

Wellness and Thriving in a Student Registered Nurse Anesthetist Population

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With the creation of its Wellness Program, the American Association of Nurse Anesthetists (AANA) has advocated for renewed emphasis in education, research, and practice on anesthesia provider wellness. This research was designed to explore the relationship between student registered nurse anesthetists' perceived wellness and students' thriving throughout their academic program. Because of the multifactorial nature of wellness and its alignment with the AANA's wellness model, a salutogenic wellness framework provided the theoretical basis for this study. Four variables related to thriving in a nurse anesthesia program were studied in relationship to students' perceived wellness, measured using the Salutogenic Wellness Promotion Scale (SWPS): self-efficacy, academic achievement, technical clinical competence,

and patients' perceptions of students' relational skills. Measurements were taken at 5 points during the academic program.

There was a significant correlation, using multiple regression analysis, between SWPS and self-efficacy at times 1, 2, and 3, but not at times 4 and 5. The Emotional Score subscale of the SWPS significantly correlated with self-efficacy at the same intervals. Within the variable of student academic achievement, overall wellness negatively correlated with the National Board of Certification & Recertification for Nurse Anesthetists' Self-Evaluation Examination scores. These results have potential implications on nurse anesthesia education.

Keywords: Academic achievement, salutogenic, self-efficacy, student registered nurse anesthetist, wellness.

Student registered nurse anesthetists (SRNAs) must meet the challenges of rigorous, stressful curricula. Highly technical, complex, and competitive nurse anesthesia educational programs place demands on students' personal and professional lives, and trigger in many students a heightened sense of liability and vulnerability.¹⁻³ Students face substantial academic, relational, and emotional demands, financial strain, altered living routines, sleep deprivation, and lack of leisure time.⁴ During their educational experience, SRNAs begin to establish patterns of responding to stressors that they may take with them into their professional lives.

Many of the studies done thus far on SRNAs' experiences describe the nature and types of stressors that students encounter and expand understanding of the "pathogenesis" of stress and how it leads to negative outcomes. Although some degree of stress is necessary for motivation and higher performance levels, unmanaged stress can contribute to illness, dissatisfaction, and substance use.^{1,5} Experiencing chronic stress over time can lead to unintended consequences for students' mental and physical health, and can negatively influence their academic performance, self-confidence, and their professional and personal lives.⁶ Negative coping strategies, including higher rates of substance abuse in anesthesia providers, have been documented.⁷

Phillips⁸ explored SRNAs' stressors using a grounded theory method. She noted that perceived stressors changed as students transitioned through their educational program. Students experienced curricular and personal stressors, including relationship issues, changed body image, financial challenges, and lack of personal time. Chipas et al² reported similar sources of stress in SRNAs and noted that some minority student groups report statistically higher levels of stress, potentially leading to avoidant coping measures, depressive mood, low self-esteem, and unhealthy eating patterns. Somewhat higher stress levels were found in divorced students and in female students.²

Numerous studies of the health and stress levels of graduate students in general and medical students and SRNAs in particular have highlighted the multifactorial nature of stress and coping. Human beings experience distress as an integrated organism in interrelated dimensions: body, emotions, physical health, and spiritual health.⁹ Longfield et al¹⁰ studied self-worth and physical and social activities of graduate students and concluded that negative changes in any one health dimension could jeopardize an individual's overall sense of well-being and life balance. Artino et al¹¹ studied the impact of medical students' personal factors, motivational beliefs, and emotions on academic achievement, recognizing that multiple variables contribute to students' success. McKay

et al¹² researched the correlations between SRNAs' physiologic parameters and acute stress in their study of anxiety and salivary α -amylase levels and the quality of students' performance during simulator activities. A multi-institutional study of US medical students identified multiple modifiable personal factors and elements in the learning climate that related to resilience and recovery from burnout while in school.¹³

• **Wellness Focus in Nurse Anesthesia Education.** Breslow¹⁴ described the need to move beyond "first and second era" epidemiologic revolutions which are based on pathogenesis and problem description. There is no evidence that avoiding a negative condition will lead to overall wellness or enhanced well-being. Unfortunately, much of the wellness literature describes how to avoid negative health behaviors rather than promoting and studying positive health behaviors.¹⁵

A "third era health revolution" is focused on maintaining and improving health as a resource for living and thriving.¹⁴ In 2004, the American Association of Nurse Anesthetists (AANA) helped move nurse anesthesia education and practice toward "third era" health with the creation of the AANA Wellness Program.¹⁷ The program defines wellness as a multidimensional concept, reflected in measures of spirituality, work and leisure, friendship, love, and self-direction. Drawing on the work of Hettler¹⁶ in 1984, the AANA identified 6 components to wellness: physical, emotional, occupational, social, intellectual, and spiritual.^{16,17}

Because of the multifactorial nature of wellness and its alignment with the AANA's wellness framework, this research used the theoretical model of salutogenesis to study the relationships among select educational variables and students' multidimensional wellness. Salutogenesis offers a comprehensive view of wellness composed of 7 interrelated domains: physical, social, emotional, spiritual, intellectual, vocational, and environmental. A salutogenic framework supports descriptions of how people stay well when encountering periods of stress.

• **Study Aims.** This research was designed to explore the relationship between SRNAs' perceived wellness and students' thriving over time, throughout their academic program. Four variables related to thriving in a nurse anesthesia program were studied in relationship to students' perceived wellness: self-efficacy, academic achievement, technical clinical competence, and patients' perceptions of students' relational skills.

This study's aims were to

1. Assess SRNAs' perceived wellness at specific intervals over time in their program of study.
2. Explore the relationship between students' perceived wellness and perceived self-efficacy over time.
3. Explore the relationship between students' perceived wellness and their academic achievement.
4. Explore the relationship between students' per-

ceived wellness and their technical clinical competence.

5. Explore the relationship between students' perceived wellness and patients' satisfaction with students' interpersonal interactions.

Methods

Following the completion of a pilot study, this research was designed to explore the relationship between SRNAs' wellness and key variables indicative of student thriving while in graduate school. Information from this study can be used to understand wellness more specifically and over time, potentially leading to curricular and programmatic changes to promote wellness.

• **Participants.** Study participants were 3 separate cohorts of students pursuing a master's degree in a nurse anesthesia program in a large Midwestern state university. Participants were followed over a 16-month period. Student age, gender, marital/relationship status, and years of experience in nursing were obtained as part of the study's demographic data (Table 1). Students who consented to be part of the study were informed of study purposes, time demands, and risks and benefits.

• **Instruments.**

• **Salutogenic Wellness Promotion Scale.** The Salutogenic Wellness Promotion Scale (SWPS) was used to measure students' perceived wellness at intervals throughout their course of study in the anesthesia program. The 26-item SWPS assesses perceived wellness in 7 domains: physical, social, emotional, spiritual, intellectual, vocational, and environmental. Initial analysis of the pilot data gathered before the beginning of this study indicated that the SWPS yielded high reliability ($\alpha = .83$), confirming its appropriateness as a measure of wellness. Researchers have used the SWPS to determine factors associated with activities that optimize health.¹⁸⁻²⁰

• **Perceived Self-Efficacy Scale.** The Perceived Self-Efficacy Scale (PSE) was used to measure students' perceived self-efficacy at different intervals throughout their course of study in the anesthesia program. This 10-item, reliable and valid instrument has been widely used for assessing a person's perception of his or her self-efficacy.^{3,21} Perceived self-efficacy can be used to predict a person's ability to adapt to life changes and as an indicator of successful coping. The PSE performed very well during a pilot study undertaken on a similar population and had a reliability of $\alpha = .84$.

• **Academic Achievement.** Data for documenting students' academic success and clinical competence were obtained using the assessment methods in use for all students in the anesthesia program. Assessment methods included students' grade point average (GPA) in didactic anesthesia courses and their Self-Evaluation Examination (SEE) scores, a standardized examination based on national CRNA curriculum standards. The SEE is taken by students during August of their junior

Characteristics	No. (N = 75)
Gender	
Male (%)	27 (0.36)
Female (%)	48 (0.64)
Mean age (range), y	31.65 (24-47)
Marital status (%)	
Married/partnered	54 (0.72)
Unmarried/single	18 (0.24)
Divorced	3 (0.04)
Mean experience (range), y	5.59 (1.5-19)

Table 1. Demographics of Participants

and senior years, and scores were correlated only to the SWPS from those specific times. The SEE scores are compiled by the National Board of Certification & Recertification for Nurse Anesthetists (NBCRNA) and include an overall scaled score as well as scores in 5 subsets: (1) professional and legal aspects of anesthesia, (2) anatomy, physiology/pathophysiology anesthesia considerations, (3) pharmacology, (4) basic principles of anesthesia, and (5) advanced principles of anesthesia. Participating students' total SEE scores and scores from each of the 5 domains were correlated with students' overall SWPS total and domain scores. Students' current and cumulative didactic GPAs were also used to assess academic achievement.

- **Technical Clinical Competence.** Students' technical clinical competence was assessed using their overall clinical course grade averages. Clinical course grades are based on 5 criteria: (1) daily evaluations, (2) end-of-rotation evaluations, (3) outstanding or sentinel events, (4) punctuality in clinical work and with paperwork submission, and (5) appropriateness of care plans. A clinical evaluation, based on 13 general competencies, is completed daily by the preceptor working with the student. The preceptor's assigned score indicates whether the student performed at, below, or greatly below the expected level. Clinical coordinators also complete an end-of-rotation evaluation (final grade) based on a compilation of the daily outcomes evaluations. The end-of-rotation evaluations often capture nuances not fully identified in the daily evaluation forms. Preceptors' evaluations are completed as part of the standard routines at the study institutions' existing clinical sites and are in accordance with the school's and agency's established policies.

- **Caring Behaviors Inventory Scale and Client Perception of Caring Scale.** Patients' satisfaction with SRNA's care was measured using a 15-item Likert-type scale from the Caring Behaviors Inventory (CBI) Scale and the Client Perception of Caring Scale (CPCS).²² These scales are more often used to research nurse-patient interactions in long-term care; however, there is compelling evidence

that the instruments can be used to research interactions in episodic care settings. Swan²³ used the CBI to measure preoperative nursing caring behaviors during preadmission testing visits. The CBI has also been used to assess trauma patients' perceptions of their encounters in the emergency department.^{24,25} Yeakel et al²⁶ used the CBI to measure elements of perioperative care during surgical hospitalization. The CBI instrument caring tools were used in a pilot study completed before this study. The combined scale (CBI and CPCS) items together had decent reliability ($\alpha = .70$).

- **Procedures.** After receiving institutional review board approval, study data were gathered over a 16-month period from 3 different junior and senior SRNA cohorts (N = 75). To study relationships among students' perceived wellness in 7 domains and their perceived self-efficacy, the SWPS and PSE were administered during class time in one of their nurse anesthesia courses in January, August, and May, 3 times each year of the study. Wellness perceptions were assessed at different intervals throughout the students' curriculum to track changes over time. The academic achievement measure (GPA) and clinical assessments (compiled preceptor evaluation data) were added to the participants' databases at the time of each SWPS and PSE assessment. The academic achievement measure (SEE) and patient satisfaction data were compiled to be compared with the SWPS score from the appropriate timeframe.

Students' interactions with patients were assessed after the SRNA completed a preoperative initial assessment on patients having same-day, outpatient endoscopy procedures. This patient population was chosen to help limit the number of variables that can affect the stress and attention level of a presurgical patient. After the SRNA completed the preoperative assessment and left the area, a research assistant obtained consent from patients willing to respond to the 15-item CBI/CPCS questionnaire. Patient survey responses were marked with the corresponding student's study code number so the patient's survey responses could be linked to the student who provided the preanesthesia care. The coding protected student confidentiality. No identifiable patient information was recorded on the survey sheet. Patient survey results were entered into student participants' databases and were correlated with SWPS overall and specific domain scores.

- **Statistical Analysis.** Data analysis was accomplished using multiple regression analysis, appropriate for evaluating the effects of more than one independent (predictor) variable on outcome variables. The SWPS was carefully selected as the predictor variable because its use is supported in the literature and has been used to study wellness in the proposed designated population.¹⁸⁻²⁰ Gender, age, marital status, and nursing experience served as control variables. Additionally, PSE data were

Mean SWPS Time	n	Minimum score	Maximum score	Mean ± SD
1	46	1.80	4.76	3.5663 ± 0.62733
2	47	1.96	4.92	3.5779 ± 0.64135
3	23	2.64	4.20	3.3304 ± 0.43304
4	42	.40	4.12	3.1802 ± 0.67065
5	40	1.72	4.12	3.2490 ± 0.50609

Table 2. Descriptive Statistics

Abbreviation: SWPS, Salutogenic Wellness Promotion Scale.

correlated with the SWPS overall and the 7 wellness domain scores. As explained later, there were no differences in results as a function of the control variables. For ease of interpretation, only the results of the correlational analyses are discussed.

Results

The SWPS and PSE instruments performed with high reliability in this study, with reliability in all testings of $\alpha > .8$. Data were analyzed to determine if there were differences in students' perceived wellness, measured by the SWPS, at different points in their educational program. There were no significant differences in SWPS across time, nor were there any meaningful patterns or trends in each of the SWPS subscales over time. Interestingly, although not statistically significant, students' perceived wellness scores trended downward during the last 2 semesters of study (Table 2).

Of note, students' perceived wellness and self-efficacy were positively correlated at all testing intervals. There was a significant correlation between SWPS and PSE at time 1 ($r = 0.34, P < .05$), time 2 ($r = 0.32, P < .05$), and time 3 ($r = 0.62, P < .01$), but not at time 4 or 5. For the significant correlations, the higher the perceived self-efficacy, the higher the wellness. Similarly, the Emotional Score subscale of the SWPS was significantly correlated with Perceived Self-Efficacy at time 1 ($r = 0.52, P < .001$), time 2 ($r = 0.57, P < .001$), and time 3 ($r = 0.76, P < .001$), but not at time 4 or 5. There were no significant correlations with self-efficacy and other wellness domain scores. As self-efficacy increased, so did the emotional component of wellness.

Regarding the relationships between academic achievement, wellness, and self-efficacy, overall wellness was negatively correlated with SEE scores ($r = -0.48, P < .05$). Self-efficacy was negatively correlated with GPA at time 5 ($r = -0.36, P < .05$), indicating lower GPA for higher self-efficacy. These findings, however, were not a trend and should be interpreted cautiously. Overall wellness was not correlated with overall GPA in anesthesia courses at any time point, nor did they correlate with measures for clinical competence at any time point. Neither overall wellness nor self-efficacy correlated with patient satisfaction with care scores at any time point. Longitudinal data for the PSE scores can be found in Table 3.

Discussion

This study demonstrates a positive relationship between students' overall perceived wellness, the emotional domain of wellness, and perceived self-efficacy. Because of the importance of self-efficacy as a necessary personal characteristic for facing life challenges, it is valuable to see the positive correlation in this study between self-efficacy and higher perceived levels of wellness. Self-efficacy has often been studied as a variable associated with wellness in academic settings, and this study furthers the evidence between these 2 important dimensions of student health.^{3,11,27} People with higher levels of self-efficacy and wellness are better able to set goals, maintain persistence in the face of barriers, and recover from setbacks. Research suggests that a person's life outlook and belief that he or she can overcome obstacles may lead to wellness more than simple avoidance of stress.³

Although further study into the nuanced characteristics of the emotional domain of wellness is warranted, the positive relationship between self-efficacy and emotional health demonstrated in this study provides fertile ground for discussion. How students process the emotional dimensions of their personal and professional lives while in school may set wellness patterns that they will use when they become professional anesthesia providers. In an exit interview qualitative study of SRNAs conducted recently at the study institution, students reported encountering many situations that are charged with emotional content—performance anxiety, self-doubt, fear of failure, standing up for one's self, decisional fatigue, and workplace incivility. As a group, SRNAs can cope and perform well while facing challenging circumstances for a given length of time. Although most aspects of wellness are outside the educator's reach, this study underscores the importance of students' emotional lives and the potential opportunities educators and preceptors have to help students process the emotional content of their learning and experiences. Emotional and physical well-being are inextricably linked in human health. Perhaps emotional health is a key dimension in overall perceptions and experiences of wellness.

Because overall wellness is the desired goal for SRNAs, studies of student wellness can direct educators in the development of specific strategies to promote physical, mental, and social well-being in SRNAs. For example,

Mean PSE Time	n	Minimum score	Maximum score	Mean ± SD
1	46	2.70	4.20	3.3871 ± 0.32254
2	47	2.70	4.00	3.3613 ± 0.35867
3	23	2.10	3.90	3.2838 ± 0.42721
4	42	2.90	4.00	3.4455 ± 0.37636
5	40	2.80	4.00	3.3975 ± 0.38993

Table 3. Longitudinal Data

Abbreviation: PSE, Perceived Self-Efficacy Scale.

this study demonstrated the loss of significant correlation between overall perceived wellness, the emotional domain of wellness, and self-efficacy in the later testing periods. Student fatigue near the end of a program or school year could be a factor in changing perceptions of wellness or emotional health. Also, the last 2 semesters for senior students in the study institution featured online didactic courses and extensive clinical work. Students have gained more independence and spend most of their time in more independent practicum experiences and/or with higher acuity patients. Perhaps the loss of the valuable social contacts in face-to-face classroom interactions with peers and faculty members contributes to decreased perceived wellness. Curriculum adjustments could be made to mitigate the loss of social connections and perceived wellness across time. Educational programs can be designed to include content, processes, extracurricular resources, and course sequencing to help students thrive from program entry to exit. Nurse anesthesia curricula should be more intentionally based on holistic, wellness-focused educational models.

Regarding academic achievement and wellness, it was earlier noted that there was a negative correlation between the SEE scores and wellness. Simply stated, students who scored higher in self-reported wellness tended to have lower SEE scores. Although it is important to again note that data were not trended and should be interpreted very cautiously, these findings might be worthy of a few comments. With few exceptions, students in the study scored well on the SEE. The average score of the study participants was well above the national average. Thus, variance in SEE scores could reflect the difference between those scoring “well” and those scoring “very well.” Perhaps those scoring “very well” or extremely high on the SEE had sacrificed more elements of personal wellness in order to immerse themselves in the volumes of information needed to master the material. It is difficult for high-achieving students to discern how much is enough or how good is good enough. Although the data do not indicate any cause-and-effect relationship, this statistical finding might be the catalyst for future validating research.

Finally, the subjects of this study were students in a 31-month master’s program. As nurse anesthesia education moves to the Doctor of Nursing Practice (DNP)

level, students will face the additional academic challenges of creating and implementing a DNP project, scholarly manuscript development, leadership expectations, and higher level interdisciplinary collaboration with other professionals for project implementation. Given the expanded academic expectations and increased length of doctoral programs, students may experience higher demands on their time and coping resources, making wellness an even more pressing issue for doctoral students.

• **Limitations.** Several important limitations should be considered when interpreting study results. Because the data are correlational, no cause-effect conclusions can be made regarding the observed relationship between wellness and perceived self-efficacy. Although the findings suggest a strong association between the overall wellness and the emotional domain of wellness and self-efficacy, causal pathways cannot be assumed. Second, the study participants are from a relatively small, homogeneous group, thus limiting the generalizability of study results. Finally, academic achievement, clinical competence, and patient satisfaction data had minimal variance. All SRNAs are selected based on their previous academic and nursing success, and the students represented in this study perform at a very high level. Students who have progressed in the program to their junior and senior years no longer display wide variance in their skills and knowledge. It would be beneficial for future studies to adopt assessment instruments that are much more sensitive to this smaller variation, to overcome potential ceiling effects. A multi-institutional study with a larger sample size may offer greater variability and interest to the study design.

• **Strengths.** Few studies of SRNAs have explored the relationship of student wellness or salutogenesis to areas of thriving in their programs of study. To further the shift to “third era” (wellness) approaches to health, well-controlled studies should be undertaken to further untangle the relationships among the domains of wellness and other variables in student life. This study took a first step in that direction. Further exploration might also include the study of stress and wellness in family members of SRNAs. The SWPS and PSE performed with high reliability in this study and can help expand our understanding of wellness for SRNAs. Students, too, noted the importance

of a wellness focus for a research strategy. During program exit interviews, after the study was completed, some participants stated that they valued and benefited from being reminded of their holistic wellness and self-efficacy with the periodically administered assessments.

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