Bias in Pain Management

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Why Discuss This?

• Society’s problems can transgress into medicine.

• We need to be vigilant about protecting all vulnerable groups.

• If we don’t recognize the problem, how can we address it?

Overview
A Lesson From Cardiology

- Schulman et al. The Effect of Race and Sex on Physicians Recommendations for Cardiac Catheterization. NEJM 1999

- Computerized survey of 720 primary care physicians assessing physicians’ recommendations for managing chest pain in a hypothetical patient
Bias

• Several studies suggest that there are biases in medicine based either on ethnicity or on socioeconomic status.
  – Cardiac catheterizations, coronary angiography, angioplasty, and coronary artery bypass grafting (CABG)
  – Breast cancer evaluation and management
  – Prostate cancer evaluation and management
  – Rate of amputation for peripheral vascular disease

Is Insurance the Issue?

• Whittle et al. 1993
• Retrospective study
• Compared the use of cardiovascular procedures in black and white male veterans discharged with primary diagnoses of cardiovascular disease
• 428,300 patients studied
Overview

• Discrimination based on ethnicity and socioeconomic status in pain management:
  • A) acute pain
  • B) postoperative pain
  • C) cancer pain

Overview

• Poor pain management for the general population
  – Physicians perceived a lack of knowledge in themselves about pain and its management
  – They also had negative views about patients with chronic pain
  – (Weinstein et al., 2000)
Overview

• Medical student attitudes (Weinstein et al., 2000)
  – Senior medical students had more “opiophobia” than freshman medical students
  – Opiophobia was associated with:
    • Reliance on technology
    • Having an external locus of control
    • Being intolerant of clinical uncertainty

Acute Pain

Ethnicity as a Risk Factor for Inadequate Emergency Department Analgesia
[Brief Report]

Todd, Knox H.; Samaroo, Nigel; Hoffman, Jerome R.

From the UCLA Emergency Medicine Center, Los Angeles, Calif. 
Reprint requests to UCLA Emergency Medicine Center, 924 Westwood Blvd, Suite 300, Los Angeles, CA 90024 (Dr Todd).
Acute Pain

• Todd et al. performed a retrospective analysis of 139 patients at the UCLA Medical Center with isolated long bone fractures

• Controlled for:
  a) patient characteristics (gender, language, insurance status), the degree of injury severity (open fracture, reduction, admission), and
  b) presentation (time of presentation, occupational injury, and concurrent alcohol intoxication)

Acute Pain

• 55% of Hispanic patients received no analgesics

• 26% of white patients received no analgesics

• Hispanic patients were twice as likely as non-Hispanic Caucasians to receive no pain medication in the emergency department
Acute Pain

- Prospective analysis of physicians’ ability to assess pain severity in Hispanic patients and non-Hispanic white patients

- No significant difference found

- Studies have not shown significant differences in the ability to discriminate painful sensory stimuli based on ethnicity

Acute Pain

- Karpman et al. performed a prospective cohort study of adult and pediatric patients with isolated long bone fractures

- Conducted at an ethnically diverse community hospital in Phoenix

- 45% of Hispanic patients received no analgesia
- 43% of non-Hispanic white patients received no analgesia
Acute Pain

• No significant difference found

• Is there a difference in the care provided at large urban academic centers vs. at community hospitals in ethnically and financially diverse neighborhoods?

Acute Pain

• Todd et al. performed a retrospective cohort study of 217 patients with isolated long bone fractures

• Urban emergency department in Atlanta

• Similar pain complaints found in medical records
Acute Pain

- 43% of African American patients received no analgesics
- 26% of Caucasian patients received no analgesics
- The risk of receiving no analgesic in the ED was 66% greater for African American patients than for Caucasian patients

Acute Pain

- Choi et al. performed a retrospective analysis of patients at the Royal London Hospital in the United Kingdom with isolated long bone fractures
- Compared Caucasian and Bangladeshi patients
- No significant difference found
Acute Pain

- Investigators did not report:
  - A) the quantity of pain medication prescribed
  - B) the factors that determined the prescription of analgesics
  - C) the influence of ethnicity on pain threshold
  - D) the communication of pain to the healthcare staff
  - E) the relationship between the patient and the staff

Postoperative Pain

The effect of ethnicity on prescriptions for patient-controlled analgesia for post-operative pain

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(Received 30 March 1991; revision received 11 July 1991; accepted 10 July 1991)
Postoperative Pain

• Ng et al conducted a retrospective study of 250 patients hospitalized for open reduction and internal fixation of a limb fracture

• Controlled for age, sex, insurance status, and number of diagnoses

• Caucasians received significantly higher doses of analgesics than African Americans and Hispanics

Postoperative Pain

• Performed a follow-up study of 454 patients prescribed patient-controlled analgesia

• Controlled for age, sex, site of surgery, and history of pre-operative opioid use
Postoperative Pain

- Amount of opioid prescribed:
  - Caucasians = African Americans
  - Both > Hispanics > Asians/Indians

Cancer Pain
Cancer Pain

• Cleeland et al. performed a multi-center study of outpatients with cancer

• Patients who went to clinics that served minorities were three times more likely to be under-medicated for pain than were patients in other settings

Cancer Pain

• African American and Hispanic patients were more likely than non-minority patients to have ineffective pain relief regardless of the setting
Cancer Pain

• Follow-up study showed that patients treated at non-minority community treatment settings were more likely to obtain adequate pain relief compared to patients treated at centers that primarily treated minorities and compared to university centers.

Cancer Pain

• Limiting factors:

• A) financial limitations
• B) difficulty filling analgesic prescriptions
• C) fears about aggressive treatments
• D) decreased “assertiveness” about seeking pain medications
The Role of Pharmacies
NEJM, 1996

Morrison et al. surveyed a random sample of 30% of the pharmacies in New York City about their opioid supplies.

They obtained data on the ethnic composition of neighborhoods from the U.S. Census estimates for 1997.

Controlled for the proportion of elderly persons at the census-block level and

Controlled for crime rates at the precinct level.
The Role of Pharmacies

• 51% of pharmacies did not have sufficient supplies of opioids to treat patients with severe pain

• 75% of pharmacies in predominantly non-white neighborhoods did not have sufficient opioids

• 28% of pharmacies in predominantly Caucasian neighborhoods did not have sufficient opioids

The Role of Pharmacies

• Compared to pharmacies in predominantly Caucasian neighborhoods, pharmacies in predominantly non-Caucasian neighborhoods of New York City do not stock sufficient medications to treat patients with severe pain adequately (p <0.001)
Medicare Participants

• A study from the Systematic Assessment of Geriatric Drug Use via Epidemiology (SAGE) database of 13,625 Medicare beneficiaries being treated for pain showed that:

  • Minority patients with cancer living in nursing homes were more likely not to have received any analgesia

  • African Americans had a 63% increased chance of having their pain untreated relative to Caucasians

  • African American and Hispanic patients were less likely to have their pain recorded compared to non-Hispanic Caucasians
Chronic Pain

- The annual prevalence of low back pain ranges from 15-45% with a point prevalence of approximately 30%

- Lower-income African Americans appear to use fewer opioids and benzodiazepines to manage their pain

Background

- This data suggests two possibilities:
  
a) Lower income African American patients may be more reluctant than Caucasians or higher income groups to taking these potentially dependency-producing medications, or

b) Physicians may prescribe medications such as opioids at different rates in different racial or socioeconomic groups
Purpose

1. To assess how treatment preferences for chronic low back pain are related to characteristics of physicians

2. To provide an experimental test of whether these relationships remain the same for patients of different ethnicities and socioeconomic status

Methods

• Study Design: Double-blinded randomized controlled study using a survey instrument

• Setting: Tertiary care academic hospital, free-standing urban rehabilitation hospital, and academically-affiliated suburban community hospitals
Methods

• Sample
  54 attending and resident physicians

• Interventions:
  Physicians were given 1 of 2 scenarios of a male patient with chronic low back and lower extremity pain:
  a) Caucasian with Blue Cross/ Blue Shield
  b) African American with Medicaid

  All other aspects of the patient scenarios were identical

Results

• Of the patients who were less likely to receive morphine, 16/25 (64.0%) were African American

• Of the patients who were more likely to receive morphine, 10/28 (35.7%) were African American

• Patient race and socioeconomic status significantly affected the rate of prescription of major opioids such as morphine (p=0.04)
Results

• Of the patients who were less likely to be considered for a nerve block, 20/32 (62.5%) were African American

• Of the patients more likely to be considered for a nerve block, 6/21 (28.6%) were African American

• Patient race and socioeconomic status significantly affected the rate of consideration for a nerve block (p = 0.02)

Results

• Of the patients who were less likely to be considered for surgery, 21/37 (56.8%) were African American

• Of the patients who were more likely to be considered for surgery, 5/16 (31.3%) were African American

• Patient race and socioeconomic status trended towards affecting the rate of surgical consideration (p = 0.09)
Results

- Of the patients less likely to be prescribed an exercise program, 10/27 (37.0%) were African American.
- Of the patients more likely to be prescribed an exercise program, 16/26 (61.5%) were African American.
- Patient race and socioeconomic status trended towards affecting the rate of prescription of exercise ($p = 0.07$).

Results

- **Physician Age**

  Younger physicians, especially physicians between the ages of 22-27, were more likely to prescribe muscle relaxants for chronic low back pain ($p=0.05$).
Results

• **Physician Ethnicity**

- The physicians were divided into ethnic groups for statistical purposes:
  - Caucasians (29 physicians), and
  - Non-Caucasian (24 respondents)
    - Including 20 Asian/Indian American respondents

Results

• **Minor Opioids**

- Non Caucasian physicians were significantly more likely to prescribe minor opioids for chronic low back pain
  \[(p = 0.05)\]
Results

- *Benzodiazepines*

- Non-Caucasian physicians were significantly more likely to prescribe benzodiazepines for chronic low back pain (*p* = 0.05)

Results

- *Patient Education*

- Non-Caucasians were significantly more likely to provide patient education about low back pain (*p* = 0.04)
Socioeconomic Status

• Can be difficult to differentiate from race
• Income less than poverty level vs. income 4 times the poverty level:
  – 1.76 times the likelihood of severe headache
  – 1.48 times the likelihood of low back pain
  – 1.59 times likelihood of neck pain

(Institute of Medicine, 2011)

Socioeconomic Status

• Income < $25,000 or
  < high school education
  → more likely to be disabled
Socioeconomic Status

- More physically demanding jobs
- Less stable job characteristics
- Inadequate insurance
- Less availability of analgesic treatment options

Morrison et al., 2000

Workers Compensation

- Two years post-settlement: Blacks received lower levels of care and demonstrated poorer outcomes than Whites
- Contribution: race > socioeconomic status

Chibnall et al., 2005
Pediatric Population

• Black children seen in the emergency department for abdominal pain were 39% less likely to receive pain medication as compared to white children with the same conditions

• If pain was rated as 7/10 or greater, larger disparity

Johnson et al., 2015

Chronic Pain Management

• Blacks and Hispanics are seen as more likely to require scrutiny for potential drug abuse (Becker et al., 2011)

• Blacks receiving opioids for noncancer pain were subjected to more urine drug tests, more referrals for substance abuse assessment, and fewer referrals to a pain management specialist (Hausmann et al., 2013)
Types of Bias

• Explicit biases
• Implicit biases

Project Implicit

Weapons ('Weapons - Harmless Objects' IAT). This IAT requires the ability to recognize White and Black faces, and images of weapons or harmless objects.

Gender - Science. This IAT often reveals a relative link between liberal arts and females and between science and males.

Race ('Black - White' IAT). This IAT requires the ability to distinguish faces of European and African origin. It indicates that most Americans have an automatic preference for white over black.

Age ('Young - Old' IAT). This IAT requires the ability to distinguish old from young faces. This test often indicates that Americans have automatic preference for young over old.

Weight ('Fat - Thin' IAT). This IAT requires the ability to distinguish faces of people who are obese and people who are thin. It often reveals an automatic preference for thin people relative to fat people.

Presidents ('Presidential Popularity' IAT). This IAT requires the ability to recognize photos of Barack Obama and one or more previous presidents.
Implicit Biases

• Large sample of community physicians showed explicit and implicit bias toward Latinos and Blacks although participants denied any bias (Blair et al., 2013)

• Written vignettes: Medical students demonstrated significant pro-White pro-upper class leaning on the IAT but no evidence of bias on written vignettes (Haider et al., 2011)

Pain Assessment

• Subjects viewed a series of pained facial expressions, estimated the levels of pain, and then rated what elements influenced their judgment; race was one of them (Hirsh et al., 2010)

• Similar findings in studies that used video → more aggressive treatment recommended for whites (Drwecki et al., 2011)
Empathy

- Anterior cingulate cortex is activated in both felt and observed pain; increased activity in models of the same race (Xu et al., 2009)

- Muscle evoked potential (MEP) muscle inhibition greater with same race models (Avenanti et al., 2010)

Conclusion

- Be aware of potential bias
- Be consistent
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Questions?

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