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A survey of moral distress in certified registered nurse anesthetists: A theoretical perspective for change in ethics education for advance practice nurses

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ABSTRACT

Objective: The aim of this study was to examine the relationship between moral distress that may affect patient safety, and the clinical practice model, assessing ethical decision-making skills of certified registered nurse anesthetists (CRNAs).

Methods: A survey using the Ethical Stress Scale (ESS) and the Ethical Assessment Skills Survey (EASS) was conducted with 134 CRNAs.

Results: Results indicated no significant effect of practice model on level of moral distress or perceived ethical assessment skill knowledge [Wilks's lambda = 0.952, $F(6, 256) = 1.068$, $P = 0.382$, $\eta^2 = 0.02$]. A statistically significant positive correlation existed between importance and skill ($r = 0.275$, $P = 0.001$). CRNAs felt skilled to manage the actions or activities they deemed important.

Conclusion: CRNAs who perceived a higher skill level in addressing ethical issues experienced lower levels of moral distress. Findings indicate content-specific curricula for the CRNAs need to be evaluated for ethical decision-making skill assessment content.

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1. Introduction

Certified Registered Nurse Anesthetists (CRNAs) are advanced practice nurses (APNs) in the United States who have received specialized education and training in the field of anesthesiology. CRNAs independently provide more than half of the anesthesia services provided in rural areas [1]. Demographically and economically, many nurse anesthetists are the sole provider of anesthesia services [2], adding value to the role in filling the gap in anesthesia delivery in rural areas in the United States. The most cost-effective delivery of anesthesia services influences the cost of health care and access to health care [1,3]. For these reasons, protecting CRNAs and all APNs from moral distress is important to patient care and the health care economy.

The advocacy role of the APN often results in moral distress from ethical dilemmas stemming from circumstances such as scarce resources, or the challenges posed by conflicts with families and other health care professionals [4–8]. Moral distress is the tension caused by the discrepancy, which may cause feelings of fear, anger,

anxiety, and powerlessness [5,8].

One large challenge, to increase production, decrease time, and adhere to strict utilization of resources may cause undue moral distress in the APN who feels these new obligations impinge on the adequacy of patient: practitioner interactions. Production pressure can become overbearing within the practice of nurse anesthesia, potentially jeopardizing patient safety.

Wilkinson [9] contends that any threat to patient care, such as moral distress, deserves further study. Ample research indicates current ethics education in nursing is not sufficient to meet the demands of ethical decision-making of APNs, including, CRNAs [10–15].

Jameton described moral distress as feelings that arise when it becomes difficult or impossible for a nurse to make decisions he or she feels to be the right choice concerning a patient [5]. Moral distress causes feelings of fatigue, frustration, job burnout, anger, and a fear of job loss and might lead to changes in patient care affecting the safety of the patient [8,16–19]. Moral distress and its effects on nurses have been well described in the literature [5,18,20–23]. The limitation of research on moral distress is that it contains minimal exploration into the experience for the APN, or more specifically, CRNAs.

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Radzvin [7,8] described the experience of moral distress in CRNAs but did not explore the perceived ethical assessment skills of CRNAs. Variations exist in the different practice models used in anesthesiology in the U.S. that might affect the experience of moral distress and change the direction of focus for future CRNA education. One variation is the level of supervision or collaboration with an anesthesiologist. Another variation is the autonomy of the role of CRNAs. In managed care or supervisory environments, CRNAs work closely with other anesthesia professionals, but in an independent practice model, a CRNA might be the sole anesthesia provider. To build on prior research, the purpose of this quantitative correlation study was to measure the relationship between perceived ethical assessment skill knowledge and moral distress and how this varies across the three CRNA practice models.

2. Study design and methods

2.1. Ethics statement

This study was submitted for Institutional Review Board approval. Participation in this study was voluntary with participant informed consent. The study involved minimal risk and the participants could withdraw by contacting the researcher.

2.2. Study design

This quantitative correlational study was a random sample using two survey instruments to measure the relationship between moral distress and perceived ethical skill assessment knowledge in the sample of CRNAs across three practice models including medically directed, supervision, and independent practice.

2.3. Setting and participants

The target population was the 44,000 CRNAs in practice in America [24]. Eligible participants were those CRNAs who were active certified members of the AANA. Retired members, nonpracticing members, and students did not meet eligibility requirements for the study. The minimum required sample size was calculated based on a multiple regression with five predictor variables. This statistical test had the largest required sample size of any of the statistical tests used for the study. With a power of 0.80, alpha level of 0.05, medium effect size [13], and five predictor variables, the minimum required sample size was 92. Participants were selected and recruited from a random sample provided by the AANA. Of the CRNAs who met the criteria of active membership who are in practice, a random sample of 920 CRNAs was selected.

2.4. Data collection

A representative from the AANA organization provided permission to recruit subjects, use the name of the organization, and use data from the organization. Participants were recruited from a random sample provided by the AANA via a mailed packet of surveys through the U.S. Postal Service. The AANA selected a random sample of eligible participants for the study, as described in the AANA research sample mailing list policy. The AANA organization provided mailing labels for the randomly selected individuals. From the 920 survey packets mailed, 145 participants returned surveys and 134 CRNAs' survey data were analyzed, yielding a 15% response rate.

2.5. Questionnaires

Radzvin [7,8] addressed the issue of moral distress in CRNAs

using the Ethical Stress Scale (ESS) developed by Raines and Tymchuk [25]. Raines (1994) established a content validity index of 0.89, $P < 0.05$, of the ESS "using a 4-option Content Validity Index rating scale by a group of advanced practice nurse clinicians who were exposed to ethical dilemmas in their practice several times a week" [7]. According to Radzvin [8], "While the original ESS included 56 questions, Raines [30] did not address the method used to calculate the total score for the ESS". Radzvin [7] calculated the response to the first 52 questions to reach a total ESS score. The lower 10% indicates a high level of moral distress and the median score indicates a moderate level of moral distress. Radzvin tested the first 52 questions for face validity with four nurse educators and tested for internal consistency reliability using Cronbach's alpha of 0.87 for the research. Raines [30] tested for stability reliability using test-retest methods resulting in a reliability coefficient of $r = 0.82$, $P \leq 0.005$. This study included the same measurement scales as developed by Radzvin [8].

The study also included the Ethical Assessment Skills Survey (EASS) developed by Cassells and Gaul [26] to assess the self-perceived skill level of ethical decision-making. Cassells and Gaul expanded the EASS tool in 1998 to 12 ethical actions skills from the initial 11-step framework. "Content and expert validity tests were undertaken during the development and revisions of the instrument" and "they have been tested in a number of national and international studies [11]." "Reliability for the EASS was established by the test-retest method, with a coefficient alpha of 0.87 [11]". The focus of the study was to build on Radzvin's [7] descriptive study of the effects of moral distress on CRNAs.

2.6. Data analysis

Data analysis was performed using Statistical Analysis System (SAS), a statistical software program. A correlation analysis was then performed between the total ESS and the two dimensions of the perceived ethical assessment skill knowledge—measuring perceived importance and perceived ethical skill using Pearson's correlation coefficient.

Multiple linear regressions were used in answering the first research question to determine if a correlation existed between perceived ethical assessment skill knowledge (perceived importance and skill) and the level of moral distress.

To answer research question 2, the relationship of the practice models was tested using multivariate analysis of variance (MANOVA). The MANOVA provides an analysis to examine intercorrelations of the dependent variables such as in the current study of moral distress and the two dimensions of perceived ethical assessment skill knowledge.

3. Results

3.1. Moral distress and ethical assessment skill level

Descriptive statistics were a result of the data analysis seeking the demographics of the sample (Table 1). The total sum was first calculated for the ESS to better understand the relationship between the participants perceived ethical assessment skill knowledge and the dependent variable moral distress. By replicating the scoring pattern used by Radzvin [8], the total sum of the ESS for Questions 1–52 was used. The total sum for ESS Questions 1–52 ranged from 72 as the lowest to the highest score of 198. Replicating the scoring pattern, the lower 10% of the total was considered the range for a high level of moral distress, which included total scores of 134 and below. A total score of 158.5 (median) to scores of 135 indicated a moderate level of moral distress, and total scores above 158.5 indicated a low level of moral distress. To test whether a

Table 1
Demographic characteristics of the study sample.

Variable name	n	%
Gender		
Male	56	42
Female	78	58
Age group		
<30	7	5
30–40	36	27
41–50	33	25
51–60	39	29
Over 60	18	14
Highest level of education		
Diploma	5	4
Associated degree	7	5
Bachelor of science/Bachelor of science in nursing	15	11
Master of science/Master of science in nursing	102	77
Doctorate		
Current practice model	4	3
Independent practice	34	25
Managed care practice, with medical direction	81	60
Managed care practice, with supervisory model	19	14
Number of years as a CRNA		
Less than 2 years	21	16
2–5 years	16	12
6–10 years	21	16
11–15 years	11	8
16–20 years	21	16
21–25 years	7	5
Greater than 25 years	37	27

significant correlation existed between perceived ethical assessment skill knowledge and moral distress, both importance and skill were tested on the two-dimensional EASS were tested (see Table 2). The descriptive results of the survey were calculated and correlations were performed with the ESS.

A correlational analysis between moral stress (ESS) and the two dimensions of perceived ethical assessment (EASS), perceived ethical importance and perceived ethical skill, was performed using Pearson's correlation coefficient. The lower 10% total score on the ESS was again indicative of a higher level of moral distress. Results showed no statistically significant correlation existed between total ESS and perceived ethical importance ($P=0.250$). A significant positive correlation did exist between the total ESS and perceived ethical skill ($r=0.348$, $P<0.001$). A statistically significant positive correlation also existed between importance and skill ($r=0.275$, $P=0.001$). CRNAs felt skilled to manage the actions or activities they deemed important.

Table 2
Skill level and importance of each action or activity in the ethical assessment framework (N = 134).

Action or activity	Perceived skill level		Perceived importance level	
	\bar{x}^a	SD	\bar{x}^b	SD
Gathering relevant medical facts	3.59	0.62	3.221	0.624
Gathering contextual data	3.69	0.50	3.318	0.597
Identify a concern or issue that may be an ethical problem	3.59	0.63	3.160	0.614
Using interdisciplinary resources	3.51	0.57	2.952	0.705
Determining if the problem is an ethical dilemma	3.51	0.64	2.808	0.759
Gathering relevant facts on institutional policies	3.49	0.68	3.128	0.633
Acting on action selected	3.46	0.66	2.940	0.715
Proposing actions and options	3.34	0.65	2.841	0.770
Clarifying values, rights and duties	3.61	0.56	3.076	0.695
Applying guidelines from relevant codes of ethics	3.40	0.65	2.872	0.763
Prioritizing actions identified	3.38	0.81	2.684	0.820
Selecting an ethically justified action	3.48	0.62	2.924	0.778
Evaluating actions or options taken	3.51	0.64	2.902	0.780
Gathering relevant facts about state and federal laws	3.52	0.66	3.008	0.786
Applying methods of ethical justification to each action proposed	3.38	0.76	2.720	0.794

^a 1 (not skilled) to 4 (very skilled).

^b 1 (not important) to 4 (very important).

One multiple linear regression analysis was performed for each of the three outcome variables: perceived ethical assessment importance, perceived ethical assessment skill, and moral distress. Results of this study showed a significant relationship between the perceived ethical assessment skill level and moral distress. As higher levels of moral distress are measured by a lower total ESS score, CRNAs whose perceived ethical skill was higher felt lower moral distress.

Results showed no statistically significant correlation existed between total ESS and importance ($P=0.250$). A significant positive correlation did exist between the total ESS and skill ($r=0.348$, $P<0.001$). A statistically significant positive correlation also existed between importance and skill ($r=0.275$, $P=0.001$). The multiple linear regression model used in research question 3 for testing interactions between CRNA model and perceived ethical assessment skill knowledge was expanded by adding other variables such as age, gender, education, and years of experience as covariates. Total moral distress did not show a significant association, $F(1, 117)=1.515$, $P=0.221$, with perceived ethical assessment importance (EASS) after adjusting for age, gender, education, practice model, and number of years as CRNA.

Two multiple linear regression models served to analyze the association between (a) the perceived ethical assessment skill and the level of moral distress (ESS) and (b) the perceived ethical assessment knowledge and the level of moral distress (ESS) while controlling for age, gender, education, years of experience, and the practice model. Total moral distress (ESS) did have a significant positive association ($\beta=0.006$, $P=0.001$) with perceived ethical assessment skill (EASS) even after adjusting for age, gender, education, practice model and number of years as CRNA, $F(1, 117)=14.705$, $P=0.001$, $R^2=0.172$, adjusted $R^2=0.080$. The standardized regression coefficient was 3.460 while the raw regression coefficient was 0.006 ($SE=0.002$) and the intercept was 1.461 ($SE=0.449$). Certified registered nurse anesthetists who perceived a higher skill level in addressing ethical issues experienced lower levels of moral distress.

3.2. Moral distress and the practice models

Results of this analysis indicated no significant association existed between the three practice models and perceived ethical assessment skill knowledge and moral distress. The relationship between the joint distributions of moral distress (ESS) and perceived ethical assessment skill knowledge (EASS) in the three

different practice models was analyzed using a MANOVA. The MANOVA results indicated no significant effect of practice model on level of moral distress or perceived ethical assessment skill knowledge [Wilks's lambda = 0.952, $F(6, 256) = 1.068$, $P = 0.382$, $\eta^2 = 0.02$]. CRNAs effectively demonstrate the ability to adapt to a variety of practice models, without the addition of undue stress to their ethical practice.

4. Discussion

Although research has indicated in a multidisciplinary environment nurses need to be educated for the social situations that affect them in practice [12,17,27], the results of the study did not indicate a significant correlation exists across the three CRNA practice models. Minimizing the negative experience of moral distress for APNs is most significant for leaders of health care organizations and educators. The study supported Fenton's [28] call for a better understanding of clinical work to lessen the curriculum gaps in ethical education. This study has reduced the gap in the current research addressing the subspecialty of nurse anesthetists [13].

Due to the economy, health care leaders must evaluate provider modalities carefully to provide the most cost-effective and safest health care. Hamric, Davis, and Childress, ([29] who dialogue during the University of Virginia School of Medicine's weekly multidisciplinary forum The Medical Center Hour, brought attention to the focus on moral distress. Hamric et al. [29] contended moral distress "can compromise health professionals' moral integrity... [and] in turn compromise the care they provide." Quality safe patient care is imperative. The conclusion of The Medical Center Hour forum discussion hailed the need to "protect the moral integrity of all clinicians" to provide safe quality patient care. In 2005, the Quality and Safety Education for Nurses (QSEN) project initiation began addressing this importance of safety in preparing nurses for their environment emphasizing the importance to healthcare [30].

The medical model has dominated nursing, permitting the marginalization of the value of nursing ethics as a result [4,14,15]. As APNs struggle to make the decisions they feel are right, they might be in conflict with others in more powerful professional positions. Jameton [5] noted, "In general, reducing the number of instances of moral distress over injustices requires a general flattening of the scales of rewards for labor." Hamric et al. [29] asked if nurses become insensitive with the experience they gain and if situations become less distressful when nurses gain experience and understanding of those issues, does this dissipates the feelings from an earlier experience.

Limited resources and production pressure might lead CRNAs to be less attentive to the critical care of patients. A thorough assessment is important to plan the most appropriate anesthesia care for the patient. If the CRNA is pressured for time they may not evaluate the patient as thorough as they would without this increase in production pressure. CRNAs might not follow protocol in an attempt to meet demands or might become apathetic and inattentive to patient monitoring during surgery as feelings of frustration and burnout occur.

Grady, Danis, Soeken, O'Donnell, Taylor, Farrar, & Ulrich [31] noted, "there is little consensus on the appropriate content of ethics education" and this is reflected in the way ethics education is offered." Some programs offer independent classes in ethics, whereas others "direct students to courses offered through other academic departments, some integrate threads of ethics and other important content throughout a curriculum [31]."

Nursing ethics education research has indicated nurses might not be prepared to make ethical decisions in the current health care environment [10,12–14,18]. Without the education, necessary to

address the issues of moral distress, CRNAs might withdraw from the important demands of patient advocacy. Such actions might lead to decreased quality of care for patients [27,32].

The education for CRNAs is moving to the entry to practice doctorate level, lending more evidence for the need to improve ethics education as the CRNA moves forward in leadership skills with the potential for more responsibility and patient advocacy. Nurses need to be ready for the social situations that will affect them in practice [12,14,18].

Applying an interdisciplinary focus is one approach to understand each professional's perspective in ethical decision-making [21]. This study found CRNAs who perceived a higher skill level in addressing ethical issues experienced lower levels of moral distress. When CRNAs struggle to make these decisions, and perceive themselves to be less skilled, moral distress can result, which could affect patient safety and care. Perhaps a cultural and health care environment change, where CRNAs are gaining increased acceptance as part of a collaborative team, as an integral part of the curriculum of nurse anesthesia educational programs can meet the needs of CRNAs.

When the CRNAs' professional morality and practice are not in alignment with the demands imposed by organizational constraints, experiences of moral distress might result [8,21].

Under the theoretical framework of Beauchamp & Childress [32], the challenges of the health care landscape urges for more autonomy of nurses, emphasizing the importance of improved education that targets the needs of the provider [18]. Gariety [12] noted the need for a better understanding of the different subspecialties such as nurse anesthesia and the issues faced in clinical decision-making. In consideration for curriculum development, these relationships are important and education to manage ethical issues within these relationships is key to improving the APNs', including CRNAs', skill. Further research [18] is necessary to explore the best approaches to strengthen ethics education for APNs, including CRNAs.

Several Limitations of this study are identified. Only members of the AANA participated in the study, which eliminated the ability to select a random sample from the entire CRNA population. The low 15% response rate may influence the results of this study and its generalizability. Self-reporting might be limited by self-reporting bias. Difficulty with recall, social desirability, time, and interest in the topic are all potential issues that might have affected participants' responses. Limitations of the ESS tool include the lack of scoring patterns used by Raines [25] and lack of clarity to the subscales used in the tool. The EASS [11] only examined the data statistically including "frequencies, percentages, ranges, means, and standard deviation" (p. 365). The ability to generalize these finding to other advanced practice nurses or non-advanced-practice nurses is unknown.

5. Conclusion

In conclusion, given the practice models do not have a significant effect on the CRNA level of moral distress as indicated in this study; researchers should direct their focus toward developing education to increase skills in making ethical decisions. A future recommendation would be to examine the extent of the ethical decision-making education that APNs receive as part of the curriculum. The focus of curriculum changes might be on clinical practice but the changes might not need tailoring to the different practice models. A qualitative exploration to explore the direct causes for CRNAs who experience high levels of moral distress might further guide curriculum development, as Pauley et al. [18] found improving the current education to be imperative. A recommendation to key stakeholders such as administrators and

management is to evaluate the resources available to APNs dealing with ethical dilemmas.

Appendix A. Supplementary data

Supplementary data related to this article can be found at <https://doi.org/10.1016/j.ijnss.2018.03.006>.

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