

Do Ethnic Differences Still Exist in Pain Assessment and Treatment in the Emergency Department?

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■ ABSTRACT:

Although the provision of timely and appropriate analgesia is a primary goal of Emergency Department (ED) staff, pain continues to be undertreated and some evidence supports the existence of pain treatment disparities. Despite strong incentives from accreditation organizations, pain management in the ED may still be inconsistent and problematic. The purpose of this research study was to conduct a retrospective chart review to investigate pain assessment and treatment for 200 adults (≥ 18 years old) admitted to the ED suffering from long-bone fractures. An additional purpose was to investigate demographic variables, including ethnicity, to determine if they influenced pain assessment, pain treatment, and wait times in the ED. Although assessment and treatment of pain is universally recognized as being important and necessary to provide optimal patient care, only 52% of patients in this study were assessed using a pain intensity scale, with 43% of those assessed reporting pain as ≥ 5 on a 0-10 pain intensity instrument. Pain medication was administered to 75% of the patients, but 25% of the patients received no medication. Only 24% of those receiving a pain medication were reassessed to determine pain relief. Compounding these problems were wait times for analgesia of > 1 hour. Although the influence on pain management related to ethnicity was not a factor in this study, other findings revealed that undertreatment of pain, inadequate assessment, lack of documentation of pain, and lengthy wait times persist in the ED.

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Although the provision of timely and appropriate analgesia is a primary goal of Emergency Department (ED) staff, pain continues to be undertreated (Baumann, Holmes, Chansky, Levey, Kulkarni, & Boudreaux, 2007; Herr & Titler, 2009; Hwang, Richardson, Sonuyi, & Morrison, 2006; Kelly, 2000; Pletcher, Kertesz, Kohn, & Gonzales, 2008; Ritsema, Pronovost, & Pham, 2007;

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Received November 3, 2009;
Revised June 1, 2010;
Accepted June 7, 2010.

Supported by a grant from the American Society for Pain Management Nursing.

1524-9042/\$36.00
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<http://dx.doi.org/10.1016/j.pmn.2010.06.001>

Rupp & Delaney, 2004; Tamayo-Sarver, Hinze, Cydulka, & Baker, 2003; Todd, Ducharme, Choiniere, Crandall, Fosnocht, Homel & Tanabe, 2007; Todd 2001; Todd, Deaton, D'Adamo, and Goe, 2000; Todd, Samaroo, and Hoffman, 1993). Compounding this problem of undertreatment are long wait times before analgesics administration. Findings from earlier research studies indicate that patients wait on the average >1 hour for first medication when presenting to the ED (Grant, 2006; Epps, Ware, & Packard, 2008). Despite policies, protocols, and guidelines mandating pain assessment and treatment for patients, undertreatment of pain and inadequate assessment and documentation of pain persist in the ED (Colley & Crouch, 2000; Epps, Ware, & Packard, 2008). One possible contributing factor to the problem of oligoanalgesia is the existence of ethnic disparities in treatment of pain (Harrison & Falco, 2005; Institute of Medicine [IOM], 2003; U.S. Department of Health & Human Services, 2005) regardless of whether the disparities are intentional or not. A body of evidence suggests inadequate analgesia for ethnic and minority patients (Bonham 2001; Cintron & Morrison, 2006; Ducharme, 2005, Neighbor, Honner, & Kohn, 2004; Silka et al. 2004; Tamayo-Sarver et al., 2003; Todd, Samaroo, and Hoffman, 1993, Todd, Lee, & Hoffman, 1994; Todd, Deaton, D'Adamo, and Goe, 2000; Weisse, Sorum, Sanders, & Syat, 2001; Weisse, Sorum, & Dominguez, 2003). The purpose of the present research study was to investigate pain assessment and treatment for adult patients (≥ 18 years old) who were admitted to the ED suffering from long-bone fractures (LBFs). An additional purpose was to determine if ethnic disparities were evident in the assessment and treatment process.

BACKGROUND AND LITERATURE REVIEW

Racial Disparities in the ED

Despite continued study, evidence for the existence of racial disparities in the treatment of ED pain remains mixed. A systematic review of pain and ethnicity in the U.S. conducted by Cintron and Morrison (2006) supports the existence of disparities in pain treatment. Out of the 35 journal articles included in that review, findings from 20 of the studies revealed the existence of ethnic disparity. Continued research is needed to address ED pain assessment and treatment practices and the relationship to possible disparities in treatment. Research about ED pain can be loosely categorized into retrospective and prospective/observational designs. Bijur, Berard, Esses, Claderon and Gallagher (2008) noted that both retrospective and prospective studies

are necessary to find compelling evidence of unacceptable practices contributing to racial or ethnic disparity in pain management in the ED and to find solutions to the problem.

Retrospective Studies of ED Pain

Pletcher, Kertesz, Kohn, and Gonzalers (2008) analyzed >150,000 pain-related ED visits from 1993 to 2005. Thirty-two percent of patients presented to the ED with moderate to severe pain. In that study, blacks, Hispanics and other groups were less likely than whites to receive pain medication in the ED. In the seminal and groundbreaking research of Todd et al. (1993, 1994, 2000), African-American and Hispanic patients were less likely than Caucasians to receive analgesia when presenting to the ED with LBFs, even when their pain ratings were similar. In the Todd, Samaroo, and Hoffman (1993) study, the records of 31 Hispanics and 108 non-Hispanics diagnosed with LBFs were evaluated retrospectively for the presence of pain and its management. Hispanics patients were twice as likely as non-Hispanics to not receive pain medication in the ED. In a more recent study, Todd, Deaton, D'Adamo, and Goe (2000) again used a retrospective cohort design to examine pain management in ED LBF patients. Out of the 217 patients, 127 were black and 90 were white. White patients were significantly more likely than black patients to receive analgesics despite similar complaints of pain from both groups. Black patients' risk for receiving no analgesia was 66%. Todd et al. concluded that patient ethnicity does affect decisions about pain management despite objective clinical data.

Eder, Sloan, and Todd (2003) conducted a prospective study following recommendations made by Joint Commission. In that study, ethnicity was not found to be predictive of pain documentation in patient records. Patients arriving in the ED with complaints of severe pain who received more powerful analgesics were more likely to receive documented follow-up pain assessments.

Tamayo-Sarver et al. (2003) used the 1997, 1998, and 1999 data from a National Hospital Ambulatory Medical Care Survey (NHAMCS), a national sample of visits to non-Federal short-stay hospital EDs. Of the 67,487 sample patients, 21% were black, 9% were Latino, and 68% were white. Utilizing multivariate analysis, the researchers found that blacks and Latinos were 28% less likely than whites to receive opioid analgesics. Whites also had more visits classified as urgent, with subsequent admission to the hospital, than did blacks or Latinos.

Heins et al. (2006) reviewed 1,360 records of patients to determine if pain treatment was based on

race or age. Findings revealed that patient age and race, physician's training and experience, and whether the patient had chronic pain were predictors of ED analgesia. The researchers concluded that pain practices were highly variable among health care providers in the ED.

Silka et al. (2004) investigated whether pain assessment using verbal pain scores (VPSs) increased the likelihood of analgesic administration for 150 ED trauma patients. The use of the VPS increased the likelihood of analgesia, and no overall ethnic differences were found in analgesic administration. However, non-white male patients not assessed with the pain instrument received fewer doses of analgesics than white male patients (40% of whites received analgesia versus 25% of nonwhites).

Fuentes et al. (2002) replicated the Todd et al. (1993, 2000) studies and reported contrasting findings. Fuentes et al. reviewed 323 records of patients between 18 and 55 years old who presented to the ED with LBFs. Out of these patients, 181 (56%) were white and 142 (44%) were nonwhite, consisting of African Americans (18%), Hispanics (14%), and Asians (12%). The researchers found no ethnic or racial disparities in provision of analgesia.

Similarly, Gaeta et al. (2002) did not find ethnic or racial disparities in pain treatment in the ED. Gaeta et al. used NHAMCS data of adults presenting with isolated LBFs from 1992 to 1999. ED analgesic administration occurred in only 57% of the visits, and no ethnic differences in frequency of analgesic use were found. The exact numbers or percentages of the various racial or ethnic groups were not given in that study.

Prospective Studies of ED Pain

Despite the difficulties presented when studying ED pain prospectively, a number of researchers have structured research in this manner. Building on their 1993 study, Todd, Lee, & Hoffman (1994) used a prospective methodology to analyze whether physicians' medical judgment of patient pain could be influenced by the patient's ethnicity. No differences were found in physician pain assessments of Hispanic and non-Hispanic patients, although physician estimates of pain were significantly lower than patients' pain assessments. Todd et al. concluded that the problem with unequal use of analgesics was not physician inability to assess pain, but possibly physician bias.

More recently, Todd, Ducharme, et al. (2007) conducted an observational, multicenter, prospective study of patients presenting to urban academic EDs with complaints of moderate to severe pain. Using 20 sites in the U.S. and Canada, baseline enrollment was done in the ED; after discharge, a follow-up interview

was conducted. No ethnic disparities were reported, but the researchers found high pain intensity, undertreated pain, and long delays in treatment.

Dealing more specifically with ED LBF pain management, Bijur et al. (2008) found no evidence of racial disparities in the treatment of long-bone pain in two academic EDs. Additionally, in that prospective study of 345 ED LBF patients, no disparities were found in wait time, dose, route, or change in pain.

Singer, Garra, Chohan, Dalmedo, and Thode (2008) conducted a prospective observational study of 392 patients who presented to the ED with diagnoses of pain. In an analysis of the relationship between triage pain scores and analgesic administration, they found no significance differences related to ethnicity. In contrast, Ducharme et al. (2008) conducted an observational prospective multicenter ED study of triage systems/scores and their relationship to timeliness of analgesic administration for 842 subjects. All sites demonstrated unacceptably long waits for medication, and white ethnicity was found to be a significant predictor of increased time to analgesia.

Related Studies of Pain and Ethnic Disparities

Weisse et al. (2001) found that race affected decisions about acute pain management. Those researchers presented hypothetical vignettes to 111 primary care physicians and asked them to treat the pain. Only patient gender and race were varied. No differences were found regarding decisions to treat with analgesic medication or in the prescribed doses of analgesic medication. However, male physicians prescribed more analgesia to white patients with renal colic, and female physicians prescribed more analgesia to black patients with renal colic. These findings suggested that physician gender may play a part in decisions about pain management.

In a Lee, Burelbach, and Fosnacht study (2001) of 58 Hispanics and 408 whites regarding their pain management expectations, patients were asked how much of their pain should be relieved and how long it was reasonable for them to wait. The researchers found no significant differences between Hispanics' and non-Hispanic whites' expectations of how much their pain should be relieved or how much time would be reasonable to wait.

Pines and Hollander (2008) studied the impact of ED crowding on delays in treatment and nontreatment for patients complaining of severe pain. Of the 13,758 patients in this retrospective study, 49% received medication. Of the 49% receiving medications, 59% experienced delays in treatment that were accounted for by "waiting room number and occupancy rate." The researchers concluded that ED overcrowding

significantly affected pain treatment and assessment. This finding was supported by Hwang, Richardson, Livote, et al. (2008), who found direct correlation with total ED census and increased time to pain assessment, time to analgesic medication ordering, and time to analgesic medication administration.

Miner et al. (2006) conducted a prospective observational study to investigate patient and physician perceptions as risk factors for oligoanalgesia. The sample included 1,693, of whom 72% received pain medication while in the ED. The physician's score of pain using the visual analog scale (VAS) was higher for perceived exaggeration of symptoms among Native-American patients than among other ethnic groups ($p > .001$). The researchers concluded that physician perception was associated with patient's ethnic background but not with whether a patient was treated with a pain medication or not.

In summary, race and ethnicity may influence pain treatment for LBFs in the ED, and reasons for this undertreatment are not known. Empirical evidence supports that inadequate assessment and documentation, oligoanalgesia, and unacceptable wait times continue to exist in the ED. Conflicting findings are reported in both retrospective and prospective studies, suggesting the need for additional research using various methodologies.

METHODS

Research Design

A retrospective chart review was conducted after Institutional Review Board approval from both the university and the hospital. A convenience sampling of 200 patients who were ≥ 18 years old with ICD-9 coding for long bone fracture, from a ~600-bed midsouth regional medical center, were chosen for this study. Records were excluded if the patient/subject was < 18 years old or had a diagnosis of chemical impairment, dementia, delirium, or disorientation to time, place, or name.

Data collection was performed by three master's-prepared nurses employed by the medical center. University professors/researchers monitored the data collectors and the process to insure interrater reliability. Information from patient records was recorded in Excel spreadsheets.

The independent variables in the study were patient age, gender, race, fracture location, type of analgesia, route of dose, pain instrument used, and the pain score. The dependent variables were the wait time between admission and first dose of analgesia and the wait time between admission and discharge.

Research Questions

1. What type of pain assessment was conducted initially?
2. What type of pain medication was administered?
3. What type of reassessment was conducted after administration of pain medication, and was a second medication given to patients?
4. What was the interval of time from admission to initial pain medication?
5. What were the gender/ethnic/racial differences in pain scores, wait times from admission to first medication, and wait times from admission to discharge?

Sample

The 200 patients were placed into three age categories, < 40 years, 40-60 years, and > 60 years. About 30% ($n = 59$) of the patients were < 40 years old, 42% ($n = 85$) were 40-60 years old, and 28% ($n = 56$) were > 60 years old. Fifty-two percent ($n = 104$) of the study sample were women. The sample was comprised mainly African Americans and Caucasians. Thirty-seven percent ($n = 73$) of the patients were African Americans and 61% ($n = 122$) were Caucasians. The study also included one Asian American, three Hispanic Americans, and one patient classified as "other." Fracture locations included upper limbs 41% ($n = 82$), lower limbs 49.5% ($n = 99$), and more than one fracture 9.5% ($n = 19$).

RESULTS

Research Question 1: What Type of Pain Assessment Was Conducted Initially?

Out of the 200 patients, only 52% ($n = 103$) received a pain score using a pain intensity tool. The pain instruments used were the numeric pain scale (NRS), the VPS, or a combination of the two. The remaining 48% of patients did not receive a pain score. Nine percent of patients ($n = 18$) had pain scores of 0-4, 18% ($n = 36$) had pain scores of 5-7, and 25% ($n = 49$) had pain scores of 8-10. The average pain score (deleting the patients without pain scores or with no notation of pain) for African Americans was 6.8 and for Caucasians was 6.9.

Research Question 2: What Type of Pain Medication Was Administered?

Seventy-five percent ($n = 149$) of the sample received an analgesic medication, of which the majority (85%; $n = 126$) received an opioid. Almost 50% ($n = 97$) received an intravenous analgesic. Out of the 149 patients who were administered analgesia, 33% ($n = 49$) were African Americans and 64% ($n = 96$) Caucasians. Of the 51 patients who did not receive

any analgesia, 24 were African Americans and 26 were Caucasians. For 33 individuals (17%), pain was described but not noted as a score in the patient record.

Research Question 3: What Type of Reassessment Was Conducted after Administration of Pain Medication, and Was a Second Medication Given to Patients?

Only 24% ($n = 36$) were reassessed after 1 hour using a pain intensity scale to measure pain. Of those reassessed, 53% had pain scores >5 . Although only 36 patients were reassessed, 122 received a second pain medication.

Research Question 4: What Was the Interval of Time from Admission to Initial Pain Medication?

The average wait time from admission to first dose of analgesia was 75.69 minutes with a standard deviation of 138.92 minutes. The large standard deviation was the result of a single observation of 1,200 minutes of wait time. If that observation is deleted, the average wait time was 70.05 ± 113.8 minutes.

Research Question 5: What Were the Ethnic/Racial/Gender Differences in Pain Scores, Wait Times from Admission to First Medication, and Wait Time from Admission to Discharge?

Out of the 48% ($n = 96$) that did not receive a pain score, 37% were African Americans and 58% were Caucasians. A two-proportion Z test comparing the proportion of African Americans and Caucasians who did not receive a pain score revealed no significant difference ($p = .64$) between the proportions of patients not receiving a pain score. A similar test comparing the proportions between men and women not receiving a pain score also suggested no significant difference ($p = .47$) between genders. Because the pain score was on a nominal scale, a nonparametric hypothesis test, the Mann-Whitney, was used to compare the median pain scores between African Americans and Caucasians. No significant difference was detected in the median pain scores between African-American and Caucasian patients ($p = .79$).

The average wait time for African Americans and Caucasians who did receive medication was 106 minutes. A parametric two-sample t test revealed no significant differences in wait times between the two groups gives ($p = .52$). A similar test comparing the wait times between men and women was also nonsignificant ($p = 0.77$).

The average wait time from admission to discharge was 374.9 ± 297.8 minutes. Fifty percent of the patients had to wait for 301 minutes (5 h) before being discharged. For four patients, the wait time

was unavailable. No significant difference was found when comparing the average wait time from admission to discharge for African Americans and Caucasians ($p = .17$).

DISCUSSION

Although assessment and treatment of pain is universally recognized as being important and necessary to provide optimal patient care, only 52% of patients in the present study were assessed using a pain intensity scale, with 43% of those assessed reporting pain as ≥ 5 on a 0-10 NRS or VDS. This lack of assessment supports the findings of Silka et al. (2004) and Stalknikowicz, Mahamid, Kaspi, and Brezisho (2005), who reported that pain assessment using VPS or VAS, respectively, increased the likelihood of analgesic administration and decrease in wait time until analgesia. In the present study, pain medication was administered to 75% ($n = 149$) of the patients, but 25% ($n = 51$) of the patients received no medication (which is unacceptable considering that these patients presented to the ED with LBFs). Similar findings were reported in earlier study by Epps, Ware, and Packard (2008), who noted that analgesics were not administered to 15% of patients presenting to the ED with LBFs.

Only 24% of patients in the present study were reassessed after 1 hour with a pain intensity scale to measure pain. Previous researchers have reported barriers to patient pain assessment and treatment, including the lack of use of pain rating scales, not asking patients about their pain, and lack of chart documentation (Ducharme & Barber, 1995; Eder, Sloan, & Todd, 2003; Herr & Titler, 2009; Tannabe & Bushman, 1999; & Tanabe, Thomas, Paice, Spiller, & Marcantonio, 2001). Titler et al. (2003) identified communicating and contacting the physician as the biggest barrier to effective pain management. The lack of guidelines and nurse protocols for pain management may also deter pain assessment and treatment. Thomas (2007) summarized literature addressing barriers to pain assessment and treatment: interruption of nurse's activities, delays in the administration of analgesics and other comfort measures, lack of accountability, presumptions that all pain is related to an underlying pathology (the medical model), lack of education, poor pain assessment, fears of opioid side effects such as addiction and respiratory depression, poor communication and documentation, and failure to recognize the patient in pain. Findings from the present study provide support to the need for focusing on immediate relief of patients' pain, consistent use of

assessment tools, reassessment of pain, and documentation in the patient record.

Wait times did not differ significantly between African Americans and Caucasians or between men and women. The average wait time from admission to first dose of analgesia was 76 minutes, and the average wait time from admission to discharge was 375 minutes. This finding is consistent with other research findings supporting a delay between prescribing of medication and subsequent administration (Grant, 2006). Hwang, Richardson, Sonuyi, et al. (2006) reported a mean wait time of 122 minutes for older adults with hip fractures. Silka et al. (2004) found that the mean wait time for ED trauma patients was 68 minutes, but ethnicity as a factor influencing wait times was not reported. In a recent study (Mitchell, Kelly, & Kerr, 2009), wait time to analgesia for patients presenting to the ED was 53 minutes. Ethnicity was not a variable of consideration in that study and was not reported.

A very positive finding of the present study was the lack of ethnic/racial disparities in pain management for LBF ED patients suggesting that health care providers are becoming more aware of possible bias and are striving to treat pain in a similar manner for all patients. Seventy-eight percent of those who received a pain medication received an opioid, with no group being less likely than another to receive an opioid.

These findings support the findings of Fuentes et al. (2002), who found no association between patient ethnicity/race and fracture analgesia. These findings are contrary, however, to reports suggesting the existence of ethnic disparities in treatment of pain (Bonham 2001; Cintron & Morrison, 2006; Ducharme, 2005; Harrison & Falco, 2005; Institute of Medicine, 2003; Neighbor et al., 2004; Pletcher, Kertesz, Kohn, & Gonzales, 2008; Silka et al., 2004; Tamayo-Sarver et al., 2003; Todd, Samaroo, & Hoffman, 1993; Todd, Lee, & Hoffman, 1994; Todd, Deaton, D'Adamo, & Goe, 2000; U.S. Department of Health & Human Services, 2005; Weisse, Sorum, Sanders, & Syat, 2001; Weisse, Sorum, & Dominguez, 2003).

Study Limitations

The present study had several limitations. The study used only one hospital's records and was retrospective with no possibility of verification of data accuracy. A convenience sample was used, possibly leading to selection bias. Demographic differences may have limited the study. The duration of pain and any medications given before admission to the EDs were not recorded and may have influenced the pain. The

findings of this study can not be generalized to other hospital EDs.

CONCLUSIONS

Despite strong incentives from accreditation organizations, pain management in the ED continues to be inconsistent and problematic. Although health care providers are knowledgeable about pain assessment and treatment, it is apparent that knowledge and actions do not always correlate with one another. Oligoanalgesia may still be occurring in the ED. Consistent use of a pain assessment tool with subsequent recording of the patient's pain rating score is needed to facilitate pain assessment and management in the ED. ED nurses are in a key position to advocate for patients in pain, but do not always do what is necessary to relieve their patients' pain.

Kelly (2000) reported that a nurse-driven approach to pain by using protocols has successfully reduced wait times in Australian EDs, and Ducharme (2005) has recommended the use of this approach. Nurses have the responsibility to cooperate with other professionals to create clinical practice guidelines and generate clinical knowledge to aid in decision-making about patient pain relief in the ED. Fosnocht, Swanson, and Barton (2005) point out that analgesia in the ED does not need to be secondary to the diagnosis and disposition of the patient.

In summary, the following strategies have been suggested by Herr and Titler (2009) for improving pain management in the ED: share data related to patient pain outcomes with physicians, identify nurse pain champions to work with ED staff, form interdisciplinary teams to develop pain assessment and management clinical pathways, develop and refine tools for pain assessment/reassessment and treatment, use and distribute pain education materials to patients to increase their awareness of the importance of assessment and treatment of pain, establish standards for pain assessment with input from staff, continue to provide education for nurses regarding use of assessment tools with cognitively impaired patients, arrange regular meetings with staff to discuss pain assessment/treatment, and continue to educate staff on best practices for optimal pain assessment treatment for all patients.

Standards indicate that for acute pain in LBF patients without complications, an opioid analgesic should be given intravenously while in the ED (Berry & Dahl, 2000; Gaeta et al., 2002; Gerson, Emond, & Camargo, 2004). Todd (2001) cautions that pain should be considered an entity in and of itself worthy of treatment. The current system encompasses multiple steps before the actual analgesic administration,

impeding pain relief and contributing to patient dissatisfaction. To overcome the barriers, health care

providers must experience a paradigm shift in the way pain is treated and managed in the ED.

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