Women on Professional Society and Journal Editorial Boards

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Purpose: Membership on a professional medical society or journal editorial board is a marker of influence and prestige for those in academic medicine. This study presents the first comprehensive quantification of women on these boards and the implications for women in medicine.

Methods: The numbers of women and men on professional society and journal editorial boards across 28 specialties (March 2004) were counted. The number of women holding multiple roles on these boards and the number of women holding top leadership positions on these boards were counted, and these proportions were compared.

Results: Three-thousand-four-hundred-seventy-three individuals on 39 professional medical society boards and 54 journal editorial boards were included. Eighty-three percent (2,884) of board members were male. Men occupied >80% of top leadership positions on these boards. Thirty-five of the 589 women in the study held multiple roles. Anesthesiology ($p<0.0025$), pediatrics ($p<0.0001$), dermatology ($p=0.0001$), obstetrics/gynecology ($p=0.05$), medical genetics ($p<0.015$) and rehabilitation medicine ($p<0.03$) had significantly lower proportions of women on boards in comparison to the total women in the specialty. Internal medicine, plastic surgery, cardiology and general surgery had nearly equivalent proportions; in otolaryngology and family medicine, female board members slightly exceeded the proportion of women in the field.

Conclusion: Women's representation on society and editorial boards does not always reflect their presence in medical specialties, and it is critically lacking in certain specialties. Efforts should be made to attain parity of women leaders on these boards. Further efforts should be made to eliminate barriers to women's leadership in medicine.

Key words: gender ■ women's health ■ education

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INTRODUCTION

Over the past generation, women physicians have enjoyed a dramatic increase in percentage and in absolute numbers. In 1970, only 7.6% of U.S. physicians were female; by 2004, 26.6% of physicians were female.[1] Future prospects for women in medicine appear bright, with female graduates from U.S. medical schools totaling approximately 45% as of 2003.[2] However, women have been much slower to achieve leadership positions in many areas of medicine. A 2004 study of 1,814 medical school faculty members revealed that female faculty were less likely to be full professors than were men with similar professional roles and achievement; additionally, 66% of men but only 47% of women with 15–19 years of seniority were full professors.[3] Furthermore, across all medical specialties, only 16% of full professors are women.[4] Across all disciplines in medicine, including the basic sciences, the average number of women department chairs in the 125 U.S. medical schools is 1.72.[5] As medical schools serve to train and educate the physicians of tomorrow, the absence of women in leadership roles in medical schools is particularly grave.[6]

Occupying a position on a professional society board or journal editorial board is evidence of a high reputation within one's specialty. Selection for service on a journal's editorial board is based on academic rank and responsibility as well as the number of publications;[7] selection for service on a professional society's board is reflective of similar accomplishments. Furthermore, attainment of such positions serves to synergistically enhance one's professional contacts and future career opportunities. Thus, we feel that the presence of women on professional society and journal editorial boards is a valuable marker of the attainment of equity by female physicians within each field.

Two previous studies attempted to quantify the percentage of women on journal editorial boards, but they were limited in the number of journals included.[7,8] Another study quantified the number of women editors of journals, but this study was limited to journals in the field of epidemiology.[9] Other studies have examined women's presence on journal editorial boards but have

been limited to journals within individual medical specialties.[10-13] To date, no study has attempted to quantify the percentage of women on professional medical society boards or to complete a comprehensive survey of the percentages of women on professional medical journal editorial boards.

The purpose of this study was to determine the percentages of women on professional society and journal editorial boards, and to determine the number of women that hold multiple roles on these boards. Additionally, the percentage of women holding positions defined as "top posts" was determined.

METHODS

Our study was approved as exempt by the Human Investigations Committee at the University of Pennsylvania School of Medicine. Journals and societies were identified by a convenience sample of physician experts in the specialties of interest. The number of board members was counted as of March of 2004. The names of board members were obtained using the official website of each journal and society. Editorial assistants, managing editors, and international consultants or editors were not included when listed in a separate section from the editorial board. The persons holding the following positions defined as "top posts" were recorded, both male and female: president, past-president, president-elect, editor, coeditor, and editor-in-chief. If the gender of an individual could not be determined from the name listed, an attempt was made to obtain this information by calling the society or journal directly. If this information was subsequently unavailable, that particular name was not used in the data count. For each person counted, where available, the affiliation of the individual with academic medicine was recorded. If this information was unavailable, the individual was categorized as undifferentiated. The absolute number of physicians in each specialty was obtained from the American Medical Association's Physician Characteristics and Distribution in the United States, 2006 edition, representing data as of December 31, 2004.

We used a random 10% sample of the database to check for errors in data entry and classification prior to analysis. Results were entered into an Excel® spreadsheet (Microsoft,® Redmond, WA), and statistical analyses were performed using Stata® (Stata Corp., College Station, TX). Statistical analyses included presentation of descriptive statistics and binomial tests for significant differences between the number of women in each specialty and the number of women on boards.

Table 1. Percentage of women in leadership positions by specialty

Specialty	Total Number (% Female)	Number of Leaders (% Female)	P Value
Anesthesiology	38,822 (21.6)	79 (8.9)	0.00232
Cardiovasc. medicine	22,114 (9.3)	351 (11.7)	0.944
Dermatology	10,441 (37.4)	128 (21.9)	0.0001
Emergency medicine	27,864 (21.5)	95 (17.9)	0.236
Family medicine	80,327 (32.7)	63 (38.1)	0.852
General Surgery	37,502 (13.8)	191 (12.0)	0.279
Internal medicine	150,933 (30.6)	108 (30.6)	0.543
Medical genetics	476 (47.5)	86 (34.9)	0.0122
Obstetrics & gyn.	42,059 (41.0)	40 (27.5)	0.05
Otolaryngology	9,861 (11.0)	176 (14.8)	0.952
Pediatrics	70,151 (52.2)	90 (25.6)	<0.0001
Phys med & rehab	7,290 (34.0)	49 (20.4)	0.028
Plastic surgery	6,852 (11.3)	53 (11.3)	0.608
Psychiatry	40,292 (32.5)	48 (25.0)	0.17
Pulmonary	9,807 (14.5)	236 (14.4)	0.53
Radiation oncology	4,288 (23.7)	13 (15.4)	0.373
Radiology	8,735 (14.5)	241 (17.0)	0.883
Thoracic surgery	4,916 (3.4)	121 (4.1)	0.72
Transplant surgery	104 (9.6)	49 (6.1)	0.296
Urological surgery	10,568 (4.8)	66 (3.0)	0.381
Gastroenterology	11,728 (10.7)	108 (11.1)	0.63
Total	884,974§ (26.6)	3473§ (17.0)	<0.00001

§: Numbers do not equal total as not all specialties are included in this table

RESULTS

A total of 3,473 individuals on 39 professional medical specialty societies and 54 professional journals were included in the study. More than 80% (2,884) of board members were male. Table 1 summarizes the overall percentage of women on society and journal editorial boards by specialty. Specialties with statistically significant differences between the percentage of women on society and journal editorial boards and the total percentage of women physicians in the specialty were anesthesiology (8.9% vs. 21.6%, $p<0.003$), pediatrics (25.6% vs. 52.2%, $p<0.0001$), dermatology (21.9% vs. 37.4%, $p<0.01$), obstetrics/gynecology (41.0% vs. 27.5%, $p<0.05$), medical genetics (34.9% vs. 47.5%, $p<0.015$), and physical medicine and rehabilitation (20.4% vs. 34.0%, $p<0.03$). In all other specialties, there was no statistically significant difference.

Specialties in which women in leadership were approaching parity include emergency medicine, radiation oncology, urology and transplant surgery. The percentage of women on society and journal editorial boards and the percentage of total women physicians in the specialty were equal or near equal in general internal medicine, pulmonary medicine, plastic surgery and general surgery. The percentage of women on society and journal editorial boards was greater than the total percentage of women physicians in the specialties of family medicine, otolaryngology, radiology, gastroenterology, thoracic surgery and cardiology.

Figure 1 highlights the discrepancies between the percentages of total women in each specialty and the percentages of women leaders. The specialties of pediatrics, obstetrics and gynecology, dermatology, anesthesiology, and physical medicine and rehabilitation show the highest discrepancies.

Table 2 shows the number of women in top leadership positions on professional society and journal editorial boards. Women occupied 19% of these positions, compared to 26.6% total women in medicine ($p=0.02$). In the positions of president (27%) and president-elect (25.1%), the percentage of female physicians reflected parity with the overall percentage of women physicians. The position of past-president had a slightly lower percentage of females, at 19.1%, but it did not meet the threshold for statistical significance ($p=0.24$). The editorial positions reflected a marked contrast, with only 4% of women holding the position of editor ($p=0.004$), 12.5% of coeditor ($p=0.33$) and 16.7% ($p=0.20$) of editor-in-chief, although the latter two were not statistically significant.

Table 3 provides a breakdown of the absolute numbers of women on each individual society and journal editorial board.

The number of women holding multiple roles on society and journal editorial boards was also counted. Thirty-five of 589 women in the study held multiple roles on professional society and journal editorial boards, with 31 women holding two roles and four women holding ≥3 roles.

DISCUSSION

This study revealed that in many specialties commonly considered more female dominated, as evidenced by a high percentage of women physicians in the specialty, the proportion of female board members is markedly less than the overall proportion of women physicians in the specialties. Most marked is the discrepancy in pediatrics, which has a majority of female physicians (52.2%) but less than half that proportion of female board members (25.6%). This discrepancy is particularly concerning given that women have been entering this field in large numbers for decades.[14] Also striking are the contrasts in anesthesiology, dermatology, medical genetics, physical medicine and rehabilitation, and obstetrics/gynecology. These disparities may reflect institutional norms that must be averted by more proactive policies by leaders in those fields.

Interestingly, in some specialties in which women are less represented overall—such as cardiology, general surgery and the surgical subspecialty of otolaryngology—the proportion of female board members achieves parity or even exceeds the overall proportion of women physicians in the specialty. Although these and many other surgical subspecialties have low absolute numbers of women, the increased percentage of women board members might possibly reflect an effort by the leadership of each specialty's professional organization to advance qualified women in the field. Support from women's organizations may also be a factor; the Society of Women Surgeons is one influential group that helps to provide mentorship and career guidance to aspiring female surgeons. Another possible explanation for the relative parity in these fields lies in the individuals themselves, who may have a higher level of drive and commitment at the outset because of the challenging nature of the

Table 2. Women in "top posts" of society and journal editorial boards

"Top Posts"	Male	Female (%)	Total
President	27	10 (27.0)	37
Past president	25	6 (19.4)	31
President-elect	23	8 (25.8)	31
Editor	24	1 (4.0)	25 ($p=0.004$)
Coeditor	7	1 (12.5)	8
Editor-in-chief	20	4 (16.7)	24
Total top posts (%)	126 (80.8)	30 (19.2)	156 ($p<0.003$)

field they are entering. Leaders in academic medicine should also make a concerted effort to uncover and ameliorate the disincentives to entry of women into these specialties. There is evidence that this is beginning to change—nearly 20% of incoming surgical residents are now female.[5] It remains important to promote women in leadership to make these organizations truly reflective of the new generation of physicians.

In some specialties, such as cardiology, transplant surgery, thoracic surgery and urology, there are very low overall numbers of women (<10%). In specialties with such low numbers of women, simply reporting the percentage of women in leadership may be less relevant to analyzing the status of women in the specialty. An analysis of the factors that prevent women from entering these fields may provide more insight useful for improving the status of women in the specialty. These factors may include increased or unpredictable working hours, lack of availability of female mentors, lengthy training requirements or other cultural factors. Leaders in these specialties may benefit from formally analyzing these barriers to entry for women physicians and undertaking measures to mitigate them.

The results pertaining to women editors of professional journals reflect that very few women hold the position of journal editor relative to their percentage in medicine as a whole. Only 4% of editors of included medical journals are women, and only 12.5% of coeditors. The results for the position of editor-in-chief are somewhat better, at 16.7%, but this is still below the percentage of women physicians overall in the United States (26.6%), although it is not statistically significant (p=0.20). These findings

Table 3. Women on major professional society and journal editorial boards

Society or Journal Title	Female	Total Board Members	Percent Female	Total % Female Physicians in Specialty in U.S.
Anesthesia	7	79	8.9%	21.6%
Am Soc Anesthesiologists	1	12	8.3%	(p<0.003)
Anesthesiology	5	46	10.9%	
Anesthesia and Analgesia	1	21	4.8%	
Critical Care Medicine	7	107	6.5%	n/a
Soc Critical Care Med	6	18	33.3%	
Critical Care Medicine	1	89	1.1%	
Dermatology	28	128	21.9%	37.4%
Am Acad Dermatology	6	24	25.0%	(p=0.0001)
J Amer Acad Derm	18	84	21.4%	
Arch Dermatology	4	20	20.0%	
Emergency Medicine	17	95	17.9%	21.5%
Am Col Emergency Phy	2	12	16.7%	(p=0.23)
Soc Acad Emer Med	3	11	27.3%	
Ann Emer Med	3	32	9.4%	
Acad Emer Med	9	40	22.5%	
Family Practice	24	63	38.1%	32.7%
Am Acad Fam Phys	6	18	33.3%	(p=0.85)
Soc Teachers Fam Med	5	10	50.0%	
Ann Family Med	13	35	37.1%	
Family Medicine	n/a	n/a	n/a	
Medical Genetics	30	86	34.9%	47.5%
Am Col Med Genetics	7	18	38.9%	(p=0.012)
Am Soc Human Genetics	8	18	44.4%	
Am J Human Genetics	5	14	35.7%	
Am J Medical Genetics	10	36	27.8%	
Cardiovascular Medicine	41	351	11.7%	9.3%
Am Coll Cardiology	5	30	16.7%	(p=0.94)
J Am Coll Card	0	24	0.0%	
Circulation	36	297	12.1%	
Gastroenterology	12	108	11.1%	10.7%
Am Gastroent Assoc	1	18	5.6%	(p=0.63)
Am Coll Gastroent	3	21	14.3%	
Gastroenterology	8	69	11.6%	
J Am Coll Gastroent	n/a	n/a	n/a	
General Internal Medicine	33	108	30.6%	30.6%
Soc Gen Int Med	6	16	37.5%	(p=0.54)
JAMA	22	56	39.3%	
N Engl J Med	5	36	13.9%	

reflect those presented by Dickerson and colleagues in 1998, which revealed that far fewer women in the field of public health hold editorial positions at professional journals (12.8%) than serve as authors and reviewers (28.7% and 26.7%, respectively).[9] It appears that little has changed in the nearly 10 years since this study was conducted. Women have been making some headway, however, in the position of society president (27%) and president-elect (25.1%), an improvement over the percentage of women past-presidents (19.1%).

One possible reason for the dearth of women editors lies in the choice of career path within academic medicine. Women are more likely than men to choose clinical academic careers rather than the highly competitive research and teaching positions, which are much more likely to lead to higher professional prestige and subsequent positions on journal editorial boards.[7] An increase in the number of women in these higher-prestige subsegments of academic medicine may be necessary to effect meaningful change in their representation on journal editorial boards.

The presence of women in multiple roles on society and journal editorial boards is also encouraging to women's advancement in medicine. A total of 35 women held multiple roles on society and journal editorial boards, a finding that we interpret as a marker for highly influential people within a medical specialty. Although the total number of women holding multiple roles is small compared with the total number of female board members (589), their presence indicates the advancement of women to the highest levels of influence within their specialties. Women holding multiple leadership roles may also reflect a lack of women in sufficient numbers in a specialty, thus causing leadership roles to fall to the same

Table 3. continued

Society or Journal Title	Female	Total Board Members	Percent Female	Total % Female Physicians in Specialty in U.S.
Hematology/Oncology	110	450	24.4%	n/a
Am Assoc Canc Res	8	20	40.0%	
Am Soc Clin Onc	3	18	16.7%	
Cancer Research	53	232	22.8%	
J Clin Onc	46	180	25.6%	
Pulmonary	34	236	14.4%	14.5%
Am Thor Society	6	25	24.0%	(p=0.53)
Am Coll Chest Phys	4	21	19.0%	
Am J Resp Crit Care Med	13	101	12.9%	
Am J Resp Cell Mol Bio	11	89	12.4%	
Vascular Medicine	7	44	15.9%	n/a
Soc Vascular Med and Bio	1	7	14.3%	
Vascular Med	6	37	16.2%	
Obstetrics and Gynecology	11	40	27.5%	41.0%
Am Col Obstet and Gynec	n/a	n/a	n/a	(p=0.05)
Assoc Prof of Gyn and Ob	4	11	36.4%	
Am J of Ob and Gyn	0	7	0.0%	
Obstetrics and Gynecology	7	22	31.8%	
Otolaryngology	26	176	14.8%	11.0%
Am Aca Otolaryn-Head/Neck Surg	4	19	21.1%	(p=0.95)
Laryngoscope	7	85	8.2%	
Arch Otolaryn-Head & Neck Surg	7	31	22.6%	
Otolaryngology-Head & Neck Surg	8	41	19.5%	
Pediatrics	23	90	25.6%	52.2%
Am Ped Soc Council	3	9	33.3%	(p<0.0001)
Soc Ped Res Council	9	17	52.9%	
Pediatrics	6	37	16.2%	
J Pediatrics	5	27	18.5%	
Psychiatry	12	48	25.0%	32.5%
Am Psychiatric Association	0	n/a	n/a	(p=0.17)
Am J Psychiatry	7	20	35.0%	
Arch General Psychiatry	5	28	17.9%	
Radiology	41	241	17.0%	14.5%
RSNA	2	12	16.7%	(p=0.88)
AUR	5	18	27.8%	
Radiology	17	107	15.9%	
AJR	17	104	16.3%	

few qualified individuals.

The barriers to women's advancement are still real. A brief discussion here may illuminate paths for improvement for today's leaders in medicine. A recent study in the *New England Journal of Medicine* revealed that although women are significantly more likely than male physicians to pursue an academic career, the numbers of women promoted to the ranks of associate and full professor were much lower than expected for both tenure and nontenure tracks.[15] Female medical students and physicians perceive more difficulty in finding mentors than do their male colleagues,[16] which may be a function of the disparity between men and women in senior levels of academic medicine. Data on salary, a particularly difficult variable to measure, are conflicting but indicate that there is still some progress to be made in removing this barrier to women's advancement.[3,17,18]

A 2002 study by Sonnad and Colletti revealed that women in academic surgery were far less likely to have children or be married, and of those women who were married, a far greater percentage of women than men had spouses who worked full time outside the home.[19] Family

Table 3. continued

Society or Journal Title	Female	Total Board Members	Percent Female	Total % Female Physicians in Specialty in U.S.
Radiation Oncology	2	13	15.4%	23.7%
Am Soc Therapeutic Rad Onc	2	13	15.4%	(p=0.37)
Int J Rad Onc Bio Phy	n/a	n/a	n/a	
Physical Medicine & Rehab	10	49	20.4%	34.0%
Am Acad Phy Med and Rehab	4	17	23.5%	(p=0.028)
Arch Phys Med and Rehab	6	32	18.8%	
General Surgery	23	191	12.0%	13.8%
ACS	3	7	42.9%	(p=0.28)
Annals Surgery	6	67	9.0%	
Archives Surgery	4	26	15.4%	
J Am Coll Surg	10	91	11.0%	
Cardiothoracic Surgery	5	121	4.1%	3.4%
Soc Thor Surgeons	1	16	6.3%	(p=0.72)
Amer Acad Thor Surgeons	1	10	10.0%	
Annals of Thoracic Surgery	2	53	3.8%	
J Thor Cardiovasc Surg	1	42	2.4%	
Pediatric Surgery	6	87	6.9%	n/a
Amer Pediatric Surgical Assoc	1	7	14.3%	
J Pediatric Surgery	5	80	6.3%	
Plastic Surgery	6	53	11.3%	11.3%
Am Society Plastic Surgeons	0	n/a	n/a	(p=0.61)
Plastic & Reconstructive Surgery	3	32	9.4%	
Ann Plastic Surgery	3	21	14.3%	
Transplant Surgery	3	49	6.1%	9.6%
Am Soc of Transplant Surgeons	0	12	0.0%	(p=0.30)
Am J Transplantation	3	37	8.1%	
Transplantation	n/a	n/a	n/a	
Trauma Surgery	4	105	3.8%	n/a
AAST	0	13	0.0%	
J Trauma	4	92	4.3%	
Urological Surgery	2	66	3.0%	4.8%
Am Urological Assn	0	14	0.0%	(p=0.38)
Urology	n/a	n/a	n/a	
J Urology	2	52	3.8%	
Vascular Surgery	4	67	6.0%	n/a
Society for Vascular Surgery	2	25	8.0%	
J Vasc Surg	2	42	4.8%	
Health Services Research	61	222	27.5%	n/a
Acad Health	9	22	40.9%	
Soc for Med Dec Making	7	15	46.7%	
Health Services Research	19	60	31.7%	
Med Decision Making	15	48	31.3%	
Value in Health	4	42	9.5%	
Am J Managed Care	7	35	20.0%	
Totals	589	3473	17.0%	26.6%

responsibilities may be in conflict, at times, with serving in leadership roles in medicine; certainly women, for their part, must explore methods to ensure that their time for work is maximized. However, administrators and leaders in the various medical specialties must make a concerted effort to integrate family considerations into policy guidelines for physician employees to ensure a more equal playing field at the institutional level.

Women holding key positions on professional society and journal editorial boards are crucial in this regard. Women in these leadership positions can help to further influence their respective fields to effect change for women in medicine as a whole, helping to make the work environment one that is tolerant not only of professional but of personal considerations. Additionally, young women entering the medical profession should have access to positive female role models and mentorship by female physicians; women in these leadership positions can both serve in this regard and encourage further promotion of women in academic medicine. Such mentorship is not only critical in the professional arena but also for guiding women through the unique challenges of balancing their profession with family demands that still today fall more heavily on women. Although policy changes cannot bring about fundamental societal changes, changing institutional norms can help to make the work environment a more family- (and female-) friendly one. Finally, the presence of women in key positions on professional society and journal editorial boards can perhaps most importantly serve to advance women's and children's health concerns, as women have traditionally been more involved in research pertaining to these causes.

LIMITATIONS

This study does not include every available medical journal but rather those reported by a convenience sample of experts as the most well known and read in each field. This study also does not include every known medical specialty but rather a list of several well-known medical specialties. The data in this study are current as of March 2004, but there may be alterations in the numbers and percentages of female board members since that date.

CONCLUSION

The percentage of women physicians holding influential positions in medicine has been slow to achieve parity with the total number of women physicians. A recent nationwide study of medical students by Guelich and colleagues reveals worrisome trends in the research career intentions of U.S. medical students, including a large and persistent gender gap and a negative impact of the medical school experience on women's interest in a medical research career.[20] A decline in women pursuing research careers will further contribute to their absence in influential positions in academic medicine. According to a report issued by the American Association of Medical Colleges:

> *Only institutions able to recruit and retain women will be likely to maintain the best house staff and faculty. The long-term success of academic health centers is thus inextricably linked to the development of women leaders.*[18]

Currently women's representation on society and editorial boards does not always reflect their presence in the specialty, potentially reducing the visibility of women in those fields even further. Leadership positions on professional society and journal editorial boards may be more accessible to women than are leadership positions as division chiefs, department chairs or top administrators. In order to further the success of women in medicine, efforts should be made to attain or exceed parity between numbers of women in each specialty and their representation on society and journal editorial boards. Further efforts should be made to elucidate and eliminate the barriers to women occupying these positions, in the hopes that this will contribute to the advancement of women into leadership positions in academic medicine and positively contribute to the promotion of women's health overall.

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