

DO NURSE ANESTHETISTS DEMONSTRATE GENDER BIAS IN TREATING PAIN? A NATIONAL SURVEY USING A STANDARDIZED PAIN MODEL

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A major responsibility of the nurse anesthetist is providing adequate pain relief. Current research suggests that provider gender, as well as patient gender, may affect the clinical assessment and treatment of pain. Implications of the undertreatment of pain may be avoided if the anesthetist is aware of potential gender bias when approaching a given clinical situation. A postoperative pain scenario and questionnaire regarding proposed pain management was mailed to a random sample of 450 currently practicing Certified Registered Nurse Anesthetists (CRNAs).

Data were analyzed descriptively and qualitatively; 59 female and 74 male CRNAs responded (n = 133). Analgesic medication was used by 131 anesthetists; 124 of

these used opiates. Significantly more male CRNAs (P < .05; ²) administered benzodiazepines along with the analgesic (21/74 [28%]) than did female CRNAs (11/59 [19%]); male CRNAs were more likely to administer benzodiazepines as part of their clinical management of cases involving males (13/38 [34%]) than female patients (8/36 [22%]); however, this difference was not significant. Pain treatment strategies were indistinguishable between male and female anesthetists, as well as between male and female patients. However, gender-based differences in the use of sedation medication in concert with analgesic medication was an unexpected finding.

Key words: Gender, pain management, provider bias.

The adverse physical effects of untreated and undertreated pain are well documented. The physiologic implications of pain affect nearly every body system, resulting in sympathetic nervous system stimulation, decreased lung volumes, hyperglycemia, immune dysfunction, altered coagulation, psychologic distress, gastrointestinal ileus, and urinary retention.^{1(p1309-1312),2,3} A major responsibility of the nurse anesthetist is to provide adequate pain control, thereby curtailing the negative physiologic and psychologic effects of pain. Among certain healthcare providers, evidence suggests that gender of the provider and gender of the patient may affect the clinical management of pain.⁴⁻¹³ Gender bias may contribute to inadequate pain control in a given patient unless the provider is cognizant of the phenomenon.

Research examining the role of gender bias in nurse anesthetists was not found. This aspect of pain management warrants further investigation, if for no other reason than to draw attention to the potential occurrence of gender bias in a given clinical situation. The purpose of this study was to determine whether nurse anesthetists as a group demonstrate gender bias when presented with a standardized pain management scenario.

Materials and methods

Institutional approval for this study was obtained from the affiliate university. A national, randomized

sampling of Certified Registered Nurse Anesthetists (CRNAs) was obtained from the American Association of Nurse Anesthetists. A pilot-tested questionnaire depicting a postoperative scenario of a young, healthy patient undergoing anterior cruciate ligament repair was mailed to 450 CRNAs (225 male, 225 female). The questionnaire, which did not indicate that this was a gender-based study, described a female patient in one half of the scenarios and a male patient in the remaining one half (Appendix). It was confirmed that 50% of the male CRNAs received a male scenario and 50% received a female scenario. The same was true for female CRNAs. An identical history was provided, and an identical postoperative scenario was set. Respondents were queried regarding the proposed patient management strategy, and some non-identifying demographic information was obtained. Data were analyzed descriptively and qualitatively.

Results

Of the 450 CRNAs, 133 returned the questionnaires, for a return rate of 30%. Of the respondents, 59 (44%) were female and 74 (56%) were male CRNAs (n = 133) treating 62 female patients (47%) and 71 male patients (53%) (Tables 1-3). Two CRNAs, both female, did not treat their patients with analgesic medication; 1 patient received a benzodiazepine as the sole postoperative treatment strategy, and 1 patient was given some form of pain treatment that

Appendix. Clinical scenario

You are asked to consult on a 35-year-old male* who arrived in the postanesthesia care unit (PACU) approximately 30 minutes ago having undergone a 3.25-hour open procedure repairing a right torn anterior cruciate ligament suffered as a result of a recreational soccer game. You encounter a 72-kg male who is 5 feet 9 inches and whose only complaint is severe pain (on a 0 to 10 scale of increasing pain, he rates his pain as 9). His leg is elevated and immobilized; ice packs are in place. Via laryngeal mask airway he received propofol, isoflurane, nitrous oxide, and a total of 500 µg of intravenous fentanyl; the last doses being 50 µg, 30 minutes prior to the end of the case, and 50 µg just before transit to the PACU. He received 10 mg of metoclopramide as an antiemetic about 1 hour ago.

After speaking with him and reviewing the chart, you find that he is taking paroxetine (Paxil), 30 mg, each day for a “depression problem,” the herbal medication ginseng for “stress reduction,” and a multivitamin. He is alert, somewhat tearful, and dry skinned; hemoglobin saturation is 97% on room air, blood pressure is 134/86, heart rate is 108, and respiratory rate is 28, though his almost constant talking makes the latter difficult to rigorously evaluate. No local anesthetic was used by the surgeon; a leg tourniquet was used during the procedure, and there is virtually no blood in the wound evacuation bottle. He has received a total of 2.3 L of intravenous crystalloid, voided reasonable amounts of clear urine, and is currently sipping apple juice.

* By changing gender of the pronouns, 50% of the scenarios described a female, and 50% described a male. The scenario has been edited slightly to conform to *Journal* style.

did not involve drug administration (leg elevation and ice packs to the area). Eight CRNAs opted against treating their patients with an opioid; a relationship by provider or patient gender was not elucidated. However, these 8 patients received some form of analgesic medication that may have included nonsteroidal anti-inflammatory drugs, regional anesthesia, local anesthesia infiltration, or a benzodiazepine. Male CRNAs were significantly more likely to administer a benzodiazepine to their patients than were female CRNAs (21/74 [28%] vs 11/59 [19%]; $P < .05$; ²) in conjunction with the analgesic drug; male patients being treated by a male CRNA were more likely to receive a benzodiazepine than female patients treated by a male CRNA (13/38 [34%] vs 8/36 [22%]; $P > .05$; ²) in conjunction with an analgesic drug. Furthermore, female patients received benzodiazepines more often when treated by a male CRNA than when treated by a female CRNA (8/36 [22%] and 4/26 [15%], respectively, $P > .05$; ²).

Table 1. Patient management strategies by 59 female Certified Registered Nurse Anesthetists*

Patients	Received opiates	Received sedation
Female (n = 26)	24 (92)	4 (15)
Male (n = 33)	31 (94)	7 (21)

* Data are given as number (percentage). A total of 11 female CRNAs (19%) used sedation.

Table 2. Patient management strategies by 74 male Certified Registered Nurse Anesthetists*

Patients	Received opiates	Received sedation
Females (n = 36)	33 (92)	8 (22)
Males (n = 38)	36 (95)	13 (34)

* Data are given as number (percentage). A total of 21 male CRNAs (28%) used sedation.

Discussion

The present study, focusing solely on CRNAs, found that gender bias does not seem to exist when pain management scenarios are presented and pain management plans are compared. Previous studies involving nurses and physicians have indicated that gender of the provider and gender of the patient influence the treatment of reported pain.⁴⁻¹³ Although males and females both seem to be undermedicated for acute or chronic pain, females may be at a greater disadvantage.¹³ In fact, a multicenter study by Cleeland et al,¹⁰ with more than 1,300 outpatients being treated for metastatic cancer, confirmed the inadequacy of prescribed analgesics; 42% of the patients experiencing pain were undermedicated. Females in this study were found to be 1.5 times more likely to be undertreated for pain than were males.

A retrospective study of 60 patients who underwent coronary artery bypass graft surgery compared the frequency of pain and sedative medication administered to male and female patients by intensive care unit nurses. To control for physiologic variables, 30 males and 30 females were matched for age, number of grafts performed, and location of donor grafts (the internal mammary artery is associated with more pain due to surgical technique). During the 72-hour postoperative period, males received pain medications more frequently than did females, and females received more sedation medication than did males.⁸

Table 3. Pain management strategies by Certified Registered Nurse Anesthetists for female patients vs male patients*

Patients	Management strategy			
	Analgesic medication alone	Analgesic medication with sedation	Nonpharmaceutical therapy	Sedation only
Females (n = 62)	49 (79)	11 (18)	1 (2)	1 (2)
Males (n = 71)	51 (72)	20 (28)	0 (0)	0 (0)

* Data are given as number (percentage).

This finding is contradictory to documented observations that are consistent in the literature: females are reported to have a lower pain tolerance and pain threshold than males^{6,12,13}; therefore, the authors of this study had originally hypothesized that *females* should have received pain medications more frequently than males.

Briebert et al⁷ reported findings in 1996 that also suggested that females were at a disadvantage in obtaining adequate pain control. In that study, 366 ambulatory patients with human immunodeficiency virus infection were evaluated for adequacy of analgesic therapy. It was discovered that 85% of the patients were classified as receiving inadequate analgesic therapy, and, again, females were significantly more likely to be undertreated than males.

An overview of these findings seems to suggest that there may be a bias against females when they report pain, in addition to the subsequent attainment of adequate pain control. The willingness of females to express their discomfort has led to the perception that they are more emotional and expressive than males.^{4,8,11} It is difficult to ascertain whether this may be factoring into the observations previously noted, that females have a lower pain tolerance and pain threshold than males. Multiple variables have been identified that may influence pain reporting in both males and females (Table 4); however, disparities in pain management between males and females warrant further study to determine whether the cause is related to preconceived gender bias on the part of the provider or whether patient-related factors may influence the course of pain treatment.

Conclusion

In the limited studies of nonanesthesia providers examining gender bias among healthcare providers, it has been shown that females are more likely to be undertreated for reports of pain or treated with sedative-like drugs, whereas males are more likely to receive analgesic medications. In the present study,

Table 4. Interacting variables other than gender that may influence clinical pain reporting^{6,12}

Category	Variable
Status of pain subject	Level of anxiety Ethnicity Health status Social and cultural beliefs Hormonal status Past pain experiences
Time of pain report	Phase of menstrual cycle Time of day and year Season/weather
Dimension/nature of pain	Sensory: pain intensity Affective: pain unpleasantness Current or previous pain Location of pain
Environment in which pain is reported	Pain clinic Home Waiting room School Hospital Gender of pain interviewer
Method of pain report	Home diary Face-to-face interview Questionnaire Telephone survey

pain treatment strategies were indistinguishable between male and female CRNAs, irrespective of patient gender, regarding analgesic medication administration. Of the 133 responses analyzed, only 10 CRNAs decided against using an opiate; however, 8 of these 10 used an alternative analgesic medication. This finding seems to reveal an absence of gender bias in CRNAs when managing a clinical pain scenario.

Because of the relatively small sample and the low response rate, findings may not be representative of the national group. Although a case vignette has merit in the realm of research, it may not have been the best way to approach this topic. Future investigation should include a larger sample and perhaps a retrospective

record review of pain management in a facility where nurse anesthetists commonly assess and treat pain. The unexpected finding of increased utilization of benzodiazepines among male CRNAs is a topic that bears mentioning and that should be addressed further.

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