



## Lactation and Advanced Birthing Age

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## Objectives

- Learn how pregnancy over 40 is different than pregnancy under 40
- Learn about specific physiologic changes that are associated with aging and how they might affect lactation
- What do studies show about lactation in this population?
- How do we mitigate the effects of age on lactation goals and success?

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## What is different about pregnancy over age 40?

- It is the only age group where pregnancy rates are increasing in the US!
- Accounts for 3.5% of all births in the US in 2019-2021 according to the March of Dimes
  - People are delaying childbearing due to economic instability-student loans, purchasing a home, establishing a career, cost of raising a child (!)
  - May be a delay in finding a suitable partner (more women than men with college degrees and advanced degrees)
  - Increased access to and coverage of assisted reproductive technology
  - Use of donor eggs and sperm, donor embryo

[www.marchofdimess.org/peristats/data?reg=9&top=2&ctop=5&lev=1&lev=1&obj=3&chy=20182020](http://www.marchofdimess.org/peristats/data?reg=9&top=2&ctop=5&lev=1&lev=1&obj=3&chy=20182020)

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### Egg quality decreases as we age...

- Risk of miscarriage increases with age
  - For birthing people under 35, risk is approximately 1 in 5 pregnancies
  - By age 40, the risk increases to about 1 in 3 pregnancies
- This also increases the risk of chromosomal anomalies including Trisomy 21 (Down's Syndrome), Trisomy 13 (Edward's Syndrome), and Trisomy 18, as well as sex chromosome abnormalities

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### It's not all about us...

- Advanced paternal/sperm age is also potentially a risk factor
  - Maternal/Birthing morbidity
  - Neonatal Complications
  - Abnormalities in childhood psychosocial development of offspring
- As you can guess, this is very understudied.

Khandwala YS, Baker V.L, Shaw G.M., Stevenson D.K., Lu Y, Eisenberg M.L. Association of paternal age with perinatal outcomes between 2007 and 2016 in the United States: population based cohort study. *BMJ*. 2018; <https://doi.org/10.1136/bmj.k4372>

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### Risks associated with pregnancy over 40

Every pregnancy related morbidity is increased with older age

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|------------------------|---------------------|
| ◦ Pre-eclampsia        | ◦ Stillbirth        |
| ◦ Gestational Diabetes | ◦ Cardiomyopathy    |
| ◦ Placenta Previa      | ◦ Mortality         |
| ◦ Growth restriction   | ◦ Risk of multiples |
| ◦ Obesity              | ◦ Pre-term birth    |

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### Why are these conditions more common over 40?

- More pre-existing health problems such as hypertension, diabetes, thyroid disease, lupus, substance use
- Vascular "wear and tear" affecting small blood vessels in the placental bed and endometrium
- Higher risk of previous surgeries or other reproductive procedures

<https://www.cdc.gov/obesity/data/adulthtml>

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### Why are these conditions more common over 40?

- Longer exposure to negative social determinants of health: poverty, lack of support, stress, racism, misogyny, lack of access to care, insufficient health education, poor nutrition.
- Obesity
  - 39.8% among adults aged 20 to 39 years
  - 44.3% among adults aged 40 to 59 years
  - Mechanical issues, delayed lactogenesis II (Bever Babendure, et al. 2015)
- Decreasing physical fitness/cardiovascular health with age-pregnancy is a physiologic workout for your body!

<https://www.cdc.gov/obesity/data/adulthtml>

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### This causes a higher risk of iatrogenic preterm birth

- Pregnant people over the age of 40 are advised to deliver prior to 39-40 weeks
  - *early term and term babies have different breastfeeding success rates!*
- This could be much sooner due to hypertensive disease, fetal growth restriction, multiples
- Preterm birth or growth restriction can pose unique challenges
  - Separation from the infant
  - Small mouth/latch difficulty
  - Poor effort during feeding
  - Reliance on pumping
  - Increased risk of cesarean delivery or prolonged induction

Scheeren MDC, Fiori HH, Machado LU, Volkmer CP, Oliveira MG. Exact Gestational Age Term Versus Early Term, Is Associated with Different Breastfeeding Success Rates in Mothers Delivered by Elective Cesarean Section. *Breastfeed Med.* 2022 Oct;17(10):925-931. doi: 10.1089/bfm.2022.0068. Epub 2022 Sep 13. PMID: 36103275.

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**But, it's not all bad....**

"Older" birth parents have been shown to:

- Have more money (sometimes, some high parity/low resource)
- More confidence
- More experience
- Better support
- More resources to support offspring (children have better nutrition, higher educational achievement)
- Maturity

Fall CH, Sachdev HS, Osmond C, et al. COHORTS investigation. Association between maternal age at childbirth and child and adult outcomes in the offspring: a prospective study in five low-income and middle-income countries (COHORTS collaboration). *Lancet Glob Health*. 2015 Jul;3(7):e366-77. doi: 10.1016/S2214-109X(15)0038-8. Epub 2015 May 18. PMID: 2599096; PMCID: PMC4547329.

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**How does age effect breast/chestfeeding rates?**

- Rates of breastfeeding  $\geq 6$  months were highest among mothers aged 30-34 years and 35-39 years, followed by mothers aged 40-55 years
- Education, age, and maternal obesity had the greatest effects on breastfeeding rates.

Anny H. Xiang, Ting Chow, Janet Mora-Maraquez, et al. Breastfeeding Persistence at 6 Months: Trends and Disparities from 2008 to 2015. *The Journal of Pediatrics*, Volume 208, 2019, Pages 169-175.e2, ISSN 0022-3476, <https://doi.org/10.1016/j.jpeds.2018.12.055>

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**How does age effect breast/chestfeeding rates?**

- "Breastfeeding rates (at 6 months of age) increased significantly with increasing maternal age overall and for all race/ethnicity groups. The breastfeeding rates of mothers who were under 20 years of age (43%) were lower compared with mothers who were 30 years and older (75%) or 20–29 years of age (65%). "

McDowell MM, Wang CY, Kennedy-Stephenson J. Breastfeeding in the United States: findings from the national health and nutrition examination surveys, 1999-2006. *NCHS Data Brief*. 2008 Apr;(5):1-8. PMID:19389319

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### How does age effect breast/chestfeeding rates?

- The successful rate of EBF was the lowest in primiparous aged  $\geq 35$  mothers at 1 month

Kitano N, Nomura K, Kido M, Murakami K, Ohkubo T, Ueno M, Sugimoto M. Combined effects of maternal age and parity on successful initiation of exclusive breastfeeding. *Prev Med Rep.* 2015 Dec 29;3:121-6. doi: 10.1016/j.pmedr.2015.12.010. PMID: 26844198; PMCID: PMC4733091

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### Age and breast/chestfeeding rates, cont'd.

- These studies are older
- While some of them do acknowledge the increasing age of birthing people, none include recent data from the last 9 years
- Birthing people age $>40$  and parity may temper some of the benefits of older age on initiation and continuation rates
- More study on this population is needed.

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### How does age effect breast/chestfeeding duration?

- WHO goal of exclusive human milk feeding for 6 months and continued breast/chestfeeding for 2 years
  - (<https://www.who.int/news-room/fact-sheets/detail/infant-and-young-child-feeding>)
- In a study of Canadian birth parents and reasons for discontinuation, they found inconvenience/fatigue, milk supply, and returning to work were the top reasons given.
  - While this study did not include birthing people older than 40, *these reasons for discontinuation may be significant for older parents*

Brown CR, Dadds L, Legge A, Bryanton J, Semenic S. Factors influencing the reasons why mothers stop breastfeeding. *Can J Public Health.* 2014 May 9;105(3):e17986. doi:10.17269/cjph.30.5.4244. PMID: 2516886; PMCID: PMC6972160

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### Is the composition of the milk different?

- Lipid concentrations in colostrum may be lower in extremes of parental age

Hochman VGA, Nascimento RCFA, da Silva CBM, Quinderé PNA, Melo RX, Velarde LGC, Bueno AC, Vieira AA. Relationship Between Maternal Age and Macronutrient Content of Colostrum. J Hum Lact. 2024 Feb 27; 8903344241233500. doi: 10.1177/08903344241233500. Epub ahead of print. PMID: 38411139.

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### What about bone loss?

- Lactation is associated with temporary bone density loss with complete recovery after cessation
- Concern for ability to recover bone mass in patients with advanced maternal age found in mouse models
- Continue to encourage routine weight bearing exercise and a balanced diet with calcium containing foods

Rogowska MD, Pena UNV, Binning N, Christians IK. Recovery of the maternal skeleton after lactation is impaired by advanced maternal age but not by reduced IGF availability in the mouse. PLoS One. 2021 Sep 1;16(9):e0256906. doi: 10.1371/journal.pone.0256906. PMID: 34469481; PMCID: PMC8409645.

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### Influence of lactation on chronic stress

- Influence of weathering/allostatic load (cumulative burden of chronic stressors)
- A study followed 10 biomarkers reflecting metabolic, cardiovascular, immune, and neuroendocrine systems at 6 (T2) and 12 (T3) months postpartum including:

- |  |   |
|--|---|
| (1) BMI, $\geq 30$ kg/m <sup>2</sup>         | (6) HS-CRP, $\geq 3$ mg/L                   |
| (2) waist/hip ratio, $\geq 0.85$             | (7) HbA1c, $\geq 5.4\%$                     |
| (3) systolic blood pressure, $\geq 125$ mmHg | (8) HDL, $\leq 40$ mg/dL                    |
| (4) diastolic blood pressure, $\geq 80$ mmHg | (9) total cholesterol/HDL ratio, $\geq 5.9$ |
| (5) pulse, $\geq 100$ beats per minute       | (10) diurnal cortisol slope, $\geq -0.01$   |

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### Influence of lactation on chronic stress

Findings:

- Duration of lactation >6 months was associated with lower allostatic load
- Longer breastfeeding duration was associated (significantly) with:
  - Lower BMI, systolic and diastolic blood pressure, pulse, steeper cortisol slopes at T2 and T3
  - Higher HDL, lower HbA1c at T2
  - Lower HS-CRP at T3

Hsiao BJ, Laws H, Cordero LS, O'Campo P, Sibelo L. Breastfeeding Duration Is Inversely Associated with Postpartum Allostatic Load: A Possible Mechanism for Improved Maternal Health. *Breastfeed Med.* 2022 Oct;17(10):859-869. doi: 10.1089/bfm.2022.026. PMID: 36282190.

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### Influence of lactation on chronic stress

This may be of particular benefit to older birthing people who presumably have had more accumulated stress, especially in marginalized groups.

Further study assessing baseline allostatic load at the start of pregnancy and comparing it to postpartum time points is needed

- Lacking data on birthing people over age 40 in this study

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### Risk of breast/chest cancer and screening

- Total duration of lactation is most important factor for breast/chest cancer risk reduction *independent of age*
  - Birthing people over 40 may have fewer children due to decreased fecundity especially if using assisted reproduction
  - Especially important to discuss prolonged lactation duration
- Risk of developing breast cancer in your 40s is 1.55% according to the National Cancer Institute
- Routine mammogram is recommended according to the American College of Radiology starting at age 40 (defer during pregnancy)
  - Safe in lactation, pt advised to bring pump to appointment and pump immediately prior to exam

Collaborative Group on Hormonal Factors in Breast Cancer. Breast cancer and breastfeeding: collaborative reanalysis of individual data from 47 epidemiological studies in 30 countries, including 503 02 women with breast cancer and 96 973 women without the disease. *Lancet.* 2002 Jul 20;360(9231):87-95. doi: 10.1016/S0140-6736(02)9454-0. PMID: 12133652.

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### Evaluating breast masses during or after pregnancy

- Breast cancer is the most common pregnancy-associated cancer occurring in 0.3/1000 pregnancies
- For a patient with a concerning breast mass or possible abscess, ultrasound is the first line radiologic test
- Mammogram or MRI may also be done and are safe, MRI (without gadolinium) is preferred during pregnancy (mammogram usually only for confirmed malignancy)
- Biopsies of the breast can be safely performed during pregnancy and lactation

Perez F, Bragg A, Whitman G. Pregnancy-associated breast cancer. J Clin Imaging Sci 2021;11:49.

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### Take home points...

- We don't have many specific studies on lactation in this patient population despite the growing proportion of births to people over age 40
- Much of what we are doing is extrapolated from experiences with younger parents
- There are some advantages to older parenthood that increase breast/chestfeeding rates, however, we cannot assume that all of these advantages hold in the setting of age >40
- Birth parents older than 40 have a higher likelihood of chronic illness and are likely to be delivered before term

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