

# Representation of women in ophthalmology journal editorial boards

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Women have historically been under-represented in the editorial boards of ophthalmology journals despite the increasing proportion of women in ophthalmology over the past decades.<sup>1</sup> Previous studies have only characterised representation of women as editors for select journals based mainly in North America.<sup>2-3</sup> The purpose of this cross-sectional study was to evaluate the representation of women in editorial boards of ophthalmology journals globally and across various ophthalmology subspecialty journals. This study also compared the demographic characteristics and research productivity between men and women in the editorial board.

The Ulrichweb and SCImago Journal and Country Rank were used to identify ophthalmology journals being published as of 10 October 2021. Journals without a valid journal website and/or without a list of editorial board members were excluded from the analysis. Journals with websites in non-English languages were also excluded. Journals were categorised into subspecialties within ophthalmology based on the stated aims and scope. Journal country of publication was ascertained from journal website and categorised according to the World Bank's 2021 classification of countries by income and region.<sup>4</sup> Finally, impact factor (IF) was obtained from Journal Citation Reports (JCR).

The lists of editorial board members were available on the journal websites. Editor-in-chief (EiC) information was ascertained from all included journals, while editor and advisory board member information was only ascertained from journals with IFs listed on JCR. An editor was defined as those not in EiC positions with decisive functions regarding manuscript acceptance, which included section editors, associate editors, assistant editors as well as others with non-specific titles such as 'editor' and 'editorial board'. This definition excluded administrative staffs such as managing, copy, illustration, video and technical editors. An advisory board

member was defined as those with 'advisory' in their position title. For each editorial board member included, gender and academic degrees were identified through institutional profiles. Gender (eg, man or woman) was determined based on gender pronouns and/or photographs. If no profiles were available, a cut-off of 90% certainty on the application programming interface (<https://gender-api.com>) was used to determine gender based on the first name, and the websites of physician governing bodies or designations found on the most recent journal publications were used to determine academic degrees. The Web of Science database was accessed in December 2021 to obtain data on each board member's publication productivity measures. Detailed methodologies including statistical analysis have been outlined in a previously published protocol of this study.<sup>5</sup>

A total of 222 EiCs from 193 journals online supplemental eTable 1 as well as 2658 editors and 206 advisory board members from 55 journals listed on JCR were included. A detailed list of all of the included journals and their characteristics is included in the online supplemental eTable 1. Fourteen profiles were discarded due to lack of certainty about gender, and 45 profiles required the use of application programming interface to ascertain gender. The proportions of women were 17% in the EiC, 25% in editor and 22% in advisory board positions (table 1). Among ophthalmologists, the proportion of women editors was 23%, which was significantly lower compared with the proportion of women editors among non-ophthalmologists (31%;  $p<0.001$ ). There was no association between women as EiCs and the proportion of women in the corresponding editorial boards. The highest proportion of women as EiCs was found in Europe and Central Asia (40%). The highest proportion of women as editors or advisory board members was in North America (29%), followed by East Asia and Pacific (24%), South Asia (23%), Latin America and Caribbean (22%), Europe and

**Table 1** Characteristics of journal editors-in-chief and editorial board members based on gender

Characteristics	Editors-in-chief			Editors			Advisory board members			
	Total	Men	Women	Total	Men	Women	Total	Men	Women	P value
Total number, n (%)	222 (100)	185 (83.3)	37 (16.7)	2658 (100)	1986 (74.7)	672 (25.3)	206 (100)	160 (77.7)	46 (22.3)	
Degree type, n (%)										
MD	178 (80.5)	151 (82.1)	27 (73.0)	1989 (75.5)	1527 (77.7)	462 (69.0)	192 (94.1)	149 (93.7)	43 (95.6)	0.64
Ophthalmologist	173 (78.6)	147 (80.3)	26 (70.3)	1955 (74.3)	1499 (76.4)	456 (68.4)	191 (93.6)	148 (93.1)	43 (95.6)	0.55
PhD	98 (44.5)	84 (45.9)	14 (37.8)	1337 (50.8)	963 (49.0)	374 (55.8)	141 (69.1)	107 (67.3)	34 (75.6)	0.29
MD-PhD*	64 (28.8)	53 (28.6)	11 (29.7)	720 (27.3)	545 (27.7)	175 (26.1)	129 (63.2)	97 (61.0)	32 (71.1)	0.22
Other degrees†	46 (20.9)	34 (18.6)	12 (32.4)	467 (17.7)	327 (16.6)	140 (20.9)	49 (24.0)	35 (22.0)	14 (31.1)	0.21
Country income,‡n (%)										
High	152 (68.8)	131 (71.2)	21 (56.8)	2348 (88.3)	1749 (88.1)	599 (89.1)	55 (26.8)	41 (25.8)	14 (30.4)	0.53
Upper middle	42 (19.0)	33 (17.9)	9 (24.3)	221 (8.3)	169 (8.5)	52 (7.7)	150 (73.2)	118 (74.2)	32 (69.6)	
Lower middle	25 (11.3)	18 (9.8)	7 (18.9)	88 (3.3)	67 (3.4)	21 (3.1)	0	0	0	
Low	2 (0.9)	2 (1.1)	0 (0.0)	1 (0.0)	1 (0.1)	0 (0.0)	0	0	0	
Research impact, median (IQR)										
Publishing years	29.0 (19.0–40.0)	30.0 (20.0–41.0)	25.0 (13.0–30.0)	29.0 (20.0–38.0)	29.0 (20.0–38.0)	27.0 (19.0–36.0)	25.0 (17.0–36.0)	25.0 (17.0–36.0)	26.0 (18.0–36.0)	0.92
Publications	122.5 (28.8–276.8)	135 (34.3–285.8)	35 (11.5–195.3)	160.0 (82.0–270.5)	170.0 (92.0–283.0)	125.0 (67.0–245.0)	42.0 (11.0–147.0)	41.0 (10.0–144.5)	43.0 (14.0–163.0)	0.95
Publications last 5 years	24.0 (5.8–72.3)	26.0 (6.0–72.8)	13.5 (2.8–71.3)	40.0 (18.0–82.0)	42.0 (18.0–84.0)	36.0 (17.0–74.0)	8.0 (1.0–33.0)	8.0 (1.3–35.0)	14.0 (1.0–27.0)	0.70
Total citations	1593.5 (249.5–5392.3)	2017.5 (312.0–5292.8)	374 (88.0–5796.5)	2929.0 (1175.5–6554.5)	3091.0 (1317.0–6810.0)	2295.0 (854.0–5315.0)	435.0 (79.0–2364.0)	434.0 (72.5–2572.5)	493.0 (87.0–1890.0)	0.90
H-index\$	20.5 (8.0–37.3)	23.0 (9.0–38.0)	9.5 (3.5–37)	28.0 (18.0–41.0)	29.0 (19.0–42.0)	25.0 (15.0–38.0)	10.0 (4.0–26.0)	10.0 (4.0–26.5)	10.0 (5.0–26.0)	0.85
M-quotient¶	0.7 (0.4–1.3)	0.8 (0.4–1.3)	0.5 (0.2–1.3)	1.0 (0.7–1.4)	1.1 (0.7–1.5)	0.9 (0.7–1.4)	0.4 (0.2–0.8)	0.4 (0.2–0.9)	0.4 (0.3–0.7)	0.74

\*Dual doctoral degree of Medicine and of Philosophy.

†Academic degrees other than Doctor of Medicine or Doctor of Philosophy degree.

‡Categorised based on the gross national income per capita, in U.S. dollars, into low-income (\$1045 or less), lower middle-income (between \$1046 and \$4095), upper middle (between \$4096 and \$12 695) and high-income (\$12 696 or more) economies.

\$Number of publications (h) that have received at least h citations.

¶H-index divided by the number of years since the first published paper. IQR, Interquartile range; n, number.

Central Asia (22%), Middle East and North Africa (14%) and Sub-Saharan Africa (11%). Journals belonging to the subspecialty of paediatric ophthalmology and strabismus (71%) were the most likely to be chaired by at least one woman, followed by journals in neuro-ophthalmology (60%), oculoplastics (50%), cornea (33%), ocular immunology, inflammation and uveitis (25%), glaucoma (17%), cataract and refractive surgery (14%), retina and vitreoretinal surgery (10%) and basic sciences (0%). There were no significant associations between gender and journal IF or the countries of origin grouped based on income.

The m-quotient, a metric of publication productivity that considers the length of academic careers, was comparable between the genders among the EiCs and advisory board members but higher for men compared with women among the editors (1.1 (interquartile range [IQR], 0.7–1.5) for men vs 0.9 (IQR, 0.7–1.4) for women;  $p=0.003$ ). Men were more likely to hold a Doctor of Medicine (MD) degree (78% vs 69%;  $p<0.001$ ) and have received specialty training in ophthalmology (76% vs 68%;  $p<0.001$ ) compared with women. Women were more likely to have a Doctor of Philosophy (PhD) degree (56% vs 49%;  $p=0.002$ ) and hold non-medical/non-PhD degrees (21% vs 17%;  $p=0.013$ ) compared with men.

Herein, this study evaluated the proportion of women in ophthalmology journal editorial boards and compared the characteristics between men and women in the largest study on the gender composition to date. The proportion of women in the editor position (25%) in this study is comparable to previous reports (26%) among the editorial boards of 20 highest ranked ophthalmology journals.<sup>3</sup> Notably, the gender disparity was greater among the editors who were ophthalmologists compared with non-ophthalmologist editors (23% vs 31%;  $p<0.001$ ). The proportion of women in editorial boards in this study is also comparable to the proportion of women participating as ophthalmologists in North America (27%) currently.<sup>6</sup> Nonetheless, women continue to have a smaller representation in the most senior position of a journal, as evidenced by women representing only 17% of EiCs of ophthalmology journals globally. As the proportion of women in the editor position is beginning to reflect the percentage of women in the profession of ophthalmology, it may be reasonable to expect an increase in the representation of women in the EiC position in the near future.

The higher proportion of women as editors or advisory board members (29%) in North America compared with other countries is likely a reflection of the increasing participation of women as fully trained physicians (27%) and as trainees (41%) in ophthalmology.<sup>6</sup> On the contrary, the proportion of women in editor positions in Europe and Central Asia in the current study is 22%, which is somewhat low compared with the proportion of women as practicing ophthalmologists (31%) in parts of Europe.<sup>7</sup> This study demonstrates the existence gender disparity in ophthalmology journal editorial positions

outside of North America and highlights the importance of comparing the proportions of women as editorial board members and as practising physicians to better understand the degree of under-representation.

Moreover, women had greater participation as EiCs in the paediatric ophthalmology and strabismus subspecialty journals. This is consistent with a recent discovery that the American Association of Pediatric Ophthalmology and Strabismus was the only major subspecialty society to have achieved gender parity (52% women and 48% men) with its members.<sup>8</sup> It may, thus, be important to consider how certain subspecialties, such as retina, with traditionally lower representation of women may differentially contribute to the overall diversity and inclusion disparities in ophthalmology leadership.<sup>8</sup>

Finally, this study's findings on the unequal distribution of academic degrees between the genders are consistent with the previous study by Fathy and colleagues, which suggests that when compared with men, women authoring articles in ophthalmology journals are more likely to be non-ophthalmologists and hold non-medical or non-PhD degrees.<sup>9</sup> Kramer and colleagues demonstrated a significant gender disparity in ophthalmic research, which may hinder career advancements for young ophthalmologists.<sup>10</sup> The current study further indicates that this gap may persist throughout an ophthalmologist's career even in highly visible positions as journal editorial board members.

The main limitation of this study is that international journals without English translation were excluded, and, thus, non-English journals may have been underrepresented. Furthermore, the database used in this study reports authors' publications based on their names. Authors who have multiple names or underwent a name change may not have all their research works reflected in one profile. Finally, gender was assigned to each member of the editorial board using the binary classification based on publicly available data, which may be different from the self-identified gender.

In conclusion, this study demonstrated the presence of gender disparity in editorial board positions in ophthalmology journals at a global level, while highlighting a greater gap in regions in Middle East and Africa, and in journal subspecialties of basic science and retina. Identifying and addressing any barriers to women participation in editorial positions would improve quality and diversity of journal review process and output of research.

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