Title: Analysis of Academic and Demographic Characteristics of Orthopedic Trauma Surgery Division Chiefs at Level 1 and 2 Trauma Centers in the United States

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Introduction: The field of orthopedic surgery has faced scrutiny for its lack of diversity in race and gender among residency applicants and those in advanced leadership. However, little is known about orthopedic trauma division chiefs' academic and demographic characteristics and what factors are favorable in attaining the position. Being appointed as a division chief is an essential milestone for many orthopedic surgeons, as it offers an opportunity to lead and transform departments and often serves as a steppingstone to subsequent leadership roles within institutions and orthopedic societies. This study aims to examine the academic and demographic profiles of orthopedic trauma division chiefs at all level 1 and 2 trauma centers and assess the influence of fellowship location on their journey to becoming division chiefs.

Methods: To identify every level 1 and 2 accredited trauma center in the United States (academic and community), we utilized an online listing of current level 1 and 2 trauma centers confirming their teaching and trauma level status' respectively, using the American Hospital Directory. To identify division chiefs/chairs of orthopedic trauma, we conducted thorough searches on osteopathic and allopathic residency program websites, respective trauma center websites, the Orthopedic Trauma Association website, LinkedIn, and Doximity. Our data collection encompassed various demographic factors such as race, age, and gender. Academic characteristics were also evaluated, including the current institution, hospital type, medical school attended, degree type earned (DO/MD), residency location, master's degree and/or Ph.D. attainment, research fellowship participation (e.g., AO Traveling Fellowship), fellowship location and subspecialty, years of practice, years between fellowship and division chief position, number of publications and citations, program director status (residency or fellowship), and service as a past or current orthopedic society president. Patient satisfaction scores were obtained from Healthgrades and Healthline.

Results: Out of the 172 Level 1 trauma centers we identified, 130 orthopedic trauma division chiefs/chairs were readily identifiable. Most division chiefs were male (91.5%) and White (87.7%), with an average age of 54 years. On average, male chiefs are 11.6 years older than female chiefs (54.8 vs. 43.2). Within the Level 1 Trauma centers, only four division chiefs identified as Black/African American, four as Asian, two as Hispanic/Latino, and two as Middle Eastern. Male chiefs, on average, took 3.3 more years to reach the position than female chiefs (9.9 vs. 6.6).

On average, these 130 orthopedic traumatologists have been in practice for 24.3 years. Most held the academic ranks of either professor or associate professor, while fewer were assistant professors. Among them, 29 had additional leadership positions within their departments, including program director (residency and/or fellowship), and 11 had attained or were actively pursuing additional graduate degrees. Male chiefs, on average, also published and had more citations than female chiefs (82.9 vs. 33.3 publications and 3,343.8 vs. 1,118.8 citations). The average duration between fellowship completion and assuming the division chief role was 9.6 years. Eighteen division chiefs had participated in at least one traveling fellowship, and 14 had been presidents of Orthopedic Trauma or Orthopedic Societies. On average, division chiefs had published 80 papers with 3,191 citations. The most common fellowship locations, in order, were R Adams Cowley Shock Trauma Center (15), UC Davis Medical Center (6), University of Pittsburgh Medical Center (5), and Hospital for Special Surgery (4).

Of the 134 level 2 trauma centers identified, 60 trauma chiefs were readily identifiable. On average, these 60 orthopedic traumatologists have been in practice for 17.17 years. Most division chiefs were male (91.7%) and White (78.3%), with an average age of 50.7. At level 2 trauma centers, six chiefs identified as Black/African American, four as Asian, and one as Hispanic/Latino. On average, male chiefs are 10.7 years older than female chiefs (51.7 vs. 41). Male chiefs, on average, took 3.9 more years to reach the position than female chiefs (8.1 vs. 4.2).

Like level 1 trauma centers, most held academic ranks of professor or associate professor, with a smaller percentage being assistant professors. Three division chiefs held additional leadership positions, including program director, and two had pursued additional graduate degrees. Male chiefs, on average, also published and had more citations than female chiefs (33.9 vs 3.2 publications and 1,694.1 vs. 49.8 citations. The average time between fellowship completion and assuming the division chief position was 7.8 years. Two division chiefs had participated in at least one traveling fellowship, and one had served as an Orthopedic Trauma or Orthopedic Society president. On average, division chiefs had published 30.6 papers with 1,521 citations. The most common fellowship locations, in order, were UC Davis Medical Center (5), UCSD (4), R Adams Cowley Shock Trauma Center (3), and Florida Orthopedic Institute (2).

Conclusions: Our study revealed that orthopedic trauma division chiefs tend to be older than 50 years, male, and White. They typically train at high-volume trauma and academic centers, particularly in major cities. Additionally, many division chiefs have served as presidents of Orthopedic Trauma or Orthopedic Societies. While the number of those underrepresented in orthopedics continues to reveal a paucity in diversity, it appears that those who can enter leadership roles attain their positions at a younger age and in less time following the start of their practice. The findings emphasize the urgent need to address the gender and racial/ethnic diversity gap in orthopedic trauma division chief leadership to better reflect the evolving landscape of orthopedics.

Clinical/Study Significance: This study underscores the lack of diversity amongst orthopedic trauma division chiefs at trauma centers in the United States, highlighting the need for leadership reflective of our patient population.