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Original article

Gender-gaps and glass ceilings: A survey of gender-specific publication trends in Psychiatry between 1994 and 2014

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ABSTRACT

Background: Within academic psychiatry, women are underrepresented in the higher academic ranks. However, basic determinants of women's lack of academic advancement such as publication activity are poorly understood. The present study examines women's publication activity in high-impact psychiatry journals over two decades and reports developments in the numbers of male and female authorship over time and across cultural areas.
Methods: We conducted a retrospective bibliometric review of all articles published in 2004 and 2014 in three high-ranking general psychiatry journals. Statistical comparisons were made between the two years and with results from a baseline assessment in 1994.
Results: The overall percentage of female authors increased from 24.6% in 1994 to 33.2% in 2004 to 38.9% in 2014. Though increases in female authorship were statistically significant for both decades, there was less difference between 2004 and 2014, indicating a possible ceiling effect. Rates of female first authors increased between 1994 and 2014, though to a lesser degree between 2004 and 2014. Numbers of female corresponding authors plateaued between 2004 and 2014. Within Europe, Scandinavia displayed the most balanced gender-wise first author ratios. Western European and Central European countries increased their rates of female first authors substantially between 2004 and 2014.
Conclusions: Despite gains in some areas, our study reveals considerable deficits in the diversity of the current academic psychiatric landscape. Ongoing efforts and interventions to enhance the participation of underrepresented groups on institutional, political and editorial levels are necessary to diversify psychiatric research.

1. Introduction

Diversity research shows that diverse working environments contribute substantially to innovation and productivity, both in academic and commercial settings [1,2]. Thus, numerous policies on national and institutional levels were implemented to unleash untapped potentials by enhancing participation of underrepresented groups such as women [3]. Despite the considerable advancements the academic landscape has made in the last decade, medical academia remains male-dominated, especially in leading positions [4]. Even though women make up 50% or more of medical students in most Western countries [3], only 39% of faculty [5] and less than 15% of department chairs are female in the US [6]. In psychiatry, numbers of women involved in clinical, scientific or educational activities have traditionally been higher than in other areas of medicine. This trend, however, has not been proportionally reflected in women psychiatrists' research output, especially in domains crucial to academic advancement such as first and corresponding authorship of original papers [7].

Though the problem of gender discrimination is evident on many levels of psychiatric research, interventions and solution-oriented studies into this topic are constrained by a lack of reference data on current developments.

The present paper aims to close this information gap and updates on women's publication activity in high-impact psychiatry journals over time and with respect to cultural/territorial variations. We hypothesised that:

- the gender gap has been narrowing since the last available report in 1994;

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- and significant differences in the proportion of female authorship can be observed depending on geographic/cultural area.

2. Methods

We performed a retrospective bibliometric review of all articles published in 2004 and 2014 in three of the most prestigious general psychiatry journals, i.e. *Jama Psychiatry (JP)*, *The American Journal of Psychiatry (AJP)* and *The British Journal of Psychiatry (BJP)*. These journals were chosen based on their long-standing consistency in high impact factor rank as well as for reasons of comparability to a previous study by our group reporting gender and authorship in 1994 and 2007 in the same three journals. We chose to investigate the years 2004 and 2014 in order to provide comparisons across 10-year intervals since 1994. We provide statistical comparisons with results from 1994 where possible and place an additional focus on the geographical area of authors' affiliation in the years 2004 and 2014. We included all articles published in the above journals except:

- editors' introductory notes;
- book reviews;
- American Psychiatric Association issues and presidential addresses;
- regular columns;
- and corrections in our analysis.

The applied coding scheme was developed and used for the first assessment on authorship by our research group in the context of this ongoing project and adapted for the present assessment. First, publications from two months in each journal were rated simultaneously by two authors (S.S. and B.S.), followed by discussion and consensus on adaptations of the coding scheme. This process was repeated twice until the new coding scheme satisfactorily fit the data. Thereafter, two authors (S.S. and B.S.) independently recoded all articles of 2014. Where discrepancies between the ratings occurred, these were discussed and resolved until full concordance between the raters was achieved. All articles from 2004 where recoded according to the new final coding scheme by one author (S.S.).

2.1. Coding scheme

We distinguished between (a) original research and (b) non-research articles. Original research articles were categorized according to the research methods used: cohort studies, case–control studies, cross-sectional studies, clinical trials, meta-analyses/systematic reviews and "other". The non-research articles included the subcategories: reviews, case reports, commentaries or discussions, editorials and letters.

Gender of all listed authors for the included publications was identified from the first and middle name provided in the article. Where first/middle names were not stated, we consulted further publications by the same group and performed *Google* searches for the first names. Where names were not clearly indicative of gender, the social network for scientists *ResearchGate* or personal or institutional homepages were checked for photographs and CVs indicating gender. The country of affiliation of the first author was recorded as stated in the bylines of the respective articles. When information on the corresponding author was not stated or an article was published by only a single author, the first author served both as first and corresponding author in our coding scheme. Data on the gender composition of the editorial boards was obtained from the journals' homepages and by email request.

2.2. Data analysis

Countries of affiliation were grouped according to geographic region and cultural area based on their classification in the Human Relation Area Files database (eHRAF) [8], a widely used indexing tool for cultural studies. First, descriptive analyses were performed separately for all three years and results displayed as full numbers, percentages and means with standard deviation. Second, differences between journal, years, affiliation of the first author and gender were investigated using Chi^2 tests. Alpha levels $< 0{,}05$ were considered statistically significant. For all statistical analyses SPSS, Version 22 [9] was used.

3. Results

In 1994, a total of 950 articles were published across the three journals. Of these, 473 (49.8%) were original research articles and 477 (50.2%) were non-research articles. In 2004, the total number of publications dropped to 800 (original research: 502, 62.8%; non-original research: 298, 37.2%). In 2014, the number of published articles was 642 articles (original research: 318, 49.5%; non original research: 324, 50.5%).

3.1. Gender of authors

In 1994, overall 3417 authors were listed. Of these, 2456 (71.9%) were male and 801 (23.4%) were female. For 160 authors (4.7%) the gender could not be identified. In 2004, the listed 3782 authors included 2379 (62.9%) authors of male, 1180 (31.2%) of female and 224 (5.9%) of unidentified gender. In 2014, 1957 out of 3418 authors (57.3%) were male, 1246 (36.4%) were female and 215 (6.3%) were of unidentified gender. This reflects a statistically significant increase in overall female authors between 1994 and 2004 ($P = 0.000$) as well as between 2004 and 2014 ($P = 0.000$).

Rates of female first authorships also increased between the years from 17.1% in 1994 to 30.2% in 2004 to 33.9% in 2014. While the change between 1994 and 2004 was statistically significant ($P = 0.000$), the increase between 2004 and 2014 failed to reach statistically significant levels ($P = 0.133$).

The percentage of female corresponding authors increased significantly between 1994 and 2004 (1994: 17.9%; 2004: 29.2%; $P = 0.001$), but showed no statistically significant difference between 2004 and 2014. Results are illustrated in Fig. 1.

In 1994, rates of female first authors were comparable for all three journals (JP: 16.5%, AJP: 17.8%, BJP: 15.2%). In 2004 and 2014, however, rates of female first authors were considerably higher in JP than in the other two journals under investigation (2004: JP 45.5%, AJP 29.5%, BJP 23.8%, 2014: JP 39.3%, AJP 31%, BJP: 31.9%) A similar picture emerged for the rates of female corresponding authors. While in 1994 the rates of female corresponding authors across the three journals were comparable (JP: 18.4%, AJP: 13.9%, BJP: 16.2%), pronounced journal-wise differences in female corresponding authorship were visible in 2004 (JP: 48.2%, AJP: 28.4%, BJP: 20%) and 2014 (JP: 35.9%, AJP: 26.5%, BJP: 20%).

3.2. Author gender in non-research articles

In all three years, non-research articles were significantly more frequently first authored by men than by women ($P = 0.000$). A detailed display of gender distribution amongst first and corresponding authors in non-research articles is provided in Table 1.

Significant differences over time in non-research articles were observed in letters, where female corresponding authorships dropped between 1994 and 2004. Between 2004 and 2014, however, rates of both female first and corresponding authors

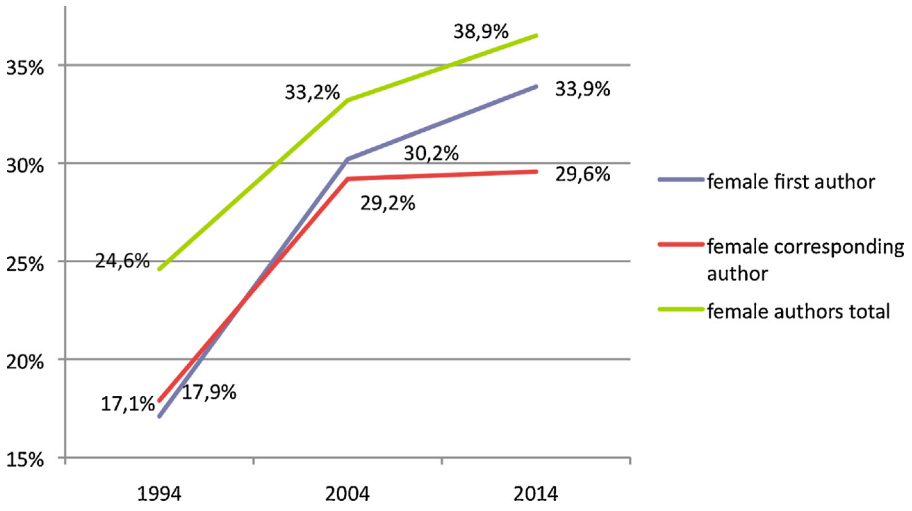

Fig. 1. Relative rates of female authors according to year.

Table 1
Gender of first and corresponding authors of non-research articles according to year of publication.

	1994		2004		2014		Significant difference in female authorship
	Male, *n* (%)	Female, *n* (%)	Male, *n* (%)	Female, *n* (%)	Male, *n* (%)	Female, *n* (%)	
First authorship							
Letter	270 (83.6)	53 (16.4)	169 (86.7)	26 (13.3)	116 (74.4)	40 (25.6)	2004 < 2014 (*P* = .003)
Editorial	45 (86.5)	7 (13.5)	29 (52.7)	26 (47.3)	75 (78.1)	21 (21.9)	1994 < 2004 (*P* < .000) 2004 > 2014 (*P* = .001)
Commentary	18 (81.8)	4 (18.2)	8 (66.7)	4 (33.3)	24 (82.8)	5 (17.2)	None
Case report	22 (84.6)	4 (15.4)	4 (50.0)	4 (50.0)	8 (66.7)	4 (33.3)	1994 < 2004 (*P* = .043)
Review	28 (87.5)	4 (12.5)	12 (75.0)	4 (25.0)	12 (60.0)	8 (40.0)	None
Total	383 (84.2)	72 (15.8)	222 (77.6)	64 (22.4)	235 (75.1)	78 (24.9)	1994 < 2004 (*P* = .025)
Corresponding authorship							
Letter	137 (86.2)	22 (13.8)	102 (95.3)	5 (4.7)	117 (75.5)	38 (24.5)	1994 > 2004 (*P* = .015) 2004 < 2014 (*P* = .000)
Editorial	45 (86.5)	7 (13.5)	30 (78.9)	8 (21.1)	74 (77.1)	22 (22.9)	None
Commentary	17 (81.0)	4 (19.0)	8 (66.7)	4 (33.3)	26 (89.7)	3 (10.3)	None
Case report	22 (84.6)	4 (15.4)	5 (62.5)	3 (37.5)	8 (66.7)	4 (33.3)	None
Review	28 (87.5)	4 (12.5)	12 (75.0)	4 (25.0)	14 (70.0)	6 (30.0)	None
Total	249 (85.9)	41 (14.1)	157 (86.7)	24 (13.3)	239 (76.6)	73 (23.4)	2004 < 2014 (*P* = .006)

Table 2
Gender of first and corresponding authors of research articles according to year of publication.

	1994		2004		2014		Significant difference in female authorship
	Male, *n* (%)	Female, *n* (%)	Male, *n* (%)	Female, *n* (%)	Male, *n* (%)	Female, *n* (%)	
First authorship							
Cohort study	56 (71.8)	22 (28.2)	50 (61.7)	31 (38.3)	39 (54.2)	33 (45.8)	None
Case control study	109 (83.8)	21 (16.2)	92 (59.7)	62 (40.3)	40 (50.6)	39 (49.4)	1994 < 2004 (*P* < .000)
Cross-sectional study	117 (81.2)	27 (18.8)	69 (54.3)	58 (45.7)	27 (46.6)	31 (53.4)	1994 < 2004 (*P* < .000)
Clinical trial	75 (87.2)	11 (12.8)	68 (73.9)	24 (26.1)	40 (67.8)	19 (32.2)	1994 < 2004 (*P* = .026)
Other	20 (83.3)	4 (16.7)	17 (89.5)	2 (10.5)	6 (54.5)	5 (45.5)	2004 < 2014 (*P* = .029)
System review/meta-analysis	–	–	8 (61.5)	5 (38.5)	22 (78.6)	6 (21.4)	None
Total	377 (81.6)	85 (18.4)	304 (62.6)	182 (37.4)	174 (56.7)	133 (43.3)	1994 < 2004 (*P* < .000)
Corresponding authorship							
Cohort study	59 (59.0)	41 (41.0)	51 (63.7)	29 (36.3)	42 (57.5)	31 (42.5)	None
Case control study	110 (85.9)	17 (13.2)	102 (65.8)	53 (34.2)	53 (66.3)	27 (33.8)	1994 < 2004 (*P* < .000)
Cross-sectional study	119 (83.2)	24 (16.8)	67 (53.2)	59 (46.8)	31 (54.4)	26 (45.6)	1994 < 2004 (*P* < .000)
Clinical trial	74 (87.1)	11 (12.9)	68 (73.9)	24 (26.1)	42 (71.2)	17 (28.8)	1994 < 2004 (*P* = .028)
Other	20 (83.3)	4 (16.7)	16 (94.1)	1 (5.9)	6 (50.0)	6 (50.0)	None
System review/meta-analysis	–	–	8 (66.7)	4 (33.3)	24 (82.8)	5 (17.2)	None
Total	382 (79.7)	97 (20.3)	312 (64.7)	170 (35.3)	198 (63.9)	112 (36.1)	1994 < 2004 (*P* < .000)

Table 3
Gender of first author according to cultural area.

	2004			2014			Significant difference between years
	Male, *n* (%)	Female, *n* (%)	Significance	Male, *n* (%)	Female, *n* (%)	Significance	
Asia	10 (71.4)	4 (28.6)	0.109	21 (75.0)	7 (25.0)	0.0008	None
Europe	210 (74.5)	72 (25.5)	0.000	149 (65.1)	80 (34.9)	0.000	None
Africa	3 (75.0)	1 (25.0)	0.317	2 (100.0)	0 (0.0)	n.a.	–
Middle East	8 (80.0)	2 (20.0)	0.058	2 (50.0)	2 (50.0)	1.000	None
North America	272 (66.7)	136 (33.3)	0.000	219 (67.2)	107 (32.8)	0.000	None
Oceania	19 (65.5)	10 (34.5)	0.095	14 (50)	14 (50)	1.000	None
Eurasia	0 (0.0)	0 (0.0)	n.a.	0 (0.0)	0 (0.0)	n.a.	–
South America	2 (66.7)	1 (33.3)	0.564	2 (100)	0 (0.0)	n.a.	–

Table 4
Gender of first author according to region (Europe).

	2004			2014			Significant difference between years
	Male, *n* (%)	Female, *n* (%)	Significance	Male, *n* (%)	Female, *n* (%)	Significance	
Scandinavia	17 (63.0)	10 (37.0)	0.176	15 (62.5)	9 (37.5)	0.221	None
Central Europe	40 (85.1)	7 (14.9)	0.000	22 (66.7)	11 (33.3)	0.056	0.051
Western Europe	140 (74.1)	49 (25.9)	0.000	102 (64.2)	57 (35.8)	0.000	0.045
Southern Europe	11 (64.7)	6 (35.3)	0.225	8 (72.7)	3 (27.3)	0.132	None
South Eastern Europe	3 (100.0)	0 (0.0)	n.a.	2 (100.0)	0 (0.0)	n.a.	–
Baltic States	1 (100.0)	0 (0.0)	n.a.	0 (0.0)	0 (0.0)	n.a.	–

significantly increased. Similarly, editorials showed a mixed change pattern, with significantly increasing rates of female first authors between 1994 and 2004 but significantly dropping rates between 2004 and 2014. Significant changes were also observed in female first authorship of case reports between 1994 and 2004. Overall female first authorship across all non-research articles increased significantly between 1994 and 2004. Overall corresponding authorship across all non-research articles increased significantly between 2004 and 2014, but not between 1994 and 2004.

3.3. Author gender in original research articles

Even though the gender difference in first authorship of original research was statistically significant in all years (1994: $P = 0.000$; 2004: $P = 0.000$; 2014: $P = 0.016$), gender distribution amongst first authors was more balanced than in non-research articles. Table 2 provides a detailed description of gender distribution amongst first and corresponding authors in research articles.

More significant changes in the rate of female first and corresponding authorships were observed between 1994 and 2004 than in the second observed decade. While overall female first authorship increased significantly between 1994 and 2004, further gains between 2004 and 2014 did not reach statistical significance. Similarly, following a significant increase between 1994 and 2004, the overall rates of female corresponding authorship remained stable between 2004 and 2014 (Table 2).

3.4. Author gender according to cultural area in 2004 and 2014

As shown in Table 3, by far the most publications were published by first authors from North America (2004: 408, 54.4%, 2014: 326, 52.7%) and Europe (2004: 282, 37.6%; 2014: 229, 37%) followed by Oceania (2004: 29, 3.9%, 2014: 28, 4.5%) and Asia (2004: 14, 1.9%, 2014: 28, 4.5%) in both investigated years. Publications from other cultural areas were scarce and only accounted for 2.2% in 2004 and 1.2% in 2014.

While North America and Europe still dominated the scientific landscape in 2014, their publication rates slightly declined, while Asian countries more than doubled their publication output in the three journals under investigation. First authorship from Oceania also slightly increased from 3.9% to 4.5%. Publications from all other cultural areas decreased between 2004 and 2014.

North America and Europe showed significantly lower rates of female first authors both in 2004 and 2014. While the number of female first authors rose between 2004 and 2014 in Europe, it decreased slightly in North America. These changes, however, did not reach statistical significance. Likewise, gender differences, or their change, did not reach statistical significance for publications from Oceania, but there was a marked trend towards an even gender distribution in 2014. By contrast, the percentage of Asian female first authors appears to have lowered between 2004 and 2014.

When considering only Europe, Scandinavia was the area with the most balanced genderwise first authorship rates. In 2004, the lowest rates of female first authors were found in Central Europe (14.9%), South Eastern Europe (0%) and the Baltic States (0%). While rates of female first authors were stable in Scandinavia between 2004 and 2014, the numbers of female first authors in Southern Europe declined from 35.3% to 27.3%. During the same period of time, rates of female authors from Western Europe increased significantly ($P = 0.045$). Central Europe more than doubled its rate of female first authors (from 14.9% to 33.3%), but the change did not reach statistical significance. Table 4 provides a detailed description of the gender distribution of first authors within Europe.

3.5. Gender composition of the editorial boards of the three journals

Average rates of women on the editorial boards of the three journals were 16% in 1994, 28.8% in 2004 and 25.9% in 2014. When the three journals were analysed individually, the highest rates of female editorial board members were observed in the AJP across all years (1994: 21%, 2004: 48.1%, 2014: 30.8%). JP had the lowest rates of female editorial board members (10%) in 1994, but increased its numbers substantially to 24.1% in 2004 and 27.1% in 2014. In comparison, the BJP started at a higher base-rate (16%) in 1994, but its number of female editorial board members decreased to 14.1% in 2004. By 2014, the rate of female editorial board members in BJP had increased again to 19.7%.

4. Discussion

The present study updates on women's international publication activity in high-impact psychiatry journals between 1994 and 2014 and forms part of a longitudinal analysis with the aim to monitor the progression of women in psychiatric research over time. Despite substantial scientific interest in other medical fields and an increased focus on gender issues in psychiatric research in the last decades [10–12], it is, to our knowledge, the first and only project of its kind in the field of psychiatry.

The study results indicate that publication rates of women have been on a rise over two ten-year periods. However, there was considerably less growth in the rates of female first authors between 2004 and 2014 (3.7%) than between 1994 and 2004 (13.1%), indicating a possible ceiling effect. The finding of a decreasing gender gap in academic publishing in psychiatry mirror a trend apparent in various other medical fields [13–17]. In some of these fields similar observations of decreasing gains in the rates of female first authors, as indicated by our data, have been reported [13,14,17].

It has been argued that a major influencing factor for the existing disproportionate gender rates in academic publishing could be a lack of women choosing academic medicine as a career. This argument, however, does not hold true for the field of psychiatry, where women currently make up 47% of full-time faculty [18] in the US and rates of women have traditionally been high.

As reported by the Association of American Medical Colleges (AAMC), the rate of psychiatric female full-time faculty has risen from 42% to 47% between 2009 and 2014 [18,19], constituting a gain of 5% in women potentially eligible for scientific publishing over a 5-year period. Though we lack the data to calculate estimates of the effects of this rise of "women at risk for publishing" on women's research output, a gain of only 3,7% of female first authors over a period twice as long (2004 to 2014) seems disproportionately low.

Potential explanations for persisting disproportionate publication activities between the genders in spite of near-balanced numbers of men and women in academic psychiatry include prevailing constraints of traditional gender stereotypes, manifestations of sexism in the medical environment, work environments that fail to support women, discrimination in research funding, inequalities in the distribution of scientific labour roles and a lack of female role models and mentors in leading positions [20–23]. Additionally it has been argued that women in academic medicine may be more limited by family liabilities than their male counterparts [24–26], resulting in less time for scientific work. A greater interest of female faculty in teaching and clinical activities at the cost of science has also been observed [21,27,28] and could add further to disproportionate publication rates.

While female first authorship somewhat progressed over the past decade, corresponding authorship of women was virtually stationary between 2004 (29.2%) and 2014 (29.5%) according to our data. As corresponding authorship usually indicates academic seniority, the lack of change may be due to a glass-ceiling for the progression of women to higher academic ranks, where women are still grossly underrepresented [18,29]. The study's findings of an extreme dominance of male corresponding authors in the publishing of non-original research such as editorials, which are often invited contributions that require high ranks and prestigious positions within the academic community, may also be a reflection of the lack of women in leading academic positions.

When we considered the three journals under investigation separately, JP had substantially higher rates of female authors than the other two journals in 2014 and 2004. Reasons for the surprisingly high numbers of publications by women in JP are difficult to interpret and do not correlate with numbers of women on the editorial board.

An analysis of authorship of women according to cultural area showed an increase of female first authors from one-fourth to one-third in European studies between 2004 and 2014, but stable numbers in North American studies during the same period of time. We can only speculate about the reasons for the lack of change in the publication rates of women in North America. However, it should be noted that North American rates of female first authorship had already been comparably high in 2004, resulting in less scope for improvement than in Europe. Only time can tell if stagnant publication rates of female first authors, as discovered for North America, will also occur in European publications. Future developments as well as possible ceiling effects should be monitored.

Within Europe, Scandinavian countries such as Sweden, Norway, Denmark or Finland have been pioneers in the implementation of extensive policies strengthening women's participation in the labour force such as full-day day care for children, the transference of major parts of social care from the private to the public sector or incentives for fathers to take a more active part in the care of their minor children since the early 1970s [30]. The impact of the elaborate Scandinavian support system for women, resulting in consistent top rankings on the United Nations Development Programme's Gender Inequality Index [31] is also reflected in our data, where Scandinavian countries showed the most balanced gender publication rates in 2004 as well as in 2014.

5. Limitations

First, the degree to which our findings can be generalised is limited, because we only investigated three high-ranking psychiatric journals. Thus, our results are not representative of all journals in which psychiatrists publish and cannot be extrapolated to other, including lower-impact journals. Second, we only analysed the publications of one year of each decade and, though unlikely, significant fluctuation of the composition of author gender between years cannot be ruled out. Third, the affiliation of the first author of each article was used as a proxy for the paper's country of origin. Information on the affiliations of the co-authors as well as the corresponding authors was not included in our analysis. As a consequence, collaborations between different countries could not be assessed. Furthermore, the affiliation of the first author is not in all cases indicative of the country in which the research was actually conducted.

6. Conclusion

This bibliometric analysis reveals deficits in the diversity of the current academic psychiatric landscape in terms of the representation of women as well as authors from non-first world countries.

Though women have gained ground in some areas of scientific publishing over the past decades, their progress has been slower and less pronounced than could have been expected from their increasing influx into academic psychiatry. This suggests that interventions beyond the mere recruitment of female scientists will be necessary to achieve gender parity in academic medicine.

To date interventions strengthening women's professional networks such as mentoring programs [22,32], interventions tackling subtle gender biases [33–35] and career development programs [36] have been shown to be effective and should be implemented comprehensively at universities. Furthermore, we suggest the compulsory masking of author information during the reviewing process of scientific journals as gender biases cannot be ruled out from the current scientific perspective.

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Authors' contributions

All authors have made substantial contributions to the work reported in this manuscript and fulfill authorship criteria.

Disclosure of interest

The authors declare that they have no competing interest.

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References

[1] Østergaard CR, Timmermans B, Kristinsson K. Does a different view create something new? The effect of employee diversity on innovation. Res Policy 2011;40:500–9.
[2] Daley S, Wingard DL, Reznik V. Improving the retention of underrepresented minority faculty in academic medicine. J Natl Med Assoc 2006;98:1435.
[3] Riska E. Gender and medical careers. Maturitas 2011;68:264–7.
[4] Diamond SJ, Thomas Jr CR, Desai S, Holliday EB, Jagsi R, Schmitt C, et al. Gender differences in publication productivity, academic rank, and career duration among U.S. academic gastroenterology faculty. Acad Med 2016;91:1158–63.
[5] Robinson D. The status of higher education teaching personnel in Australia, Canada, New Zealand, the United Kingdom, and the United States. In: International Higher Education and Research Conference; 2005.
[6] Jolliff L, Leadley J, Coakley E, Sloane R. Women in US academic medicine and science: statistics and benchmarking report 2011–2012. Washington, DC: Association of American Medical Colleges; 2012. p. 1–59.
[7] Amering M, Schrank B, Sibitz I. The gender gap in high-impact psychiatry journals. Acad Med 2011;86:946–52.
[8] eHRAF World cutures; 2015, http://www.ehrafworldcultures.yale.edu/ehrafe/regionsCultures.do#region=0.
[9] Corp. I. IBM SPSS Statistics for Windows, Version 22.0. Armonk, NY: IBM Corp; 2013.
[10] Riecher-Rossler A. Sex and gender differences in mental disorders. Lancet Psychiatr 2017;4(1):8–9.
[11] Sobanski T, Sauer H, Bär K, Wagner G. Gender differences in neural activation during perceptual uncertainty in patients with major depression. Eur Psychiatry 2016;33:S200.
[12] Agyapong V, Juhas M, Ritchie A, Kavanagh A. Gender differences and characteristics of psychiatric patients assessed in the emergency department of a regional hospital in Canada. Eur Psychiatry 2016;33:S439–40.
[13] Weiss DA, Kovshilovskaya B, Breyer BN. Gender trends of urology manuscript authors in the United States: a 35-year progression. J Urol 2012;187:253–8.
[14] Jagsi R, Guancial EA, Worobey CC, Henault LE, Chang Y, Starr R, et al. The "gender gap" in authorship of academic medical literature — a 35-year perspective. N Engl J Med 2006;355:281–7.
[15] Nkenke E, Seemann R, Vairaktaris E, Schaller HG, Rohde M, Stelzle F, et al. Gender trends in authorship in oral and maxillofacial surgery literature: a 30-year analysis. J Craniomaxillofac Surg 2015;43:913–7.
[16] Piper CL, Scheel JR, Lee CI, Forman HP. Gender trends in radiology authorship: a 35-year analysis. AJR Am J Roentgenol 2016;206:3–7.
[17] Sidhu R, Rajashekhar P, Lavin VL, Parry J, Attwood J, Holdcroft A, et al. The gender imbalance in academic medicine: a study of female authorship in the United Kingdom. J R Soc Med 2009;102:337–42.
[18] Colleges AoAM. The state of women in academic medicine: the Pipeline and pathways to leadership; 2013–2014, https://www.aamc.org/members/gwims/statistics/.
[19] Colleges AoAM. Women in U.S. academic medicine statistics and medical school benchmarking; 2008–2009, https://www.aamc.org/members/gwims/statistics/stats09/.
[20] Westring AF, Speck RM, Dupuis Sammel M, Scott P, Conant EF, Tuton LW, et al. Culture matters: the pivotal role of culture for women's careers in academic medicine. Acad Med 2014;89:658–63.
[21] Edmunds LD, Ovseiko PV, Shepperd S, Greenhalgh T, Frith P, Roberts NW, et al. Why do women choose or reject careers in academic medicine? A narrative review of empirical evidence. Lancet 2016;388:2948–58.
[22] Bates C, Gordon L, Travis E, Chatterjee A, Chaudron L, Fivush B, et al. Striving for gender equity in academic medicine careers: a call to action. Acad Med 2016;91:1050–2.
[23] Macaluso B, Lariviere V, Sugimoto T, Sugimoto CR. Is science built on the shoulders of women? A study of gender differences in contributorship. Acad Med 2016;91:1136–42.
[24] Perna LW. Sex differences in faculty tenure and promotion: the contribution of family ties. Res Higher Educ 2005;46:277–307.
[25] Shollen SL, Bland CJ, Finstad DA, Taylor AL. Organizational climate and family life: how these factors affect the status of women faculty at one medical school. Acad Med 2009;84:87–94.
[26] Raj A, Carr PL, Kaplan SE, Terrin N, Breeze JL, Freund KM. Longitudinal analysis of gender differences in academic productivity among medical faculty across 24 medical schools in the United States. Acad Med 2016;91:1074–9.
[27] Buckley LM, Sanders K, Shih M, Hampton CL. Attitudes of clinical faculty about career progress, career success and recognition, and commitment to academic medicine. Results of a survey. Arch Intern Med 2000;160:2625–9.
[28] Mayer AP, Blair JE, Ko MG, Hayes SN, Chang YH, Caubet SL, et al. Gender distribution of U.S. medical school faculty by academic track type. Acad Med 2014;89:312–7.
[29] Moran M. Women make progress in academic medicine, but leadership disparities linger. Psychiatr News 2015;50:1.
[30] Gornick JC, Meyers MK. Creating gender egalitarian societies: an agenda for reform. Politics Soc 2008;36:313–49.
[31] Gender inequality index. United Nations; 2014, http://www.hdr.undp.org/en/content/gender-inequality-index-gii.
[32] Varkey P, Jatoi A, Williams A, Mayer A, Ko M, Files J, et al. The positive impact of a facilitated peer mentoring program on academic skills of women faculty. BMC Med Educ 2012;12:14.
[33] Girod S, Fassiotto M, Grewal D, Ku MC, Sriram N, Nosek BA, et al. Reducing implicit gender leadership bias in academic medicine with an educational intervention. Acad Med 2016;91:1143–50.
[34] Westring A, McDonald JM, Carr P, Grisso JA. An integrated framework for gender equity in academic medicine. Acad Med 2016;91:1041–4.
[35] Carnes M, Devine PG, Baier Manwell L, Byars-Winston A, Fine E, Ford CE, et al. The effect of an intervention to break the gender bias habit for faculty at one institution: a cluster randomized, controlled trial. Acad Med 2015;90:221–30.
[36] Helitzer DL, Newbill SL, Cardinali G, Morahan PS, Chang S, Magrane D. Narratives of participants in national career development programs for women in academic medicine: identifying the opportunities for strategic investment. J Womens Health 2016;25:360–70.