

Clinical Study

The influence of race and hospital environment on the care of patients with cervical spine fractures

Andrew J. Schoenfeld, MD, MSc^{a,*}, Dafang Zhang, MD^a, Kempland C. Walley, BSc^b,
Christopher M. Bono, MD^a, Mitchel B. Harris, MD, FACS^a

^aDepartment of Orthopaedic Surgery, Brigham and Women's Hospital, Harvard Medical School, 75 Francis St, Boston, MA 02115, USA

^bDepartment of Orthopaedic Surgery, Beth Israel Deaconess Medical Center, 330 Brookline Ave, Boston, MA 02215, USA

Received 21 July 2015; revised 29 September 2015; accepted 4 November 2015

Abstract

BACKGROUND: The influence of non-white race on outcomes following orthopedic injury has been described in the past. The impact of such factors on hospital processes and quality of care after spinal trauma is less well understood.

STUDY DESIGN: A cohort control study using the Massachusetts Statewide Inpatient Dataset (2003–2010) was used as the study design.

PURPOSE: This study aimed to determine whether (1) hospital processes and quality of care associated with the treatment of cervical spine fractures was significantly altered by non-white race and (2) whether findings were different among those treated at academic medical centers (AMCs).

SAMPLE: The study comprised 10,841 patients.

OUTCOMES: Surgical rate, postoperative morbidity, mortality, and length of stay (LOS) were the outcome measures.

METHODS: Baseline differences between cohorts were evaluated using chi-square or Wilcoxon rank sum tests. Logistic and negative binomial regression techniques were used to adjust for confounders, including whether a surgical intervention was performed. Subset analyses were performed to evaluate whether findings were different for individuals treated at AMCs.

RESULTS: The rate of surgical intervention was not significantly different between non-whites and whites (odds ratio [OR] 0.92, 95% confidence interval [CI] 0.82–1.04). LOS (regression coefficient [RC] 0.18, 95% CI 0.13–0.23), mortality (OR 1.49, 95% CI 1.20–1.85), and complications (OR 1.17, 95% CI 1.02–1.33) were significantly increased among non-white patients. These findings were largely preserved among those treated at AMCs.

CONCLUSIONS: Our results reinforce the fact that efforts at universal access to care may be insufficient to reduce differences in care among minority patients following cervical trauma. Future mixed-methods research is necessary to more effectively evaluate the etiologies behind health-care disparities associated with race in different health-care environments.

LEVEL OF EVIDENCE: The level of evidence is Level III, prognostic study. © 2015 Elsevier Inc. All rights reserved.

Keywords: Academic medical centers; African American; Cervical spine trauma; Complications; Disparities; Minorities; Mortality

FDA device/drug status: Not applicable.

Author disclosures: **AJS:** Grant: Robert Wood Johnson Foundation (E, Paid directly to institution/employer); Personal Fees: Arbometrix (B); Other: Wolters Kluwer (A, Royalties), outside the submitted work; Other Relationships or Activities: The Spine Journal (Deputy Editor), NASS (CME Committee), Journal of Orthopedic Trauma (Section Editor, Health Reform). **DZ:** Nothing to disclose. **KCW:** Nothing to disclose. **CMB:** Personal Fees: United Health Care (B, Advisory Board), CRICO (B, Expert Testimony), Wolters Kluwer (B, Royalties), Journal of the American Academy of Or-

thopaedic Surgeons (B, Deputy Editor Stipend), outside the submitted work; Board Membership: NASS. **MBH:** Board Membership: NASS.

The disclosure key can be found on the Table of Contents and at www.TheSpineJournalOnline.com.

* Corresponding author. Department of Orthopaedic Surgery, Brigham and Women's Hospital, Harvard Medical School, 75 Francis St, Boston, MA 02115, USA. Tel.: +13303292594; fax: +18573073793.

E-mail address: ajschoen@neomed.edu (A.J. Schoenfeld)

Introduction

Over the course of the last decade, there has been increased appreciation for the influence of psychosocial factors, including race, ethnicity, and insurance status on outcomes following orthopedic surgical interventions [1–11]. For example, a recent systematic review determined that African-American patients were at increased risk of complications and mortality following orthopedic procedures [10]. However, similar research is lacking for spine surgery as a whole and spinal trauma in particular.

Although race and ethnicity have been shown to adversely affect the results of spine surgery in certain contexts [6–9,11], there is little evidence regarding the underlying mechanisms for observed disparities. These include the influence of race and ethnicity on surgical decision making, quality of care, and the risk of postinjury morbidity and mortality. The role of the health-care environment, such as academic medical centers (AMCs) or teaching hospitals [12–14], in mitigating the impact of these sociodemographic factors on outcomes after spinal injury is also poorly understood.

This study sought to use the Massachusetts Statewide Inpatient Dataset (SID) to evaluate the influence of race and hospital environment on aspects of hospital care, as well as the quality of care associated with the treatment of patients with cervical spine fractures. Massachusetts was chosen because of its history as a progressive health-care environment where efforts to improve access to care among minorities have been underway for more than two decades and universal health insurance was mandated in 2006 [15]. This investigation was designed with the intent of addressing two questions:

1. Does patient race impact hospital processes of care and the quality of care for cervical spine fractures?
2. Is the influence of patient race on hospital processes and quality of care different among individuals treated at AMCs?

Methods

This was a retrospective review of data reported to the Healthcare Cost and Utilization Project by the state of Massachusetts. The methodology and clinical application of the SID initiative have been presented in previous publications, and the SID has been successfully used in the past as a means of evaluating variation in the delivery of orthopedic care [16–18]. The Massachusetts SID was queried by the International Classification of Diseases, 9th Revision (ICD-9) code to identify all individuals age 18 and older who sustained a cervical spine fracture or fracture dislocation (805.00–08, 805.10–08, 806.00–09, 806.10–806.19, 839.00–08, 839.10–18) in the calendar years 2003–2010. Demographic data, including sex, race, insurance status, and age were recorded for all patients treated for a cervical spine fracture. Race was

EVIDENCE & METHODS

Context

Although socio-demographic factors such as race and ethnicity are known to be associated with health care use and outcomes in orthopedics and other fields, how these variables affect cervical spine fracture care and prognosis is less well studied.

Contribution

The authors accessed and analyzed state of Massachusetts data from the Healthcare Cost and Utilization Project (HCUP) from 2003–2010 to estimate the associations of white versus non-white race with (1) surgery and reoperation rates, (2) length of stay, and (3) morbidity, mortality and complications among hospitalized patients with cervical spine fractures. Case-mix-adjusted surgery and reoperation rates were similar between whites and non-whites; however, non-whites had longer lengths of stay and higher odds of mortality and complications in both academic and non-academic medical sites.

Implications

This study is one of many showing differences in health care outcomes based on race. Study design and data limitations preclude causal inferences of race on quality of care and prognosis as well as an understanding of factors that may mediate these relationships. Identification of modifiable factors amenable for intervention to reduce health care disparities in spine care should be the focus of future research.

—The Editors

defined as white or non-white, inclusive of African-American and Hispanic patients as well as those classified in the SID as belonging to Other Race. Insurance status was categorized as Medicare, private insurance, or underinsured, which consisted of self-pay patients and those with Medicaid. The level(s) of cervical injury was obtained for all patients in the cohort, and the environment of care [12] was recorded for those treated between 2003 and 2009. The environment of care was stratified as Academic or Non-Academic based on the American Hospital Association identification codes and Massachusetts Center for Health Information designation [15]. Institutions labeled as *Academic Center* or *Teaching Hospital* by the Massachusetts Center for Health Information were considered AMCs in this study. Medical comorbidities were also evaluated for each patient using modified Charlson criteria [19].

All individuals in the study set were evaluated by the ICD-9 procedure code to determine whether a surgical intervention was performed. Patients were also censored for the occurrence of complications (delirium, deep venous thrombosis, pulmonary embolism, hemorrhage/hematoma, seroma,

Download English Version:

<https://daneshyari.com/en/article/4096117>

Download Persian Version:

<https://daneshyari.com/article/4096117>

[Daneshyari.com](https://daneshyari.com)