

Exploring workplace barriers faced by breastfeeding mothers who are PAs

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ABSTRACT

Objectives: To explore physician associate/assistant (PA) mothers' breastfeeding intention, duration, as well as workplace barriers for breastfeeding among working PA mothers and to determine if specialty has an effect on breastfeeding duration.

Methods: A cross-sectional online survey was administered to PA mothers who had at least one biological child while a PA student or practicing as a PA. Study participants were recruited through the American Academy of Physician Associates' special interest group, PA Moms.

Results: The 545 participants reported a breastfeeding goal of 12 months in 76.8% of births. Breastfeeding rates among participants were 96.3% at birth, 83.8% at age 3 months, 78.1% at age 6 months, and 54.8% at age 12 months. Exclusive breastfeeding rates were 77.9% at birth, 75% at age 3 months, and 42.6% at age 6 months. Workplace support from colleagues and support staff was associated with longer exclusive breastfeeding duration and any breastfeeding duration. Adequate time and place for expression of breastmilk and support from supervising or collaborating physicians were associated with longer duration of breastfeeding. Specialty had a statistically significant effect on exclusive breastfeeding duration.

Conclusions: PA mothers failed to meet their breastfeeding goals, despite high initiation rates. Dedicated time and space to express breastmilk and workplace support may significantly improve PA mothers' breastfeeding duration.

Keywords: PAs, mothers, breastfeeding, workplace, barriers, support

otitis media, acute diarrhea, asthma, atopic dermatitis, inflammatory bowel disease, obesity, diabetes, childhood leukemia, sudden infant death syndrome, and infant mortality.² According to the WHO, optimal breastfeeding could annually save the lives of 820,000 children under age 5 years.³ Mothers who breastfeed also have a lower risk of type 2 diabetes, hypertension, breast cancer, ovarian cancer, and endometrial cancer.² Despite the AAP and WHO recommendations, breastfeeding goals still are not being met in the United States. According to the most recent data from Healthy People 2030, only 24.9% of infants were exclusively breastfed at age 6 months in 2015, compared with a target of 42.4%.⁴ Similarly, only 35.9% of infants were breastfed at age 12 months in 2015, compared with a target of 54.1%.⁵ With the AAP and WHO recommending breastfeeding to 2 years and beyond and Healthy People 2030 setting measurable objectives and targets for breastfeeding, researching and reducing workplace barriers, especially those in the healthcare setting, is important.

Common themes exist among systematic reviews involving working mothers and continued breastfeeding after returning to work. Women who had access to breaks, lactation rooms, and supportive colleagues were more likely to continue breastfeeding.⁶⁻⁸ Women without those support structures in place had difficulty continuing to breastfeed.⁶⁻⁸ Although no published literature was found pertaining to PAs and breastfeeding challenges after returning to work, some published studies have found that physician mothers experienced similar challenges as other working mothers when returning to work.⁹⁻¹⁶ The most common barriers identified among breastfeeding physicians included inadequate time to pump, inadequate location to pump, unsupportive team, working too many hours, low milk supply, stress, and inadequate storage for breastmilk.⁹⁻¹⁷

The Break Time for Nursing Mothers federal law that allows for protected break time for the expression of breastmilk does not apply to salaried, exempt employees.¹ Most physician associates/assistants (PAs) are considered salaried employees, although some are hourly. The American Academy of Pediatrics (AAP) recently updated its policy statement and recommends breastfeeding exclusively for the first 6 months of life and complementary breastfeeding for 2 years or longer.² These updated recommendations are now also consistent with World Health Organization (WHO) recommendations.³ Breastfeeding reduces infants' risk for respiratory tract infections,

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TABLE 1. Characteristics of study participants (N = 545)

Percentages may not total 100% because of rounding.

Variable	Number of participants (n)	Percentage of participants (%)
Age (years)		
20-25	1	0.2
26-30	86	15.8
31-35	225	41.3
36-40	164	30.1
41-45	51	9.4
46-50	12	2.2
51-55	5	0.9
56-60	1	0.2
Medical specialty		
Anesthesiology	2	0.4
Dermatology	23	4.2
Emergency medicine	61	11.2
ENT	8	1.5
Family medicine	95	17.4
General surgery	45	8.3
Internal medicine	92	16.9
Internal medicine/ pediatrics	3	0.6
Neurology	11	2
Obstetrics-gynecology	16	2.9
Oncology	12	2.2
Orthopedic surgery	50	9.2
Pediatrics	17	3.1
Physical medicine and rehabilitation	11	2
Preventive medicine	3	0.6
Psychiatry	14	2.6
Radiology	3	0.6
Urgent care	48	8.8
Urology	8	1.5
Missing response	23	4.2
Current practicing PA		
Yes	527	96.7
No	18	3.3
Currently breastfeeding		
Yes	240	44
No	305	56
Number of biological children		
1	185	33.9
2	273	50.1
3	77	14.1
4	10	1.8

Differing practice specialties and work environments also contributed to the challenges they encountered.^{9,15} However, Frolkis and colleagues, in their scoping review of 71 articles involving physicians, found that they were unable to assess trends in barriers or duration of breastfeeding because of observed heterogeneity of the studies, indicating that further studies are warranted.¹⁷

According to the National Commission on Certification of Physician Assistants (NCCPA), the United States had 168,318 certified PAs in 2022, and nearly 71% are women.¹⁸ The median age of certified PAs is 38 years, with the majority of PAs concentrated in the younger age demographics (age 39 years and younger), indicating that a large portion of PAs are women practicing during their peak reproductive years.¹⁸ A study evaluating common workplace barriers to breastfeeding among this demographic is highly pertinent to the profession.

Breastfeeding PAs likely experience similar challenges as physician mothers on their return to work, although no studies specifically focus on PA mothers. Although the scope of the problem likely extends to women in other healthcare professions and to other salaried professionals, a focused study on breastfeeding PAs returning to work is needed to fill a gap in the literature. This study evaluated PA mothers' breastfeeding intention, duration, and workplace barriers for breastfeeding and sought to determine if a relationship existed between practice specialty and breastfeeding duration.

METHODS

The institutional review board at A.T. Still University approved this study as exempt. This was a cross-sectional survey study, using the online survey platform Qualtrics. The survey was adapted and previously used by Sattari and colleagues and permission was granted to use this survey for PA mothers.¹⁰ Participants completed a 40-question online survey evaluating their breastfeeding intentions and their experiences breastfeeding after returning to work. Eight questions addressed demographics, including age, sex, medical specialty, employment status, number of children, and breastfeeding status. Questions other than those on demographics were duplicated for each biological child. Questions used a Likert scale to evaluate whether PAs were allowed protected break time and private space for expression of breastmilk. Questions about support from colleagues, supervising or collaborating physicians, employers, and staff also were included. Further questions evaluated whether PA mothers quit breastfeeding early because of workplace demands, or if they used a wearable, hands-free pump, such as the Elvie or Willow, while working in order to express breastmilk. The five open-ended questions explored underlying themes or patterns that encouraged or discouraged a working PA mother from continuing to breastfeed.

For the source population, participants were recruited from the group PA Moms, an American Academy of Phy-

TABLE 2. Career stage at birth of each child (N = 1,002)

Percentages may not total 100% because of rounding.

	Child 1 (n = 545)		Child 2 (n = 360)		Child 3 (n = 87)		Child 4 (n = 10)	
	n	%	n	%	n	%	n	%
PA student—didactic	10	1.8%	0	0%	0	0%	0	0%
PA student—clinical	4	0.7%	2	0.4%	0	0%	0	0%
Practicing PA	509	93.4%	347	96.4%	83	95.4%	9	90%
Other	22	4%	11	3.1%	4	4.6%	1	10%

sician Associates (AAPA) special-interest group. The target population that this study aimed to understand consisted of PA mothers who were students or practicing as certified PAs in the United States. A cover letter and online link to the survey were posted to the social media PA Moms group, with permission from the president and founder of PA Moms. The survey was available starting June 11, 2022, and open for completion for a period of 1 month, with a reminder posted after 3 weeks to encourage further participation. All members had the opportunity to enroll in the study if they met the inclusion criteria and voluntarily decided to participate. To be included, participants had to be PAs, female, with at least one biological child, and have had at least one child born while a PA student or working as a PA. Potential participants were excluded if they were not PAs, male, had no biological children, or did not have at least one child born when the participant was a PA student or practicing as a PA. Participants voluntarily chose to take part in the survey and were able to discontinue at any time without negative repercussions. The sampling method used was convenience sampling, which is nonprobability based, because of the ease of access to qualified participants through membership in the PA Moms group.

Statistical analysis For data and statistical analysis, SPSS version 28 was used. Statistical analysis used was mainly descriptive statistics, given the sampling type and biases. Information collected from open-ended survey questions did not have a formal qualitative assessment; however, the responses are addressed in the discussion.

Sample characteristics were described using percent distribution, frequency, mean, and median for age, sex, medical specialty, practicing status, biological child status, and number of biological children as appropriate. Standard deviation was calculated for the number of biological children for participants. The Shapiro-Wilk normality test was used to determine if the data were normally distributed, with an alpha level set to 0.05.

The infant was used as the unit of analysis for calculating breastfeeding rates because infant-feeding practices can vary by child with multiparous participants. Exclusive breastfeeding duration and total duration of breastfeeding were the dependent variables. Independent variables included PA specialty, protected break time for expressing

breastmilk, private space for expressing breastmilk, support of colleagues, support of supervising or collaborating physician, support from staff, support from administration, and breastfeeding duration goal.

Having adequate break time and private space for expressing breastmilk is described using frequency and percentages. Using wearable, hands-free pumping devices also is described using frequency and percentages. Frequency and percentages also were used to describe how many PA mothers discontinued breastfeeding because of workplace demands. Comparative statistics using the Pearson *chi*-square test were used to compare breastfeeding duration intention and actual breastfeeding durations for the participants' first child. Comparative statistics using the Pearson *chi*-square test for the participants' first child also were used to compare adequate break time, private space, workplace support, and relationship between specialty and breastfeeding duration. The first-child data were used because this was the largest sample size between children. The alpha level set for all Pearson *chi*-square tests used during statistical analysis was set to 0.05.

RESULTS

At the time of the survey, PA Moms had 13,217 members; 750 members started the survey, indicating a 5.67% response rate. Of the 750 participants who started the survey, 31 did not proceed past agreeing to the informed consent, 11 did not proceed past the demographics section, 140 did not fully complete the survey for at least one biological child, and 23 did not meet inclusion criteria. In total, 545 PA mothers with 1,002 children completed the survey, met the inclusion and exclusion criteria, and were eligible for analysis. The median age range of participants was 31 to 35 years (Table 1). Overall participant ages ranged from 20 to 60 years. All participants included in the sample population were female. A variety of medical specialties were represented, with the top three being family medicine, internal medicine, and emergency medicine. Of those who participated in the survey, 96.7% of participants were actively practicing as PAs. Although the majority of the participants were not breastfeeding at the time of the survey, a large portion (44%) were breastfeeding. The participants had between one and four biological

children, with the mean number of children being 1.84 (SD, 0.727). All participants gave birth to at least one child while they were either a practicing PA or a PA student, and 94.6% of children born to PA mothers were born while the mothers were practicing PAs (Table 2).

The Shapiro-Wilk normality test was conducted to determine the distribution of the dependent variables: exclusive breastfeeding duration and total duration of breastfeeding. An alpha level was set to 0.05 to assess the normality of the data set. The *P* value returned as less than .001 for both dependent variables; thus, the null hypothesis was rejected, and the data were not normally distributed. Based on the data not being normally distributed, nonparametric tests were used, specifically the Pearson *chi*-square test.

Using the infant as the unit of analysis, 99.5% of PA mothers planned to breastfeed their children. At birth, 77.9% of infants were exclusively breastfed and 96.3% of infants were either exclusively breastfed or given a combination of breastmilk and formula (Figure 1). Of those who responded, 76.8% of PA mothers had a goal breastfeeding duration of 12 months. Less than half, 42.6%, of PA mothers were able to exclusively breastfeed to 6 months. Similarly, 54.8% of PA mothers were able to breastfeed their children until at least 12 months with a median breastfeeding duration of 12 to 18 months. A *chi*-squared test for independence was used to assess the relationship between breastfeeding intention and total breastfeeding duration. A statistically significant association was found between breastfeeding intention and total breastfeeding duration, meaning that total breastfeeding duration was dependent on the breastfeeding intention of PA mothers (*chi*-square [84, N = 507] = 155.160, *P* ≤ .001).

Of the PA mothers returning to work, 27.6% (251/910) quit breastfeeding because of workplace demands. Once at work, 45.3% of PA mothers indicated that they *often* or *always* had sufficient time to express breastmilk (Table 3). PA mothers also indicated that while at work, 57.6% of them *often* or *always* had access to an appropriate place to express breastmilk (Table 3). The most common loca-

FIGURE 1. Rates of exclusive and any breastfeeding

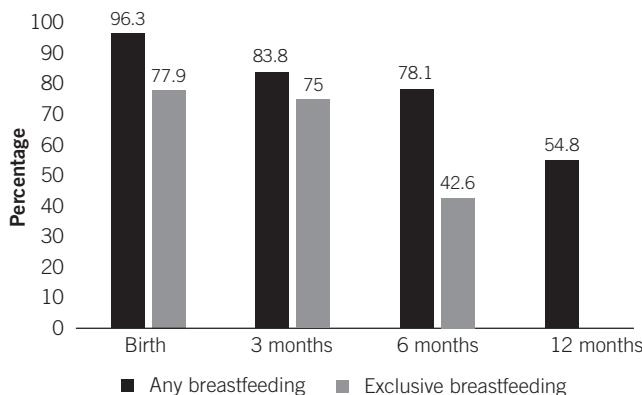


TABLE 3. Characteristics of breastfeeding at work (N = 1,002)

Percentages may not total 100% because of rounding.

Variable	Number of participants (n)	Percentage of participants (%)
Did you pump breastmilk while working?		
Yes	807	80.5
No	72	7.2
Missing response	123	12.3
Did you have sufficient time to express breastmilk?		
Never	75	7.5
Occasionally	122	12.2
Sometimes	239	23.9
Often	272	27.1
Always	182	18.2
Missing response	112	11.2
Did you have an appropriate space to express breastmilk?		
Never	77	7.7
Occasionally	102	10.2
Sometimes	136	13.6
Often	168	16.8
Always	409	40.8
Missing response	110	11
Were colleagues supportive of milk expression effort?		
Always opposed my efforts	23	2.3
Usually opposed my efforts	45	4.5
Neither supportive nor oppositional	130	13
Usually supportive	274	27.3
Always supportive	375	37.4
Colleagues didn't know	15	1.5
Missing response	140	14
Were supervising/collaborating physicians supportive of your milk expression efforts?		
Always opposed my efforts	23	2.3
Usually opposed my efforts	45	4.5
Neither supportive nor oppositional	170	17
Usually supportive	221	22.1
Always supportive	217	21.7
Supervising/collaborating physicians didn't know	46	4.6
Missing response	280	28
Were you satisfied with your breastfeeding duration?		
Yes	578	57.7
No	99	10
Somewhat	236	23.6
Missing response	89	8.9

tions used to express breastmilk in the workplace were a private office, followed by a shared office space, followed by a car (Figure 2). Lastly, 43.9% (390/888) of PA mothers *often* or *always* had adequate time and space to express breastmilk once they returned to work.

PA mothers used a wireless, hands-free pumping device, at least occasionally, 30.4% (268/883) of the time in the workplace. Of those who used the wireless, hands-free pumping device, 49% (127/259) *often* or *always* used the device because they had insufficient time to express breastmilk while working. Another 35.8% (92/257) *often* or *always* used the device because they did not have an adequate place to express breastmilk while working.

A *chi-square* test for independence was used to determine the relationship between specialty and any breastfeeding duration with the PA mother's first child. No statistical association was found between specialty and any breastfeeding duration for the PA mother's first child (*chi-square* [252, N = 464] = 239.482, $P = .704$). However, a significant association was found between specialty and exclusive breastfeeding duration (*chi-square* [198, N = 513] = 365.512, $P < .001$) for the PA mother's first child.

Significant associations were found between being given adequate time for breastfeeding at work and breastfeeding duration (*chi-square* [56, N = 485] = 144.933, $P < .001$), as well as between being given a place to breastfeed at work and breastfeeding duration (*chi-square* [56, N = 488] = 74.668, $P = .048$). However, exclusive breastfeeding duration did not differ based on adequate time (*chi-square* [44, N = 513] = 53.342, $P = .158$) or place (*chi-square* [44, N = 516] = 47.257, $P = .341$). A statistically significant association was found between breastfeeding duration and support from colleagues (*chi-square* [70, N = 475], 96.677, $P = .019$) and support staff (*chi-square* [70, N = 454] = 99.457, $P = .012$). A statistically significant association also was found between exclusive breastfeeding duration and support from colleagues (*chi-square* [55, N = 503] = 96.629, $P < .001$) and support staff (*chi-square* [55, N = 477] = 103.195, $P < .001$). At work, 64.8% of PA mothers indicated that colleagues were *usually* or *always* supportive of their milk expression efforts (Table 3). Support from supervising or collaborating physicians also had a statistically significant association with breastfeeding duration (*chi-square* [70, N = 451] = 94.119, $P = .029$), but not with exclusive breastfeeding duration (*chi-square* [55, N = 476] = 66.743, $P = .133$). Also, 43.7% of PA mothers indicated that supervising or collaborating physicians were *usually* or *always* supportive of their milk expression efforts (Table 3). No significant association was found between support from administration and breastfeeding duration (*chi-square* [70, N = 454] = 87.436, $P = .078$). Similarly, no significant association was found between support from administration and exclusive breastfeeding duration (*chi-square* [55, N = 476] = 65.265, $P = .162$).

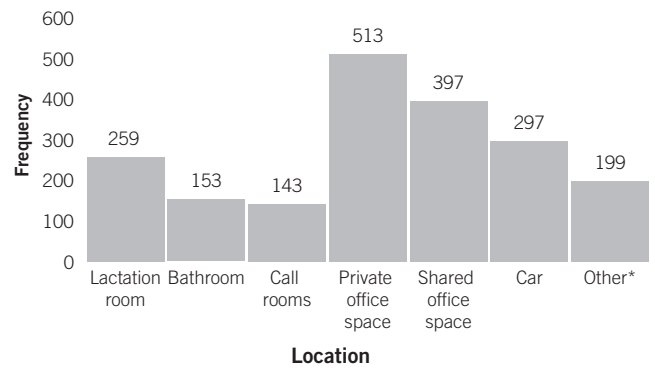


FIGURE 2. Locations used to express breastmilk

*The most common "Other" response cited use of the patient examination room.

DISCUSSION

Similar to previous studies involving physicians, PA mothers in this study had high breastfeeding initiation rates at childbirth.^{10,14-16} In fact, exclusive breastfeeding rates to 6 months and any breastfeeding until 12 months surpass the general population rates, but barely surpass the Healthy People 2030 objectives.^{4,5} Despite high breastfeeding initiation rates (96.3%) among PA mothers, only 54.8% were able to breastfeed until at least 12 months, despite 76.8% of PA mothers having the intent to breastfeed for this duration. The difference noted between breastfeeding intent and actual breastfeeding duration, along with workplace barriers associated with breastfeeding duration, suggests that despite PA education and breastfeeding intent, workplace factors have a sizable effect. Furthermore, 27.6% of PA mothers in this study quit breastfeeding because of workplace demands, indicating that work hampers ability to breastfeed for almost a third of PA mothers.

Barriers to breastfeeding duration included lack of time and space to express breastmilk, as well as lack of support from colleagues, supervising or collaborating physicians, and support staff. Barriers to exclusive breastfeeding duration included support from colleagues and support staff. Interestingly, administrative support was not a barrier to breastfeeding duration or to exclusive breastfeeding duration. It may be difficult to determine the work-related barriers to exclusive breastfeeding duration because other variables must be considered, including length of maternity leave and medical diagnoses that may interfere with exclusive breastfeeding.

Despite these barriers, many PA mothers used a variety of places to express breastmilk while at work (Figure 2). Private office spaces and shared office spaces were the most common locations for expressing breastmilk, but other less-than-ideal places were used, including cars and bathrooms. Other locations used to express breastmilk, gathered from open-ended responses, included patient examination rooms, shared breakrooms that lacked privacy, supply closets or storage rooms, and shared locker rooms that also lacked privacy.

Although PA mothers met Healthy People 2030 breastfeeding objectives, many factors discouraged continued breastfeeding.^{4,5} Common themes gathered from open-ended questions about the factors that discouraged breastfeeding included work, stress, time, places to pump, supply issues, pumping, pregnancy, difficulties with latching, and lack of support. Some participants indicated that they encountered no discouraging factors to breastfeeding. However, by far, the most common underlying discouraging factor for continuing to breastfeed was work-related.

Slightly more than 30% of PA mothers used wireless, hands-free pumping devices in order to continue expressing breastmilk while working, seeing patients, or even in the OR while performing surgery. Forty-nine percent indicated that they used these types of devices because of inadequate time, and 35.8% because of inadequate space for pumping.

STUDY STRENGTHS AND LIMITATIONS

A strength of the study was the large sample size of those who met inclusion criteria. Also, the study population included PA mothers from many different specialties. Another strength was that almost half (44%) of the study participants were actively breastfeeding. No study to date has explored workplace barriers for PA mothers who return to work while breastfeeding.

Limitations of the study include the convenience sampling method, which limited study participation to those who were already members of the special-interest group PA Moms. As a result, the sample population may be inherently different from PA mothers nationwide. Self-selection bias is likely another limitation. Factors contributing to self-selection bias include the low response rate, overrepresentation of younger women, social media use, and survey respondents being limited to members of PA Moms. Additionally, members of PA Moms are likely to have an increased motivation to participate in the survey because they may benefit from workplace changes. More than 87% of participants sampled were under age 40 years, compared with 56.5% of PAs in this age range in the NCCPA Statistical Profile of Certified PAs; this likely is indicative of social media use and proximity in age to birth and breastfeeding, indicating self-selection bias.¹⁸ Although a large portion of the study population was breastfeeding at the time of the survey, recall bias still exists and is another limitation. Also, cross-sectional studies cannot determine causality, so although PA mothers in this study did not meet their breastfeeding goals, the cause cannot be determined as related to work alone.

As previously mentioned in the results section, the study's 5.67% response rate is lower than what would typically be expected for email/online survey responses. This likely is because of the method of survey distribution and length of time that the survey was available. Despite the age variation compared with the NCCPA data, the specialty data collected on the study population is similar to that of

the NCCPA data: 17.4% of study participants practiced in family medicine, compared with 17.1% of NCCPA certified PAs.¹⁸ Just under 17% of study participants practiced in internal medicine, compared with 14% of NCCPA certified PAs.¹⁸ The study did not differentiate between surgical subspecialties; however, 17.5% of study participants practiced in a surgical specialty, compared with 21.7% of NCCPA certified PAs.¹⁸ Additionally, 11.2% of study participants practiced in emergency medicine, as do 11.2% of NCCPA certified PAs.¹⁸

The number of students who participated in this study was relatively small compared with the number of practicing PAs. According to the Physician Assistant Education Association, the United States had 9,603 PA students in 2019.¹⁹ In the same year, the United States had 139,688 certified PAs, which equates to PA students accounting for 6.4% of the PA population in 2019.¹⁸ In the study, PA students represent 2% of the study population, making this study less applicable to students; however, the emphasis of the results was on practicing PAs.

This study did not take into account that PAs are able to switch specialties, and this may likely be why no significant correlation was found between breastfeeding duration and PA specialty. Future studies should take this into account to determine if there is a significant effect on PA specialty and breastfeeding duration. Future studies also should include further delineation between inpatient and outpatient specialties. This study also did not consider state-specific breastfeeding laws, which can provide workers breastfeeding protection above and beyond the federal law. Future studies could examine how different state laws affect breastfeeding duration. Lastly, future studies should include more raw numerical data to allow for more complex inferential statistical analysis.

CONCLUSION

Despite high breastfeeding initiation rates and breastfeeding durations that meet the Healthy People 2030 objectives, PA mothers still are falling short of their breastfeeding goals and almost a third of PA mothers quit breastfeeding because of workplace demands. In fact, the most common underlying factor that discouraged PA mothers to continue breastfeeding was work-related. Given the AAP and WHO recommendations for breastfeeding duration, it is disappointing that PA mothers are struggling to meet their breastfeeding goals, despite working in the healthcare system that regularly recommends specific breastfeeding guidelines based on evidence-based medicine. The choice to breastfeed should not be affected by employment in healthcare. Healthcare employers should provide all women, including PA mothers, with sufficient time and an adequate place for expressing breastmilk. Workplaces need to create supportive environments for breastfeeding mothers and flexible schedules that carve out time away from patients or procedures so that working PA mothers

have adequate time to meet their workplace obligations as well as express breastmilk.

The Providing Urgent Maternal Protections for Nursing Mothers Act (PUMP Act) passed in December 2022, after this research was conducted, and extends nursing law protection to many employees who previously were not protected.²⁰ Future research would be helpful in determining the effect of this new law on PAs. **JAAPA**

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