



## Commentary

# Social Determinants of Breastfeeding in the United States

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### ABSTRACT

Despite overall improvement in breastfeeding in the past 3 decades in the United States, significant and alarming social disparities persist. Adverse social determinants of health are increasingly recognized as root causes of social disparities in health outcomes, including breastfeeding initiation and continuation. We provide an overview of the evidence and mechanisms by which social determinants of health, including education, employment, food, neighborhood, and housing contribute to ongoing social disparities in breastfeeding in the United States, including current research gaps. We also review the intersection of social determinants of health with income, racism, and *theory of planned behavior*, a commonly used decision-making framework for breastfeeding promotion. Future interventions to address social determinants of breastfeeding should occur at the policy, community, organization, and individual levels. (*Clin Ther.* 2022;44:186–192.) © 2021 Elsevier Inc.

**Key words:** breastfeeding, social determinants, United States.

### INTRODUCTION

Exclusive breastfeeding is recommended for all newborns until at least 1 year of age due to the array of health benefits for mothers and infants across the life course.<sup>1</sup> Unfortunately, inequities in breastfeeding according to race/ethnicity in the United States are well-known and persistent, where non-Hispanic black mothers are much less likely to initiate and continue breastfeeding compared to mothers in most other racial/ethnic groups.<sup>2–4</sup> Similar to social disparities in other health behaviors, the causes of racial and ethnic disparities in breastfeeding are multifactorial

and rooted in an array of social, financial, and political issues (Figure). One important cause of racial/ethnic disparities in breastfeeding is *social determinants of health* (SDHs), defined as the “conditions in the environments where people are born, live, learn, work, play, worship, and age that affect a wide range of health, functioning and quality-of-life outcomes and risks,” according to the US Department of Health and Human Services Health People 2030 strategic goals.<sup>37</sup> SDHs include education, employment, food, neighborhood, and housing. SDHs can positively or negatively impact health. Negative, or adverse, SDHs are more common among under-represented minority populations and therefore represent a root cause of racial/ethnic disparities in health outcomes. Our primary aims were to (1) summarize current evidence that elucidates the mechanisms by which adverse SDHs contribute to low breastfeeding rates and (2) clarify research gaps (Table I).

### EDUCATION

The association of higher education attainment and increased breastfeeding is well-known.<sup>4</sup> The mechanism by which this occurs is multifaceted. Higher education attainment leads to improved job mobility and wealth, which can facilitate breastfeeding through increased financial support.<sup>5</sup> For example, many mothers with higher incomes can afford private lactation consultations, breast pumps and supplies, and paid support for child care or other household duties that may

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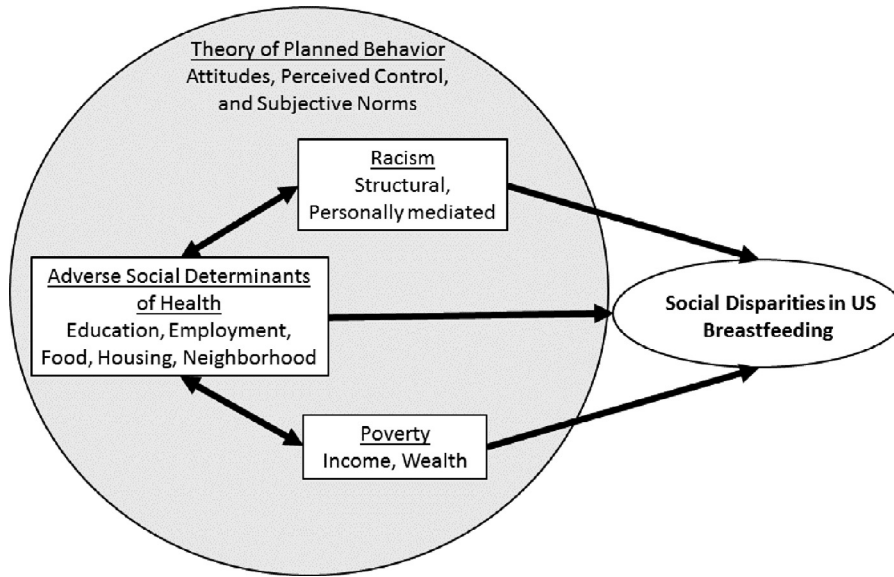


Figure. Causes of racial and ethnic disparities in breastfeeding.

facilitate breastfeeding (see further explanation in the Income and SDH section). Lactation-specific education also has been linked to breastfeeding and serves as a target of many successful interventions geared toward breastfeeding promotion among low-income, minority populations.<sup>6</sup> Effective lactation-education interventions that are focused on non-Hispanic black and Hispanic mothers target increasing knowledge on the benefits of breastfeeding and overcoming common barriers.<sup>6</sup> These studies have been delivered during the prenatal, hospital, and postpartum time periods and vary by mode of education delivery (eg, peers, lactation consultants, or nurses).<sup>6</sup>

## EMPLOYMENT

Studies have consistently shown that a shorter duration of maternity leave and a lack of work-related support for breastfeeding are negatively associated with breastfeeding.<sup>7,38</sup> This negative association occurs because maternity leave allows for increased mother-infant contact and frequency of nursing. Mothers who *anticipate* a shorter duration of time off from work have been shown to be less likely to even start breastfeeding.<sup>7</sup> A recent seminal study showed that when maternity leave was extended from 6 to 12 weeks among mothers serving in the military in 2016, exclusive breastfeeding increased from 72%

to 82% at 2 months, 57% to 71% at 4 months, 47% to 60% at 6 months, and 35% to 45% at 9 months,<sup>8</sup> demonstrating the effectiveness of longer maternity leave on breastfeeding duration, and consistent with substantial evidence from other developed countries. Since 1993 in the United States, ~50% of workers who wish to take maternity leave have been provided job protection through the Family and Medical Leave Act. However, few states require *paid* medical or maternity leave. In California, the first state to institute paid maternity leave, exclusive breastfeeding at 3 and 6 months was increased by 3% to 5%, and any breastfeeding at 3, 6, and 9 months was increased by 10% to 20% after paid maternal leave was implemented, when compared to the same time periods in other states.<sup>9</sup> Unfortunately, the duration of maternity leave is substantially less in the United States than in most other high-income countries.<sup>10</sup>

In addition to duration of maternity leave, barriers to breastfeeding in the work environment are substantial contributors to breastfeeding cessation. Work-related breastfeeding-promotion practices include accommodating time and space for milk expression, providing a sanitary place for milk storage, and allowing breastfeeding in public and private locations. Several laws across many states have been passed in

Table I. Proposed interventions targeting social determinants of breastfeeding.

Social Determinant of Health	Theory of Planned Behavior Domain	Proposed Interventions
Overall	Perceived control; subjective norms	Screening and referral for SDHs in clinical and community settings; peer navigation that connects mothers to resources as appropriate
Education	Attitude; subjective norms	Improve access to culturally appropriate lactation education (text message, peer support); target education at community-level, include partners
Employment	Perceived control	State and federal policy supporting longer duration of paid maternity leave and more extensive supports for lactation at work
Food	Perceived control	Support for local organizations providing food delivery for families with pregnant and breastfeeding mothers; policy support for food access for families with pregnant and breastfeeding mothers
Neighborhood	Attitude; subjective norms	Support policies that reduce racial segregation; support development of community-level breastfeeding support groups and delivery of breastfeeding support services
Housing	Perceived control	Support policies providing adequate housing for pregnant and breastfeeding mothers; promote breastfeeding support practices in homeless shelters
Intersection with income	Perceived control	Financial support for mothers' time spent breastfeeding; expansion of direct cash payments of child tax credit programs
Intersection with racism	Attitude; subjective norms; perceived control	Implicit bias training to health care providers giving lactation support; track breastfeeding support practices according to race/ethnicity in hospitals and other public health settings; promoting training and hiring of racially concordant lactation providers; support policies geared toward reducing neighborhood segregation

SDHs = social determinants of health.

support of such practices and have been associated with modest increases in breastfeeding outcomes.<sup>11-13</sup>

Overall, state policies to support breastfeeding and paid leave have increased in the past 1 to 2 decades. However, many policy gaps remain. Many states lack such policies, while other states have policies that apply to only large businesses; furthermore, the extent to which these policies are followed is unclear. Therefore, addressing employment-related barriers remains a high priority to further promote breastfeeding in the United States.

**FOOD**

Studies have found associations between household food insecurity and earlier breastfeeding cessation.<sup>14,15</sup> The mechanisms of this association are multifactorial. Food insecurity is a marker of poverty, which itself

has been associated with family stress and many other adverse SDHs that contribute to decreased breastfeeding. Mothers with food insecurity have reported concerns about their milk quantity and quality, leading to mothers' decisions to supplement with formula and stop breastfeeding.<sup>16</sup> Metabolic disorders such as gestational diabetes and morbid obesity have been associated with low milk production, and thus poor food access may have a direct physiologic link to breastfeeding outcomes.<sup>17,18</sup> It is also possible that decreased quality or quantity of maternal energy intake may impact milk production, but further studies are needed to examine this possibility.

The Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) is a source of food benefits for low-income families. Pre-/post-design studies reported higher rates of breastfeeding

after WIC food benefits were increased in 2019.<sup>19,20</sup> While it is possible that increased receipt of food contributed to improved milk production and longer durations of breastfeeding, this mechanism is less likely due to the way the policy was designed. Only mothers who were exclusively breastfeeding received the increased food benefit, compared to partially breastfeeding or formula-feeding mothers. Therefore, the policy incentivizing breastfeeding was more likely the explanation for increased breastfeeding among mothers receiving more food benefits, rather than a direct impact of the food itself.

### NEIGHBORHOOD

Neighborhood has been shown to be associated with breastfeeding.<sup>21,22</sup> Yourkavitch et al<sup>22</sup> geocoded and linked birth-certificate data to census tracts and reported the extent to which *neighborhood disadvantage*, an index derived from various markers of household poverty, and *neighborhood affluence*, an index derived from occupation, education, and home value, were associated with breastfeeding within racial/ethnic groups. Neighborhood disadvantage was associated with lower exclusive breastfeeding rates among Asians, Hispanics, and non-Hispanic blacks, but not non-Hispanic whites. Neighborhood affluence was associated with higher exclusive breastfeeding rates among Hispanics and non-Hispanic whites.<sup>22</sup> Furthermore, living in a primarily non-Hispanic black (ie, more racially segregated) neighborhood has also been associated with decreased breastfeeding initiation and duration among non-Hispanic blacks.<sup>23</sup>

Neighborhoods provide several possible supports for breastfeeding. Neighborhoods contain local breastfeeding support resources, such as baby cafes, WIC centers, or other medical facilities that facilitate access to breastfeeding education and support. These supports are not equitably distributed. A recent study that geocoded breastfeeding support services reported that these services were more likely to be located in suburban, high-income areas composed predominantly of non-Hispanic white populations.<sup>24</sup> Beyond direct breastfeeding supports, neighborhoods also provide social and cultural support, which represent additional determinants of breastfeeding continuation.<sup>25</sup>

### HOUSING

Homelessness and housing instability have also been associated with lower breastfeeding initiation and

continuation.<sup>26,27</sup> Housing instability often occurs in conjunction with other adverse SDHs, such as lower education, employment, and income,<sup>28</sup> which contribute to reduced breastfeeding initiation and continuation. Homeless mothers are also less likely to attend prenatal care and well-child visits, limiting their access to breastfeeding-related education.<sup>27</sup> Homeless shelters themselves may be unlikely to support private spaces for breastfeeding or pumping and milk storage,<sup>29</sup> and staff may be unsupportive.<sup>29</sup> Recently published guidelines address breastfeeding support practices specific to homeless shelters.<sup>40</sup> These practices included staff education and training; provision of water and snacks for breastfeeding mothers at night; provision of clean, private, and safe spaces for breastfeeding or pumping, and breast pumps; support of nursing at group classes; and facilitating access to community breastfeeding support.<sup>40</sup> Research is needed to examine the extent to which the implementation of these practices may impact breastfeeding among mothers living in homeless shelters.

### THEORY OF PLANNED BEHAVIOR AS A FRAMEWORK FOR UNDERSTANDING THE IMPACT OF SDH ON BREASTFEEDING BEHAVIORS

The *theory of planned behavior* (TPB) is a well-established framework used to examine health behaviors, including breastfeeding.<sup>41</sup> Decisions about health-related behaviors such as breastfeeding, as described in the TPB, are determined by attitudes (perceptions about a behavior), perceived control (how much someone believes they have control of the behavior), and subjective norms (what someone believes other people think about whether they should engage in the behavior).<sup>30,41</sup> Studies have shown that negative attitudes, lack of perceived control, and lack of subjective norms regarding breastfeeding among non-Hispanic black mothers, as compared to non-Hispanic white mothers, are key contributors to decreased breastfeeding<sup>25,31</sup>; therefore, these domains have been a target of many breastfeeding-intervention studies targeting non-Hispanic black mothers.<sup>32</sup>

What has rarely been acknowledged in past studies examining TPB domains is the intersection with SDH. The TPB can serve as a useful framework for operationalizing intervention targets of adverse SDHs that affect breastfeeding. For example, attitudes are informed by the belief that breast milk is healthy

and nutritious, concepts that are often delivered through improved access to health education. Perceived control is impeded by the perception of support for breastfeeding at work, access to breast pumps and lactation support in a community or neighborhood, child care, and other competing demands in the home. Subjective norms are driven by both advice from health care providers and the experience of family and friends living in a community or neighborhood. Future interventions using the TPB domains as mechanistic targets toward breastfeeding promotion should consider the intersection with SDHs [Table I](#).

### INTERSECTION OF INCOME AND SDHS

Income level and SDH are interrelated and both contribute to decreased breastfeeding ([Figure](#)). For example, lower education attainment and inconsistent or lower-paying employment are linked to lower household income and a subsequent increased risk for housing and food insecurity. In addition to the aforementioned mechanisms linking adverse SDHs to decreased breastfeeding, direct financial support is also related to breastfeeding. Mothers with higher incomes are more likely to pay for private lactation consultation and breastfeeding supplies, for example. These mothers are more easily able to pay for support related to household duties (eg, cleaning, food preparation) and childcare to facilitate more time to breastfeed. Despite the fact that employment has been associated with barriers to breastfeeding, higher-income mothers are more likely to hold full-time employment that allows for more breastfeeding support in the workplace compared to lower-income mothers who are more likely to work part-time jobs and/or jobs without such support.

In addition to the financial support that enables time and access to breastfeeding support, emerging evidence suggests that small cash incentives can be used to incentivize breastfeeding. In a recent cluster randomized controlled trial from the United Kingdom, in which mothers were randomly assigned to receive a small financial incentive (50 USD) versus no incentive, breastfeeding was modestly increased in the first 6 to 8 weeks postpartum.<sup>39</sup> In a qualitative analysis conducted alongside the trial, designed to elucidate the mechanisms of the increase, mothers who received the financial incentive reported that they felt valued for their effort and compensated for their difficulties.<sup>33</sup> These findings suggest that small cash incentives may

promote self-efficacy, or a belief in one's ability to breastfeed, and provide value to this behavior.

### INTERSECTION OF RACISM AND SDHS

*Structural racism*, or racial bias among institutions and across society,<sup>34</sup> is a well-known cause of SDH. Structural racism impacts equitable access to housing and neighborhoods, which in turn impacts access to education and employment. A recent study of mothers in the Black Women's Health Study, using data from 1995–2005, reported on experiences of racism in the work environment<sup>23</sup>; rates of breastfeeding initiation and continuation were decreased among mothers who reported such experiences.

Personally mediated racism that occurs between individuals<sup>34</sup> (implicit and explicit) has also been shown to be associated with decreased breastfeeding.<sup>35</sup> A recent review of data from qualitative and quantitative studies on this topic reported that health providers held biased assumptions that non-Hispanic black mothers would not breastfeed, and that this bias led to decreased support offered to them. Furthermore, fewer referrals and lower-quality lactation support were received by non-Hispanic black mothers compared to mothers in other racial/ethnic groups.<sup>35</sup> Black, Hispanic, and other minoritized mothers have few opportunities to receive racially concordant lactation support: Only 1.6% of surveyed International Board Certified Lactation Consultants identify as non-Hispanic black, and 4.7%, as Hispanic.<sup>36</sup> There have not yet been interventional studies targeting personally mediated racism as a mechanism of improving equitable lactation support for minority mothers.

### NEXT RESEARCH AND POLICY STEPS

SDHs are crucial determinants of breastfeeding in the United States and contribute significantly to existing racial/ethnic disparities. Future strategies to address social determinants of breastfeeding should optimally combine interventions at the policy, community, organization, and individual levels ([Table](#)). Interventions should target different types of SDHs that are drivers of breastfeeding outcomes, and address the intersection of poverty, racism, and theory of planned behavior domains.



## CONCLUSIONS

Breastfeeding is recognized as a modifiable health-related behavior, with substantial short- and long-term benefits to mothers and infants. Addressing the persistence in social disparities in breastfeeding in the United States is crucial for offsetting health-related inequities and is recognized as a public health priority. Evidence shows that SDHs are a crucial driver of social disparities in breastfeeding. Future interventions should target improvements in education, employment, food access, housing, and neighborhoods.

## DISCLOSURE

The authors have indicated that they have no conflicts of interest with regard to the content of this article.

## AUTHOR CONTRIBUTIONS

Dr. Parker drafted and reviewed the manuscript. Dr. Standish reviewed the manuscript critically for content.

## REFERENCES

1. Section on Breastfeeding. Breastfeeding and the use of human milk. *Pediatrics*. 2012;129:e827–e841.
2. Centers for Disease Control. *Breastfeeding Report Card United States*. 2020.
3. Jones KM, Power ML, Queenan JT, Schulkin J. Racial and ethnic disparities in breastfeeding. *Breastfeed Med*. 2015;10:186–196.
4. Anstey EH. Racial and geographic differences in breastfeeding—United States, 2011–2015. *MMWR Morb Mortal Wkly Rep*. 2017;66.
5. The Lancet Public Health. Education: a neglected social determinant of health. *Lancet Public Health*. 2020;5:e361.
6. Segura-Pérez S, Hromi-Fiedler A, Adnew M, Nyhan K, Pérez-Escamilla R. Impact of breastfeeding interventions among United States minority women on breastfeeding outcomes: a systematic review. *Int J Equity Health*. 2021;20:72.
7. Ogbuanu C, Glover S, Probst J, Liu J, Hussey J. The effect of maternity leave length and time of return to work on breastfeeding. *Pediatrics*. 2011;127:e1414–e1427.
8. Donne AD, Hatch A, Carr NR, Aden J, Shapiro J. Extended maternity leave and breastfeeding in active duty mothers. *Pediatrics*. 2019;144.
9. Huang R, Yang M. Paid maternity leave and breastfeeding practice before and after California's implementation of the nation's first paid family leave program. *Economics & Human Biology*. 2015;16:45–59.
10. Livingston G, Thomas D. Among 41 countries, only U.S. lacks paid parental leave. Pew Research Center. Accessed October 20, 2021. <https://www.pewresearch.org/fact-tank/2019/12/16/u-s-lacks-mandated-paid-parental-leave/>
11. Hawkins SS, Stern AD, Gillman MW. Do state breastfeeding laws in the US promote breastfeeding? *J Epidemiol Community Health*. 2013;67:250–256.
12. Smith-Gagen J, Hollen R, Walker M, Cook DM, Yang W. Breastfeeding laws and breastfeeding practices by race and ethnicity. *Women's Health Issues*. 2014;24:e11–e19.
13. Gonzalez-Nahm S, Grossman ER, Benjamin-Neelon SE. The role of equity in US states' breastfeeding policies. *JAMA Pediatr*. 2019;173:908–910.
14. Gallo S, Kogan K, Kitsantas P. Racial and ethnic differences in reasons for breastfeeding cessation among women participating in the special supplemental nutrition program for women, Infants, and Children. *J Midwifery Womens Health*. 2019;64:725–733.
15. Drennen CR, Coleman SM, Ettinger de Cuba S, et al. Food insecurity, health, and development in children under age four years. *Pediatrics*. 2019;144:e20190824.
16. Gross RS, Mendelsohn AL. Food insecurity during early childhood: marker for disparities in healthy growth and development. *Pediatrics*. 2019;144.
17. Fenger-Grøn J, Fenger-Grøn M, Blunck CH, Schønemann-Rigel H, Wielandt HB. Low breastfeeding rates and body mass index in Danish children of women with gestational diabetes mellitus. *International Breastfeeding Journal*. 2015;10:26.
18. Marchi J, Berg M, Dencker A, Olander EK, Begley C. Risks associated with obesity in pregnancy, for the mother and baby: a systematic review of reviews. *Obesity Reviews*. 2015;16:621–638.
19. Li K, Wen M, Reynolds M, Zhang Q. WIC participation and breastfeeding after the 2009 WIC revision: a propensity score approach. *Int J Environ Res Public Health*. 2019;16:E2645.
20. Langellier BA, Chaparro MP, Wang MC, Koleilat M, Whaley SE. The new food package and breastfeeding outcomes among women, infants, and children participants in Los Angeles County. *Am J Public Health*. 2014;104(Suppl 1):S112–S118.
21. Burdette AM. Neighborhood context and breastfeeding behaviors among urban mothers. *J Hum Lact*. 2013;29:597–604.
22. Yourkavitch J, Kane JB, Miles G. Neighborhood disadvantage and neighborhood affluence: associations with breastfeeding practices in urban areas. *Matern Child Health J*. 2018;22:546–555.
23. Griswold MK, Crawford SL, Perry DJ, et al. Experiences of racism and breastfeeding initiation and duration among first-time mothers of the Black Women's Health Study. *J Racial Ethn Health Disparities*. 2018;5:1180–1191.
24. Grubestic TH, Durbin KM. Geodemographies of breastfeeding support. *J Hum Lact*. 2021;37:301–313.

25. Safon CB, Heeren TC, Kerr SM, et al. Disparities in breastfeeding among U.S. black mothers: identification of mechanisms. *Breastfeeding Medicine*. 2021;16:140–149.
26. Reilly KH, Zimmerman R, Huynh M, Kennedy J, McVeigh KH. Characteristics of mothers and infants living in homeless shelters and public housing in New York City. *Matern Child Health J*. 2019;23:572–577.
27. Richards R, Merrill RM, Baksh L. Health behaviors and infant health outcomes in homeless pregnant women in the United States. *Pediatrics*. 2011;128:438–446.
28. Frank DA, Casey PH, Black MM, et al. Cumulative hardship and wellness of low-income, young children: multisite surveillance study. *Pediatrics*. 2010;125:e1115–e1123.
29. Spatz DL. Improving breastfeeding for homeless families. *MCN: The American Journal of Maternal/Child Nursing*. 2020;45:242.
30. The Theory of Planned Behavior. Accessed October 26, 2021. <https://sphweb.bumc.bu.edu/otlt/mph-modules/sb/behavioralchange/theories/BehavioralChangeTheories3.html>
31. DeVane-Johnson S, Giscombe CW, Williams R, Fogel C, Thoyre S. A qualitative study of social, cultural, and historical influences on African American women's infant-feeding practices. *J Perinat Educ*. 2018;27:71–85.
32. Chapman DJ, Pérez-Escamilla R. Breastfeeding among minority women: moving from risk factors to Interventions123. *Adv Nutr*. 2012;3:95–104.
33. Johnson M, Whelan B, Relton C, et al. Valuing breastfeeding: a qualitative study of women's experiences of a financial incentive scheme for breastfeeding. *BMC Pregnancy Childbirth*. 2018;18:20.
34. Four Levels of Racism. Accessed October 29, 2021. <https://www.cacgrants.org/assets/ce/Documents/2019/FourLevelsOfRacism.pdf>
35. Robinson K, Fial A, Hanson L. Racism, bias, and discrimination as modifiable barriers to breastfeeding for African American women: a scoping review of the literature. *J Midwifery Womens Health*. 2019;64:734–742.
36. Chetwynd E, Meyer AM, Stuebe A, Costello R, Labbok M. Recognition of international board certified lactation consultants by health insurance providers in the United States: results of a national survey of lactation consultants. *J Hum Lact*. 2013;29:517–526.
37. U.S. Department of Health and Human Services, Office of Disease Prevention and Health Promotion. Healthy People 2030. Accessed December 6, 2021. <https://health.gov/healthypeople/objectives-and-data/social-determinants-health>
38. Navarro-Rosenblatt D, Garmendia M-L. Maternity Leave and Its Impact on Breastfeeding: A Review of the Literature. *Breastfeed Med*. 2018;13(9):589–597. doi:10.1089/bfm.2018.0132.
39. Relton C, Strong M, Thomas KJ, et al. Effect of financial incentives on breastfeeding a cluster randomized clinical trial. *JAMA Pediatr*. 2018;172(2):1–7. doi:10.1001/jamapediatrics.2017.4523.
40. Ernst A, Lee N, Karamanian V. Building a Policy: Ten Steps to a Breastfeeding-Friendly Shelter. *J Hum Lact*. 2020;36(4):795–802. doi:10.1177/0890334420935822.
41. Montano DE, Kasprzyk D. Theory of Reasoned Action, Theory of Planned Behavior, and the Integrated Behavioral Model. In: Glanz K, Rimer B k, Viswanath K, eds. *Health Behavior and Health Education* Jossey-Bass; 2002:67–96.

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