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Impact of emergency department provider training on patient satisfaction with procedure-related pain management

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Abstract

Background: Emergency clinicians perform many routine procedures that may add to the pain burden of patients. Many factors influence the level of patient satisfaction with procedure-related pain management in the emergency department (ED). This paper aimed at comparing patient satisfaction with the ED procedure-related pain management based on the training level and gender of the provider.

Methods: This study was based on a prospective cross-sectional survey performed between June and November 2009 at an urban level-1 trauma center. Researchers interviewed a convenience sample of English speaking non-psychiatric adult patients who received ED procedures such as suturing and incision and drainage. Patients completed a confidential, post-procedure survey that collected information on demographics and satisfaction on a scale of 1 to 4 (1 = completely dissatisfied, 4 = completely satisfied). Researchers recorded the training level and gender of providers. Data was analyzed with descriptive statistics and comparative analyses were performed with one-way analysis of variance and chi-square tests where appropriate.

Results: Overall, 75 patients participated. The average age was 39 years (60.8% male and 60.8% African-American). Procedures included sutures (57.3%), lumbar punctures (12.0%), central line placement (4.0%), incision and drainage (20.0%) and closed reduction (6.7%). Procedures were performed by advanced practice nurses (14.7%), medical students (14.7%), attending physicians (6.6%) and residents (64.0%). Females comprised 53.3% of the providers. The median pain rating before procedures was 7 out of 10. Mean satisfaction scores with pain management did not differ ($P=0.639$) between nurse practitioners (3.64), students (3.60), attending physicians (3.60) and residents (3.33), nor between male and female providers (3.40 vs 3.49; $P=0.688$).

Conclusion: Provider training level and gender did not impact patient satisfaction with pain management for ED procedures in this study.

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Introduction

Pain management in the emergency department (ED) is an essential aspect of patient care. The Joint Commission on Accreditation of Hospitals Organization (JCAHO) has ordered effective pain assessment and treatment.[1] Moreover, literature supports a correlation between patient satisfaction and pain management.[2] Effective pain management also enhances rapport between patient and physician along with adherence to discharge instructions by the patient.[3] In the ED, pain can be an original chief complaint or the result of invasive procedures performed as necessitated by patient care. Healthcare providers often perform procedures in the ED to obtain the diagnosis or as part of a treatment plan. Most ED procedures require pain management in various forms, from local anesthesia infiltration to procedural sedation. Many factors have the potential to influence the patient's experience with pain management from invasive procedures performed in the ED, including providers' characteristics such as level of training and gender. Therefore, the purpose of our study was to determine whether the level of training and/or gender of the provider impacted patient satisfaction with pain management related to receiving invasive procedures in our urban ED.

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Materials and Methods

We conducted a single center, prospective cross-sectional study in an urban, level-1 trauma tertiary care center with nearly 100 000 ED visits per year. The level-1 trauma center is a comprehensive regional resource that provides comprehensive high-level trauma care from prevention through rehabilitation. Patients who required an invasive procedure in the ED were approached by research personnel to participate in the study. The inclusion criteria were patients who were 18 years of age and older, competent to consent, English-speaking and who required one of the six predetermined invasive procedures in the ED. The six invasive procedures included suturing, incision and drainage, closed reduction of fracture and/or dislocation, central line placement, lumbar puncture and wound debridement, and were chosen because our institution's ED performs approximately 3000 invasive procedures annually. Exclusion criteria consisted of patients younger than 18 years of age, non-English speaking, in police custody, those who had altered mental status or were otherwise unable to participate due to an unstable medical condition.

Prospective participants were identified by ED staff. Research personnel were then contacted via pager system. Once the procedure was completed and informed written consent for study was obtained, the survey was orally administered by the research assistant at the patient's bedside.

An 18-item survey composed of four domains was developed and orally administered to consenting participants. The first domain collected demographic data including date of birth, gender, race, level of education, past medical history and the perceived procedure performed. The second domain detailed yes/no questions regarding different aspects of procedural informed consent. The third domain addressed pain levels before, during and after the procedure on a numerical pain rating scale from 1 to 10 (1 = least pain, 10 = worst pain). The final domain was composed of questions regarding satisfaction with the procedure on a scale from 1 to 4 (1 = completely dissatisfied, 4 = completely satisfied). After completing the survey, the research personnel recorded additional data from the patient's medical record including the provider's gender and level of training.

Data was analyzed with descriptive statistics and comparative analyses were performed with one-way analysis of variance and chi-square tests where appropriate.

Results

A total of 106 patients were approached with 75 ED patients consenting to enrollment. Patient demographics and types of procedures performed on consenting adults in the ED are shown in Tables 1 and 2, respectively. Of the six pre-selected procedures, we had no instances of patient participation for a wound debridement during the study period. Resident physicians performed the majority of procedures in the ED as evidenced in Table 3. The median pre-procedure and post-procedure pain ratings were seven and two out of ten, respectively. The averages of patient

Table 1. ED patients' demographic data[a]

Characteristics	Number (N = 75)	Percent
Gender		
Female	29	39.2
Male	45	60.8
Race		
African-American	45	60.8
Others	29	39.2
Age		
18-29	21	28.4
30-39	18	24.3
40-49	20	27.0
50-59	10	13.5
60-69	3	4.0
70-79	1	1.4
80-89	1	1.4
Level of Education		
1st-11th grade	18	24.3
Completed high school/GED	28	37.8
Some college/vocational school	20	27.0
Completed 4 years college	7	9.5
Completed > 4 years college	1	1.4

[a]One participant refused to answer the demographic questions.

Table 2. Raw number and percentages of invasive procedures performed in the ED

Procedure performed	Number (N = 75)	Percent
Suture	43	57.3
Lumbar puncture	9	12
Central line placement	3	4.0
Incision and drainage	15	20
Closed reduction	5	6.7

Table 3. Gender and level of training of provider performing invasive procedures

Provider information	Number (N = 75)	Percent
Gender		
Female	40	53.3
Male	35	46.7
Level of training		
Advanced practice nurses (APN)	11	14.7
Attending physicians	5	6.6
Medical students	11	14.7
Resident Physicians	48	64.0

satisfaction with pain management in the ED ranged from "mostly satisfied" to "completely satisfied" at all provider levels. We compared patient satisfaction with pain management between provider training levels. Resident physicians received the lowest patient satisfaction, whereas the advance practice nurses (APNs) received the highest patient satisfaction. There was no statistical significance between healthcare provider training level, as shown in Figure 1. No significant differences existed between study participants' satisfaction and the gender of the healthcare providers. In comparing patient satisfaction with pain management between provider genders, we noticed a trend of higher patient satisfaction with female providers than their male counterparts (Figure 2), but the difference did not reach statistical significance.

Discussion

Provider level of training may be expected to impact patient satisfaction with procedure-related pain management. As the least experienced providers, medical students may be perceived as most likely to receive an unsatisfactory rating by patients. This perception may in turn result in decreased opportunities offered to medical students and therefore challenge the building of essential cognitive and technical skills that are required for the practice of emergency medicine. Santen et al. reported 90% of patients in the ED consented to medical students' performing minimally invasive procedures even though they acknowledged medical students' inexperience.[4] In this case the level of training seemed to minimally influence patient satisfaction. In addition, Patton et al[5] showed that the level of training of physicians performing internal pelvic examinations had no effect on the level of pain or embarrassment experienced by the patient. Graber et al, however, found contradicting results and found a significant percentage of participants would refuse a medical student's performance of common invasive procedures. However, the refusal rate dropped slightly if medical students completed procedure training on a simulator, indicating the influence of the level of training of the providers.[6,7] In a major teaching institution, medical students' roles in the ED often include direct interactions with the patient, as well as performance of procedures. Thus, their participation may be integral in a patients' ED experience and overall satisfaction with care. Although many studies demonstrate patients do not prefer medical students to perform procedures on them, the reasons remain unknown.[6,7] One speculation may be patients' concerns about inadequate pain management by "inexperienced" medical students. Interestingly, our study showed that patient satisfaction with adequate pain management by medical students was not different from satisfaction with higher level providers. The residents, on the other hand, performed most of the ED procedures but received lower satisfaction scores. The limited sample size makes it difficult to explore reasons behind this difference. However, we hypothesize that these results may be related to the time spent by each provider at the bedside reassuring the patient and alleviating anxiety and thus addressing the emotional distress that accompanies procedure-related pain. Residents who have time constraints and manage many ED patients may perhaps devote less time to the patient, whereas medical students are able to spend ample time addressing patient concerns that may positively impact satisfaction scores. Medical students also never work in an unsupervised role, so when they perform a procedure more than one provider is at the patient bedside. This added clinician support may influence patient perception of care provided and hence satisfaction scores. Medical students may also be more active as patient advocates and seek more pain management for patients under their care. This is supported by studies that suggest that there may exist a progressively negative reinforcement in attitude toward pain and use of opiates for analgesia as medical training advances.[8,9] Healthcare providers in general may benefit from pain education programs to provide satisfactory pain management in the ED regardless of their level of training or years of experience.[10,11]

Some studies state that patients of all ages have no gender preference for the provider who performs procedures such as pelvic examinations.[5] In our analysis there was a trend of better patient satisfaction with procedure-related pain management scores when female ED providers delivered care. With the limited sample size we can speculate that the reasons for this trend may have been due to a

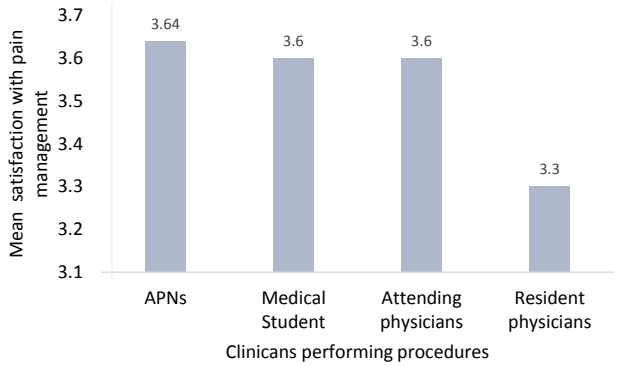

Figure 1. Patient satisfaction with pain management by provider level of training.

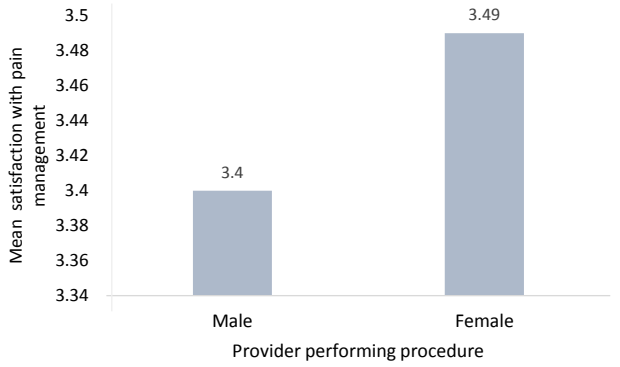

Figure 2. Patient satisfaction with pain management by provider gender.

perception by patients that female providers had a "more caring or nurturing" overall approach or the fact that female ED clinicians may have actually provided better analgesia. This would be consistent with a study conducted by Safdar et al that showed a higher likelihood of analgesic administration by female physicians.[12] Larger studies may be needed to determine if a significant gender-based difference in patient satisfaction with procedure-related pain management exists, as well as to explore the reasons behind the higher ratings of female providers.

Limitations

Our study has many limitations. The lack of significance in our results may be attributed to the small sample size. It is uncertain whether a larger sample size would provide any difference in the results. We acknowledge a response bias as expected in a voluntary survey study. The study group was comprised of a convenience sample to accommodate our limited resources (i.e., participants were enrolled only when research personnel were available). We do not anticipate bias from this aspect of recruitment.

Another limitation of our study is the effect of the supervising physician on procedural performance. By law, all medical students' procedures must be supervised by a resident or attending physician. It is possible that the medical students' satisfaction rating in fact reflected the resident or attending physician rating if they were very actively involved in all aspects of the procedure.

We used the visual analog scale (VAS), Wong Baker Facial Grimace Scale. The effect of using the VAS in pain measurement is often questioned. A study by Kelly reported no correlation between patient satisfaction in pain management and VAS pain score.[13]

Conclusion

Our study shows that patient satisfaction with pain management for procedures performed in the ED is not impacted by the training level of the provider (from medical student to attending physician) or the providers' gender. We encourage larger studies to further investigate the role of gender on satisfaction with pain control.

Ethical approval

The study was conducted between June and November 2009 after approval by the Institutional Review Board.

Competing interests

Authors declare that they have no competing interests.

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