

Are articles authored by women under-cited compared to articles authored by men?

Rob Siebers

A recent article in *Nature Physics* described that articles authored by women in general physics journals were significantly under-cited compared to articles authored by men (1). This has also been demonstrated previously in high impact medical, epidemiology and social journals (2-4). To our knowledge no such studies have been reported in medical laboratory science journals. Therefore, the present study aimed at determining whether there is under-citation in articles authored by women in the *New Zealand Journal of Medical Laboratory Science* (the Journal).

The Scopus™ database was searched for the Journal and the number of citations each published article received from August 2000 to July 2022. Articles were categorised in whether women or men were the 1st or senior corresponding author. Comparison between citations in the two categories was by Mann-Whitney u test (2-tailed) and statistical significance set at the p 0.05 level.

Of the 435 articles published in the Journal (August 2000 to July 2022), 128 were cited at least once. Table 1 shows the mean, standard deviation, and range of citations in the two categories (female, male). The Mann-Whitney u test returned a z-score of 1.438 resulting in a p value of 0.150 and a 95% confidence interval of the differences was -0.103 to 2.323.

Table 1. Citations to articles authored by women and men.

	Female authors	Male authors
Mean	2.23	3.34
Standard deviation	1.79	4.16
Range of citations	1-9	1-30
Number	52	76

Our study, although showing a higher mean number of citations to male authored articles compared to female authored articles, did not demonstrate a statistically significant difference. This contrasts with previously published articles on this topic (2-5). However, compared to those studies, the present study had a much smaller number of articles and citations, which is a limitation of the study.

The under-citation of articles by women in international journals (2-4) has been ascribed to the “Matthew effect” or the Matilda effect”. The “Matthew effect” is where research by men

is deemed to be the most important and central in any field while the “Matilda effect” is where research by women is deemed less important than that by men or their ideas are attributed to male scholars.

Citations to published peer-reviewed articles are important in the academic environment for promotion and research grant funding. Therefore, potential under-citing to articles published by women could have serious consequences for them in the academic environment. However, in New Zealand most medical laboratory science personnel are not academics and therefore potential under-citation is not of importance in their work environment. However, under-citation would be important to them personally as female authors are under-represented in the Journal (6).

AUTHOR INFORMATION

Rob Siebers, PGCertPH FNZIMLS FRSB HonFNZSP, Associate Professor¹ and Emeritus Editor²

¹ University of Otago, Wellington

² New Zealand Institute of Medical Laboratory Science, Rangiora

Correspondence: rob.siebers@otago.ac.nz

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