Barriers to the Publication of Scientific Literature by Academic Certified Registered Nurse Anesthetists

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"Every prudent man acts out of knowledge." Proverbs 13:15

This is dedicated to my family. My wife Dianne gave me her loving support during this busy time. Katie, the oldest, spent time corralling the smaller children out of my office while I spent hours on the work at hand. Tessa and Ethan who attempted to see what "daddy" was doing in his office. Last, but by no means least, little Treu who could not resist hitting the computer keyboard, while on my lap, as I typed away. Each of you is dear to my heart and loved. May your patience during this time of 'dabbling' in higher education benefit the entire family in the future.

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Abstract

Nurse anesthesia is the oldest advanced practice nursing specialty. Nurse anesthetists were authors of scholarly articles from the very beginning of the profession. In the past two scholarly journals failed, in part, due to a lack of submissions. A qualitative study, utilizing a descriptive design with content analysis, was undertaken to identify barriers to the publication of scientific literature by academic Certified Registered Nurse Anesthetists (CRNAs). Additional information included identification of strategies to reduce barriers, rewards associated with publication, and effects of barriers on professional development.

Fifteen academic CRNAs were interviewed. Interviews were recorded and verbatim transcripts were generated. Transcripts were analyzed using descriptive qualitative analysis techniques.

Barriers to the publication of scientific literature included time, institutional, preparation, motivation, limited outlets for dissemination, and mentorship. Strategies to diminish barriers included adequate education, time, mentorship, professional support, institutional, and motivation. Effects on professional development were dependent upon institutional expectations. If writing for publication is an expectation, barriers can effect promotion and opportunities, dissemination of knowledge, and professional prestige. If not an expectation, it may limit future opportunities in academia, professional prestige, and self esteem. Rewards of publishing in the scientific literature included dissemination of knowledge, sense of accomplishment, prestige, professional rewards, and self improvement.

Recommendations and implications were framed within a previously published five step process to encourage research. Additional measures should include professional support, identification of additional outlets for dissemination, and doctoral preparation of faculty.

Findings of the present study provide a basic blue print for future exploration. The importance of scholarship through research and writing are essential for the continued growth of the profession. Once barriers are clearly identified, initiatives on a local and national level should seek strategies to reduce them, promote scholarship, and cultivate a unique and cumulative body of knowledge for the profession of nurse anesthesia.

Barriers to the Publication of Scientific Literature by Academic Certified Registered Nurse Anesthetists

CHAPTER I: INTRODUCTION

Purpose of the Study

The purpose of this qualitative study, utilizing a descriptive design with content analysis, was to identify actual or perceived barriers to publication of scientific literature by academic Certified Registered Nurse Anesthetists (CRNAs). Barriers were defined as any perceived or actual impediment to writing scientific literature for dissemination. Participants described barriers to writing for publication, identified potential solutions to identified barriers, evaluated how barriers impact professional and personal development, and explored perceived rewards associated with publication.

Background and Rationale

Nurse anesthesia is the oldest advanced practice nursing specialty. Anesthetic administration was addressed in nursing textbooks in the latter portion of the 19th century. The first nurse anesthetist generated scholarly manuscript, published in a professional medical journal, appeared in 1899 (Bankert, 2004, p. 24;30-31). Early scholarship was important in the establishment of the profession. In recent years it has been noted that nurse anesthetists produce fewer textbooks and scholarly journals than other advanced nursing specialties (Waugaman, 1991). The American Association of Nurse Anesthetists (AANA) Journal, published since 1933, is the primary journal publication for nurse anesthetists (Corbitt, 2001). Other journals published with content authored by nurse

anesthetists have not proven viable and failed due, in part, to a lack of scholarly manuscript submission (Waugaman, 1993; Gunn, 2000).

A measure of professionalism includes scholarly production. If nurse anesthetists, as a profession, do not embrace writing for publication as a vital aspect of professionalism, the burden falls upon a few productive Certified Registered Nurse Anesthetists (CRNAs). The lack of publication will limit dissemination of nurse anesthetist generated research and scholarly endeavors. Nurse anesthetists are responsible for the development, establishment, and contribution of scholarly writing for their profession. If the profession does not embrace writing it may stymie vital growth within the profession (Waugaman, 1992).

CRNAs primarily employed in the academic setting are in an environment that should stimulate research and writing for publication. A recent survey of nurse anesthesia faculty illustrated a lack of scholarly output. Research and publication were seen as an 'essential' activity by two-thirds of the faculty responding to the survey. When scholarly activity was reviewed (defined as a poster presentation, journal article, or book chapter), it was found that only 64% of the responding 74 programs reported at least one scholarly product per year. Scholarly activities were not analyzed to determine the percentage of programs that contributed specifically to the scientific literature. Only 28% of the responding individual faculty reported at least one scholarly product per year. Even though respondents believed that research and scholarly writing are essential, they spent very little time on these activities or endeavors. In addition, little time was spent mentoring students to develop the research skills necessary to generate scholarly publications (Lupien & Rosenkoetter, 2006).

In 2009, literature does not adequately describe or identify specific barriers that impede CRNAs in academic settings from publishing scientific literature. A descriptive qualitative study, using content analysis, may help identify barriers to the publication of scientific literature by academic CRNAs. Once specific phenomena of barriers are identified and described, the nurse anesthesia community can address barriers, eventually increasing the output of scholarly manuscripts, building upon past and current CRNA generated literature.

The research questions of the present study were as follows:

1. What are the barriers to writing scientific literature for publication for academic CRNAs?

2. How are academic CRNAs prepared for participating in writing for publication during their educational experience?

3. What are the major and minor barriers that impede academic CRNAs ability to write for publication?

4. What do academic CRNAs perceive as strategies that could minimize, diminish, or remove barriers encountered?

5. What is the impact of barriers on the professional development of academic CRNAs?

6. What are perceived rewards of publishing in the scientific literature for the academic CRNA?

Assumptions

1. Research questions are open-ended and non-leading.

2. Additional questions to explore participants' responses are non-leading and open ended.
3. Participants have had an opportunity to review the interview questions.
4. Participants have reflected on the questions that will be asked.
5. Participants will answer questions honestly.
6. Researcher and participants will fully explore their responses to ensure clarity and completeness.
7. Transcripts of interviews will be compared to the audio recording to ensure accuracy.
8. Participants will review transcripts to ensure that it accurately portrays their responses.
9. Data analysis will be objective and interpretation will be free of pre-conceived notions.

Definition of Terms

The following operational definitions were used in this research study:

Academic Certified Registered Nurse Anesthetist

A Certified Registered Nurse Anesthetist (CRNA) who is primarily employed in an academic setting. The primary function of academic CRNAs is the education of nurse anesthesia students. An academic CRNA may participate in primarily didactic education or a combination of didactic and clinical education. A minimum of 10% of the faculty member's time is spent in didactic education.

Barriers to Publication

A barrier is defined, for the purpose of this study, as anything that obstructs, prevents, slows down, or otherwise impedes the ability of an academic CRNA to successfully write scholarly works of literature. Barriers may be professional and/or personal.

Certified Registered Nurse Anesthetist (CRNA)

A Certified Registered Nurse Anesthetist (CRNA) is a specially educated nurse that administers anesthesia. CRNAs receive extensive didactic and clinical experience in anesthetic techniques during their educational experiences. To become certified, nurse anesthetists must successfully pass a national certification examination (AANA, 2007b). After certification, CRNAs must complete a minimum of 40 hours of continuing education every two years, maintain a current nursing license, and be 'substantially engaged in the practice of nurse anesthesia' for a minimum of 850 hours during a two year period. In addition, CRNAs have to attest that they do not suffer from any conditions that may impair their ability to provide anesthesia (Council on the Recertification of Nurse Anesthetists, 2006).

CHAPTER II: LITERATURE REVIEW

Introduction

Nurse anesthesia is the oldest advanced practice nursing specialty. The administration of anesthetics by nurses was addressed in nursing textbooks as early as 1893. The first scholarly manuscript published in a professional medical journal, authored by a nurse anesthetist, appeared in the *Northwestern Lancet* in 1899 (Bankert, 2004, p. 24;30-31). Despite early scholarship nurse anesthetists produce fewer textbooks and scholarly journals than other advanced nursing specialties (Waugaman, 1991). The *American Association of Nurse Anesthetists (AANA) Journal*, published since 1933, is the primary publication resource for nurse anesthetists (Corbitt, 2001). At least two additional journals were available to nurse anesthetists briefly. The viability of both journals have failed due, in part, to a lack of scholarly manuscript submission (Waugaman, 1993; Gunn, 2000).

The production of scholarly work and contribution to scientific literature serves as a measurement of professionalism. If nurse anesthetists fail to enthusiastically embrace publication writing, the burden of producing scholarly material falls upon a few productive Certified Registered Nurse Anesthetists (CRNAs). The current lack of publication limits dissemination of nurse anesthetist generated research and scholarly endeavors. Only nurse anesthetists are responsible for the development, establishment, and contribution of scholarly writing for their profession. If the profession as a whole does not embrace this scholarly activity, others will continue to usurp this venue, diminishing vital growth within the profession (Waugaman, 1992a).

CRNAs primarily employed in the academic setting exist in an environment that commonly stimulates research and writing for publication. However, a recent survey of nurse anesthesia faculty illustrated a lack of scholarly output. Research and publication were seen as an 'essential' activity by two thirds of the faculty responding to the survey. When scholarly activity was reviewed (defined as a poster presentation, journal article, or book chapter) it was found that only 64% of the responding 74 programs reported at least one scholarly product per year (Lupien & Rosenkoetter, 2006). However, scholarly activities were not analyzed to determine the percentage of programs that contributed specifically to the scientific literature. Only 28% of the responding individual faculty reported at least one scholarly product per year. Even though the respondents acknowledged that research and scholarly writing are essential, they spent very little time on these activities or endeavors. In addition, little time was spent mentoring students on the development of research skills necessary to generate scholarly publications (Lupien & Rosenkoetter, 2006).

In 2009, research literature does not adequately describe or identify specific barriers that impede CRNAs from publishing scientific literature in academic settings. This literature review broadly covers three distinct "types" of nurse anesthetists; student, clinician, and academic faculty. Relevant literature from nursing and medicine was also included and explored opportunities and issues related to students and clinicians are described. All academic CRNAs have been required to take on the role of being a student and clinician. This may shed light on barriers to publication that academic CRNAs eventually encounter. This qualitative descriptive study, using content analysis, may help identify barriers to the publication of scientific literature by academic CRNAs.

Once specific phenomena of barriers are identified and described, the nurse anesthesia community can address these specific barriers and eventually increase scholarly manuscript output.

Historical Context

Nurse anesthesia is the oldest advanced nursing specialty, contributing to scientific literature while still in its infancy. Bankert (2004) succinctly described the early development of nurse anesthesia as a profession. In 1893, Isabel Adams Hampton Robb published a textbook entitled "*Nursing: Its Principles and Practices for Hospital and Private Use*." Robb devoted an entire chapter to the emerging discipline of nurse administered anesthesia, entitled "*The Administration of Anaesthetics.*" Alice McGraw is known as the "Mother of Anesthesia", and was the first nurse anesthetist to author a publication in a scholarly journal. Her publication was entitled "*Observations in Anesthesia*". She reported on the administration of over 3000 anesthetics. The manuscript was published in the Northwestern Lancet in 1899. In 1900, McGraw reported on an additional 1092 anesthetic cases performed in a year's time which was published in the *St. Paul Medical Journal*. McGraw subsequently published a manuscript in 1906, reviewing over 14,000 anesthetic cases with an emphasis on her anesthetic technique (Bankert, 2004)

The National Association for Nurse Anesthetists (NANA) was founded in 1931. At this time there were no clinical journals devoted to the art and science of nurse anesthesia. The first publication devoted solely to nurse anesthetists occurred in 1933. This annual publication reported clinical and business sessions from the national meeting. After the 1934 annual meeting, it was decided that NANA would publish the *Bulletin of*

the National Association of Nurse Anesthetists on a quarterly basis starting in February 1935. The contents of this bulletin would include clinical articles, reports, information on individual members, and the development of individual state nurse anesthetist's associations. In 1939, the association changed its name to the American Association of Nurse Anesthetists (AANA). The name of the quarterly journal accordingly was changed to the *Bulletin of the American Association of Nurse Anesthetists*. In 1945, the name of the publication was again changed to *The Journal of the American Association of Nurse Anesthetists*. In 1947, the AANA created two publications, the *Journal of the AANA (JAANA)* was published on a quarterly basis and contained clinical information and the *AANA News Bulletin* published association news. In 1960, *JAANA* changed its publication schedule from a quarterly journal to a bimonthly publication. The year of 1974 saw another change in the title of the journal, changing it to the current *AANA Journal* (Corbitt, 2001). The year 2008 marked the 75th anniversary the journal has served nurse anesthetists with clinically relevant information.

Failure of the Profession to Support Scholarly Nurse Anesthesia Journals

The *AANA Journal* has been published continually for over 75 years with few 'competitors'. *Nurse Anesthesia* was published by Appleton and Lange on a quarterly basis from March of 1990 to December of 1993 (accessed pubmed 7/13/07). *Nurse Anesthesia* was a peer reviewed scholarly journal sponsored by CRNAs. A review of this scholarly journal revealed several articles discussing the use of statistics, research, and publication. Providing informative articles for the readership had the intended effect of stimulating, informing, and encouraging research and publication. The intent of the journal was to provide an additional forum for CRNAs and student registered nurse

anesthetists (SRNAs) to disseminate research findings to their colleagues. In the final issue of the journal the closing editorial by editor Wynne R. Waugaman CRNA, PhD discussed several reasons why the journal had to cease operation. One of the reasons cited included that the number of subscriptions to the journal represented less than 5% of the practicing CRNAs during that time period and could not be sustained financially. Surveys of CRNAs found that many practicing anesthetists did not have an interest in research and did not feel that had an impact on their practice. In contrast, authors contributing to *Nurse Anesthesia* felt strongly that research related articles impacted their clinical practice. There appeared to be a chasm in comprehending the relationship between research and practice between those who wrote for publication and those who did not. Dr. Waugaman also reported that during its four years of publication, the journal received only 85 manuscripts for submission. Over half of the submissions were received from SRNAs as a result of the research projects required by their anesthesia programs to obtain their Master's degree (Waugaman, 1993). These statistics are only representative of one scholarly journal; however, the numbers indicate a void in research and lack of submissions contributed to the failure of *Nurse Anesthesia*.

CRNA- the clinical forum for nurse anesthetists was a peer reviewed, quarterly journal published from Feburary 1992 to November 2000 (accessed pubmed 7/13/07). In a closing commentary, Gunn (2000) discussed factors that may have contributed the journal's demise. She noted that other professional journals targeting nurse anesthetists also failed. One contributing factor that she identified was that CRNAs do not appear to be supportive of publication efforts. However, the journal did not formally solicit scholarly articles from SRNAs. Another factor cited included competition from other

journals including several anesthesiology journals that apply to the practice of nurse anesthesia. Physician-orientated anesthesiology journals do not afford the nurse anesthetist with the same opportunities as does a journal that is specifically created for nurse anesthesia driven research (Gunn, 2000). This is due to conflicts and politics that divide physician anesthesia and nurse anesthesia providers. Both Waugaman and Gunn offered several opinions of why the journals failed. However, it is unknown if perceived or actual barriers may have contributed to the relative lack of submissions.

Writing for Publication: Implications for the Profession

The publication of scientific literature is essential to the profession of nurse anesthesia. As advances in the delivery of anesthesia continue to evolve, the dissemination of information fosters continued growth among those involved in the delivery of anesthetics. New techniques and insights into the delivery of anesthesia can only evolve if CRNAs are willing to disseminate new ideas and research. Continued evolution of anesthesia related knowledge directly impacts the patient, improving safety and efficacy of anesthesia delivery. It is a lost opportunity if the profession does not publish (AANA Annual Meeting News, 2007).

John Aker quoted Sir Robert Hutchison during the AANA Writing Workshop on August 8, 2007. Hutchison wrote in a 1939 issue of Lancet, "The amount of writings of a profession is a measure of its vitality and activity, whilst their quality is a rough indication of its intellectual state." Aker cited several relevant personal and professional motivations for writing for publication that are relevant. Professional factors included the expansion of knowledge and skills, sharing ideas and expertise, dissemination of research, and commitment to building/adding to the professional knowledge base of

anesthesia. Personal factors included personal satisfaction, interest and motivation concerning the chosen topic; future career paths, and expanded opportunities (Aker, AANA Writing Workshop, August 8, 2007). Overall, there are altruistic and self-satisfying motivations in publishing. The opportunity to share one's expertise, ideas, and research with others can be a powerful factor for some. There is also self-satisfaction in seeing one's hard work finally published in a scholarly journal. Finally, there is the ability to place the publication on a curriculum vita that may be helpful in securing employment (Burnard, 2001).

Writing for publication is an important component of professional accountability. Nurse anesthesia, as a profession, has navigated substantial hurdles as an emerging discipline. The educational preparation of nurse anesthetists has recognized and integrated formal research into the rigors of graduate education. There are three essential components to this specialized profession: clinical practice, education, and research. Each component is equally important. Conducting research and disseminating its results through publication expands the knowledge base of anesthesia, contributing to theory, practice, and education. Publication of research is foundational to the professional accountability of nurse anesthetists. It is foundational not only for future growth of this nursing subspecialty, but also for improving the delivery of anesthesia to patients (Drain, 1990).

A measure of professionalism is the scholarly production of and contribution to scientific literature. Members of a profession should feel an obligation to contribute to this growing body of knowledge. Scholarly writing should be initiated and fostered during the formative educational experience of SRNAs. It is imperative that graduate

nurse anesthesia programs teach the rigors and process of research. In addition, there is a need to promote the importance of research and its contribution to the profession's body of knowledge. Fostering and role modeling this responsibility will aid in the mentorship of students creating an environment of scholarship. Only nurse anesthetists are responsible for the development, establishment, and contribution of scholarly writing to their profession. If they do not embrace this important aspect of professionalism others will usurp this venue and diminish the potential growth that is vital to any profession (Waugaman, 1992a).

Barriers to Writing for Publication

A barrier is defined as "anything that obstructs progress, access, etc.; a limit or boundary of any kind" (Webster's, 1989). Barriers to writing for publication is defined, for the purpose of this study, as anything that obstructs, prevents, slows down, or otherwise impedes the ability of an academic CRNA to successfully write scholarly works of literature. Barriers may be professional and/or personal. A review of the literature revealed a paucity of research concerning barriers to writing for publication as experienced by CRNAs. A review of literature for the profession of nursing in general, revealed assorted opinions and perspectives with a relative dearth of actual research.

Student Registered Nurse Anesthetists (SRNAs)

The academic rigors of nurse anesthesia programs are tremendous. Students are expected to comprehend the exquisite interaction of anatomy, physiology, pharmacology, disease processes, and surgical procedures with the administration of anesthetics. In addition, students are required to read, write, understand, and participate, in some capacity, in the process of research. Fostering a scholarly culture during initial

educational experiences may impact scholarly output in the future, increasing and sustaining the growth of nurse anesthesia as a profession.

Opportunities for SRNAs to Publish

There are several types of manuscripts that can be submitted for publication by SRNAs. These include: original research articles published as a result of clinical or laboratory research related to their chosen research topics; review articles based on their review of literature; case reports on interesting or unusual anesthetic cases encountered during their clinical experience; and/or monographs based on their extensive research (Waugaman, 1992b). The number of publications that SRNAs may submit to is also substantial, the most obvious choice being the *American Association of Nurse Anesthetists Journal* (AANA). The mission of the *AANA Journal* is to advance patient safety and excel in the delivery of anesthetic care. However, students have the opportunity to publish in the *International Student Journal of Nurse Anesthesia (ISJNA)* which exists solely for publishing the work of nurse anesthesia students. One of the major goals of this publication is to introduce nurse anesthesia student to the process of writing for publication (Author Guidelines, 2007). There are a number of related specialty nursing journals that would benefit from SRNA generated manuscripts including: *Journal of Perianesthesia Nursing*, *American Operating Room Nursing Journal*, *Gastroenterology Nursing*, *British Journal of Anaesthetic and Recovery Nursing*, and *Orthopedic Nursing*. It is not known if students consider these additional outlets for their scholarly output.

Barriers to Publication for SRNAs

A qualitative study of novice researchers from medicine, nursing, and physical therapy identified several themes related to scientific writing. The cognitive burden of the actual writing process dealt with individual perceptions. A diverse response was noted that ranged from perceiving the writing process as difficult to viewing it as a positive challenge. A positive view of the process allowed students to identify a systematic and planned approach. Some perceived it as difficult, while others relished the challenge. Those that viewed it as a positive challenge generally approached writing in a systematic and planned manner. Group support and mentorship were a source of guidance, encouragement to novice authors. Initially the ability to identify the difference between content and structure of a scientific manuscript can be challenging. As the writer begins to understand their important role in logically disseminating information, they start to draw upon past experience, and/or review published examples. It is at this point that the novice writer begins to distinguish between the two. A clear vision of the manuscripts goal was experienced by individual writers differently. Those that had a clear view of 'backward design' were able to write in a focused manner while others lost their focus (Shah, Shah, & Pietrobon, 2009). Further identification of difficulties that are encountered by novice authors during their preparatory training may help identify strategies to improve their development as scholarly writers.

According to Happell (2005), there is anecdotal evidence that the majority of nurses who complete degrees at a master's level do not publish their work. In other words, research that may yield valuable insight is not being disseminated. Faculty at the Nurse Anesthesia Program at Georgetown University identified four barriers to writing

for publication by nurse anesthesia students. The identified barriers include a lack of time related to a busy clinical/academic schedule; lack of confidence in their own writing ability; the limited number of journals that concentrate on issues specific to nurse anesthetists; and the inability to read/understand healthcare related research (Pearson, VanNest, & Jasinski, 2004). The effect and extent of these barriers were not explored in depth. A clearer understanding of these barriers and potential solutions are foundational to improving scholarly output.

Changing the Style

By the time students reach the graduate level they have written scores of papers. The style, language, and composition of a paper written for a professor differ from a manuscript that eventually is published in a scholarly journal. The *AANA Journal* encourages the submission of student generated research and scholarly endeavors. One common reason that manuscripts are rejected is because they are written as though they were required by a class (Johnson, 1993). This sentiment was echoed at the AANA Journal Writers Workshop (Kenneth M. Kirsner, August 8, 2007). The purpose of papers written as an assignment is to fulfill class requirements, demonstrate students' ability to research subjects as well as expand their own knowledge. Thesis and graduate projects are written for a specific audience, namely their respective committees and graduate school. Professional publications are meant to disseminate ideas, theories, and findings to stimulate, educate, and encourage change. Novice authors may write in an 'academic' style unsuitable for clinicians.

Changing the style of writing often means 're-writing' the manuscript which can be daunting (Burnard, 2001). The author must start with a clear idea, eliminate basic

material, write at the level of the proposed audience, reduce the reference list, and synthesize the review of literature to reflect the point that the author is trying to make (Johnson, 1993).

Condensing large amounts of material generated by a thesis or research project can be an arduous task. As a result, the prospective writer may lack the energy to attempt to publish their research. Thesis and graduate projects take a tremendous amount of time and effort and initially the subject was intellectually stimulating but after an extended period of time it may become tedious and boring (Bland & Batten, 1998).

Intimidation by the "Process" of Writing for Publication

The process of writing for publication is unfamiliar territory for novice writers and there are several potential pitfalls. Writing for an audience comprised of more experienced colleagues can be overwhelming. Adherence to ethical and scientific standards is critical. Authors must be careful not to unintentionally plagiarize others work. Fear of an unintentional breech of ethics may occur because they "don't know" what may or may not be acceptable. Researchers must be assured that they have protected subjects and adhered to institutional protocol in relation to institutional review boards. Choosing which journal to submit the manuscript may be difficult based on manuscript content and the specific journals mission. In addition, the format and style of the target journal may be "new" and thus authors are unsure if they are writing them correctly. Peer review and the publication process may be intimidating because experienced clinicians/writers are evaluating manuscripts written by novice writers (Waugaman, 1990). The prospect of rewriting, criticism, and suggestions may be overwhelming. After acceptance there are copyright transfers, final editing, and adding

missed information. There may be ambivalence and trepidation about the final product published leading to authors questioning themselves about what they have written. The entire process is no small task even for experienced writers, but for SRNAs it may prove to be overwhelming.

Format and Documentation Issues

Adherence of stylistic format and documentation of citations can act as barriers to publication. Graduate school formatting and documentation standards differ from specific journals. Inattention to the details of formatting and documentation frustrate editors and may lead to rejection. For authors, there may be feelings of failure because journals appear to be overly concerned with 'minor' details. Authors may fail to recognize the importance of these seemingly minor changes. Specific formats are created for the readership by organizing, standardizing, and highlighting scholarly work. Authors may not take the time to cite articles in the format desired by a particular journal or errors may occur in transferring the citations into a different format. Incorrect citations may lead to a question of credibility on the authors' part. Researchers and consumers of manuscripts depend on correct citations as they research or explore the topic at hand (Foster, 1990).

Revising Manuscripts

There is anecdotal evidence that a significant number of novice authors do not take the time and effort to make required revisions to their submitted manuscripts. The reason this occurs has not been researched in depth, however, it has been postulated that novice authors may feel that making revisions reflects failure (Happell, 2005). Failure to make the required revisions appears to be a common problem among SRNAs. An editorial in

the *International Student Journal of Nurse Anesthesia* reported that most manuscripts that are returned to authors for revision are not sent back. A tremendous amount of time and effort are put forth by authors, mentors, and reviewers only to have the process stop at revision (Van Nest & Pearson, 2007).

Time and Priorities

Time is a factor identified as a barrier to writing for publication by SRNAs during their educational experience (Pearson et al., 2004). Most nurse anesthesia students wait until graduation to attempt to publish their scholarly endeavors. There are time constraints for both former students and faculty. Students are transitioning from student to clinician, while faculty members are preparing new groups of students to become competent clinicians. Time constraints and transitions disrupt the mentoring process and publications are lost.

Mentoring

Mentorship, by experienced faculty, is crucial to guiding students in research and writing. Though the majority of nurse anesthesia faculty believes that research and publication are important, there was little time spent on the mentorship of students (Lupien & Rosenkoetter, 2006). A contributing factor is the 30-34% vacancy rate for academic faculty (Merwin, Stern, & Jordan, 2008a). As a result of this shortage, understaffed faculty take on additional workloads leaving little time to pursue mentoring. In addition, existing faculty members may lack the skills in the didactic and scholarly arenas of research and publication (Pearson et al., 2004).

Supporting Scholarly Publication for Advanced Practice Nursing Students: *A Model*

The University of Missouri-Kansas City (UMKC) Neonatal Nurse Practitioner (NNP) program supports the concept that authorship of scholarly manuscripts for publication should be included in the curricula of all advanced practice nursing (APR) programs. To accomplish this goal a three credit course was designed and titled "Directed Research". The NNP students each have a mentor and work online to write a clinically orientated article focused on the neonate. Students gain valuable exposure by performing an extensive literature review, synthesizing and analyzing research, and experiencing the writing and submission process. The ultimate goal is to encourage students to view writing for publication as a professional responsibility.

The program at UMKC takes great strides in diminishing the intimidation factor. The course breaks down each step of the writing process. Each section of the paper is written separately. Once all sections are completed, the paper is condensed. Redundancies, omissions, a narrowed focus, and general editing are addressed with the help of the mentor in order to create a seamless and flowing scholarly paper.

UMKC met several challenges with the creation of this class. First, they had to locate faculty with experience in publications willing to mentor students. This process can be frustrating for experienced writers and novice writers. The individual attention of a mentor is crucial for a successful manuscript. Second, mentors had to select topics to match the experience of the students. Students enter the program with various levels of experience and sophistication in their research and writing ability. Third, the faculty has to engrain in the student that publication should be a priority and not a secondary consideration. Fourth, the faculty has to mentor students on how to perform extensive literature reviews, appropriate composition, and referencing.

Two ultimate goals of the UMKC model are to encourage active research by clinicians with appropriate implementation into clinical practice and to promote the dissemination of knowledge with colleagues through publication. The UMKC NNP faculty reported that the vast majority of students complete their education with a published manuscript (Trotter & Rasmussen, 2006). A model similar to the UMKC NNP course could be beneficial for SRNAs if implemented as a formal course, in conjunction to their work on a major project/thesis. It is unknown; however, if this would perpetuate itself once graduates have embarked upon their careers.

Unique Opportunities: The International Student Journal of Nurse Anesthesia

Nurse anesthesia students have the unique opportunity of having a journal published solely for their educational advancement. Goals of this publication are to introduce students to writing and publication, and to educate students by using case reports experienced by their peers (Anonymous, 2007). Concerning publication there are three primary goals. The first goal is to improve and build upon individual writing skills. The second goal enhances didactic education through clinical case studies that add to the literature. The final goal provides faculty with the experience of nurturing and mentoring future authors (Pearson et al., 2004).

The *International Student Journal of Nurse Anesthesia (ISJNA)* began as *The Student Journal of Nurse Anesthesia (SJNA)*. The first issue was desktop published by the faculty at Georgetown University. The journal was published in a bi-annual format, being distributed to students and faculty at the program. *SJNA* received positive feedback from the School of Nursing and Health Studies and was allocated funds to publish in a journal format. In 2002, SJNA was professionally published with an initial run of 1000 copies.

SJNA was mailed to 85 program directors and distributed at the AANA National Meeting. The faculty of Georgetown secured corporate funding as it transitioned to a national journal (Pearson et al., 2004). In 2003, students from across the country were encouraged to submit articles to the journal. The journal expanded to being published three times a year and mailed to individual students at their home (Pearson et al., 2004). Later, manuscripts were submitted from outside the United States prompting the name change to the *ISJNA* (Christ, Cutler, Mahrs, Jasinski, & Pearson, 2006). One of the strengths of *ISJNA* is that the writing process is mentored by faculty. The encouragement, direction, and facilitation of the process by mentors introduce students to writing for publication as well as the experience of navigating the publication process.

The *ISJNA* is currently limited to case reports and abstracts. The case reports are considered to be too basic or common for the practicing clinician or an advanced clinical journal such as the *AANA Journal*. Combining personal experience during the administration of clinical anesthesia with the intellectual activity of reviewing relevant literature aids in the preparation of a scholarly manuscript. Experiencing the process of a literature review, submission, editing, and revision promotes skills that are necessary to dissemination of information in a published format (Pearson et al., 2004).

The *ISJNA* was evaluated for its effectiveness in the dissemination of information. The authors used a correlational/descriptive design. A seven question test was used to assess the recall of information obtained from reading four random case reports from the journal. It was found that students that read the journal scored two points higher on the test than those who did not read it. The second portion of the test collected demographic data and opinions concerning the journal. The results revealed that students who were in

clinical rotations were able to assimilate the information from the journal into their clinical practice. In other words, students that read the journal felt that the journal reinforced information that had been learned. The authors of this study acknowledged that there are several additional factors that contribute to cognitive knowledge and clinical application that were beyond the scope of their study (Christ et al., 2006). There are no current studies that detail the impact of publishing in the *ISJNA* on future writing/publishing endeavors. The availability of a student driven anesthesia journal may help reduce some of the initial barriers to the publication of scientific literature. It is not known if this will stimulate those that go on to academia to participate in further writing.

Table 2-1: Related Research for SRNAs provides a summary of the literature on students writing for publication.

Table 2-1. Related Research for SRNAs

Author	Type of Study	Research Question/Purpose	Findings
Shah, J., Shah, A., & Pietrobon, R. (2009).	Qualitative	To identify difficulties encountered by novice authors as they attempt to write their research results in a scientific format.	Mentorship and group support were essential in providing guidance and encouragement. Diverse responses were noted in the cognitive burden of the writing process and backward design of a manuscript. Students appeared to progressively grasp the difference between content and structure as they went through the writing process.
Christ, J., Cutler, R., Mahrs, R., Jasinski, D., & Pearson, J.	Correlational design with a descriptive component.	To examine if students who read the student journal are better prepared for clinical. Does the journal help	Mean scores on the test were higher for students that read the journal than those who did not, scoring 2 points higher. Likert type

(2006).		with other students' educational experience? Does it contribute to the students' knowledge base?	questions found that 96.9% strongly agreed/agreed that reading the journal provided new information; 92.8% that it reinforced information; 98% that the information was useful in their education and clinical practice. Findings support the information process theory of learning.
Lupien, A.E., & Rosenkeotter, M.M. (2006).	Descriptive, survey	To identify what the educational preparation of CRNA faculty is. To describe the role expectations of CRNA faculty.	Two thirds of all programs felt that scholarly output was essential or desirable (this includes writing for publication, conducting research, and speaking at professional conferences. Only 5% of the programs reported spending at least 0.20 FTE or more on funded research/non-funded research. Up to 62% and 58% of the programs reported spending no time on funded or unfunded research repectively. No time was spent guiding student research for 27% of the programs. Only 64% of the programs reported 1 scholarly product per year and 28% reported at least 1 scholarly product per faculty member per year. Didactic/clinical teaching and administration accounted for 66% and 75% of allocated time for program and assistant program directors. Program directors spent 10% of their time on research and assistant directors 5%.
Merwin, E.,	Survey,	What are the differences	There is a wide range in

Stern, S., & Jordan, L.M. (2008).	descriptive	between academic and clinical CRNAs?	salary. Academic positions earn less than clinical positions. Faculty can earn outside sources of income; however some universities restrict this activity. There is a general vacancy rate for academic CRNAs of 30-34%. Salary, workload, and academic credentials are barriers for recruitment.
Pearson, J.A., VanNest, R.L., & Jasinski, D.M. (2004).	Narrative description of the development of a student journal.	How to increase publication output/exposure for student nurse anesthetists?	Faculty at Georgetown University identified that students did not write for publication due to time constraints, lack of confidence in writing skills, limited outlets for publication, and barriers to reading research. (This was done through an informal survey of students at GU). This article describes the process of creating a student journal to expose students to the writing process, provide an outlet for publications, provide mentorship, and improve learning and scholarship.
Trotter, C., & Rasmussen, L. (2006).	Narrative description of a writing program/opinion.	How does a formalized writing course for graduate students impact their development?	University of Missouri-Kansas City neonatal nursing program developed a formal class that highlights the process of writing for publication. The process is discussed as well as challenges. Anecdotal evidence asserts that the majority of students end up with a published manuscript.

Opportunities for Publication by CRNAs

The CRNA has several opportunities to participate in the publication of quantitative research, qualitative research, and to provide continuing education information to colleagues or nursing specialties that have a common interest. Numerous types of manuscripts may be generated, which were referred to earlier in this paper (Waugaman, 1992b). Several journals are available for the CRNA to submit to depending on the content. These journals were alluded to earlier. Nurse anesthetists possess a unique body of knowledge that others do not possess. Not only do they understand the intricate details of the practice of anesthesia, they also have the unique nursing background that physician anesthesia providers do not have. Sharing their unique knowledge with other nursing colleagues not only increases the visibility of nurse anesthetists within the nursing community, but also serves to stimulate additional research/publication opportunities.

Encouraging Writing for Publication

The AANA has encouraged writing for publication for several years. Historically, Chicago Illinois has served as a meeting place for an annual invitation only writers' workshop. Starting in 2005, the AANA Journal Writing Workshop has been held during the AANA National Annual Meeting. The workshop is designed to guide first time writers, as well as seasoned writers, through the process. The workshop focuses on personal and professional reasons to publish; generation of ideas; writing for the journals audience; peer review process; common reviewer concerns; common problems encountered by the editor in chief; ethical considerations; and conflict of interest issues. The program highlights one author who has successfully navigated the process

enlightening the audience on the process from a personal perspective (AANA, Writing Workshop, August 8, 2007).

Barriers to Writing for Publication

Based on extensive writing and editorial experience, John Aker cited several barriers to the publication of scientific literature by nurse anesthetists. Aker's barriers include: lack of interest, time, confidence, resources, and mentorship; not fully understanding the process; and fear of rejection (Aker, AANA Writing Workshop, August 8, 2007).

Burnard (2001) also cited several barriers in regards to why nurses do not publish. Burnard compiled these barriers following 20 years of teaching and publishing within the subspecialty of community health nursing. There may be a lack of motivation related to a demanding career in conjunction with other demands of life such as family obligations. Lacking self confidence, potential authors may not feel worthy to submit their work to the peer review process and editors. They may feel that they lack the skill to write cohesive scholarly manuscripts. A third barrier Burnard identified is time.(Burnard, 2001). Full time clinicians may not have time to devote to the creation of manuscripts suitable for publication in journals. A fourth publication barrier may be research or topic selection. The research available may not add to the present body of literature on a given subject, have flawed methodology, fit into a specific journal format, and/or the author may not know of a suitable alternative (Bland & Batten, 1998). Time, motivation, self confidence, and writing skills were identified writing barriers echoed in a survey of the Journal of Association of Nurses in AIDS Care (JANAC). The major limitation of this survey was that the reliability and validity of the survey instrument was not reported and the sample size contained only 24 respondents. However, due to the paucity of research

looking at barriers to publication it was deemed reasonable to report (Meisenhelder, Kalinoski, & Saunders, 1995). Research by physicians in the public health sector in England found that common barriers included lack of time, mentorship, and emphasis by training departments (Donaldson & Cresswell, 1996).

Common themes related to barriers found across nursing, nurse anesthesia, and physicians appear to be time, mentorship, and institutional support. Grzybowski et al. (2003) reported the experience of a formalized peer support writing group of family practice physicians. It was found that those who frequently met to discuss writing projects increased their scholarly output. The study's limitations included a small sample and only one publication per person per year (PPY) was reported. From this study it appears that peer support and mentorship may help to improve scholarly output however, a similar study has not been reported in the literature concerning nurse anesthetists.

Table 2-2: Research Related to Barriers provides a summary of literature concerning barriers that may be encountered by healthcare professionals.

Table 2-2. Research Related to Barriers

Author	Type of Study	Research Question/Purpose	Findings
Donaldson, L.J., & Cresswell,P.A. (1996).	Descriptive study	To what degree do physician trainees in public health publish their work in peer reviewed publications?	76% had published at some point in their career. No publications from their training occurred in 30% from any of their trainee research and 49% did not publish any research that was submitted as part of their examination.
		What are the barriers to publishing their work in peer reviewed literature?	Barriers to publication included: organizational which included lack of emphasis by training department; lack of time; and lack of mentor in preparation of manuscripts for submission.
Grzybowski, S.C.W.,	Descriptive	What is the effect of	Participants who frequently

Bates, J., Calam, B., Alred, J., Martin, R.E., Andrew, R., Rieb, L., Harris, S., Wiebe, C., Knell, E., & Berger, S. (2003).	study	a peer support group on the scholarly output of manuscripts for publication?	attended meetings increased their PPY from 0.14 to 0.60. Those that attended less frequently did not increase their PPY. Those who did not attend meetings had a slight decrease in their PPY.
Meisenhelder, J.B., Kalinoski, J., & Saunders, J.M. (1995).	Descriptive survey	What are the barriers for publication of manuscripts by the readership? What are some strategies to increase writing for publication among members of ANAC.	Four main barriers to publication were identified lack of time, writing skills, self-confidence, and motivation. Mentorship, either through workshops or working with an experienced author.

The Research and Publication Link

The findings from quality research are often published in scholarly journals. In 1998, the Council on Accreditation of Nurse Anesthesia Educational Programs (COA) required that all nurse anesthesia programs provide students with a master's degree for entry into the profession. During this transition, research was elevated in the nurse anesthesia curriculum creating a research-based practice as one avenue to advance the profession. The ultimate goal of the AANA is to have CRNAs at the forefront of research and provide documentation that CRNAs are high quality providers of anesthesia (Cowan, Vinayak, & Jasinski, 2002).

Evolution of Research

Nursing and nurse anesthesia research has evolved over the years. An analysis of nursing related research articles from the 1952-1953, 1960, 1970, and 1980 were examined for trends and changes in the number and quality of published studies. It was found that over time nursing research has increased, is more clinically focused, has

demonstrated an increase in theoretical orientation, and has shown improvement in the use of methods that are considered more sophisticated and reliable. An identified limitation of nursing research is a relative lack of accumulated knowledge in areas of study (Brown, Tanner, & Padrick, 1984). Taunton, Oetker-Black, and Woods (1990) reviewed characteristics of nurse anesthesia research during the periods of 1975-1976 and 1985-1986. They found that research was primarily descriptive; however explanatory and prospective research were increasing. Nurse anesthesia research, when compared to nursing research, did not report reliability and validity as frequently, were deficient in the psychometric evaluation of instruments, and use of statistics. The researchers made recommendations to focus more on methodological studies and use more sophisticated statistical analysis; broaden research to include education, administration, and characteristics of nurse anesthetists; and create a more focused and cumulative collection of research literature. A follow-up study covering the time period of 1995-1996 was compared to previous CRNA generated research during the time periods of 1975-1976 and 1985-1986 that were published in the AANA Journal by Taunton et al. (1990). The original study was based on four essential characteristics to develop a scientific base for practice. The identified characteristics were that specialty members should conduct their own research; CRNA generated research should be relevant to practice and focus on clinically based problems; research should be tied to a theoretical framework that can continually be shaped; and sound methodology should be utilized. The authors selected 38 research reports from 1995 and 1996 to compare to previous findings, using the four essential characteristics to classify the studies. Reliability was established by two investigators who analyzed 25% of the sample articles together to establish intercoder

reliability. Next the two investigators analyzed all the articles separately and then reviewed the articles for agreement between investigators.

Identified themes were identical to the previous research and included: evaluation of specific anesthetic agents; evaluation of new technology; evaluation of specific anesthetic agents in patients with a particular diagnosis; and characteristics of nurse anesthetists. Two additional themes that were noted by the follow-up study included variables of educational programs and patient safety (Connelly, Schretenthaler, & Taunton, 2002).

The amount of research being published in the AANA Journal continues to increase as CRNAs contribute relevant research to the body of knowledge. Research is largely based on clinical problems and the overall number of case reports has remained stable. Two additional foci of CRNA generated publications included education and patient safety. CRNA generated research continues to fall short on methodological research and needs to address the contribution of nurse administered anesthesia.

Conduction of Research

A recent survey found that clinical, academic, and non-faculty CRNAs spent little time on research (Merwin, Stern, & Jordan, 2008b). A previous quantitative, descriptive study with a randomized sample was conducted on the state of nurse anesthesia conducted research. The researchers developed a questionnaire that was validated by a pilot study. A total of 370 questionnaires were mailed and a return rate of 43.6% (173) was obtained. The results found a small percentage, (14.4%) of CRNAs, were involved in research. From the responses it was found that 80% of the research conducted was quantitative in nature. This is in contrast to other nurse generated research which is generally qualitative in nature. Of the CRNAs that participated in research (N=25), 44%

of the researchers submitted their research results for publication with 40% attaining subsequent publication indicating that CRNA generated research is generally well designed and publishable. However, this does indicate that over half of the research being completed is not submitted for publication (Cowan et al., 2002).

Similarly, nurses are conducting research but often fail to follow through with publication. A review of 40 research abstracts presented at the American Association of Critical-Care Nurses' National Teaching Institute found that 62.5% were not published as full articles in a six year period following the initial presentation (Winslow, 1996). Hicks (1995) conducted a nationwide survey of English nurses and found that 71% of the nurses were involved with research. Of those involved 58% had written the results, but only 10% had submitted it for publication and 9% had been accepted for publication.

Barriers to Conducting Research

Several barriers for nurse anesthetists conducting research were identified and include: lack of time, interest, motivation, resources, and funding (Cowan et al., 2002). Hicks (1995) identified the following reasons for not submitting research for publication: being insecure with research methodology, lack of confidence, and time.

Nurses in general have personal and subjective barriers to conducting research which include lack of motivation, interest, time and/or confidence in nursing research (Hicks 1995 & 1996). Lack of confidence was not formally identified by Cowan et al. (2002); however, the authors postulated that lack of emphasis during formative nursing educational experiences and lack of exposure may result in common barriers to conducting research. Lack of confidence in nurse generated research by fellow nurses was demonstrated by Hicks (1992). Thirty-one nurses with prior exposure to statistical

analysis and research design participated in the study. Participants were asked to judge two papers. Half the participants were told the first paper was by a physician and the second by a nurse. The order was switched for the second half of the sample. Nurses consistently rated research design and statistical analysis as inferior to the manuscript that they were told was written by a physician. In addition there were organizational or structural barriers to research such as time and limited training/resources for research.

Lack of time allocated to nurse anesthesia faculty for scholarly production was also identified as a barrier limiting scholarly development for the nurse anesthesia profession. In addition, little time was allowed to provide mentorship activities for students, which hampered the ability to learn how to conduct research and participate in scholarly activity (Lupien & Rosenkoetter, 2006). It has been postulated that research may not have been highly regarded in undergraduate nursing programs which lead to a low exposure rate. Not being exposed to research may have resulted in a diminished level of interest and confidence. In addition, the uncertainty of research methodology may result in being uncomfortable with the concept of research. The age of CRNAs was not significant for those who participated in research when compared to those who did not. However, those that had masters degrees participated in the majority of the research though educational level was not a significant factor. The top topics of interest to CRNAs that participate in research include patient outcomes and anesthesia pharmacology. Though few are involved in research, 87.9% of the CRNAs surveyed felt that research findings were applicable to the clinical setting and 79.2% applied research finding to their individual practices (Cowan et al., 2002).

Employment situations showed direct bearing on conducting research. Academic hospitals had a larger percentage of CRNAs participating in research. Most of the CRNAs stated that preparation for research was often the result of training on the job, mentorship, and tutorial by research staff when preparing for a specific study. The majority of CRNAs conducting research did not receive formal preparation in their education curricula. In this employment setting CRNAs may be involved with research as a condition of their employment. An unexpected finding was that CRNAs that are practicing in rural or independent practice also participated in research. This phenomenon was not investigated. It was postulated that rural and independent CRNAs had more motivation or time to do research compared to CRNAs in other practice settings (Cowan et al., 2002). Another potential factor in conducting research for faculty may be the 30-34% vacancy rate which is partially due to lower overall salary and an increased workload when compared to non-academic CRNAs (Merwin, et al., 2008a).

Increasing Research

Though CRNA generated research continues to improve and grow there are many areas that deserve attention. Multidisciplinary collaboration with specialties that have an overlap with nurse anesthesia should be encouraged to investigate complex healthcare problems. CRNAs should pursue multiple site studies to include large samples and provide for evidence based practice. There is also a need to direct research systematically to establish a nurse anesthesia scientific foundation. The profession should take the opportunity to build on, extend, and replicate previous research instead of participating in a non-cumulative direction. CRNAs should take advantage of the

opportunities to lay the scientific foundation that will document the advantages of nurse administered anesthesia (Connelly et al., 2002).

Lupien & Rosenkoetter (2006) identified a five step process which should help promote and increase research among nurse anesthetists and, in turn, increase the generation of manuscripts for publication. First, there should be an increase in the time allowed for faculty to conduct research and mentor students. Second, faculty should actively recruit students that have an interest in furthering their education with a doctorate, research, and a potential career as faculty. Third, there should be a continued focus on evidence-based practice in anesthesia programs to help students realize the importance of research and how it specifically impacts clinical practice. Becoming a consumer of research will enhance the appreciation of the very real impact it can have on patient care. Fourth, networking among CRNA researchers through professional associations and across disciplines should foster continued growth for a scientific foundation for the practice of nurse anesthetists. Fifth, institutions should be committed to mentor their faculty as researchers. Encouraging CRNAs to work with other disciplines would allow for the advancement of nurse anesthesia's knowledge base and continued growth of the profession (Lupien, & Rosenkoetter, 2006).

Addressing the 30-34% vacancy rate among academic CRNAs (Merwin, et al., 2008a), the AANA Education Committee completed a survey of CRNA faculty to help develop a strategic plan for recruitment and retention. A portion of the plan included faculty development workshops and a campaign to promote/increase awareness about opportunities in becoming a CRNA faculty (Starnes-Ott & Kremer, 2007). If this strategic plan is successful then the current workload may decrease allowing for an

increase in the amount of research being conducted among academic CRNAs. Interestingly, most of the recommendations concerning the increase of research focused on the academic CRNA and little attention were given to the non-academic CRNA. Even though Cowan et al. (2002) identified that research is being conducted by CRNAs in rural and independent practices, the profession should develop strategies to increase research among non-academic as well as academic CRNAs.

Table 2-3: Research Related to Research provides a summary of literature concerning research related issues encountered by healthcare professionals.

Table 2-3. Research Related to Research

Author	Type of Study	Research Question/Purpose	Findings
Brown, J.S., Tanner, C.A., & Padrick, K.P. (1984).	Content analysis, Quantitative	To identify trends and changes in nursing reseach by comparing selected articles from the 1950's, 1960's, 1970's, and 1980's.	Nursing research has increased over time. Focused more on clinical research, has more of a theoretical orientation, and progressed to more sophisticated/reliable methods. The work being done is non-cumulative.
Connelly, L.M., Schretenthaler, J., & Taunton, R.L. (2002).	Content analysis, Quantitative	How do the periods of 1995-1996, 1975-1976, and 1985-1986 compare in regards to nurse anesthesia research? Are the themes the same as a previous study during the 1995-1996 periods?	The major theme of the research was identical to the previous research and included: evaluation of specific anesthetic agents; evaluation of new technology; evaluation of specific anesthetic agents in patients with a particular diagnosis; and characteristics of nurse anesthetists. Two additional themes were noted by the follow-up study and included: variables of educational programs and patient safety.
Cowan C., Vinayak, K., &	Quantitative descriptive	Are CRNAs involved in research?	No significant association between numbers of years in

Jasinski D.M. (2002).	design	What are factors that influences a CRNA to participate in research?	practice, educational level and whether or not involved in research. Previous exposure to teaching hospitals influenced subsequent research and if they been exposed to research on the job or mentored by research staff. CRNAs in rural hospitals and independent practices were more likely to participate in research. Differs from nursing research in being quantitative and more submit their work. Barriers to research include lack of time, interest, motivation, resources, and funding.
Hicks, C. (1992).	Quantitative	Do nurses have a lower perception of nurse authored research compared to physician?	No statistically significant difference in quality, clarity, expertise, or contribution to the literature…however nurses consistently rated the "nurses" paper lower in terms of statistical analysis and research design. In addition female nurses judged the "nurse" authored paper as having less expertise than male nurses.
Hicks, C. (1995).	Survey descriptive	To discover why nurses do not publish more.	Nurses generally had a positive view of research. Younger nurses are more likely to be positive about and involved with research. 71% of the nurses have been involved with research. Of those involved 58% had written it but only 10% had submitted it for publication and 9% had been accepted for publication. Reasons for not doing research included lack

			of confidence and lack of time. Reasons for not submitting research for publication included being insecure with research methodology, lack of confidence and time.
Hicks, C. (1996).	Two Parts: 1. Development of attitude scale (38 item scale reduced to 13 after tested randomly on 45 nurses & reliability tested 3 weeks later with the same results. 2. Factor Analysis	To examine nurses attitudes towards research. To examine why relatively few studies/research are submitted for publication.	Factor 1: Subjective/personal barriers to research included lack of motivation, interest, confidence, and belief in the value of nurse-related research. Those with negative attitudes were less likely to conduct research. Factor 2: Organizational/structural barriers included the nurses role in research, time, training and the need for training requirements. Factor 3: Medical view of nursing research included doctor's view of nursing research (ie nursing uses more qualitative while MDs use quantitative). Nurses may be viewed and view themselves as more subservient than physicians. Factor 4: Allied health view of nursing research as inferior and fail to adopt findings into clinical practice. Nurses also have a lack of confidence towards their own research. Factor 5: Nursing research does not make an impact and nurses may not be competent to carry our research.
Lupien, A.E., &	Descriptive, survey	To identify what the educational	Two thirds of all programs felt that scholarly output was

Rosenkeotter, M.M. (2006).		preparation of CRNA faculty is. To describe the role expectations of CRNA faculty.	essential or desirable (this included writing for publication, conducting research, and speaking at professional conferences). Only 5% of the programs reported spending at least 0.20 FTE or more on funded research/non-funded research. Up to 62% and 58% of the programs reported spending no time on funded or unfunded research repectively. No time was spent guiding student research for 27% of the programs. Only 64% of the programs reported 1 scholarly product per year and 28% reported at least 1 scholarly product per faculty member per year. Didactic/clinical teaching and administration accounted for 66% and 75% of allocated time for program and assistant program directors. Program directors spent 10% of their time on research and assistant directors 5%.
Merwin, E., Stern, S., & Jordan, L.M. (2008).	Survey, descriptive	What are the differences between academic and clinical CRNAs?	There is a wide range in salary. Academic positions earn less than clinical positions. Faculty can earn outside sources of income; however, some universities restrict this activity. There is a general vacancy rate for academic CRNAs of 30-34%. Salary, workload, and academic credentials are barriers for recruitment.
Merwin, E., Stern, S., & Jordan, L.M. (2008).	Survey, descriptive	What are the differences and work activity between academic, clinical	Barriers reported for volunteer clinical faculty are no financial incentive, extra work load, required to always

		faculty and non faculty CRNAs? What are the barriers to teaching as a clinical faculty.	teach students, lack appropriate credentials. Clinical faculty administered fewer anesthetics than nonfaculty but more than academic faculty. The overall number of hours worked was about the same but activities varied.
Starnes-Ott, K., & Kremer, M.J. (2007).	Quantitative, survey, descriptive	What can be done to recruit and retain CRNA faculty?	Several areas were explored. Faculty felt that the following should be subjects of workshops: innovative instruction, curriculum development, negotiation skills, leadership, grant writing. Fellowships should be considered for: assist in obtaining doctoral degrees, financial support, educational grants, shadowing. High priorities for recruitment and retention included: an annual survey of salaries, develop resources to assist new faculty, revise Medicare teaching rules, const benefit workbooks, distance learning opportunities through the AANA Learning Center.
Taunton, R.L., Oetker-Black, & S., Woods, C.Q. (1990).	Content analysis qualitative	How do two different decades compare concerning nurse anesthesia research? How does nurse anesthesia research compare to nursing research in general?	Focus of research included evaluation of specific anesthetic techniques, anesthetics, interaction of anesthetic techniques for particular patient conditions, and characteristics of CRNAs. Over time research has become more theoretically orientated as has nursing. Use descriptive studies more than nursing in general. Case studies were frequent while rare in nursing research. Experimental

			studies doubled over the decade with more stating a research hypothesis. Physiological measures used and retrospective review of patient charts. Most commonly used descriptive statistics. Use of statistics less than nursing in general.
Winslow, E.H. (1996).	Descriptive, opinion	Of the abstracts presented at the American Association of Critical Care Nurses' National Teaching Institute in 1989 how many were subsequently published as full articles in a six year period following initial presentation?	62.5% of the abstracts were not published as full research articles in the subsequent 6 year period.

Nurse Anesthetists as Faculty

The role of nurse anesthetists as faculty continues to evolve. From the very early chapter on the administration of anesthetics in 1893 (Bankert, 2004) to the appointment of Alice Hunt, in 1922, as the first nurse anesthetist to be appointed as an university medical school faculty at Yale (Gunn, 2005) to the current push towards doctoral prepared faculty, the “gold standard” for university faculty includes a doctoral degree. The COA of Nurse Anesthesia Educational Programs stated in 2004 that a doctoral degree is the preferred credentials for a program director, though only 16% of the programs report that their program director or assistant program director had a doctorate. Out of 213 full time faculty only 53 (24%) had a doctorate. Of the 53 faculty that had a doctorate 75% had a traditional degree (PhD or EdD), 21% had a clinical doctorate (DNSc or DSN), and 4% had a professional doctorate (ND or JD). Furthermore, a survey

of 73 nurse anesthesia programs found that 34% of the nurse anesthesia programs reported that none of their faculty had a doctorate or were currently enrolled in a doctoral program. Only 49% of the reporting programs documented that they had one doctoral prepared faculty and 16% reported at least two (Lupien & Rosenkoetter, 2006). The number of doctorally prepared full time faculty had not changed substantially in 15 years with 22% in 1991 compared to 25% in 2006 (Frels & Horton, 1991; Lupien & Rosenkoetter, 2006). It was noted by Lupien & Rosenkoetter (2006) that nurse anesthesia faculty have fewer doctoral-prepared faculty than the nursing profession overall and significantly fewer doctoral-prepared faculty when compared to nurse practitioner faculty.

Scholarly Production

A recent survey of nurse anesthesia faculty was conducted concerning scholarly production; however, there was not a breakdown comparing doctoral prepared and non doctoral prepared faculty. Research and publication were seen as an 'essential' activity by two-thirds of the faculty responding to the survey. However, when scholarly activity was reviewed, defined as a poster presentation, journal article, or book chapter, it was found that only 64% of the responding 74 programs reported one scholarly product per year. When individual faculty scholarly production was reviewed, it was found that only 28% of the faculty reported at least one scholarly product per faculty on a yearly basis. Though the respondents felt that research and scholarly writing are important aspects of academics, very little time was spent on these activities. In addition, the exact extent to which nurse anesthesia faculty are mentoring students on the development of skills, required to conduct research; and generate scholarly activities, including writing for

publication, is unknown (Lupien & Rosenkoetter, 2006). It is unknown what degree nurse anesthesia faculty are mentored in the writing process. A formalized mentoring program of academic faculty in medicine found that participants acquired the knowledge, skills, and support required to write for publication. Each of the eighteen assistant professors had completed at least one scholarly manuscript by the end of the mentoring program. At this time, the long term effects are not known and this qualitative study is limited by sample size and non-randomized nature of the participants (Pololi, Knight, & Dunn, 2004).

Roberts and Turnbull (2002-2003) have documented that Australian academic nurses contribute to the scientific literature less frequently than other disciplines. The production of scholarly manuscripts was positively associated with academic qualification, rank, and promotion. It was also found that writing for publication was not associated with gender, size of the university, and undergraduate education. The authors suggested that academic nurses with publication expertise should mentor colleagues in the development of skills required to be productive in scholarly output. In 2009, the scholarly output of manuscripts and associations among nurse anesthetists is unknown.

Barriers to Scholarly Production

Barriers to the publication of scientific literature by nurse anesthesia faculty have not been well described in the literature. Jutel (2007) surveyed nursing faculty in New Zealand concerning barriers to publication in the Polytechnic sector. New Zealand's education of nurses differs from the United States. In 1991, the first baccalaureate program was accredited followed by accreditation of the first postgraduate program in 1997. New Zealand nursing programs are just beginning to embark on research and

writing for publication and a survey of research active faculty was undertaken. The author did not identify reliability and validity of the survey instrument. Closed ended, open ended, ranking, and a blank for additional comments were provided. Seventy-seven of 171 nurses returned the survey. Time was a barrier for 74%, 20% were unsure of how to start writing, motivation to write was a barrier for 21% , 13% did not understand the publication process, 11% had a perceived issue with writing well enough to express themselves, 9% did not have a subject, and 7% did not like to write. To help improve writing output 62% of the respondents believed that having allocated time would help, 55% believed that collegial input and critique would be useful, 28% of the participants proposed writing groups, and 24% suggested co-authors. Additional time constraints included the time to actually engage in research and immersion into the current literature. Recommendations included the use of assistants for some academic tasks to reduce workload and allow more time to pursue writing; the establishment of a physical space for writing, such as a writing room; have writing group activities meet and work on projects; and the creation of a mentoring program for new writers. Among nurse academics in Australia, factors that inhibited scholarly output, including the availability of adequate time due to their other duties. Factors that facilitated scholarly production were allowing nurse academics' the time to pursue activities, active research, and writing groups (Roberts & Turnbull, 2004). Barriers identified by medical faculty at one institution included lack of experience and knowledge related to writing for publication, anxiety and lack of confidence, avoidance of criticism, and writing was not a necessary component of their job (Pololi et al., 2004).

Specific issues related to the challenges of scholarship were explored by Worrall-Carter and Snell (2004). A qualitative, grounded theory approach was utilized for extensive interviews of 20 nurse academics in Australia. Nurses transitioning to an academic setting lacked prior experience with research and writing for publication which affected scholarly production. Some institutions reduced the number of faculty positions which placed an additional workload on those that remained. It was also argued that because nurses come from a verbal culture the transition to academic writing can be a difficult transition. Nurses are also trying to attain additional education and higher degrees limiting the time and energy available for scholarly work. There also appears to be a lack of organizational assistance to help nurse academics grow. Institutions that allowed time, reorganized workloads and responsibilities, provided for professional development of the skills required for scholarly output, as well as collaboration with other specialties, increased scholarly output among nurse academics.

Table 2-4: Research Related to Faculty provides a summary of literature concerning research related to healthcare faculty.

Table 2-4. Research Related to Faculty

Author	Type of Study	Research Question/Purpose	Findings
Frels, L., & Horton, B. (1991)	Descriptive survey	To describe demographic information concerning CRNA faculty.	Demographic information was reported. The majority of the respondents reported that they plan to remain as faculty for 5-10 years. 90% reported that they would recommend a faculty appointment to colleagues. Reasons to become faculty included

			the dissemination of knowledge and positive aspects of being a teacher. Salary, benefits, and cost of malpractice insurance were cited as negative aspects of being a faculty member.
Jutel, A.M. (2007). Writing for publication in the polytechnic or 'new university' sector. Nurse Author & Editor, 17, available online at http://www.nurseeditor.com	Descriptive, questionnaire	To identify what the greatest barriers are to writing for publication by research active staff. How to improve scholarly output.	Time was a barrier for 74%; unsure of how to start for 20%; 21% are motivated by other things besides writing; 13% unsure of the publication process; 11% had a perceived problem with writing well enough to express themselves; 9% did not have a subject; 7% did not like to write. To help improve writing output 62% of the respondents felt that having allocated time would help; 55% collegial input and critique; 28% writing groups; 24% co-authors.
Lupien, A.E., & Rosenkeotter, M.M. (2006).	Descriptive, survey	To identify what the educational preparation of CRNA faculty is. To describe the role expectations of CRNA faculty.	Two thirds of all programs felt that scholarly output was essential or desirable (this included writing for publication, conducting research, and speaking at professional conferences). Only 5% of the programs reported spending at least 0.20 FTE or more on funded research/non-funded research. Up to 62% and 58% of the programs reported spending no

			time on funded or unfunded research repectively. No time was spent guiding student research for 27% of the programs. Only 64% of the programs reported 1 scholarly product per year and 28% reported at least 1 scholarly product per faculty member per year. Didactic/clinical teaching and administration accounted for 66% and 75% of allocated time for program and assistant program directors. Program directors spent 10% of their time on research and assistant directors 5%.
Pololi, L., Knight, S., & Dunn, K. (2004).	Qualitative (data analysis of narrative and open-ended questions)	What are barriers to academic writing among faculty members? What is the effect of a mentoring program among faculty members?	Barriers reported included: novice writer, no preparation for academic writing, anxiety and lack of confidence, fear of criticism, and not a specific job requirement. A peer mentoring group provided the participants with knowledge of the publication process and writing, provided the skills, and provided the support required to complete at least one scholarly manuscript for publication. No long-term follow up.
Roberts, K.L., & Turnbull, B.J. (2002-2003).	Quantitative, correlational, descriptive study	Scholarly production (defined as authorship of journal articles) found that academic nursing in	About 46% of all nurse academics in Australia had published during a two year period that was

		Austrailia lags behind other disciplines. What is the current scholarly output among academic nurses?	studied. Scholarly production of published articles was behind other disciplines. Academic qualifications, rank, promotion all had positive associations with output. Employment, gender, size of university, and basic education did not have an association
Roberts, K.L., & Turnbull, B.J. (2004).	Quantitative, descriptive, correlational	What factors do nurse academics' identify as those that facilitate scholarly productivity and those that are seen as a hindrance?	Top three constraints included coordination of course work, teaching, and university demands/work load. Things that facilitate scholarly production include time, research, and writing groups.
Worrall-Carter, L., & Snell, R. (2003-2004).	Qualitative, grounded theory	What are nurse academics' perceptions and experiences concerning scholarship and research?	Nurse academics described problems with transitioning to academia and lacked experience. As they try to advance their education by attaining higher degrees, they find it hard to produce scholarly work. Nurses come from primarily a verbal culture and adapting to writing for publication is a difficult transition. There is inexperience in writing grants. Research and scholarship are given a low priority by the institutions and the workload makes it so they have to delay scholarly projects until other objectives are met. There is a need for additional support for

staff development, redefining responsibilities, organization of workloads, and changing work patters.

Summary

In 2006, there were over 30,983 active Certified Registered Nurse Anesthetists (CRNAs) and 5,125 Student Registered Nurse Anesthetists (SRNAs) in America (AANA, 2008). There were 16,257 CRNAs that responded to the 2006 AANA Demographic survey. Of those that responded 187 CRNAs were primarily employed in education and research (AANA, 2007) The nursing specialty of nurse anesthesia has a long and distinguished history. It is the oldest advanced practice nursing specialty. Despite this history, there are fewer published textbooks and journals compared to other advanced nursing specialties (Waugaman, 1991). Part of the problem may stem from the considerable overlap between physicians and nurses that specialize in the administration of anesthesia. Several journals and numerous books are produced by anesthesiologists that contribute substantially to the body of knowledge shared by both professions. Competition may diminish the necessity of scholarly production, but this conjecture clearly does not explain why there is a relative dearth of scholarly output.

The academic CRNA is suitably situated to write for publication. Barriers to research identified by Cowan et al. (2002) include: lack of time, interest, motivation, resources, and funding (2002). Steps to improve research output have also been suggested (Lupien & Rosenkoetter, 2006). Barriers to scholarly output have also been alluded to in the research and include the inability to find time for the academic CRNA to produce their

own work as well as mentor students in their own pursuits (Lupien & Rosenkoetter, 2006). In addition, there are several opinions on barriers to writing for publication. Overall the literature demonstrates a paucity of information related to barriers encountered by academic CRNAs to the publication of scientific literature. A formal study utilizing a qualitative design would illuminate the phenomenon of barriers by fully exploring this subject with academic CRNAs.

CHAPTER III: METHODS AND PROCEDURES

Research Design

A qualitative approach, utilizing a descriptive design with content analysis, was utilized to identify publication barriers experienced by CRNAs in the academic setting. Qualitative description has been criticized in the past as being simplistic in the realm of qualitative research. This approach has its roots in naturalistic inquiry (Polit and Beck, 2008). Despite criticism qualitative descriptive research is a valid method to categorize data, create an 'interpretive description' of the subject being studied, and analyzing data that does not require conceptualization or abstraction (Sandelowski, 2000). The intent of this study was to describe the meaning of "barriers" to individuals within the academic setting, perceptions of their preparation to write for publication, identification of major and minor barriers, how barriers impact professional development, and perceived rewards of writing for publication in the scientific literature. By exploring individual experiences with "barriers" it was hoped that an overall description of the phenomena could be described. Because the purpose was to identify academic CRNAs perceptions concerning barriers and provide a summary of the data without in-depth interpretation other qualitative or theoretical approaches, it was deemed as not appropriate to the aims and intent of this study (Sandelowski, 2000; Polit & Beck, 2008).

Ethical Considerations

Sensitivity to ethical concerns was maintained during this study. Institutional Review Board approval was obtained prior to the initiation of the study (Appendix A). Participants were provided a written explanation of the purpose of the study and allowed to review the questions prior to the interview to ensure that there were no elements of

deception. Participants were provided with a copy of their rights as a research participant and consent form after agreeing to participate (Appendix B). Written consent was sought and confidentiality was maintained to protect the anonymity of the participants. Each interviewee was assigned a generic letter and number for identification. The identities were only known by the researcher. Transcripts were carefully reviewed and any reference that could potentially identify a participant was removed. Audio tapes of interviews were destroyed after an audit was performed. Transcripts were available only to the typist, researcher and those involved with the audit process. Quotes that were used to demonstrate themes and subthemes were carefully evaluated to ensure that there was no information that could potentially identify a participant. There were no power imbalances. Participants were treated with respect and there was no discrimination or stereotyping.

Identification of Sample

The participants for this study were academic CRNAs primarily employed in an academic setting. A purposive sample identifying participants whose primary function is the education of nurse anesthesia students was undertaken. Purposely sampling CRNAs involved in the academic arena, a homogeneous sample strategy was employed. This sampling strategy helped to focus, reduce, simplify, and identify the barriers that may be commonly encountered by this population. The sample included a minimum 15 CRNAs who were invited to participate after meeting the criteria of being an academic CRNA. Criteria to qualify as a participant included a CRNA who is primarily employed in an academic setting and involved in the educational process of student registered nurse

anesthetists (SRNAs). A minimum of 10% of the faculty's time must be spent in didactic activities.

The sample included a relative equal distribution among geographic locations including the West, Midwest, South, and Northeast. Geographic regions were identified according to Census Regions and Divisions of the United States. Individual states were divided into regions were Northeast: Maine, New Hampshire, Vermont, Massachusetts, Connecticut, Rhode Island, New York, New Jersey, and Pennsylvania; South: Delaware, Maryland, Washington DC, West Virginia, Kentucky, Tennessee, North Carolina, South Carolina, Georgia, Alabama, Mississippi, Arkansas, Oklahoma, Texas, Louisiana, and Florida; Midwest: Ohio, Michigan, Wisconsin, Indiana, Illinois, Missouri, Iowa, Minnesota, North Dakota, South Dakota, Nebraska, and Kansas; West: Montana, Wyoming, Colorado, New Mexico, Idaho, Utah, Arizona, Nevada, Washington, Oregon, and California. Experience in writing for publication was also taken into account in the selection of academic CRNAs. Approximately half of the participants had at least one manuscript published and the other half did not.

Demographics

Descriptive information was collected from the participants. Information collected included if tenure is available at their institution, if the faculty member is currently tenured, age, gender, educational background, publication history, and location of the school of nurse anesthesia within the institutional structure (Appendix C).

Description of Setting

Interviews took place via the telephone.

Questionnaire

The overarching research question was what are actual or perceived barriers to publication of scientific literature by CRNAs primarily employed in the academic setting? Participants were asked open-ended, evolving, and non-directional questions about this phenomenon. Research questions were exploratory, identifying actual/perceived barriers. The questions were designed to be answered by individuals describing their individual experiences and perceptions in a narrative manner.

The central question was "What are all the barriers to writing scientific literature for publication that you have experienced?" The issue orientated questions were explicit. The purposes of these questions were to explore subtopics related to the central question. This aided the exploration and illumination of the phenomena. The issue orientated questions included:

"How were you prepared for participating in writing for publication during your anesthesia training and/or graduate educational experience?"; "What do you consider to be major barriers which impede your ability to write for publication?"; " What do you consider to be minor barriers?"; "What do you think could be done to minimize, diminish, or remove barriers that you are encountering?"; "How do barriers that you encounter impact your professional development?"; and "What do you perceive as the rewards of publishing in the scientific literature?" (Appendix D).

The procedural sub-questions were not explicit. They were dictated by the direction of the interview. Additional questions were asked to help illuminate the essence of the phenomena.

Procedure

A list of accredited schools was obtained from the American Association of Nurse Anesthetists (AANA) web site. A call for participants was sent to each accredited school in the continental United States. Interested participants responding by email were provided with an introductory letter containing basic information concerning the study, a three-page consent form, a research participant's rights letter, as well as a copy of six open-ended questions that would be asked during the interview. After written consent the participant was contacted by email to set up a convenient time to conduct a recorded telephone interview. Prior to recording, introductory comments were made, and participant questions answered. It was verified that the participant received and had the opportunity to review the study questions prior to the interview, and verbal permission was obtained prior to recording of the interview. Each participant was assigned an alpha numeric codes (that is A1, A2…) to maintain confidentiality. Verbatim transcripts were compared to the audio recording to confirm accuracy. Each participant was encouraged to review the transcript to ensure that it accurately reflected the interview. Audio tapes were destroyed after verbatim transcripts had been confirmed.

Data Analysis

Verbatim transcripts were analyzed using descriptive qualitative content analysis techniques (Sandelowski, 2000; Downe-Wamboldt, 1992; Graneheim & Lundman, 2003). Analysis focused on manifest content. The unit of analysis for coding purposes was the entire response to the question. Responses that contained more than one content area were duplicated into multiple categories. Transcripts were reviewed multiple times allowing inductive development of initial codes with NVivo 8. Codes were revised and

condensed to identify categories. Subthemes were identified that pertained to each overarching theme. All data related to the questions were treated equally. An audit trail was conducted by experienced qualitative researchers who verified accuracy and reviewed coding processes indicating a transparent decision making trail of horizontalization and categorical aggregation.

Summary

The purpose of this qualitative study, utilizing a descriptive design with content analysis, was to identify actual or perceived barriers to publication of scientific literature by academic Certified Registered Nurse Anesthetists (CRNAs). Barriers were defined as any perceived or actual impediment to writing scientific literature for dissemination of information in medical/nursing/education related journals. Participants described barriers to writing for publication, identified potential solutions to percieved barriers, evaluated how barriers impact professional and personal development, and explored perceived rewards associated with publication. Participants were identified as defined by the operational definitions of this study. Participants were recruited through a call for participants and snowballing techniques. Geographic locations are represented by the participants. Approximately half of the participants had published at least one manuscript and the other half will have no prior publication history. Demographic information was collected prior to the interview. Participants were contacted via email. After a signed consent had been received, all participants were allowed to review the questions prior to the interview. Transcribed transcripts were compared to actual audio recordings to ensure accuracy. Participants were encouraged to review transcripts to ensure it accurately portrayed their response. Transcripts were analyzed using descriptive

qualitative content analysis techniques and responses were coded. An audit trail was conducted by experienced qualitative researchers to indicate a transparent trail of horizontalization and categorical aggregation. Data were categorized to create an interpretative description of barriers to publication in the scientific literature.

CHAPTER IV: RESULTS

Introduction

Approval for "Barriers to the Publication of Scientific Literature by Academic CRNAs" was received from College of Saint Mary Institutional Review Board on February 5, 2009. The category of the study was exempt review. The Institutional Review Board assigned approval number CSM-08-76 to the study (Appendix A). Initial call for participants commenced in February of 2009. Subsequent calls were initiated as additional participants were required. Data collection occurred from February 2009 through May 2009.

Demographic Information

A total of 15 academic CRNAs participated in the study. Approximately 120 pages of verbatim transcripts were generated from the interviews. Sixty percent of the participants had at least one publication and 40% had not previously published (Figure 4-1).

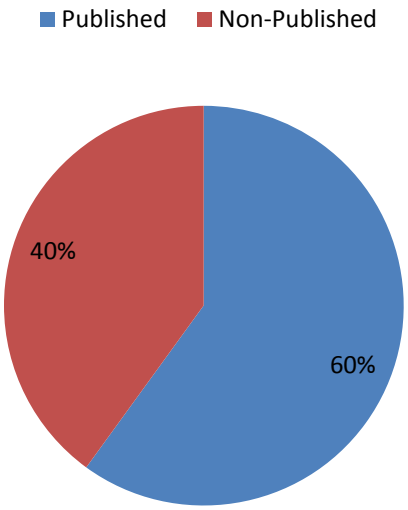

Figure 4-1. Publication History

Twenty-seven percent were male and 73% were female (Figure 4-2).

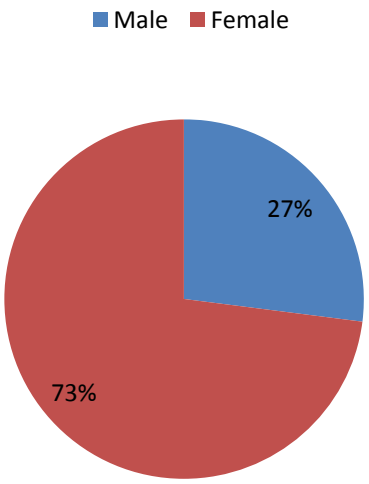

Figure 4-2. Gender of Participants

The majority of the participants (60%) were aged 50-59. Twenty percent were 40-49, 13% were greater than 60 years of age, while 7% were between 30-39 years of age (Figure 4-3).

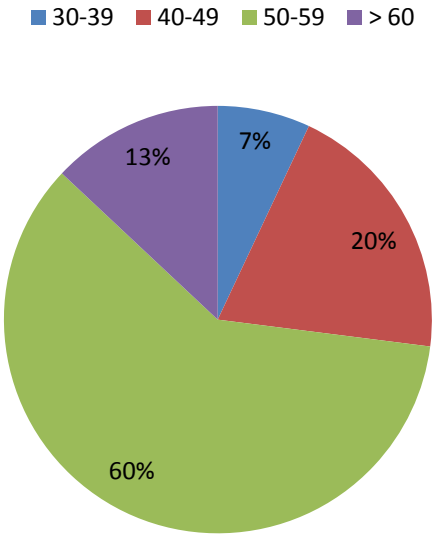

Figure 4-3. Age of Participants

Geographically 27% of the participants were located in the Northeast, 20% from the South, 27% from the Midwest, and 27% were from the West (Figure 4-4).

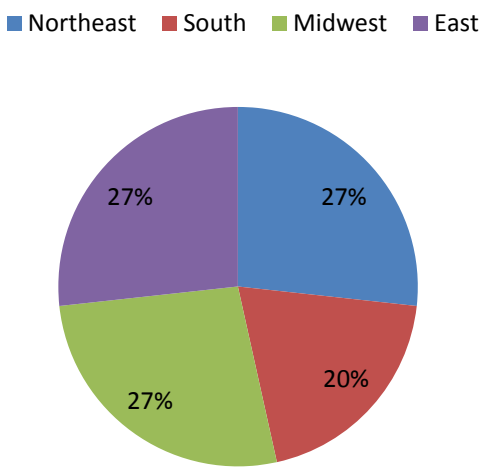

Figure 4-4. Geographic Location of Participants

Forty percent of the participants currently had a doctorate (Figure 4-5).

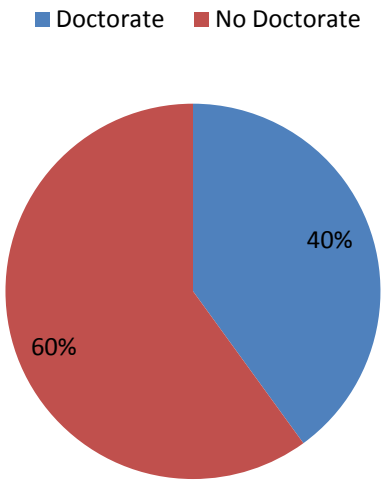

Figure 4-5. Participants with a Doctorate

Nurse anesthesia programs were located within the College of Nursing for 40% of the participants, College of Allied Health/Health Sciences for 33%, and other for 27% (Figure 4-6).

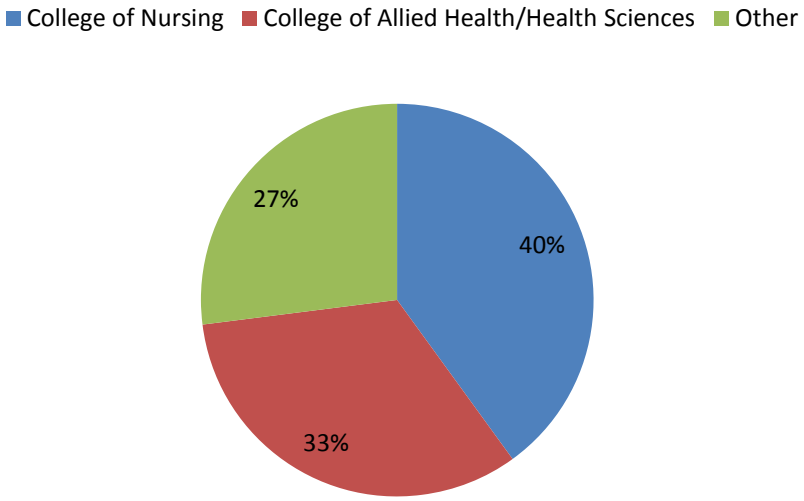

Figure 4-6. Affiliation of Nurse Anesthesia Program

Sixty percent of the participants had tenure available at their institution (Figure 4-7).

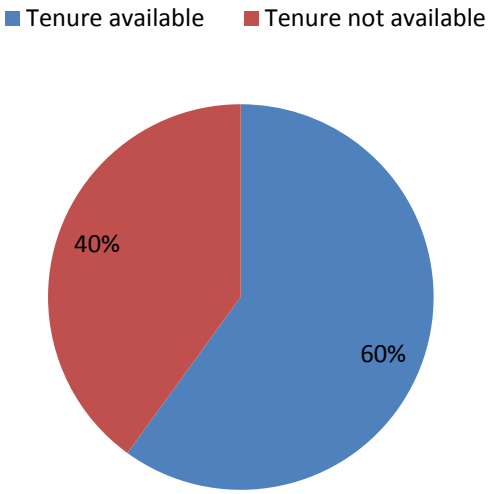

Figure 4-7. Tenure Available at Institution

In institutions where tenure was available only a third were tenured (Figure 4-8).

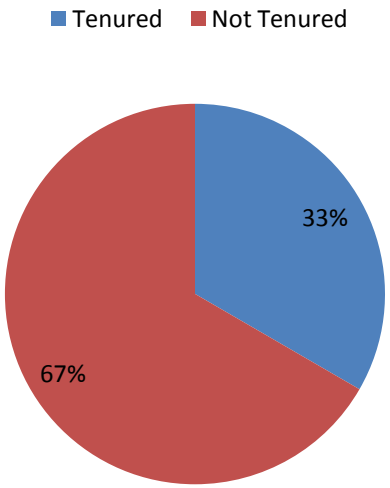

Figure 4-8. Percentage of Participants who were tenured

Data Analysis

Transcripts were analyzed multiple times allowing for the inductive development of initial codes with NVivo 8 (QRS International, Cambridge, MA.) All data that were related to the question were treated equally. Codes were continually revised and condensed as categories were identified. Overarching themes and subthemes related to each overarching theme were identified for each research question.

Data analysis revealed four overall themes: barriers to the publication of scientific literature; measures that may minimize, diminish, or remove barriers for participants; the effect of barriers on professional development; and rewards associated with publication in the scientific literature. Each major categories themes and subthemes will be identified and discussed. Research questions applicable to each theme will be reiterated prior to each discussion of themes to ensure clarity.

Barriers to Publication of Scientific Literature

There were six barriers to the publication of scientific literature by academic CRNAs that were identified. Research questions that pertained to this theme were as follows: What are all the barriers to writing scientific literature for publication that you have encountered; what are the major barriers that impede your ability to write for publication; and what are the minor barriers? Responses that contained more than one content area were duplicated into multiple categories. Barriers included time, institutional, preparation, motivation, limited outlets for dissemination, and mentorship (Table 4-1 and Table 4-2).

Table 4-1. Barrier's to the Publication of Scientific Literature

Barrier's to the Publication of Scientific Literature
Time • Academic demands • Process • Prioritization
Institutional
Preparation
Motivation
Limited Outlets for Dissemination
Mentorship

Table 4-2. Number of Participant's discussing each Barrier

Barrier Identified	Number of Participants
Time	15
Institutional	9
Preparation	9
Motivation	7
Limited Outlets for Dissemination	5
Mentorship	4

Time

> "Barrier number one is time. Just the opportunity to be able to sit down and do scholarly works on a regular basis—that's number one." **A12, Line 2-3.**
>
> "Oh, sure. I mean, time goes in there again. There's never enough time to get everything done. I mean you could spend your entire world…entire life working on your career, you know. You can't do that though; other things come up. There's just not enough time I think to get everything done." **A3, Line 183-186.**
>
> "The biggest barrier I've encountered is finding the time.**" A15, Line 2-10**

The most common barrier was that of time. All fifteen participants discussed this barrier. Subthemes of time included academic demands, the process of producing scholarly works, and prioritization.

Academic Demands

The most complex of the subthemes were academic demands placed on CRNA faculty. Academic demands may be dictated by the varying structures found within nurse anesthesia education.

> "Well, there were times when I was not in full-time academics that I taught, but my money came from a hospital or an anesthesia group and I didn't have the time because that was not part of my job. I was paid to do anesthesia and to teach students in the operating room and to lecture and that's how my time was apportioned. So, any writing that I wanted to do—I did on my own time." **A1, 14-18.**

> "Well, I think that just most of my regular workday, you know, for me, it doesn't include a research or writing component because I'm not a university employee." **A4, Line 12-14.**
>
> "So, it's primarily, for me, administration, service, teaching, and then scholarship and because of my administrative role of being more than 50% of what I do and teaching a full-time course virtually throughout the whole year, it leaves little time, at least in the normal workday, to do scholarly work." **A12, 26-30.**

Nurse anesthesia programs that are not within a university structure may not have the expectation to produce scholarly works. Dedicated time to pursue these activities may not be allowed by the expectations, philosophy, and goals of individual programs. However, lack of dedicated time to pursue scholarly activity is also evident in some nurse anesthesia programs that are structured within university settings.

> "You know, we're kind of overwhelmed I think in academia with administrative work, student work, mentoring, teaching—that there's really, you know…the scientific writing has to be kind of on your own time after five o'clock and on the weekends." **A3, Line 2-5.**
>
> "With time I'd have to say any…any writing or scientific literature that you'd want to do would have to be done on your own time. It would have to be done on personal time…" **A5, Line 22-24.**
>
> "I work about fifty to sixty hours a week and then the time leftover is not really…there's not really time there to do anything; so, ideally it would be nice if I was given an opportunity to pursue research opportunities while I was actually at work. " **A15, 49-52.**

Participants mentioned administrative demands; didactic requirements including class time, course preparation, and evaluation; participating in clinical teaching; and meeting with students. Some academic CRNAs have dedicated office days but this time may be spent on academic demands other than writing scholarly works.

> "…even though we get office days, the office days are used just to keep up with program responsibilities—meeting with students, class-time preparation…" **A5, 26-28.**

If an office day is spent working on scholarly works there may be the perception that the academic CRNA is not "busy".

> "…the interruptions, you know, people see you in your office, students see you in your office and blast in there. It's like, 'Well, if you're sitting at the desk just typing away, then, you know, you've got time to see me.' So it is a time management issue." **A7, Line 54-57.**

Most nurse anesthesia programs have a relatively small number of faculty and may not always be fully staffed. This places additional demands on time as each faculty member must take on additional academic responsibilities to sustain the program.

> "I would think probably the most prominent would be time; to get time to dedicate to actually doing scientific research. We have a very large program and a very small staff in very tight economic times; so, I don't think that there's a lot of time outside of teaching and administration to get much else done." **A9, Line 2-5.**

Increasing focus on having doctoral prepared faculty in nurse anesthesia programs has prompted academic CRNAs to pursue doctorate degrees. For academic CRNAs that

do not have doctorates, this academic expectation competes for time as they pursue an advanced degree. Individual academic CRNAs currently pursuing a doctorate discussed the limitation of time to pursue writing for publication due to the demands of their individual programs.

> "Time is the biggest one. We have…I think that within the specialty, we are in the situation of playing catch-up in terms of getting our people with the academic credentials that, in fact, that are going to sustain them within academia and it's a long history that we've developed for ourselves, which is I think is a challenge for us. As such, we have people who are running programs where they may be functioning at the master's level within higher education, in which any other faculty member is entering at the doctoral level; so it's a real challenge for us in terms of trying to run a program for our people to go ahead and get their doctoral preparation to put a research program together to sustain themselves as well as run a program—a clinical program with all of its heavy requirements. It's a huge challenge for people." **A6, Line 2-12.**

Process

Actual logistics of the processes involving writing of scholarly works are time consuming and labor intensive. Academic CRNAs discussed this subtheme as a barrier related to time. Time impacts all aspects of the process involved from idea generation to the review process after submission of manuscripts. With busy academic schedules the time required to clearly delineate an idea of inquiry can act as a barrier.

> "No, I guess…part of it is also, you know, generating ideas, you know, that are worthwhile and having the time to think about those ideas and what you would do with them. " **A15, Line 43-45.**

Once an idea is identified a specific course of inquiry may involve research. The process of obtaining institutional permission to proceed with an actual study can be time consuming and act as a barrier.

> "The other potential problem with publications is if you're going to write something about research that you've done, the other issue becomes being able to get the research done, which involves IRB approval and that is very often a long and time-consuming and difficult process and, a lot of times, people just don't have the time to do that. Basically, the major barrier I see is one of time." **A1, 5-10.**

After navigation of the Institutional Review Board process actual participant enrollment and data collection can be problematic.

> "The things we struggle with: time. Then, the…when I'm…when we're thinking of doing research and partnering with our students, almost all of our patients—are pre-registered and AM admitted and they're pre-registered by phone; so access to the patients, in terms of enrolling them in a study, you know…those are the things that we have…we struggle with the most." **A4, Line 5-9.**

Time involved with the actual writing process can act as a barrier.

> "Well, the barriers that I've run across are primarily time, you know. To write takes a lot of time and it's difficult very often in people's schedules to find the time to work this in…" **A1, Line 2-4.**

After submission of a manuscript the length of the review process can act as a barrier for some.

> "Length of time for the review process—that's probably the biggest one. Some journals are very good about, oh, sixty days; some journals will take longer than that. In fact, I've had to re-initiate communication with the journal when that happens because I'm not sure if it's lost in the system or if…if a manuscript is lost in the system, or if a manuscript is still in process but they're just waiting on…like, one reviewer, which I find frustrating because, you know, you get something in—especially if it's something that they've asked you to write about and then, you know, it takes a long time." **A11, Line 2-9.**

Prioritization

The demands on academic CRNAs place them in a position where they must carefully balance time spent on personal and professional aspects of their lives.

> "Barriers for me include, you know, as for so many people, just having the time to do so in my current position. So, primarily, time because with being a full-time faculty member, I also try to do clinical work at least one day a week; so that doesn't leave a lot of time to do other things if you want to have a life outside of your employment." **A14, Line 2-6.**
>
> "…I work about 50 to 60 hours a week and then the time leftover is not really…there's not really time there to do anything; so, ideally it would be nice if I was given an opportunity to pursue research opportunities while I was actually at work. As opposed to trying to find it on my personal time." **A15, Line, 49-53.**

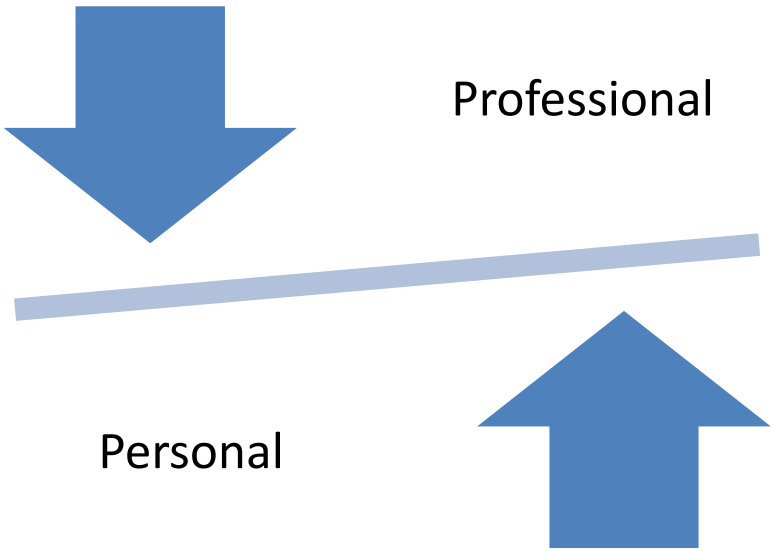

Figure 4-9. Seeking a balance in time spent between the personal and professional

Participants were asked to categorize barriers as being major or minor. Ten of the 15 participants discussed time as being a major barrier.

"So, I guess, what are the barriers that impede my ability to publish? It's a time factor." **A8, Line 120-121.**

"I would say the major areas would be time. I just…I don't have time to sit down and start another project**…" A10, Line 44-45.**

"For me personally, I think the major barrier is time and opportunity to focus on scholarly works. I think that's the major one." **A12, Line 64-66.**

The subtheme of academic demands was prominently discussed as being a major barrier in regards to time.

"Well, I think the time issue I described already in terms of many of us are in this situation where we're not only running programs of study, but we're teaching, we're maintaining clinical practices and so…and just fitting that scholarship into our day-in and day-out is a huge challenge for us." **A6, Line 33-36.**

However, the time involved actual process of conducting research with the intent of publication as well as writing for publication was also discussed.

> "Things like informed consent, things like HIPPA are all barriers right now to doing any sort of research." **A13, Line 41-42.**

Four of the participants discussed the issue of prioritization of time with a balance of professional and personal demands (Figure 4-9).

Institutional

Institutional structure, philosophy, and focus can present a barrier to the production of scholarly manuscripts. Nine participants described various aspects of this barrier. Six of the participants who saw this as a barrier have had prior publications, while the remaining participants had not published. More participants saw this as a minor barrier rather than major.

Institutional Expectations

Academic CRNAs who work within institutions that are not focused, or do not value the production of scholarly works, may find formidable barriers to writing for publication.

> "…the first one is that it's not really a focal point of our department**…" A5, Line 3.**

> "I mean, they'd like to have you publish, but that is certainly not the focus of their institution." **A7, Line 30-31.**

> "…an internal structure to support writing and stuff like that, it's not existent..." **A7, Line 40-41.**

> "We have a lot of problems with even getting it through the institution; much less the Board to do any earth-shattering original research, so there's an inherent barrier—a huge barrier right there." **A13, Line 5-8.**
>
> "Another barrier is actually…I don't get a lot of support from the hospital administration." **A15, Line 13-14.**

For institutions that do not make scholarly output a priority, the ability to perform research that is critical to writing for publication may be hampered by gaining permission to conduct research in the first place. If the focus is strictly on educating students and if revenue streams are limited to tuition, there may not be an economic incentive to allow academic CRNAs to pursue scholarly endeavors. In addition, institutions may lack resources that are supportive of writing for publication. Institutions who value writing for scholarship may be instrumental in providing opportunities for the academic CRNA to work on projects.

> "I think those supports, both at work and at home, permit me to write." **A2, Line 78.**
>
> "It's required to stay at the institution. It's required for tenureship and it's part of job performance. They'd like you to have one authorship a year." **A3, Line 13-15.**

Despite expectations of scholarly output, institutions may not always provide support or time to accomplish publication goals.

The culture of an institution affects the perceptions of fellow colleagues. If colleagues do not value research and writing efforts, then acceptance and valuable support may be lost. Lack of support may cause academic CRNAs to encounter more

difficulties as they attempt to work on projects and prove to be a source of discouragement.

> "…and other people are rolling their eyes at it because we always have things going, but to do a randomized prospective trial is pretty overwhelming in our practice because of patient access." **A4, Line 39-41.**
>
> "You know, there's no encouragement to do that from my peers and there's sort of a pervase [sic] apathy in nurses. In general, I find that they really don't consider research, you know. Like say, for example, if I were to go to someone and say, "Here. You know, I'd like for you to participate in a study." "Really! For what? Well, that's so ridiculous. What are we doing that for?" Not appreciating the fact that practice standards come from research and that they think that they're, you know, "I'm clinically oriented. I don't need…I don't have time to be involved in research. Research is, you know, sets you up in an ivory tower, not…" **A15, Line 88-96.**

Preparation

Individual preparation was a barrier for nine of the participants. Preparation was noted to be a barrier for both published and unpublished academic CRNAs. Though, nine participants discussed this as a barrier, seven felt that it was a minor barrier.

> "Some more barriers would be…I don't think many programs, when I was going through school, really did a good job of preparing students for academic scientific writing." **A3, Line 7-10.**
>
> "The average CRNA is not well-trained to write for scholarly work." **A9, Line 12.**

Participants discussed a number of aspects related to writing for publication. Generalized comments were related to academic preparation. Individual academic CRNAs commented that their educational background during their master degree programs may not have been in a discipline that focused on writing for publication. Other participants believed that a doctoral background was helpful in writing for publication; however, others did not feel adequately prepared by their program.

> "I don't think my Ph.D. did a great job at preparing me for writing scientific information or any…I guess, I guess that's the answer I want to say." **A14, Line 6-8.**

Additional areas related to writing for publication focused on deficiencies including how to initiate projects, how to conduct research, writing skills, and the logistics of how to navigate through the publication process.

> "Then, minor would just be lack of experience in that and therefore, getting into it is like, "Whew, okay. What's that going to take to get going?" **A4, Line 78-80.**
>
> "…I don't know—mostly that I don't know where to start and I don't know how to do it." **A10, Line 5-6.**
>
> "I guess the third barrier would be loss of experience on my part in terms of actual research and so…that's assuming that if I was going to write an article based on original research. I am not currently a researcher so that I consider that a little bit of a barrier, but that doesn't preclude still the ability to do scholarly work." **A12, Line 7-11.**
>
> "Well, I'm not that great of a writer so it just…I mean it takes writing and re-writing and re-writing and re-writing." **A7, Line 50-51.**

> "Minor: minor things would be stylistic problems, which you can overcome by looking at various sources and checking out websites and seeing what the requirements for author publication are, but that's sort of a minor thing that you have to—like a learned skill, but it's not something that insurmountable." **A3, Line 79-82.**
>
> "Minor barriers are, you know, not quite knowing how to navigate the system." **A14, Line 27.**

Motivation

Motivation was a barrier for seven of the participants. Academic CRNAs must have a desire to write for publication to be motivated and persistent enough to complete writing tasks. Without desire, tasks may not be completed or fail to produce a quality product.

> "I don't think writing is intrinsically rewarding. You have to go through a lot of revisions and you have to be, you know, a person who is egotistical enough to want to see their name in print and yet humble enough so that when somebody tells them that they're producing trash, they can listen and get better." **A2, Line 54-58.**

For participants that have published in the scientific literature starting a self-initiated project can be difficult.

> "So, for me, the opportunities have been more from requests by colleagues or other people who were referred to me versus my…a self-initiated project as in, "I think I'll write a review article on this particular topic since I'm very interested in it," or I've done some active research in this so I think I will write an article and

> submit it for publication. I would like to get to that point, you know, I hadn't thought about it, but for me, the most…basically, the opportunities I've had have been, thankfully, you know, people who have asked me to do something..." **A12, Line 39-45**.
>
> "When I have to write a budget for my department, it's given to me on a date and I have a due date. That's nothing like producing original works of writing or even more difficult, thinking about what to write about." **A2, Line 2-5.**

Academic CRNAs that are able to create time out of their schedule to work on writing must be disciplined to focus strictly on these endeavors.

> "In other words, if you walk into your office the first thing in the morning and turn on your computer to check your e-mail, then I believe you're making a big mistake. That's just kind of a little strategy there. I think you have to have the discipline to say this is where I'm doing my scholarship and this is all I'm doing." **A6, Line 39-43.**

Allowing academic demands to enter into committed scholarship time can affect motivation momentum and distract from writing endeavors.

> "…the motivation, you know, because when you know you're going to put this stuff down and then, you know, edit and re-edit and edit—once you get into it, you get motivated; but just, you know, getting yourself geared up—the interruptions, you know, people see you in your office, students see you in your office and blast in there." **A7, Line 52-56.**

Academic CRNAs who have not published have described a lack of incentive to produce scholarly works, either economic or job related.

> "…there's not really a money incentive to do that." **A5, Line 5.**
>
> "I mean, in our hospital-based world, outside of the student group, no one is really doing it; so, I'm not sure it's truly a barrier, but there's no real incentive. It's not a, you know, a job-descriptive expectation and other people aren't doing it where you'd kind of "catch the fever" so to speak, you know?" **A4, Line 80-85.**

Others may not see the value of what is currently being published in the nurse anesthesia literature and, thus, are not motivated to take on the arduous task of conceptualizing, researching, and writing a project. Alternatively, if they have not published in the past, they may not be motivated to publish in the future.

> "I think that probably my biggest impediment to writing something for publication would be having something interesting to say. I just see so much nonsense sort-of-information, trivial kind of things published that I'm totally not interested in. I think that the drive to publish has produced an overwhelming amount of information that's totally useless and covers just basic science and applied science career background focus—there's a lot of us in practice that think that it's not really worth that much." **A9, Line 62-68.**
>
> "…but there…it's…you've done most of your career already without writing anything kind of like, "Well, why would I do it now?" **A5, Line 36-37.**

Personal challenges, individual economic situations, and attempting to earn a doctorate degree also affect the motivation to write for publication. Participants were about evenly divided whether motivation was a major or minor barrier.

Limited Outlets for Dissemination

The profession of nurse anesthesia is very specialized which creates limitations in potential publication outlets. Five participants discussed this as a limitation to the publication of scientific literature.

> "You know, that there is just one nurse-anesthesia-specific journal..." **A3, Line 154-155.**
>
> "I could only name really one journal that I think nurse anesthetists would publish a scholarly work in that was about anesthesia." **A9, Line 18-20.**

One of the issues related to having few options for publication include the amount of time it takes from submission to publication. In addition, the academic community within nurse anesthesia is small and personal relationships may act as a barrier in the submission of manuscripts. Academic CRNAs who recognize that journals outside of nurse anesthesia that may have a mutual cross-over interest in a subject also run into limitations to the number of journals that may be interested in their chosen subject. The amount of time that it takes for a manuscript to be submitted and eventually published can also be an issue. Another issue, when choosing a journal outside the realm of nurse anesthesia, is the ability of reviewers and editors to fully comprehend the information being conveyed.

> "Sometimes, you know, I think sometimes anesthesia is so specific that there's a couple of journals that really understand what we do; but sometimes when I've put my manuscript into non-nurse anesthesia journals—ones that are just general nursing, it's a…sometimes I get a feedback from some of the reviewers that they don't understand what's going on, or they have, you know, don't understand the intricacies, I think, of our profession. " **A3, Line 36-42.**

Mentorship

Lack of mentors or mentorship was discussed as a barrier by four participants. Lack of mentorship may be related to the limited number of academic CRNAs that are available within any single institution.

> "…we don't have role models that are just a little bit older than us that can teach us, that can inspire us, that know something about anesthesia." **A2, Line 25-27.**
>
> "Also, I think there's a lack of senior faculty to mentor scientific writings because it's a true art and it's very different than regular writing." **A3, Line 5-7.**

In addition, institutions may lack infrastructure, expertise, and focus to provide opportunities and encouragement to mentor staff on writing for publication.

> "Like a lot of institutions don't offer the mentorship, so like, let's say a brown-bag lunch with senior faculty about what goes into academic writing—what are components, what are barriers, how do you get over barriers…nobody, I don't think, ever prepared me for that." **A3, Line 23-26.**
>
> "With the encouragement is… mentoring once in awhile." **A5, Line 15-21.**

Educational Experience and Preparation for Writing for Publication

The research question that pertained to this theme was as follows: How were you prepared to participate in writing for publication during your educational experience? Responses that contained more than one content area were duplicated into multiple categories. The majority of the participants did not believe that their undergraduate through master's degree educational experience prepared them for writing for publication. Five participants had prior publications and six did not. Examples of comments related to educational preparation for writing for publication include:

> "I really would have to answer that 'not at all.'" **A5, Line 42.**
>
> "My graduate education really, I'd say, didn't give me systematic preparations for academic scientific writing. I mean, they were alright at scholarly writings and projects, but it's really different to write for, I think, a journal." **A2, Line 18-21.**
>
> "I was not prepared at all." **A15, Line56.**

One area that two participants discussed, as being inadequate, included statistics and research.

> "The other area where I feel like I was…I had…I had a basic idea what research was about from my nursing research courses and my masters level and also at my baccalaureate level, but they really don't teach you how to conduct research." **A15, Line** 62**-65.**
>
> "I don't think that those research classes actually promote interest in research…" **A15, Line 69-70.**
>
> "However, the big deficit was that I didn't have a strong statistical background at the time, so most of my writings in the masters program was more or less regurgitating out of the literature without really scrutinizing the research that I was reading." **A8, Line 12-15.**

One participant spent undergraduate training in a program that valued research and writing for publication, which had a significant impact on subsequent scholarly endeavors.

> "…we had folks there…you know, nursing educators who were proponents of both research and writing and they stressed that to us, that it's part of a level of professionalism that goes beyond being a clinical nurse and so I was sort of

indoctrinated into that. So, I set a goal for myself after I finished by bachelors program and then entered a masters program that I would try and publish…" **A11, Line 35-40.**

Some participants discussed a positive impact at the masters level by participating in writing a thesis. Examples of comments concerning this issue are included below.

"That's about it for anesthesia; but, at least, I had that experience." **A2, Line 143.**

"…through that education itself, especially at the masters and doctoral level by doing projects and theses. I think that was a big part of that preparation…" **A6, Line 20-22.**

Another participant felt that experience during the masters degree helped to understand the whole process and become a better reader and consumer of literature.

"…that whole process of coming up with a design, coming up with a plan, coming up with my, you know, results, running statistical analysis—we did that whole process, so that was a long time ago and you know, to maybe think about doing that. Probably, more importantly, it led me to be a much more a consumer of literature that does come out, you know, what is a good study, what's not a good study." **A13, Line 23-28.**

Six participants had a doctorate. Four participants that currently have a doctorate, believed the experience had a significant impact on preparing them to write for publication.

"…I mean you write constantly in a doctoral program and it's constantly critiqued…I mean, every course that you take requires multiple papers to write so that you either become a fairly decent writer in a scientific way or you don't

graduate, so…. I think my educational program did, in fact, prepare me to write for publication." **A1, Line 27-31.**

"…it wasn't until I got to the dissertation and you're doing your twentieth rewrite on your proposal that it suddenly dawns on you, you know, I really don't have excellent writing skills and I need to fix it up." **A8, Line 50-53.**

"…when I actually started my doctoral program, it became very clear, very quickly that I actually did not know how to write like a scholar and it took a long time for me to overcome that—to get writing that was worthy of publication." **A15, Line59-62.**

At least two participants did not believe that their doctorate education helped prepare them for writing for publication.

"…it was really more of something we picked up on our own." **A7, Line 73.**

Mentorship was a crucial component in the development of writing for scientific literature for four published academic CRNAs during their educational experiences.

"I have a couple of good mentors who really are strong in writing who have helped me hone and fine tune my skills." **A3, Line 56-57.**

"I think having people around me who encouraged the publication and were…had experience in doing it to help you navigate through the, through the process." **A6, Line 26-28.**

"I would definitely say there were a couple of faculty in each program who not only talked about it, but did it themselves and kind of went through the process and showed you some of the nuts and bolts." **A11, Line 56-58.**

Two participants, who have not published, specifically discussed the lack of mentorship during their educational experience.

> "We were pretty much solo in those days and all doing it for the first time and all doing it on our own…" **A4, Line 57-58.**

Some participants discussed that the focus of nursing and nurse anesthesia education is primarily on the basic sciences and tend to neglect writing for publication. This may lead to students not being adequately prepared to be scholarly writers.

> "…when you have a scientifically based education or basic science—let me call it that—a basic science education—you don't develop your writing skills, you don't develop your scholarly reading skills." **A8, Line 68-70.**

> "…our master's is science and clinical oriented; it's not a research or a writing promoter." **A9, Line 32-33.**

> "Actually now, when I read students' papers, I cringe at how poorly they're written because I think that nurses are not really taught to be scholarly writers early enough along in their education. I don't think there's enough emphasis on that." **A15, Line 79-83.**

Two published participants discussed how their educational experience impacts their current teaching focus to incorporate a focus on writing for publication.

> "My premise is by teaching the students now to become scholarly readers and scholarly writers, the next step then is to teach them that they have an obligation to the profession and that is to do research—credible research and disseminate that new knowledge to the profession." **A8, Line 92-96.**

"Reading, I would say…and I teach my students this in nurse anesthesia is that the more you read the better writer you'll become." **A11, Line 62-64.**

Minimizing, Diminishing, or Removing Barriers

Participants discussed possible solutions to help minimize, diminish, or remove barriers that impede their ability to contribute to the scientific literature. Seven subthemes related to the theme of minimizing barriers were identified and include: education; time; mentorship; institutional; professional support; and motivation (Table 4-3). The first four subthemes of education, time, mentorship; and institutional had the same number of participants discuss each topic.

Table 4-3. Themes Associated with Minimizing Barriers

Reducing Barriers	Number of Participants
Education	7
Time	7
Mentorship	7
Professional Support	7
Institutional	6
Motivation	2

Education

Seven participants discussed education as a possible way to minimize, diminish, or remove barriers. The research question that pertained to this theme was as follows: What could be done to minimize, diminish, or remove barriers that you encounter?

Responses that contained more than one content area were duplicated into multiple categories.

> "Well, first of all, if the barrier is lack of preparation for doing it—education is the way to remove the barrier." **A1, Line 49-51.**

The issue of education was answered in general terms and focused primarily on what could be done during the formative education of nurse anesthesia students by five participants.

> "…I think we could do more and we've got to do more." **A2, Line 169-170.**

Research is an essential component of writing for publication. Teaching students the importance of research in relation to the clinical arena is the first step.

> "Well, like I just said, I think one of the things you could do to minimize barriers would be to educate nursing students early on that research is important…" **A15, Line 121-123.**

Finding alternative approaches in the presentation of research during formative educational experiences may help reduce perceptions that research is not interesting. Engaging individual students in the research process, attention to individual learning styles, and making information relevant may help reduce the education barrier.

> "I think there needs to be a push towards students participating in actual research because once I started my research and my dissertation, I got very excited about it; I couldn't wait to see what the outcome was." **A15, Line 130-132.**
>
> "So, I think part of it is starting the education process early and the other one is improving the way that research is taught in nursing schools." **A15, Line 138-140.**

Writing skills are paramount to ensure success when writing for publication. Teaching students how to write scholarly manuscripts during their anesthesia training may help produce, foster, and encourage future scholarly output.

> "…there's more that we can do in terms of preparing people to be writers." **A2, Line 165-166.**
>
> "…students need to learn how to write or practice writing at the…in anesthesia school. They're not prepared when they come and it's really…it's very difficult to manage them and I think in order for us to have the, you know, writers for down the road, they need to be prepared now…" **A11, Line 132-135.**
>
> "…that's my next quest is to get some kind of program going for them." **A11, Line 136-137.**

A comprehensive approach, during anesthesia training, which emphasizes critical analysis and evaluation of current research, implications to current clinical practice, along with the ability to write in a scholarly manner may decrease some perceptions that research is not relevant in the clinical arena.

> "…they have to be able to critique anything you publish and be able to make the decision that's going to impact the way they practice or they're going to totally disregard it." **A8, Line 169-171.**

To ensure that nurse anesthesia faculty members are prepared to write for publication and have the necessary skills and background to teach students, two participants discussed the importance of having doctoral prepared faculty.

> "I also encourage my people to go on and get doctoral education by doctorally prepared faculty." **A1, Line 66-67.**

> "I think that the doctorate degrees themselves and the research that goes along with those types of degrees—terminal degrees like a Ph.D. or an Ed.D. is really the type of degree that we need in nurse anesthesia education because I think it really does help you educate your students on the importance of research; so, I think that the DNP, the non-dissertation or non-thesis DNP actually doesn't encourage research and I think that you may find that that is actually going to impact the quality of research and/or the motivation to conduct it…" **A15, Line 243-249.**
>
> "Until you actually participate in research, I don't think you're going to be engaged in it." **A15, Line 251-252.**

Two additional participants discussed faculty preparation to write for publication by teaching them the logistics through additional education such as workshops or seminars.

Time

The provision of dedicated time to pursue scholarly activities through negotiation and reduction of academic demands placed on nurse anesthesia faculty was discussed by seven participants. Three participants have had prior publication and four had not.

> "…or you need to negotiate with the people above you in the administrative chain, time within your workday to work on these pursuits." **A1, Line 54-55.**
>
> "Providing focused time for faculty members to do their scholarly work and this is a conversation we have all the time at our university because many faculty would like to have a lot more opportunity to do that; so, what I mean by that is

saying really allowing a person who is interested in writing to have the time in their workload to do the work." **A12, Line 81-85.**

"Not that I can really think of because, again, I'm not afraid of the writing process. I just have not had the time to do it; so, other than, again, you know, re-allocating your time—if somebody would relieve me of some of my administrative or teaching responsibilities so that I had time to write, that would certainly help considerably." **A14, Line 66-70.**

Mentorship

Mentorship was discussed by seven participants as a way to decrease barriers to publication of scientific literature by academic CRNAs. Four had prior publications and three had not published before. Aspects of mentoring that were discussed included mentorship by local faculty, mentorship at a national level, and choosing the right doctoral program to help prepare faculty to write.

One participant discussed the impact of being in a doctoral program that included a mentor that made a major impact on ability and desire to write for publication as well as to help mentor others within their own programs.

"One of the people on the graduate faculty at my university, a member of my doctoral committee, you know, my dissertation committee, sort of, you know, took me under his wing and helped and encouraged…" **A1, Line 72-74.**

Mentors can be instrumental in guiding faculty to a doctoral program that would have helped prepare them to write for scientific literature.

"…maybe what could have helped is some mentoring in terms of choosing a program that would better prepare you to be a writer than the one that I chose. I

> got a lot of really good pedagogical teaching foundational-types of information, but not preparing me to write scientific literature." **A14, Line 61-65.**

The importance of experienced faculty mentoring junior members cannot be underestimated. One participant described their desire to conduct research and write for publication but lacked a suitable mentor to help develop a line of inquiry.

> "I mean, I don't…I don't really know…like, I have lots of ideas about what I want to do with research, but then taking it to the next step it's always…it's difficult for me to take it beyond that at this point… **A15, Line 191-194.**

Senior faculty members that have experience in writing for publication can reduce barriers by taking on the role of mentor.

> "I don't think anybody has an innate ability to write well scientifically. I think it's a learned skill and it helps to be mentored by somebody above the chain—above you in the chain. I think that that's what I do with my faculty." **A1, Line 60-63.**

Mentorship on a local level can be accomplished through formal programs or writing groups and the provision of a budget that would allow interested faculty to pursue education.

> "Like, some sort of systematic, you know, once every couple months there's a lunch/work group to talk about idea sharing or problems and barriers from senior people who can help you work through it; so, a systematic way for mentorship." **A3, Line 95-97.**

> "Then, a second and very important one again is formal mentorship and guidance in scholarly writing—how to do it well, I would say and that is one of the things I

> think that I have been looking for and have been finding opportunities available at my own institution…" **A12, Line 88-91.**
>
> "So, I think mentoring is one thing right there—that there really should be somebody within a university or a college of nursing, a nurse anesthesia program to mentor all new, young faculty members when they come out of their Ph.D. program and help get them onto a path of doing research and publishing and I have not had that at this institution." **A14, Line 50-54.**
>
> "So, I guess I wouldn't want to underemphasize the importance of mentorship for new Ph.D. or doctoral anesthetists." **A14, Line 116-118.**

On a national level the American Association of Nurse Anesthetists provides some support for writing for publication.

> "…I believe that other conferences within the AANA is trying to nurture that in our colleagues, as well—providing support. You know, they always have workshops on how to write for publication scholarly articles—all of that, so I think that would…that's an important piece of it." **A12, Line 91-94.**

However, some participants felt that an expanded role of this national organization in the area of mentorship may help reduce some of the barriers that they encounter.

> "…but you could do that on a bigger level by…a larger, national level just by doing it all electronically and helping each other out, you know. **A10, Line 71-73.**
>
> "…that we could maybe as a profession do a better job mentoring new scholars…" **A14, Line 111-112.**

Professional Support

Professional support was a theme discussed by seven participants. The theme of reducing barriers through professional support encompassed that of colleagues as well as support on a national level.

Two participants discussed the importance of collegial support in reducing barriers. Non-academic CRNAs may not always view those who spend their time on scholarly endeavors as truly 'working'.

> "…they don't see what we do as real work—writing, it's not real work." **A2, Line 316-317.**
>
> "I can tell you my friends don't really see my…the value in getting my doctorate degree and the research that I did. They think that it was all a bunch of, you know, like, "I don't know why you would want to waste your time doing that." **A15, Line 183-186.**
>
> "I don't think we have a scholarly tradition." **A2, Line 307.**
>
> "I think we need to value scholarship." **A2, Line 321.**

This perception can act as a form of peer pressure that dissuades or discourages the academic CRNA from writing for publication. If there is the perception that colleagues do not value scholarship as an important component of nurse anesthesia, then academic CRNAs may begin to question the value of what they are attempting to do.

Academic CRNAs acknowledges the professional support that the AANA provides through an annual writing workshop and the AANA Foundations Doctoral Fellowship Program.

> "…the foundation's Doctoral Fellowship Program was expanded greatly this year. They started giving away some serious money in a way that they hadn't before. **A2, Line 295-297.**

Additional professional support was discussed as being helpful in reducing barriers to the publication of scientific literature through efforts on a national level. This was discussed by six participants. One aspect of professional support could include a resource for authors on practical aspects of writing for publication.

> "If there was some sort of central resource, maybe it should come from our profession..." **A3, Line 108-109.**

A central resource for nurse anesthesia authors may serve a number of purposes. First, it would be a useful guide for newer authors.

> "I also think that there's so many journals out there and so many publication things and so many resources, but they're kind of scattered. It's hard to find a great central resource for resources. I know that sounds stupid, but a central place where people who are newer to scientific writing can get resources." **A3, Line 98-101.**

> "Sure, resources…so funding sources, stylistic writing tips, helpful pearls of wisdom from people that have gone through this before. You know, even just tips as basic as how to use EndNote or some of the other reference things out there." **A3, Line 102-105.**

Information could include how to write and apply for research grants; funding sources; the process involved with writing a scholarly manuscript; general publication process;

suitable journals for submission based on content; writing tips; use of software programs; and advice from published authors.

> "…I think there are things that can be done to help us contribute more to the literature. I mentioned what they are—I think, again, time and opportunity and then importantly—giving people resources and teaching them how to write scholarly work." **A12, Line 153-158.**

In addition, a centralized resource could potentially allow for academic CRNAs and/or other clinicians that have similar interests or research projects to communicate and collaborate.

> "…collaborating across institutions and so, you know, instead of looking internal on my institution to make writing teams, I could do that with other, you know, program faculty across the United States. " **A7, Line 101-103.**
>
> "…I wish there would be some way I could…we could figure out to get our practitioner colleagues who practice more to participate in writing and doing things together because…I mean, you know, there's a hundred-fold more practitioners than there are people that are in academia." **A7, Line 143-147.**

Mentorship is a component of professional support, on a national level, and was discussed earlier. A centralized information source would allow mentors with various areas of expertise assist their colleagues in writing for publication.

Institutional

Six participants discussed ways that institutions can decrease or minimize barriers to publication. Two overall components were discussed and included expectations and resources. Changing institutional structure, philosophy, and focus to include valuing

contributions to scientific literature would help diminish some barriers that are encountered.

> "I think a changing environment to where the expectation was that you produced a scholarly paper a period a year or something like that." **A4, Line 87-89.**
>
> "That might be an incentive if you had a group working together or if the department decided they wished to really push forward for some publishable articles every year—just that sort of philosophy and environment-based genesis would probably be the most important." **A4, Line 94-98.**
>
> "So, the hospital itself needs to change its perspective and encourage, you know, the nursing research because we have an IRB, you know, board here at the hospital but they only really look at medical…at physicians. They don't really encourage nurses to participate in research; so, I think that's…those are the three ways that you could improve…to minimize the barriers." **A15, Line 145-150.**

A second component of reducing barriers, from an institutional perspective, is to provide support for scholarly initiatives. Support includes the provision of adequate staff to help reduce some administrative and academic demands that academic CRNAs encounter; funding to pursue initiatives; opportunities to participate in preparation to write for scientific literature; and clinical resources.

> "Money. To, at least, if we could have funding provided for those who are interested in writing and using that funding either to move forward with a project that would lead to a scholarly piece or funding to get the sort of training that you need in order to write for the scholarly work." **A12, Line 95-98.**

"Clinical resources are going to have to be there. In order to do clinical research you got to have clinical resources. We're not tied to a hospital. We have many hospitals who affiliate with the school to train their students, but we are not a university-based hospital, so clinical research is very difficult." **A9, Line 97-101.**

Motivation

Two participants discussed motivation. Academic CRNAs must have a desire to write for publication. Without an interest and desire to write for publication it is difficult to overcome this barrier.

"…but it's also feeling something you just have to want to do—you have to have an interest in it." **A1, Line 84-85.**

The two participants were at odds whether an external incentive would decrease the barrier of motivation.

Effect of Barriers on Professional Development

Nine of the participants discussed the effect of barriers on professional development as being centered on individual nurse anesthesia program expectations. The research question that pertained to this theme was as follows: What is the impact of barriers on your professional development? Responses that contained more than one content area were duplicated into multiple categories. Aspects of professional development that are affected by barriers include the ability to be promoted and advance in academic ranks, opportunities, diminished opportunities to disseminate knowledge, professional prestige, and self esteem (Figure 4-10).

"Well, it depends on how one views professional development and what it means. In other words, what your job is and who pays the salary. If your job is you're a

staff-nurse anesthetist and you're being paid to either administer anesthesia to people or to teach student-nurse anesthetists to administer anesthesia to people, these barriers—and if they are sufficient to stop you from publishing, it doesn't really matter because that's not what your job is and you're not going to be promoted or retained or given a raise or anything in terms of your professional development based upon the fact that you either did or did not write because that's not your job." **A1, Line 98-106.**

"It doesn't really affect me because, you know, I'm in my job; it's not a requirement of my job. " **A4, Line 116-117.**

Figure 4-10. Expectations and Aspects of Professional Development

Academic CRNAs that are required to write for publication find that barriers may impede their ability to be promoted and continue to grow professionally.

> "…you're going to be very negatively affected in terms of your professional development. You will not, for instance, be promoted in the academic ranks. You're certainly not going to be granted tenure if you don't publish. You're not going to be valued by the people within the academic system in which you teach, assuming that the academic system is, in fact, a university." **A1, Line 110-114.**

Tenure was available in 60% of the participant's institutions. Only a third of the participants currently had tenure. Barriers can dissuade some academic CRNA's from pursuing a tenure track.

> "…then that could impact my ability to achieve tenure if I don't find the time to accomplish what is required of me on that tenure line and that's going to be, of course, publications and research." **A14, Line 82-84.**

Academic CRNAs in educational systems that do not have the expectation of writing for publication may not be motivated to pursue such endeavors. This may negatively affect professional growth and future opportunities.

> "If I were to look for another job, I would be less marketable, you know, because of that." **A4, 124-125.**

> "So, I think it really hurts my professional growth because I know if I was in a university setting, I would be encouraged to engage in scholarly activities as part of being a faculty…" **A15, Line 212-214.**

Academic CRNAs that have the expectation of publication find that barriers impede their ability to disseminate knowledge. Three published participants discussed this as an effect on their professional development.

> "I've gone through stretches where I'm pretty productive and others where I'm not." **A2, Line 370-371.**
>
> "It's a significant barrier to…you know…everybody wants not only their name to be known, but you want to spread the information that you have so that other people can benefit from it and learn from it." **A3, Line 142-144.**
>
> "So, the impact for me is that I haven't developed as much in my scholarly portfolio as I would have liked to at this point in my career." **A12, Line 134-135.**

Professional prestige was discussed by three participants. Barriers to publication of scientific literature can stymie individual academic CRNAs' professional development.

> "I think it's, you know, it's a requirement for me to be there, for me to continue to publish, but it's very difficult for me to find the time to get my name out there, to be known amongst my—not only my nurse anesthesia profession, but as an educator." **A3, Line 138-141.**
>
> "…I think you need to probably get your name out there if you really want to be career-oriented and really want to develop professionally…" **A14, Line 90-92.**

In addition, barriers can reduce the ability of academic CRNAs in development of a unique body of knowledge and contribution to anesthesia literature, affecting the prestige of the profession at large.

> "The only thing that really would matter to me would be if there was a body of scientific work done by nurse anesthetists. That's…I think it would improve our…I would like to be able to pass that on to my students. This is Dr. so-and-so's work. She's a CRNA; he's a CRNA. You know, instead of information, you know, all of their evidence-based practice coming from non-nurse-anesthesia sources." **A9, Line 144-149.**

Two participants who do not have the expectation of publication may experience negative repercussions in regards to how they perceive their professional development and career in terms of self esteem.

> "I would feel a little better personally about the roundedness of what I am as an educator if I was writing; but, since no one really expects me to write and I'm not blaming that, I'm just saying no one expects it of me and I don't do it because of the constraints—it just means that in the end, I'm going to be not a very…as rounded as I'd like to be as I look back on my educational career." **A4, Line 118-122.**

> "Well, I think it's a little bit of frustration and maybe embarrassment that I've been teaching, you know, this long and never, you know, had my name on a journal article or you're not recognized, you know, for anything in particular." **A5, Line 119-121.**

Rewards of Publishing in the Scientific Literature

Participants were encouraged to discuss their perceived perceptions of the rewards associated with publication of scientific literature. The research question that pertained to this theme was as follows: What do you perceive as the rewards of publishing in the

scientific literature? Responses that contained more than one content area were duplicated into multiple categories. Themes included the dissemination of knowledge, personal sense of accomplishment, prestige, professional rewards, and self improvement (Table 4-4).

Table 4-4. Rewards Associated with Writing for Publication

Reward	Number of Participants
Dissemination of Knowledge	12
Sense of Accomplishment	10
Prestige	10
Professional	5
Self Improvement	4

The most commonly perceived reward associated with publication of scientific literature was dissemination of knowledge. Twelve participants discussed this as a reward. Eight of the participants had published in scientific literature and four had not published.

"You're adding to the body of knowledge…" **A6, Line 53.**

"Well, you know, furthering the knowledge base for nurse anesthetists—that's the big one." **A11, Line 96-97.**

"And then, the opportunity to share your knowledge with others—that's also very rewarding." **A12, Line 146-147.**

"Well, I think as a professional, it's always good to contribute to the body of knowledge of your profession…" **A13, Line 78-79.**

The dissemination of knowledge may elevate visibility of nurse anesthetists among their healthcare colleagues; improve patient care; expand additional lines of inquiry or research for a specific topic; open up lines of communication with other professionals with similar areas of interest; and literature may be used for educational purposes for students.

A personal sense of accomplishment was a theme that was discussed by ten participants. A sense of completing the task, making the mark, and perseverance was noted with this theme. This theme was evenly divided between those that have published and those who have not published.

"Then there's self-satisfaction involved with it, the achievements**." A10, Line 102-103.**

"Certainly, personal and professional gratification are wonderful." **A11, Line 99-100.**

"You know, personal rewards—just the reward of doing it, of achieving it, being published—I think is all good." **A14, Line 103-104.**

"But, you know, it's…it's…just the research itself is what I would consider to be the reward." **A15, Line 239-241.**

Closely related to a personal sense of accomplishment was that of prestige. Prestige focused on the fruits of accomplishment. Prestige included reputation, recognition, and importance. Ten participants discussed this theme. Six participants have had a publication and four had not. Prestige was further divided into professional and personal. Professionally, publication may enhance others view of the profession. Within the profession publication of scientific literature enhances name recognition, how

students view their faculty, and may lead to additional opportunities to grow as an academic CRNA.

> "Advance for the cause of knowledge, advancement of the prestige of our profession." **A2, Line 392-393.**
>
> "I think that students maybe, you know, look at you as an expert." **A5, Line 141-142.**
>
> "I think it's good for the students to see that, you know, there's a body of knowledge that has been developed by their program director and other faculty that they know. I think it's good for our physician colleagues to see that, you know, you've contributed to the scientific body of knowledge and participated in publication as well." **A7, Line 121-126.**
>
> "You know, you get your name published, people call you up, they want you to be…they want you to have speaking engagements, they invite you to be on the editorial board, and they invite you to be a referee to analyze other people's publications. So, there are kudos to that where you bolster your reputation as an academician." **A8, Line 195-199.**
>
> "I think that it gets your name out there and recognized by colleagues." **A14, Line 99-100.**

With personal prestige, in addition to a sense of accomplishment, academic CRNAs may feel more prestigious through their publications.

> "…but I think people like to see their name in print. People like to be recognized for the work that they're doing.." **A6, Line 54-55.**

> "Well, you know, seeing your name in writing. Seeing your name in the literature is, you know, certainly something that makes you feel good…" **A11, Line 105-106.**
>
> "I would say lastly—is to be able to say, "Yeah, I published" and to know that someone else is reading your work." **A12, Line 147-149.**

Professional rewards were discussed by five participants. All five participants that discussed professional rewards had tenure available within their institution. Two had tenure at the time interviews were conducted and were previously published in the scientific literature and three did not have tenure or were published. Educational institutions that offer tenure value writing for publication and it is often a condition of achieving tenure. Professional rewards is identified with external rewards, primarily that of promotion and rank which act as an incentive to write for publication.

> "One of which is if you're in a system that values that—you get promoted, you get raises, you get tenure, you get all the things that go along with recognition within an academic system." **A1, Line 129-131.**
>
> "Well, it would…it would progress me along the promotional track at the university**." A10, Line 96-100.**
>
> "One of the other, I won't call it perks, but certainly something that's looked upon in academia is that in order to be promoted to the next academic rank and get tenure, they want to see publications or a history of publications or history of scholarly products. Publication efforts are viewed very positively in that process." **A11, Line 100-104.**

> "Well, I think, you know, it would lead you onto that tenure line if that's something you desired as an academician." **A14, Line 97-99.**

A final theme that was discussed by four participants was the reward of self improvement. Two participants had prior publications and two participants had not published. The task of writing for scientific literature involves an immersion in the current literature. As information is learned academic CRNAs become an expert on the subject. In addition, academic CRNAs become more familiar with the process of conducting a research project which lends to their experiences. It was the participants' perception that these experiences translate into being a better educator.

> "I think it makes me a better practitioner, you know, to do investigation of a topic and write about it and reflect upon it, you know, develop it into my own words and present it to somebody else." **A7, Line 116-119.**
>
> "You start off with a certain level of expertise on…but then, as you work to, you know, research your topic and to really get it right and use all the literature so you become familiar with that area of the field and you basically become, hopefully will become an expert; so, that's extremely rewarding." **A12, Line 143-146.**
>
> "I think it makes you…I think it makes you a better scholar, a better program director, a better teacher because you are publishing and probably researching and publishing and I think that's definitely all beneficial for yourself and for your students alike." **A14, Line 100-103.**

Results Summary

A qualitative approach, utilizing a descriptive design with content analysis, identified publication barriers experienced by CRNAs in the academic setting. Barriers

included time, institutional structure, preparation, motivation, limited outlets for dissemination, and mentorship. All of the participants identified time as a common barrier. Subthemes related to time include academic demands; the process and logistics of conducting for research and/or writing for publication; and prioritization of this precious commodity. Time was considered a major barrier by 67% of the participants. Institutional barriers including structure, philosophy, and focus was the second most common barrier. This was noted by 60% of the participants. Institutions that do not have expectations that include contributing to the scientific literature present a formidable barrier. Institutions that encourage writing for publication may lack adequate support of these endeavors. Finally, the culture of the institution may act as a barrier if writing for scientific literature is not supported by colleagues. Preparation was a third barrier discussed by academic CRNA's but was commonly described as a minor barrier by 78% of the participants. Academic preparation was often described in general terms. Specific areas related to writing for publication included how to initiate and conduct research; writing skills; and logistics of navigating the publication process. Motivation was a fourth barrier described by 47% of the participants. Aspects of this theme were related to intrinsic factors such as desire as well as extrinsic factors such as incentives and a diminished perception of the value that research may eventually have on clinical practice. Personal challenges, individual economic situations, and furthering ones education can also affect the individual academic CRNA's motivation to write for publication. A fifth barrier was the limited number of potential outlets for publications related to nurse anesthesia. Because the profession is very focused and specific, the number of outlets is limited to a few specialty journals that focus on anesthesia related information. This

barrier was discussed by 33% of the participants. The final barrier identified was mentorship. Lack of mentors at individual institutions can be related to the fact that most nurse anesthesia programs have only a few academic CRNA's involved in didactic education and program administration. In addition, there may not be the provision of opportunities to help encourage and mentor staff to write for publication.

Most of the participants were not adequately prepared to write for publication during their undergraduate and master's degree preparation. This was highly dependent on individual programs. Participants whose educational programs valued writing for publication were more likely to discuss a positive impact on their subsequent writing. Four participants believed that their doctoral education contributed to their preparation for writing while two did believe their education prepared them to write. Mentorship during educational experiences was an extremely influential factor for four published academic CRNAs.

One of the research questions asked participants to discuss ways that barriers could be reduced. All of the participants discussed a number of issues that could help minimize, diminish, or remove barriers that they encounter. Themes identified included education, time, mentorship, institutional factors, professional support, and motivation. Forty-seven percent of the participants discussed strategies involving education, time, mentorship, and institutional factors. The role of education during formative educational experiences of students was one approach to diminish barriers that are subsequently encountered. A comprehensive approach that stresses the importance of research and writing skills was suggested. The provision of dedicated time to focus on research projects and writing for publication was a second strategy to help reduce barriers. A third

strategy included mentorship on a local and national level. Mentorship of authors on a local level included assistance during their educational experiences as well as senior faculty assisting junior faculty. On a national level additional mentorship may be provided by experts. This was developed further under the theme of professional support. Professional support was a forth strategy discussed. This included collegial support from non-academic CRNAs as well as support on a national level. It was acknowledged that there is some support from the national organization but more could be done to support authors. Suggested support included a central resource for authors, a forum that allowed communication and collaboration with other CRNAs, and may allow for mentorship from various CRNAs with specific areas of expertise. Institutions can be instrumental in reducing barriers by creating an environment that values and encourages writing for publication and the provision of resources to encourage scholarship. This was discussed by 40% of the participants. Motivation was discussed by two participants.

The effect of barriers on professional development was centered on institutional expectations. If academic CRNAs are employed by schools of nurse anesthesia that have expectations of scholarly production then barriers to writing for publication can affect their ability for promotion and continued growth. Barriers may be significant enough to stop academic CRNAs from pursuing tenure. In addition, barriers impact their ability to disseminate knowledge, and can stymie professional and personal prestige. For academic CRNAs in institutions that do not have an expectation of scholarly output the faculty members may not be motivated to pursue writing which can have a negative impact on future opportunities and professional growth within academia. In addition to the effect of

barriers on professional prestige those that do not have the expectation of writing for publication may impact their self esteem.

Rewards of publication were multiple. Dissemination of knowledge was the most commonly described reward associated with writing. This reward was described by 80% of the participants. Sense of accomplishment was discussed by 67%. The subtheme of accomplishment centered on the concept of completing difficult tasks with the eventual successful navigation of the process. Prestige was a reward discussed by 67%. This theme is the result of the accomplishment. Reputation, recognition, and overall importance of the scholarly work were described. Professional rewards and opportunities for promotion were described by five of the participants. All five participants had tenure available in their institutions. A final reward described by 27% of the participants was that of self improvement. Focused study and immersion into a particular topic as well as conducting research was seen as ways to continue to grow as professionals in academia.

For those who were able to overcome barriers and write for publication there appeared to be a demand for academic CRNAs to help disseminate knowledge among their nurse anesthesia, nursing, and allied health colleagues. This quote summarized this sentiment.

> "But, you know, when you really get into publication, there's not that many barriers. There are people out there that are dying for good articles to publish in nursing and so forth and, you know, have good reviewers, but that's not something you realize until, you know, you've gotten something published and then you kind of get into a school where people are writing and publishing and

you realize that and then all of a sudden it's like you've got more requests for publications than you could ever write." **A7, Line 163-169.**

CHAPTER V: DISCUSSION AND SUMMARY

Research Questions and Interpretation

A qualitative approach, utilizing a descriptive design with content analysis, was utilized to identify barriers to writing scientific literature for publication as encountered by academic CRNAs. Four themes were identified after data analysis: barriers to the publication of scientific literature; measures that may minimize, diminish, or remove barriers; the effect of barriers on professional development; and rewards associated with publication of scientific literature.

Sample demographics of this study were compared to demographics reported in the literature. The goal of the sample for the current study was to obtain equal representation across geographic locations and in regard to publication history, in an attempt to obtain as broad of a description as possible. The sample used for this study was not meant to be representative of demographics found nationally. According to a recent survey by the Council on Accreditation of Nurse Anesthesia Educational Programs there were 107 programs within the continental United States. Geographic location, as defined by this study according to the Census Regions and Divisions of the United States, the South contained 41% of the schools of nurse anesthesia followed by the Midwest (27%), Northeast (25%), and West (6%) (AANA, 2009). In contrast, this study attempted to get equal representation of all four geographic locations. Participants from the Northeast, Midwest, and West represented 27% of the sample respectively, while 20% of the sample was from the South.

Lupien and Rosenkoetter (2006) reported that 25% of 213 full time faculty had earned a doctorate. In the current sample 40% of participants possessed doctorates.

There was not a breakdown of the type of doctorate within the current sample, however Lupien and Rosenkoetter (2006) reported that of faculty that had earned a doctorate 75% possessed a traditional doctorate, 21% a clinical doctorate, and 4% professional degrees. According the 2008 Annual Report of Nurse Anesthesia Programs 163 clinical and didactic faculty currently hold a doctorate and 154 were currently enrolled in a doctoral program (AANA, 2009). Regarding tenure, Lupien and Rosenkoetter (2006) reported that of 73 programs that responded to their survey, 45% had tenure available within their institutions. Participants in this study reported that 60% had tenure available within their institutions.

Nurse anesthesia programs vary in their duration, major, and location within educational/institutional systems. According to the 2008 Annual Report of Nurse Anesthesia Programs educational programs lasted between 24-36 months with 66% lasting between 25-29 months. The most common major was nursing (56%), followed by nurse anesthesia (35%). Biology, science, health sciences, education, and health care administration accounted for the remaining 10% of degree majors. Academic units reported in 2008 included nursing for 58% of the programs, followed by 18% of programs being associated with allied health or health sciences, and 25% affiliated with biology, medicine, liberal arts and sciences, education, and other/independent (AANA, 2009). The current study's sample was stratified for three basic categories which included an affiliation with nursing (40%), college of allied health/health sciences (33%), and other which included independent programs (27%). Demographic information concerning duration of individual nurse anesthesia programs and degree conferred were not collected.

This qualitative descriptive study, with content analysis, has yielded pertinent information. Participants' responses to research questions pertaining to the theme of barriers yielded six categories. Questions related to this included: what are all the barriers to writing scientific literature for publication that you have encountered; what are the major barriers that impede your ability to write for publication; and what are the minor barriers? Barriers included time, institutional factors, preparation, motivation, limited outlets of dissemination, and mentorship.

The most common barrier discussed by all of the participants was that of time. Time has been identified as a barrier to writing for publication (Burnard, 2001; Meisenhelder et al., 1995; Donaldson & Cresswell, 1996) and as a barrier for CRNA conducted research (Cowan et al., 2002). Participants discussed academic demands, the process of writing a scholarly manuscript, and prioritization as aspects of time.

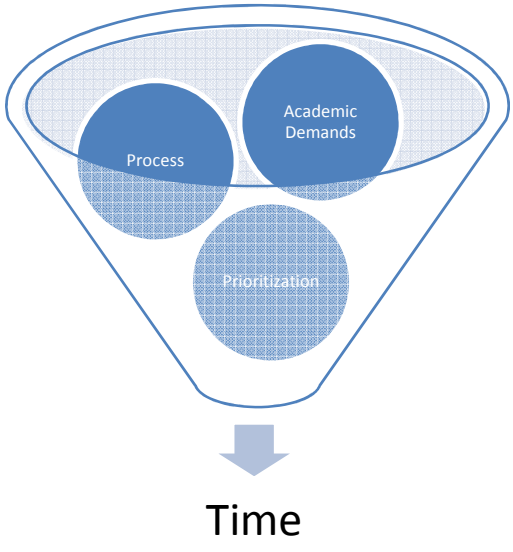

Figure 5-1. Aspects of Time

The total number of hours committed to work has been found to be similar for academic and clinical faculty when compared to non-academic CRNAs. Academic

faculty differ from clinical and non-faculty members in regard to their responsibilities and duties. With the exclusion of being on call from home, faculty positions carry a relatively high workload and faculty may find it challenging to meet all of their academic and clinical demands (Merwin et al., 2008b). Lupien and Rosenkoetter (2006) summarized faculty time allotment by activity. It was found that approximately 30% of the program and assistant director's time was spent in didactic education. When all faculty were taken into account the amount of time allotted to didactic education was equivalent to 0.92 FTE. Academic faculties were also involved in a service role to the university, profession, and clinical area. University and professional services of all faculty ranged from 0.00 to 0.50 FTE. In addition, program administration and teaching account for 66% of programs directors' time while assistant program directors spend up to 75% of their time teaching and administrative duties. Demands on time leave little room for conducting research and producing scholarly works. Only 5% of programs reported spending 0.20 FTE on funded or non-funded research respectively, while 28% of programs reported one scholarly product per faculty member per year.

Staffing issues may impact time academic CRNAs have to dedicate to writing for publication. Of 79 anesthesia programs, that responded to a survey, it was found that the number of full time faculty ranged from 0-36, with a median of 2 full time faculty. Part time faculty ranged from 0-31, with a median of 1 part time faculty per anesthesia program (Lupien & Rosenkoetter, 2006). In 2007, it was reported that there was a 34% vacancy rate for CRNA faculty across the United States (Merwin et al., 2008a). A projected faculty shortage due to aging may continue to hamper scholarly efforts. The majority of the current sample was between 50-59 years of age (60%). The AANA has

started to address the issue of recruitment and retention of CRNA faculty (Starnes-Ott & Kremer, 2007).

Individual institutional structures, philosophy, and focus can present barriers to the publication of scientific literature. If institutions do not have the expectation of scholarly production, do not value the contribution of scientific literature by nurse anesthetists, then appropriate support and encouragement may not be available. However, participants within institutional organizations that had the expectation of publication did not always receive the support and time required to complete scholarly works. Roberts and Turnbull (2004) found that academic demands diminish the ability for nurse academics to produce scholarly works. Institutions that value research and scholarship, as well as provide support to faculty, enhance scholarly production (Roberts & Turnbull, 2004). Common barriers to CRNA conducted research may be the result of institutions not supporting research efforts and include lack of time, resources, and funding (Cowan et al., 2002). Educational institutions do not appear to allot adequate time resources to the pursuit of scholarly works (Lupien & Rosenkoetter, 2006).

Preparation was a barrier that was discussed by nine participants, though seven believed it was minor. Lack of appropriate academic preparation included deficiencies related to project initiation, conducting research, writing skills, and navigating the process. Individual academic programs varied in how well they prepared academic CRNAs for writing. Some participants believed their master's degree programs had exposed them to some aspects of research and publication while others did not. For academic CRNAs that have earned a doctorate some believed that they were prepared for writing for publication while others did not. This disparity in being prepared to write

highlights the importance of selecting an appropriate educational program based on career planning. For academic CRNAs that have not previously published and who have not been adequately prepared to write for publication, the issue of writing skills and lack of confidence may be a barrier to initiating projects. Writing skills and confidence have been cited as barriers as anecdotal evidence or the result of study (Burnard, 2001; Meisenhelder et al., 1995) and lack of emphasis by training departments have been cited by another study (Donaldson & Cresswell, 1996). Research provides a vital link to scholarly production. Because CRNAs foundational secondary education involves nursing it is possible that their exposure to research is somewhat marginalized, which may affect their preparation. Hicks (1992; 1995; 1996) found that nurses often lack confidence in their research and may be insecure with methodology. Cowan et al. (2002) similarly postulated that a lack exposure to research during undergraduate nursing programs may result in diminished confidence, which may translate into being uncomfortable with research and research methodologies. This trend does not end with undergraduate nursing programs but may perpetuate itself into graduate nurse anesthesia programs. Lupien & Rosenkoetter (2006) found that little time is allocated in providing mentorship to students. This may diminish their ability to learn how to conduct research and serve to limit their preparation to participate in scholarly activity during their subsequent anesthesia career. CRNAs that participate in research often were prepared through on the job training, mentorship, or tutorial by research staff while preparing to conduct research. Most CRNAs that conduct research did not receive formal training during their educational experiences (Cowan et al., 2002).

Motivation was discussed by seven of the participants as a barrier. Academic CRNAs must have the desire to write for publication, be able to initiate projects, and persevere. If faculty does not perceive a benefit or incentive to initiate research projects and/or write for publication, then they will not be motivated to take on an arduous project. A small percentage of CRNAs do not appear to value the potential impact that research can have on anesthesia practice (Cowan et al., 2002). Up to one-third of academic faculty may not fully appreciate the production of scholarly works (Lupien & Rosenkoetter, 2006). Motivation has been described as a barrier to conducting CRNA generated research in the literature. This may be related to research not being emphasized during nurse anesthetists formative training and translate into a lack of confidence or interest (Cowan et al., 2002). Motivation has also been identified in the nursing literature as a barrier to writing for publication and research (Hicks, 1995 & 1996; Meisenhelder et al., 1995).

Limited outlets for dissemination were discussed by five of participants as a barrier to the publication of scientific literature. Limited dissemination avenues as a finding were unexpected. There is only one specialty journal that is specific to nurse anesthesia. There are additional anesthesia journals that are physician orientated and a small number of specialty nursing journals that may have a cross-over interest into subjects that academic CRNAs may write about. Interpersonal relationships, the amount of time from submission to publication, and writing for a non-anesthesia audience are components of this barrier. This barrier has not been well described in the literature.

A mentor is “an experienced individual who befriends and guides a less experienced individual” (Grossman & Valiga, 2005, p.173). Mentorship is vital and its

importance to the profession of nurse anesthesia has been defined, emphasized, and described in the literature (Faut-Callahan, 2001; Hand & Thompson, 2003). Mentorship was discussed as a barrier by four participants. Mentorship may not be available secondary to staffing constraints commonly found in nurse anesthesia programs. The median faculty for university nurse anesthesia programs includes 2 full time faculty and 1 part time faculty per anesthesia program (Lupien & Rosenkoetter, 2006). Mentorship was noted as being absent among nurse academics in Australia which had a negative impact on subsequent scholarly production (Roberts & Turnbull, 2004). A recent qualitative study has discussed the important role that group support and mentorship have on novice researchers. Mentors were essential in helping to guide, motivate, and reassure participants during the writing process (Shah et al., 2009). Formalized peer support writing and mentorship groups have been found to improve overall scholarly output among a small group of family practice physicians (Grzybowksi et al., 2003). Pololi et al. (2004) discussed a collaborative peer mentoring group that allowed 18 assistant professors in academic medicine to complete at least one scholarly manuscript. This qualitative study identified five goals that allowed each participant to successfully navigate the writing process.

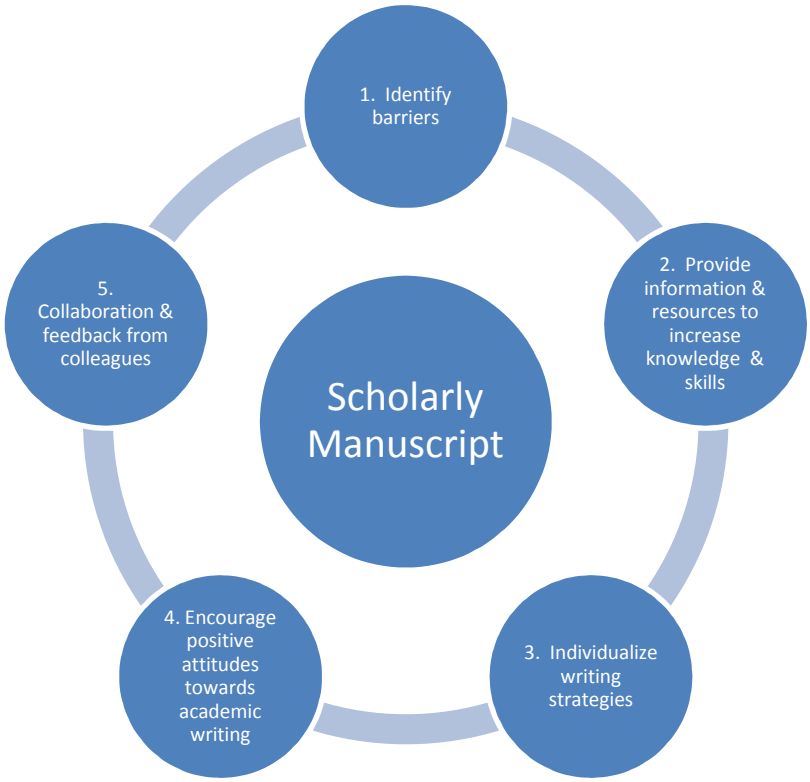

Figure 5-2. Five goals of a Collaborative Peer Mentoring Group (Pololi et al., 2004)

Allowing participants to identify individual barriers is the first step to help reduce barriers to writing scholarly manuscripts. Individuals may not be aware of their barriers or have not clearly identified what their barriers may be. Once barriers are identified, either internal or external, writers can devise strategies to minimize them. The second goal is to provide resources, written and practical, to help participants gain insight, knowledge, and skills about writing scholarly manuscripts. The third goal involves developing an individualized approach to writing. Individuals vary in how they approach writing projects. Allowing participants to 'discover' what approach best fits their own style improves productivity. The fourth goal is cultivation of a positive attitude toward writing. Once individuals gains confidence in the process they can avoid negative self perceptions and move forward. The fifth goal includes feedback and collaboration.

Interactions with colleagues allowed individuals to gain insight, strategies, and resources through feedback and discussions (Pololi et al., 2004).

Participants were asked 'what could be done to minimize, diminish, or remove barriers that you encounter?' Appropriate education, the allotment of time, mentorship, reducing barriers imposed by institutional organization and expectations, professional support, and motivation were identified by participants as potential strategies. Discussion of these findings will be more fully developed in the implication/recommendation portion of this chapter.

Effects of barriers on professional development for academic CRNAs are not well described in the literature. Participants were asked 'what is the impact of barriers on your professional development?' The effect of barriers on professional development, as discussed by participants, largely centered on individual institutional expectations. If there is an expectation to contribute to the scientific literature but institutional support is not sufficient, then it may impact the ability of an academic CRNA to be promoted, continue to grow professionally, and may be a disincentive to pursue a tenure track. If barriers are sufficient to impede writing for publication the dissemination of scientific literature is diminished, which affects professional and personal prestige and impede professional development. Academic CRNAs located within institutions that do not have an expectation of scholarly output may not pursue writing for publication which can impact their professional development when pursuing other employment opportunities within academia.

The rewards of publishing, in the scientific literature, are not well described in the nurse anesthesia literature. Available information is largely anecdotal. Participants were

asked ‘what do you perceive as the rewards of publishing in the scientific literature?’ Several rewards were described. Dissemination of knowledge was the most commonly described reward. Navigating the writing and publication process was noted as a sense of accomplishment. Recognition and overall importance of the scholarly work produced resulted in the reward of prestige. Academic CRNAs that worked in institutions that had tenure available discussed professional rewards. Self improvement was a final reward discussed by academic CRNAs.

Limitations of this Study

All research designs have limitations. Qualitative research is no exception. Caution must be maintained when evaluating the limitations of qualitative research. Qualitative research is often presented in the literature as less precise, rigorous, and desirable than quantitative traditions (Sandelowski, 2008). Researchers who are familiar with qualitative traditions are quick to identify its advantages. Each tradition complements the other. The research design utilized for this particular study has also been viewed by some within the qualitative community as being too simple. However, based on the goal of this study, to categorize data and describe data without conceptualization or abstraction, other forms of inquiry were not deemed appropriate for the aim and intent of this study (Sandelowski, 2000). Without a baseline description of barriers further study would not be possible. In the discussion of limitations there will be a conscious effort to avoid the perpetuation of negative language in their description.

The use of telephone interviews has advantages and disadvantages. This study would not have been possible without the use of this mode of communication. It would have been impossible to ‘meet’ with each participant due to issues related to time,

finances, distance, and logistics. Telephone interviews allowed participants to remain confidential and disclose information from a location that is familiar and comfortable. However, because a face to face interview was not possible additional non-verbal information may have been lost (Novick, 2008).

Sample size consisted of 15 academic CRNAs. Sixty-percent of the participants had published before and 40% had not. Though it appeared that data saturation occurred it is possible that a larger sample may yield additional information that was not captured within this particular sample. In addition, a larger sample consisting solely of either academic CRNAs that have published or those who have not, may have lead to the identification of additional information. This study purposely included both the published and unpublished academic CRNA to obtain an overall description.

Academic CRNAs that agreed to be participants were at different points in their careers. Because the sample consisted of senior and junior faculty it is possible that particular barriers are more apparent than others based on the number of years spent within the academic arena. This study did not attempt to categorize barriers in relation to whether a participant was considered a senior or junior faculty member.

Inclusion of university employed academic CRNAs and those that are employed in a nurse anesthesia program outside of a university may impact the data gathered. It is possible that academic CRNAs in the non-university setting may encounter different barriers more commonly than those in the university setting or vice versa.

Theoretical Context

Prior to the initiation of this study there was no attempt to identify a theoretical context. There is no single theoretical context that is supportive of the findings of this

study. There are elements of Dr. Albert Bandura's social cognitive theory of self efficacy and Dr. Patricia Benner's application of the Dreyfus model of skill acquisition to the realm of nursing.

In the 1980's Dr. Albert Bandura developed the social cognitive theory of self efficacy. This theory advocated that individual perceptions or beliefs of self efficacy will determine eventual outcomes and involves four processes: cognitive, motivational, affective, and selection processes (Bandura, 2009) (Figure 5-3).

Figure 5-3. Bandura's Four Processes Involved with Self Efficacy Beliefs (Bandura, 2009)

Cognitive processes involve obtaining information and how one internalizes and uses it. Affective processes involve one's emotions and reactions to situations. Motivation is how one determines their approach, amount of effort, and perseverance. Selection processes involve the ability to control or influence eventual outcomes. If one has a strong sense of efficacy they will approach situations with confidence, not be

deterred easily, and persevere. Those who have a weak sense of efficacy will likely avoid tasks that are deemed to be difficult. If they do attempt a task the effort may be feeble and they may be easily discouraged. Instead of focusing on the successful completion of the task they focus on failure and personal weaknesses. There are four sources of self efficacy which can have a positive or negative effect. These include obstacles, observations, reinforcement, and perceptions. Those that are initially successful in their endeavors but do not encounter difficulties may become easily discouraged when difficulties arise. This may diminish their self efficacy. Those that encounter obstacles and persevere will actually strengthen their self efficacy beliefs. Observation of others success, that are perceived as being similar, will strengthen overall self efficacy beliefs while observing failure may weaken it. Reinforcement can help motivate and encourage self efficacy beliefs while negative reinforcement can quickly diminish it. Finally, how one perceives physical or emotional reactions can impact self efficacy. Seeking ways to reduce stress and negative reactions to difficulties may alter their perceptions of emotional and physical stimuli. Those with a strong self efficacy may find their reactions as a source of strength while those with weak self efficacy will see it as a reinforcement of their doubts and a source of discouragement (Bandura, 2009).

Writing for publication is an arduous task that requires perseverance. If academic CRNAs do not possess positive perceived self efficacy in regards to their ability to write for publication, then they are unlikely to attempt it or be easily discouraged. Those with a strong self efficacy are more likely to succeed at the task and view challenges from a positive perspective. Preparation to write was seen as a barrier by seven participants. Activities during the education process may provide experience that lends itself as a

positive influence especially if early challenges are successfully navigated. Academic CRNAs who write for publication can serve as models and mentors by sharing successful experiences and discussing current projects with peers and students. Observation of individuals, that one can identify with, may have a positive impact on self efficacy beliefs concerning writing for publication. Encouragement and positive reinforcement through support of novice and beginning authors may also have a positive impact on individuals self efficacy beliefs. How one perceives emotional or physical reactions to writing for publication is highly individualized; however seeking strategies to reduce stress associated with scholarly production as well as altering perceptions of difficulties and obstacles may have a positive impact on self efficacy.

Stuart and Hubert Dreyfus developed a model of skill acquisition based on intensive study of adult learners as they acquired proficiency in diverse activities such as chess and aviation. An adult learner will pass through five stages as they advance from novice to expert. Dr. Patricia Benner applied these stages to nursing. The five stages included: novice; advanced beginner, competent; proficient; and expert (Figure 5-4) (Benner, 2001).

Figure 5-4. Benner's Five Levels of Development (Benner, 2001)

During the novice stage learners are inexperienced. Tasks are specific and objective to allow learners to gain experience. At this stage adult learners are relatively inflexible as they apply instructions or guidelines that they were given. Because they are inexperienced novice learners require instruction and guidance to allow them to function. As experience is gained the learner will begin to function in the advanced beginner stage. The learner has gained enough experience to recognize aspects of specific situations. This recognition can only occur through experience. Competence occurs with continued experience. Not only does this stage take into account the specific situation but it incorporates likely outcomes of specific actions. Decisions are based on likely outcomes and based on ranking aspects of the situation, specifically which aspects should be taken into consideration and which can be ignored. As the learner advances to the proficient stage situations are no longer viewed as aspects but instead as a whole. Maxims, or nuances that impact situations, are taken into account and help guide the entire process. The expert stage is noted by abandoning the rules that governed the novice stage through

the maxims of the proficient stage and relies on intuition based on previous experience. Action becomes reflexive and based on aspects that would be unperceivable to those in early stages (Benner, 2001).

Dr. Patricia Benner applied these five stages specifically to nursing; however her landmark application of the Dreyfus model of skill application can be applied to any number of skills including writing for publication. Writing is a skill that is learned.

> "I don't think anybody has an innate ability to write well scientifically. I think it's a learned skill…" A1, Line 60-61.

Participants included those that have published and those who have not published. Comments echoed by those who have not attempted to publish fall into the realm of a novice. What are the ground rules? How do you get started? Where do you find resources? For participants that have published, past experiences ranging from one or more publications, represent stages from advanced beginner to proficient. Those that are relatively prolific in their publication history would be considered to be experts.

There are two aspects of Benner's five levels of development that stand out in the findings of this study. The first is that of preparation. Lack of exposure and preparation was noted as a barrier to writing for publication among the sample of this qualitative study. Addressing writing for publication during formative educational experiences was discussed as one measure, by participants, which may help minimize, diminish, or remove barriers that are encountered by academic CRNAs. Participants that were exposed to the importance of writing or had the realization that their scholarly writing skills were inadequate, at some point in their educational development, were placed into the beginning stages of their development of becoming authors. From there some

continued to develop and evolve as writers of scholarly manuscripts. Without exposure and preparation it is difficult for the academic CRNA to write scholarly works. Experience in writing for publication, through preparation, is essential to eventually becoming an expert.

The second aspect is that of mentorship in the process of development. Mentors have been acknowledged as being essential in the development of novice nurses into becoming experts. This concept is the basis of pairing a novice nurse with a preceptor that is presumably an expert. The function of a mentor in guiding a novice to become an expert is seen as essential to the continued growth of the nursing profession (Dracup & Bryan-Brown, 2004). Mentorship was identified as a barrier to writing for publication by academic CRNAs as well as a strategy which may minimize, reduce, or remove barriers that are encountered by academic CRNAs. Without the guidance of an expert mentor it is difficult for a novice to evolve from basic and rudimentary rules of writing, to guidelines, to maxims, to finally writing reflexively. Experience is what drives the development of a writer. Expert mentors are essential to guide, foster, encourage, and teach those who are in the process of developing their skills as an academic author.

Implications/Recommendations

Discussion of this study's findings regarding strategies to minimize, diminish, or remove barriers are more fully developed in conjunction with recommendations from the literature. Participants were asked 'what could be done to minimize, diminish, or remove barriers that you encounter?' Appropriate education, the allotment of time, mentorship, reducing barriers imposed by institutional organization and expectations, professional support, and motivation were identified by participants as potential strategies.

Lupien and Rosenkoetter (2006) stated that nurse anesthesia has been slow to embrace the cultivation of a systematic scientific foundation for the profession despite repeated calls for action. A possible solution is a comprehensive 5 step process to increase research in nurse anesthesia to realize the goal of cultivating a systematic and scientific foundation for the profession. It has been found that nurse anesthesia generated research is non-cumulative and does not build upon past research to establish a nurse anesthesia based scientific foundation (Connelly et al., 2002). Results of this study will be framed within the process suggested by Lupien and Rosenkoetter (2006) and additional recommendations and implications, as applicable, will be discussed.

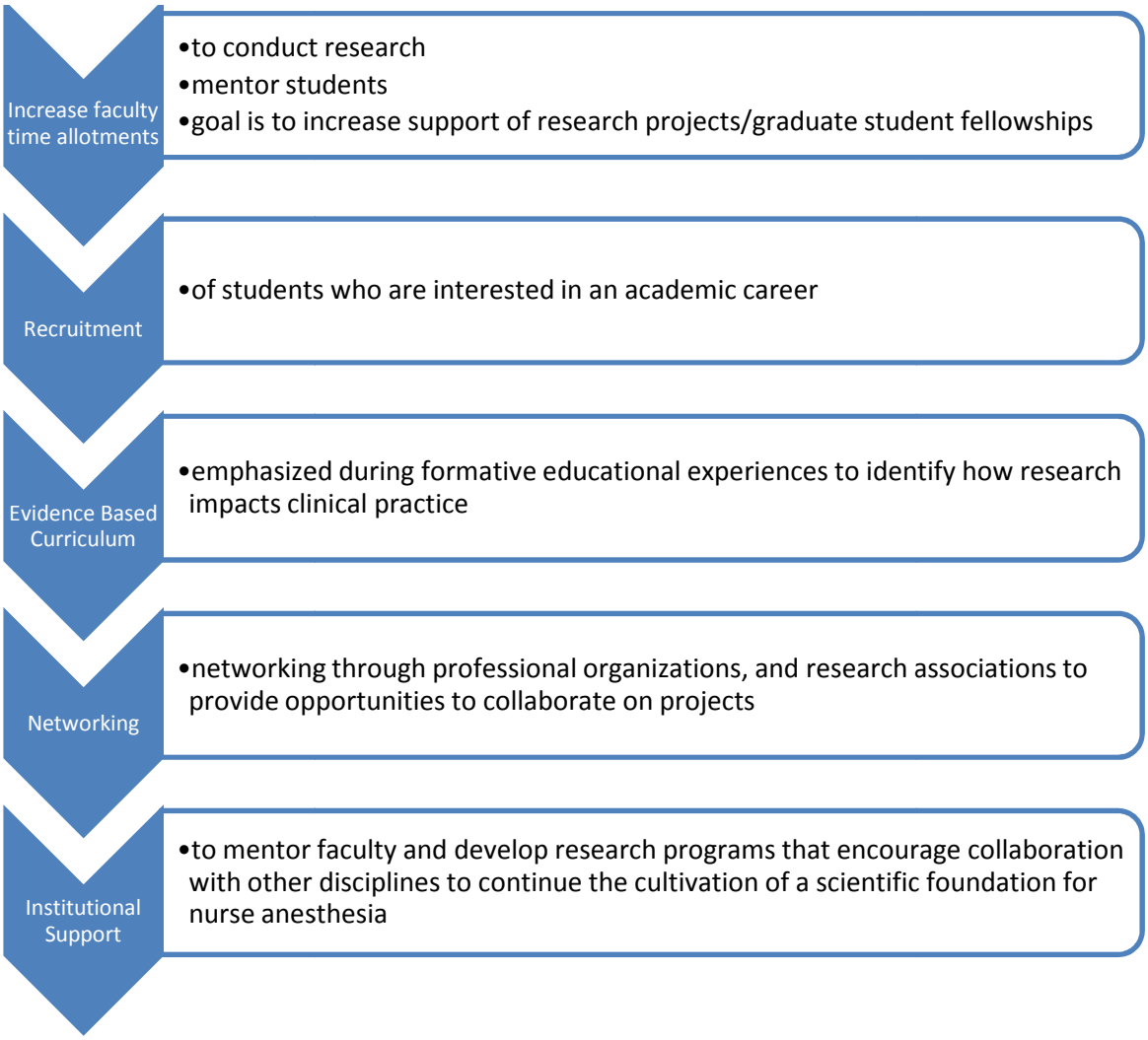

Figure 5-5. Lupien and Rosenkoetter's (2006) 5 step process to encourage research

Increase Time Allotments

The provision of time to pursue scholarly activities was discussed by 47% of the participants. Time was the most commonly discussed barrier to writing for publication. Lack of time for writing and research were also well supported in the literature as a barrier (Burnard, 2001; Meisenhelder et al., 1995; Donaldson & Cresswell; Cowan et al., 2002; Lupien & Rosenkoetter, 2006). Workloads of academic CRNAs do not reflect adequate time for these pursuits and thus hamper growth in the writing area. Nurse

anesthesia programs allocate fewer hours to conducting or guiding research than other postsecondary degree-granting programs. Only 5-10% of program directors and assistant directors' allocated time is dedicated to conducting or guiding research. This translates into an average of 0.15 FTE to research endeavors. When all program faculty are considered, in regards to time allotment, only an additional 0.04 FTE is allowed for research. Little time allotted for research creates situations that make it difficult to implement research programs and mentor junior faculty. Merwin et al. (2008b) discussed the need to evaluate faculty responsibilities and seek ways to reduce the overall workload, especially because the amount of time spent conducting research and professional development was comparatively small to other workload demands. Institutions and faculty should work together to allot dedicated time for writing, research, and mentoring students. Negotiation of how time is allocated and reducing/redistributing workloads may help facilitate this goal, increase scholarly productivity, and publication in the scientific literature now and in the future.

Recruitment

Recruitment of nurse anesthesia students interested in research and an academic career was not explicitly discussed by participants. Allotment of time for faculty to participate in scholarly activity, institutional support, and providing an adequate education may serve to encourage and inspire students to work in academia.

Evidence Based Curriculum

Education was discussed by 47% of participants as a strategy to minimize barriers that are encountered. Comments focused primarily on what could be done during the educational experience. Lupien and Rosenkoetter (2006) highlighted the importance of

continuing to stress the effect that research has on anesthesia practice. Several participants discussed the need to strengthen students' education in research and the importance of disseminating scientific knowledge. A comprehensive program should be initiated during anesthesia training that incorporates critical analysis of research, implications, and writing skills. When developing a comprehensive program attention should be focused on how to actively engage students in the process with consideration of individual learning styles. Innovative approaches may encourage students to pursue scholarly activities after their educational experience. A careful examination of nurse anesthesia programs that have a strong research and publication history may provide useful information that other programs could model. Consideration of graduate nursing programs that incorporate research and writing for publication as a model should also be encouraged (Trotter & Rasmussen, 2006). It has been noted that 12.1% of CRNAs do not feel research is applicable to their anesthesia practice (Cowan et al., 2002) and up to one third of nurse anesthesia programs do not consider conducting research, writing for publication, and speaking at professional conferences as essential or desirable (Lupien & Rosenkoetter, 2006). Implementation of comprehensive programs during anesthesia training may help change these perceptions.

Networking

The ability to network with other clinicians is discussed under the headings of institutional and professional support.

Institutional Support

Institutional support for scholarship was discussed by 40% of participants. Institutional support of academic CRNAs can be instrumental by first valuing

contributions to the scientific literature. Not all nurse anesthesia programs emphasize scholarship as an expectation of their faculty. Programs that do not have this expectation should reconsider their structure, philosophy, and focus to include contributions to the literature. In addition to institutional expectations, adequate support should be provided to support faculty as they pursue scholarly activities. Time allotment is one aspect of institutional support and was discussed earlier. Additional support includes funding, providing opportunities to learn how to write scholarly manuscripts, and clinical resources. Providing academic faculty with opportunities to participate in research and professional development may be intrinsically beneficial as well as encourage growth and retention (Merwin et al., 2008b).

Mentorship was discussed as a component of institutional support (Lupien & Rosenkoetter, 2006). Mentorship was discussed by 47% of participants as a strategy to reduce barriers that are encountered. Mentorship by senior faculty members can help diminish barriers that are encountered. Institutions can support mentorship activities by providing opportunities and resources. A formal program and writing groups may foster and encourage writing skills. Group support and mentorship have been found to be an important component for the development of novice researchers during the writing process (Shah et al., 2009). Formal peer support writing programs appear to promote scholarly output (Grzybowski et al., 2003; Pololi et al., 2004). Most nurse anesthesia programs have a limited number of faculty. Institutions may be instrumental in identifying faculty in other specialties that could help foster the development of researchers (Lupien & Rosenkoetter, 2006). Mentorship on a national level will be discussed under professional development. Developing research teams across disciplines

would allow for collaboration and staff development (Lupien & Rosenkoetter, 2006). Collaboration was also discussed by some participants as a possible strategy to enhance scholarly output.

Professional Support

Professional support was discussed by seven participants. Professional support includes support from colleagues that may not be actively involved in furthering their education or scholarly endeavors. A few academic CRNAs perceived that those involved full time in the clinical arena may not always fully appreciate the importance of scholarly activities. This is supported by a study by Lupien and Rosenkoetter (2006). Academic CRNAs that were considered university faculty were asked to rank conducting research, writing for publication, and speaking at professional conferences as 'essential', 'desirable', 'not essential', or 'discouraged'. Only two thirds of the anesthesia programs ranked these activities as either essential or desirable. None of the programs responded that scholarly activities were discouraged. These findings imply that up to one third of the programs did not feel that these activities were essential or desirable (Lupien & Rosenkoetter, 2006). This is a disconcerting attitude or perception towards scholarly activity that appears to be in place among those involved in academia. Approximately 12% of CRNAs did not feel research was applicable to their anesthetic practice. On the other hand, if CRNAs realize that research results are applicable to their practice they are likely to make adjustments to their approaches to patient care (Cowan et al., 2002). Professional support, on a national level, was acknowledged by some of participants from the AANA Foundation. The AANA Foundation has adopted a mission to promote research and education to advance the profession of nurse anesthesia. Activities of the

Foundation include helping nurse anesthetists pursue research by providing grants, to provide fellowships and scholarships to nurse anesthetists who wish to pursue additional education, and sponsorship of educational conferences, workshops, and poster presentations at national meetings. In the 2008 Annual Report the Foundation reported having supported over 100 research and developmental awards but was unable to support all of the qualified applicants (AANA Foundation, 2008). Despite the current support on a national level, several participants discussed additional measures that may be helpful in reducing barriers to writing scientific literature. A centralized resource may benefit current and future authors. Resources made available to novice authors may help them navigate the writing process, choice of appropriate publications based on manuscript content, how to use software programs to improve productivity, and advice from accomplished authors. In addition, a central resource could contain information on how to write grant applications that would support research. A final aspect of a central resource would include a forum that would encourage mentorship and collaboration. If clinicians with similar areas of interest could locate each other and collaborate on research and/or writing projects there would be the potential for increasing scholarly productivity. Mentorship could be provided by willing and accomplished academic CRNAs, according to their area of expertise, to the less initiated. The AANA Foundation should explore the need for a central resource as well as the feasibility of such a project.

Outlets for Dissemination

In the past there were additional journals dedicated to publishing scholarly manuscripts written by nurse anesthetists. However, *CRNA-the clinical forum for nurse anesthetists* was only published from 1992-2000 and *Nurse Anesthesia* was published

from 1990-1993. Contributing to the demise of these two additional outlets for dissemination was a lack of support through scholarly submissions (Waugaman, 1993; Gunn, 2000). This results in one major outlet for dissemination, the *AANA Journal.* Identification of additional nursing and allied health journals, with cross interest in nurse anesthesia related subjects, may help to open up additional lines of dissemination. Providing academic CRNAs with a list of potential journals or journals in which CRNAs have published may help the academic CRNA realize additional outlets for dissemination. In addition, writing style tips may be helpful to make anesthesia related information easier to comprehend by non-anesthesia providers.

Doctoral Prepared Faculty

As of 2008 only 163 clinical and didactic faculty had earned a doctorate (AANA, 2009). Lupien and Rosenkoetter (2006) pointed out that the Council of Accreditation of Nurse Anesthesia Educational Programs prefers that directors have a doctorate, however they found that only 16% of the programs met this preference. A current initiative from the American Association of Colleges of Nursing (AACN) to move advanced nursing programs towards a doctorate of nursing practice by 2015 (Martin-Sheridan, Ouellette, & Horton, 2006) should provide additional doctoral prepared faculty. In 2007, the AANA Board of Directors recommended that entry into nurse anesthesia practice should be at the doctorate level by 2025. The Board of Directors did not specify a preference in regards to the type of doctorate to which future anesthetists should aspire. CRNAs have a wide choice of doctorates and should base them on the focus of the degree and individual career goals. Doctorate degrees include research based foci including Doctor of Philosophy (PhD), Doctor of Nursing Science (DNSc or DNS), and Doctor of Education

(EdD); a hybrid of research and clinical practice which includes Doctor of Nursing Practice (DrNP); and practice based degrees which include Doctor of Nursing Practice (DNP), Doctor of Nurse Anesthesia Practice (DNAP), and Doctor of Management Practice in Nurse Anesthesia (DMPNA). Because the DNP emphasizes clinical practice and will most likely become the entry level doctorate, there may be the need to have faculty that have a doctorate with a focus in research (Hawkins & Nezat, 2009). Some participants discussed the need to have a doctoral education that emphasizes research and academic writing as a strategy to reduce barriers. This educational background would allow for mentorship of colleagues and students as well as prepare individuals for scholarly productivity.

Future Research

This qualitative study represents the beginnings of research into barriers to the publication of scientific literature encountered by academic CRNA's. The methodology and inclusion criterion was purposely broad in its scope. Because of the nature of qualitative research additional lines of inquiry should be taken. It is possible that some barriers are not represented by this sample. From a professional perspective the identification of barriers and scope of the problem is the first step. However, the findings of this study may be used as a template for further research. A large quantitative study should be designed and implemented. It would be beneficial for the profession to identify all of the barriers that are encountered. In addition, it would be beneficial to identify which barriers present the most formidable challenge and which ones the least formidable challenge. Further identification of barriers based upon the organization and structure of educational institutions would help identify barriers that are common as well

as those that are divergent. It is possible that educational institutions located within a university setting may commonly encounter barriers that are different than those encountered by academic CRNAs in institutions that are independent or structured outside university settings. Once barriers are thoroughly identified and ranked, the profession can start the process of seeking solutions to common barriers, where applicable, to improve and foster the scholarly output of academic CRNAs. To accomplish this goal a cross-sectional descriptive study could be employed (Freda & Kearney, 2005). A cross-sectional design would be an appropriate research design to describe the phenomenon of barriers. In addition, it would be a useful design to compare academic CRNAs in university settings to those that are in an educational organization outside of university settings (Polit & Beck, 2008b). A survey would accomplish this goal in an economical fashion. A survey instrument composed of descriptive questions could be constructed. To capture responses and obtain useful data the instrument would utilize multiple choice, Likert scales, and open-end questions. The majority of data that would be collected would be quantitative in nature (Polit & Beck, 2008c). Open ended questions would utilize content analysis to categorize, label, and identify the frequency of responses (Freda & Kearney, 2005; Downe-Wamboldt, 1992). An additional advantage of a cross-sectional study would be that it would describe barriers to the publication of scientific literature at a particular point in time. Follow up studies, using the same methodology, could help determine if barriers have changed over time (Polit & Beck, 2008b).

This descriptive qualitative research study identified several areas that are worthy of additional inquiry. In depth and comprehensive study of several findings of this study

could be accomplished with qualitative research designs. A narrative qualitative study of a small number of extremely proliferative academic CRNAs would provide useful information. This particular approach would utilize analysis of narratives. Creswell (2007, p. 54) described this approach as "using paradigm thinking to create descriptions of themes that hold across stories or taxonomies of types of stories." In-depth analysis of academic CRNAs that are prolific in their publications may help others gain insight into their development, motivations, and approaches to scholarly production.

Phenomenological approaches would be useful in studying several individual academic CRNAs and the meaning of barriers (Creswell, 2007). In addition, phenomenology could be used to analyze components of subthemes that were identified in relation to barriers to the publication of scientific literature and could include preparation, motivation, and mentorship. The phenomenon of mentorship and its role in scholarly production may produce a wealth of information that may be helpful for academic CRNAs to draw upon. Additional areas that are worthy of phenomenological study and deserve further exploration include rewards of publication and barriers impact on professional development.

Five academic CRNAs discussed the importance of preparing nurse anesthesia students to write for publication during their formative educational experience. It was believed that this may help foster and encourage future scholarly output. At least one participant discussed the implementation of a comprehensive program to emphasize analysis and evaluation of research, implications to current practice, and learning how to write in a scholarly manner. After implementation and evaluation, additional research could take place in the form of a process analysis. Process analysis provides the reader

with a description of the process of implementing and operation of a program. It stresses strengths and weaknesses, how implementation differs from other interventions, and barriers (Polit & Beck, 2008c). A process analysis could discuss the genesis and implementation of writing for publication curriculum created for nurse anesthesia students. The manuscript would start by detailing the challenge of implementing the curriculum. A summary of educational materials and methods would be essential. Discussing the barrier of preparation during formative educational experiences would help build the case for implementing a comprehensive curriculum learning program. A detailed discussion of resources that were utilized; how the curriculum was supported and incorporated into the overall curriculum of the nurse anesthesia program; and faculty participation would be cornerstones of the process analysis. In addition the difficulties, time, and cost that arose during the creation of the program, as well as initial outcomes would be reported. The purpose in writing a process analysis would be to provide a blue print of the process so that other nurse anesthesia programs could replicate it and avoid some of the pitfalls that were encountered during the process (Polit & Beck, 2007c). Alternatively, the identification of nurse anesthesia programs that already incorporate writing for publication in their curricula may be helpful in conducting evaluation research. This line of inquiry seeks to develop information on curricula that incorporates a writing component. Evaluation research would provide information to other programs that would help them decide whether to adopt, modify, or reject the inclusion a similar program into their curricula. The overall purpose of evaluation research would be to determine if the inclusion of writing for publication module actually translates into future scholarly production (Polit & Beck, 2008c).

Summary

The significance of this study is that it specifically identified barriers to the publication of scientific literature, strategies to minimize barriers, rewards, and effect of barriers on professional development using academic CRNAs own perceptions. This qualitative study has identified several barriers to the publication of scientific literature and includes: time, institutional factors, preparation, motivation, limited outlets of dissemination, and mentorship. Barriers of time, institutional factors, preparation, motivation, and mentorship have been described previously in nursing literature. The barrier of limited outlets for dissemination has not been well described before. The effect of barriers on professional development largely depended on institutional expectations. If scholarly productivity is expected by institutions, then barriers may affect promotion and opportunities, dissemination of knowledge, and professional prestige. If there is not an expectation within institutions, then barriers may affect future opportunities within academia, professional prestige, and educators' self esteem. Rewards of publishing in the scientific literature have been largely anecdotal. This study identified the following rewards: dissemination of knowledge, a sense of accomplishment, prestige, professional advancement and opportunities, and self improvement.

There are a number of limitations associated with the present study. Because face to face interviews were not possible there was the loss of non-verbal information. Data saturation appeared to be met with the present sample, however a larger sample may have yielded additional barriers. The sample was broad. Samples consisting of entirely university or non-university faculty; solely of published or non-published CRNAs; or a

homogenous sample junior or senior faculty may have identified additional barriers or a change in the focus of barriers.

Theoretical context was driven by participant response. No single theory was identified that would support the findings of this study. However, there were two theoretical contexts that are applicable. These include Dr. Albert Bandura's social cognitive theory of self efficacy and Dr. Patricia Benner's application of the Dreyfus model of skill acquisition to nursing.

Several strategies to minimize barriers were identified by participants. These included adequate educational preparation, allocation of time, mentorship, professional support, institutional support, and motivation. Recommendations and implications were framed within Lupien and Rosenkoetter's (2006) five step process to increase nurse anesthesia related research, where applicable. In addition to the allocation of time, evidence based curriculum, networking, and institutional support; professional support, identification of additional outlets for dissemination, and doctoral preparation of faculty were identified as additional strategies. Recruitment of students was not identified as a strategy by participants.

Future research should focus on continued identification of barriers, what barriers are common to various subsets of academic CRNAs based on demographics and academic settings, and an in-depth study of individual findings of the current study. The phenomenon of mentorship, preparation, and motivation could be studied within the realm of nurse anesthesia education through qualitative methods. Process analysis and evaluation research should be undertaken to detail current programs that emphasize research and writing for publication.

Findings of the present study provide a basic blue print for further exploration. The importance of continued scholarship through research and writing for publication are essential for the continued growth of the profession. Once barriers are clearly identified initiatives on a local and national level should seek strategies to reduce barriers, promote scholarship, and cultivate a unique and cumulative body of knowledge for the profession of nurse anesthesia.

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Appendices

Appendix A

Institutional Review Board Approval

February 5, 2009
College of Saint Mary
7000 Mercy Road
Omaha, NE 68106

Dear Mr. Moos:
The Institutional Review Board at College of Saint Mary has granted final approval of the Consent Form for your study titled, *Barriers to the Publication of Scientific Literature by Academic Certified Registered Nurse Anesthetists.* You will find it attached to this email. You will also find a copy of this approval letter attached for your convenience.
The Consent Form now has the approval date stamp embedded so that you may make official copies of your consent forms directly from this document.
The Committee has assigned approval number CSM 08-76. The approval will expire in one calendar year, February 5th, 2010.
Attached is the "Rights of Research Participants" form. You are required to make copies and give a copy to each research participant.
Sincerely,

Dr. Melanie K. Felton

Melanie K. Felton, Ph.D.
Associate Professor
Chair, Institutional Review Board
mfelton@csm.edu

7000 Mercy Road • Omaha, NE 68106-2606 • 402.399.2400 • FAX 402.399.2341 • www.csm.edu

Appendix B

The Rights of Research Participants and Consent Form

COLLEGE OF SAINT MARY

THE RIGHTS OF RESEARCH PARTICIPANTS*
AS A RESEARCH PARTICIPANT ASSOCIATED WITH COLLEGE OF SAINT MARY YOU HAVE THE RIGHT:

1. TO BE TOLD EVERYTING YOU NEED TO KNOW ABOUT THE RESEARCH BEFORE YOU ARE ASKED TO DECIDE WHETHER OR NOT TO TAKE PART IN THE RESEARCH STUDY. The research will be explained to you in a way that assures you understand enough to decide whether or not to take part.

2. TO FREELY DECIDE WHETHER OR NOT TO TAKE PART IN THE RESEARCH.

3. TO DECIDE NOT TO BE IN THE RESEARCH, OR TO STOP PARTICIPATING IN THE RESEARCH AT ANY TIME. This will not affect your relationship with the investigator or College of Saint Mary.

4. TO ASK QUESTIONS ABOUT THE RESEARCH AT ANY TIME. The investigator will answer your questions honestly and completely.

5. TO KNOW THAT YOUR SAFETY AND WELFARE WILL ALWAYS COME FIRST. The investigator will display the highest possible degree of skill and care throughout this research. Any risks or discomforts will be minimized as much as possible.

6. TO PRIVACY AND CONFIDENTIALITY. The investigator will treat information about you carefully and will respect your privacy.

7. TO KEEP ALL THE LEGAL RIGHTS THAT YOU HAVE NOW. You are not giving up any of your legal rights by taking part in this research study.

8. TO BE TREATED WITH DIGNITY AND RESPECT AT ALL TIMES.

THE INSTITUTIONAL REVIEW BOARD IS RESPONSIBLE FOR ASSURING THAT YOUR RIGHTS AND WELFARE ARE PROTECTED. IF YOU HAVE ANY QUESTIONS ABOUT YOUR RIGHTS, CONTACT THE INSTITUTIONAL REVIEW BOARD CHAIR AT (402) 399-2400.

*ADAPTED FROM THE UNIVERSITY OF NEBRASKA MEDICAL CENTER , IRB WITH PERMISSION

7000 Mercy Road • Omaha, NE 68106-2606 • 402.399.2400 • FAX 402.399.2341 • www.csm.edu

IRB # CSM 08-786
Date Approved 2/5/09
Valid Until: 2/5/10

IRB#: 08-76

Barriers to the Publication of Scientific Literature by Academic Certified Registered Nurse Anesthetists

Invitation

You are invited to take part in this research study. The information in this form is meant to help you decide whether or not to take part. If you have any questions please ask.

Why are you being asked to be in this research study?

You are being asked to be in this study because you are an academic Certified Registered Anesthetist.

What is the reason for doing this research study?

It is important to understand your perspective on barriers encountered to writing scientific literature for publication.

What will be the done during this research study?

The purpose of this study is to explore barriers that academic CRNAs encounter that may impact their ability for scholarly production of publishable manuscripts.

Procedure:

a. You will be asYou will be asked open-ended questions from a prepared questionnaire during individual interviews conducted by one of the researchers. Data will be audio taped for later transcription and recording of your verbal communication. The researchers will be contacting you, by phone, from the College of Saint Mary or their home. The interviews should last no longer than 30-45 minutes.

b. Audio tapes will be destroyed at the conclusion of the analysis of data.

Participant's initials_____

What are the possible risks of being in this study?

There are no known risks to you from being in this research study.

What are the possible benefits to you?

The information obtained from this study will be shared with you. However, you may not get any benefit from being in this research study.

What are the possible benefits to other people?

The information obtained from this study is intended to provide a better understanding of barriers to writing scientific literature for publication.

What are the alternatives to being in this research study?

Instead of being in this research study you can choose not to participate.

What will being in this study cost you?

There is no cost to you to be in this research study.

Will you be paid for being in this research study?

You will not be compensated for being in this research study.

What should you do if you have a problem during this research study?

Your welfare is a major concern of every member of the research team. If you have a problem as a direct result of being in this study, you should immediately contact one of the people listed at the end of this consent form.

How will information about you be protected?

Reasonable steps will be taken to protect your privacy and the confidentiality of your study data. The only persons who will have access to your research records are the study personnel, the Institutional Review Board (IRB), and any other person or agency required by law. The information from this study may be published in scientific journals or presented at scientific meetings but your identity will be kept strictly confidential.

Participant's initials_____

What are the rights as a research participant?

You have rights as a research participant. These rights have been explained in this consent from and in *The Rights of Research Participants* that you have been given. If you have any questions concerning your rights, talk to Daniel D. Moos CRNA, MS by calling 308-627-2290 or Dr. Peggy Hawkins by calling 402-399-2658 or call the Institutional Review Board (IRB), telephone (402) 399-2400.

What will happen if you decide not to be in this research study or decide to stop participating once you start?

You can decide to not be in this research study, or you can stop being in this research study ("withdraw") at anytime before, during, or after the research begins. Deciding not to be in this research study or deciding to withdraw will not affect your relationship with the investigators, or with College of Saint Mary. You will not lose any benefits to which you are entitled. If the research team gets any new information during this research study that may affect whether you would want to continue being in the study, you will be informed promptly.

Documentation of informed consent

You are freely making a decision whether to be in this research study. Signing this form means that (1) you have read and understood this consent form, (2) you have had the consent form explained to you, (3) you have had your questions answered and (4) you have decided to be in the research study.

If you have any questions during the study, you should talk to one of the investigators listed below. You will be given a copy of this consent form to keep. If you are 19 years of age or older and agree with the above, please sign below.
Signature of Participant: _____ Date: _____ Time: ____

My signature certifies that all the elements of informed consent described on this consent form have been explained fully to the participant. In my judgment, the participant possesses the legal capacity to give informed consent to participate in this research and is voluntarily and knowingly giving informed consent to participate.
Signature of Investigator _____ Date: _____

Authorized Study Personnel
Principal Investigator: Daniel D. Moos CRNA, MS Phone No: 308-627-2290
Secondary Investigator: Dr. Peggy Hawkins Phone No: 402-399-2658

Appendix C

Demographic Data

Descriptive Information:
Is tenure available within your institution: yes no
If yes are you currently tenured? yes no
What is your educational background?
Masters degree: anesthesia nursing other
Doctorate degree: yes no
Age: < 29 30-39 40-49 50-59 >60
Gender: male female
Is the school of nurse anesthesia located in: College of Nursing College of Allied Health
Other

Appendix D

Open Ended Interview Questions

1. What are all the barriers to writing scientific literature for publication that you have encountered?

2. How were you prepared to participate in writing for publication during your educational experience?

3. What are the major barriers that impede your ability to write for publication? What are the minor barriers?

4. What could be done to minimize, diminish, or remove barriers that you encounter?

5. What is the impact of barriers on your professional development?

6. What do you perceive as the rewards of publishing in the scientific literature?

7. Is there anything else you would like to add?

Appendix E

Audit Trail

August 1, 2009

Daniel Moos has requested a qualitative research audit on Barriers to the Publication of Scientific Literature by Academic Certified Registered Nurse Anesthetists. The purpose of this audit was to determine the degree to which the results of the study are trustworthy. The qualitative research audit was conducted from April 2009 through August 2009 and concluded on August 1, 2009.

An audit trail is conducted to provide accountability outlining the research process and the systematic thematic analysis (Miles & Huberman, 1984; Huberman & Miles in Deglin and Lincoln 1994; Lincoln and Guba 1985; Moustakas, 1994)

The audit was conducted by taking the following six steps:

1. Listened to audiotapes and examined verbatim transcripts.
    a. Listened to taped conversation and read transcriptions.
    b. Checked for added, omitted, or incorrect or inverted words.
    c. Findings: Transcription errors were negligible. There were no errors that affected or altered the meaning of data. Therefore, the effect of transcription error or data analysis is deemed non-existent.
2. Reviewed researcher's (s') notes and materials
    a. Institutional Review Board application and approval
    b. Coded transcriptions
    c. Researcher's notes
    d. Coding notes
    e. Dissertation draft
    f. Interview guide
    g. Findings: The files included the required information and approval forms.
3. Reviewed participants' consent forms
    a. Signed forms were consistent with approved forms by the Institutional Review Board
    b. Findings: All participants signed and gave consent to participate in the study.
4. Reviewed coding processes
    a. Researcher's notes indicated a transparent decision making trail of horizontilization and categorical aggregation.
    b. Findings: Data supported the identified theme.
5. Read draft dissertation
    a. Report was read in its entirety with careful review of purpose, design, verification of data quality, and use of theory.
    b. Findings: Theory and literature were described accurately. Ample description and direct quotes were consistent with the identified themes.
6. Reviewed purpose of this audit
    a. The overall product and process was reviewed.
    b. Findings: Appropriate procedures were utilized in producing the conclusions and findings. The data were accurately reported.

Based on the process outlined by Creswell (2007) the following conclusion is made:

Conclusion

In my opinion the study, Barriers to the Publication of Scientific Literature by Academic Certified Registered Nurse Anesthetists, followed established processes for qualitative studies. This study remained consistent with its intended purpose statement, Institutional Review Board approval, and proposal as approved by the Dissertation Committee. The researcher's steps were clearly transparent and documented. Data were logically analyzed and supported by quotes from informants. Procedures were followed as outlined. There was evidence of the following activities: prolong engagement, member check, thick and rich descriptions, and transparent audit trail. The utilization of Moustakas (1994) method of qualitative analysis lends credibility to the findings and conclusions.

In summary, the researcher satisfied the criteria for dependability and confirmability of findings.

Attested to this 1st day of August in the year 2009.

Sincerely,

Peggy L. Hawkins, PhD, RN, BC, CNE
Professor
College of Saint Mary
7000 Mercy Road
Omaha, NE 68106