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Racial and ethnic disparities in obstetric anesthesia

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ABSTRACT

Racial and ethnic disparities are prevalent within healthcare and have persisted despite advances in medicine and public health. Disparities have been described in the use of neuraxial labor analgesia, with minority women being less likely to use neuraxial labor analgesia than non-minority white women. Minority women are also more likely to have a general anesthetic for cesarean delivery than non-minority women. The origins of these disparities are likely multi-factorial, with patient-, provider-, and systems-level contributors. The purpose of this article is to give an overview of disparities in obstetric anesthesia.

Introduction

Pain is defined as an unpleasant sensory and emotional experience associated with actual or potential tissue damage.[1] Pain affects millions of Americans and has become a public health challenge. As pain interferes with both patients' quality of life and function,[2] for many, it results in lost productivity and incurs treatment cost, which nationally results in an approximate cost of $560–$635 billion annually.[3,4]

Childbirth is the most common reason for admission to a hospital in the United States (US),[5] and labor is considered to be one of the most painful experiences a woman will encounter in her lifetime.[6] Appropriate management of pain is an important quality of care issue. The Joint Commission has stated that appropriate pain management is a right for all patients and an indicator of high-quality medical care.[7]

Racial and ethnic disparities are pervasive in healthcare.[8] Multiple studies have documented racial and ethnic disparities in the treatment of acute and chronic pain.[9–17] The Institute of Medicine has identified racial/ethnic minorities as being at risk for inadequately treated pain across many healthcare settings.[2] Increasing awareness of the presence of disparities, and taking action to address them has become an issue of national importance. One goal of the United States Department of Health and Human Services (HHS) *Healthy People* campaign is to establish health equity, thus eliminating health disparities by the year 2020.[18] Several national efforts have provided frameworks for approaching and reducing disparities.[19,20] Most recently, the Alliance for Innovation on Maternal Health (AIM) developed a safety bundle focused on reduction of peripartum racial disparities.[21] This article will provide an overview of disparities in obstetric anesthetic care and deconstruct possible contributing factors.

Definition of disparities

While multiple definitions of disparities exist, the Agency for Healthcare Research and Quality (AHRQ) definition is one of the most commonly used. AHRQ defines a disparity as a difference or a gap that exist between two groups, which is both statistically significant, larger than 10%, and indicates poor quality for the minority (non-referent) group.[8] Other definitions include that of the Institute of Medicine, which defines a disparity as a difference that is not related to need, preferences, or the appropriateness of an intervention,[22] and

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that of the World Health Organization which defines a disparity as a difference that is not only unnecessary and unavoidable, but also unfair and unjust.[23] The AHRQ definition of disparities will be used throughout this text.

Disparities in the use of neuraxial labor analgesia

The pain of childbirth ranks as one of the most intense types of pain experienced in a patient's life.[6,24] Neuraxial labor analgesia, which includes epidural, spinal, and combined-spinal epidural analgesia, is the most effective way to manage labor pain.[25] Of the three techniques, epidural analgesia remains the most commonly used in labor.[26] In a joint statement on Pain Relief in Labor, the American Congress of Obstetricians and Gynecologists and the American Society of Anesthesiologists state that neuraxial anesthesia is the most flexible and effective treatment modality with the added benefit of being the least depressing to the central nervous system.[27] The statement further emphasizes that pain management should be provided whenever medically indicated.

In the United States, over 60% of all deliveries use neuraxial labor analgesia[28]; however, minority women are less likely to use neuraxial analgesia for labor than non-Hispanic white women.[29–31] In 2004, Rust et al.,[29] using the 1998 Georgia Medicaid claims database, evaluated differences in neuraxial analgesia use among white, African American, and Hispanic women. Fifty-three percent of the 29,833 women used neuraxial analgesia. While nearly 60% of white women used neuraxial labor analgesia, only 50% of black women, and 35% of Hispanic women received neuraxial labor analgesia.[29] The racial/ethnic disparity in neuraxial analgesia use persisted even after controlling for patient age, metropolitan status (rural/urban), and the availability of anesthesiologists in the area (number of anesthesiologists per 100,000 population).

Glance et al. demonstrated similar disparities in 2007. The authors used the New York State Perinatal database, which contained information on all inpatient admissions for birth between 1998 and 2003 ($n = 81,883$).[30] The overall neuraxial analgesia use rate was low (38.3%). Using a multivariable logistic regression model which controlled for patient factors (e.g., age, parity, and comorbid medical conditions), socio-demographic factors (e.g., insurance type and education), and obstetric characteristics (e.g., labor type and fetal weight), a disparity persisted, with non-Hispanic white and black women having lower odds of neuraxial analgesia use than non-Hispanic white women.

A prospective study documenting racial/ethnic disparities in neuraxial labor analgesia was conducted at Northwestern in 2012. White, Hispanic, and black women admitted for labor who had not yet requested, or received labor analgesia, and had not had a pre-anesthetic consultation, were eligible for study participation.[31] Participating women completed a survey at the time of enrollment, and self-reported the type of analgesia they anticipated using for labor. After delivery, the type of labor analgesia used was abstracted from the medical record. There were differences in the rates of anticipated neuraxial analgesia use with 85% of non-Hispanic white women anticipating neuraxial analgesia use, compared to 51% and 67% of Hispanic and black women, respectively. Non-Hispanic white women had the highest neuraxial use rates (94%), and Hispanic women had the lowest rates (79%).

In a subsequent retrospective cross-sectional study, anticipated and actual neuraxial analgesia use among Medicaid-insured, nulliparous Hispanic women were compared based on primary spoken language ($n = 932$).[32] Overall, 182 women self-identified as being primarily Spanish speaking. Spanish-speaking women were less likely to both anticipate and use neuraxial labor analgesia. These disparities persisted even after adjusting for age, marital status, income, obstetric provider type (obstetrician/midwife), and labor type (spontaneous/induction). The adjusted relative risk for anticipated use was 0.70 (97.5% CI: 0.53–0.92) and for actual use was 0.88 (97.5% CI: 0.78–0.99).

These studies demonstrate a disparity in use and anticipated use of neuraxial anesthesia. The reasons for this disparity and whether they represent cultural preferences or truly represent a disparity in care or access needs to be further evaluated.

Disparities in the use of neuraxial anesthesia for cesarean delivery

Neuraxial anesthesia is also the preferred mode of anesthesia for cesarean delivery.[33] While maternal mortality was once greater for general anesthesia than neuraxial anesthesia, with advances in anesthesia safety, there are now no differences in mortality between the two modes of anesthesia.[34] There are however several additional maternal and fetal benefits associated with neuraxial anesthesia, thus making it the preferred anesthetic for cesarean delivery.[35,36]

There has been an increase in the rate of cesarean deliveries in the United States, with over 30% of deliveries resulting in a cesarean birth.[37] The cesarean delivery rate is higher for Hispanic and African American women than that of non-Hispanic white women.[38] Two recent studies have evaluated racial/ethnic disparities in the use of general anesthesia for cesarean delivery. Both studies used the cesarean delivery registry developed by the Maternal–Fetal Medicine Units Network. The registry contained data on deliveries that occurred in 19 US academic centers between 1999 and 2002. The first study evaluated disparities in the use of general anesthesia among preterm deliveries ($n = 11,539$).[39] A total of 17.6% of women in the cohort received general anesthesia, with 43% of all black women receiving general anesthesia. This disparity persisted even after controlling for other factors associated with the use of general anesthesia including maternal age, body mass index, multiple gestation, and other medical comorbidities (adjusted odds ratio = 1.9, 95% CI: 1.7–2.2). The second study evaluated term deliveries ($n = 50,974$).[40] Compared to preterm deliveries, the overall rate of general anesthesia use was lower (7.1%); however, black women still had the highest rates of general anesthesia use (11.3%). The adjusted odds ratio for general anesthesia use among black women compared to non-Hispanic white women was 1.7 (95% CI: 1.5–1.8).