

Abstract

Introduction: Breastfeeding rates in the United States fall short of national targets and are marked by racial and ethnic disparities. Birth centers are associated with high rates of breastfeeding initiation and duration, yet no systematic review has compiled reported birth center breastfeeding data.

Methods: A PRISMA-guided literature review was conducted in CINAHL, PubMed, and Web of Science to retrieve quantitative studies that reported breastfeeding data in birth centers. Inclusion criteria focused on English language studies published since 2011 with breastfeeding outcomes from birth centers in the United States.

Results: Ten studies were included for analysis. Breastfeeding rates that exceeded actual and target national breastfeeding rates were reported among all 10 studies. Characteristics about breastfeeding outcomes were reported heterogeneously across the studies, which included a range of breastfeeding timepoints (immediately postpartum up to 6 weeks postpartum) and definitions of breastfeeding.

Discussion: Although breastfeeding rates reported in birth centers are higher than national breastfeeding rates and targets, authors of the included studies did not explore or analyze these rates in-depth. Developing standard definitions and data collection may enhance research about breastfeeding outcomes in birth centers.

Clinical Implications: Giving birth in a birth center is associated with higher than national breastfeeding rates.

Key words: Birth centers; Breastfeeding; Midwifery; Postpartum period.

BIRTH CENTER BREASTFEEDING RATES: A LITERATURE REVIEW

Erin K. George, MSN, CNM

Despite its high rate of health expenditures per capita, the United States lags far behind worldwide breastfeeding rates (United Nations Children's Fund, 2018). Bartick et al. (2017) estimated that optimal lactation rates in the United States, defined as at least 90% of infants experiencing some breastfeeding through 6 months to 1 year of life, could prevent one in 597 perinatal or child deaths. Healthy People 2030, the data-driven national public health goals for the United States over the next decade, published benchmarks that fall well below this 90% rate: 42.4% of infants to be exclusively breastfeeding at 6 months of life and 54.1% of infants to receive any amount of breast milk through their first year of life (United States Department of Health and Human Services [US DHHS], 2021b). Current breastfeeding rates in the United States include 25.6% of infants exclusively breastfeeding at 6 months of life and 35.9% of infants receiving any breastmilk at 1 year of life (Centers for Disease Control and Prevention [CDC], 2020).

Breastfeeding initiation and duration rates are key health indicators due to their associated health impacts. One measure endorsed by The Joint Commission and the National Quality Forum is the rate of exclusive breastfeeding upon postpartum discharge from a birthing facility, due to its strength of predicting longer-term breastfeeding patterns (Jolles & Hoehn-Velasco, 2021). For people who breastfeed, health impacts include lower risks of postpartum hemorrhage, depression, cardiovascular disease, and many cancers (Louis-Jacques & Stuebe, 2020). For children, breastfeeding duration is associated with decreased incidence of sudden infant death syndrome, leukemia, diabetes, and asthma. Breastfeeding rates are significantly lower among people who identify as non-Hispanic Black or African American, compared with people from other racial and ethnic groups (CDC, 2020). Factors attributed to breastfeeding disparities in the United States include systemic racism, socioeconomic inequalities, lack of paid family leave, and limited health insurance coverage for breastfeeding support services (Barraza et al., 2020; Kett, 2020).

In its landmark report about the effects of birth settings on perinatal health outcomes, the National Academies of Sciences, Engineering, and Medicine (NASEM) underscored that increasing



Birth centers are midwifery-led facilities that are typically home-like, freestanding buildings and focused on supporting low-intervention pregnancy, birth, and postpartum care.

use of the birth center model of care is an important strategy to improve breastfeeding initiation and duration rates (NASEM, 2020). Birth centers are midwifery-led facilities that are typically home-like, freestanding buildings and focus on supporting low-intervention pregnancy, birth, and postpartum care (American Association of Birth Centers [AABC], 2016). Midwives operate the vast majority of the 384 birth centers currently in operation in 37 states and Washington D.C., and may be accompanied by nurses, doulas, prenatal educators, lactation consultants, medical assistants, and administrative staff, depending on the individual birth center (Ernst & Bauer, 2020). Per AABC standards of operation, people who are

at low perinatal risk (i.e., singleton, vertex, term pregnancies without the presence of significant medical comorbidities or fetal anomalies) are the most appropriate candidates for care at birth centers (AABC, 2017). Many birth centers also offer people with higher perinatal risks and people who simply desire a hospital option to birth in affiliated hospital settings without having to transfer prenatal care to a different site (AABC, 2017).

Approximately 0.61% of all births in the United States occurred in birth centers in 2020, a 13.2% increase since 2019 (MacDorman et al., 2022). Birth centers are associated with positive perinatal health outcomes, such as low cesarean birth rates and high satisfaction with care (Alliman et al., 2019; Jolles et al., 2017, 2020; Stapleton et al., 2020; Thornton et al., 2017). In two studies, participants who birthed in birth centers reported higher degrees of autonomy and

respect during their care and less instances of mistreatment, compared with participants who birthed in hospitals (Almanza et al., 2022; Vedam et al., 2019).

Although NASEM has asserted that the birth center model has positive effects on breastfeeding rates (NASEM, 2020), no synthesis to date has evaluated breastfeeding data associated with birth centers in the United States. The purpose of this literature review is to synthesize breastfeeding rates reported at birth centers in the United States. Not all people directly breastfeed and may instead give expressed breastmilk, and not all people identify with the term breastfeeding (Yourkavitch & Chetwynd, 2019). For consistency, and to reflect the findings in the articles in

TABLE 1. INCLUSION AND EXCLUSION CRITERIA

	Inclusion	Exclusion
Participants	People receiving perinatal care at birth centers	People receiving perinatal care in home or hospital settings
Intervention	Not applicable	Not applicable
Outcomes	Breastfeeding	No breastfeeding data reported
Study design	Any quantitative study or study that includes quantitative data	Qualitative, literature reviews, meta-analyses, or meta-syntheses
Setting	United States	Any country or territory outside of the United States
Time period	2011–2022	Before 2011
Language	English	All other languages
Publication type	Peer-reviewed articles	Reviews, editorials, or dissertations

this literature review, breastfeeding will refer to any parent–baby couplet that engages in direct latching, or the receipt of expressed or donor breastmilk.

Methods

Article Eligibility Criteria

This literature review followed the 2020 guidelines of the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA; Page et al., 2021). For inclusion in a full-text review, articles needed to contain quantitative studies that reported breastfeeding rates in birth centers in the United States and published in English within the last 10 years. Any studies that did not contain breastfeeding data in the full-text review were excluded from the analysis. See Table 1 for the full inclusion and exclusion criteria.

Search Strategy

The author conducted searches between September 2021 and June 2022 in three databases: CINAHL Plus, PubMed, and Web of Science. Using the PICO (Patient or Population, Intervention, Comparison, Outcome) framework (Schardt et al., 2007), a comprehensive search strategy was applied across all three databases. Search terms focusing on birth centers and breastfeeding were used to guide the search (see Table 2 for the complete PICO framework). References and citations of the articles included for review underwent handsearching to ensure completeness of the search process.

Search Outcome

The primary searches yielded a total of 559 articles, which were compiled in the reference software Zotero. Duplicates were automatically excluded, yielding a total of 267 articles for screening.

TABLE 2. PATIENT OR POPULATION, INTERVENTION, COMPARISON, OUTCOME (PICO) FRAMEWORK FOR SEARCH STRATEGY

PICO Elements	Keywords	Search Terms	Search Strategies
P (Patient or Population)	People who received perinatal care	Perinatal care	Perinatal care OR Labor OR Birth OR Delivery OR Postpartum
I (Intervention)	Birth center	Birth center	Birth center OR Birthing center OR Freestanding birth center
C (Comparison)	Not Applicable	Not Applicable	Not Applicable
O (Outcome)	Breastfeeding	Breastfeeding	Breastfeeding OR Lactation

Note. This PICO framework was applied to each of the three databases used for this literature review (CINAHL Plus, PubMed, and Web of Science)

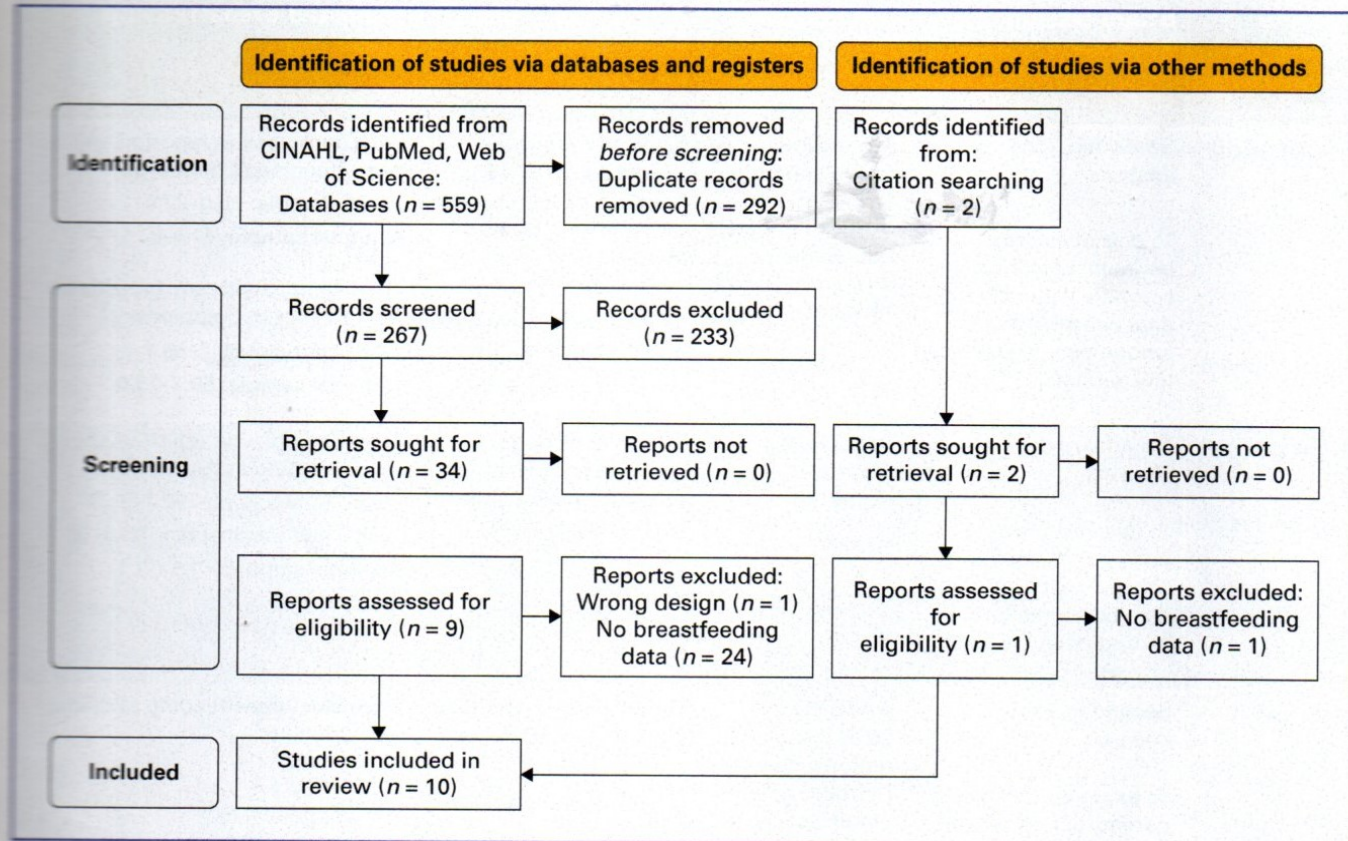
Article Review

The author reviewed screened titles and abstracts based on the inclusion criteria, which yielded a total of 10 articles for review. The review process for this literature review is displayed in Figure 1.

Data Extraction

Each of the 10 articles were thoroughly reviewed for reported breastfeeding data. Variables of interest were collated in a Microsoft Excel spreadsheet. These variables included primary author and year, study design and purpose, data source, data timeframe, and setting, sample size and participant characteristics, any comparison groups, and reported breastfeeding rates (See Table 3 for all extracted variables in supplemental digital content at <http://links.lww.com/MCN/A81>).

FIGURE 1. PRISMA FLOWCHART ILLUSTRATING THE SEARCH STRATEGY



Results

Study Settings

Details of the 10 studies from the literature review are displayed in Table 3 (supplemental digital content at <http://links.lww.com/MCN/A81>). See Table 4 for a summary of the studies. Five included breastfeeding data from birth centers for analysis stratified breastfeeding data by specific birth setting. Two reported breastfeeding data from participants who birthed in birth center, home, and hospital settings (MacDorman & Declercq, 2016, 2019), two reported data from birth center and hospital settings (O'Hara et al., 2013; Thornton et al., 2017), and one study reported data from a birth center only (Perdion et al., 2013). Breastfeeding data from four of the AABC Perinatal Data Registry studies were not stratified by birth setting, but instead described cumulatively people who received care at AABC sites and birthed in birth center, hospital, or home settings (Alliman et al., 2019; Jolles et al., 2017, 2020; Stapleton et al., 2020). One study reported a combined breastfeeding rate about participants who birthed in birth center and home settings (Nethery et al., 2021).

Sample Size and Participant Characteristics

Sample size ranged from 553 to 88,574 participants. Only one study reported any breastfeeding outcomes by race or ethnicity (Alliman et al., 2019). In this study, 91.0% of white people who received perinatal care at

AABC sites reported ever breastfeeding, compared with 85.9% of white people nationally, 91.2% of Hispanic people at AABC sites ever breastfed, compared with 84.6% nationally, and 89.1% of Black, non-Hispanic people at AABC sites ever breastfed, compared with 69.4% nationally.

Reported Breastfeeding Rates

Breastfeeding rates were reported heterogeneously across the studies. These outcomes included rates of breastfeeding initiation, breastfeeding upon postpartum discharge from birthing facility, breastfeeding at 1 month postpartum, and breastfeeding at 6 weeks postpartum. Three studies reported breastfeeding initiation rates at birth centers compared with hospital births. O'Hara et al. (2013) reported a breastfeeding initiation rate of 72.8% of birth center births in their sample, compared with 53.7% of hospital births. MacDorman and Declercq (2016) stated that among all births in the United States in 2014, there was a 97.8% breastfeeding initiation rate among birth center births, compared with an 80.8% rate in hospitals. MacDorman and Declercq (2019) reported breastfeeding initiation rates of 98.1% among birth center births and 82.0% among hospital births in 2016. Six studies reported about breastfeeding rates on postpartum discharge from a birthing facility, although none defined how many days after birth discharge occurred or how they defined any versus exclusive breastfeeding (Alliman et al., 2019;

TABLE 4. SUMMARY OF ARTICLES INCLUDED IN THE REVIEW

Primary Author and Publication Year	Study Design and Purpose	Data Source, Date Time-frame, and Setting	Sample Size and Participant Characteristics	Reported Breastfeeding Rates (%)
Alliman (2019)	Secondary data analysis To describe core perinatal outcomes and compare with national data benchmarks among people at similar low perinatal risk	American Association of Birth Centers (AABC) Perinatal Data Registry (PDR), 2013–2017, 19 states	6,424 people who received care at 44 AABC birth center sites in the Strong Start program 2,797 (43.5%) gave birth in birth centers	Total sample who reported any breastfeeding at discharge^a AABC sample: 85.0–92.9 National sample: 41.5–83.1 Total sample with any breastfeeding at 1 month postpartum: AABC sample: 65.7–88.1 National sample: 59.1–79.0
Jolles (2017)	Secondary data analysis To describe core perinatal outcomes and compare with national data benchmarks among people at similar low perinatal risk	AABC PDR, 2012–2014, 21 states	3,136 people who received care at 45 AABC birth center sites in the Strong Start program 1,409 (67.7%) gave birth in birth centers	Total sample who reported any breastfeeding at discharge^a AABC total sample: 92.7–95.3 AABC low medical risk: 93.3–96.1 National sample: 41.5–79.2
Jolles (2020)	Secondary data analysis To explore and compare rural and urban maternity care	AABC PDR, 2012–2020, national sample (number of states not specified)	88,574 people who gave birth at 82 AABC sites 60.4% gave birth in birth centers	Exclusive breastfeeding at discharge ^a : 94.6
MacDorman (2016)	Secondary data analysis To examine trends in out-of-hospital births, risk profiles, and access to options	National birth certificate data, 2004–2014	59,674 people who had birth in out-of-hospital settings in 2014 Birth center births: 18,219	Breastfeeding initiation rate Birth centers: 97.8 Home: 97.8 Hospitals: 80.8
MacDorman (2019)	Secondary data analysis To examine trends in out-of-hospital births, risk profiles, and access to options	National birth certificate data, 2004–2017	62,228 people who had birth in out-of-hospital settings in 2017 Birth center births: 19,878	Breastfeeding initiation rate Birth centers: 98.1 Home: 97.9 Hospitals: 82.0
Nethery (2021)	Retrospective cohort study To examine maternal and perinatal health outcomes between births at home and in birth centers	Obstetrical Care Outcomes Program Data Set, 2015–2020, Washington State	10,609 people who planned birth center or home births 6,265 planned birth center births	Exclusive breastfeeding at 6 weeks postpartum: 93.0
O'Hara (2013)	Retrospective cohort study To compare outcomes at physician-led, birthing center to a traditional hospital labor and delivery service	Electronic medical records, 1998–2005, Wichita, KS	32,174 singleton births Birth center: 14,326 births Hospital: 17,838 births	Breastfeeding initiation rate Birth center: 72.8 Hospital: 53.7

TABLE 4. SUMMARY OF ARTICLES INCLUDED IN THE REVIEW (CONTINUED)

Primary Author and Publication Year	Study Design and Purpose	Data Source, Date Time-frame, and Setting	Sample Size and Participant Characteristics	Reported Breastfeeding Rates (%)
Perdion (2013)	Secondary data analysis To describe outcomes at a hospital-based, midwifery led birth center	Electronic medical records, 2012, San Diego, CA	4,168 people who gave birth in a birth center	Exclusive breastfeeding at discharge ^a : 99.1
Stapleton (2020)	Secondary data analysis To describe knowledge, values, and experiences of care	AABC PDR, 2015–2016, 22 states	553 people who received care at 34 AABC birth center sites in the Strong Start program 54.9% gave birth in birth centers	Expressed prenatal intention to breastfeed: 81.7 Breastfeeding initiation: 94.2 Exclusive breastfeeding at discharge: 91.7 Exclusive breastfeeding at 6 weeks postpartum: 78.6
Thornton (2017)	Retrospective cohort study To assess effects of birth centers on cesarean odds among women at low perinatal risk who were admitted in spontaneous labor at birth centers or hospitals	AABC PDR, 2006–2011, 46 states	11,303 women who received prenatal care at 79 freestanding, out-of-hospital birth centers Birth center births: 8,776 Hospital births: 2,527	Breastfeeding ^b at discharge ^a : Birth centers: 94.51 Hospitals: 72.77

Note. AABC = American Association of Birth Centers; PDR = Perinatal Data Registry.

^adischarge time not defined

^bexclusive versus any breastfeeding not defined

Jolles et al., 2017, 2020; Perdion et al., 2013; Stapleton et al., 2020; Thornton et al., 2017). Three studies described data about breastfeeding rates 4 to 6 weeks postpartum (Alliman et al., 2019; Nethery et al., 2021; Stapleton et al., 2020). Definitions of any versus exclusive breastfeeding were not explicitly cited. No breastfeeding rates were reported beyond 6 weeks postpartum.

Two studies reported data about breastfeeding intentions (Jolles et al., 2017; Stapleton et al., 2020). In one study, 95.9% of people who received perinatal care at AABC birth centers expressed an intention to breastfeed at their first prenatal visit and 93.3% reported exclusive breastfeeding upon postpartum discharge from their birthing facility (Jolles et al., 2017). In another study, 81.7% of people who received care at AABC birth centers expressed an intention to breastfeed at some point during their prenatal care, and 91.7% reported exclusive breastfeeding rates at postpartum discharge (Stapleton et al., 2020).

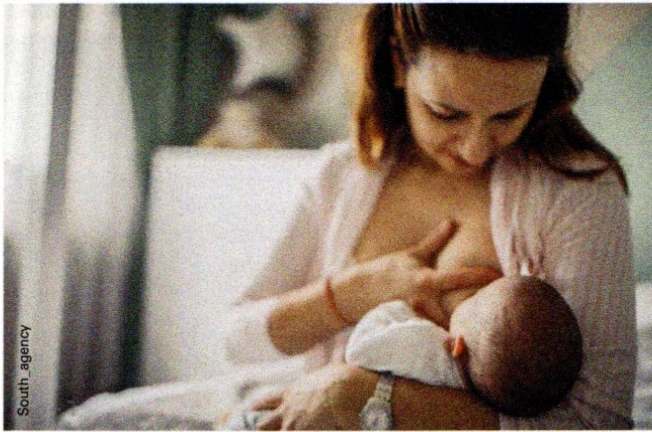
One study described predictors of breastfeeding (Stapleton et al., 2020). Expressing a preference for breastfeeding at the first prenatal visit was significantly correlated with breastfeeding upon discharge ($p = .02$), but not significantly correlated to breastfeeding at 6 weeks postpartum.

Similarly, attending a prenatal education class was significantly correlated with breastfeeding at discharge ($p = .01$), but not to breastfeeding at 6 weeks postpartum.

Discussion

In this review, people who received perinatal care at birth centers experienced high rates of breastfeeding initiation and duration in the first 6 weeks postpartum. If the rate of at least 90% of people breastfeeding is used as the benchmark for comparison (Bartick et al., 2017), nine of the 10 studies, except the O'Hara et al. (2013) study, reported various breastfeeding rates higher than 90% among people who received perinatal care at birth centers. Healthy People 2020, the last iteration of the data-driven national public health goals for breastfeeding, aimed for a target of 81.9% of infants to ever breastfeed (US DHHS, 2021a), an objective that did not carry over to the Healthy People 2030 goals (US DHHS, 2021b).

Among the studies at AABC sites that matched similar cohorts from national data, breastfeeding rates were significantly higher at AABC sites (Alliman et al., 2019; Jolles et al., 2017). Although not everyone receiving perinatal care at an AABC site birthed at a birth center, the higher



People who received perinatal care at birth centers experienced high rates of breastfeeding initiation and duration in the first 6 weeks postpartum.

breastfeeding rates in these studies suggest that receiving birth center care at some point during the perinatal experience may increase breastfeeding rates. This idea is suggested by the authors of one study who reported a higher rate of breastfeeding at discharge from birth centers, compared with the rate of participants who expressed any breastfeeding intention during prenatal care (Stapleton et al., 2020). However, authors from another study reported a slight decline in breastfeeding at discharge compared with intention to breastfeed (Jolles et al., 2017).

A compelling finding is the decreased disparity in the rate of “ever-breastfeeding” reported among Black, non-Hispanic people in the Alliman et al. (2019) study. Because people who identify as Black or African American experience the lowest breastfeeding rates among all racial and ethnic groups in the United States (CDC, 2020), the finding that their ever-breastfeeding rate was only 2.1% lower than the highest breastfeeding rate reported in this study warrants further investigation. Given the well-documented health impacts of breastfeeding (Louis-Jacques & Stuebe, 2020), researching what is different about the breastfeeding experiences of people who are Black or African American and receive care at birth centers is critical to supporting optimal breastfeeding rates. Reporting breastfeeding data stratified by race and ethnicity at birth center sites will enable a better understanding of whether breastfeeding outcomes are more equitable across people of all racial and ethnic backgrounds who receive birth center care. This literature review reveals several gaps in understanding how the birth center model of care affects breastfeeding rates. The limited number of articles eligible for inclusion in this review reflects the need to more widely study and report breastfeeding data in birth centers. Standardizing how breastfeeding data are reported in studies about birth center outcomes would improve ability to compare data

SUGGESTED CLINICAL IMPLICATIONS

- Breastfeeding rates in the United States are suboptimal and marked by racial, ethnic, socioeconomic, and systemic disparities.
- The midwifery-led, birth center model of care may offer innovations in promoting high breastfeeding rates.
- Birth center breastfeeding rates exceed actual and targeted national breastfeeding rates.
- Birth center breastfeeding rates are reported heterogeneously, with no data reported beyond 6 weeks postpartum.
- Future research should standardize breastfeeding reporting in birth centers and evaluate factors associated with breastfeeding outcomes in birth centers.

across studies. For example, clearly defining breastfeeding measurement parameters such as breastfeeding upon postpartum discharge will increase the ability to compare and synthesize outcomes. Because the last breastfeeding data points reported in these studies only went as far as 6 weeks postpartum, these data cannot be compared with the Healthy People 2030 objectives, which set breastfeeding goals for 6 months and 1 year postpartum (US DHHS, 2021b). Developing mechanisms for prospective, longitudinal collection and reporting of breastfeeding outcomes among people who received care at birth centers would shed light on whether the birth center model is meeting or exceeding the Healthy People 2030 goals.

Only two studies reported any information that could start to evaluate components of the birth center model of care that may be affecting breastfeeding rates (Jolles et al., 2017; Stapleton et al., 2020). Staffing at birth centers may affect who is primarily providing breastfeeding education support, for example, the number of nurses or lactation consultants on staff. Conducting regression analyses to evaluate factors of birth center perinatal care associated with breastfeeding rates may inform interventions to enhance breastfeeding support. Exploring breastfeeding intentions among people choosing the birth center model, as well as their experiences of breastfeeding education and support at birth centers, could better explain the positive breastfeeding outcomes reported in birth center settings and inform interventions to increase breastfeeding rates in hospital settings. The authors of one recent study found that people receiving prenatal care at AABC sites who intended to birth in birth centers experienced higher breastfeeding initiation and duration rates across all racial and ethnic groups, compared with the rates among people who were eligible for birth center birth but instead chose a hospital setting (Jolles et al., 2022).

Conclusions

There is a critical public health need to improve breastfeeding rates in the United States and, subsequently, enhance both short- and long-term perinatal health outcomes (Barraza et al., 2020; CDC, 2020; Louis-Jacques & Stuebe, 2020; US DHHS, 2021b). Based on the limited

number of articles about the United States birth center model and associated breastfeeding rates included in this literature review, positive breastfeeding rates that exceed national targets are being achieved in birth centers, at least early in the postpartum period. Expanding use of the birth center model of care may be one strategy to increase breastfeeding rates and reduce health inequities associated with breastfeeding disparities (NASEM, 2020). Standardizing how breastfeeding rates are defined, collected, and reported across birth centers will contribute to future research efforts to study breastfeeding outcomes in birth centers. ♦

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Erin K. George is a PhD Candidate, Boston College, W. E. Connell School of Nursing, Chestnut Hill, MA. The author can be reached via email at erin.george@bc.edu

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