

Bridging the Gap of Sex and Gender Differences in Medicine and Research: a trainee initiative for improved sex and gender specific patient care

Shayna Levine M.D. M.S.^{1,2}, Sneha M. Chaturvedi³, Jeanna M. Qiu^{1,7}, Nora Galoustian⁴, Brooke Hartenstein⁵, Jan Werbinski M.D.⁶,
Deborah Kwolek M.D.^{1,7}

¹Harvard Medical School, Boston, MA, ²Brigham and Women's Hospital, Boston, MA, ³Washington University School of Medicine, St. Louis, MO, ⁴University of California, Los Angeles David Geffen School of Medicine City of Los Angeles, CA, ⁵Florida State University College of Medicine, Tallahassee, FL, ⁶Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, MI, ⁷Massachusetts General Hospital, Department of Internal Medicine, Boston, MA



INTRODUCTION

- Sex- and gender-based medicine (SGBM) aims to understand how biological sex and gender affect the pathophysiology and expression of human disease
- Research has historically lacked female animal models or clinical trial participants.
- Despite efforts since the 1990s to include women in medical research and report data by sex, there has been little uptake of this mandate and many researchers did not analyze data by sex, minimizing the effect of this policy.
- Less than 20% of medical schools have an integrated SGBM curriculum outside of traditional obstetrics and gynecology.

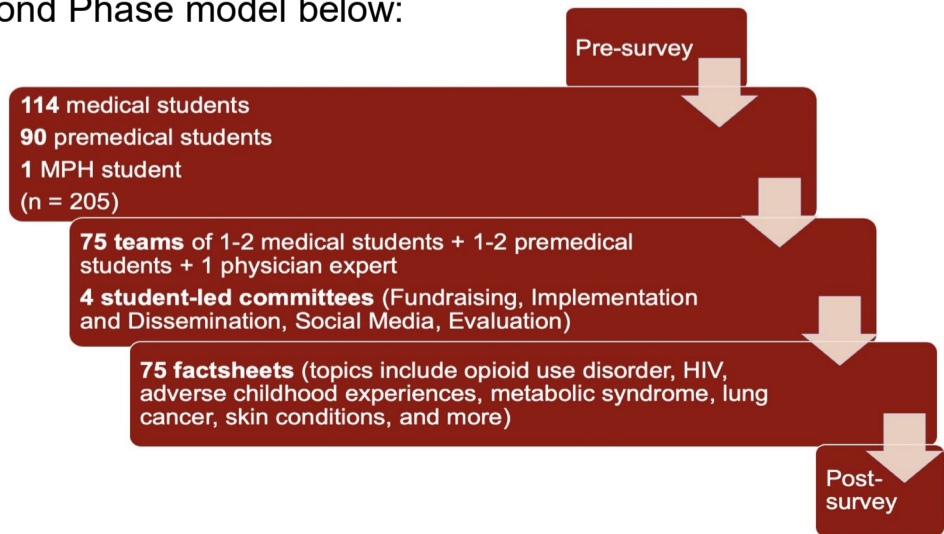
The **Sex and Gender Health Collaborative (SGHC)** is a national initiative of **American Medical Women's Association (AMWA)**, with the goal of advancing SGBM education.

GOALS

- Create a publicly available resource of fact sheets and videos for students, healthcare providers and the public to help expand awareness of SGBM
- Bridge the gap in traditional medical education curricula by increasing knowledge about sex and gender differences in common diseases
- Provide opportunities for students to conduct in-depth research and literature review
- Create a nationwide network of trainees and physicians interested in SGBM

METHODS

- Survey data was collected pre- and post- the creation of fact sheets and educational materials by volunteer students and trainees.
- First phase: 6 students working on 9 fact sheets.
- Second Phase model below:



RESULTS

Phase 1:

- Post-survey results from Phase 1 pilot showed 100% of respondents (N=5) **strongly agreed** participation increased their knowledge of sex and gender differences in medicine and expanded their network on this topic.
- Qualitative data from Phase 1 pilot suggests the creation process **enabled students to develop skills in literature review, scientific communication, and mentoring other trainees.**

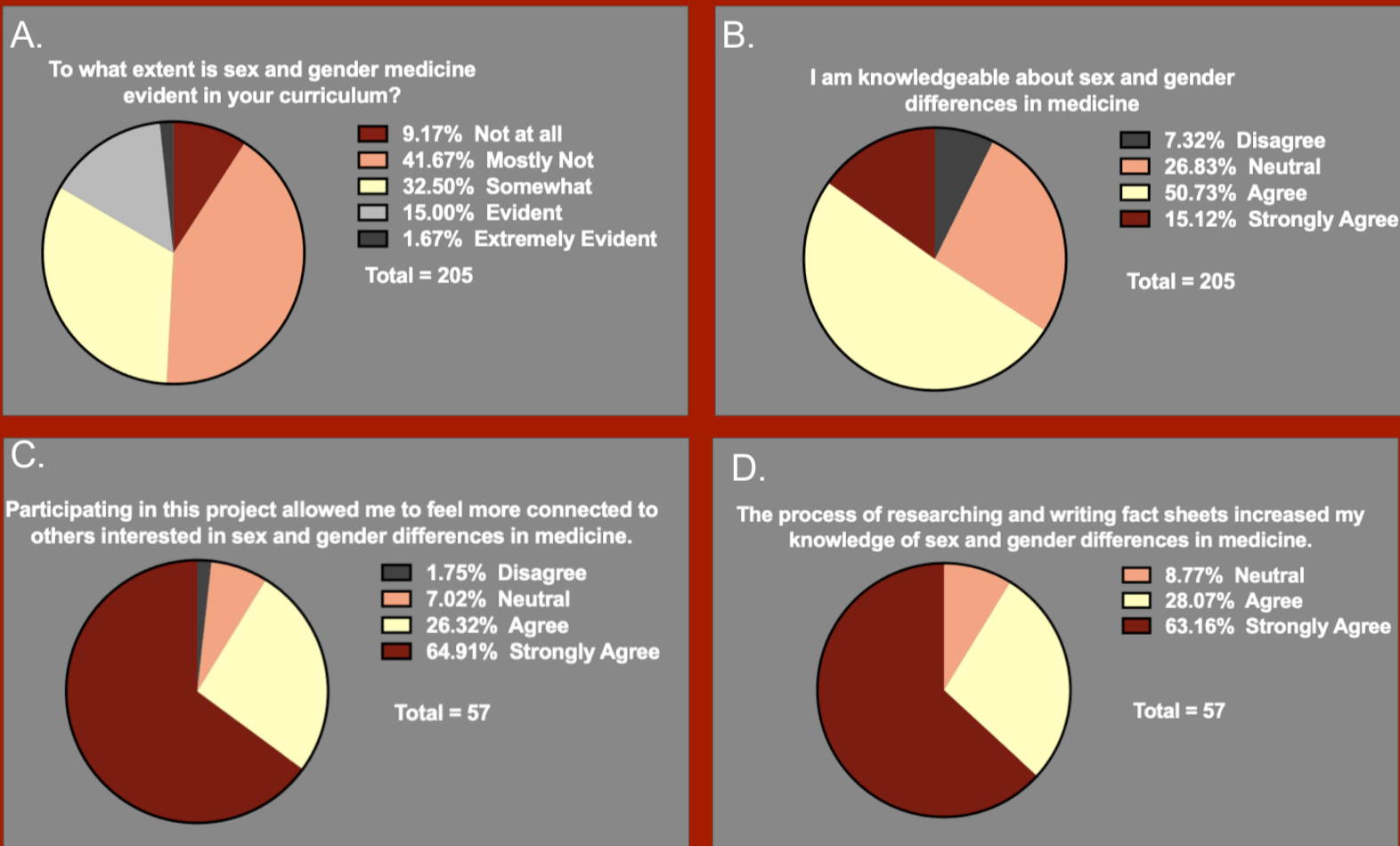


Figure 1: Survey data from Phase 2 SGBM Education Initiative:

A-B show data from pre-survey (N=205)

C-D show preliminary data from post-survey results. Post-survey results are on-going.

Phase 2

- Pre-Survey Phase 2 data (N=205) demonstrates how students believe SGBM is important to patient care (not shown above) but inconsistently presented in their curriculum (Figure 1A).
- Preliminary post-survey data (N=57, still in process) shows participation increased knowledge of SGBM and facilitated networking with others in the field. (Figure 1B-D).

DISCUSSION

- Students believe education on sex and gender differences is vital yet lacking from current medical curricula.
- Creating training tools for SGBM instills leadership and essential writing/editing skills for volunteers.
- Connections forged between students and mentors will broaden the medical community dedicated to learning and teaching sex and gender differences.
- Resultant educational material will expand the knowledge base of SGBM among healthcare professionals, improving the quality of patient care.

FUTURE DIRECTIONS

- Analyze data from participant post-surveys to evaluate improvement in SGBM knowledge.
- Grow the SGBM database by empowering students to create fact sheets, YouTube videos and slide sets on new topics.
- Utilize communication platforms for longitudinal connections extending beyond this project.
- Create comprehensive toolkits for trainees to encourage incorporation of SGBM into medical school curriculum and residency programs.
- Expand the project to create a collaboration with interprofessional disciplines and intersectional populations.

ACKNOWLEDGEMENTS

We would like to thank the student volunteers for their enthusiastic passion and effort to narrow this gap in medical education and improve healthcare. We would also like to thank AMWA for their continued support for the Sex and Gender Health Collaborative.

Please visit our website:



REFERENCES

- Geller, S. E., Koch, A. R., Roesch, P., Filut, A., Hallgren, E., & Carnes, M. (2018). The More Things Change, the More They Stay the Same: A Study to Evaluate Compliance With Inclusion and Assessment of Women and Minorities in Randomized Controlled Trials. *Academic Medicine*, 93(4), 630–635. <https://doi.org/10.1097/ACM.0000000000002027>
- Jenkins, M. R., Herrmann, A., Tashjian, A., Ramineni, T., Ramakrishnan, R., Raef, D., Rokas, T., & Shatzler, J. (2016). Sex and gender in medical education: A national student survey. *Biology of Sex Differences*, 7(S1), 45. <https://doi.org/10.1186/s13293-016-0094-6>
- Mauvais-Jarvis, F., Bairey Merz, N., Barnes, P. J., Brinton, R. D., Carrero, J.-J., DeMeo, D. L., De Vries, G. J., Epperson, C. N., Govindan, R., Klein, S. L., Lonardo, A., Maki, P. M., McCullough, L. D., Regitz-Zagrosek, V., Regensteiner, J. G., Rubin, J. B., Sandberg, K., & Suzuki, A. (2020). Sex and gender: Modifiers of health, disease, and medicine. *The Lancet*, 396(10250), 565–582. [https://doi.org/10.1016/S0140-6736\(20\)31561-0](https://doi.org/10.1016/S0140-6736(20)31561-0)