**Ethnic and Gender Diversity in Hand Surgery Trainees**

**Gordon Bae, BA1,2, David Park, MS1,3, Austin Lee2, David Zurakowski PhD2,4, Charles Day MD1,2**

1Beth Israel Deaconess Medical Center - Dept. of Orthopedic Surgery. 2Harvard Medical School. 3Tufts University School of Medicine. 4Boston Children’s Hospital - Contact: CDay1@bidmc.harvard.edu

**Background**
- Increases in gender and ethnic diversity in the medical vocation correlates with higher-quality medical education, greater research productivity and increased accessibility to healthcare resources for underserved populations.²,³
- Medical schools mirror the increasing diversity in the US population but orthopedic and plastic surgery residencies lag significantly in minority and gender equity recruitment.⁴

**Objectives**
1. Evaluate the trends in ethnic and gender diversity in hand surgery trainees from 1995 to 2012.
2. Evaluate the current state of ethnic and gender diversity in hand surgery trainees.

**Methods**
- Trainees were categorized into the following ethnic group: Caucasian, African-American, Asian, Hispanic, Other.
- Ethnic and gender composition data taken from the Journal of the American Medical Association (JAMA) and the National Resident Matching Program (NRMP).
- Compared the ethnic compositions of hand surgery, orthopedic sports medicine, orthopedic surgery, plastic surgery, neurological surgery, and general surgery trainees from 1995 to 2012 – other subspecialties were not compared because they do not participate in the NRMP.
- Statistical Analysis: Changes over time in ethnic and gender compositions were compared using logistic regression analysis with a binomial distribution and the Wald chi-square test to compare slopes. The two-sample Z-test was used to determine differences in binomial proportions.

**Results**
- Figure 1: Ethnic Diversity Among Hand Surgery Trainees from 1995 to 2012. There was significant linear growth of 0.15% and 0.47% per year (P<0.05 for both) for African-American and Asian populations.
- Figure 2: Ethnic Diversity Among Orthopaedic Surgery Trainees from 1995 to 2012. Significant linear growths of 0.06%, 0.19% and 0.40% per year (P<0.05 for all) for African American, Hispanic and Asian populations, respectively, were observed.
- Figure 3: Ethnic Diversity Among Plastic Surgery Trainees from 1995 to 2012. Significant linear growth of 0.05% and 0.70% per year (P<0.05 for both) for African-American and Asian populations.
- Figure 4: Ethnic Diversity Among Hand Surgery Trainees vs. Other Surgical Specialty Trainees from 2009 to 2012. The percentages of non-Caucasian trainees compared to hand surgery were significantly lower in orthopedic sports medicine and orthopedic surgery while significantly higher in general surgery (P<0.05 for all).
- Figure 5: Gender Diversity Among Hand, Orthopedic, and Plastic Surgery Trainees from 1995 to 2012. There was significant linear growth of 0.46%, 0.66% per year (P<0.05 for all) found for proportions of female trainees in hand, orthopedic, and plastic surgery, respectively.

**Discussion Point**
- Between 1995 and 2012, the proportions of minority trainee populations increased significantly in the fields of orthopedics, plastic surgery, and hand surgery. However, the proportions of Hispanic trainees in hand and plastic surgery did not increase significantly during this time.
- Comparison of trainee demographics in hand surgery versus other surgical specialties revealed significant differences in proportions of minority populations, indicating that hand surgery was both less and more ethnically diverse than other residencies/fellowships. Our data suggest that ethnic diversity trend in hand surgery mirrors its academic feeder, plastic surgery, and is actually improved relative to its other academic feeder, orthopedic surgery.
- Between 1995 and 2012, female-to-male ratios rose significantly for hand, orthopedic, and plastic surgery fellowships/residencies. Given the results, we predict that this ratio will continue to increase linearly.
- Previous efforts to promote diversity can help formulate new strategies to increase gender and ethnic diversity in hand surgery. Evidence from orthopedic residencies suggests that making diversity an institutional goal through professional platforms correlates with increased minority representation.⁵,⁶ Such a method has been implemented by the American Society for Surgery of the Hand (ASSH).

**References**