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# Work Activities and Compensation of Male and Female Cardiologists

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## ABSTRACT

**BACKGROUND** Much remains unknown about experiences, including working activities and pay, of women in cardiology, which is a predominantly male specialty.

**OBJECTIVES** The goal of this study was to describe the working activities and pay of female cardiologists compared with their male colleagues and to determine whether sex differences in compensation exist after accounting for differences in work activities and other characteristics.

**METHODS** The personal, job, and practice characteristics of a national sample of practicing cardiologists were described according to sex. We applied the Peters-Belson technique and multivariate regression analysis to evaluate whether gender differences in compensation existed after accounting for differences in other measured characteristics. The study used 2013 data reported by practice administrators to MedAxiom, a subscription-based service provider to cardiology practices. Data regarding cardiologists from 161 U.S. practices were included, and the study sample included 2,679 subjects (229 women and 2,450 men).

**RESULTS** Women were more likely to be specialized in general/noninvasive cardiology (53.1% vs. 28.2%), and a lower proportion (11.4% vs. 39.3%) reported an interventional subspecialty compared with men. Job characteristics that differed according to sex included the proportion working full-time (79.9% vs. 90.9%; $p < 0.001$), the mean number of half-days worked (387 vs. 406 days; $p = 0.001$), and mean work relative value units generated (7,404 vs. 9,497; $p < 0.001$) for women and men, respectively. Peters-Belson analysis revealed that based on measured job and productivity characteristics, the women in this sample would have been expected to have a mean salary that was $31,749 (95% confidence interval: $16,303 to $48,028) higher than that actually observed. Multivariate analysis confirmed the direction and magnitude of the independent association between sex and salary.

**CONCLUSIONS** Men and women practicing cardiology in this national sample had different job activities and salaries. Substantial sex-based salary differences existed even after adjusting for measures of personal, job, and practice characteristics. (J Am Coll Cardiol 2016;67:529–41) © 2016 by the American College of Cardiology Foundation.

Women have constituted nearly one-half of the medical student body in the United States for more than a decade. Nevertheless, women continue to be dramatically underrepresented in the specialty of cardiology, accounting for only 21% of first-year cardiology fellows training in 2012 to 2013 (1). This situation has fostered concerns in the United States (2) and abroad (3–6) that cardiology may no longer be accessing the full pool of talent in the educational pipeline, potentially jeopardizing the ability of the field to continue generating the highest quality clinical care, teaching, and research.

The lack of sex diversity in the cardiology workforce is striking, with recent workforce estimates suggesting that women constitute only approximately 12% of general cardiologists and even smaller proportions of specialties, such as interventional cardiology and

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**ABBREVIATIONS AND ACRONYMS**

**ACC** = American College of Cardiology

**CI** = confidence interval

**PET** = positron emission tomography

**SPECT** = single-photon emission computed tomography

**wRVU** = work relative value units

clinical cardiac electrophysiology (7). Both the American College of Cardiology (ACC) and the British Cardiac Society have convened working groups charged with addressing women's persistent underrepresentation in the field of cardiology (4,8). These groups have identified several consistent concerns, including the challenges of work-life balance in a field in which on-call duties can be frequent and demanding, and occupational radiation exposure, sex bias, and overt discrimination exist. They have called for increased mentorship and exposure to female role models, along with efforts to address the "image issues for the prior traditionally male domain of cardiology" (2).

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Despite these and other laudable efforts to increase the representation of women in the specialty, much remains unknown about the experiences of those women who have slowly begun to join this previously male-dominated specialty. Professional life surveys conducted in 1996 and 2006 by the ACC have suggested that women in cardiology are less likely to be married or have children than their male colleagues (9,10), less likely to practice interventional cardiology, less likely to perceive career advancement and/or salaries to be higher than their peers, and less satisfied with their level of financial compensation. Although illuminating, these surveys collected little information about the detailed work activities or actual pay of practicing cardiologists.

Thus, little is currently known about the distribution of working activities or pay of either male or female practicing cardiologists. To provide this information, we used a large national dataset to evaluate job descriptions and to compare compensation in men and women after controlling for differences in work activities.

## METHODS

**SAMPLE.** An original dataset was obtained from MedAxiom, a membership network and service provider for cardiology practices, hospitals, and academic centers. This dataset, which represented the entire calendar year of 2013, contained data voluntarily reported by member executives regarding the personal, job, and practice characteristics of 3,187 cardiologists from 161 practices. Subjects were excluded if they were missing values for either sex (n = 37) or salary (n = 287) because those were the 2 primary variables of interest in this analysis. In addition, subjects were excluded if they worked <40 half-days (n = 12), reported <500 work relative value units (wRVUs), or had >25,000 wRVUs (n = 172). In the United States, wRVUs are allocated based on billing claims codes submitted for reimbursement and are therefore a productivity measure linked to clinical reimbursement. The final analytic sample included data for 2,679 cardiologists. A diagram depicting these exclusions can be found in **Figure 1**.

**MEASURES.** Key measures included personal, job, and practice characteristics reported in the surveys. Specifically, age was categorized into 5 groups (24 to 38, 39 to 48, 49 to 58, 59 to 68, and ≥69 years). Race/ethnicity was grouped into 8 categories as listed in **Table 1**. Subspecialty was grouped as electrophysiology, general/noninvasive, interventional, invasive, or other.

Job characteristics included whether the subject was working full-time. Two definitions of full-time work were included: "self-reported," which corresponded to the designation reported by the administrator completing the survey, and "investigator-defined," which corresponded to a response of working >400 half-days in the last year. We also considered the number of half-days worked and whether the respondent participated in on-call duties (full call, partial call, or no call). The number of wRVUs and new patient office visits were also measured. In addition, we evaluated whether the respondent's job included certain activities: office consultations, return office visits, hospital consultations, initial hospital care, hospital observation cases, hospital visits, outpatient pacemaker checks, permanent pacemaker implantations, catheterizations, angioplasty, echocardiograms, electrocardiograms, positron emission tomography (PET) scans, single-photon emission computed tomography (SPECT) scans, stress echocardiograms, and treadmill tests. For these items, we first evaluated whether the subject performed any, 1 to 4, or ≥5 procedures in each category in the last year and then, among those performing ≥5 procedures, the absolute number of such procedures.

Information was collected on practice characteristics, including geographic region (grouped as Midwest, Northeast, South, and West), practice composition (cardiology only, cardiology and cardiothoracic surgery, cardiology and multiple surgeries, or cardiology and vascular surgery), whether the practice had a female administrative director, practice size, the practice compensation model (blended, equal share, productivity, or salary plus bonus), whether the practice owned imaging facilities (none, SPECT only, or SPECT and PET), provider-based billing details (diagnostic only, diagnostic plus evaluation and management services, evaluation and management only, or no provider-based billing), and whether the practice