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Understanding of Lactational Amenorrhea As a Contraceptive Method Among U.S. Pregnant Women

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Title: Understanding of lactational amenorrhea as a contraceptive method among US pregnant women

Running Title: Understanding of lactational amenorrhea in US women

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Abstract

Introduction: The lactational amenorrhea method (LAM) of postpartum contraception is more effective than typical use of condoms or birth control pills. However, LAM may be underutilized due to incomplete perinatal counseling.

Methods: We compared perceptions of the effectiveness of postpartum contraceptives including LAM among US-born nulliparous pregnant women recruited using social media for a trial (NCT 04601987). We used descriptive statistics to summarize data.

Results: Of 760 individuals screened, 627 were invited to participate, and 451 (72%) enrolled. Most (81%) had a college degree; 79% intended to breastfeed for at least 1 month. Only 8% believed exclusive breastfeeding reduces the chance of pregnancy “a lot” within 6 months of delivery and 2% indicated that exclusive breastfeeding is typically more effective than birth control pills or condoms. Compared to those planning to use other postpartum contraceptives, the 17% of respondents who planned to use LAM were more likely to know that breastfeeding delays return of menses (84% vs 44%, $p < 0.0001$) and provides protection from pregnancy until menses return (54% versus 22%, $p < 0.0001$). Although 25% of those planning to use LAM believed exclusive breastfeeding reduces pregnancy risk by “a lot,” only 5% thought LAM is more effective than birth control pills and only 9% that it is more effective than condoms.

Conclusions/Implications: First-time US mothers are often unaware of breastfeeding’s effects on menses and fertility. Clinicians providing counseling about postpartum contraceptive options should include more information on LAM.

Introduction

Family planning is an essential component of postpartum health care, as interpregnancy intervals < 18 months have been associated with adverse maternal and infant health.^{1,2} However, up to one-third of all US pregnancies follow a short interpregnancy interval,³ and disparities in access to postpartum care and contraception vary by race, ethnicity, and insurance coverage.^{4,5}

Improved access to postpartum care through Medicaid expansion is associated with lower rates of short interval pregnancy,⁶ particularly for Black individuals.⁷

Lactational amenorrhea (LAM) is the original form of postpartum contraception. To use this method effectively, individuals should be exclusively feeding their infants their own breastmilk, within 6 months of birth, and remain amenorrheic.⁸ When these criteria are met, LAM is highly effective.^{9,10} To best utilize lactational amenorrhea as a contraceptive method, individuals must be well informed about the criteria for use of LAM. We therefore assessed understanding of the comparative effectiveness and intended use of LAM for postpartum contraception among nulliparous pregnant women in the US.

Materials & Methods

To assess knowledge and perceptions of the effectiveness of LAM compared to other postpartum contraceptives, we conducted a secondary analysis of baseline data from individuals recruited for a randomized trial comparing the effects of two prenatal counseling interventions. This study was reviewed and approved by the UC Davis IRB (Institutional Review Board) and registered on ClinicalTrials.gov (Identifier: NCT04601987). Information regarding perceptions of the

effectiveness of LAM was collected at study enrollment prior to receipt of any counseling interventions.

Individuals were recruited using social media advertisements on Facebook and Instagram.

Interested individuals completed a screening questionnaire prior to enrollment. Inclusion criteria were US-born, nulliparous women with a singleton gestation of 27-37 weeks' gestation, age 18 to 40 years, able to read English, have reliable access to a telephone that can send and receive text messages, and have access to a device with internet. Exclusion criteria were multiple gestation, maternal conditions that might prevent breastfeeding (such as HIV, breast reduction surgery, mastectomy, conception occurring through assisted reproductive technology), surrogacy, or planning not to parent the infant after delivery. Participants were compensated for completing this survey with a \$20 gift card.

Surveys collected sociodemographic information, infant feeding plans, and postpartum contraceptive plans. We assessed intentions to breastfeed by asking how long participants planned to breastfeed, in months. Participants who responded "0 months" or who did not respond to this question were categorized as not planning to breastfeed. To assess understanding of LAM criteria and effectiveness, we asked the following questions:

- (1) How much do you believe exclusive breastfeeding reduces a mother's chance of becoming pregnant within 6 months of delivery? Response options: "A lot", "A little", "Not at all", or "I don't know"
- (2) Breastfeeding will delay my menstrual period after birth. Response options: "true", "false", or "I don't know"

- (3) For breastfeeding to protect a mother from pregnancy, her baby can't be fed anything but the mother's milk. Response options: "true", "false", or "I don't know"
- (4) Breastfeeding only protects mothers from pregnancy until her menstrual periods have returned. Response options: "true", "false", or "I don't know"
- (5) Typically, which does a better job protecting a mother from pregnancy? Response options: "exclusive breastfeeding", "condoms", or "I don't know"
- (6) Typically, which does a better job protecting a mother from pregnancy? Response options: "exclusive breastfeeding", "birth control pills", or "I don't know"

Consideration of LAM as a contraceptive method

- (7) Have you considered using breastfeeding to protect against pregnancy after delivery?
Response options: "No, I haven't considered it", "No, it doesn't work", "Yes, I would like to use it as my only method", or "Yes, but I would also use condoms or another method"

We categorized individuals considering LAM as those who selected, "Yes, I would like to use it as my only method" or "Yes, but I would also use condoms or another method." We used descriptive statistics to summarize these data and Chi-square tests to assess the significance of differences in participant awareness of benefits of LAM by consideration of LAM as a contraceptive method. Statistical significance was defined as $P < 0.05$. All statistical analyses were conducted using SAS Enterprise Guide, Version 7.1. Copyright 2017 SAS Institute Inc., Cary, NC, USA.

Results

Sociodemographic Characteristics

Of 760 individuals screened, 627 were invited to participate, and 451 (72%) enrolled (Table 1). The largest proportions of participants resided in the US south (42%), identified as White (59%) or Black (20%), and held college degrees (81%). The average age of participants was 32 (± 5) years and most (79%) intended to breastfeed for more than 1 month (Table 1).

Understanding of LAM

About half (50.3%, 227/451) of respondents were aware that breastfeeding can delay the return of menses. However, only 11.3% understood that exclusive breastfeeding is necessary to rely on LAM, and many (47.3%) did not know that exclusive breastfeeding is needed to reduce pregnancy risk. About one third (28%) were aware that LAM is only effective until menses return; 42.4% indicated LAM was “a little” and 8.4% “a lot” effective to protect against pregnancy in the first 6 months postpartum (Table 2).

When asked to compare the effectiveness of LAM to condoms or birth control pills, most participants believed that condoms (87.3%) were more effective than exclusive breastfeeding and that birth control pills (87.8%) were more effective than breastfeeding to prevent pregnancy. Respondents who intended to use LAM as their primary method of postpartum contraception (76/451, 17%) had significantly greater understanding of the effects of breastfeeding on fertility than respondents intending to use other forms of contraception (Table 3). However, even among those intending to rely on LAM, understanding of the three components of LAM was incomplete (Table 2). For example, 60% of those considering LAM were not aware that exclusive breastfeeding is a requirement of LAM, and 46% were unaware that breastfeeding is only protective until menses return.

Discussion

In this national survey of highly educated nulliparous pregnant US women, we found that most were unaware of the essential components of the LAM contraceptive method. Even among individuals intending to rely on LAM as postpartum contraception, knowledge of the essential three components of LAM was incomplete, potentially increasing risks of unplanned pregnancy. Incomplete knowledge of LAM was also demonstrated in prior work where only 8% of postpartum Turkish women were aware of all three criteria for the LAM and a majority (61%) stated that no health professional had ever provided any information about LAM as a contraceptive method.¹¹ Worldwide, it has been estimated that 1.5 million women utilize LAM inappropriately, potentially leading to unplanned pregnancies.¹² Comprehensive education about postpartum contraceptive options is important to prevent unplanned pregnancies and has been demonstrated to improve uptake of contraception after delivery.¹³ To improve awareness of LAM, pregnant and postpartum individuals should be counseled on all forms of postpartum contraception including LAM.¹⁴

While LAM has been demonstrated to be effective contraception in exclusively breastfeeding individuals for the first 6-months postpartum,⁸ few participants were aware that LAM is more effective than typical use of birth control pills or condoms.¹⁵ This is unfortunate, as breastfeeding has multiple long-term benefits for the health of both women and children.¹⁶ In a large multinational study, LAM users in multiple countries reported high satisfaction with LAM and that LAM was highly effective, preventing pregnancy with >98% efficacy.^{17,18} In contrast, our

data indicate that even highly educated US women underestimate the effectiveness of LAM compared to other postpartum contraceptives.

Strengths & Limitations

This study is strengthened by the national sample of pregnant primiparous individuals recruited from all regions of the US. Most participants (79%) intended to breastfeed for at least 1 month, which is similar to US population estimates that 78% of US infants are breastfed for at least 1 month.¹⁹ However, participants in this study differed from the US population in important ways, which could potentially limit generalizability. Most participants were college educated. In addition, this study had less representation from Hispanic and mixed-race women than the US population at large;²⁰ on the other hand, the study had greater representation from Black and Indigenous women, who have historically been underrepresented in clinical research. Participation was limited to primiparous individuals who are comfortable communicating in English, reducing generalizability in some parts of the US. Finally, the survey design did not allow for clarification of responses provided by individuals who may not have been familiar with LAM terminology resulting in underestimation of intended users of LAM.

Conclusions

In conclusion, few US pregnant women are currently aware of LAM, or its effectiveness compared with other postpartum contraceptives. This indicates that many patients may benefit from comprehensive counseling about postpartum contraception, including information

regarding LAM. For those planning to rely on breastfeeding as a method of contraception, the essential components of LAM should be carefully and clearly explained.¹⁴

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Authorship Confirmation/Contribution Statement

Adrienne Hoyt-Austin: conceptualization, writing – original draft (lead), writing – review & editing, Melissa J. Chen: conceptualization, writing – review & editing (equal), Caidon Iwuagwu: writing – review & editing (equal), Susan D Brown: writing – review & editing (equal), Margaret Fix: methodology, software, formal analysis (lead), data curation, Laura R. Kair: conceptualization, writing – review & editing (equal), Eleanor B. Schwarz: conceptualization (lead), methodology, investigation, resources, supervision, funding acquisition, writing – review & editing

Author Disclosure

All authors confirm they have no disclosures or conflicts of interest.

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Table 1: Sociodemographic characteristics of nulliparous pregnant participants, 2021 (n=451¹)

	N (%) or mean±SD
Age, years	32±5
Geographic region of residence ²	
Northeast	68 (15.1)
Midwest	81 (18.0)
South	192 (32.6)
West	87 (19.3)
Race/ethnicity	
African American / Black	91 (20.2)
Asian	25 (5.5)
Hispanic or Latina	21 (4.7)
Mixed Race	33 (7.3)
Native American, Alaskan, Other	7 (1.6)
White	257 (58.5)
Education	
College or graduate degree	364 (81.0)
Some college or 2-year degree	59 (13.1)
High school or less	26 (5.8)
Health insurance	
Private or employer	326 (72.3)
Medicaid	96 (21.3)
Military/Tricare or other ³	29 (6.43)
Postpartum Contraception plan ⁴	
Barrier Methods	150 (33.3)
Hormonal methods	100 (22.2)
Lactational amenorrhea method (LAM)	76 (16.9)
Undecided	68 (15.1)
Long-acting reversible contraception	63 (14.0)
None	61 (13.5)
Other	16 (3.5)
Permanent Contraception	14 (3.1)
Intention to breastfeed	
Do not plan to breastfeed	51 (11.3)
Plan to breastfeed 1 or more months	358 (79.3)

¹ Data were missing on age for n=14, race/ethnicity for n=7, education for n=2, geographic regions for n=23 participants, and birth control plan for n=1.

² Geographic regions defined as follows: Northeast (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont, New Jersey, New York, Pennsylvania), Midwest (Illinois, Indiana, Michigan, Ohio, and Wisconsin, Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, South Dakota), South (Delaware; Florida; Georgia; Maryland; North Carolina; South Carolina; Virginia; Washington, D.C., West Virginia, Alabama, Kentucky, Mississippi, and Tennessee, Arkansas, Louisiana, Oklahoma, Texas), and West (Arizona, Colorado, Idaho, Montana, Nevada, New Mexico, Utah, and Wyoming, Alaska, California, Hawaii, Oregon, Washington)

³ Other includes answer responses of “Military Insurance”, “Other”, or “I Don’t Know”

⁴ Percentage does not add to 100 as participants could select multiple responses

Plan to breastfeed ≥ 12 months

228 (50.6)

Table 2: Knowledge of the Lactational Amenorrhea Method (LAM) of postpartum contraception among nulliparous pregnant US women, 2021 (n=451*)

	All	Considering LAM as a		p- value
	Participan ts	postpartum contraceptive**		
	n=450 (% of total)	No (n=374, % of column)	Yes (n=76, % of column)	
<i>Breastfeeding will delay my menstrual period after my baby is born</i>				<.00 01
True	227 (50.4)	163 (43.6)	64 (84.2)	
False	63 (14)	62 (16.6)	1 (1.3)	
I don't know	160 (35.6)	149 (39.8)	11 (14.5)	
<i>For breastfeeding to protect a mother from pregnancy, her baby can't be fed anything but the mother's milk</i>				<.00 01
True	51 (11.3)	28 (7.5)	23 (30.1)	
False	186 (41.3)	158 (42.3)	28 (36.8)	
I don't know	213 (47.3)	188 (50.3)	25 (32.9)	
<i>Breastfeeding only protects mothers from pregnancy until her menstrual periods have returned</i>				<.00 01
True	126 (28)	85 (22.7)	41 (54)	
False	148 (32.9)	131 (35)	17 (22.4)	
I don't know	176 (39.1)	158 (42.3)	18 (23.7)	
<i>How much do you believe exclusive breastfeeding reduces a mother's chance of becoming pregnant within 6 months of delivery?</i>				<.00 01
A lot	38 (8.4)	19 (5)	19 (25)	
A little	191 (42.4)	138 (36.9)	52 (69.7)	
Not at all	101 (22.4)	100 (26.7)	1 (1.3)	
I don't know	120 (26.7)	117 (31.3)	3 (4)	

*Data were missing for birth control plan for n=1

**When asked, "Have you considered using breastfeeding to protect against pregnancy after delivery?" those we categorized as considering LAM answered, "Yes, I would like to use it as my only method", or "Yes, but I would also use condoms or another method."

Table 3: Perceptions of the comparative effectiveness of postpartum contraceptives, 2021 (n=451*)

	All Participants n=450, % of total	Considering LAM as a postpartum contraceptive**		p-value
		No (n=374, % of column)	Yes (n=76, % of column)	
<i>Typically, which does a better job protecting a mother from pregnancy? Condoms or exclusive breastfeeding?</i>				<.0001
Exclusive Breastfeeding	10 (2.2)	3 (0.8)	7 (9.2)	
Condoms	392 (87.3)	330 (88.5)	62 (81.6)	
I don't know	47 (10.5)	40 (10.7)	7 (9.2)	
<i>Typically, which does a better job protecting a mother from pregnancy? Birth control pills or exclusive breastfeeding?</i>				0.06
Exclusive breastfeeding	9 (2)	5 (1.3)	4 (5.3)	
Birth control pills	395 (87.8)	329 (88)	66 (86.8)	
I don't know	46 (10.2)	40 (10.7)	6 (7.9)	

*Data were missing for birth control plan for n=1

**When asked, "Have you considered using breastfeeding to protect against pregnancy after delivery?" those we categorized as considering LAM answered, "Yes, I would like to use it as my only method", or "Yes, but I would also use condoms or another method."