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Original Research

## Contribution of gender on compensation of Veterans Affairs-affiliated dermatologists: A cross-sectional study

Mytrang H. Do PhD<sup>a</sup>, Shari R. Lipner MD, PhD<sup>b,\*</sup><sup>a</sup>Weill Cornell Medical College, Tri-Institutional MD-PhD program, New York, NY, United States<sup>b</sup>Weill Cornell Medical College, Department of Dermatology, New York, NY, United States

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## ABSTRACT

**Background:** Gender disparity in research funding, leadership, authorship, and compensation in medicine is well documented, with most parameters favoring men over women. Gender differences in salary in dermatology have not been well studied.

**Objective:** This study aimed to investigate the contribution of gender to dermatologists' compensation in the Veterans Affairs (VA) health care system.

**Methods:** A retrospective cross-sectional study was conducted by identifying VA-affiliated dermatologists from the U.S. Department of VA website. The contributions of gender, years since graduation, h-index, academic appointment, race, and region on the publicly available salaries were analyzed using a linear-regression model to isolate the effects of gender and interaction with other variables.

**Results:** This study included 247 VA dermatologists with publicly available salaries (114 women and 133 men). On univariate analyses, male dermatologists had significantly higher compensation than female dermatologists ( $p = .0333$ ). However, male dermatologists also had significantly more years since graduation ( $p < .0001$ ) and higher h-indices ( $p < .0001$ ). Multivariate analysis showed that gender was not a significant contributor to salary. Instead, years since graduation ( $p < .0001$ ), h-index ( $p = .0066$ ), and academic appointment ( $p < .0001$ ) contributed significantly to VA dermatologists' salaries. Region and race were not determinants of salary. Gender did not contribute to salary overall, but there was an interactive effect between gender and region ( $p = .0099$ ). Compared with women, male dermatologists had significantly higher salaries in the Midwest ( $p < .0018$ ).

**Conclusion:** Our study revealed that VA hospitals have maintained gender equality in dermatologist compensation nationally, which could serve as a model to close salary gender gaps in other health care systems. Further research should focus on inclusion of VA physicians from different specialties, as well as across multiple years, to further characterize this observation.

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## Introduction

Despite tremendous progress in increasing gender parity in the past century, salary discrepancies between genders persist (Barbezat and Hughes, 2005; Freund et al., 2016). These gaps are particularly prevalent among health care professionals, including physicians, dentists, pharmacists, registered nurses, and physician assistants (Coplan et al., 2012; Muench et al., 2015; Seabury et al., 2013). In dermatology, women are well represented, making up 52% of board-certified dermatologists; however, they are underrepresented as full professors (Stratman and Stratman, 2019). Women also lag behind men in terms of research funding,

leadership, journal editorial boards, lecturing at national meetings, and authorship in high-impact dermatology journals (Bendels et al., 2018; Flaten et al., 2019; Larson et al., 2019; Lobl et al., 2020; Stewart and Lipner, 2020; Stratman and Stratman, 2019; Wu and Lipner, 2020).

In previous studies focusing on gender-based compensation in dermatology, male dermatologists earned higher salaries than female dermatologists (Weeks and Wallace, 2007; Sachdeva et al., 2020). However, factors that indirectly contribute to gender-based pay disparity have not been explored in depth. In this study, we investigated whether there are gender pay disparities in dermatology in a government-based model. We also examined predictors of salaries of male and female dermatologists based on publicly available 2018 Veteran Affairs (VA) data.

\* Corresponding author.

E-mail address: [shl9032@med.cornell.edu](mailto:shl9032@med.cornell.edu) (S.R. Lipner).

## Methods

### Study population

All dermatologists working for the VA (as of April 2020) were identified from physicians on the U.S. Department of VA website (<https://www.accesscare.va.gov/ourproviders/>) in medicine, surgery, and other and were matched with race data from Redi-Data (<https://redidata.com/healthcare-lists>), yielding 391 dermatologists with gender and race information. Race categories included White, Black, Asian, Native American, and Pacific Islander per the U.S. census. Based on the latest publicly available salary data (2018), 8 of 391 dermatologists had redacted salaries and 133 of 391 dermatologists did not work at the VA in 2018. Therefore, our study included 250 dermatologists with 2018 locations and salaries identified through U.S. Federal Government Employee Lookup (<https://www.federalpay.org/employees>).

An a priori power analysis showed that this sample size is sufficient to detect medium effect size using a false positive rate of .01. Salaries for both full-time and part-time dermatologists were included in the analysis because salaries listed on <https://www.federalpay.org/employees> are the full-time equivalent base salaries. Therefore, they reflect the compensation that a VA dermatologist would receive working for the VA full time.

Regions were classified into West, Midwest, South, and Northeast based on the U.S. census. For the 250 VA dermatologists with salary information, academic appointment and medical school graduation year were identified through Doximity.org, Docinfo.org, or medical school and hospital websites. Academic appointments included professor, associate professor, assistant professor, and no appointment. Years since graduation were calculated based on the year 2018 to match salary data. H-indices were extracted from Scopus.com.

### Linear regression model

To investigate the contribution of gender, years since graduation, h-index, academic appointment, region, and race on salary, a linear regression model accounting for all the aforementioned variables and interactions of gender with all other variables was used for multivariate analysis. Based on this model, Cook's D ( $d > 0.05$ ) was used to eliminate three outliers, leaving 247 VA dermatologists for analysis. All analyses were done in R. All graphic illustrations were made using GraphPad Prism, version 8.0.1.

### Statistical analysis

Two-sided Student's *t* test and Fisher's exact test were used for univariate analysis. One-way analysis of variance with Tukey's post hoc test for the main effect of academic appointment and two-way analysis of variance with Sidak's multiple comparison test for interaction between gender and region were conducted using GraphPad Prism, version 8.0.1.

## Results

In total, 247 VA dermatologists were included in the final analysis (114 women and 133 men). Demographics of the cohort are shown in Table 1. Using univariate analyses, male dermatologists had significantly higher compensation than female dermatologists (\$122,968 vs. \$118,807;  $p = .0333$ ). However, male dermatologists also had significantly more years since graduation (25.8 vs. 19.3 years;  $p < .0001$ ) and higher h-indices (13.9 vs. 6.4;  $p < .0001$ ). Physicians with no academic appointment were the largest group ( $n = 99$ ; 40.1%), and women were significantly

**Table 1**

Demographic information of all Veterans Affairs dermatologists in the study.

	Female (n = 114)	Male (n = 133)	Total (n = 247)
<b>Mean salary (STD)</b>	\$118,807 (\$11,826)	\$122,968 (\$15,268)	\$121,048 (\$13,916)
<b>Mean years since graduation (STD)</b>	19.3 (11.6)	25.8 (13.4)	22.8 (13.0)
<b>Median h-index (STD)</b>	6.4 (9.6)	13.9 (18.2)	10.5 (15.3)
<b>Academic appointments, n (%)</b>			
Professor	8 (7.0)	30 (22.6)	38 (15.4)
Associate professor	21 (18.4)	14 (10.5)	35 (14.2)
Assistant professor	38 (33.3)	37 (27.8)	75 (30.4)
No academic appointment	47 (41.2)	52 (39.1)	99 (40.1)
<b>Geographic distribution, n (%)</b>			
West	37 (32.2)	31 (23.3)	68 (27.5)
Midwest	20 (17.5)	34 (25.6)	54 (21.9)
South	36 (31.6)	45 (33.8)	81 (32.8)
Northeast	21 (18.4)	23 (17.3)	44 (17.8)
<b>Race, n (%)</b>			
White	91 (79.8)	104 (78.2)	195 (78.9)
Black	0 (0.0)	2 (1.5)	2 (0.8)
Asian	23 (20.2)	20 (15.0)	43 (17.4)
Unspecified	0 (0.0)	7 (5.3)	7 (2.8)

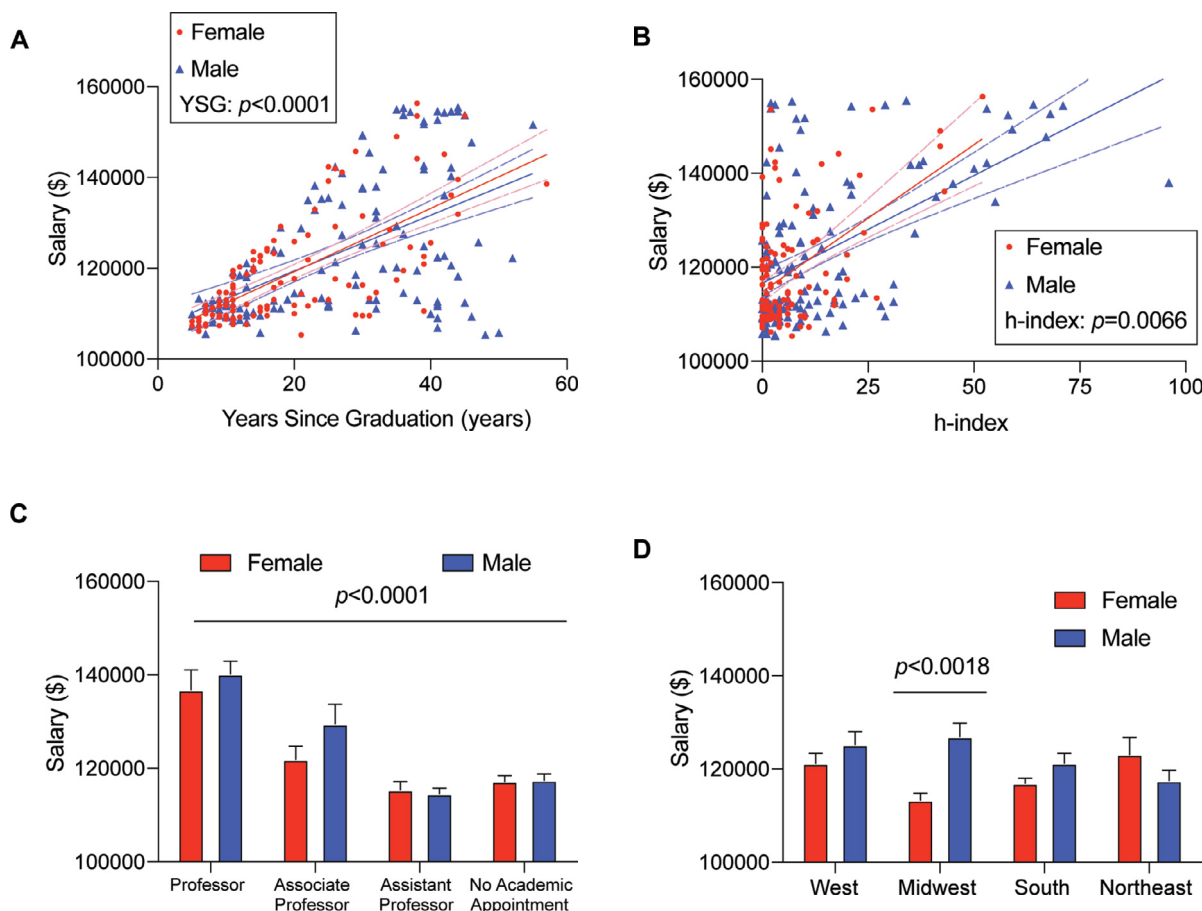
STD, standard deviation.

underrepresented as professors ( $p = .0007$ ). Dermatologists located in the South made up the largest group ( $n = 81$ ; 32.8%), and those in the Northeast made up the smallest group ( $n = 44$ ; 17.8%). Men outnumbered women in all regions, except for the West. White and Asian were the most common races (78.9% and 17.4%, respectively). There were only two Black dermatologists in the cohort, and neither was female. There were also no Native Americans or Pacific Islanders in the study population.

Multivariate analysis showed that gender was not a significant contributor to VA dermatologists' salaries nationally. Instead, years since graduation ( $p < .0001$ ), h-index ( $p = .0066$ ), and academic appointment ( $p < .0001$ ) contributed significantly to VA dermatologists' salaries (Fig. 1A–C). Specifically, a greater number of years since graduation was associated with higher salaries (Fig. 1A). Similarly, higher h-indices were associated with higher compensation (Fig. 1B). For academic appointments, professors had significantly higher salaries than associate professors, assistant professors, and those without an academic appointment ( $p < .0001$ ). In addition, associate professors had higher salaries compared with assistant professors ( $p = .0001$ ) and those without academic appointments ( $p = .0034$ ; Fig. 1C). Of note, region and race were not determinants of salary. Gender did not contribute to salary overall, but there was an interactive effect between gender and region ( $p = .0099$ ). Compared with women, male dermatologists had significantly higher salaries in the Midwest ( $p < .0018$ ; Fig. 1D).

## Discussion

In our study, years since medical school graduation, h-index, and academic rank significantly influenced salary but gender and race did not, indicating that compensation is largely based on merits such as experience and productivity. Although univariate analysis showed a gender pay gap, the difference was not significant when factors such as years since graduation, h-index, and academic appointments were considered. In line with previous studies, we found that male dermatologists had significantly higher h-index and academic rank, suggesting that the apparent gender pay gap on univariate analysis is driven by differences in these factors. In addition, our recent study showed that for equal levels of achievement, men and women are promoted similarly in



**Fig. 1.** Determining factors for Veterans Affairs (VA) dermatologists. (A) Salary of VA dermatologists across years since graduation (blue: male; red: female; solid line: linear fit; dotted line: 95% confidence interval). (B) Salary of VA dermatologists across h-index values (blue: male; red: female; solid line: linear fit; dotted line: 95% confidence interval). (C) Salary of VA dermatologists in different academic ranks (blue: male; red: female). (D) Salary of male and female VA dermatologists in various regions in the United States (blue: male; red: female). YSG, years since graduation.

dermatology (Stewart and Lipner, 2020), supporting the hypothesis that gender does not affect salaries through its effect on academic rank.

Consistent with our findings, two recent studies investigating the salaries of male and female otolaryngologists and all surgeons in complex VA medical centers found no gender-based salary differences (Dermody et al., 2019; Maxwell et al., 2020). However, these findings are in contrast to a wealth of previous evidence indicating persistent gender-dependent salary gaps among physicians (Boesveld, 2020; Jagsi et al., 2012, 2013; Lo Sasso et al., 2011; Wiler et al., 2019). Similarly, in a telephone survey-based study analyzing nonpublic annual incomes, there was a significant gender gap in salary, with male dermatologists compensated 28% more than female dermatologists (Weeks and Wallace, 2007). In addition, in a recent study, female dermatologists earned 31.57% and 19.88% less than male dermatologists in 2013 and 2018, respectively (Sachdeva et al., 2020). However, factors such as experience and productivity, which we found to be important determinants, were not considered in these studies.

The lack of gender disparity among surgeons in the VA has been proposed to be due to transparency within the system. The publicly available salary data allow physicians to compare their contribution and compensation with peers to allow self-advocating for a more equal salary (Dermody et al., 2019; Maxwell et al., 2020). Nevertheless, transparency is unlikely to be the sole reason for salary equality between genders at VA hospitals. Multiple studies on

gender-associated salary disparity in public U.S. medical institutions showed significant gaps despite complete salary transparency in these institutions, including in dermatology (Guss et al., 2019; Jena et al., 2016; Sachdeva et al., 2020). Therefore, additional factors might promote gender equalities unique to the VA system.

One factor may be the objective and tier-based system used by the VA to determine physicians' salaries. Specifically, the annual pay that each physician receives is the sum of General Schedule base pay and market pay. The base pay is fixed and determined by law and does not include other pay types, such as allowances, overtime, or holiday. Market pay is designed to reflect the recruitment and retention needs for the specialty or assignment of each specific physician (U.S. Department of Health and Human Services, 2016). In dermatology, there are two tiers of physicians. Tier 1 includes staff physicians and tier 2 includes section and service chiefs, as well as managers (U.S. Department of Veterans Affairs, 2018). To ensure adequate compensation, at least once every 2 years, the VA Secretary prescribes nationwide minimum and maximum amounts of annual pay based on national surveys of pay for physicians (U.S. Department of Health and Human Services, 2016).

Another reason may be equality in starting salaries. Dermody et al. (2019) found that male and female VA otolaryngologists had similar starting salaries, which differs from the significant pay gap reported for newly trained physicians from multiple

specialties (Lo Sasso et al., 2011). In our study, there was also no difference in the salaries of male and female dermatologists across their careers, suggesting that equivalent starting salaries may promote gender equality in compensation.

We did not find a regional difference in VA dermatologists' salaries. However, male dermatologists received higher salaries than female dermatologists in the Midwest (11% favoring male dermatologists). Our finding is consistent with that of a study of salaries in the general population showing an overall gender pay gap in the United States, with large gaps occurring most often in the Midwest (Miller and Vagins, 2018). These findings suggest that in certain parts of the country, specific regional influences can contribute to the gender gap in dermatologists' salaries.

We did not observe any racial differences in salary, but we found a significant underrepresentation of Black (2 of 247; 0.8%), Native American (0), and Pacific Islander (0) dermatologists. In contrast, 14%, 0.9%, and 0.4% of VA enrollees identify as Black, Native American, and Pacific Islander, respectively (Huang et al., 2018). For comparison, Black dermatologists comprise 3% of all dermatologists, compared with 12.8% of the total U.S. population. Therefore, the disparity between underrepresented dermatologists at the VA and the VA patient population is even more striking compared with their representation in the general population. This proportional discrepancy can significantly hinder patient experiences with dermatologists and may affect compliance. Patients of color often seek physicians of their own race (Saha et al., 2000; Street et al., 2008), and patients in race-concordant visits tend to have more positive experiences (Cooper et al., 2003). Therefore, our findings highlight the need to increase racial diversity in both the general and VA dermatology workforces to optimize patient experiences.

There are several limitations to our study. Our data included only dermatologists employed by the VA system, reducing the generalizability of our findings to all U.S. dermatologists. Second, the 391 dermatologists included in the study are those who worked for the VA as of April 2020. Because there is a delay in publicly available salary data for VA employees, salaries for dermatologists who started working for the VA after 2018 were not available. In addition, we were unable to include salary data for dermatologists who were employed by the VA in 2018 but had since left the VA. The VA does not release information regarding previous employees. Finally, we cannot account for changes in faculty status that were not updated online. FederalPay.org is sourced from the U.S. General Service Administration and the U.S. Office of Personnel Management, and we had no independent method to corroborate the accuracy of the salary data.

## Conclusion

Overall, our findings suggest that although there is an apparent difference in salaries between male and female VA dermatologists, the disparity can be explained by gender discrepancies in years since graduation, h-index, and academic appointments, all of which can impact salary and are skewed toward men. With equal credentials, expertise, and achievement, there was no true gender difference in salary in the VA system nationally. Regionally, male dermatologists received higher salaries compared with female dermatologists in the Midwest, demonstrating the effect of local influence. Nevertheless, the lack of overall gender difference in the VA system is an optimistic sign for narrowing the gender gap, likely reflecting the recent effort in promoting gender equality. Future research including VA physicians across different specialties and over longer time spans will be important to further characterize our observations in dermatology.

## Conflicts of Interest

None.

## Funding

None.

## Study Approval

The author(s) confirm that any aspect of the work covered in this manuscript that has involved human patients has been conducted with the ethical approval of all relevant bodies.

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