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Authors
Ojo, Ayotomiwa
Singer, Miriam R
Morales, Blanca
et al.

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Reproductive Justice: A Case-Based, Interactive Curriculum

Ayotomiwa Ojo, MD, MPP*†, Miriam R. Singer†, Blanca Morales, MD, Allison A. Merz, MD, Rose L. Molina, MD, MPH, Andrea Pelletier, MS, MPH, Andrea Carmen‡, Marcos A. Moreno, MD‡, Victor A. Lopez-Carmen, MPH‡, Sonya Y. Ye, MD, Anabel Starosta, MD, Jennifer Rowley, MS, Sophia H. Yin, Hanna Amanuel, MSc, Caitlin C. Radford, MD, Leah N. Schwartz, MSc, Isabelle Wijangco, MD, MPP, Amanda R. Jowell, Kimberly M. Schaefer, MD, MPP, MSc, Jennifer Potter, MD, Camila M. Mateo, MD, MPH, Deborah Bartz, MD, MPH

*Corresponding author: ayotomiwa.ojo@nm.org

†Co-primary authors

‡Tribal Affiliation: Yaqui Nation

Abstract

Introduction: Reproductive injustices such as forced sterilization, preventable maternal morbidity and mortality, restricted access to family planning services, and policy-driven environmental violence undermine reproductive autonomy and health outcomes, with disproportionate impact on historically marginalized communities. However, curricula focused on reproductive justice (RJ) are lacking in medical education. **Methods:** We designed a novel, interactive, case-based RJ curriculum for postclerkship medical students. This curriculum was created using published guidelines on best practices for incorporating RJ in medical education. The session included a prerecorded video on the history of RJ, an article, and four interactive cases. Students engaged in a 2-hour small-group session, discussing key learning points of each case. We evaluated the curriculum's impact with a pre- and postsurvey and focus group. **Results:** Sixty-eight students participated in this RJ curriculum in October 2020 and March 2021. Forty-one percent of them completed the presurvey, and 46% completed the postsurvey. Twenty-two percent completed both surveys. Ninety percent of respondents agreed that RJ was relevant to their future practice, and 87% agreed that participating in this session would impact their clinical practice. Most respondents (81%) agreed that more RJ content is needed. Focus group participants appreciated the case-based, interactive format and the intersectionality within the cases. **Discussion:** This interactive curriculum is an innovative and effective way to teach medical students about RJ and its relevance to clinical practice. Walking alongside patients as they accessed reproductive health care in a case-based curriculum improved students' comfort and self-reported knowledge on several RJ topics.

Keywords

Reproductive Justice, Case-Based Learning, Health Equity, LGBTQ+, OB/GYN - Reproductive Endocrinology/Infertility, Women's Health, Anti-racism, Editor's Choice

Educational Objectives

By the end of this session, students will be able to:

1. Define reproductive justice (RJ).
2. Describe historical examples of injustices perpetrated against individuals and groups with marginalized identities.
3. Explain how current social, economic, environmental, and health policies create and exacerbate reproductive injustices and health inequities.
4. Identify principles of RJ within real patient scenarios.
5. Summarize the role of advocacy in RJ.
6. Identify interventions to improve reproductive health outcomes and reduce inequities.

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Introduction

Throughout the United States, forced sterilization, preventable maternal morbidity and mortality, restricted access to family planning services, and policy-driven environmental violence disrupt reproductive autonomy and positive reproductive health outcomes, with disproportionate impact on communities of color.[1,2] Reproductive justice (RJ) is a framework to identify and address these injustices and to underscore cumulative impacts from multiple intersecting barriers. SisterSong, the largest national multiethnic RJ collective, defines RJ as the human right to maintain personal bodily autonomy, to have or not have children, and to parent in safe and sustainable communities.[3] The RJ framework acknowledges the extensive history of injustices

perpetrated against individuals and groups with marginalized identities and recognizes that injustice persists today.[3-5]

Achieving health justice requires health care workers and medical systems to admit their complicity in perpetuating injustice.[1] Recent survey data suggest that obstetrics and gynecology residents witness discrimination and injustice in patient care yet feel poorly equipped to address reproductive injustices.[6] Thus, it is critical that academic medical institutions comprehensively educate trainees on health equity and justice.[7,8] Metzl and Hansen proposed shifting the paradigm in medical education towards building trainees' structural competency.[9] A structural competency framework emphasizes the social, economic, environmental, and political structures that impact health.[10] Prior literature has demonstrated that a structural competency curriculum can reduce trainee biases that blame patients for poor health outcomes.[11] Incorporating RJ into medical curricula using a structural competency framework can help prepare students to enter diverse clinical environments and provide better care to marginalized groups, a critical step in reducing reproductive health disparities.[8-11]

Few peer-reviewed publications have discussed RJ curricula in medical education. To our knowledge, the only published curriculum explicitly centered on RJ is "Structures & Self: Advancing Equity and Justice in Sexual and Reproductive Healthcare," developed by the Innovating Education in Reproductive Health program.[12] This curriculum outlines important resources and videos related to RJ, although it does not include an interactive or classroom-based component. *MedEdPORTAL* has published curricula related to structural racism and racial disparities in health,[13,14] LGBTQ health,[15,16] and social determinants of health,[17] including social determinants of sexual and reproductive health.[18] However, these curricula do not explicitly center on the principles of RJ.

Investigators at the University of Michigan Medical School recently recruited an expert panel of RJ leaders to identify best practices for teaching RJ in medical education using the Delphi method.[19] Motivated by a call from Harvard Medical School (HMS) students to incorporate RJ within the program, we built and implemented a unique and novel curriculum based on these best practices in RJ education.[19] We presented the course content in the form of a digitally interactive, case-based curriculum in which medical students virtually walked alongside patients and made various decisions in the patient journey. Each case centered on the structural boundaries and violence challenging patients of minoritized status by race, sexual orientation, gender, and documentation status. This is the first RJ curriculum of its kind to offer an interactive, choose-your-own-adventure format.

We hypothesized that by centering on individual patient experiences, this interactive curriculum would advance students' knowledge of reproductive injustices in the United States, which are often compounded by interpersonal bias and structural violence faced by individuals of color, individuals who identify as LGBTQIA+, and those who are undocumented. Furthermore, we predicted that this interactive curriculum would improve students' understanding of the long-standing history of care inequities and the contemporary socioeconomic systems and policies that contribute to reproductive injustice.

Methods

Learners

Third- and fourth-year HMS students who had completed their core clinical clerkships and enrolled in Social Medicine II participated in this 2-hour session. Social Medicine II was a component of the broader Essentials II course, a mandatory, 4-week, classroom-based course at HMS covering clinical epidemiology, health policy, medical ethics and professionalism, population health, and social medicine. The goal of the Essentials II course was to teach students to think critically about medical knowledge and understand the sociopolitical contexts of health and health care in the US.

Case Development

In April 2020, two HMS students (Blanca Morales and Allison A. Merz) developed a pilot, interactive, case-based session on RJ for Social Medicine II. The pilot primarily focused on barriers to reproductive health care encountered by undocumented patients. The interactive cases used a skip logic format that allowed students to make decisions at various junctures and follow the resulting paths of the patient in a PowerPoint slide deck. This format was used to convey how political determinants of health,[20,21] clinical interactions, power dynamics, and other circumstances influenced patients' ability to access safe and comprehensive reproductive care. Each case had distinct objectives, the intent of which was competence in RJ praxis in various clinical settings. Ninety-eight students participated in this pilot and provided feedback via an anonymous online survey.

Between May 2020 and October 2020, a team of HMS students and faculty incorporated feedback from the pilot session and expanded the curriculum to cover additional RJ topics. Students were divided into four groups, with each group responsible for creating an interactive case focusing on a different area of RJ (LGBTQIA+ health, undocumented populations' health and

access to family planning services, racial disparities in maternal morbidity and mortality, reproductive health and environmental violence within Indigenous communities; Appendices A-D). Two senior faculty advisors (Rose L. Molina and Deborah Bartz) with expertise in RJ supervised these teams. Additionally, each group of students worked with a faculty or community member with expertise in a specific subtopic of RJ. For example, students who developed content related to LGBTQIA+ reproductive health collaborated with a faculty expert (Jennifer Potter) on LGBTQIA+ care. Similarly, students who developed content related to Indigenous health collaborated with Yaqui tribal members (Andrea Carmen, Marcos A. Moreno, and Victor A. Lopez-Carmen) with expertise regarding Indigenous reproductive health and environmental violence in Indigenous communities. Community experts were monetarily compensated using a community engagement fair-market value calculator.[22]

Preparatory Assignments

As preparatory work, we instructed students to view a 25-minute prerecorded video lecture on the history of RJ (Appendix E) created by the senior faculty advisors and to read an article about RJ.[4] Students had been split into small discussion groups of six to 10 students per faculty member in advance as part of the Social Medicine II course structure. Each student was assigned one of the four cases to review in depth and present to their peers in their small groups, emphasizing key learning points. Students were provided with detailed instructions in advance for preparing for the session (Appendix F). We also provided four to nine slide templates for each case to aid students leading the case discussion (Appendix G). We instructed students to review the other three cases (Appendices A-D) ahead of their discussion session as well, with the expectation of contributing to small-group discussions.

Two-Hour Discussion Session

In the 2-hour discussion session, students rotated leading small-group discussions regarding the interactive cases, with one faculty lead helping facilitate each small group. We also provided small-group discussion faculty leaders with a curriculum guide in advance of this session. This guide included an overview of key RJ themes and a fact sheet to reference during small-group discussion (Appendix H).

Due to the COVID-19 pandemic, this course took place virtually using Zoom in October 2020 and March 2021.

Analysis and Program Evaluation

Students who participated in the course were asked to complete optional pre- and postsurveys (Appendices I and J) via an online survey tool. The pre- and postsurveys were each designed to take under 5 minutes. The presurvey was administered to students via an online learning management system, and the postsurvey was distributed via email after the session. The pre- and postsurveys asked students to rate their level of knowledge and comfort regarding RJ topics using a 5-point Likert scale (1 = *strongly agree,* 5 = *strongly disagree*), allowing for a comparison before and after students took the course. Additionally, the postsurvey asked students to provide feedback specific to the content and timing of the session (i.e., how long each case took them to complete) and included an open-ended response for comments about the session.

We invited all learners to join a virtual focus group. We developed guiding questions for the focus group to assess how well the case-based, interactive format and synchronous, 2-hour session achieved the objectives of this curriculum (Appendix K). We provided these guiding questions to students in advance of the focus group session. The focus group was moderated by Andrea Pelletier via Zoom. The focus group lasted 30 minutes and was recorded (with permission from participants).

Deidentified pre- and postsurvey data was exported from an online survey tool to Excel, merged based on the last four digits of students' cell phone numbers, and exported to Stata 16.0 (StataCorp). Descriptive statistics, including frequencies, median, and interquartile range, were calculated. The Wilcoxon signed rank test was performed to test for differences in pre- and postsurvey responses with respect to Likert-scale responses on student comfort and self-reported knowledge. Open-ended survey responses and the focus group discussion were reviewed by two collaborators (Ayotomiwa Ojo and Miriam R. Singer) who independently identified themes using content analysis. Reviewers then convened to discuss, finalize, and explain each theme. There were no discrepancies in theme identification for the open-ended survey question or focus group discussion data.

This project was reviewed by the HMS Program in Medical Education Educational Scholarship Review Committee and determined a quality improvement initiative, requiring no additional review.

Results

Sixty-eight postclerkship medical students participated in the Social Medicine II RJ session in October 2020 and March 2021. Twenty-eight students (41%) completed the presurvey, and 31 (46%) completed the postsurvey. Overall, 15 students (22%) completed both the pre- and postsurveys.

Table 1 shows students' comfort and self-reported knowledge regarding various topics within RJ before and after engaging in the curriculum. After participating in this session, students reported higher comfort in identifying how environmental violence violates RJ for Indigenous communities and had higher self-reported knowledge of how the Indian Health Service functions to provide medical care. Students' self-reported knowledge of state variations in policies that impact RJ also increased. There was no change in students' self-reported comfort with defining RJ, identifying systemic racism as a contributor to racial disparities in maternal mortality, or using gender-affirming language.

The Figure depicts students' satisfaction with the course content. Ninety percent of respondents strongly or somewhat agreed that RJ was relevant to their future practice, and 87% strongly or somewhat agreed that participating in this session would impact their future clinical practice. Overall, most respondents (81%) strongly or somewhat agreed that more RJ content was needed in the HMS curriculum. The median amount of time taken to complete each case was 20-30 minutes, with each case requiring a similar amount of time to complete.

Of the 31 students who completed the postsurvey, 15 (48%) submitted additional comments. Common emerging themes included that the content was impactful and should be included throughout the 4-year curriculum. Other emerging themes included suggestions to improve the synchronous session and the feeling that time constraints limited students' ability to engage fully with the material.

Four students participated in the focus group. Themes identified in the focus group included (1) support for the case-based, interactive format, (2) an appreciation of the intersectionality within the cases, (3) a desire for more RJ within the 4-year curriculum, and (4) an expression of the importance of historical context within any RJ curriculum. We briefly describe the themes and include exemplary quotes in Table 2. Students expressed a liking for this unique curriculum format and its effectiveness for teaching nuanced and complex material. Regarding the content, students appreciated the inclusion and intersection of multiple identities mirroring the diversity of patient experiences across US hospital systems. Students also noted the importance of adequate time to absorb the historical context that sets the foundation for understanding RJ in a modern context. Overall, students reflected on the novelty of many of these concepts and the need for more RJ content in medical education.

Discussion

To address the lack of RJ curricula in medical education, we developed a novel, interactive, case-based RJ curriculum based on recently published best practices for teaching RJ. This curriculum offers the first published example of the use of unfolding and branching cases to (1) enhance knowledge of the role of historical injustices in creating current structural and social determinants of reproductive health, (2) enhance awareness of reproductive injustices in the lives of individual patients, and (3) prompt consideration of advocacy and specific interventions to address inequities.

This innovative curriculum is a promising approach for teaching medical students about RJ and its relevance to clinical practice. The majority of our respondents felt that RJ was important to their future practice and reported that the session would impact their future. Moreover, most students agreed that more RJ content is needed in medical education, supporting the notion that our curriculum fills an important gap in medical education. Data on self-reported knowledge gained were mixed, with more improvements for material that students likely had less

Table 1. Changes in Student Comfort, Knowledge, and Skills Related to Reproductive Justice Content Assessment ($N = 15$)

Item[a]	Pretest *Mdn* (IQR)	Posttest *Mdn* (IQR)	*p*
Comfort			
I am comfortable defining reproductive justice.	2 (1-2)	1 (1-2)	.09
I am comfortable identifying how systemic racism operates to contribute to racial disparities in maternal health outcomes.	2 (1-2)	1 (1-2)	.14
I am comfortable identifying the ways in which environmental violence negatively impacts maternal and infant health in Indigenous communities.	2 (2-4)	1 (1-2)	.002
Knowledge			
I understand the extent to which state variations in policy impact reproductive justice.	2 (1-4)	2 (1-2)	.02
I am aware of the history of unconsented sterilization in the United States.	2 (1-2)	1 (1-2)	.10
I have an understanding of how the Indian Health Service functions.	4 (3-4)	2 (1-3)	.003
Skills			
I feel equipped to use gender-affirming language when discussing reproductive anatomy and reproductive health with sexual and gender minorities.	2 (2-4)	2 (1-2)	.06

Abbreviation: IQR, interquartile range.
[a]Rated on a 5-point Likert scale (1 = *strongly agree,* 5 = *strongly disagree*).

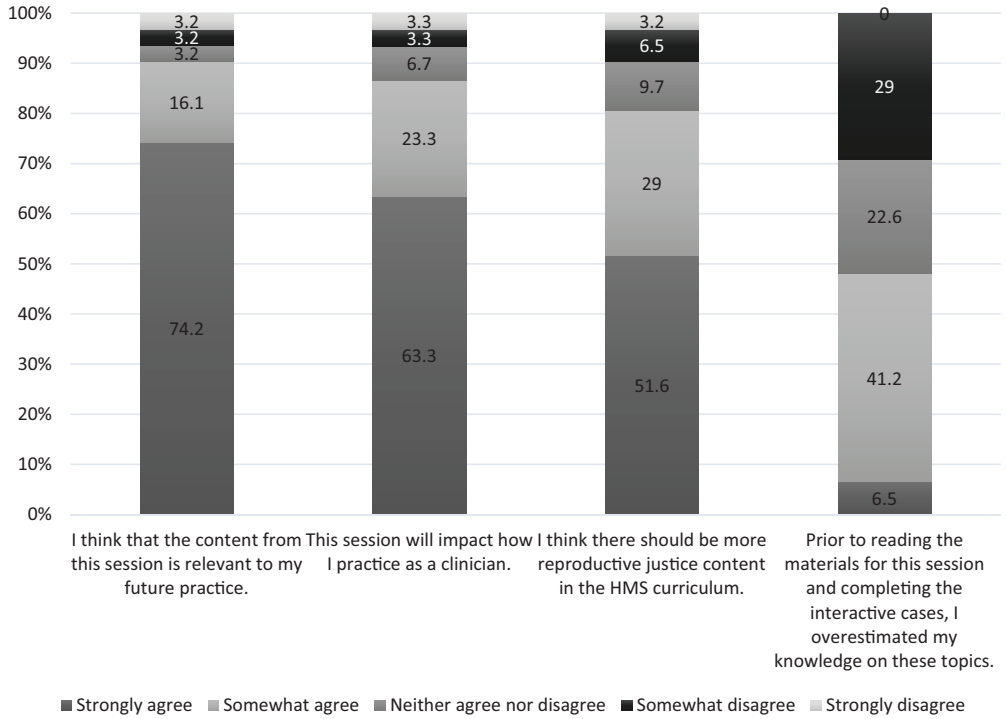

Figure. Student satisfaction and perceived level of reproductive justice's importance for trainee education ($N = 31$). Abbreviation: HMS, Harvard Medical School.

previous exposure to (e.g., material pertaining to American Indian and Native American communities) compared to material that had been addressed in prior Social Medicine II sessions (e.g., maternal mortality, gender-affirming language).

Students supported the intersectional framework rooted in realistic patient experiences, supporting our original hypothesis that a case-based curriculum would help students better understand the impact of historical and current injustices on

Table 2. Focus Group Themes and Representative Quotes

Theme	Quotes
Support for case-based, interactive format	"I liked the format of the cases… it was helpful to see how if you just changed a few variables how different the outcomes could be."
	"The case-based format itself added to the objectives because it was more experiential; you were able to walk through the cases and see the nuances of the discussion."
Importance of intersectionality and inclusion	"The cases provided enough nuance and texture for a large expanse of people to find something relatable or understandable… the cases seemed very real and very complex, as opposed to being a very stereotypical or one-dimensional character."
	"[The curriculum] did a good job of integrating the idea of intersectionality… [and] built on the previous social medicine classes that we had already had, such as racial justice… while also bringing in new concepts."
	"I want to state my appreciation for the care that was taken in crafting the identities of the people in the case. It was done very thoughtfully, and I appreciate that."
	"I also appreciate the imagery… for example, [in the prep video,] all the images used were people of color and varying appearances. I felt like that was a strong message even though it was subtle… the imagery was very powerful. It changed the way people were thinking about it and was more humanizing in conceptualizing these abstract concepts."
More reproductive justice in medical education	"A member of my group… said they had never seen this material at any other time at [our institution]. It is really high yield stuff."
	"Some of [the learning] was taken away [since] we were so pressed for time and could not discuss the nuances of each case in only 20-30 minutes."
Importance of historical context for reproductive justice	"Some of the historical context could be in the prep work before so everyone has a baseline discussion. In our small group, the historical context was mentioned but was not really dived into."
	"It would be nice to incorporate more historical context, which could be accomplished by having it in the prep and having more time. It could also be included in the final synthesis."

patients' decision-making and interactions with health care systems. Studies have shown that case-based learning is more engaging compared to traditional lecture-based courses and is effective in increasing students' knowledge surrounding complex topics.[23] While other resources invite discourse about reproductive injustice using patient cases,[24] this curriculum is novel in that its interactive nature allows students to follow patient decision-making processes and understand how care differences impact health outcomes.

Although specific to RJ, this interactive, case-based learning initiative contributes to the growing body of literature on curricular methods to achieve structural competence in medical education.[10-19] Educators can adapt and expand our cases to address other issues in reproductive health care such as ableism[25] and Islamophobia.[26] Additionally, educators can include this content throughout students' medical training and present individual cases to students at different stages of their training, supporting a longitudinal curriculum. A longitudinal format would also allow time for more nuanced discussions, addressing student feedback that time constraints prevented robust conversations about each case.

In addition to the interactive, case-based format, other novel components of this curriculum are the student-led approach and the inclusion of community experts. Medical students increasingly demand that medical education better address the historical and contemporary context of health injustices and play a pivotal role in raising awareness that systemic discrimination is a key driver of health inequity.[27] Collaborating with key stakeholders from the communities of focus to cocreate cases is critical to constructing accurate and dignified patient narratives around marginalized identities.[28,29] While developing this curriculum, we partnered with community members, who contributed expertise and shared decision-making. By compensating community experts for their contributions, we hoped to help establish compensation as a norm in curriculum development and avoid academia's tendency to benefit from knowledge within marginalized communities without providing adequate recognition or compensation.

Our curriculum and its evaluation had several limitations. We had a limited sample size to assess the curriculum's effectiveness due to a low survey response rate that may have resulted in greater sample bias. The low response rate may have been due to the virtual format during the COVID-19 pandemic, as students could not complete the survey while in the classroom. Additionally, since we assessed self-reported knowledge, it was unclear whether the curriculum increased students' actual knowledge on RJ topics. Future studies should evaluate the curriculum's impact on students' actual RJ knowledge, whether changes in knowledge are sustained over time, and whether the curriculum influences the future care that students provide. Moreover, the curriculum was part of a 4-week course dedicated to the intersections of structural racism, the social determinants of health, clinical practice, and health care delivery. Thus, the program specifics and outcomes may not be generalizable to other educational contexts that do not provide a broader understanding of the relationships between complex social issues and health care. Additionally, the curriculum was implemented at a medical school located in a state with more liberal policies supporting RJ. Student survey responses may have reflected an institutional and environmental bias. It will be crucial to repeat the administration and evaluation of the curriculum in a variety of medical schools across the US, particularly those in which RJ is being limited legislatively, to understand how the curriculum is received by students and impacts their learning.

We successfully developed, implemented, and evaluated the first comprehensive, interactive, case-based curriculum on RJ. This curriculum is representative of the sociopolitical landscape at the time of creation and thus will need to be updated by educators as laws and policies surrounding reproductive health evolve over time. Our curriculum provides students with foundational knowledge related to RJ and fills an important gap in medical education. An RJ framework gives trainees the necessary foundation to begin practicing culturally humble and effective care and emphasizes the need for providers' sensitivity to the political and institutional powers that impact patient health.

Appendices

A. Case on RJ and Indigenous Health.pptx

B. Case on RJ and LGBTQIA+ Health.pptx

C. Case on RJ and Maternal Mortality.pptx

D. Case on RJ and Family Planning.pptx

E. Prerecorded Lecture.mp4

F. Student Guide.docx

G. Small-Group Discussion Slides.pptx

H. Faculty Guide.docx

I. Presurvey.docx

J. Postsurvey.docx

K. Focus Group Questions.docx

All appendices are peer reviewed as integral parts of the Original Publication.

Ayotomiwa Ojo, MD, MPP: First-Year Resident, Department of Obstetrics and Gynecology, Northwestern University Feinberg School of Medicine; ORCID: https://orcid.org/0000-0002-0718-838X

Miriam R. Singer: Fourth-Year Medical Student, Harvard Medical School

Blanca Morales, MD: Third-Year Resident, Department of Obstetrics, Gynecology & Reproductive Sciences, University of California, San Francisco

Allison A. Merz, MD: Third-Year Resident, Department of Obstetrics, Gynecology & Reproductive Sciences, University of California, San Francisco

Rose L. Molina, MD, MPH: Assistant Professor, Department of Obstetrics and Gynecology, Division of Global and Community Health, Beth Israel Deaconess Medical Center, Harvard Medical School

Andrea Pelletier, MS, MPH: Biostatistician, Department of Obstetrics & Gynecology, Harvard Medical School/Brigham and Women's Hospital

Andrea Carmen: Executive Director, Yaqui Nation, International Indian Treaty Council

Marcos A. Moreno, MD: Second-Year Resident, Department of Psychiatry, Yale School of Medicine

Victor A. Lopez-Carmen, MPH: Third-Year Medical Student, Harvard Medical School

Sonya Y. Ye, MD: Second-Year Resident, Naval Medical Center

Anabel Starosta, MD: Second-Year Resident, Department of Obstetrics, Gynecology & Reproductive Sciences, Yale University

Jennifer Rowley, MS: Fourth-Year Medical Student, Harvard Medical School

Sophia H. Yin: Fourth-Year Medical Student, Harvard Medical School

Hanna Amanuel, MSc: Third-Year Medical Student, Harvard Medical School

Caitlin C. Radford, MD: First-Year Resident, Department of Obstetrics & Gynecology, Weill Cornell Medicine

Leah N. Schwartz, MSc: Fourth-Year Medical Student, Harvard Medical School

Isabelle Wijangco, MD, MPP: Second-Year Resident, Department of Obstetrics, Gynecology & Reproductive Sciences, University of California, San Francisco

Amanda R. Jowell: Fourth-Year Medical Student, Harvard Medical School

Kimberly M. Schaefer, MD, MPP, MSc: First-Year Resident, Department of Obstetrics and Gynecology, Oregon Health & Science University

Jennifer Potter, MD: Professor, Beth Israel Lahey Health, Harvard Medical School

Camila M. Mateo, MD, MPH: Instructor, Division of Pediatrics, Boston Children's Hospital

Deborah Bartz, MD, MPH: Associate Professor, Department of Obstetrics & Gynecology, Harvard Medical School/Brigham and Women's Hospital

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Ethical Approval
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