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ORIGINAL RESEARCH

Pregnancy and Motherhood for Trainees in Anesthesiology: A Survey of the American Society of Anesthesiologists

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INTRODUCTION

For the past 2 decades, approximately half of matriculants to US medical schools have been women.¹ The proportion of women anesthesiology residents has risen modestly during this period, from 25% in 1999 to 34% in 2018.^{2,3} However, the continued lack of gender parity suggests a need to better understand and support the unique experiences of women anesthesiology trainees. Given that the peak childbearing years are likely to coincide with training, concerns surrounding motherhood are expected to influence a woman physician's satisfaction during residency and fellowship.⁴⁻⁷ Indeed, our recent analysis found that women anesthesiologists would be more likely to counsel a female medical student against a career in anesthesiology if their desired childbearing age and number of children was adversely affected by work demands.⁸

Although data are limited in anesthesiology, recent surgical literature offers insight into the childbearing experiences of women physicians during training. A survey of women surgeons who finished residency in 2007 or later found that most trainees felt their parental leave was inadequate, with the American Board of Surgery leave policy cited as a major barrier to desired length of leave.⁹ More than half of these trainees stopped breastfeeding earlier than preferred because of poor lactation facility access and difficulty

leaving the operating room.⁹ Trainees who perceived stigma associated with being pregnant were significantly more likely to indicate that, if given the opportunity, they would choose a nonsurgical career more accommodating of motherhood.⁶

A study of physician mothers across specialties identified anesthesiologists as significantly more likely than women of other medical specialties to experience maternal discrimination.¹⁰ Nearly half of anesthesiologist participants reported prejudicial treatment based on pregnancy, maternity leave, or breastfeeding.¹⁰ We previously surveyed women members of the American Society of Anesthesiologists (ASA).⁸ In the current article, we report on their childbearing experiences during residency and fellowship.

METHODS

The survey was created by a group of women anesthesiologists with diverse childbearing experiences and institutional affiliations. In a literature review of relevant English language publications, 3 studies¹¹⁻¹³ that surveyed women physicians on their parental experiences were identified. The associated corresponding authors provided their survey tools to serve as references in survey design.¹¹⁻¹³ Survey questions were also drawn from a 2017 pilot study¹⁴ conducted by the present authors at a professional event for women anesthesiologists. The final

survey queried experiences and attitudes related to childbearing, parental leave, and breastfeeding for all women resident, fellow and attending members of the ASA. Respondents with children were asked a series of questions pertaining to each individual pregnancy/child (see Online Supplemental Material, Appendix 1).

The survey was deemed exempt by the Institutional Review Board at Mayo Clinic (Rochester, Minnesota). The ASA approved and distributed the electronic survey via email to all active women physician members who had not opted out of survey participation in March 2018. At the time of the survey distribution, there were 9999 active female resident, fellow, and physician members; of these, 474 opted out of surveys, leaving 9525 possible participants to this survey. The survey was open for 4 weeks, with email reminders sent periodically by the ASA. Participation was voluntary, and no compensation was given to respondents. Respondents were alerted if a question was left blank, but they could choose to continue without responding. Survey design did not allow respondents to return to previous questions; respondents were not able to close the survey and complete it at a later time. The particulars of this survey's development, design, and dissemination have been previously published.⁸

The present analysis focuses on respondents

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who were pregnant and/or had children while in anesthesia training in the United States since 2000. Respondents were excluded if they finished training prior to 2000 or did not train in the United States. Survey answers were reported in simple proportions. Descriptive statistics were used to summarize survey responses and demographic information. In Table 1, the sample size used is that of respondents who reported at least 1 pregnancy during training. In Tables 2 and 3, the sample size used are pregnancies (ie, the questions are reports about each pregnancy individually). Continuous variables were reported as medians and means, and categorical variables as frequencies and percentages. Missing data were not included in final calculations.

This group was subdivided for comparison in 2 ways (Figure 1). A comparison was undertaken among the following groups: pregnancies of women who graduated from 2000-2010, 2011-2018, and those who were in training when they completed the survey. Differences were assessed using Kruskal-Wallis for continuous variables and χ^2 test for categorical variables (Table 2). Responses from women who had pregnancies with and without female program directors and/or chairs were also compared. Differences were assessed using Wilcoxon rank sum for continuous variables and χ^2 for categorical variables (Table 3). Unadjusted *P* values from Table 2 and 3 were recalculated after controlling for False Discovery Rate using the Benjamin-Hochberg method for the 48 comparisons tested. Adjusted *P* values $<.05$ were considered significant for all statistical tests. Statistical analysis was performed using SAS version 9.4 (SAS Institute Inc, Cary, North Carolina).

RESULTS

The overall response rate was 22% with 2104 of 9525 recipients completing the survey. A total of 542 respondents who completed training in the United States in 2000 or after reported 752 pregnancies during anesthesia training (Figure 1, Table 1). Women in this group had a mean 1.4 pregnancies during training (median 1.0, range 1.0-4.0), more often occurring in residency (86.0%) than fellowship (14.0%). Planned pregnancies

comprised 84.1%. Some required infertility treatment (8.1%, *n* = 52), and many were complicated (32.9%, *n* = 210). Self-reported complications were premature labor (8.8%, *n* = 66), bedrest (7.8%, *n* = 59), preeclampsia (6.5%, *n* = 49), and a Neonatal Intensive Care Unit (NICU) stay for the baby (5.7%, *n* = 43). A small number were characterized by miscarriage/stillbirth (10.7%, *n* = 79). When asked to recall if they ever missed an obstetric appointment because of work, trainees reported missing at least 1 appointment in 40.5% of pregnancies.

A median 7.0 weeks was taken for maternity leave, with a median 4.0 weeks paid. The reported total length of leave has not increased significantly over time, specifically between 2011-2018 versus 2000-2010. (Table 2) For more than half of the pregnancies, respondents felt leave was inadequate (59.6%) and felt discouraged from taking more leave (65.7%); these metrics did not change significantly over time (*P* = .2162 and *P* = .8801, respectively). Less than half of respondents reported formal maternity leave policies at their training programs (32.2% yes, 44% no, 23.8% unsure). Leave associated with 64.1% of pregnancies caused the respondent's graduation date to be extended. Women were required to make up call days following 49.5% of pregnancies. In 19.5% of pregnancies, income loss related to leave affected ability to financially support a family.

Respondents breastfed their children following 92.7% of pregnancies, for a median 8.0 months. The average number of months breastfeeding increased significantly over time (*P* $<.0001$). When asked if there was a designated lactation space available, the number answering yes decreased significantly over time (*P* $<.0001$; Table 2). Following pregnancy, those that expressed milk answered that they were given pump breaks *majority of the time*, this increased significantly over time (*P* $<.0001$). However, guilt related to pump breaks increased over time (*P* $<.0001$).

For many pregnancies, residents and fellows felt discouraged from being pregnant or having children (51.6%), without significant change over time (*P* = .5125; Table 2). Most women perceived a negative stigma attached to having children during training (60.3%).

Data also were analyzed based on the sex of

the program director and department chair (Table 3). No statistically significant findings were detected.

DISCUSSION

This was the first national survey of women anesthesiologists regarding their experiences with pregnancy and motherhood during training.⁸ Parenthood during medical training is highly prevalent across specialties.^{4,15} In our study, anesthesiology trainees frequently missed at least 1 appointment because of work (40.5% of pregnancies). Pregnancy complications among our respondents largely mirrored the US population,^{16,17} although NICU admission was much more common among respondent births compared to national data (5.4% vs 0.1%).¹⁸ The cause for this discrepancy is unclear, but it may be due to differences in the definition of a NICU admission.

Maternity Leave

Maternity leave is considered essential to postpartum physical and mental health, such that many have argued for its expansion on a national level.^{19,20} For anesthesiology trainees, the past 2 decades have not seen a significant change in length of maternity leave (*P* = .4946 for total leave and *P* = .2087 for paid leave). Our survey revealed that in more than half of pregnancies during training, women felt their maternity leave was inadequate (59.6%) and/or felt discouraged (65.7%) from taking more time off, similar to attitudes reported in surgical trainees (Table 2).^{9,21} Seemingly incongruous, for most pregnancies trainees described their programs as accommodating in terms of maternity leave flexibility (86.1%), and felt guilt for overburdening cotrainees with extra responsibilities while on leave (67.5%). Graduate medical education must balance multiple goals: ensuring adequate and excellent clinical training, providing patient care, and supporting trainee needs outside of their education.²² Our findings suggest that trainee mothers also grapple with these competing priorities.

Respondents frequently reported their training programs did not have a formal maternity leave policy. Many women reported that during their pregnancies, their programs employed a patchwork of

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vacation and sick days to increase their time off around childbearing. Even so, trainees often had to choose between adequate maternity leave and graduating on time and/or financially supporting a family. These findings are consistent with existing literature that demonstrates substantial variability among institutional maternity leave policies for trainees across medical specialties.^{15,22} Our survey did not assess the potential downstream effects of delayed graduation on fellowship selection or application or employment opportunities.

At the time our survey was distributed, the American Board of Anesthesiology (ABA) and ASA had not created statements to specifically address parental leave for anesthesiology trainees. However, in January 2019, the ABA²³ revised its absence policy to allow up to 8 weeks of additional leave for birth and care of a newborn, or adopted or foster child, without extending training. The ASA also recently addressed maternity leave for trainees in a statement on personal leave: “all...anesthesiology training programs... should have explicit written policies that support and define leave...[for] situations that may involve...the birth or adoption of a child.”^{24(p1)} We are optimistic that these guidelines will help address parental leave-related challenges faced by anesthesiology trainees. Still, the American Council for Graduate Medical Education (ACGME)²⁵ does not have standard maternity leave requirements that apply to training programs across specialties. We think that our results support the call for an ACGME standard parental leave policy to promote resident wellness and reduce gender disparities in medicine.²⁶⁻²⁸

Breastfeeding

Trainees breastfed their infants following a vast majority of pregnancies (92.7%), at a higher rate and for a longer average period compared to national data.²⁹ Length of lactation increased significantly from 2000 to 2018 ($P < .0001$), consistent with a national resurgence in breastfeeding that is likely driven in part by increased understanding of associated health benefits.^{29,30} The American Academy of Pediatrics recommends breastfeeding for a full year, while median duration among trainee respondents was 8 months.³¹ This discrepancy likely

contributed to our finding that nearly half of trainee mothers (48.7%) did not meet their desired lactation period. Another factor may be lack of access to designated lactation space at work, a problem that has become more prevalent over time. Only 19.4% of current trainees reported designated lactation space at all locations, compared to 63.8% of those who completed training in 2000-2010 ($P < .0001$). This may be due to increased rotations at free standing ambulatory practices that do not have lactation facilities and increased nonoperative room anesthesia cases that lack proximal lactation spaces.³²⁻³⁵ While trainees increasingly reported protected lactation time ($P < .0001$) and greater support for breastfeeding among coworkers ($P = .0392$), guilt associated with pump breaks increased significantly over time ($P < .0001$). Together these findings show that a trainee mother's choice and ability to breastfeed is shaped by both environmental and cultural factors.

Reflecting the need for protected lactation space, time, and culture for trainee mothers across specialties,^{9,36-38} since our survey, the ACGME has enacted new requirements regarding breastfeeding accommodations. Programs are now required to have “clean and private facilities for lactation that have refrigeration capabilities, with proximity appropriate for safe patient care.”^{25(p6)} We hope this policy will validate and empower physicians who choose to breastfeed while in training, and that future studies will show a significant improvement in adequacy of space and time for lactation.

Attitudes and Culture

Negative stigma around being pregnant and having children during training was reported in 60.3% of pregnancies. In about half of cases (51.6%), trainees reported feeling discouraged from having children during training, which did not improve significantly over time ($P = .5125$). These findings are concerning, because perceived institutional support and maintenance of work-life balance are associated with a lower risk of burnout, distress, and depression in anesthesiology trainees.³⁹ Women anesthesiology trainees are at a greater risk of burnout and emotional distress than their male counterparts, which may have a substantial impact on their well-being in future practice.^{39,40}

Interestingly, presence versus absence of

a female program director or department chair was not significantly correlated with differences in length of leave, presence of paid leave, adequacy of leave, discouragement from taking more leave, breastfeeding, meeting desired breastfeeding duration, lactation space availability, guilt related to pump breaks, guilt for burdening other trainees, or satisfaction with the choice to have children during training (all $P \geq .41$). The increasing proportion of women anesthesiology program directors⁴¹ is encouraging from the perspective of greater gender parity in leadership; however our findings suggest that the gender identity of program leaders is less important than a supportive culture. Recruiting program directors who are dedicated to supporting resident parents is just one way that the field of anesthesiology can better recruit and retain talented women physicians.⁴²

Limitations

The survey was distributed to active members of the ASA, who may not represent the general population of anesthesiologists. Due to the nature of the study population, data were not collected from women who had left anesthesiology training or practice. Anesthesiologists who had a negative experience with childbearing may have been more likely to complete the survey and/or to remember their experiences. Data were collected from current residents as well as physicians who had completed training nearly 2 decades prior, leading to the possibility of recall bias. The survey did not look at factual policies but respondent's perception of things such as leave, flexibility, and lactation support, for example. These limitations must be considered when interpreting survey results. The survey was of women, not women who were pregnant. Therefore, unlike in our previous report of the survey wherein we could show that nonresponse did not affect conclusions, such insight is not available for the current article.⁸

CONCLUSIONS

Our study identified many challenges faced by women physicians who had pregnancies during anesthesiology training, including inadequate maternity leave, deficient access to lactation facilities at work, and negative

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culture surrounding pregnancy during training. Most of these challenges have been consistently present for multiple decades. Encouragingly, women indicated that if given the choice again, they would still have their child during training despite these obstacles (86.2%). Further research will be needed to understand how recent policy changes from the ABA, ASA, and ACGME change the childbearing experiences of women trainees. We are hopeful that these policy changes, increased advancement of women leaders in anesthesiology, and additional changes at specialty, institutional, departmental, and interpersonal levels can further support positive experiences for women trainees working to achieve balanced lives.

References

- Association of American Medical Colleges. 2019 FACTS: Applicants and Matriculants Data. Washington, DC: Association of American Medical Colleges; 2019.
- Brotherton SE, Rockey PH, Etzel SI. US graduate medical education, 2003-2004. *JAMA*. 2004;292(9):1032-7.
- Brotherton SE, Etzel SI. Graduate medical education, 2018-2019. *JAMA*. 2019;322(10):996-1016.
- Blair JE, Mayer AP, Caubet SL, et al. Pregnancy and parental leave during graduate medical education. *Acad Med*. 2016;91(7):972-8.
- Stentz NC, Griffith KA, Perkins E, Jones RD, Jagsi R. Fertility and childbearing among American female physicians. *J Womens Health (Larchmt)*. 2016;25(10):1059-65.
- Rangel EL, Lyu H, Haider AH, et al. Factors associated with residency and career dissatisfaction in childbearing surgical residents. *JAMA Surg*. 2018;153(11):1004-11.
- Rogers AJ, Rogers NG. The impact of frequent transitions on families in medical training. *Acad Med*. 2018;93(5):677-8.
- Kraus MB, Dexter F, Patel PV, et al. Motherhood and anesthesiology: a survey of the American Society of Anesthesiologists. *Anesth Analg*. 2020;130(5):1296-302.
- Rangel EL, Smink DS, Castillo-Angeles M, et al. Pregnancy and motherhood during surgical training. *JAMA Surg*. 2018;153(7):644-52.
- Adesoye T, Mangurian C, Choo EK, et al. Perceived discrimination experienced by physician mothers and desired workplace changes: a cross-sectional survey. *JAMA Intern Med*. 2017;177(7):1033-6.
- Carty SE, Colson YL, Garvey LS, et al. Maternity policy and practice during surgery residency: how we do it. *Surgery*. 2002;132(4):682-7; discussion 687-8.
- Mundschenk MB, Krauss EM, Poppler LH, et al. Resident perceptions on pregnancy during training: 2008 to 2015. *Am J Surg*. 2016;212(4):649-59.
- Willett LL, Wellons MF, Hartig JR, et al. Do women residents delay childbearing due to perceived career threats? *Acad Med*. 2010;85(4):640-6.
- Pearson ACS, Dodd SE, Kraus MB, et al. Pilot survey of female anesthesiologists' childbearing and parental leave experiences. *Anesth Analg*. 2019;128(6):e109-12.
- Sandler BJ, Tackett JJ, Longo WE, Yoo PS. Pregnancy and parenthood among surgery residents: results of the first nationwide survey of general surgery residency program directors. *J Am Coll Surg*. 2016;222(6):1090-6.
- Blencowe H, Cousens S, Oestergaard MZ, et al. National, regional, and worldwide estimates of preterm birth rates in the year 2010 with time trends since 1990 for selected countries: a systematic analysis and implications. *Lancet*. 2012;379(9832):2162-72.
- Ananth CV, Keyes KM, Wapner RJ. Pre-eclampsia rates in the United States, 1980-2010: age-period-cohort analysis. *BMJ*. 2013;347:f6564.
- Harrison W, Goodman D. Epidemiologic trends in neonatal intensive care, 2007-2012. *JAMA Pediatr*. 2015;169(9):855-62.
- Dagher RK, McGovern PM, Dowd BE. Maternity leave duration and postpartum mental and physical health: implications for leave policies. *J Health Polit Policy Law*. 2014;39(2):369-416.
- Falletta L, Abbruzzese S, Fischbein R, et al. Work reentry after childbirth: predictors of self-rated health in month one among a sample of university faculty and staff. *Saf Health Work*. 2020;11(1):19-25.
- Altieri MS, Salles A, Bevilacqua LA, et al. Perceptions of surgery residents about parental leave during training. *JAMA Surg*. 2019;154(10):952-8.
- Magudia K, Bick A, Cohen J, et al. Childbearing and family leave policies for resident physicians at top training institutions. *JAMA*. 2018;320(22):2372-4.
- American Board of Anesthesiology. Primary certification policy book. https://theaba.org/pdfs/Policy_Book.pdf. Accessed February 10, 2021.
- American Society of Anesthesiologists. Statement on personal leave. <https://www.asahq.org/standards-and-guidelines/statement-on-personal-leave>. Accessed July 14, 2020.
- Accreditation Council for Graduate Medical Education. Common program requirements. <https://www.acgme.org/What-We-Do/Accreditation/Common-Program-Requirements>. Accessed May 18, 2020.
- Ortiz Worthington R, Feld LD, Volerman A. Supporting new physicians and new parents: a call to create a standard parental leave policy for residents. *Acad Med*. 2019;94(11):1654-7.
- Vassallo P, Jeremiah J, Forman L, et al. Parental leave in graduate medical education: recommendations for reform. *Am J Med*. 2019;132(3):385-9.
- American Osteopathic Association House of Delegates. Approved resolution: Parental leave policies for Accreditation Council for Graduate Medical Education programs. Paper presented at: American Osteopathic Association Annual Business Meeting; October 2019; Chicago, IL.
- Centers of Disease Control and Prevention. Breastfeeding among US children born 2009-2016, CDC National Immunization Survey. https://www.cdc.gov/breastfeeding/data/nis_data/index.htm. Accessed July 14, 2020.
- Wright A, Schanler R. The resurgence of breastfeeding at the end of the second millennium. *J Nutr*. 2001;131(2):421S-5S.
- Section on Breastfeeding. Breastfeeding and the use of human milk. *Pediatrics*. 2012;129(3):e827-41.
- Dexter F, Jarvie C, Epstein RH. Lack of generalizability of observational studies' findings for turnover time reduction and growth in surgery based on the state of Iowa, where from one year to the next, most growth was attributable to surgeons performing only a few cases per week. *J Clin Anesth*. 2018;44:107-13.
- Nagrebetsky A, Gabriel RA, Dutton RP, Urman RD. Growth of nonoperating room anesthesia care in the United States: a contemporary trends analysis. *Anesth Analg*. 2017;124(4):1261-7.
- Elhag D, Dexter F, Elhakim M, Epstein RH. Many US hospital-affiliated freestanding ambulatory surgery centers are located on hospital campuses, relevant to interpretation of studies involving ambulatory surgery. *J Clin Anesth*. 2018;49:88-91.
- Epstein RH, Dexter F, Smaka TJ, Candiotti KA. Policy implications for the COVID-19 pandemic in light of most patients ($\geq 72\%$) spending at most one night at the hospital after elective, major therapeutic procedures. *Cureus*. 2020;12(8):e9746.
- Johnson HM, Mitchell KB, Snyder RA. Call to action: universal policy to support residents and fellows who are breastfeeding. *J Grad Med Educ*. 2019;11(4):382-4.
- Dixit A, Feldman-Winter L, Szucs KA. "Frustrated," "depressed," and "devastated" pediatric trainees: US academic medical centers fail to provide adequate workplace breastfeeding support. *J Hum Lact*. 2015;31(2):240-8.
- Halley MC, Rustagi AS, Torres JS, et al. Physician mothers' experience of workplace discrimination: a qualitative analysis. *BMJ*. 2018;363:k4926.
- Sun H, Warner DO, Macario A, et al. Repeated cross-sectional surveys of burnout, distress, and depression among anesthesiology residents and first-year graduates. *Anesthesiology*. 2019;131(3):668-77.
- Raimo J, LaVine S, Spielmann K, et al. The correlation of stress in residency with future stress and burnout: a 10-year prospective cohort study. *J Grad Med Educ*. 2018;10(5):524-31.
- Gonzalez LS, Fahy BG, Lien CA. Gender distribution in United States anaesthesiology residency programme directors: trends and implications. *Br J Anaesth*. 2020;124(3):e63-9.
- Huffmyer JL, Fahy BG. Cracking the motherhood and medicine code. *Anesth Analg*. 2020;130(5):1292-5.

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Abstract

Background: Although approximately half of US medical students are now women, anesthesiology training programs have yet to achieve gender parity. Women trainees' experiences and needs, including those related to motherhood, are increasingly

timely concerns for the field of anesthesiology. At present, limited data exists on the childbearing experiences of women physicians in anesthesiology training.

Methods: In March of 2018, we surveyed women members of the American Society of Anesthesiologists via email. Questions addressed pregnancy, maternity leave, lactation, and motherhood. We analyzed data from a subset of respondents who were pregnant or had children during training and graduated in the year 2000 or later.

Results: A total of 542 respondents who completed training in the year 2000 or after reported 752 pregnancies during anesthesia training. A maternity leave had a median length of 7 weeks and did not change significantly over time. During many pregnancies, women felt their leave was inadequate (59.6%) or felt discouraged from taking more time off (65.7%). Pregnancy and associated leave extended graduation from training in 64.1% of cases. In approximately half of pregnancies (51.3%), women met desired breastfeeding duration, with access to designated lactation space *decreasing* significantly over time (false-discovery adjusted $P = .0004$). Trainee mothers often felt discouraged from having children (51.6%) or perceived negative stigma surrounding pregnancy (60.3%). These attitudes did not change over time or in relation to female program leadership.

Conclusions: Women anesthesiology trainees commonly face obstacles when attempting to balance work and motherhood. Recent policy changes have addressed some of the challenges identified in our study. Future studies will need to evaluate how these changes have impacted anesthesiology trainees.

Keywords: Internship and residency, motherhood, pregnancy, parental leave, breastfeeding

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Figure

Figure 1. Survey responses. This analysis focuses on a subgroup of 542 survey respondents who had pregnancies or adoptions while completing residency training in the United States during the year 2000 or after. Their 752 pregnancies or adoptions occurred during training from these 542 respondents. They were stratified compared based on graduation year and gender of either the department chair or program director. Abbreviation: ASA, American Society of Anesthesiologists.



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Tables

Table 1. Respondent Demographics^a

Parameter	Value (N = 542)	Parameter	Value (N = 542)
Age, mean (SD), y	38.6 (5.82)	Current marital status, n (%)	
Year of residency completion, n (%)		Single, not in a committed relationship	3 (0.6)
2000-2010	208 (38.4)	Single, in a committed relationship	3 (0.6)
2011-2018	293 (54.1)	Engaged	2 (0.4)
Current trainees	41 (7.5)	Married	519 (95.9)
No. of pregnancies/children in training, n (%)		Divorced	13 (2.4)
1	353 (65.1)	Widowed	1 (0.2)
2	171 (31.5)	Partner works outside the home, n (%)	436 (80.6)
3	15 (2.8)	Race/ethnicity, n (%)	
4	3 (0.6)	African American	33 (6.1)
Pregnant or had children prior to training, n (%)	136 (25.1)	Hispanic/Latino	13 (2.4)
Current role, n (%)		Asian/South Asian	74 (13.7)
In residency or fellowship	101 (18.6)	Caucasian	403 (74.8)
In private practice	259 (47.8)	Multiracial	7 (1.3)
At an academic center	174 (32.1)	Other	9 (1.7)
Military	5 (0.9)	Sexual orientation, n (%)	
Not currently working	1 (0.2)	Heterosexual	530 (98.1)
Other	2 (0.4)	Homosexual	8 (1.5)
Board certified, n (%)		Bisexual	2 (0.4)
No	53 (9.8)		
Yes	405 (75.0)		
Not yet eligible	82 (15.2)		

^a Characteristics are summarized for participants who reported having at least one child or pregnancy during training in the United States with residency program completion in 2000 or after. Also survey wording preserved per original.

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Table 2. Maternity Leave, Breastfeeding, and Attitudes Toward Pregnancy in Training by Pregnancies/Adoptions of Respondents Based on Year of Residency Completion Demographics^a

Question	Pregnancies of Those With Residency Completion Between 2000-2010 (n = 305)	Pregnancies of Those With Residency Completion Between 2011-2018 (n = 395)	Pregnancies for Current Trainee (n = 52)	Total Pregnancies (N = 752)	P Value	FDR Adjusted P Value
Maternity Leave						
Weeks of total leave					.3297 ^a	.4946
n	264	343	41	648		
Mean (SD)	7.9 (4.8)	8.2 (5.3)	8.4 (4.5)	8.1 (5.0)		
Median	7.0	8.0	7.0	7.0		
Weeks of paid leave					.0795 ^a	.2087
n	262	338	39	639		
Mean (SD)	4.2 (3.7)	4.5 (3.3)	5.2 (2.9)	4.4 (3.5)		
Median	4	5	6	4		
Weeks using vacation					.8029 ^a	.9367
n	257	330	39	626		
Mean (SD)	2.8 (2.1)	2.7 (1.9)	2.6 (2.4)	2.8 (2.0)		
Median	3.0	3.0	2.0	3.0		
Use of sick time for leave, n (%)					<.0001 ^b	.0002
No	163 (61.5)	158 (46.2)	12 (29.3)	333 (51.4)		
Yes	87 (32.8)	165 (48.2)	22 (53.7)	274 (42.3)		
Unsure	15 (5.7)	19 (5.6)	7 (17.1)	41 (6.3)		
Perceived adequacy of leave, n (%)					.1038 ^b	.2162
No	136 (54.8)	199 (62.4)	24 (68.6)	359 (59.6)		
Yes	112 (45.2)	120 (37.6)	11 (31.4)	243 (40.4)		
Discouragement from taking more leave, n (%)					.7334 ^b	.8801
No	86 (32.6)	121 (35.4)	15 (36.6)	222 (34.2)		
Yes	178 (67.4)	221 (64.6)	26 (63.4)	425 (65.7)		
Felt discouraged to take leave by Chair, n (%)					.0294 ^b	.1372
No	284 (93.1)	381 (96.5)	52 (100.0)	717 (95.3)		
Yes	21 (6.9)	14 (3.5)	0 (0.0)	35 (4.7)		

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Program leave flexibility, n (%)					0.1081 ^b	0.2162
Accommodating	182 (82.5)	272 (88.3)	37 (90.2)	491 (86.1)		
Not accommodating	39 (17.6)	36 (11.7)	4 (9.8)	79 (13.9)		
Breastfeeding						
Did you breastfeed? n (%)					.0561 ^b	.1666
No	15 (5.6)	26 (7.5)	7 (15.6)	48 (7.3)		
Yes	254 (94.4)	322 (92.5)	38 (84.4)	614 (92.7)		
Months breastfeeding					<.0001 ^a	<.0001
n	242	296	33	571		
Mean (SD)	7.7 (7.1)	9.6 (5.7)	9.3 (6.6)	8.8 (6.4)		
Median	6.0	10.0	9.0	8.0		
Met desired breastfeeding/pumping duration, n (%)					.4405 ^b	.5968
No	130 (51.8)	143 (46.4)	15 (46.9)	288 (48.7)		
Yes	121 (48.2)	165 (53.6)	17 (53.1)	303 (51.3)		
Designated lactation space, n (%)					<.0001 ^b	<.0001
No	57 (23.2)	128 (40.3)	13 (36.1)	198 (33.0)		
Yes	157 (63.8)	109 (34.3)	7 (19.4)	273 (45.5)		
At certain locations	32 (13.0)	81 (25.5)	16 (44.4)	129 (21.5)		
Space accessible? n (%)					.1710 ^b	.2762
No	8 (14.0)	22 (17.2)	3 (23.1)	33 (16.7)		
Yes	34 (59.6)	60 (46.9)	3 (23.1)	97 (49.0)		
Somewhat	15 (26.3)	46 (35.9)	7 (53.8)	68 (34.3)		
Given pump breaks, n (%)					<.0001 ^b	<.0001
Always	10 (4.4)	17 (5.6)	2 (6.1)	29 (5.1)		
Majority of the time	58 (25.3)	122 (40.0)	21 (63.6)	201 (35.4)		
Sometimes	91 (39.7)	113 (37.0)	9 (27.3)	213 (37.6)		
Never	70 (30.6)	53 (17.4)	1 (3.0)	124 (21.9)		
Guilt related to pump breaks, n (%)					<.0001 ^b	<.0001
No	89 (42.6)	65 (22.1)	6 (17.6)	160 (29.8)		
Yes	120 (57.4)	229 (77.9)	28 (82.4)	377 (70.2)		

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Tables continued

Breastfeeding support by coworkers, staff, n (%)					.0056 ^b	.0392
Supported	81 (35.2)	148 (47.7)	21 (63.6)	250 (43.6)		
Neutral	48 (20.9)	58 (18.7)	4 (12.1)	110 (19.2)		
Not supported	101 (43.9)	104 (33.5)	8 (24.2)	213 (37.2)		
Attitudes, n (%)						
Discouragement from having children during training					.3539 ^b	.5125
Agree	112 (55.4)	131 (49.2)	14 (46.7)	257 (51.6)		
Disagree	90 (44.6)	135 (50.8)	16 (53.3)	241 (48.4)		
Negative stigma around having children during training					.0139 ^b	.0793
Agree	150 (67.6)	154 (54.8)	16 (57.1)	320 (60.3)		
Disagree	72 (32.4)	127 (45.2)	12 (42.9)	211 (39.7)		
Felt unfairly burdened by other trainees taking maternity leave					.0416 ^b	.1627
Agree	35 (17.4)	32 (11.2)	7 (25.0)	74 (14.4)		
Disagree	166 (82.6)	253 (88.8)	21 (75.0)	440 (85.6)		
Felt guilt for burdening cotrainees with additional responsibilities					.9688 ^b	.9831
Agree	154 (67.8)	203 (67.4)	23 (65.7)	380 (67.5)		
Disagree	73 (32.2)	98 (32.6)	12 (34.3)	183 (32.5)		
Satisfaction with choice to have child during training					.1262 ^b	.2409
Satisfied	210 (79.2)	287 (83.7)	29 (70.7)	526 (81.0)		
Neutral	31 (11.7)	36 (10.5)	9 (22.0)	76 (11.7)		
Dissatisfied	24 (9.1)	20 (5.8)	3 (7.3)	47 (7.2)		
Would you do it again, have this child during training?					.0426 ^b	.1627
No	44 (16.6)	44 (12.9)	1 (2.5)	89 (13.8)		
Yes	221 (83.4)	298 (87.1)	39 (97.5)	558 (86.2)		

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Tables continued

Did you or will you have to make up call days you missed while on maternity leave for this pregnancy/child?					.5362 ^b	.6918
No	140 (52.8)	166 (48.4)	21 (52.5)	327 (50.5)		
Yes	125 (47.2)	177 (51.6)	19 (47.5)	321 (49.5)		
Was your graduation date extended because of parental leave?					.0603 ^b	.1809
No	106 (40.2)	117 (34.2)	9 (22.5)	232 (35.9)		
Yes	158 (59.8)	225 (65.8)	31 (77.5)	414 (64.1)		
Did income loss, related to parental leave with this child, adversely affect your ability to financially support your family?					.2104 ^b	.3607
No	211 (79.6)	261 (75.9)	26 (63.4)	498 (76.6)		
Yes	46 (17.4)	68 (19.8)	13 (31.7)	127 (19.5)		
Unsure	8 (3.0)	15 (4.4)	2 (4.9)	25 (3.8)		

Abbreviation: FDR, False Discovery Rate.

^a Kruskal-Wallis *P* value.

^b χ^2 *P* value.

Table 3. Maternity Leave, Breastfeeding, and Attitudes Toward Pregnancy in Training by Presence of Trainees Who Had Female Chair and/or Program Director During Pregnancy

Question	Male Chair/Director During Pregnancy (n = 395)	Female Chair/Director During Pregnancy (n = 356)	Total Pregnancies (N = 751)	<i>P</i> Value	FDR Adjusted <i>P</i> Value
Maternity Leave					
Weeks of total leave				.4705 ^a	.5988
n	343	304	647		
Mean (SD)	8.2 (4.6)	8.0 (5.4)	8.1 (5.0)		
Median	8.0	7.0	7.0		
Weeks of paid leave				.9494 ^a	.9831
n	340	298	638		
Mean (SD)	4.4 (3.4)	4.4 (3.5)	4.4 (3.5)		
Median	5.0	4.0	4.0		

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Tables continued

Weeks using vacation				.0477 ^a	.1666
n	330	295	625		
Mean (SD)	2.6 (12.0)	2.9 (2.0)	2.7 (2.0)		
Median	2.0	3.0	3.0		
Use of sick time for leave, n (%)				.0895 ^b	.2088
No	184 (53.8)	149 (48.9)	333 (51.5)		
Yes	132 (38.6)	141 (46.2)	273 (42.2)		
Unsure	26 (7.6)	15 (4.9)	41 (6.3)		
Was your leave adequate? n (%)				.9489 ^b	.9831
No	191 (59.7)	167 (59.4)	358 (59.6)		
Yes	129 (40.3)	114 (40.6)	243 (40.4)		
Discouragement from taking more leave, n (%)				.9377 ^b	.9831
No	118 (34.5)	104 (34.2)	222 (34.4)		
Yes	224 (65.5)	200 (65.8)	424 (65.6)		
Program leave flexibility, n (%)				.1402 ^b	.2454
Accommodating	242 (84.0)	249 (88.3)	491 (86.1)		
Not accommodating	46 (16.0)	33 (11.7)	79 (13.9)		
Breastfeeding					
Did you breastfeed? n (%)				.4681 ^b	.5988
No	23 (6.6)	25 (8.0)	48 (7.3)		
Yes	327 (93.4)	286 (92.0)	613 (92.7)		
Months breastfeeding				.1526 ^a	.2454
n	304	266	570		
Mean (SD)	8.6 (7.1)	8.9 (5.6)	8.8 (6.4)		
Median	7.0	9.0	8.0		
Met desired breastfeeding/pumping duration, n (%)				.4280 ^b	.5968
No	159 (50.2)	128 (46.9)	287 (48.6)		
Yes	158 (49.8)	145 (53.1)	303 (51.4)		
Designated lactation space, n (%)				.9831 ^b	.9831
No	106 (33.1)	92 (33.0)	198 (33.1)		
Yes	146 (45.6)	126 (45.2)	272 (45.4)		
At certain locations	68 (21.3)	61 (21.9)	129 (21.5)		

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Tables continued

Given pump breaks, n (%)				.0578 ^b	.1666
Always	11 (3.6)	18 (6.8)	29 (5.1)		
Majority of the time	103 (34.1)	98 (37.1)	201 (35.5)		
Sometimes	111 (36.8)	102 (38.6)	213 (37.6)		
Never	77 (25.5)	46 (17.4)	123 (21.7)		
Guilt related to pump breaks, n (%)				.6467 ^b	.7989
No	81 (28.9)	79 (30.7)	160 (29.8)		
Yes	199 (71.1)	178 (69.3)	377 (70.2)		
Breastfeeding support by coworkers, staff, n (%)				.1332 ^b	.2432
Supported	121 (39.8)	129 (48.1)	250 (43.7)		
Neutral	63 (20.7)	47 (17.5)	110 (19.2)		
Not supported	120 (39.5)	92 (34.3)	212 (37.1)		
Attitudes, n (%)					
Discouragement from having children during training				.0595 ^b	.1666
Agree	148 (55.4)	108 (47.0)	256 (51.5)		
Disagree	119 (44.6)	122 (53.0)	241 (48.5)		
Negative stigma around having children during training				.0151 ^b	.0793
Agree	181 (65.1)	138 (54.8)	319 (60.2)		
Disagree	97 (34.9)	114 (45.2)	211 (39.8)		
Felt unfairly burdened by other trainees taking maternity leave				.1066 ^b	.2162
Agree	45 (16.8)	29 (11.8)	74 (14.4)		
Disagree	223 (83.2)	217 (88.2)	440 (85.6)		
Felt guilt for burdening cotrainees with additional responsibilities				.9183 ^b	.9831
Agree	195 (67.2)	184 (67.6)	379 (67.4)		
Disagree	95 (32.8)	88 (32.4)	183 (32.6)		

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Tables continued

Satisfaction with choice to have child during training				.2667 ^b	.4149
Satisfied	273 (79.8)	253 (82.7)	526 (81.2)		
Neutral	46 (13.5)	29 (9.5)	75 (11.6)		
Dissatisfied	23 (6.7)	24 (7.8)	47 (7.3)		
Would you do it again, have this child during training?				.0885 ^b	.2088
No	54 (15.8)	34 (11.2)	88 (13.6)		
Yes	288 (84.2)	270 (88.8)	558 (86.4)		
Did you or will you have to make up call days you missed while on maternity leave for this pregnancy/child?				.5477 ^b	.6918
No	168 (49.3)	158 (51.6)	326 (50.4)		
Yes	173 (50.7)	148 (48.4)	321 (49.6)		
Was your graduation date extended because of parental leave?				.5354 ^b	.6453
No	118 (34.7)	113 (37.0)	231 (35.8)		
Yes	222 (65.3)	192 (63.0)	414 (64.2)		
Did income loss, related to parental leave with this child, adversely affect your ability to financially support your family?				.6216 ^b	.7650
No	258 (75.2)	239 (78.1)	497 (76.6)		
Yes	70 (20.4)	57 (18.6)	127 (19.6)		
Unsure	15 (4.4)	10 (3.3)	25 (3.9)		

Abbreviation: FDR, False Discovery Rate.

^a Wilcoxon rank sum *P* value.

^b χ^2 *P* value.

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Supplemental Material

Supplemental Online Material

Appendix 1. Survey Questions^a

INTRO QUESTIONS

Do you have children?

- No
- Yes
- Currently pregnant

Do you plan to have children in the future?

- No
- Yes

Is your decision to not have children related to work or training?

- No
- Yes

Have you ever been pregnant?

- No
- Yes

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Supplemental Material continued

How many children/pregnancies have you had?

(Including if you are currently pregnant.)

- One
- Two
- Three
- Four or more

Were you pregnant prior to, or did you have any children prior to residency training?

- No
- Yes

Were you pregnant during, or did you have any children during your residency or fellowship training?

- No
- Yes

How many pregnancies/children did you have during your residency or fellowship training?

Pregnancies/children during your residency or fellowship.

Were you pregnant or did you have any children during your practice?

- No
- Yes
- Currently training

How many pregnancies/children did you have during your practice?

Pregnancies/children during your practice.

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Supplemental Material continued

PREGNANCIES - DURING TRAINING

PREGNANCY/CHILDREN DURING YOUR RESIDENT/FELLOWSHIP TRAINING

The following questions are regarding pregnancy/child during residency/fellowship training.

Was this pregnancy/child primarily during residency or fellowship?

- Residency
- Fellowship

Was this child adopted?

- No
- Yes

Did you have a surrogate for this child?

- No
- Yes

Did you have a surrogate because of medical necessity?

- No
- Yes

Did this pregnancy end in miscarriage or stillbirth?

- No
- Yes
- Not applicable

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Supplemental Material continued

Did this pregnancy end in an elective abortion?

- No
- Yes
- Not applicable

Why was this pregnancy terminated?

- It was unplanned
- Personal reasons
- Financial reasons
- Work-related issues
- Medical complications of fetus or mother
- Other, please specify:

Was this pregnancy planned?

- No
- Yes

Was the delivery for this pregnancy:

- A vaginal delivery
- A cesarean section delivery
- Not applicable

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Supplemental Material continued

Did you experience any postpartum affective disorders?

- No
- Undiagnosed postpartum depression
- Diagnosed postpartum depression
- Diagnosed postpartum psychosis
- Not applicable

Did you experience any complications during this pregnancy?

- No
- Yes
- Not applicable

Which of the following complications did you experience?
(Mark all that apply.)

- Preeclampsia
- Eclampsia
- Placenta abruption
- Placenta accrete
- Placenta percreta
- Placenta previa
- Retained placenta
- Incompetent cervix
- Premature labor
- PROM
- PPROM
- Short NICU stay

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Supplemental Material continued

- Extended NICU stay
- Amniotic fluid embolism
- Short bedrest
- Prolonged bedrest
- Postpartum depression
- Prolonged hospitalization for you
- Blood transfusion for you
- Significant back pain
- GERD
- Grade 3-4 laceration
- Other, please specify:

- Didn't have any complications
- Not applicable

Did you require infertility treatment for this pregnancy?

- No
- Yes
- Not applicable

Was this pregnancy a multiple gestation?

- No
- Yes
- Not applicable

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Supplemental Material continued

How many weeks did you **take off**, or plan to take off, for maternity leave for this pregnancy/child?

weeks

How many weeks of your maternity leave were **paid** or will be paid for this pregnancy/child?

weeks

How much time did you take off, or plan to take off, **prior to delivery**. (excluding days on required bedrest) for this pregnancy/child?

weeks

days

How much **vacation time** did you use or plan to use for maternity leave during this pregnancy/child?

weeks

days

Did you use or do you expect to use **sick time** for maternity leave for this pregnancy/child?

- No
 Yes
 Unsure

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Supplemental Material continued

Did you use or do you expect to use disability for maternity leave for this pregnancy/child?

- No
 Yes
 Unsure

Did you have to or will you make up time for your maternity leave for this pregnancy/child?

- No
 Yes

Did you ever skip an obstetric appointment due to work?

- No
 Yes
 Not applicable

Did you feel discouraged from taking more time for maternity leave for this pregnancy/child?

- No
 Yes

Please indicate why/who you felt discouraged by.
 (Mark all that apply.)

- Chair
 Program Director
 Co-residents/fellows
 Not wanting to fall behind peers
 Need to make up time
 Financial reasons
 Being off cycle and at a possible disadvantage for fellowship or job application
 Other, please specify:

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Supplemental Material continued

Did you or will you have to make up call days you missed while on maternity leave for this pregnancy/child?

- No
- Yes

Did you feel or expect that your maternity leave was or will be adequate?

- No
- Yes
- Unsure

Was your graduation date extended because of parental leave?

- No
- Yes

Did the presence of female faculty influence your willingness to consider pregnancy/having this child during training?

- No
- Yes
- Unsure

How accommodating or not accommodating was your program for schedule flexibility related to pregnancy and/or maternity leave with this child?

- Very accommodating
- Somewhat accommodating
- Neither accommodating nor not accommodating
- Somewhat not accommodating
- Not at all accommodating

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Supplemental Material continued

Please indicate your agreement or disagreement with the following statements.

	Strongly agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Strongly disagree
I felt discouraged from being pregnant/having children during training.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
There was a negative stigma attached to being pregnant/having children during training with this child.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Strongly agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Strongly disagree
I felt unfairly burdened by <u>other female trainees</u> taking time off related to pregnancy/motherhood.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I felt guilt associated with burdening co-residents/fellows with additional call or other responsibilities, relate to my pregnancy and/or maternity leave with this child.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Would you do it again, have this child during your residency or fellowship training?

- No
 Yes

How satisfied or dissatisfied are you with your choice to have this child during your residency or fellowship training?

- Very satisfied
 Somewhat satisfied
 Neither satisfied nor dissatisfied
 Somewhat dissatisfied
 Very dissatisfied

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Supplemental Material continued

Did you consider leaving training due to the pregnancy, birth, or adoption of this child?

- No
 Yes
 Somewhat
 Yes, I did leave my program due to this pregnancy/child

Did income loss, related to parental leave with this child, adversely affect your ability to financially support your family?

- No
 Yes
 Unsure

BREASTFEEDING DURING YOUR RESIDENT/FELLOWSHIP TRAINING

The following questions are regarding breastfeeding for pregnancy **during** residency/fellowship training.

Did you breastfeed?

- No
 Yes

How many months did you breastfeed?

Months breastfed:

Did you meet your desired breastfeeding/pumping duration?

- No
 Yes
 Not applicable

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Supplemental Material continued

Why did you stop breastfeeding/pumping?

(Mark all that apply.)

- Met goal
- Inadequate time during work to pump
- Inadequate space to pump at work
- Unsupported by partner at home
- Unsupported by colleagues at work
- Difficulty with infant's latch
- Inadequate milk supply
- Poor infant weight gain
- Mastitis/Clogged ducts
- Illness/need to take medications and dump milk
- Too painful to nurse/pump
- Pumping not worth effort
- Wanted to diet
- Other, please specify:

Was there a designated space for lactation at work?

(Not a bathroom, must be shielded from view and free from intrusion by coworkers or public.)

- No
- Yes
- At certain training locations
- Not applicable

Was the designated space easily accessible?

- No
- Yes
- Somewhat
- Not applicable

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Supplemental Material continued

Were you given breaks to pump?

- Always
- Majority of the time
- Sometimes
- Never
- Not applicable

Did you feel guilt related to pump breaks at work?

- No
- Yes
- Not applicable

How supported or not supported did you feel by your coworkers and staff regarding breast feeding?

- Very supported
- Somewhat supported
- Neither supported nor not supported
- Somewhat not supported
- Not at all supported
- Not applicable

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Supplemental Material continued

PREGNANCIES - DURING PRACTICE

PREGNANCY/CHILDREN DURING YOUR PRACTICE

The following questions are regarding pregnancy/child **during** practice.

What was your practice at the time of this pregnancy/child?

- Private practice
- Academic practice
- Employed physician, non-academic
- Other, please specify:

At the time of this pregnancy/child, during practice, were you working full-time or part-time?

- Full-time
- Part-time

How long had you been in practice when this pregnancy occurred/child arrived?

- First year
- Second year
- Third year
- Fourth year
- Five to 10 years
- Ten years or more

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Supplemental Material continued

Did you postpone this pregnancy/child due to a job search/expected interviews?

- No
- Yes

Was this child adopted?

- No
- Yes

Did you have a surrogate for this child?

- No
- Yes
- Not applicable

Did you have a surrogate because of medical necessity?

- No
- Yes

Did this pregnancy end in miscarriage or stillbirth?

- No
- Yes
- Not applicable

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Supplemental Material continued

Did this pregnancy end in an elective abortion?

- No
- Yes
- Not applicable

Why was this pregnancy terminated?

- It was unplanned
- Personal reasons
- Financial reasons
- Work-related issues
- Medical complications of fetus or mother
- Other, please specify:

Was this pregnancy/child planned?

- No
- Yes

Was the delivery for this pregnancy:

- Vaginal
- Cesarean Section
- Not applicable

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Supplemental Material continued

Did you experience any postpartum affective disorders?

- No
- Undiagnosed postpartum depression
- Diagnosed postpartum depression
- Diagnosed postpartum psychosis
- Not applicable

Did you experience any complications during this pregnancy?

- No
- Yes
- Not applicable

Which of the following complications did you experience?

(Mark all that apply.)

- Preeclampsia
- Eclampsia
- Placenta abruption
- Placenta accrete
- Placenta percreta
- Placenta previa
- Retained placenta
- Incompetent cervix
- Miscarriage or Stillbirth
- Premature labor
- PROM
- PPRM

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Supplemental Material *continued*

- Short NICU stay
- Extended NICU stay
- Amniotic fluid embolism
- Short bedrest
- Prolonged bedrest
- Postpartum depression
- Prolonged hospitalization for you
- Blood transfusion for you
- Significant back pain
- GERD
- Grade 3-4 laceration
- Other, please specify:

- Didn't have any complications
- Not applicable

Did you require infertility treatment for this pregnancy?

- No
- Yes
- Not applicable

Was this pregnancy a multiple gestation?

- No
- Yes
- Not applicable

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Supplemental Material continued

How much time did you take off, or plan to take off, prior to delivery (excluding days on required bedrest) for this pregnancy/child?

weeks

How many weeks did you take off, or plan to take off, for maternity leave for this pregnancy/child?

weeks

How many weeks of your maternity leave were paid or will be paid for this pregnancy/child?

weeks

Did you feel your maternity leave was adequate?

- No
 Yes
 Unsure

How much time did you take off or plan to take off prior to delivery (excluding days on required bedrest) for this pregnancy/child?

weeks

days

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Supplemental Material continued

How much vacation time did you use or plan to use for maternity leave during this pregnancy/child?

weeks

days

Did you use or do you expect to use sick time for maternity leave for this pregnancy/child?

- No
 Yes
 Unsure

Did you use or do you expect to use disability for maternity leave for this pregnancy/child?

- No
 Yes
 Unsure

Did you feel discouraged from taking more time for maternity leave for this pregnancy/child?

- No
 Yes
 Not applicable

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Supplemental Material continued

Please indicate who you felt discouraged by.

(Mark all that apply.)

- Chair
- Colleagues
- Financial reasons
- Other, please specify:

Did you have to or will you make up call days you missed while on maternity leave for this pregnancy/child?

- No
- Yes
- Not applicable

Did you/will you return to work after maternity leave?

- No
- Yes
- Return at reduced FTE
- Unsure

How accommodating or not accommodating was your job for schedule flexibility related to this pregnancy/child?

- Very accommodating
- Somewhat accommodating
- Neither accommodating nor not accommodating
- Somewhat not accommodating
- Not at all accommodating
- Not applicable

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Supplemental Material *continued*

Please indicate your agreement or disagreement with the following statements.

	Strongly agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Strongly disagree
I felt discouraged from having children while in practice.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
There was a negative stigma attached to being pregnant while in practice.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I felt unfairly burdened by other colleagues taking time off related to pregnancy.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

If you could do it again, would you have rather had a pregnancy/child during training?

- No
- Yes
- Not applicable, I did have a child during training

How satisfied or dissatisfied are you with your choice to have a child after your residency or fellowship training?

- Very satisfied
- Somewhat satisfied
- Neither satisfied nor dissatisfied
- Somewhat dissatisfied
- Very dissatisfied
- Not applicable, I did not have a child/pregnancy during training

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Supplemental Material continued

BREASTFEEDING DURING YOUR PRACTICE

The following questions are regarding breastfeeding for pregnancy **during** your practice.

Did you breastfeed?

- No
- Yes
- Not applicable

How many months did you breastfeed?

Months breastfed:

Did you meet your desired breastfeeding/pumping duration?

- No
- Yes
- Not applicable

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Supplemental Material continued

Why did you stop breastfeeding/pumping?

(Mark all that apply.)

- Met goal
- Inadequate time during work to pump
- Inadequate space to pump at work
- Unsupported by partner at home
- Unsupported by colleagues at work
- Difficulty with infants latch
- Inadequate milk supply
- Poor infant weight gain
- Mastitis/Clogged ducts
- Illness/need to take medications and dump milk
- Too painful to nurse/pump
- Pumping not worth effort
- Wanted to diet
- Other, please specify:

Was there a designated space for lactation at work?

(Not a bathroom, must be shielded from view and free from intrusion by coworkers or public.)

- No
- Yes
- Not applicable

Was the designated space easily accessible?

- No
- Yes
- Somewhat
- Not applicable

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Supplemental Material continued

Were you given breaks to pump?

- No
- Yes
- Sometimes
- Not applicable

Did you feel guilt or stress related to pump breaks at work?

- No
- Yes
- Not applicable

How supported or not supported did you feel by your coworkers and staff regarding breast feeding?

- Very supported
- Somewhat supported
- Neither supported nor not supported
- Somewhat not supported
- Not at all supported
- Not applicable

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Supplemental Material continued

DEMOGRAPHICS

In what year were you born?

Year (YYYY):

Did you train in the United States?

No

Yes

Do you currently live in the United States?

No

Yes

In what year did you graduate from medical school?

Year (YYYY):

In what year did/will you finish residency?

Year (YYYY):

How many residents are/were in your program?

Number of residents:

How many female residents are/were in your class?

Number of female residents:

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Supplemental Material continued

Are/were there female residents in your program who were pregnant during their training at your residency training program?

- No
 Yes

Approximately how many clinical faculty members were/are in your residency training program?

Number of faculty:

Approximately how many female clinical faculty members were/are in your residency training program?

Number of female faculty:

Was the chief/chair of the Anesthesiology Department during your residency training male or female?

- Male
 Female

Was the program director during your residency training male or female?

- Male
 Female

Did you complete a fellowship?

- No
 Yes

Are/were there female fellows in your class who were pregnant during their training at your fellowship training program?

- No
 Yes

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Supplemental Material continued

Approximately how many clinical faculty members were/are in your fellowship training program?

Number of faculty:

Approximately how many female clinical faculty members were/are in your fellowship training program?

Number of female faculty:

Was the chief/chair of the Anesthesiology Department during your fellowship training male or female?

- Male
 Female

Was the program director during your fellowship training male or female?

- Male
 Female

What is your current job?

- In residency or fellowship
 In private practice
 At an academic center
 Military
 Not currently working
 Other, please specify:

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Supplemental Material continued

Does/did your residency/fellowship program have a formal maternity leave policy for trainees at the time of your training?

- No
- Yes
- Unsure

Does/did your residency/fellowship program have a formal paternity leave policy for trainees at the time of your training?

- No
- Yes
- Unsure

Are you aware of the ABA policy on absence from residency?

- No
- Yes
- Unsure

Are you currently in practice?

- No
- Yes
- Retired

Was/is your desired age of childbearing/motherhood adversely affected by work demands?

- No
- Yes
- Unsure

Was your desired number of children adversely affected by work or training demands?

- No
- Yes
- Not applicable

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Supplemental Material continued

Did you have to delay board certification due to a pregnancy?

- No
- Yes

Are you board certified?

- No
- Yes
- Not yet eligible

Would you counsel a female student against a career in anesthesiology due to obstacles pertaining to motherhood?

- No
- Yes

What is your current marital status?

- Single, not in a committed relationship
- Single, in a committed relationship
- Engaged
- Married
- Civil union
- Divorced
- Widowed

Does your partner work outside the home?

- No
- Yes
- Not applicable

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Supplemental Material continued

Is your partner a physician?

- No
- Yes
- Not applicable

What is your race/ethnicity?

- African American
- Hispanic/Latino
- Asian/South Asian
- Caucasian
- Multiracial
- Other, please specify:

What is your sexual orientation?

- Heterosexual
- Homosexual
- Bisexual
- Other, please specify

THANK YOU FOR COMPLETING THE SURVEY!

Please click SUBMIT to record your answers.

^a Survey wording preserved per original.