



Career Advancement for Women in Diabetes-Related Research: Developing and Retaining Female Talent

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To change the future you need a firm grip on history. Successful implementation of strategies to catalyze evolution of gender parity requires a coherent plan with clear deliverables. The article by Dunne et al. (1,2), simultaneously published in *Diabetes* and *Diabetes Care*, provides a much-needed foundation that defines the scope of the problem within the field of diabetes, documents stagnated progress over recent years, and offers suggestions for intervention. We applaud the authors and are encouraged that the American Diabetes Association (ADA) leadership is fully invested in being part of an effective solution. As nationally funded and internationally recognized women leaders in diabetes research, we are compelled to initiate the process of addressing the inequities brought to light by Dunne et al. to enhance the development and retention of female talent in our field. To initiate that process, here we discuss the observations by Dunne et al. and propose a set of concrete measures for achieving gender equity within diabetes-related professions.

Current Status

Dunne et al. observe that almost half (43%) of the attendees of the annual ADA Scientific Sessions national conference are women, demonstrating strong active participation of women. Women are also well represented in education-focused leadership positions comprising 83% of the then Vice Presidents and now Presidents of Health Care and Education over the last five decades and 89% and 49% of the editorial boards

for *Diabetes Spectrum* and *Clinical Diabetes*, respectively. In striking contrast, in the last 20 years, only 9% of ADA Presidents of Medicine and Science have been women (1,2), and since the inception of the ADA, only 5 of 81 ADA Presidents of Medicine and Science have been women. Further, women represent one-third or fewer of editorial board members for the highest-impact diabetes journals (*Diabetes Care*, *Diabetes*, and *Diabetologia*).

Of great concern, only 2–12% of all major achievement awards given by the ADA, JDRF, and the European Association for the Study of Diabetes (EASD) have gone to women. Dunne et al. (1,2) also report that women received less grant funding from JDRF and currently lead only 2 of the 18 National Institutes of Health–supported institutional Diabetes Research Centers. Lastly, the “Pathway to Stop Diabetes” is an ADA funding program designed to support a new generation of scientists at the “peak of their creativity.” While almost half of the institutional nominees for the ADA Pathway to Stop Diabetes Initiator Award (senior postdoctoral fellows) were women, only one-third of award winners were women. Furthermore, approximately one-third of the Accelerator Award (early career) and Visionary Award (established investigators new to diabetes research) nominees and award winners were women. Although it is promising that almost half of the Initiator Award nominees were women, as it suggests a solid pipeline of qualified women, major

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See accompanying articles, pp. 1623 and 1638.

changes in the award selection process are needed for these junior women to reach their full potential.

A Closer Look

Today, women outnumber men in MD and biomedical PhD programs in the U.S., a number that has been steadily increasing over the last 10 years (3,4). Despite an abundance of women in the pipeline, the representation of women in leadership positions within health and biological sciences has not kept pace (4). In the endocrinology field specifically, 49% of practicing endocrinologists and 70% of fellows but only 31% of board members of endocrine and diabetes societies were women in 2017 (5).

The factors driving these gender gaps are multifaceted, requiring multipronged solutions. Historically, men have been recipients of the most prestigious awards (e.g., the ADA Banting Medal for Scientific Achievement or the Outstanding Scientific Achievement Award), making it more difficult for nomination committees to “see” a woman in that place. A lack of transparency in the selection process obscures the number of women nominees. Award committees often comprise former award winners, and the gender balance of the rosters are often not made public. While this ensures that committee members are not unduly influenced, it raises a transparency issue. Further, with men in the majority of scientific leadership positions, men are more likely to be considered good candidates for prizes, leading to a self-perpetuating cycle that excludes women. A striking example is the Manpei Suzuki International Prize for Diabetes Research, for which all prize winners and selection committee members are men.

The Pathway to Stop Diabetes funding program by the ADA is for bold, innovative, and transformative research ideas. Institutions can nominate a single individual within three award categories. The Mentor Advisory Group (MAG) reviews the applications and mentors the award recipients, a tremendous benefit for future career success. This 34-member panel of leaders in the diabetes field includes only 7 women (<https://professional.diabetes.org/meetings/mentor-advisory-group>). The MAG composition and high percentage of male awardees suggests to promising female scientists that prestigious innovative grants are awarded to men. This disproportionate representation puts women applicants at a disadvantage due to unconscious bias reinforcing the need for women to demonstrate a higher level of success and the perception that women are less innovative (6–9).

Competing family responsibilities shouldered by women are cited as a major barrier to success, yet this is an oversimplification. Additional conditions including male-dominated institutional cultures, lack of women role models and mentors, and implicit and unconscious bias in recruitment, salaries, retention, and promotion are consistent obstacles for the advancement of women across all fields (9). For example, start-up funding, receipt of external funding, peer review, and even number of citations are biased

toward men and provide barriers for career advancement for women (10–13). Heavier burdens of nonresearch workloads including teaching, committee work, and professional society and institutional service are female predominant and undervalued. Poignantly, too much academic service can prevent women from advancing in research careers (12).

Diversity, Equity, and Inclusion

Inequity for women in academia is compounded by ethnicity/race. According to the American Association of Medical Colleges, only 2% of full-time faculty and 1.6% of all department chairs within U.S. medical schools are Black women (14). Encouragingly, the ADA has a health care disparities focus group and a diversity, equity, and inclusion (DEI) mission statement on its website. However, there seems to be limited membership engagement or enrichment specifically focused on DEI, a clear opportunity for growth.

Impact of COVID-19

Numerous studies document the disproportionately negative impact of COVID-19-related life changes on the academic careers of women compared with men (13,15–17). While the increased burden due to child-care and remote learning explains some of this negative impact, other factors also contribute. For example, on average, women have fewer research dollars (12,18), amplifying the devastating impact of laboratory shutdowns on productivity. Underrepresentation of women in medical research journal authorship (11,19) has been compounded, as COVID-19 has negatively impacted research publication productivity of women more than men (20). Research publications are required for academic advancement and contribute to national and international recognition. Thus, recent COVID-19-related trends will amplify gender inequity in career advancement, including within diabetes-specific fields, for years to come.

Action Steps

Now is the time to harness the widespread momentum to make institutions and academic societies more diverse at all levels. Permanent, measurable solutions that address gender and racial inequalities to ensure a diverse and productive workforce using all talent are imperative. Table 1 summarizes our suggestions. The data in Dunne et al. (1,2) are from diabetes-focused academic societies, and therefore our recommendations focus on these societies.

Academic Society Mission Statements

Academic societies need strong, action-oriented mission statements to achieve diversity. While we were unable to identify a diversity mission statement for EASD, ADA's diversity mission statement lacks steps for evaluation, improvement, and continued investment. We propose

Table 1—Proposed action for promoting equity and diversity in professional societies

Define concrete measures and implementation strategies for promoting diversity, equity, and inclusion
Appoint a “Diversity Advisory Panel” to shepherd selection processes for leadership positions and award selection and to advise on member engagement
Establish clear and equitable award criteria inclusive of a broad spectrum of career contributions
Commit to adequate representation of women and minorities on award selection committees, grant review panels, and editorial boards
Ensure gender and ethnic diversity of speakers and chairs at professional meetings
Implement unconscious bias training for members of grant review and award selection committees

that academic societies appoint a “Diversity Advisory Panel” to ensure that the society is addressing DEI at every step: leadership, awards, grants, and member engagement.

Academic Society Professional Meetings

National meetings should include speakers and chairs that are representative of the membership. Although not a written policy, this has been implemented by the Endocrine Society for their annual meeting. Societies need to track membership gender and ethnicity to generate the target representation. If family responsibilities limit travel to conferences, our newly acquired virtual skill set could add flexibility for speakers to present in person or virtually. Offering day care at national meetings would also support all speakers with family responsibilities.

Academic Society Peer Review and Award Selection Process

How articles are selected for publications, proposals for funding, and individuals for awards has a critical impact on academic advancement. The composition of editorial boards, journal peer review and grant review panels, award selection committees, and institutional promotion and retention committees should reflect the gender and ethnic representation of the larger scientific community. The diversity of these panels should be tracked to ensure adequate representation of women including among editors-in-chief. Importantly, *Diabetes Care* has a plan in place to address the gender imbalance on their editorial board as a portion of the board turns over this summer, and we encourage *Diabetes* and *Diabetologia* to follow their lead.

We propose a reassessment of the criteria for bestowing awards by broadening the transparency of those criteria and also of the selection process to highlight leadership skills attributed to men or women. For example, leadership qualities traditionally associated with women, such as consensus-building and teamwork, are essential to recent consortium-based progress in

diabetes fields. Grant review and award selection committees should introduce the concept of unconscious bias to reviewers and consider including formal unconscious bias training relevant to scientific review. The introduction of this type of training may take longer to implement and will require additional resources for proper training materials. For nomination-based awards, concerted efforts should be made to solicit nominations for women and minorities. Although challenging, some form of blinded review that does not reveal the gender or ethnicity of the nominee could help address both conscious and unconscious bias.

Academic Society Mentoring

One reason often cited as limiting the career trajectory of women is lack of mentorship. While PhD training involves formal research mentors, clinicians and other health care/educational professions have fewer formal options for mentoring. The ADA has made some investments in career development initiatives. First, the ADA hosts an annual career development meeting called “Focus on Fellows” for early career fellows; this is an excellent example of how a society can enrich young professional careers. The ADA also established the Women’s Interprofessional Network of the American Diabetes Association (WIN ADA), which expanded to over 3,000 members in just 4 years. They host a mini-symposium at the annual Scientific Sessions focusing on career development for women, and they cohosted a career development workshop for diabetes professional women.

While these are important first steps, expanded resources to address the intangibles of career advancement including topics such as communication, curriculum vitae/biosketch review, promotion packages, and grant writing should be embedded into ADA resources and Scientific Sessions. A network within the ADA that is specifically targeted to DEI would also be beneficial.

Academic Institutions

Dunne et al. (1,2) highlighted several recommendations for changes within the field of diabetes, and these suggestions are widely applicable across disciplines. Academic institutions need to examine and correct salary and start-up package inequities (12). There needs to be a broader definition of productivity beyond publications and professional invitations to account for gender biases. Academic institutions also need to provide structured mentoring to help junior scientists succeed. Finally, since academic institutions and professional societies are dependent upon faculty service for governance and for mission implementation, promotion criteria should be revised to acknowledge all aspects of career achievements, including mentoring, service, and other activities that promote the success of the larger research community rather than one individual research program.

Barriers

Although there is motivation to evoke changes that benefit women and minorities in diabetes, resources are needed. WIN ADA's rapid expansion would not have been possible without dedicated and motivated ADA support staff. ADA invested resources to support the WIN ADA networking reception and the implementation of the Lois Jovanovic Transformative Woman in Diabetes Award. However, the pandemic has had significant negative impact on the economy, and organizations that rely on philanthropy have been particularly vulnerable. ADA currently has staff shortages, limiting the ability and flexibility to implement large-scale change. There may be ADA professional members who would be willing to dedicate energy to help make the goals set forth in this article come to fruition. This pandemic has illustrated that with the right stimulus, change can happen fast. We are optimistic that the professional societies, academic institutions, and individuals that make up the field of diabetes are ready and willing to step up to make change happen.

Conclusions

Here we discussed the implications of the data concerning the state of women in the field of diabetes research brought to light by Dunne et al. (1,2). Based on these data, we outline a path forward for improving gender equity. Of great concern is the gender imbalance among presenters at annual society meetings, grant and achievement award recipients, grant and award review panels, and editorial boards, despite abundant female talent entering the field. Given the still significant disparity in career advancement between men and women and the disproportionate negative impact of the current pandemic on the careers of female scientists, the ability to harness the talent of women and minorities within diabetes research is at stake.

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