



Pandemic-Produced Penalty in Pharmacy Practice Publication Productivity: Effects by Faculty Gender and Academic Rank



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HIGHLIGHTS

- There were pandemic-rank interactions but no pandemic-gender interactions on scholarly outcomes, thus gender differences in output across all ranks before the pandemic remained during the pandemic
- The pandemic effect was positive on both output and activity among assistant professors but not among associates nor full professors

BACKGROUND

- We have previously shown that at the school of pharmacy (SOP) level, scholarly output of pharmacy practice faculty slightly increased during the COVID-19 pandemic, but the increase lower than was expected¹
- Studies before the pandemic have shown that scholarly output of pharmacy practice faculty are different between genders, and among the different academic ranks^{2,3}

OBJECTIVES

- To determine whether, and how gender and/or academic rank impacted the effects of COVID-19 pandemic on scholarly outcomes of individual pharmacy practice faculty members

METHODS

- **Inclusion criteria:** All faculty from the 54 previously described SOPs¹
- **Exclusion criteria:** Faculty with missing academic rank information in the AACP faculty roster; or whose gender was indeterminable from their first names using Gender API; or (for scholarly output only, as described in outcome measures below) faculty with zero (0) publication in both periods
- **Data collection:** Documents published before and during the pandemic (2018-2019 and 2020-2021, respectively) were obtained from Scopus
- **Outcome measures:** Scholarly activity (probability of publishing ≥ 1 document), and scholarly output (SO: number of documents published) based on (a) any author, or (b) first-author positions during each period
- **Hypotheses (null):** there were no pandemic-gender or pandemic-rank interaction effects on the outcome measures
- **Data analysis:** Pre-processing with Python *pandas* (ver. 1.5.2); Statistical analysis with R, using linear mixed effects models; pandemic, gender and rank (\pm pandemic-gender and/or pandemic-rank interactions) were fixed effects, and individual faculty was the random effect

RESULTS

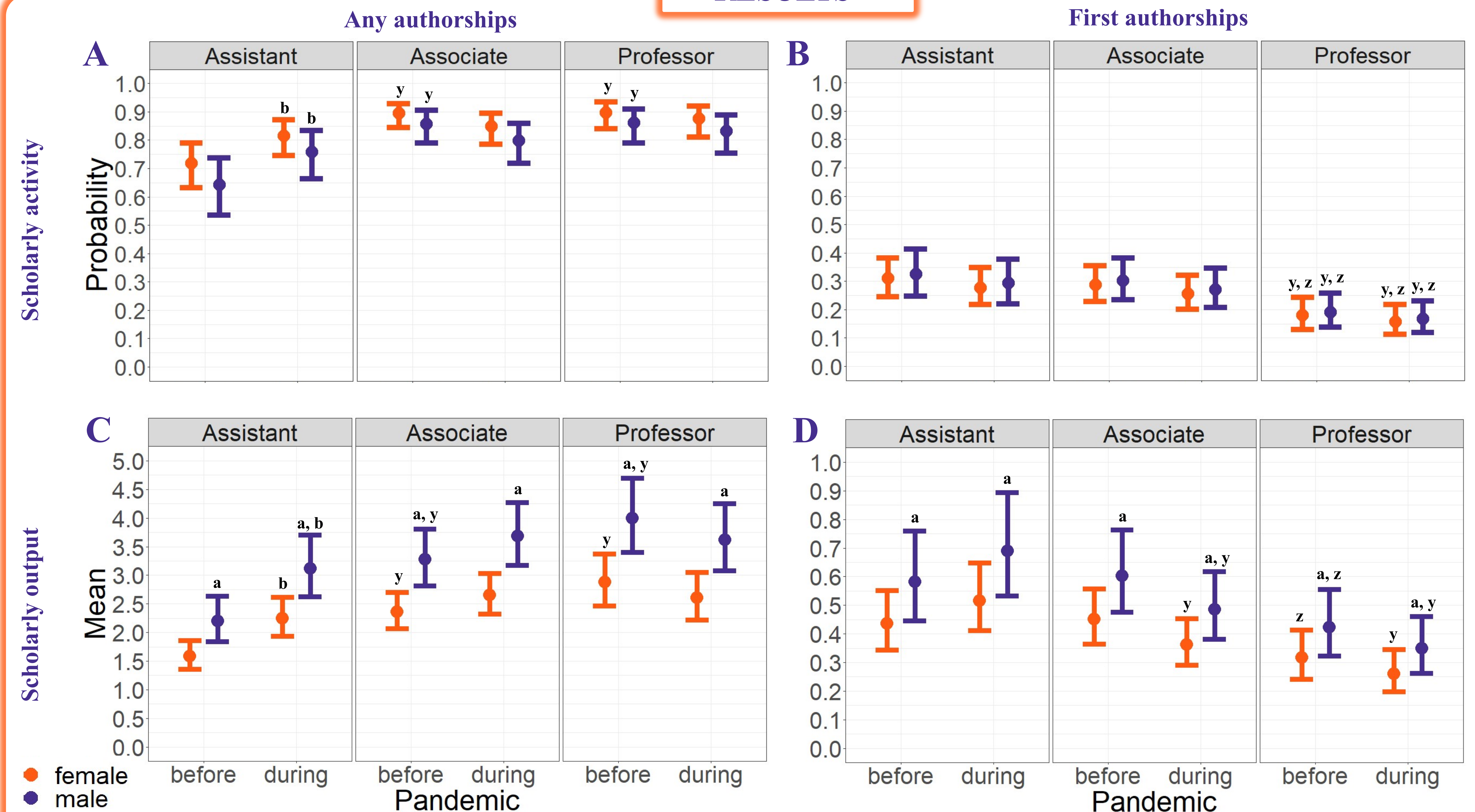


Figure 1: Effects of the pandemic on scholarly activity and output among pharmacy practice faculty. Faculty members included in analysis A&B = 1081 (61.2% females; 31.4% assistant, 40.0% associate and 28.7% full professors); C&D = 904 (62.7% females; 30.4% assistants, 40.6% associates, and 29.0% full professors). Each outcome measure was examined based on any authored (A & C) and first-authored documents (B & D). Scholarly activity (A&B) represented by predicted probability of publishing at least 1 document. Scholarly output (C & D) represented by the predicted mean number of documents published (note the difference in scales in C vs. D). Error bars are 95% confidence intervals. All models included all fixed effects (pandemic, gender and academic rank), but interaction effects are only included if significant ($p < 0.05$); Pandemic-Rank interaction included in A, C and D only. Relevant pairwise comparisons that were significant ($p < 0.05$, adjusted using Benjamini-Hochberg method) are as shown; a = versus female (same pandemic period and academic rank), b = versus before (same academic rank and gender), y = versus assistant (same pandemic period and gender), z = versus associate (same pandemic period and gender).

DISCUSSION

- Reports in other fields suggesting that scholarly output among female faculty were disproportionately negatively affected by the pandemic was not observed in this pharmacy practice faculty population; however, pre-existing gender differences in output remained during the pandemic, across all ranks
- During the pandemic, assistant professors closed the activity and output gaps with associates and professors, because associates and professors did not see similar increases during the pandemic
- Differences in collaboration patterns across academic ranks may have played a role in these findings. This potential role of collaboration is being investigated

CONCLUSION

The effects of the pandemic on scholarly outcomes among pharmacy practice faculty were overall neutral to positive. Academic rank, but not gender, modified these effects, with only assistant professors seeing the positive effects.

REFERENCES

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