Building a Diverse Workforce of Physician Scientists: Applications for Research Funding Are the Crucial First Step

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Male and Female Physicians in the US

Data Source: Physician Characteristics and Distribution in the US (AMA)
US Physician Specialties

Proportion of Women Residents, 2008

Obstetrics and Gynecology (78%)

Pediatrics (69%)

Medical Genetics (66%)

Dermatology (61%)

Urology (22%)

Thoracic Surgery (13%)

Orthopaedic Surgery (13%)

Neurological Surgery (12%)

Data Source: Women in Academic Medicine: Statistics and Benchmarking (AAMC)
Physician and Physician-Scientist Career Pathways

Data Sources: Physician Characteristics and Distribution in the US (AMA) and Women in Academic Medicine Statistics and Benchmarking (AAMC)
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Data Sources: Physician Characteristics and Distribution in the US (AMA) and Women in Academic Medicine Statistics and Benchmarking (AAMC)
US Medical School Faculty

Assistant Professor

Associate Professor

Full Professor

Data Source: Women in Academic Medicine: Statistics and Benchmarking (AAMC)
US Medical School Faculty

Data Source: Women in Academic Medicine: Statistics and Benchmarking (AAMC)
NIH Grant Support

K08, K23 (mentored)

K24

Associate Professor

R01 (and R03, R21, others)

K05

Full Professor

Data Source: Women in Academic Medicine: Statistics and Benchmarking (AAMC)
Career Development (K)
44% Female

R01 (and R03, R21, others)

K08, K23 (mentored)

K24

Assistant Professor

K05

Associate Professor

Full Professor

R01 (and R03, R21, others)

Research (R)
28% Female

Data Source: Women in Academic Medicine: Statistics and Benchmarking (AAMC)
Sex Differences in Career Development Awardees’ Subsequent Grant Attainment

TO THE EDITOR: Jagsi and colleagues (1) found a sex disparity in the achievement of National Institutes of Health (NIH) R01 awards by past career development (that is, K) awardees and raised concerns about the progression of women in research careers. Several of their conclusions deserve additional scrutiny and discussion.

Of greatest importance, as the authors acknowledged, they did not have information about application rates. Analyses by the NIH indicate that the rates at which K awardees subsequently apply for research grants are higher for men than for women. Among K08 recipients from 1995 to 1998, for example, 74% of men and 67% of women applied for an R01 award within 10 years ($P = 0.015$). Those disparities also were evident in the broader category of research project grants, in which 80% of male and 74% of female K08 recipients applied within 10 years ($P = 0.029$). However, NIH data show that when female K08 awardees apply for new R01 awards, they are equally or more successful than their male peers who hold the same types of degrees (specifically, we compared male and female MDs, including those with MD/PhDs). In addition, in the total pool of applicants for type 1 R01s, success rates for men and women

Finally, Jagsi and colleagues concluded that K awards are smaller for women than for men by comparing average total costs for all K awards. Because the entire pool of K awards includes mentored awards to junior investigators, individual awards to mid-career and senior investigators, and institutional awards to established investigators, true similarities—or differences—in direct costs between men’s and women’s awards were probably obscured. Furthermore, because individual K awards largely consist of salary support, any observed differences could be due to differences in institutional salary structure. The NIH continues to study these and other issues related to women in research and urges others to do the same (5, 6).

The transition to research independence will continue to be shaped by personal circumstances for both women and men. Nevertheless, we hope that concerns about sex-related differences in NIH funding are allayed and that all potential investigators will be encouraged to pursue NIH support. In most cases, applying for independent research funding is a critical first step on which scientific careers are built.

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Ann Intern Med May 4, 2010 152:616-617
Application, Funding, and Attainment Rates

- K Awardees
- Awardees who apply for R award
- Awardees who receive R award

Application Rate → Funding Rate → Attainment Rate
Success Rates calculated on an award/application basis.
All K08 Awardees: 1972 to 2008
All K08 Awardees: 1972 to 2008
# K08 → R01 Application, Funding, and Success

K08 Awardees 1990-2005; follow-up to 2008

<table>
<thead>
<tr>
<th>MDs and MD/PhDs only</th>
<th>Application Rate</th>
<th>Funding Rate</th>
<th>Success Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>F</td>
<td>961</td>
<td>59%</td>
<td>55%</td>
</tr>
<tr>
<td>M</td>
<td>2472</td>
<td>66%</td>
<td>60%</td>
</tr>
</tbody>
</table>
Conclusions

• Female K08 awardees generally progress more slowly to research independence
• Male K08 awardees generally have higher application rates
• No significant sex differences in success rates for K08 awardees
Future Studies

• NIH Career Development (K) Award evaluation (2010 release)
• Detailed study on sex differences in NIH programs (manuscript in preparation)
  – Participation rates
  – Application rates
  – Success rates
  – Funding rates
  – Direct costs
• Other continuing studies including regression models on K to R transition to research independence
Thank You
% Female Recipients of Mentored K Awards
(excluding recipients of unknown sex)

Data Source: RePORT.nih.gov
% Female Recipients of Research Project Grants (excluding recipients of unknown sex)

Data Source: RePORT.nih.gov