAs at work	13	54.17%
The level of professional respect administrators express towards CRNAs at work	14	58.33%
Administration's level of support for CRNAs at work	18*	75.00%
Administration's level of communication with CRNAs at work	10	41.67%
Administration's level of collaboration with CRNAs at work	10	41.67%
Administration's ability to effectively solve problems at work	12	50.00%
Administration's approach to inadequate staffing	18*	75.00%
Administration's understanding of the CRNA role in anesthesia services	18*	75.00%
Administration treating physician anesthesiologists (MDAs) better than CRNAs at work	11	45.83%

Leadership: CRNA Leadership	Number Agreeing Essential	Percentage Agreeing Essential
The level of support I feel from CRNA leadership	20*	83.33%
The level of value CRNA leadership expresses for staff CRNAs	21*	87.50%
The quality of CRNA leadership at my job	19*	79.17%
CRNA leadership's approach to asking CRNAs to stay past their shift	12	50.00%
CRNA leadership's level of appreciation for my contribution to the team	16	66.67%
CRNA leadership's level of respect for staff CRNAs	21*	87.50%
CRNA leadership's ability to provide timely and constructive feedback on my performance	13	54.17%
My level of satisfaction with CRNA leadership at my job	17*	70.83%
CRNA leadership's attitude towards staff CRNAs	20*	83.33%
CRNA leadership's level of communication	17*	70.83%
The level of transparency from CRNA leadership	17*	70.83%
Favoritism by CRNA leadership	14	58.33%
CRNA leadership's ability to effectively solve problems at work	15	62.50%
Leadership: Nursing Leadership		
The quality of nursing leadership at work	4	16.67%
The level of value nursing leadership expresses towards CRNAs at work	8	33.33%
The level of professional respect nursing leadership expresses towards CRNAs at work	15	62.50%
Nursing leadership's level of support for CRNAs at work i	11	45.83%
Nursing leadership's level of communication with CRNAs at work	8	33.33%
Nursing leadership's level of collaboration with CRNAs at work	8	33.33%
Nursing leadership's ability to effectively solve problems at work	7	29.17%
Nursing leadership's understanding of the CRNA role in anesthesia services	14	58.33%

Leadership: Physician Anesthesiologist Leadership	Number Agreeing Essential	Percentage Agreeing Essential
The quality of physician anesthesiologist (MDA) leadership at work	13	54.17%
The level of value MDA leadership expresses towards CRNAs at work	14	58.33%
The level of professional respect MDA leadership expresses towards CRNAs at work	18*	75.00%
MDA leadership's level of support for CRNAs at work	17*	70.83%
MDA leadership's level of communication with CRNAs at work	17*	70.83%
MDA leadership's level of collaboration with CRNAs at work	19*	79.17%
MDA leadership's ability to effectively solve problems at work	12	50.00%
MDA leadership's understanding of the CRNA role in anesthesia services	16	66.67%
Leadership: Operating Room Leadership		
The quality of OR leadership at work	8	33.33%
OR leadership's level of communication with CRNAs at work	11	45.83%
OR leadership's level of collaboration with CRNAs at work	14	58.33%
OR leadership's ability to effectively solve problems at work	9	37.50%
OR leadership's understanding of the CRNA role in anesthesia services	15	62.50%
OR leadership's ability to effectively manage workflow in the OR	14	58.33%

Clinical Practice Environment	Number Agreeing Essential	Percentage Agreeing Essential
The level of practice autonomy at work	17*	70.83%
Anesthesia assistants (AAs) at work	17*	70.83%
My scope of practice at work	18*	75.00%
The way roles are defined between types of anesthesia providers at work	15	62.50%
My ability to be involved in technical skills at work (e.g., line placement, regional anesthesia, etc.)	17*	70.83%
The patient population (e.g., specialty anesthesia like obstetrics or pediatrics, patient acuity level, insured versus self-pay, etc.) at work	15	62.50%
Responsibility for tasks that fall outside of anesthesia (e.g., labeling specimens, ensuring unrelated paperwork is completed, etc.) at work	7	29.17%
Micromanagement by MDAs at work	19*	79.17%
Incivility from MDAs during delivery of anesthesia	19*	79.17%
Incivility from surgeons or proceduralist during delivery of anesthesia	20*	83.33%
Incivility from RNs during delivery of anesthesia	14	58.33%
Chronically being short staffed	16	66.67%

Personal Reasons	Number Agreeing Essential	Percentage Agreeing Essential
My partner's current employment status	4	16.67%
My ability to further my education (e.g., DNP, PhD, MBA, etc.)	3	12.50%
My geographic location (e.g., neighborhood, city, state, etc.)	13	54.17%
Cost of living	12	50.00%
My proximity to family	10	41.67%
Childcare options that facilitate me working	4	16.67%
Pet care options that facilitate me working	1	4.17%
Housing options that facilitate me working	7	29.17%
My current health status	10	41.67%
Advancement opportunities at work	7	29.17%
Career advancement opportunities elsewhere	8	33.33%
Changing careers (e.g., going into education, leaving clinical to do consulting, etc.)	3	12.50%
Wanting to experience a new work environment (e.g., obstetrics, pediatrics, travel locums, etc.)	10	41.67%
Retirement	15	62.50%

* Indicates statistically significant result ($\alpha = .05$)

Chapter V: Conclusion

The purpose of this line of research was to explore certified registered nurse anesthesiologist (CRNA) turnover and turnover intention. Gaps in the literature, or gaps identified by this research, were drivers of the dissertation study aimed at establishing content validity for items associated with CRNA turnover. This line of research adds to the existing body of knowledge on this topic, as well as providing implications for research and practice.

Manuscript 1 (Chapter 2)[1] is a scoping review identifying reasons CRNAs provide for quitting their job. This research addressed an absence of literature reviews on CRNA turnover in the nurse anesthesia specialty. Findings from this literature review identified compensation, retirement, job satisfaction, and burnout as common reasons between studies for CRNA turnover. The contribution of this research is the summary of reasons provided in the literature for CRNA turnover, as well as identification of associated content domains.

Manuscript 2 (Chapter 3)[2] is a qualitative study exploring the lived experience of CRNAs voluntarily choosing to end their relationship with an employer. This study addressed the absence of qualitative research on CRNA turnover in the literature. The significance of this research was the identification of the importance of work-life fit as content domain related to turnover, as well as confirming content domains identified in Manuscript 1[1].

Manuscript 3 (Chapter 4) is a study conducted to establish content validity for measurement items associated with CRNA turnover. Conducting this research addressed a gap in the literature related to an absence of validated measurements related to turnover amongst CRNAs. The significance of this study is that content validity was established for

retained items, which provides a foundation towards the creation and validation of an instrument quantifying CRNA turnover risk.

Research Summary

Synthesizing the research conducted for this dissertation identified similarities and differences in the findings. Similarities between the manuscripts were related to confirming content domains associated with CRNA turnover (Figure 1). Differences in the findings relate to the categorization of reasons CRNA provide for quitting a job, as well as the importance of work-life fit and the impact of COVID-19 on the unprecedented rate of turnover amongst healthcare providers after the acute phase of the pandemic[3].

The primary similarity between findings from the three manuscripts were the reasons CRNAs provide for quitting a job. The broad categories of compensation, working conditions, leadership, and clinical practice environment were represented in each of the three manuscripts' findings. Another similarity between Manuscript 2 and 3 was the overrepresentation of females in study participants. While majority female participation is common for research relying on online recruitment[4,5], further research targeting equity in male participants is needed to address this gap. Finally, a similarity between results was the indication that years of experience impacts primary determinants of turnover for CRNAs. While this research confirms prior work identifying reasons CRNAs quit a job, it also identifies dissimilarities.

Findings that were not congruent between manuscripts center on retirement and work-life fit not being represented in retained items in Manuscript 3. Retirement was listed as a reason CRNAs provide for leaving a job in several studies identified in review of the literature review[1]. However, in Manuscript 3, the one item related to retirement did not reach

statistically significant agreement between content experts to demonstrate content validity. Possible explanations for this discrepancy may be that only two participants identified as being retired. Another possible explanation is that differences between CRNAs with greater than and less than ten years of experience in nurse anesthesiology resulted in this outcome. For example, 12 out of 18 (66.7%) participants in this study with greater than ten years of experience rated the item on retirement as essential, while only three out of 6 (50%) participants with less than ten years of experience listed it as essential. Combined, the level of agreement reached 62.5% of the expert panel, where 70.8% was required for statistical significance based on Lawshe's[6] content validity ration (CVR) method. While this finding is congruent with research indicating differences in turnover intention between CRNAs based on years of experience[7], further research is needed understand these differences.

Work-life fit was another dissimilarity in the findings. One of the biggest findings from the qualitative study[2] was the impact of poor work-life fit in CRNAs choosing to leave their job. However, none of the items related to the *Personal* content domain category in Manuscript 3 demonstrated significant content validity. This difference may again be explained by the composition of the content panel. It is possible that individual items, for example, geographic location, were meaningful to some participants in terms of choosing to leave a job, while not important for others. Interestingly, items related to work schedule, in terms of schedule flexibility and ability to use time off, categorized in Manuscript 3 under the *Working Conditions: Schedule* subcategory, displayed significant content validity, with five items being retained. This may indicate that work schedule interference with life outside of work is an important factor in CRNAs choosing to quit their job, and perhaps categorizing the schedule content domain differently may help in ameliorating this discrepancy.

Implications for Research

Several suggestions for future research are products of this body of work. Research into reasons why male CRNAs choose to quit their jobs, differences in primary drivers of turnover based on years of experience, and expert agreement on content domain categories are future directions for research based on these data.

Male participants were underrepresented in Manuscripts 2[2] and 3. No males participated in the qualitative study[2], and only three of the 24 participants in the content validity study (Manuscript 3) were male. Low male participation limits the ability to transfer these findings to the male CRNA population. Duplicating the qualitative study with male CRNAs is a suggestion to address this limitation. A secondary suggestion would be to pilot an instrument using items demonstrating significant content validity from the third manuscript, with a representative number of male participants. This would allow comparison based on sex, to determine if there are significant differences in drivers of attrition.

Although anecdotal, data from Manuscript 3 supports differences between CRNAs based on years of experience, in terms of primary drivers of turnover. The current work could be expanded by reproducing the content validity study with separate and equitable groups of CRNAs in terms of years of experience. Research along these lines may help clarify the differences in turnover factors between CRNAs with less than ten years of experience and those with greater than ten years of experience.

Finally, categorization of content domains is a suggestion for future research. Lack of agreement in the literature on how to categorize reasons for CRNA quitting resulted in ambiguity between categories in all three manuscripts. The importance of generating a set of categories from which to base content domains is that it might help establish boundaries

between categories, as well as provide a more intuitive way for future research to approach what can sometimes be a long and detailed lists of turnover factors[e.g., 1,8].

Implications for Practice

There are multiple suggestions for how the findings in this research can be translated to practice. Compensation, as an important driver of turnover and turnover intention, is confirmed by this research. Ensuring competitive pay compared to the local market, the importance of retention compensation in the form of performance raises or market adjustments, and adequate pay for after-hours work are suggestions for leaders looking to retain CRNAs.

The importance of CRNA leadership was identified in manuscripts 2^2 and 3. Items related to CRNA leadership's level of support, respect for, level of communication, and level of transparency with staff CRNAs were all statistically significant items in the *Leadership* content domain. These data indicate that CRNAs value quality CRNA leadership, and that without it, turnover and turnover intention may increase.

Work schedules were another important factor in this research. Certified registered nurse anesthetists in manuscript 2^2 and 3 identified the importance of their schedule in choosing to quit a job. Items associated with schedule, for example schedule flexibility, ability to get time off, and schedule differing from expectations were all identified by CRNAs as being important drivers of turnover. This may indicate that efforts to align CRNA work schedules with needs outside of work may be useful in decreasing CRNA turnover.

Incivility in the workplace is another implication for practice. Negative interactions with leadership, both physician and CRNA, as well as with surgeons or proceduralists, were

listed as important drivers of turnover in this research. Ensuring a workplace environment and culture free of incivility may be useful in retaining CRNAs.

Finally, the clinical practice environment was identified as an important category in terms of CRNA attrition. Scope of practice, ability to participate in technical skills, micromanagement from physician anesthesiologists (MDAs), and practice autonomy were factors in the clinical practice domain that were listed as important for CRNAs in terms of turnover. Efforts to ensure well defined roles in anesthesia care team (ACT) environments, where physician and nurse anesthesiologists work together to deliver anesthesia care, where both types of providers feel their role in anesthesia delivery is valued, may be useful in retention of CRNAs.

Figure 1 categorizes content domains in order of number of retained items, with items listed in order of number of participants rating the item as essential. This organization is intended to provide directionality in terms of items considered most important by participants in the study. While representing the data in this way is not intended to assert significance, visualizing the results in this way paints a picture of the milieu in which CRNAs choose to quit a job.

Conclusion

This dissertation combines research over three manuscripts to paint a picture of the factors driving occupational turnover for CRNAs. While further research is needed to translate these findings into practice, this work provides a roadmap for expanding this body of knowledge. Implications for practice suggest that compensation, leadership, working conditions, and clinical practice environment are important factors in CRNAs choosing to quit their jobs.

Figure 1. Summary of Content Domains and Associated Indicators for CRNA Turnover

Working Conditions (21)	Leadership (15)	Compensation (6)	Clinical Practice (7)
Interpersonal Dynamics	CRNA Leadership	Salary & Benefits	Clinical Practice
1. Negative interactions with CRNA leadership (21) 2. Negative interactions with MDA leadership (19) 3. Negative interactions with MDAs (18) 4. Lack of respectful communication (17) 5. Lack of professional respect from MDAs (17) 6. Lack of professional respect from surgeons and/or proceduralists (17)	1. Level of value for staff (21) 2. Level of respect for staff (21) 3. Level of support for staff (20) 4. Leadership attitude toward staff (20) 5. Quality of CRNA leadership (19) 6. Level of satisfaction with leadership (17) 7. Level of communication with staff (17) 8. Level of transparency with staff (17)	1. Competitive salary/hourly rate (21) 2. Amount of vacation time (20) 3. Overtime pay for hours > 40/week (19) 4. Guaranteed hours (17)	1. Incivility from surgeons and/or proceduralists during delivery of anesthesia (20) 2. Micromanagement by MDAs (19) 3. Incivility by MDAs during delivery of anesthesia (19) 4. Scope of practice (18) 5. Practice autonomy (17) 6. Anesthesia assistants (17) 7. Ability to participate in technical skills (17)
Schedule	MDA Leadership	Retention Pay	
1. My schedule (20) 2. Inability to get time off (20) 3. Inability to use time off when desired (20) 4. My schedule differing from expectations (19) 5. Lack of schedule flexibility (17)	1. Level of collaboration with CRNAs (19) 2. Level of professional respect for CRNAs (18) 3. Level of support for CRNAs (17) 4. Level of communication with CRNAs (17)	1. Competitive differential pay for nights, weekends, and holidays (20) 2. Salary market adjustments (19)	
Job Demands	Administration		
1. Shift-end variability (19) 2. Chronic lack of relief (18) 3. Requirement to work nights (17) 4. Requirement to work call (17)	1. Level of support for CRNAs (18) 2. Approach to inadequate staffing (18) 3. Understanding CRNA role in anesthesia services (18)		
Work Environment			
1. Work culture (19) 2. Job satisfaction (18) 3. Job risks to health (17) 4. Burnout (17)			
Safety & Quality			
1. Quality of care (20) 2. Safety environment (17)			

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