

A Mixed-Methods Investigation of the Motivations, Goals, and Aspirations of Male and Female Academic Medical Faculty

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Abstract

Purpose

Understanding the goals and aspirations of the physician–scientist workforce can inform policies to promote retention. The authors explored gender differences therein, given women's increasing representation.

Method

In 2010–2011, the authors qualitatively analyzed interviews with 100 former recipients of National Institutes of Health career development awards and 28 of their mentors. They also compared survey responses of 1,267 clinician–investigators who received these awards from 2006 to 2009, using logistic regression to evaluate gender differences after adjusting for other characteristics.

Results

Interview participants described relatively consistent career goals, including scientific contribution and desire to positively affect lives through research, clinical care, and teaching. For many, the specific ways they sought to achieve and measure goal attainment evolved over time. Survey respondents endorsed a goal of publishing high-quality research with highest frequency (97.3%, no significant gender difference). Women were more likely to endorse the importance of balancing work and other activities (95.5% vs. 90.5%, $P < .001$). There were no significant gender differences in the importance

of patient care (86.6%), teaching (71.6%), or publishing prolifically (64.9%). Men were more likely than women to consider salary (49.4% vs. 41.8%, $P < .001$), reputation (84.2% vs. 77.6%, $P = .004$), and leadership positions (38.9% vs. 34.3%, $P = .03$) important.

Conclusions

In an elite research-oriented sample, gender differences in initial aspirations were generally limited. Gender differences in career outcomes in such groups are unlikely to exclusively result from different baseline aspirations. Goals appear to evolve in response to challenges experienced.

Substantial research within the fields of psychology and human resource management has focused on goal setting, motivation, and performance in work settings,^{1,2} specifically regarding the relationship between goal commitment and subsequent achievement.^{2–4} Studies have suggested that young academic medical faculty may find it difficult to succeed if not adequately prepared at the outset of their career with well-reasoned and clearly defined goals.⁵ Numerous medical school faculty development programs aim to help junior faculty identify goals that will lead to career advancement.^{6–8} Moreover, many have speculated that observed gender

differences in outcomes of careers in academic medicine may relate to systematic differences in the goals and aspirations of men and women embarking on these careers.^{9,10}

Concern is growing that the future of academic medicine will be affected by a steadily diminishing physician–scientist workforce.^{11–18} Pololi and colleagues¹⁷ recently found that 21% of full-time faculty surveyed at 26 U.S. medical schools from 2007 to 2009 had seriously considered leaving academic medicine. Others have also demonstrated a considerable gender gap in the physician–scientist pipeline, with outcomes diverging between men and women as they progress through their careers.^{19–23} Existing qualitative evidence suggests that women face unique challenges that can eventually lead to the reevaluation of their priorities, a process which sometimes results in attrition from academic medicine.²⁴

Given interest in optimizing the physician–scientist workforce and pipeline, it is important to further investigate the motivations and goals of those who choose to pursue demanding

careers in academic medicine. These issues can be illuminated by consideration of the experiences of men and women who have received prestigious K08 and K23 career development awards from the National Institutes of Health (NIH).^{25,26} These elite clinician–investigators have demonstrated their commitment to pursuing a research career, but previous studies have shown that a substantial minority do not succeed, particularly women.²¹ Previous studies have also shown that the women in this population spend more time on domestic tasks than their male peers,²⁷ raising questions about the extent to which such differences reflect differences in the underlying values and goals of men and women pursuing such careers. In this mixed-methods investigation, we sought to explore the goals and aspirations held by this unique group of individuals, how they perceived their goals to have evolved over time, and whether this differed by gender.

Method

We obtained approval for this mixed-methods study from the University of Michigan institutional review board.

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We conducted qualitative analysis of responses to interviews with K-awardees and some of their mentors along with quantitative analysis of responses to a survey questionnaire, administered to recent recipients of NIH K-awards. The methods of each component of the study have been detailed more fully in previous publications using the same datasets but focused on other research questions.^{28,29} The research deliberately used both qualitative and quantitative methods together to reap the complementary benefits of these approaches in illuminating complex social phenomena; the survey component of the study allows greater generalizability but less opportunity to appreciate the rich and textured nuances of the participants' lived experiences, whereas the interview component offers the opposite. Results from the initial interviews were used to develop the constructs measured in the surveys, and analysis of the survey results allowed us to quantify how often men and women endorsed certain experiences and expectations in a broader sample.

Interview component

We used purposive sampling to select potential interview participants from individuals listed in the publicly available NIH RePORTER³⁰ database who received an NIH K08 or K23 award between 1997 and 2009. This approach deliberately included some individuals who were still relatively junior faculty and could speak regarding current goals, along with others who were more experienced and could reflect on their initial goals and any evolution over time. We conducted in-depth, semistructured interviews with 100 recipients and 28 of their mentors between February 2010 and August 2011.

We asked K-award recipients to discuss the kinds of things that they hoped to accomplish in their careers, the resources that were particularly important in helping them to achieve their goals, and whether their goals had changed over time (Supplemental Digital Appendix 1 and Supplemental Digital Appendix 2, <http://links.lww.com/ACADMED/A362>). We asked mentors to recount what their mentees had told them regarding what they hoped to accomplish in their careers and whether their mentees' goals had changed over time (Supplemental Digital Appendix 3, <http://links.lww.com/ACADMED/A362>).

We analyzed verbatim interview transcripts using accepted techniques of qualitative data analysis,³¹ including the participation of multiple coders for thematic coding. NVivo (version 8.0.332.0 SP4; Doncaster, Australia) software was used for the qualitative analysis. In this report, we describe the analysis of those responses coded as pertaining to goals and aspirations.

Survey component

We identified 1,719 recipients of new K08 and K23 awards in 2006–2009 using the NIH RePORTER³⁰ database and collected data on grant type (i.e., K08 or K23), award year, and institution characteristics. Between August 2010 and February 2011, we mailed a survey questionnaire along with a \$50 incentive to 1,708 awardees for whom we found valid U.S. mailing addresses.

We designed the survey questionnaire after consideration of previous instruments used to determine the characteristics and outcomes of academic careers,^{32,33} as well as preliminary results of our qualitative analyses. The 12-page instrument included a subsection that explored career goals and aspirations (Supplemental Digital Appendix 4, <http://links.lww.com/ACADMED/A362>).

We asked K-award recipients to indicate the importance of the following career goals: “having a department, school, or national leadership position”; “having a national or international reputation as an expert in my field”; “publishing high-quality research”; “publishing prolifically”; “earning a high salary”; “providing excellent patient care”; “teaching the next generation”; and “balancing work and other activities.” Four response categories were dichotomized for analysis (“very important” and “quite important” versus “somewhat important” and “not at all”).

We recorded respondents' self-reported gender; race and ethnicity (which we then grouped as white, Asian, or underrepresented minority); degree (which we grouped as MD, MD/PhD, or non-MD); marital status; and parental status. We also recorded the respondent's primary language (English or all other languages); the type of research (laboratory- or clinically based); academic rank (resident/fellow/research scientist/instructor, assistant professor,

associate professor, or full professor); specialty (non-MD, basic sciences, clinical specialties for women/children/families, hospital-based specialties, surgical specialties, or medical specialties); and K-award institution tier (four funding tiers based on the rank of the institution's total amount of NIH funding received as previously defined in a study by Jaggi et al²⁰). In addition, we merged survey responses to data previously collected from the RePORTER³⁰ database regarding K-award grant type (K23 or K08) and year.

We conducted quantitative analyses using SAS statistical software, version 9.2 (SAS Inc., Cary, North Carolina). We compared responses to the items regarding career goals by gender, using the chi-square test, and adjusted the comparison for race, marital status, parental status, whether English was the respondent's primary language, K-award type, K-award year, whether research was laboratory based, degree, academic rank, specialty, and K-award institution tier using logistic regression models. For all statistical comparisons, *P* values $\leq .05$ were considered significant.

Results

Qualitative findings

The demographic and other characteristics of the 128 interview participants are detailed in Tables 1 and 2. Below, representative quotations indicate gender, award recipient or mentor, and year of award.

K-awardees' broad goals generally fell into two categories: pure scientific and scholarly contribution; and positively impacting lives through teaching, mentoring, and/or improving patient treatment and outcomes. In general, tasks such as doing high-quality research, publishing, teaching, and caring for patients were depicted as core components of a career in academic medicine, and a desire for excellence in these tasks was shared by both men and women as common goals. Participants also described symbolic indicators of success that went beyond the tasks associated with their professional role, such as specific career milestones and accomplishments that they hoped to achieve. Finally, some discussed short-versus long-term goals and explained how these could evolve over time.

Table 1

Characteristics of 128 Qualitative Study Participants, From a Mixed-Methods Analysis of Motivations, Goals, and Aspirations of Academic Medical Faculty by Gender, 2010–2011

Characteristic	No. (%) of K-awardees (n = 100)	No. (%) of mentors (n = 28)
Gender		
Women	67 (67)	9 (32)
Men	33 (33)	19 (68)
Race-ethnicity^a		
White/Caucasian	76 (76)	24 (86)
Black/African American	7 (7)	0 (0)
Hispanic/Latino	3 (3)	0 (0)
Asian/Asian American	18 (18)	0 (0)
Not reported	1 (1)	4 (14)

^aPercentage exceeds 100 because some participants reported more than one race/ethnicity.

Table 2

Characteristics of 100 Qualitative Study K-Awardees, From a Mixed-Methods Analysis of Motivations, Goals, and Aspirations of Academic Medical Faculty by Gender, 2010–2011

Characteristic	No.
K-award type	
K08	38
K23	62
Degree type	
MD or DO	56
MD or DO with PhD	16
Other clinical doctorate	28
Specialty	
Medical	40
Surgical	3
Families, women, or children	15
Hospital based	13
Other	28
Not reported	1
Institution type (at time of K-award)	
Public	45
Private	54
Nonprofit	1
Received R01 or equivalent funding	
Yes	38
No	62
Current career status	
Academic institution	80
Government	2
Independent research institution	1
Industry	7
Nonprofit	3
Private practice	7

Scientific and scholarly contribution.

Many K-award recipients and mentors discussed a general interest in science as well as the common desire to generate ideas and gain new knowledge. Many respondents described a passion for answering research questions as well as a desire to advance their fields through scholarly contribution.

I think I've always been a pretty ambitious scientist.... I think I've always been a scientist who wants to know about a lot of different things and move into new territories that I've never been in before. (Male, K-awardee, 2003)

There are certain hypotheses that I have that I kind of want to prove are right. And I kind of want to just get a couple of good thoughts out there and contribute something. (Female, K-awardee, 2005)

Of note, several K-awardees felt that it was particularly important to publish their findings in order to maximize their impact in the scientific community.

I think I certainly would like to continue to do research ... and, hopefully, publish notable work in the top journals. That's always going to be the goal. (Male, K-awardee, 2003)

Projects or papers or manuscripts where people look at them and say, "Wow, this was an important paper ... it contributed to the way we thought about the issue. It made us think about it differently." ... Those are the types of papers and projects in terms of research that ... I would strive for. (Female, K-awardee, 2009)

Impacting lives. K-awardees also often commented that they wanted to have a

positive impact on individual lives, the surrounding community, and society as a whole. Some hoped to accomplish this by improving the quality of patient care in some way or by engaging in clinical and translational research.

I have bigger goals for what I want to see happen in the world and genuinely believe that in doing good research you can improve care. (Male, K-awardee, 2004)

I hope to really help patients with my research and really introduce new and innovative ideas or difficult-to-accept ideas into clinical practice that can really help change the quality of life for patients and their loved ones. (Female, K-awardee, 2004)

Other K-award recipients aspired to impact lives by teaching and mentoring the next generation.

I would love to ... provide good training to people who go on in the field, so that it's not just my work but the work of the people who I've trained who do more and contribute. (Female, K-awardee, 2004)

I would like to train future physician-scientists ... and show them the pleasure of working ... in laboratory-based science, and hopefully convey my love for this. (Male, K-awardee, 2002)

Of note, balancing teaching and clinical activities alongside research endeavors emerged as an important goal.

[My mentee] said she wanted my job.... I do research, teach, and I still see patients. I'm one of those triple threat kind of guys. And I've had some [mentees] want to do that. (Male, Mentor)

A number of female K-award recipients noted that they aspired to obtain or maintain a position with a mix of research, teaching, and clinical work.

My teaching and clinical, although I don't spend a lot of time on that, it's really important to me. I want to stay good at that, and I'm a little bit different than some of the other researchers in the division. (Female, K-awardee, 2007)

Several men mentioned circumstances that led them to abandon some of these activities.

I will be relinquishing ... all of my medical duties, which is a bit of a sacrifice because ... I do really aspire to the classic career of an academic physician which includes some mentoring, some clinical care, and some research. (Male, K-awardee, 2002)

Career milestones and accomplishments.

K-awardees indicated a desire to attain a wide range of career milestones and accomplishments. The eventual achievement of promotion and tenure was a common expectation.

I'd like to eventually be a full professor. (Female, K-awardee, 2002)

I'd like to get the tenure this fall, and obviously that would be very important for me. (Male, K-awardee, 2001)

Some K-awardees wished to garner prestige, recognition, and a national and/or international reputation in their field.

I think we are considered in my field to be really at the top of the game.... I'm happy with that. I want to maintain that position and solidify it. (Male, K-awardee, 2003)

I ... would like to ... become known internationally for my work. (Female, K-awardee, 2005)

Others commented that they hoped to eventually obtain a leadership position.

I eventually hope to become a research head of either a [division] or a whole department. (Female, K-awardee, 2003)

I would like to move up to like an associate dean or an office in the provost office. (Female, K-awardee, 2004)

Eventually one of my goals is to obviously become a head of the division.... So that's where I see myself down the line. (Male, K-awardee, 2001)

Notably, several K-awardees were focused on achieving sustainability and financial independence through job stability and research funding.

It's no trivial thing to remain gainfully employed and to remain sort of funded. That's certainly a primary goal. (Female, K-awardee, 2005)

I want to be able to continue to make an impact in the field of my content area ... to be able to continue to be able to support myself ... particularly through NIH funding to do my own projects. (Male, K-Awardee, 2004)

In general, mentors described the same career milestones and accomplishments when discussing their observations of and expectations for their protégés.

I think [my protégés] want to be leaders in academic medicine ... sometimes that means they end up being the chief of the service someplace. (Female, Mentor)

Prominence in the field—that's important. People do want recognition for their work. Promotion in academia and some assurance of at least some degree of stable funding is also important. (Male, Mentor)

Short-term vs. long-term goals. Both K-awardees and mentors recognized a distinction between short-term and long-term goals. They observed that individuals early in their careers tend to pursue goals that are specific and practical and that can be completed on a day-to-day or step-by-step basis. These more immediate goals can include publishing a certain number of papers or getting a certain grant funded.

[Protégés] don't say I want to be a hero, I want to be a professor, I want to be a dean.... In the early stages, they want to get up on the stage and present a paper in front of their peers ... usually, their initial desires are pretty modest. (Male, Mentor)

Usually [my protégés] are trying to finish their fellowship, get their paper published or accepted for publication, get their grants submitted and get their grants funded.... What I'm hearing from them is more of the immediate goal, not the long-range goals. I never heard anyone say, "Well, I want to become a division chief or department chair." (Female, Mentor)

In contrast, experienced individuals were expected to have shifted to broader, overarching, and more meaningful long-term goals, such as having an important leadership position, impacting society or the community, or advancing one's field in a particular area.

When one is a little bit earlier in one's career, one looks for sort of superficial markers ... a number of papers and stuff and that kind of thing, but then as one continues in one's career, you kind of realize in fact those are kind of superficial markers. So, I think from that standpoint, [my goals] probably have changed. (Female, K-awardee, 2002)

[My junior protégés] want to do the next proximal step—that is, they want to write a paper; they want to get an NIH grant ... they want to get a good faculty position.... Over time, in several of them it also evolves into bigger things ... they want to have an impact on health; they want to push medicine forward. (Male, Mentor)

Notably, short-term goals were seen by some as helping set the stage toward developing more long-term goals.

You evolve over time. It's not like you start your academic career and ... say here are my goals and I'm going to spend the next 15 years working on these.... Typically, what you do is set short-term and long-term goals and the short-term goals eventually affect the long-term goals. (Male, K-awardee, 2000)

Bounded aspirations. K-award recipients occasionally discussed how their goals and aspirations changed over time and the factors that influenced a shift in focus or priorities. Various conflicts and considerations were identified, particularly the pursuit of science and scholarship being dependent on adequate funding, discovering a lack of fit or having low satisfaction with certain aspects of an academic research career or institutional environment, and the need to maintain balance between career and family life.

Funding. K-award recipients often discussed the difficulty of pursuing their scientific and scholarly goals without the guarantee of funding and job stability.

Without large grants to pay chunks of my salary, I could not continue with any kind of level of research or scholarly activity. (Male, K-awardee, 1999)

Some had considered careers outside of academia in order to maintain the level of funding needed to support their research.

I interviewed for a couple of jobs in the pharmaceutical industry, and I thought very seriously about leaving academic medicine and going into industry because that was an opportunity to do 100% research and leave the trials and tribulations of grant support behind. (Male, K-awardee, 2001)

I like what I do, but I do not like the fact that the funding for it is so up in the air ... if I get to the point where the issue is, "Gee, you have no NIH [funding]—your grants are running out, nothing else is coming in," and there is this job at a biotech company down the street, I'll take the job; without a doubt ... there has to be some more reliable source of funding. (Female, K-awardee, 2003)

Others had thought about leaving research altogether and focusing on clinical work.

As funding gets dry, you really start wondering whether you're going to be able to do this and whether you're going to have to go some other thing ... that's always in the back of my mind.... The good thing is, as being an MD as with your PhD, you can always fall back on doing a clinical position. (Male, K-awardee, 2002)

I still don't know if I have enough [research] funding for more than the next few months from now.... I'm really privileged that my fall-back is being a doctor, but I really don't know if I'm going to end up having to just do clinical work ... pretty soon. (Female, K-awardee, 2005)

Some mentors indicated that they had observed this concern about funding among a few of their protégés.

I've had three physician mentees who started out as laboratory based and have taken on primarily clinical academic careers because they couldn't obtain funding.... My current mentees ... all wonder if they're going to have to transition to some other forms of careers than they had envisioned. (Male, Mentor)

Lack of fit or low satisfaction. A number of K-awardees explained that they had altered their career paths after discovering a lack of fit or having low satisfaction with certain aspects of an academic research career and/or the environment at their academic institution. A few discussed in particular the lack of appreciation and support from their institution or their frustration due to too many conflicting demands. One woman who chose to pursue a career in private practice explained:

I was not really enjoying the research as much as I felt that I wanted to be in order to make ... the sacrifices that I had been making ... both on a professional level and ... on a personal level ... I never quite felt that the accomplishments were being appreciated or encouraged. (Female, K-awardee, 2007)

A man who left academia for the pharmaceutical industry also recounted his frustrations:

I really couldn't accomplish a lot of the things I wanted to, either as a teacher or as a clinician or as a researcher.... I was ... expected to do a lot more in the time that I was allotted to these things, and it was not possible. So ... I decided "Well, I want to do research so I will go and do research alone." (Male, K-awardee, 2000)

Some mentors observed similar levels of dissatisfaction among their own protégés.

Some people simply don't like the academic grind ... the increased clinical demands and being pulled in too many directions, and they find that stressful or annoying and think there are places where they would fit in better. (Male, Mentor)

Maintaining balance. As reported in detail elsewhere,³⁴ female K-awardees were more likely than their male counterparts to discuss work-life balance as a significant personal concern during their interviews. Several female K-award recipients also commented that the issue of work-life balance sometimes led to a reevaluation or modification of their career goals, particularly with regard to a shift in focus towards raising children and/or the decision to prioritize family life. Notably, these women believed that they could still achieve success, engage in a meaningful career, and offer important professional contributions, albeit at a slower pace or in a different environment.

I think the goals have always been the same, but I think they have been modified by the fact that I have children now.... The timeline is a lot longer than it used to be ... by 10 years I was going to be full professor with three R01s, and now I'm willing to extend that to a 30-year plan to accommodate my personal life. But otherwise, I have never lost track of the fact that I want to be making important contributions to academia. (Female, K-awardee, 2003)

I think for me to really advance as a leader, I would have to leave here. And right now it's very comfortable here and we really like our personal and professional lives.... When I got recruited to one place the chair said, "Well, if you have ambition, you'll move."... I ... said ... "I'm not sure why I'd leave here; things are going great," and she ... said, "If you have ambition you will."... You don't always make the most ambitious move if it doesn't feel right for your whole family. (Female, K-awardee, 2005)

Some female mentors acknowledged the importance of work-life balance when considering the goals and future accomplishments of their protégés.

[My protégés] want to have good careers, but they also want to have families; they want to have a balanced life.... Those are, I think, great goals. (Female, Mentor)

One female mentor recalled feeling disappointed when two female protégés changed their career trajectories to spend more time with their families, but acknowledged the difficulty that women in particular face when trying to balance family life with competing professional responsibilities.

I had [a protégé] give up after she had had a K-award, and she had an MD-PhD ... she decided it was time in her life to get

married ... to strictly do clinical work.... That was a big disappointment to me.... I think she's had two children since then. I think there's a good possibility that she'll be interested in returning somewhat to academic medicine after her kids are grown.... Another more recent one was another gal who had an MD-PhD ... and two small children ... she also—I think probably for the time being and will come back—took a purely clinical job. So I think doing what I do to try and keep people involved in clinical work, as well as research and raising a family, is an extraordinarily difficult thing to do.... That's just really hard for young women with a family. (Female, Mentor)

Quantitative findings

We received 1,275 completed questionnaires from the 1,708 individuals we contacted (74.6% response rate). Of the 1,275 respondents, 1,267 (99.4%) reported an academic affiliation and constituted the analytical sample. The characteristics of the 582 women and 685 men in the sample are detailed in Table 3. Of note, male respondents were more likely to hold MD/PhD degrees (208 [30.4%] vs. 90 [15.5%]; $P < .001$). Women were more likely to hold non-MD clinical doctorates (146 [25.1%] vs. 72 [10.5%]; $P < .001$). Men were more likely to have received K08 awards (412 [60.2%] vs. 212 [36.4%]; $P < .001$). Men were also more likely to be married (630 [92.2%] vs. 508 [87.4%]; $P = .006$) and to have children (560 [82.0%] vs. 445 [76.6%]; $P = .02$).

The vast majority of respondents reported that it was important to publish high-quality research (1,227; 97.3%), balance work and other activities (1,171; 92.8%), provide excellent patient care (1,063; 86.6%), and have a national or international reputation as an expert in the field (1,024; 81.1%). Respondents also frequently reported that it was important to teach the next generation (903; 71.6%) and publish prolifically (817; 64.9%). Fewer respondents reported that it was important to earn a high salary (578; 45.9%) or to have a department, school, or national leadership position (463; 36.8%).

Figure 1 depicts the perceived importance of career goals by gender. For the four goals related to core job functions (publication quality, publication quantity, clinical care, and teaching), we observed no gender differences (Supplemental Digital Appendix 5, <http://links.lww>).

Table 3
General Characteristics of 1,267 Total Analytic Survey Respondents, From a Mixed-Methods Analysis of Motivations, Goals, and Aspirations of Academic Medical Faculty by Gender, 2010–2011

Characteristic	No. (%) of women	No. (%) of men	P value
K-award type			< .001
K08	212 (36.4)	412 (60.2)	
K23	370 (63.6)	273 (39.8)	
Degree			< .001
MD only	346 (59.5)	405 (59.1)	
MD and PhD	90 (15.5)	208 (30.4)	
Non-MD	146 (25.1)	72 (10.5)	
Academic rank			.32
Fellow/resident/research scientist/instructor	55 (9.5)	57 (8.3)	
Assistant professor	436 (74.9)	490 (71.5)	
Associate professor	88 (15.1)	132 (19.3)	
Professor	3 (0.5)	6 (0.9)	
Marital status			.006
Married or domestic partnership	508 (87.4)	630 (92.2)	
Single (never married)	57 (9.8)	35 (5.1)	
Divorced or widowed	16 (2.8)	18 (2.6)	
Children			.018
Yes	445 (76.6)	560 (82.0)	
No	136 (23.4)	123 (18.0)	
Race			.59
White	408 (46.1)	478 (54.0)	
Asian	126 (21.8)	158 (23.3)	
Other	44 (7.6)	43 (6.3)	

com/ACADMED/A362). However, we observed significant differences for the three goals related to recognition of contributions, as well as for the goal related to balance between work and other activities. Female K-award recipients were more likely to consider balancing work and other activities important (554 [95.5%] vs. 617 [90.5%], $P < .001$). Male K-award recipients were more likely to consider earning a high salary (337 [49.4%] vs. 241 [41.8%], $P < .001$); having a national or international reputation as an expert in the field (574 [84.2%] vs. 450 [77.6%], $P = .004$); and having a department, school, or national leadership position (265 [38.9%] vs. 198 [34.3%], $P = .03$) important.

Discussion

In this mixed-methods study of clinician–researchers holding NIH K08 and K23 career development awards and their mentors, we found that men and women holding these awards appear to

begin their careers with certain common goals. Among our survey respondents, who were relatively early in their careers, we did not observe gender differences in goals related to core roles (research productivity, clinical care, or teaching), but we did observe differences in goals related to recognition of performance (reputation, leadership, and salary) as well as the goal of balancing work with other activities. In our interviews with a more experienced cohort of K-awardees, we found that a variety of experiences and challenges appear to bound the ability to pursue initial goals and may ultimately lead to their evolution and redefinition over time. Women may be, from the outset, less focused on recognition of their contributions than men, more likely to find work–life balance a salient issue, and also more likely to adapt their goals and aspirations in ways that ultimately lead to observations of diminished success when measured by certain metrics, particularly those relating to recognition rather than

productivity. These findings together suggest that gender differences in career outcomes in academic medicine have complex roots.

Notably, a number of K-award recipients discussed factors that could influence a change in focus or priorities. Our qualitative findings suggest that the increasing value placed on work–life balance in academic medicine, the tremendous difficulty in being able to secure adequate funding, and low levels of job satisfaction, particularly with regard to lack of appreciation and enjoyment of one’s work, may all play a role in some K-award recipients’ decisions to pursue alternative career paths.

Previous studies suggest that commitment to goals is associated with both the value assigned to the goals and the expectation that the goals are achievable.³⁴ Locke and Latham’s theory of work motivation and job satisfaction, known as the “high performance cycle,”^{32,35} further suggests that challenging goals result in high performance if paired with a high expectancy of success; rewards that accompany high performance can lead to job satisfaction which, in turn, can embolden commitment to an organization and its goals; and employees who feel unsuccessful or who feel that they are not rewarded fairly for their accomplishments will likely be dissatisfied with their jobs and unwilling to remain at their organization. Thus, attrition from academic medicine may be more so due to a combination of conflicting values (e.g., with regard to work–life balance), inadequate rewards (e.g., lack of acknowledgment), low expectancy of success (e.g., too difficult to get grants), and a resulting shift in focus or priorities (e.g., pursuing private practice).

Evidence from our prior work suggests that gender disparities in salary²⁸ and success²¹ in academic medicine continue to exist. Such differences could be partially explained by the results of the current survey, which demonstrate that male K-award recipients were more likely to indicate the importance of earning a high salary; having a national or international reputation; and having a department, school, or national leadership position. Of note, female survey respondents were also slightly more likely to report the importance of balancing work and other activities

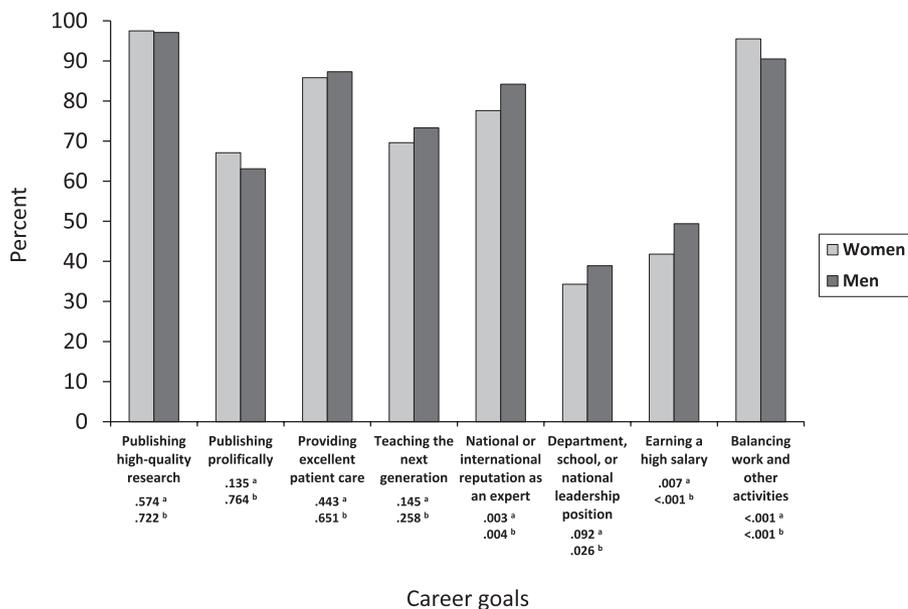


Figure 1 Comparison of career goals by gender, from a mixed-methods analysis of motivations, goals, and aspirations of academic medical faculty by gender, 2010–2011. This figure shows the percentage of 1,267 respondents to a survey of K-award recipients, by gender, who reported the perceived importance of various career goals. Significant differences by gender existed in having a department, school, or national leadership position; having a national or international reputation as an expert; earning a high salary; and balancing work and other activities.

^aP value for unadjusted chi-square (unadjusted comparison of gender).

^bP value for logistic regression Wald test (adjusted comparison for race; marital status; having child/children; English as primary language; K-award type; year of K award; indicator for laboratory based; degree [MD, PhD vs. MD/PhD]; academic rank; specialty; and K-award institution tier).

compared with their male counterparts. These survey findings were generally supported by the qualitative portion of our study as women were more likely to discuss work–life balance as a significant personal concern during their interviews.³⁴ While there were a number of women who expressed a desire to achieve recognition and leadership positions, others described how they had reevaluated or modified their career path, specifically with a shift in focus towards raising children and/or the decision to prioritize family life. Such findings appear to buttress the conclusions of a previous investigation, which postulated that women in academic medicine place a high value on the quality of their personal and work lives.³⁶ It is possible that many women are faced with the decision to prioritize family and personal life at the expense of certain career milestones and symbolic indicators of success, such as high salary, prestige, or leadership positions, particularly when institutional policies or practices conflict with their values concerning work–life balance. Prior research has found that women in academic medicine face unique challenges pertaining to family

responsibilities^{37–39} and are less likely than men to perceive their institution as family friendly.⁴⁰ Nevertheless, widespread evidence^{41–45} and the results of our survey overall suggest that being able to balance career and personal life is an increasingly important issue for most men and women alike.

A notable strength of this mixed-methods study is its ability to use methodological triangulation to illuminate the complex issues studied. Specific strengths of the qualitative subcomponent include the relatively large sample, well-reasoned participant selection, and inclusion of multiple interviewers and coders in the data collection and analysis.^{46–48} Strengths of the quantitative analysis include the high survey response rate, focus on a relatively unique and illuminating target population, and collection of information about a variety of potential confounding variables. Nevertheless, this investigation also has limitations. Although the survey questions used were developed with standard techniques of survey design and had high face validity, the quantitative analysis relied on self-

report and may have been susceptible to recall or other biases. Despite the high survey response rate for the survey and the purposively driven sampling of interview subjects, there is still a possibility of selection bias. However, we believe our mixed-methods design provided a relatively robust approach by which to address our research questions. Finally, because of our focus exclusively on a high-performing cohort of clinician–researchers, it is difficult to determine whether the commonalities in goals and aspirations observed exist because the individuals have a history of high performance or whether the high performance itself results from these conserved priorities. Future research is necessary to explore these issues further within other groups of academic medical faculty.

In sum, in this elite sample of highly apt and research-motivated clinician–investigators, gender differences in initial aspirations were relatively limited. Gender differences in career outcomes that have been documented in such groups are likely only to be partly the result of differences in baseline aspirations. Those who wish to promote retention of clinician–scientists should consider interventions that mitigate the deleterious effect of various challenges identified that bound and cause reevaluation of these individuals' initial goals. Given recent interest in educational initiatives that identify and develop the professional aspirations of young physicians,⁴⁹ such interventions are requisite early on to ensure that initial goals remain feasible and that their pursuit is not unduly hindered along the course of a challenging academic medical career. Our findings suggest that resilience-building interventions are critical in a difficult funding climate. Institutions should enact policies and cultural changes that value work–life balance. Lastly, department chairs and division chiefs should ensure that all faculty members in their programs feel adequately rewarded and appreciated for their efforts in light of their challenging and multifaceted careers and personal lives. By improving the expectancy of success and rewarding high performance, leaders in academic medicine can contribute to the persistence of such promising individuals, and perhaps particularly women, in academic medicine.

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