

Letter to the Editor

## **Publishing opportunities and gender equity: embedding monitoring in eye health education**

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We welcome recent efforts to uncover differential opportunities for women in eye health compared to their male counterparts, in terms of research, training or leadership, including in this journal.<sup>1,2</sup> We believe that routine monitoring of gender gaps across all aspects of eye health activity are required to create and maintain positive change towards gender equity.

While this drive towards equity is actively promoted in some settings, it is not clear whether the mechanisms which have historically created gender inequity might still be at work in other academic and geographical contexts. Our academic team oversees an MSc programme which aims to develop eye care researchers. As approximately 80% of our MSc students are from low- or middle-income countries (LMICs), we undertook a programme evaluation to identify whether there was a gender gap in their academic output after graduation. We took the publication of their MSc research project in peer-reviewed journals as indicative of both the degree of support provided for students towards their research work by university faculty, and opportunities to pursue academic activity afforded by subsequent employers. We also explored which graduates went on to achieve a high research output ( $\geq 15$  publications after graduating from the MSc) and undertake a PhD.

We included all graduates from the MSc in Public Health for Eye Care at the London School of Hygiene & Tropical Medicine, from inception of the course in 2002 to 2015 (2015 was chosen to allow time for students to publish their dissertation). A complete student list (n=190), along with their gender, country of origin, dissertation title and primary supervisor was created.

To ascertain the number of manuscripts each student had published before and since their MSc, we searched *Web of Science Author Search* and *PubMed*. We used the database that gave the most results for each student, and following de-duplication, checked the *Web of Science/PubMed* entry to confirm that the student was correctly identified in the author list. It was surmised that more research-active supervisors may be more successful in supporting students to publish, so the number of publications of primary supervisors from the year the student graduated

was ascertained using *Web of Science*. If the student had  $\geq 5$  publications, we attempted to identify whether they had completed a PhD by (1) searching Google Scholar – 'PhD', and first and last names in double quotation marks; (2) checking University/hospital/LinkedIn/other profile page; (3) PhD appearing after their name in a manuscript; (4) asking past MSc course directors to identify students they knew had completed a PhD.

The following confounding variables were assessed: (1) number of publications of the primary supervisor; (2) years since MSc graduation; (3) number of publications of the student prior to MSc (0 or  $\geq 1$ ) and (4) World Bank country group (low/middle-income country [LMIC], or high-income country). We tested whether supervisor's gender, and matching supervisor-supervisee gender (e.g. female student-female supervisor), were effect modifiers.

Among the 190 students, 79 (42%) were female and 166 (87%) were from an LMIC. Just over one-quarter ( $n=53$ , 28%) had published their MSc dissertation, being one in three female students (33%) and one in four male students (24%). Thirty-one students (16%) had high research output post-MSc ( $\geq 15$  publications after graduation) and this was slightly higher among female students ( $n=15$ , 19%) compared to male students ( $n=16$ , 14%). Fifteen students (8%) had completed a PhD, being equal proportions for both female ( $n=6$ , 8%) and male ( $n=9$ , 8%) students.

There were some differences in characteristics when comparing male and female students (Table 1). First, approximately two-thirds of female students (64%) had a female supervisor, compared to 50% of male students ( $p=0.09$ , chi-squared test). Secondly, 81% of female students were from an LMIC compared to 92% of male students ( $p=0.03$ , chi-squared test).

After adjusting for relevant confounders, we did not find an association between student gender and publication of their MSc dissertation ( $p=0.2$ ), nor between student gender and high research output post-MSc ( $p=0.2$ ). There was no evidence

for effect modification by supervisor gender, or by matching supervisor-supervisee gender.

A limitation of this programme evaluation is that some women may have been lost to follow-up due to their surnames changing following marriage. There is also a small chance that we missed students who had obtained a PhD but had fewer than 5 publications.

Our experience resonates with the findings discussed in a recent editorial in this journal,<sup>1</sup> showing that the gender gap in authors' h-indices disappears when length of career is taken into account (in the m-index).<sup>3</sup>

Our evaluation found that gender inequity has been avoided in the publishing opportunities of this cohort of international students. We are committed to ongoing monitoring of this and other indicators of gender inequity in opportunities for career progression and call on other academic institutions and training programmes to do the same.<sup>2,4</sup>

**Table 1:** Comparison of male and female MSc Public Health for Eye Care student cohorts at the London School of Hygiene and Tropical Medicine, 2002-2015.

		<b>Male N (%)</b>	<b>Female N (%)</b>	<b>Total N (%)</b>
Supervisor's gender*	Male	55 (50)	28 (36)	83 (44)
	Female	56 (50)	50 (64)	106 (56)
MSc dissertation published	No	84 (76)	53 (67)	137 (72)
	Yes	27 (24)	26 (33)	53 (28)
Number of publications prior to starting MSc	0	90 (81)	58 (73)	148 (78)
	≥1	21 (19)	21 (27)	42 (22)
High research output post-MSc	<15 publications	95 (86)	64 (81)	159 (84)
	≥15 publications	16 (14)	15 (19)	31 (16)
Completed a PhD	No	102 (92)	73 (92)	175 (92)
	Yes	9 (8.1)	6 (7.6)	15 (7.9)

Country of origin	LMIC	102 (92)	64 (81)	166 (87)
	HIC	9 (8.1)	15 (19)	24 (13)

Abbreviations: Low/middle-income country, LMIC; High-income country, HIC.

\*Missing for one supervisor.

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