Gender Disparities in Income Among Board-Certified Dermatologists

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PRACTICE **POINTS**

- In this survey-based cross-sectional study, a statistically significant income disparity between male and female dermatologists was found.
- Although several differences were identified between male and female dermatologists that contribute to income, gender remained a statistically significant predictor of income, and this disparity could not be explained by other factors.

Although there is evidence that gender-based disparities exist in salary, academic rank, and other factors in several areas in medicine, limited data exist on differences between male and female dermatologists. Existing studies have focused on academic dermatologists, not including the vast majority of dermatologists who work in solo and group private practices. A cross-sectional self-reported survey eliciting total annual income and other factors was performed in the fall of 2018 in the United States. A total of 397 board-certified dermatologists (MDs/DOs) participated in this study, including 53.63% female and 46.37% male respondents. A statistically significant difference existed within total annual income between male and female dermatologists ($P<.0001$). Several factors were identified that demonstrated statistically significant differences between male and female dermatologists, including productivity, practice area of focus, type of fellowship training, and faculty rank. However, despite controlling for these variations, gender remained a statistically significant predictor of income on both univariate and multivariate regression analyses ($P=.0002$/$P<.0001$), indicating that a gender-based income disparity exists in the field of dermatology that cannot be explained by other factors.

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Although the number of female graduates from US medical schools has steadily increased,[1] several studies since the 1970s indicate that a disparity exists in salary, academic rank, and promotion among female and male physicians across multiple specialties.[2-8] Proposed explanations include women working fewer hours, having lower productivity rates, undernegotiating compensation, and underbilling for the same services. However, when controlling for variables such as time, experience, specialty, rank, and research activities, this gap unequivocally persists. There are limited data on this topic in dermatology, a field in which women comprise more than half of the working population.[6,7] Most analyses of gender disparities in dermatology are based on data primarily from academic dermatologists, which may not be representative of the larger population of dermatologists.[8,9] The purpose of this study is to determine if an income disparity exists between male and female physicians in dermatology, including those in private practice and those who are specialty trained.

Methods

Population—We performed a cross-sectional self-reported survey to examine compensation of male and female board-certified dermatologists (MDs/DOs). Several populations of dermatologists were surveyed in August and September 2018. Approximately 20% of the members of the American Academy of Dermatology were randomly selected and sent a link to the survey. Additionally, a survey link was emailed to members of the Association of Professors of Dermatology, American College of Mohs Surgery, and American Society for Dermatologic Surgery. A link to the survey also was published on "The Board Certified Dermatologists" Facebook group.

Statistical Analysis—Descriptive statistics were used to summarize the distribution of variables overall and within gender (male or female). Not all respondents completed every section, and duplicates and incomplete responses were removed. Variables were compared between genders using *t* tests (continuous), the Pearson χ^2 test (nominal),

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The eTable is available in the Appendix online at www.mdedge.com/dermatology.

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or the Cochran-Mantel-Haenszel test (ordinal). For categorical variables with small cell counts, an exact χ^2 test for small samples was used. For continuous variables, *t* test *P* values were calculated using either pooled or Satterthwaithe approximation.

To analyze the effect of different variables on total income using multivariate and univariate linear regression, the income variable was transformed into a continuous variable by using midpoints of the categories. Univariate linear regression was used to assess the effect and significance of each variable on total annual income. Variables that were found to have a *P* value of less than .05 (α=.05) were deemed as significant predictors of total annual income. These variables were added to a multivariate linear regression model to determine their effect on income when adjusting for other significant (and approaching significance) factors. In addition, variables that were found to have a *P* value of less than .2 (α=.05) were added to the multivariate linear regression model to assess significance of these specific variables when adjusting for other factors. In this way, we tested and accounted for a multitude of variables as potential sources of confounding.

Results

Demographics—Our survey was emailed to 3079 members of the American Academy of Dermatology, and 277 responses were received. Approximately 144 additional responses were obtained collectively from links sent to the directories of the Association of Professors of Dermatology, American College of Mohs Surgery, and American Society for Dermatologic Surgery and from social media. Of these respondents, 53.65% (213/397) were female and 46.35% (184/397) were male. When stratifying by race/ethnicity, 77.33% identified as White; 13.85% identified as Asian; 6.3% identified as Black or African American, Hispanic/Latino, and Native American; and 2.52% chose not to respond. Although most male and female respondents were White, a significantly higher proportion of female respondents identified as Asian or Black/African American/Hispanic/Latino/Native American (*P*=.0006). We found that race/ethnicity did not significantly impact income (*P*=.2736). All US Census regions were represented in this study, and geographic distribution as well as population density of practice location (ie, rural, suburban, urban setting) did not differ significantly between males and females (*P*=.5982 and *P*=.1007, respectively) and did not significantly impact income (*P*=.3225 and *P*=.10663, respectively).

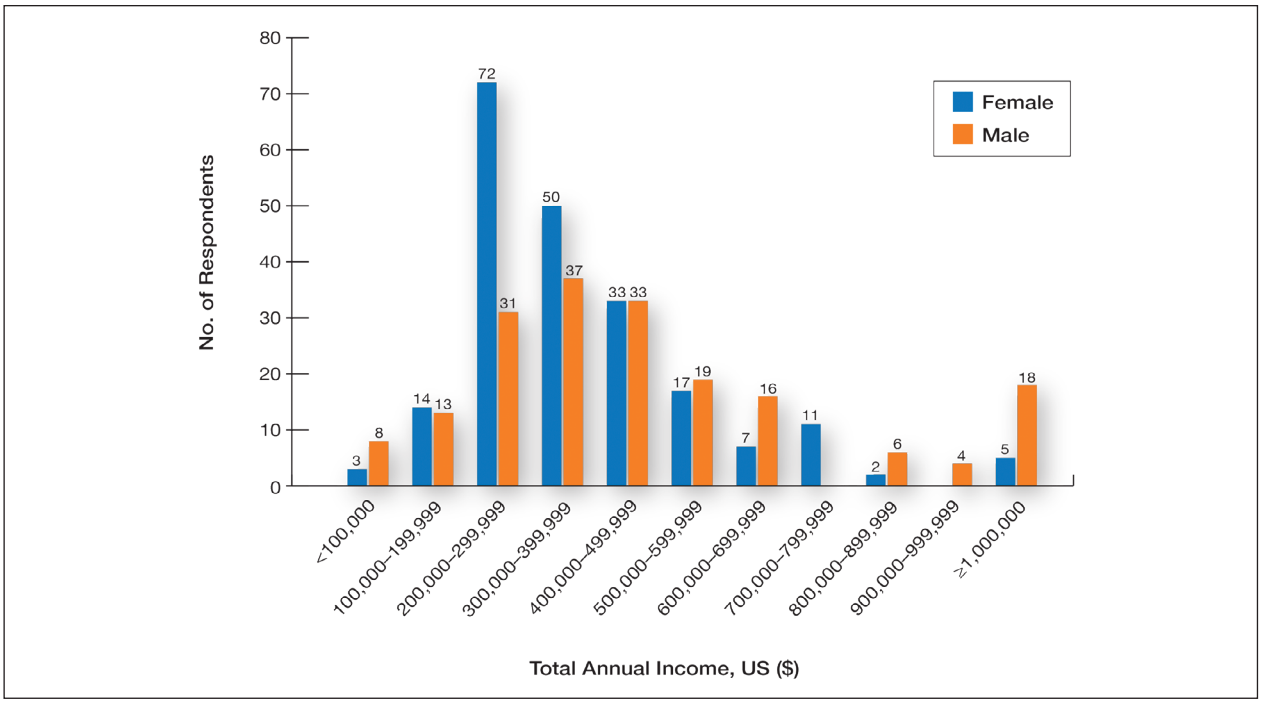
Income—Total annual income was defined as the aggregate sum of all types of financial compensation received in 1 calendar year (eg, salary, bonuses, benefits) and was elicited as an ordinal variable in income brackets of US $100,000. Overall, χ^2 analysis showed a statistically significant difference in annual total income between male and female dermatologists (*P*<.0001), with a higher proportion of males in the highest pay bracket (Figure). Gender remained a statistically significant predictor of income on both univariate and multivariate linear regression analyses (*P*=.0002 and *P*<.0001, respectively), indicating that gender has a significant impact on compensation, even after controlling for other variables (eTable). Of note, males in this sample were on average older and in practice longer than females (approximately 6 years, *P*<.0001). However, when univariate linear regression was performed, both age (*P*=.8281) and number of years since residency or fellowship completion (*P*=.8743) were not significant predictors of income.

Practice Type—There were no statistically significant differences between men and women in practice type (*P*=.1489), including academic/university, hospital based, and solo and group private practice; pay structure (*P*=.1437), including base salary, collection-based salary, or salary plus incentive; holding a supervisory role (*P*=.0846); or having ownership of a practice (*P*=.3565)(eTable). Most respondents were in solo or group private practice (58.2%) and had a component of productivity-based compensation (77.5%). In addition, 62% of private practice dermatologists (133/212) had an ownership interest in their practice. As expected, univariate and multivariate regression analyses showed that practice type, pay structure, supervisory roles, and employee vs ownership roles were significant predictors of income (*P*<.05)(eTable).

Work Productivity—Statistically significant differences were found between men and women in hours worked per week in direct patient care (*P*<.0001) and in patient visits per week (*P*=.0052), with a higher percentage of men working more than 40 hours per week and men seeing an average of approximately 22 more patients per week than women. In the subgroup of all dermatologists working more than 40 hours per week, a statistically significant difference in income persisted between males and females (*P*=.0001). Hours worked per week and patient visits per week were statistically significant predictors of income on both univariate and multivariate regression analyses (*P*<.05)(Table).

Education and Fellowship Training—No significant difference existed between males and females in type of undergraduate school attended, namely public or private institutions (*P*=.1090), but a significant difference existed within type of medical school education, with a higher percentage of females attending private medical schools (53.03%) compared to males (38.24%)(*P*=.0045). However, type of undergraduate or medical school attended had no impact on income (*P*=.9103). A higher percentage of males (27.32%) completed additional advanced degrees, such as a master of business administration or a master of public health, compared to females (16.9%)(*P*=.0122). However, the completion of additional advanced degrees had no significant impact on income (*P*=.2379). No statistical significance existed between males and females in number of residencies completed (*P*=.3236), and residencies completed had no significant impact on income (*P*=.4584).

Of 397 respondents, approximately one-third of respondents completed fellowship training (36.5%). Fellowships included dermatopathology, surgery/cosmetics, and other (encompassing complex medical, research, transplant,



Total annual income of male and female dermatologists (n=399).

and pediatric dermatology). Although similar percentages of men and women completed fellowship training, men and women differed significantly by type of fellowship completed ($P=.0188$). There were similar rates of dermatopathology and surgical fellowship completion between genders but almost 3 times the number of females who completed other fellowships. Type of fellowship training was a statistically significant predictor of income on both univariate and multivariate regression analyses ($P<.00001$ and $P<.0001$, respectively).

Work Activity—Respondents were asked to estimate the amount of time devoted to general dermatology, dermatopathology, Mohs micrographic surgery, cosmetics, and dermatologic surgery in their practices (Table). Women devoted a significantly higher average percentage of time to cosmetics (7.89%) compared to men (4.52%)($P=.0097$). The number of cosmetic procedures performed per week was not statistically significantly different between men and women ($P=.8035$) but was a significant factor for income on univariate regression analysis ($P=.0002$). Time spent performing dermatologic surgery, general dermatology, or Mohs micrographic surgery did not significantly differ between men and women but was found to significantly influence income.

Academic Dermatology—Among the respondents working in academic settings, χ^2 analysis identified a significant difference in the faculty rank between males and females, with a tendency for lower academic rank in females ($P=.0508$). Assistant professorship was comprised of 35% of men vs 51% of women, whereas full professorship consisted of 26% of men but only 13% of women. Academic rank was found to be a significant predictor of income, with higher rank associated with higher income ($P<.0001$ on univariate regression analysis). However, when adjusting for other factors, academic rank was no longer a significant predictor of income ($P=.0840$ on multivariate regression analysis). No significant difference existed between men and women in funding received from the National Institutes of Health, conduction of clinical trials, or authorship of scientific publications, and these factors were not found to have a significant impact on income.

Work Leave—Male and female dermatologists showed a statistically significant difference in maternity or Family and Medical Leave Act (FMLA) leave taken over their careers, with 56.03% of females reporting leave taken compared to 6.78% of males ($P<.0001$). Women reported a significantly higher average number of weeks of maternity or FMLA leave taken over their careers (12.92 weeks) compared to men (2.42 weeks) ($P<.0001$). However, upon univariate regression analysis, whether or not maternity or FMLA leave was taken over their careers ($P=.2005$), the number of times that maternity or FMLA leave was taken ($P=.4350$), and weeks of maternity or FMLA leave taken ($P=.4057$) were all not significant predictors of income.

Comment

This study sought to investigate the relationship between income and gender in dermatology, and our results demonstrated that statistically significant differences in total annual income exist between male and female dermatologists, with male dermatologists earning a significantly higher income, approximately an additional $80,000. Our

Productivity and Subspecialization by Gender

Characteristic	Overall, n (%)	Men, n (%)	Women, n (%)	2-sample *t* test or χ^2 *P* value[a]	Linear regression *P* value[b] (univariate/ multivariate)
Hours worked per week in direct patient care				<.0001	<.0001/.0402
<20	23/370 (6.22)	13/170 (7.65)	10/200 (5)		
20–29	83/370 (22.43)	22/170 (12.94)	61/200 (30.5)		
30–39	152/370 (41.08)	69/170 (40.59)	83/200 (41.5)		
≤40	112/370 (30.27)	66/170 (38.82)	46/200 (23)		
Patient visits per week,[c] mean/median (SD)(n=360)	111.56/100 (71.61)	123.46/112.5 (90.75)	101.38/100 (47.68)	.0052	<.0001/<.0001
Fellowship training area				.0188	<.00001/<.0001
Dermatopathology	40/145 (27.59)	21/66 (31.82)	19/80 (23.75)		
Complex/research/transplant/ pediatrics/other	39/145 (26.90)	10/66 (15.15)	29/80 (36.25)		
Surgery/cosmetics	66/145 (45.52)	34/66 (51.52)	32/80 (40)		
Practice type by area of focus, %mean/median (SD)(n=386)					
General dermatology	N=386 67.45/75 (31.21)	N=179 64.54/70 (31.70)	N=207 69.97/80 (30.63)	.0965	<.0001/<.0001
Dermatopathology	N=386 5.02/0 (15.36)	N=179 6.47/0 (16.69)	N=207 3.76/0 (14.03)	.0877	.4350
Mohs micrographic surgery	N=386 10.73/0 (25.80)	N=179 12.67/0 (27.85)	N=207 9.06/0 (23.82)	.1603	<.0001/.0443
Cosmetics	N=386 6.33/0 (12.62)	N=179 4.52/0 (9.23)	N=207 7.89/0 (14.78)	.0097	.0087/.0009
Dermatologic surgery	N=386 9.17/5 (11.94)	N=179 10.12/5 (13.64)	N=207 8.36/5 (10.21)	.1294	.1605/.9459
Cosmetic procedures performed per week, mean/median (SD)(n=354)	N=354 7.57/1.25 (15.01)	N=164 7.78/2 (15.25)	N=190 7.38/1 (14.84)	.8035	.0002/.0610

[a]Differences in gender for categorical predictors were analyzed using a χ^2 test of independence while the same for continuous predictors were analyzed using a 2-sample *t* test.

[b]All univariate models analyzed the effects of single predictors on income; predictors included in multivariate regression: gender, fellowship training area, role in private practice, faculty rank, practice type (eg, general dermatology, Mohs micrographic surgery focus, cosmetics focus, surgery focus), supervisory role, leave taken over career, characterization of city or town of practice, pay structure, hours worked per week in direct care, patient visits per week, cosmetic procedures per week, publications as author or coauthor.

[c]There was no significant difference between males and females for number of weeks worked per year.

results are consistent with other studies of US physician income, which have found a gender gap ranging from $13,399 to $82,000 that persists even when controlling for factors such as specialty choice, practice setting, rank and role in practice, work hours, vacation/leave taken, and others.[2-7,10-15]

There was a significant difference in rank of male and female academic dermatologists, with fewer females at higher academic ranks. These results are consistent with numerous studies in academic dermatology that show underrepresentation of women at higher academic ranks and leadership positions.[8,9,16-18] Poor negotiation may contribute to differences in both rank and income.[19,20] There are conflicting data on research productivity of academic dermatologists and length of career, first and senior authorship, and quality and academic impact, all of which add complexity to this topic.[8,9,12,16-18,20-23]

Male and female dermatologists reported significant differences in productivity, with male dermatologists working more hours and seeing more patients per week than female dermatologists. These results are consistent with other studies of dermatologists[4,24] and other physicians.[12] Regardless, gender was still found to have a significant impact on income even when controlling for differences in productivity and FMLA leave taken. These results are consistent with numerous studies of US physicians that found a gender gap in income even when controlling for hours worked.[12,23] Although fellowship training as a whole was found to significantly impact income, our results do not characterize whether the impact on income was positive or negative for each type of fellowship. Fellowship training in specialties such as internal medicine or general surgery likewise has variable effects on income.[24,25]

A comprehensive survey design and significant data elicited from dermatologists working in private practice for the first time served as the main strengths of this study. Limitations included self-reported design, categorical ranges, and limited sample size in subgroups. Future directions include deeper analysis of subgroups, including fellowship-trained dermatologists, dermatologists working more than 40 hours per week, and female dermatologists by race/ethnicity.

Conclusion

We have demonstrated that self-reported discrepancies in salary between male and female dermatologists exist, with male dermatologists earning a significantly higher annual salary than their female counterparts. This study identified and stratified several career factors that comprise the broad field and practice of dermatology. Even when controlling for these variations, we have demonstrated that gender alone remains a significant predictor of income, indicating that an unexplained income gap between the 2 genders exists in dermatology.

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APPENDIX

eTABLE. Practice and Professional Characteristics of Respondents

Characteristic	Overall, n (%)	Men, n (%)	Women, n (%)	2-sample *t* test or χ^2 *P* value[a]	Linear regression *P* value[b] (univariate/ multivariate)
Total annual income, US $				<.0001	
<100,000	11/399 (2.76)	8/185 (4.32)	3/214 (1.4)		
100,000–199,999	27/399 (6.77)	13/185 (7.03)	14/214 (6.54)		
200,000–299,999	103/399 (25.81)	31/185 (16.76)	72/214 (33.64)		
300,000–399,999	87/399 (21.8)	37/185 (20)	50/214 (23.36)		
400,000–499,999	66/399 (16.54)	33/185 (17.84)	33/214 (15.42)		
500,000–599,999	36/399 (9.02)	19/185 (10.27)	17/214 (7.94)		
600,000–699,999	23/399 (5.76)	16/185 (8.65)	7/214 (3.27)		
700,000–799,999	11/399 (2.76)	0 (0)	11/214 (5.14)		
800,000–899,999	8/399 (2.01)	6/185 (3.24)	2/214 (0.93)		
900,000–999,999	4/399 (1)	4/185 (2.16)	0 (0)		
≥1,000,000	23/399 (5.76)	18/185 (9.73)	5/214 (2.34)		
Practice type				.1489	<.0001/<.0001
Academic/ university	142/397 (35.77)	59/184 (32.07)	83/213 (38.97)		
Hospital based	24/397 (6.05)	8/184 (4.35)	16/213 (7.51)		
Solo private practice	96/397 (24.18)	45/184 (24.46)	51/213 (23.94)		
Group private practice (>3 physicians)	135/397 (34.01)	72/184 (39.13)	63/213 (29.58)		
Pay structure				.1437	.0008/.0012
Base salary	83/369 (22.49)	33/170 (19.41)	50/199 (25.13)		
Collection-based salary	156/369 (42.28)	81/170 (47.65)	75/199 (37.69)		
Salary plus incentive	130/369 (35.23)	56/170 (32.94)	74/199 (37.19)		

[a]Differences in gender for categorical predictors were analyzed using a χ^2 test of independence while the same for continuous predictors were analyzed using a 2-sample *t* test.

[b]All univariate models analyzed the effects of single predictors on income; predictors included in multivariate regression: gender, fellowship training area, role in private practice, faculty rank, practice type (eg, general dermatology, Mohs surgery focus, cosmetics focus, surgery focus), supervisory role, leave taken over career, characterization of city or town of practice, pay structure, hours worked per week in direct care, patient visits per week, cosmetic procedures per week, publications as author or coauthor.