ORIGINAL REPORT: EPIDEMIOLOGIC RESEARCH

Trends in Academic Dentistry and Oral Health Research Funding by Gender

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Abstract: ***Introduction:*** *Dental and oral health researchers compose a small share of the research workforce, and within this group female researchers form a much smaller share than male researchers. Additionally, a majority of full-time faculty appointments at dental schools are held by men, with women making up only 39% of full-time appointments. These factors suggest that there could be disparities between men and women in obtaining research funding.*

Objective: *The focus of our study was to determine whether there are gender differences in award funding obtained from the National Institute of Dental and Craniofacial Research or the National Institutes of Health (NIH).*

Methods: *NIH administrative data were analyzed by focusing on Research Project Grants (RPGs), the primary and most commonly used mechanism to support investigator-initiated research projects. Analyses involved 1 or 2 of the following variables: number of unique applicants or awardees, fiscal years 2007 to 2016, average age of unique applicants, awardee's degrees, awardee's age at first R01, and award rates.*

Results: *About two-thirds of RPG applicants and awardees were men. Although there were significantly more male applicants and awardees, there was no significant difference in award rate by gender, and there was no significant award rate variation through time or by degrees. The average ages of RPG applicants were similar for genders for all degrees, except that male dentists and PhD-dentists applying to the National Institute of Dental and Craniofacial Research were older and male MDs and PhD-dentists from dental schools applying to the NIH were older.*

Conclusions: *This study demonstrated that men in the dental/oral health workforce submit more applications and receive more NIH awards than do women; however, there was no difference in award rates between women and men and no difference in ages by gender at which the first R01 awards are received.*

Knowledge Transfer Statement: *Analyses of the implications of this study by the academic dentistry and oral health community could lead to establishing opportunities to expand the representation of women in dental and oral health research. Increasing the number of applications submitted by women may help achieve an equitable balance of grantees in the workforce.*

Keywords: National Institute of Dental and Craniofacial Research, dental education, dental research, dental schools, research personnel, awards

Introduction

Diversity in the biomedical workforce is essential to the advancement of knowledge, yet women remain underrepresented in academic positions (Hechtman et al. 2018).

Even though women's participation in the research workforce is increasing,

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the share of female dentists within the research workforce remains small (Elsevier 2017), with women holding only 39% of full-time dental faculty positions (American Dental Education Association 2017); moreover, not all 39% of women faculty have positions that require research, and for those positions that do, research support is often an important part of a successful academic career. The National Institutes of Health (NIH)—with a total budget of >$37 billion in 2018—is the major supporter of biomedical research in the United States and supports the research careers of thousands of academic investigators across the country (NIH Office of Budget 2018). The National Institute of Dental and Craniofacial Research (NIDCR), 1 of the 27 NIH institutes and centers, provides roughly 70% of the NIH's total research funding to dental institutions (Ferland et al. 2017). Previous studies found that dentists represent only 2% of the NIH-supported physician-scientist workforce (D'Souza et al. 2017), and from this group, female dentist-scientists received about one-third of the Research Project Grants (RPGs) awarded from 2008 to 2012 as compared with male dentist-scientists (NIH 2014; D'Souza et al. 2017). Because limited information exists on the dentist-scientist and oral health research workforce, there is a need for detailed analyses of the participation of women and men in dental and oral health research and the likelihood of women receiving NIH awards for dental and oral health research. The hypothesis for this study is that the large disparity in the number of dental and oral health research awards going to men as compared with women is not based on gender differences but rather is due to differences in the number of submitted applications. To assess this hypothesis, records from an internal NIH administrative grants database were analyzed. We examined 2 overlapping research populations: oral health researchers (NIDCR applications and awards) and researchers in academic dentistry (NIH applications and awards to dental institutions).

Methods and Materials

Data Collection

NIH application and award data by age and gender were obtained from the NIH Office of Extramural Research. Deidentified individual- and summary-level data were provided to the American Dental Education Association by the NIDCR. RPGs include the following NIH activity codes: R00, R01, R03, R15, R21, R33, R34, R35, R36, R37, R50, R56, R61, RC1, RC2, RC3, RC4, RF1, RL1, RL2, RL9, P01, P42, PM1, PN1, RM1, UA5, UC1, UC2, UC3, UC4, UC7, UF1, UG3, UH2, UH3, UH5, UM1, UM2, U01, U19, U34, DP1, DP2, DP3, DP4, and DP5. All RPG applications submitted to the NIH, regardless of whether they were discussed during peer review or not, were included in the analysis. Gender was self-reported by the applicants, and there were 4 designations: male, female, withheld (applicant clicked the "did not want to report" box), and unknown (applicant skipped the question). Over 90% of applicants self-reported as male or female; the withheld and unknown categories were excluded from the study. Applicants with MD-dentist degrees and MD degrees were combined, and applicants with MD-PhD-dentist degrees and PhD-dentist degrees were combined. NIH policy for sensitive, personally identifiable information (e.g., age, gender, and race) prohibits displaying data with sample sizes <10; the symbol Ø identifies instances where this was the case. Applications and awards under the American Recovery and Reinvestment Act of 2009 were excluded from the study. This study was submitted to the Southern Illinois University Institutional Review Board and deemed exempt.

Study Design

The goal of this study was to assess gender differences between NIH applicants and awardees in academic dentistry and oral health research, with a focus on 2 populations: 1) all NIDCR applicants and awardees from any organization (referred to as "NIDCR") and 2) all applicants and awardees from dental schools funded by the NIH (referred to as "NIH" or "NIH funding to dental schools"). Analyses assessed differences between men and women in combination with 1 or 2 of the following variables: number of unique applicants, number of awardees, fiscal years 2007 to 2016, average age of unique applicants, awardee's degree, awardee's age for first R01, and award rates. Award rate is defined as the number of awards made in a fiscal year divided by the absolute number of applications.

Statistical Analyses

Except for award rate, average age of unique applicants, and awardee's age for first R01, summary data were in the form of counts. Counts (e.g., the number of awardees in the various categories) were analyzed with a generalized linear model with a Poisson distribution and a log link function. Summary data for the average age of unique applicants and awardee's age at the time of first R01 were analyzed with a generalized linear model with a normal distribution and an identity link function. Summary data for award rate were analyzed with a generalized linear model with a binomial distribution and a logit link function. Although the use of a generalized linear model does not require the assumptions of data normality or equality of variances, for each model a studentized deviance residual plot was created and examined to detect trends that were not captured by the model. For the analyses in this study, the data distributions in the studentized deviance residual plots were judged acceptable and no cause for concern. To assess differences in percentages of men and women for each specific degree (PhD, MD-PhD, PhD-dentist, dentist, and MD), a test of the equality of proportions was performed. Because actual ages were available as raw data for awardee's age for first R01, descriptive statistics (means, medians, and standard deviations) were calculated and are provided in Tables 1 and 2, with the results of testing for data normality and equality of variances. For all analyses of this study, the null hypothesis of no

Table 1.
Ages for All Male and Female Researchers: NIDCR and NIH.

	Female	Male
NIDCR[a]		
Researchers, *n*	536	1,401
Minimum	27	27
Maximum	72	73
Mean	41.0	40.1
95% CI	40.4 to 41.5	40.0 to 40.5
Median	40.0	39.0
SD	6.7	6.6
25% to 75%	36.0 to 45.0	35.0 to 44.0
Normal distribution, *P* value	<0.001	<0.001
NIH[b]		
Researchers, *n*	274	673
Minimum	27	27
Maximum	62	73
Mean	41.6	40.3
95% CI	40.8 to 42.3	39.8 to 40.8
Median	41.0	39.0
SD	6.7	6.7
25% to 75%	37 to 46	35 to 44
Normal distribution, *P* value	<0.001	0.010

Age at the time of first R01 award for male and female researchers: NIDCR awardees from all organizations and NIH awardees from dental schools.
NIDCR, National Institute of Dental and Craniofacial Research; NIH, National Institutes of Health.
[a]Equality of variances, $P = 0.577$. Male-female age difference, $P = 0.014$.
[b]Equality of variances, $P = 0.481$. Male-female age difference, $P = 0.010$.

association was assessed. Because we thought that it would be unreasonable to consider that a real difference could occur in only 1 direction, 2-sided testing was used, and to partially control for multiple comparisons, the level of statistical significance was set at $P < 0.01$. Statistical analyses were performed with JMP Pro Statistical Software (release 13.2.1; SAS Institute, Inc.) and MedCalc Statistics for Biomedical Research (version 18.5; MedCalc Software bvba). Separate analyses were performed for NIDCR and NIH data.

To examine the association between gender and whether individual principal investigators submit applications and/or receive awards, associations were assessed with a generalized linear model analysis of covariance, for which the independent variables were fiscal year (covariate), gender, and the interaction between gender and fiscal year. For 2 separate analyses, the dependent variables were number of unique applicants and number of awardees. Plots of the linear regression lines of fit for men and women were created for the number of unique applicants per fiscal year and the number of awardees per fiscal year. For these analyses, the data were formatted so that each applicant was counted only once, no matter how many times he or she applied within each fiscal year interval (unique applicants); however, each fiscal year interval was treated independently, so if an applicant applied in >1 fiscal year interval, he or she was counted once in each fiscal year interval. In addition, the total number of unique applicants and awardees over all the

Table 2.
Ages for Male and Female Researchers Based on Degree.

	Dentist		MD		PhD		PhD-Dentist		MD-PhD	
	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male
NIDCR										
Researchers, *n*	14	35	46	132	390	965	47	147	39	122
Minimum	31	29	32	30	27	27	32	31	34	31
Maximum	56	73	59	59	72	71	57	62	59	60
Mean	44.3	43.6	44.2	41.5	40.3	39.4	41.9	41.3	41.8	42.0
95% CI	39.8 to 48.8	39.9 to 47.3	42.4 to 46.0	40.5 to 42.5	39.6 to 40.9	39.0 to 39.8	40.2 to 43.6	40.2 to 42.4	39.9 to 43.6	40.9 to 43.1
Median	45.5	42.0	43.0	40.0	39.0	38.0	41.0	40.0	40.0	41.5
SD	7.71	10.7	6.1	5.6	6.8	6.5	5.8	6.7	5.6	6.1
25% to 75%	38.0 to 51	35.0 to 50.3	40.0 to 48.0	38.0 to 44.0	36.0 to 44.0	35.0 to 43.0	37.3 to 46.0	36.0 to 46.0	38.0 to 44.0	38.0 to 45.0
Normal distribution, *P* value	0.602	0.010	0.085	<0.001	<0.001	<0.001	0.093	<0.001	<0.001	<0.001
P value										
Equal variances	0.185		0.426		0.346		0.261		0.498	
Male-female age	0.832		0.006		0.031		0.571		0.857	
NIH										
Researchers, *n*	12	31	11	43	196	424	44	125	11	50
Minimum	31	29	38	31	27	27	32	31	37	32
Maximum	53	73	59	56	62	68	57	62	47	56
Mean	43.0	43.3	47.3	40.6	41.1	39.8	41.5	40.5	42.1	42.5
95% CI	38.3 to 47.7	39.3 to 47.4	43.0 to 51.5	38.9 to 42.2	40.2 to 42.1	39.2 to 40.4	39.8 to 43.3	39.3 to 41.6	39.2 to 45.0	40.9 to 44.0
Median	43.5	39.0	49.0	40.0	40.0	39.0	40.5	39.0	41.0	42.0
SD	7.4	11.0	6.3	5.5	6.9	6.5	5.8	6.5	4.3	5.5
25% to 75%	36.0 to 49.5	35.0 to 47.5	41.5 to 51.8	36.0 to 44.0	36.0 to 45.0	35.0 to 43.0	37.0 to 45.0	35.0 to 45.0	38.3 to 46.8	39.0 to 45.0
Normal distribution, *P* value	0.475	0.005	0.595	0.190	0.002	<0.001	0.021	<0.001	0.022	0.106
P value										
Equal variances	0.172		0.346		0.187		0.370		0.639	
Male-female age	0.924		<0.001		0.018		0.370		0.832	

Age at the time of first R01 award for male and female researchers: NIDCR awardees from all organizations and NIH awardees from dental schools.
NIDCR, National Institute of Dental and Craniofacial Research; NIH, National Institutes of Health.

fiscal year intervals were calculated for each gender, with the percentages for men and women, differences between genders, and 95% CIs for the differences. For determinations of total number of unique applicants and awardees over all the fiscal years, a person was counted only once. For men, women, and degree type, summary data were provided for the total number of unique applications and total number of awardees. Preliminary analyses for these data were for differences between men and women (degree designation not included) and differences among degrees

(gender not included). These analyses were performed with a generalized linear model with a Poisson distribution and a log link function. Summary data were also provided for the average age of unique applicants, and these data were analyzed with a generalized linear model with a normal distribution and an identity link function. For the average age of unique applicants, median values were used for bars, and error bars were constructed with the minimum and maximum values (ranges) to provide an indication of data dispersion for each bar.

To examine the association between gender and award rate, we first determined how award rates varied between genders for fiscal years. Associations were assessed with analysis of covariance, for which the independent variables were fiscal year (covariate), gender, and the interaction between gender and fiscal year. A binomial distribution and logit link function were used for this analysis. If the interaction term was nonsignificant (indicating homogeneity of regression slopes), it was dropped from the model. Plots of the linear regression lines of fit for men and women were created. The distributions of award rates over the fiscal years were assessed for normality with the Shapiro-Wilk *W* test, and the distributions for both the NIDCR and the NIH were determined to be normal ($P \geq 0.01$); therefore, average award rates for men and women over all fiscal years were calculated. Differences between men and women in average award rates and 95% CIs for these differences were also calculated. For the second analysis to determine how award rates varied between genders for degrees, assessments were performed by testing the equality of proportions. For these analyses, the total award rates were used over all fiscal years (2007 to 2016).

To test the association between gender and the age at which individuals received their first R01s, data distribution normality was first assessed with the Shapiro-Wilk *W* test. Equality of variances was assessed with the Levene test, with gender being the independent variable. The first analysis assessed age differences for all men and women. In the second analysis, age differences between men and women were assessed per their degrees. For these analyses, a generalized linear model was used with a normal distribution and an identity link function. Descriptive statistics and *P* values for data normality, equality of variances, and differences between men and women were tabulated. Because of the relatively large sample sizes for this question, *P* values are given to 3 decimal points.

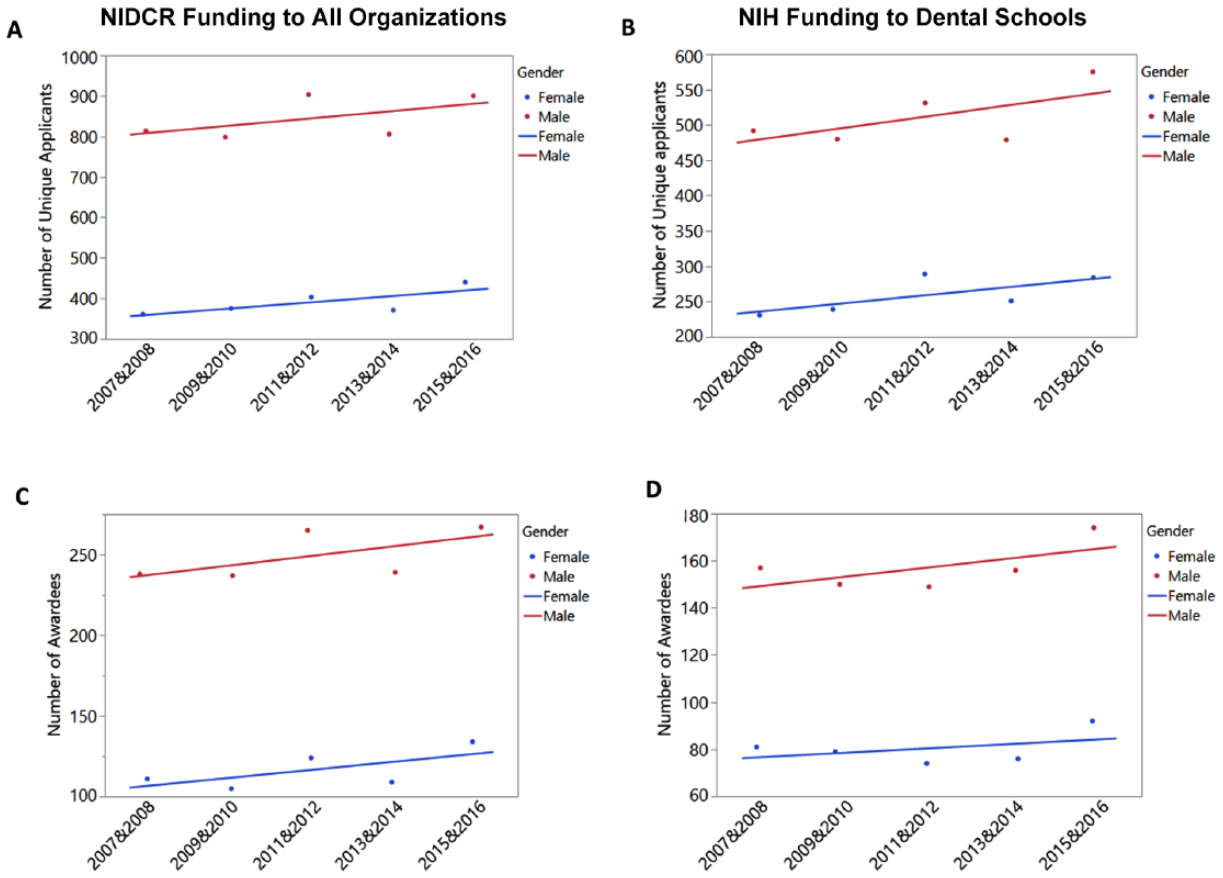
Results

The number of unique RPG applicants and awardees per fiscal year interval (2007 to 2016) was plotted per the results of the generalized linear model analysis of covariance (Fig. 1). The plots for male and female researchers represent the number of unique applicants per fiscal year (Fig. 1A, B) and number of awardees per fiscal year (Fig. 1C, D). For all models, the interaction terms were nonsignificant ($P \geq 0.35$), which means that the slopes of the fitted regression lines were equal, so the interaction terms were dropped from the models. All models were significant ($P < 0.01$) and showed significantly more male than female applicants and awardees ($P < 0.01$). For the NIDCR, the total number of unique RPG applicants over the fiscal years was 3,444, with 2,338 (68%) male researchers and 1,106 (32%) female researchers, a difference of 36% (95% CI, 34% to 38%). The total number of RPG awardees was 1,303, with 872 (67%) male awardees and 431 (33%) female awardees for a difference of 34% (30% to 38%). For NIH funding to dental schools, the total number of unique RPG applicants was 1,814, with 1,184 (65%) male researchers and 630 (35%) female researchers—a difference of 30% (27% to 33%). The total number of RPG awardees was 744, with 489 (66%) male awardees and 255 (34%) female awardees—a difference of 32% (27% to 37%). Although the linear regression lines of fit in Figure 1 indicate that both the number of unique applicants and the number of unique awardees increased with fiscal year, the increases were significant ($P < 0.01$) for NIDCR and NIH unique applicants but not for unique awardees (NIDCR, $P = 0.07$; NIH, $P = 0.23$).

The breakdown of RPG applicants and awardees by degree (PhD, MD-PhD, PhD-dentist, dentist, or MD) are plotted in Figure 2. The bars represent the combinations of gender and degree for the NIDCR and NIH regarding total number of unique applicants, total number of unique awardees, and average age of unique applicants. For some fiscal year categories, data were not available due to sample sizes <10. Differences between genders (without considering degree) and differences among degrees (without considering gender) were significant ($P <0.01$), except for the NIH average age of unique applicants ($P = 0.01$). For the NIDCR, the total number of unique RPG applicants and awardees was higher for male researchers for all degrees ($P < 0.01$), and the average age of unique applicants was higher for male dentists and PhD-dentists. For NIH funding to dental schools, the total number of unique RPG applicants was higher for male researchers for all degrees, and the total number of awardees was higher for male dentists, PhDs, and PhD-dentists ($P < 0.01$). Sample sizes for female MDs and MD-PhDs were <10; therefore, differences between men and women could not be assessed. For NIH funding to dental schools, the average age of unique applicants was higher for male MDs and PhD-dentists.

For both the NIDCR and the NIH (Fig. 3), no difference in RPG award rate was observed between genders, and award rates did not increase or decrease across fiscal years ($P \geq 0.15$). The distribution of award rates over the fiscal years (2007 to 2016) was assessed for normality and determined to be normal for both the NIDCR and the NIH ($P \geq 0.01$); therefore, average award rates for male and female researchers over all the fiscal years were calculated. As indicated by the

Figure 1. Number of unique applicants per fiscal year interval and number of unique awardees per fiscal year interval. The plots on the left (**A, C**) represent all RPG applicants or awardees to any organization funded by the NIDCR, while the plots on the right (**B, D**) represent all RPG applicants or awardees to dental schools funded by the NIH. The red and blue lines represent linear regression lines of fit for male and female researchers for the number of unique applicants per fiscal year and the number of awardees per fiscal year: (A, C) NIDCR and (B, D) NIH funding. For all plots, there were significantly ($P < 0.01$) more male researchers than female researchers. Increases across fiscal year intervals were significant ($P < 0.01$) only for the number of unique applicants for both the NIDCR and the NIH. NIDCR, National Institute of Dental and Craniofacial Research; NIH, National Institutes of Health; RPG, Research Project Grant.



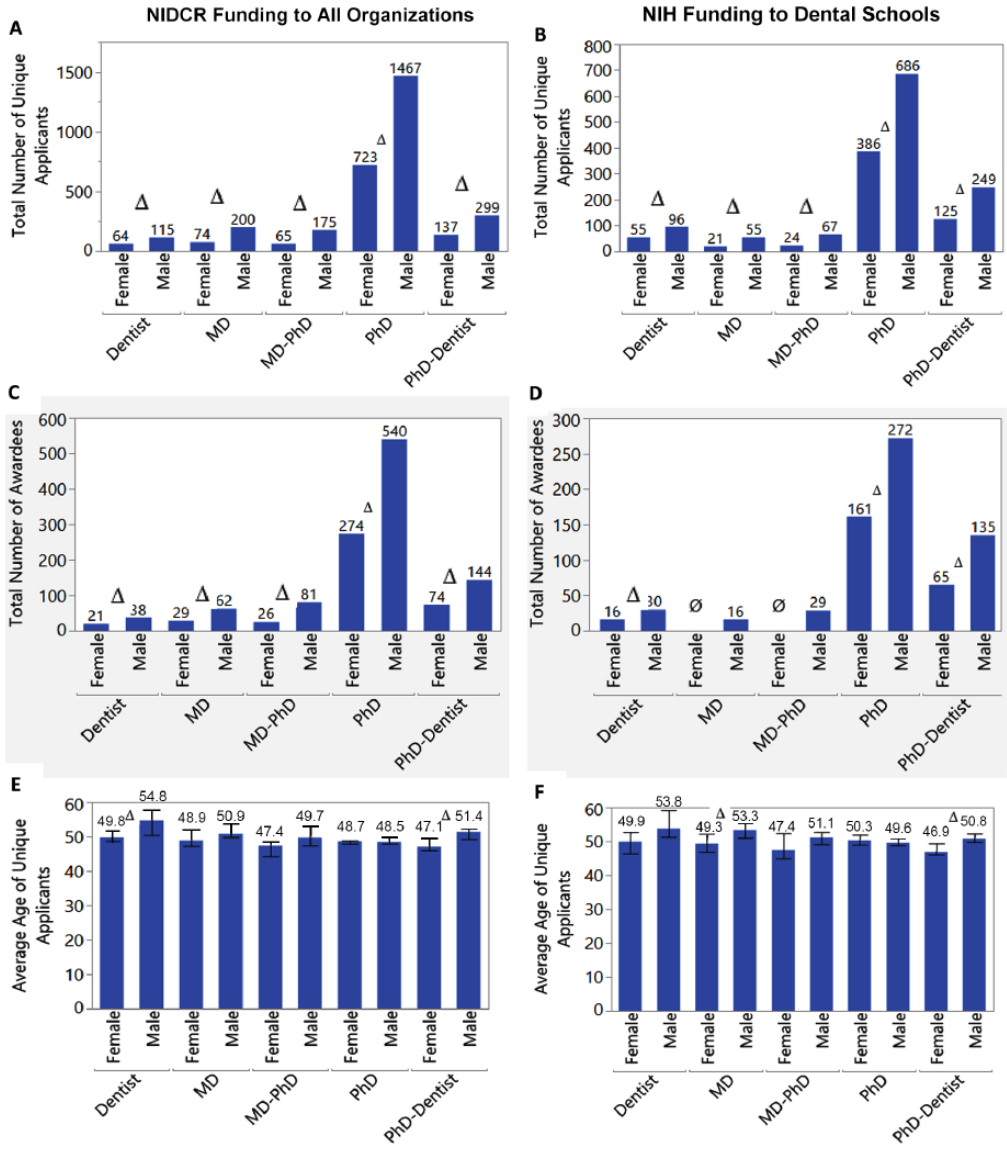
plots, the average RPG award rates over all the fiscal years for the NIDCR were equal for female and male researchers at 19% (95% CI, –22% to 22%). For NIH funding to dental schools, average award rates were 15% for female researchers and 17% for male researchers, with a difference of 2% (–19% to 23%). For both NIDCR funding and NIH funding to dental schools, there was no difference between men and women when controlling for degrees ($P \geq 0.12$) and no difference between degrees when controlling for gender ($P \geq 0.18$). RPG award rates to men and women were calculated for each degree type, and bar charts were created for NIDCR and NIH awards; none of the differences in RPG award rates between men and women were statistically significant ($P \geq 0.08$).

For the NIDCR, the only statistically significant difference between genders for the age at first R01 was for MDs, with the median age (nonnormal distribution) for female MDs being 3 y older than for male MDs ($P < 0.01$) (Table 2). Similarly, for NIH funding to dental schools, the only statistically significant difference was for MDs, with the mean age for female MDs being 6.7 y older than for male MDs ($P < 0.01$).

Discussion

This study showed that during the time frame examined, fiscal years 2007 to 2016, about two-thirds of oral health researchers (NIDCR RPG applications and awards) and researchers in academic dentistry (NIH RPG applications and awards to dental institutions) were men; however, there was no difference in award rates between men and women. These results support a recent assessment of all NIH data indicating that the NIH receives less than one-third of its new applications from women (NIH 2017). As a consequence, women receive less than one-third of the awards (Ginther et al. 2011; Pohlhaus et al. 2011; NIH 2017). In addition, our study showed that there were more male applicants for all degree types, but award rates were similar across all

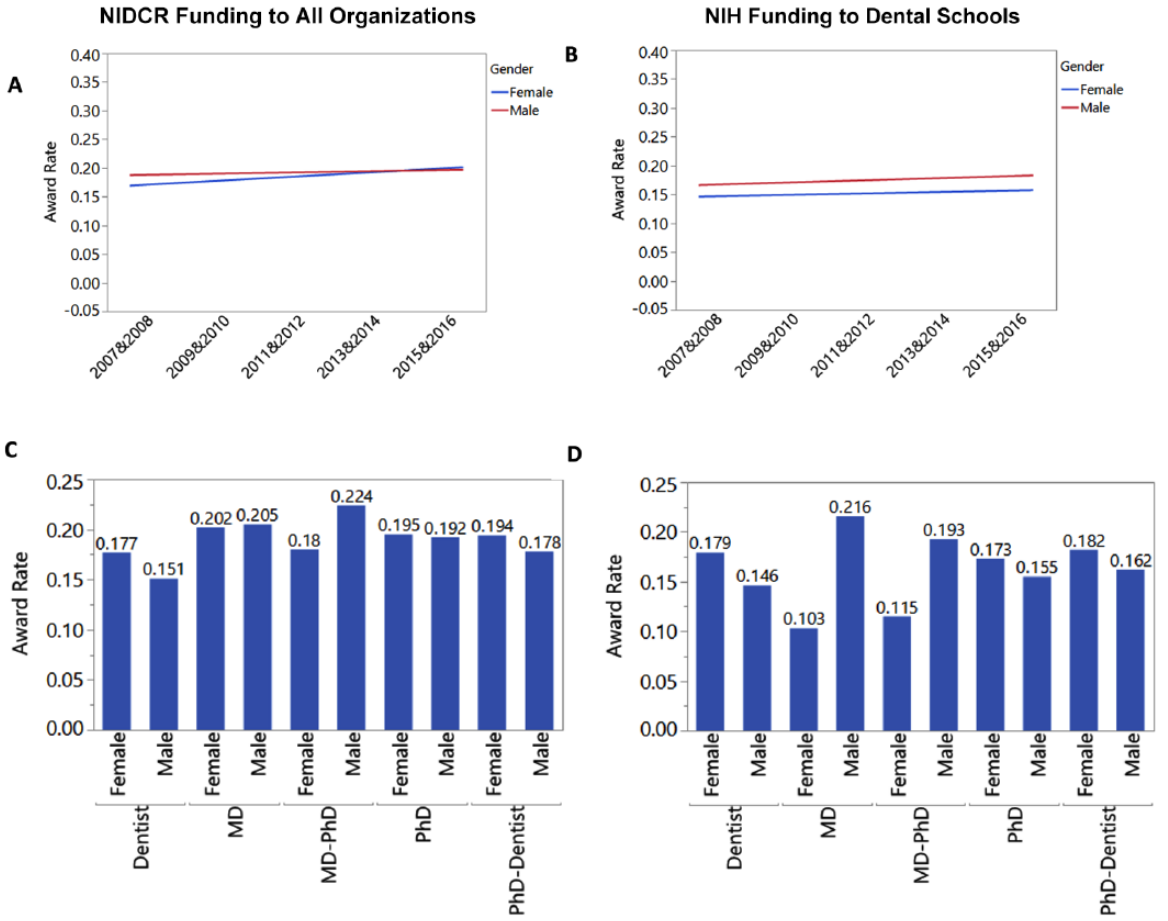
Figure 2. Total number of unique applicants, total number of unique awardees, and average age of unique applicants: (**A**, **C**, **E**) NIDCR and (**B**, **D**, **F**) NIH. The bar charts on the left represent all applicants or awardees to any organization funded by the NIDCR, while the bar charts on the right represent all applicants or awardees to dental schools funded by the NIH. The *x*-axis is the combination of gender and degree. (A–D) Total values. (E, F) Median values with error bars indicating mean minimum and maximum data for fiscal years 2007 to 2016. Δ, $P < 0.01$. Ø, sample size <10. NIDCR, National Institute of Dental and Craniofacial Research; NIH, National Institutes of Health.



degrees regardless of gender. These results suggest that, because there is no gender difference in RPG award rate, there would likely be equal numbers of male and female awardees if women and men submitted equal numbers of RPG applications.

Although there were significantly more male applicants and awardees, there was no significant difference in award rate by gender, and there was no significant award rate variation over time or by degree. These findings suggest that there is no bias in whether a male or female researcher receives an award once an RPG application is submitted. Such an absence of bias is supported by a 2011 publication in which >100,000 NIH application submissions were analyzed, and no evidence of gender bias in award rate was found (Ceci and Williams 2011). Although we did not analyze peer review data, such as the rating score applications received, we found no broad evidence suggesting peer review biases. However, other studies have reported gender biases in peer review. The conclusion of a 2016 study, in a small group of principal investigators (PIs) from a university in the Midwest, was that reviewers tend to give less favorable scores to female PIs than male PIs because the reviewers held female applicants to higher standards (Kaatz 2016). Despite the less favorable scores for women, their award rates

Figure 3. RPG award rates by gender, fiscal year interval (2007 to 2016,) and degree (PhD, MD-PhD, PhD-dentist, dentist, MD, or other). Results of analysis of covariance assessments are illustrated for (**A**) NIDCR data and (**B**) NIH data. The red and blue lines represent linear fits for male and female researchers, and data points (not shown) are for the degrees. Differences in award rates between genders and degrees are illustrated with bar charts: (**C**) NIDCR and (**D**) NIH. The *x*-axis for the bar charts indicates the gender and degree. The bars are total values for all fiscal years (2007 to 2016). The plots and bar charts on the left (A, C) represent all applications or awards to any organization funded by the NIDCR, while those on the right (B, D) represent all applications or awards to dental schools funded by the NIH. For all analyses represented in Figure 3, no significant difference was determined between genders ($P \geq 0.08$). NIDCR, National Institute of Dental and Craniofacial Research; NIH, National Institutes of Health; RPG, Research Project Grant.



were similar to those of men. Such biases against female faculty at the level of application review is concerning because scholarly performance and receipt of awards are intertwined and play fundamental roles in career advancement. However, our study and those cited here found that men and women have equal award rates.

We also assessed applicants' ages and found that the average age of RPG applicants was similar for both genders for all degrees, except that male dentists and PhD-dentists applying to the NIDCR and male MDs and PhD-dentists from dental schools applying to the NIH were older than their respective female counterparts. Using data from the 2014 findings of the NIH Physician-Scientist Workforce Working Group report (NIH 2014), D'Souza et al. (2017) found that the highest numbers of RPG applications from dentist-scientists were from the 41- to 50-y age group and the highest numbers of awards were from the 41- to 50-y and 51- to 60-y groups, regardless of gender. It was also noted that the average age of female dentist applicants for RPGs increased from 43.2 to 50.1 y, and a similar tendency was noted for male applicants, with an average age increase from 46.8 to 53.4 y. In 2012, the average age of dentist RPG awardees was 54.6 y for men and 52.7 y for women. These figures parallel the trends seen across MD, PhD, and MD/PhD career streams since 1999 (D'Souza et al. 2017).

Receiving one's first R01 is considered a measure of research independence in biomedical science (Nikaj et al. 2018). Since 1999, the average age of all first-time NIH R01 awardees has increased steadily from the early 40s to mid-40s across various degree types (D'Souza et al. 2017). In our analyses, women received their first NIDCR and NIH R01s at the same age as men, except

for MDs, for which the median age for women was older than that for men. Even though the number of women in academic dentistry is lower than the number of men, age differences of first-time R01 awardees are narrow, which suggests that gender disparity is not affecting the age at which men and women start independent research careers. A related question is, how long do women stay in independent research careers? Some evidence suggests that after receiving their first NIH awards, women and men have similar funding longevities, contradicting the assumption that women experience faster attrition than men (Hechtman et al. 2018); however, other findings have shown that men are more likely than women to apply for renewal awards and that women are less likely to resubmit unsuccessful NIH applications for further consideration after not receiving an award on their first attempt (Ginther et al. 2011; Hechtman et al. 2018; Nikaj et al. 2018). Additional analyses are needed to determine whether these observations are true in academic dentistry and oral health research.

We acknowledge as a limitation of our study that for the years of our study we did not have data on 1) the numbers of male and female academics in dental schools and 2) the ages of male and female faculty members. We suggest that analyses of such data could be components of future studies that would further increase knowledge about the representation of women in dental and oral health research.

The results of this study demonstrate that more NIDCR and NIH RPG awards go to men in the dental and oral health research workforce than women, predominately because men submit about two-thirds of the applications; however, there was no difference in RPG award rates between men and women and only a few differences in ages at which the first R01 awards are received. Further research is warranted discussing the implications of this study for academic dentistry and the potential opportunities to increase the representation of women in dental and oral health research.

Author Contributions

M.N. Garcia, contributed to conception, design, data analysis, and interpretation, drafted and critically revised the manuscript; J.P. Tiano, contributed to design and data acquisition, drafted and critically revised the manuscript; O. Contreras, contributed to data interpretation, drafted and critically revised the manuscript; C.F. Hildebolt, contributed to design, data analysis, and interpretation, drafted and critically revised the manuscript; J. Horsford, contributed to conception, design, data acquisition, and analysis, drafted and critically revised the manuscript; D. Stewart, contributed to conception, design, and data interpretation, drafted and critically revised the manuscript. All authors gave final approval and agree to be accountable for all aspects of the work.

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