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Temporal Trends and Practice Patterns in the Urology Work Force between Low and High Density Population Areas

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Abstract

Introduction: To evaluate access to urological care and potential work force shortages it is essential to understand geographic variation in physician supply and practice patterns among urologists. We sought to quantify differences between urban and nonurban urologists in the United States and evaluate these trends with time.

Methods: We obtained procedural case logs from the ABU (American Board of Urology) for 9,390 urologists undergoing ABU initial certification or recertification during 2003 through 2015. We performed summary statistics to characterize the practice patterns and case mix of nonurban urologists (practice setting less than 100,000 population) and urban urologists (practice setting greater than 100,000 population).

Results: Of 8,180 urologists (87.1%) with practice setting information 6,907 (84.4%) practiced in an urban setting vs 1,273 (15.6%) in a nonurban setting. The proportion of nonurban urologists decreased from 2003 to 2015 (19.4% to 14.2%, $p = 0.06$). A higher proportion of urban urologists were female (9.5% vs 6.8%, $p = 0.007$). Nonurban urologists were more likely to be general urologists (88.0% vs 71.8%, $p < 0.001$) and be in practice longer (mean $\pm$ SD 11.0 $\pm$ 8.4 vs 9.2 $\pm$ 8.3 years, $p < 0.001$). Nonurban urologists were more likely to be solo practitioners (21.8% vs 9.5%, $p < 0.001$) and less likely to perform major urological cases with a median of 5 (IQR 1−12) vs 9 cases (IQR 3−19) annually ($p < 0.001$).

Conclusions: Imbalance in the geographic distribution of urologists appears to be growing. With an aging nonurban urological work force that is performing fewer major operations Americans residing in nonurban areas may face barriers in access to care.

Key Words: urology, health services accessibility, urban health services, rural health services, health manpower

Abbreviations and Acronyms

AAP = advanced practice provider

AUA = American Urological Association

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There has been concern that the growth of an aging United States population coupled with a declining physician supply will result in physician shortages across all branches of medicine in the next few decades. Urology is no exception, having recently reached a 30-year nadir in the number of urologists per capita with only 3.7 urologists for every 100,000 Americans.[1,2]

Work force shortages projected in urology have been attributed to barriers in the expansion of residency training positions on a national level.[3–5] Beyond limits on expansion of the urological work force, the geographic distribution of urologists throughout the United States has had a significant impact on the ability to meet patient demand. Urologists continue to gravitate toward urban areas, thereby exacerbating the extent to which nonurban populations are underserved.[6] This has resulted in disparities in the quality of urological care and in poor clinical outcomes among the nonurban population.[7–9]

Prior studies have quantified the imbalance in the geographic distribution of urologists, estimating that approximately 63% of counties in the United States lack a resident urologist.[6] However, to our knowledge there have been no attempts to characterize the differences between nonurban and urban urologists with regard to demographics, training and practice patterns. To address geographic discrepancies in physician supply and thereby meet patient demand, it is essential that training programs, policy makers and practicing urologists attempt to understand the drivers of physician migration. Therefore, we sought to quantify differences between urban and nonurban urologists in the United States and evaluate these trends with time.

Materials and Methods

Data Source

We obtained procedural case logs from the ABU from 2003 through 2015. The ABU is the national agency responsible for conferring urology board certification on licensed medical practitioners in the United States. Eligible candidates for initial board certification or recertification are required to submit self-reported characterization of their urological practice and operative case logs for 6 consecutive months prior to the certification or recertification date. Logs include all procedures that are billed under each candidate, including those performed by physician extenders. Of note, the case log accompanying an application in a particular year documents cases performed in the prior year. For example, a recertification application for 2015 is accompanied by a case log documenting procedures performed in 2014.

Recertification is mandated every 10 years for all practicing urologists except those who were initially certified prior to 1985. Thus, annual aggregate case log data represent approximately 10% of practicing urologists.

Cohort

We identified all 9,390 urologists who applied for ABU initial certification or recertification from 2003 through 2016. We excluded 1,210 urologists for whom practice setting was not identifiable. The remaining 8,180 urologists (87.1%) were stratified according to 6,907 with an urban vs 1,273 with a nonurban practice designation. Nonurban setting was defined by the lowest ABU population density category of less than 100,000 persons in the catchment area. All practice settings with greater than 100,000 population in the catchment area were defined as urban.

Study Variables and Statistical Analysis

We performed descriptive statistics to describe the number and composition of urologists by practice setting. Descriptive variables included gender, urological subspecialty, practice region, certification type (initial vs recertification), level of employment (full time vs part time) and practice type. Trends of urologist representation with time were described.

We identified the proportion of urologists who reported having performed at least 1 major urological operation during the 6-month case log interval. Major urological operations were identified according to HCPCS (Healthcare Common Procedural Coding System) codes, including radical prostatectomy (55801, 55810, 55812, 55815, 55821, 55831, 55840, 55842, 55845 and 55866), radical cystectomy (51590, 51595 and 51596), pelvic exenteration (51597), partial cystectomy (51550 and 51555), radical nephrectomy (50220, 50230 and 50546), partial nephrectomy (50240, 50543 and 50546), nephroureterectomy (50220, 50230, 50236 and 50548), retroperitoneal lymph node dissection (38780), pyeloplasty (50400, 50405 and 50544), total or partial penectomy (54120, 54125, 54130 and 54135), percutaneous nephrolithotomy (50080 and 50081) and adrenalectomy (60540 and 60650).

The chi-square and Wilcoxon rank sum tests were used to compare urban and nonurban groups when appropriate. All statistical analysis was performed using RStudio®, version 0.99.484. The study was exempt from review by the local institutional review board.

Results

A total of 9,390 urologists sought initial or recertification from 2003 to 2015. The annual number of certifying