Trends in Gender Diversity in the Field of Orthopaedic Surgery

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INTRODUCTION: The past 20-30 years have noted a positive change in gender representation in the medical field with more females pursuing careers in healthcare. Despite this increase, disparities in gender representation remain in various specialties and previous studies have noted low female representation in the field of orthopaedic surgery. Historical data shows that the percentage of female orthopaedic residents has gradually increased from 0.6% in 1970 to 9.0% in 2001 and 20.3% in 2023. Although there has been an increase in the total number of female orthopaedic surgery residents, the percent increase over time has been reported as being relatively slow when compared with other competitive surgical specialties. Therefore, this study formulated a plan to gather and synthesize data from the Centers for Medicare & Medicaid Services (CMS) database to examine the number of practicing female orthopaedic Medicare providers and patient caseload. Additionally, data was compared from the orthopaedic cohort with that of a selection of other surgical and non-surgical CMS physician specialists. We hypothesized there would be a national increase in the percentage of female orthopaedic surgeons entering the workforce from 2018 to 2023 due to the increasing representation within residency programs, that female representation in orthopaedics would be lower when compared to other surgical specialties, that trends in geographic preference/growth would match that of population growth, and that the caseload would remain relatively constant.

METHODS: This study was a retrospective review of public data on medical providers in the United States collected and maintained by the Medicare system. In order to accurately assess trends in gender diversification of the physician workforce the Centers for Medicare and Medicaid Services (CMS) database was queried for December entries from 2018 to 2023. Both surgical and non-surgical medical specialties were selected to provide a broad assessment of gender representation. These subsets contained provider names, gender, year of graduation, and state. Yearly data on provider gender was extracted across the states using pivot table function in Microsoft Excel. In order to display geographic trends in a way consistent with the system developed by the Electronic Residency Application Service (ERAS), the 50 United States and District of Columbia were combined into geographic "signaling areas" defined by ERAS. Lastly, US Census data for persons 65 years and older was utilized to track trends in population change as well as create a measure of the number of patients per orthopaedic surgeon in each state, which we defined as “caseload”. Census data was only available from 2018 through 2022 at the time of data collection.

RESULTS:

The number of practicing orthopaedic surgeons in the data set averaged 23,682 annually across the 6-year period. The mean percentage of female orthopaedic surgeons across all states was 6.02% in 2018 and demonstrated subsequent annual increases up to 7.51% in 2023, with an overall increase of 1.49% over the 6-year period. This value was statistically significantly lower when compared to female growth in other surgical specialties such as General Surgery (5.50%) and Obstetrics and Gynecology (6.93%). Percentages of female orthopaedic CMS providers also varied by state with a minimum of 1.3% in Alaska in 2020 up to a maximum 16.5% for Hawaii in the 2023 data set. Analysis of geographical trends revealed a 14% and 23% increase respectively in female orthopaedic representation in the Pacific West and South Atlantic regions from 2018 to 2023. These regions demonstrated the highest rates of growth for all female providers across the various surgical and non-surgical specialties included in the comparison. In contrast the Mountain West and New England regions experienced the greatest rates of census growth from 2018 through 2022 at 12.2% and 11.1% respectively but did not see the level of corresponding growth of female orthopaedic providers when compared to the South Atlantic and Pacific West areas. When assessing census population, the East North Central region has a comparable size to the Pacific West however it experienced only 6% growth in female orthopaedic CMS providers from 2018 through 2023, which was 8% lower than its counterpart. Lastly, caseload per orthopaedic CMS provider per state ranged from an average of 2,264 in 2018, to a peak of 2,424 in 2022.

DISCUSSION AND CONCLUSION:

The results of this study demonstrate there was a national increase in the percentage of female orthopaedic surgeons entering the workforce from 2018 to 2023, a trend that is anticipated to continue in the future. This rate of increase was slow compared to other surgical specialties and highlights the need for additional efforts in recruiting females to the profession. Regional differences were also apparent although not unique to orthopaedics with the Pacific West and South Atlantic regions of the United States demonstrating the greatest rate of growth in all specialties for female providers. Some of the limitations of our study include that our information was restricted to CMS providers which does not capture all orthopaedic surgeons practicing in the United States. However, this population represents a large proportion of orthopaedic surgeons and presents a “worst-case” scenario as previous studies have speculated that gender disparity may be higher in orthopaedic arthroplasty specialists when compared to other orthopaedic subspecialties. Also, the CMS database lacks more granular data such as patient reporting measures and is retrospective in nature. In conclusion, this study compares current trends in gender diversification within the field of orthopaedic surgery as well as provides

comparison with selected surgical and non-surgical medical specialties. Our study establishes a gradually increasing presence of practicing female orthopaedic CMS providers and interestingly demonstrates trends in regional preference for the Pacific West and South Atlantic of the United States with larger growth in female orthopaedic representation in these areas over the 6-year study period.