Journal of Community Health (2019) 44:629–635
https://doi.org/10.1007/s10900-018-00597-3

ORIGINAL PAPER

Local Disparities in Breastfeeding Initiation and Duration: A Cross-Sectional Population-Based Survey in Ten Chicago Community Areas

Michelle M. Hughes[1,2] · Nazia S. Saiyed[1] · Pamela T. Roesch[1] · Lisa Masinter[3] · Ashima Sarup[2]

Published online: 19 December 2018

Abstract

Breastfeeding confers substantial health benefits to women and infants. While disparities in breastfeeding persist in the United States, the extent of these disparities at the local level is unclear. This study aimed to identify local level and racial/ethnic breastfeeding disparities within Chicago. A community-based representative survey including questions on breastfeeding was conducted in Chicago. We estimated the proportion of women who breastfed their last child for any length of time and who breastfed at 6 months by neighborhood and maternal characteristics. We performed Rao-Scott corrected chi-squared tests to analyze factors hypothesized to be associated with breastfeeding. Between March 2015 and September 2016, 641 women with at least one live birth completed the survey. We found no differences by community area in the breastfeeding initiation or breastfeeding for at least 6 months. Puerto Rican women had the lowest prevalence of breastfeeding initiation and continuation at 6 months in contrast to Mexican women who reported the highest prevalence of these practices. We found breastfeeding disparities between Puerto Rican and Mexican Hispanic subgroups. Policies and programs aimed at increasing breastfeeding should prioritize groups that are least likely to initiate breastfeeding or most likely to breastfeed for a limited duration.

Keywords Breastfeeding · Epidemiology · Disparities · Race/ethnicity · Survey

Background

Breastfeeding provides numerous health benefits to women and their infants. Breastfed infants are less likely to experience respiratory illnesses, ear infections, gastrointestinal diseases, asthma, and celiac disease, and have lower risk of long-term adverse health outcomes [1]. Women who breastfeed are less likely to develop hypertension, diabetes, cardiovascular disease, and ovarian and breast cancer [1]. The American Academy of Pediatrics recommends that infants be exclusively breastfed for the first 6 months of life, with continued breastfeeding until at least 12 months of age in conjunction with supplementary food [1].

Despite increases over the last decade in the initiation and duration of breastfeeding, in 2011, only 79% of U.S. newborns were ever breastfed and only 49% were still breastfed at 6 months [2]. These proportions fall short of the Healthy People 2020 goals of 82 and 61%, respectively [3]. Further, national racial and ethnic disparities persist in breastfeeding practices. When compared to other racial/ethnic groups, Black women have the lowest prevalence of breastfeeding initiation (64%) and continuation at 6

Electronic supplementary material The online version of this article (https://doi.org/10.1007/s10900-018-00597-3) contains supplementary material, which is available to authorized users.

✉ Michelle M. Hughes
nqw7@cdc.gov

Nazia S. Saiyed
nazia.saiyed@sinai.org

Pamela T. Roesch
pamela.roesch@sinai.org

Lisa Masinter
Lisa.Masinter@cityofchicago.org

Ashima Sarup
ashima.sarup@my.rfums.org

1 Sinai Urban Health Institute, Sinai Health System, 1500 South Fairfield Avenue, Chicago, IL 60608, USA

2 Chicago Medical School, Rosalind Franklin University of Medicine and Science, 333 Green Bay Road, North Chicago, IL 60064, USA

3 Bureau of Maternal, Infant, Child, and Adolescent Health, Chicago Department of Public Health, 333 S. State Street, Chicago, IL 60604, USA

months (36%) [3]. Hispanic women have a higher prevalence of breastfeeding initiation (84%) than U.S. women overall; however, only 48% still breastfeed at 6 months [3]. Additionally, national Hispanic breastfeeding statistics do not report on ethnic disparities between Hispanic subgroups [4, 5]. In studies, heterogeneity between Hispanic subgroups is unobserved when breastfeeding statistics are reported overall [4]. Hispanic women are more likely to give formula supplementation earlier, introduce solid foods before 4 months of age, practice restrictive feeding, and exclusively breastfeed at lower rates than other racial/ethnic groups [4, 6]. Analyses of maternal health outcomes demonstrate that Hispanic women with higher levels of acculturation are more likely to have less healthy behaviors; but, few studies examine this effect by Hispanic subgroup [7]. These racial/ethnic disparities in breastfeeding result in disparities in associated health outcomes [8].

Increasing breastfeeding prevalence and duration is important for reducing health disparities and optimizing health for women and infants. However, targeted breastfeeding promotion interventions require local-level data that elucidate the factors associated with breastfeeding in specific racial/ethnic groups, notably Hispanic subgroups, as well as geographic areas [4, 5]. Unfortunately, sparse data exist at the local levels, such as cities or neighborhoods, to guide intervention efforts. To address these gaps, our study aimed to provide neighborhood prevalence estimates of breastfeeding initiation and duration to 6 months within Chicago and to examine the demographic, health, and acculturation factors associated with breastfeeding within racial/ethnic groups.

Methods

Design

Sinai Community Health Survey 2.0, a representative, population-based survey, was conducted in ten predominantly low-income Chicago neighborhoods to better-understand health outcomes and determinants at a community level [9]. The survey was administered by the Sinai Urban Health Institute (SUHI) in collaboration with the University of Illinois at Chicago (UIC) Survey Research Laboratory and a Community Advisory Committee (CAC) comprising members from each surveyed community. Leveraging validated questions from national surveys and input from the CAC, the final adult survey included 369 questions on health outcomes, behaviors, and social determinants. Mount Sinai Hospital and UIC's Institutional Review Boards approved the study.

Setting

Survey data were collected between March 2015 and September 2016 in ten Chicago community areas that were chosen due to their location in the Sinai Health System's service area (SUHI's parent organization) and to ensure adequate sample sizes across racial/ethnic groups. With the exception of one predominantly non-Hispanic (NH) White comparison community, the median household income, employment rate, and high school graduation rate within surveyed communities were lower than national levels. Detailed community demographic and socioeconomic characteristics are provided in Supplemental Table 1 [9].

Sampling and Data Collection

Randomization of the survey leveraged probability proportionate to size methodology. Using a multi-stage sampling design, we randomly selected census block groups, then housing units, and then individuals within households. Up to two adults (≥ 18 years) in each sampled household were asked to participate, and participants received $50 for survey completion. Potential households were first contacted via mail, then interviewers tried to contact potential participants up to 20 times in person or via telephone (at least ten times in-person) at different dates and hours. After obtaining informed consent, the survey was administered face-to-face in English or Spanish using the Computer Assisted Survey Execution System. In order to attain sample sizes necessary for stable community area estimates, data collection was curtailed in one community area (Lower West Side) due to particularly low recruitment and to realign limited resources to the other nine community areas.

The final sample included 1543 adults. The response rate was 28.4% using the American Association of Public Opinion Research's (AAPOR) response rate type number 3, and the cooperation rate (i.e., the percent that completed the survey after an interviewer made face-to-face or telephone contact) was 53.9% (AAPOR cooperation rate type number 4) [10].

Measurement

The two primary outcomes, breastfeeding initiation and breastfeeding duration of at least 6 months, were based on the questions: (1) "Did you breastfeed your last child, or did you not breastfeed your last child?" and (2) "How old was (he/she) when (he/she) completely stopped breastfeeding or being fed breast milk?", which were answered by any adult woman who reported ever having a live birth. Women who reported breastfeeding for at least 6 months

(182 days) were categorized as having breastfed for 6 months. Women who never breastfed or who breastfed for less than 6 months were categorized as having not breastfed for 6 months. Women who were still breastfeeding an infant under one year old were excluded from the 6-month duration outcome because we were unable to determine the age of the child in months at the time of the survey. Exclusive breastfeeding was not required for either outcome.

Four racial/ethnic groups were analyzed (NH White, NH Black, Puerto Rican, and Mexican). To assess for secular trends, the reported number of years since the last pregnancy was categorized (0–9, 10–19, 20–29, and 30 or more years). Maternal age at the time of last birth was calculated as the difference between current age and years since most recent pregnancy and categorized (< 20, 20–29, 30–39, and 40 or more years old). Maternal educational attainment was dichotomized into high school graduate or less and some college or more. Women who reported smoking at least 100 cigarettes in their lifetime were considered as having a history of smoking. Certain variables were only available for women who gave birth within the past five years: whether or not the woman had smoked any cigarettes during her most recent pregnancy (yes/no) and whether or not she had experienced "postpartum depression, also known as the 'baby blues'" after her most recent pregnancy (yes/no). For Mexican and Puerto Rican women, we created a 3-item acculturation measure based on a validated construct [11]. We gave one point for each of the following: (1) born in the U.S., (2) English as primary spoken language [half point if another language is co-primary with English], and (3) English as primary thought language [half point given as described above]. Acculturation was categorized into low (≤ 1) or medium/high (> 1) levels.

Data Analysis

Analyses were weighted to account for the survey's clustered sampling design. Overall and community area prevalence estimates were calculated for the two primary outcomes. Second-order Rao-Scott corrected chi-squared tests were used to assess the association of included variables with the primary outcomes, and stratified analyses by racial/ethnic group were performed when cell sample size allowed (n > 5). Statistical significance was set at $p < 0.05$. When the global Rao-Scott test resulted in a difference for categorical variables, we performed pairwise comparison Rao-Scott tests to assess specific differences using a Bonferroni corrected p-value threshold. Analyses were conducted in Stata 14.2.

Results

Between March 5, 2015 and September 4, 2016, 1543 adult surveys were completed. All 641 women who had at least one live birth answered the breastfeeding initiation question. Of these, ten were excluded from the breastfeeding duration analysis (eight were currently breastfeeding and two did not report duration).

In our surveyed population, 51% (95% CI 45–57%) initiated breastfeeding and 31% (95% CI 24–38%) breastfed for at least 6 months. There were no statistically significant differences by community area in the reporting of breastfeeding initiation or duration until 6 months (Table 1). In two communities, Norwood Park and West Englewood, the prevalence of breastfeeding initiation was similar to

Table 1 Breastfeeding initiation and duration by Chicago community area, Sinai Community Health Survey 2.0, Chicago, IL (N = 629)[a]

	Breastfed for any length of time			Breastfed for at least 6 months		
	Weighted (%)	95% CI	p[c]	Weighted (%)	95% CI	p[c]
Community area[b]						
Norwood Park	49	34–64	0.15	45	32–59	0.59
Hermosa	53	37–69		38	22–58	
Humboldt Park	49	32–67		28	17–43	
West-West Town	49	35–64		32	17–43	
North Lawndale	27	17–39		18	9–32	
South Lawndale	50	31–69		25	15–39	
Gage Park	64	43–80		32	12–64	
Chicago Lawn	54	40–69		24	11–44	
West Englewood	31	14–55		23	7–55	

[a]Duration of breastfeeding data was missing for ten individuals (two who did not recall & eight who were currently breastfeeding)

[b]Excludes Lower West Side community area

[c]A second-order Rao-Scott test was used to assess statistical differences

the prevalence of breastfeeding duration until 6 months. In comparison, the communities of Gage Park, Chicago Lawn, and South Lawndale had larger differences between the percent of women who initiated breastfeeding and the percent that persisted to 6 months.

Mexican women had the highest prevalence of breastfeeding initiation at 73% (95% CI 64–81%) (Table 2). Mexican

Table 2 Breastfeeding initiation and duration by maternal socio-economic, demographic, and pregnancy-related characteristics[a], Sinai Community Health Survey 2.0, Chicago, IL (N = 597)[b]

	Breastfed for any length of time			Breastfed for at least 6 months		
	Weighted (%)	95% CI	p[e]	Weighted (%)	95% CI	p[e]
Race/ethnicity			**0.00**			**0.00**
Puerto Rican	30	13–56			[suppressed]	
Mexican	73	64–81		46	33–60	
Non-Hispanic Black	31	21–45		16	9–27	
Non-Hispanic White	53	38–66		43	30–57	
Maternal age			0.13			0.05
< 20 years	64	32–87		30	10–64	
20–29 years	41	32–52		21	15–27	
30–39 years	58	47–68		36	23–50	
40 + years	65	35–87		58	28–83	
Years since last pregnancy			**0.01**			0.16
0–9 years	68	56–78		37	22–54	
10–19 years	54	36–71		39	23–57	
20–29 years	32	20–46		16	8–29	
30 + years	40	25–56		26	14–42	
Education			**0.01**			0.07
High school graduate or less	43	35–52		25	18–34	
Some college or more	64	53–73		38	27–51	
Lifetime smoking			**0.01**			0.94
No	58	51–65		30	23–38	
Yes	39	27–52		30	18–45	
Smoking during pregnancy[c]			**0.00**			
No	73	61–83			[suppressed]	
Yes	17	4–51				
Post-partum depression[c]			0.55			**0.03**
No	70	54–82		38	19–62	
Yes	61	31–84		11	3–30	
Acculturation[d]			**0.03**			0.25
Low	71	60–79		42	28–57	
Medium/high	53	41–65		29	17–45	

[a]No more than 3% of responses were missing for any reported maternal characteristic

[b]Duration of breastfeeding data was missing for ten individuals (two who did not recall & eight who were currently breastfeeding)

[c]Smoking during pregnancy and post-partum depression questions were only asked of women whose last birth was within the last 5 years, n = 161 for breastfed for any length of time and n = 145 for breastfed for at least 6 months

[d]Acculturation was limited to Hispanic subpopulations, n = 290 for breastfed for any length of time and n = 279 for breastfed for at least 6 months

[e]A second-order Rao-Scott test was used to assess statistical significance (indicated in bold). For variables with more than two levels, where the primary Rao-Scott test showed global differences, we did secondary pair-wise Rao-Scott tests, using a Bonferroni corrected critical value threshold (p-value ≤ 0.0083). The following comparisons were statistically significant: for the outcome of breastfed for any length of time: race/ethnicity (Puerto Rican vs. Mexican, Mexican vs. non-Hispanic Black, Mexican vs. non-Hispanic White), years since last pregnancy (0–9 years vs. 20–29 years, 0–9 years vs. 30 + years). For the outcome of breastfed for at least 6 months: race/ethnicity (Mexican vs. non-Hispanic Black, non-Hispanic Black vs. non-Hispanic White), maternal age (20–29 vs. 40+)

women had statistically significantly higher rates of breastfeeding initiation than Puerto Rican, NH Black, and NH White women, with nearly three in four breastfeeding their last child, as compared to about half of NH White women and about a third of Puerto Rican and NH Black women. NH White and Mexican women were significantly more likely to breastfeed until at least 6 months than NH Black and Puerto Rican women. Ever smokers and those who smoked during pregnancy were less likely to breastfeed. The experience of postpartum depression (PPD) was not associated with breastfeeding initiation but these women had a 27% lower prevalence of breastfeeding at 6 months ($p = 0.03$).

Stratified analyses were performed for all racial/ethnic groups except for NH Whites due to low sample size (Supplemental Table 2). Higher education was associated with higher breastfeeding initiation among NH Black (49% vs. 18%) and Puerto Rican women (64% versus 6%), but it was not associated with breastfeeding among Mexican women. Acculturation was associated with lower breastfeeding initiation among Mexican (57% vs. 77%) and Puerto Rican women; however, among Puerto Rican women, this association was not statistically significant. No differences in breastfeeding for at least 6 months were observed within racial/ethnic groups by measured risk factors (restricted to NH Black and Mexican due to sample size).

Discussion

Racial and Ethnic Differences

We found Mexican women had the highest prevalence of breastfeeding compared to other racial/ethnic groups, which is consistent with previous studies that also controlled for socioeconomic status [3, 5, 12]. A higher level of acculturation was more strongly associated with lower breastfeeding initiation among Mexican than Puerto Rican women, for whom this relationship was not statistically significant. These findings among Mexican women mirror other studies [12], and our non-significant finding among Puerto Rican women is consistent with one previous study [13]. One hypothesized reason for these associations is that as women from countries with higher breastfeeding rates (e.g., Mexico) become more acculturated, their breastfeeding rates begin to resemble those of the American population rather than their country of origin. In our study, the generally protective effect of education on breastfeeding may be offset by the negative effect of increased acculturation on breastfeeding in Mexican women.

Higher maternal education was correlated with improved breastfeeding outcomes for NH Black and Puerto Rican women, similar to other studies [8, 14, 15], but no association was found for Mexican women. This may be confounded by acculturation, as Mexican women with high acculturation are also more likely to be highly educated [12]. Several studies have reported that NH Black women initiate breastfeeding significantly less often than Mexican women [3, 5, 8]. While one study found that race alone influenced breastfeeding practices among Black women [8], another found that the gap in breastfeeding initiation between Black and White women was mediated by demographic factors, specifically higher poverty rates, lower educational attainment, and lower marriage rates among Black women [5]. An additional consideration is that NH Black women are more likely to return to work earlier than other groups and are more often employed in unfavorable environments for breastfeeding continuation [16].

Geographic Differences

Although not directly comparable to our findings, we found a markedly lower prevalence of breastfeeding initiation and breastfeeding duration of at least 6 months compared to national, state, or city estimates [3, 17]. The disparity was greatest for breastfeeding at 6 months with an almost 30% lower prevalence in our population compared to the USA.

While the differences between community areas in breastfeeding initiation were not statistically significant, there was a substantial range in prevalence estimates between communities such as North Lawndale (predominantly NH Black) (27%) and Gage Park (predominantly Mexican) (64%). Some of the geographic diversity in breastfeeding initiation and duration might be explained by hospital-related factors where breastfeeding initiation occurs [18]. In Chicago there are marked disparities in breastfeeding initiation and exclusive breastfeeding prior to discharge between hospitals on the North Side (predominantly NH White and higher incomes) and those on the West and South Sides (predominantly communities of color with lower incomes) [19]. For example, in 2015 a hospital on the North Side reported 91% breastfeeding initiation compared to 22% for a South Side hospital [19]. Hospitals are critical to providing evidence-based resources (e.g. lactation consultants and having infants rooming in with their mothers) to women and to supporting their decision to breastfeed [20]. The Baby-Friendly Hospital Initiative was developed to encourage hospitals to adapt breastfeeding-friendly practices (5 hospitals in Chicago Baby-Friendly certified as of August 2018) [20, 21]. Differences in the standard of hospital-based maternity care may contribute to the geographic and consequentially racial breastfeeding disparities seen in our data [18].

Maternal Mental Health

Previous studies have demonstrated a strong relationship between PPD symptoms and shorter breastfeeding duration

[22, 23]. There is growing evidence that breastfeeding may be protective against PPD [22–24], however, alternative research reports heterogeneous findings on the protectiveness of breastfeeding against PPD [22–24]. Our finding of a negative association between PPD and breastfeeding for at least 6 months supports the findings of other studies [22, 23]. However, our finding of no association between breastfeeding initiation and PPD contrasts with growing evidence that breastfeeding may be protective against PPD [22–24].

Limitations

Our study has several limitations. One of our primary outcomes, breastfeeding for any length of time, combined women who may have breastfed only once with women who breastfed for several months. Thus, we may have missed differences between these groups. The breastfeeding for at least 6 months outcome was dependent on self-reported length of time breastfeeding. Women who reported on breastfeeding several years prior may be susceptible to recall bias; however, research demonstrates that this bias is minimal, with an average of a few weeks overestimation of breastfeeding duration with long-term recall [25].

Few of our respondents (~6%) gave birth in the prior year; therefore, we measured breastfeeding for the most recent child, regardless of time since last birth. Thus, our outcomes are not comparable to national data that report on breastfeeding by annual birth cohort. The measures included in the analysis for educational attainment and lifetime smoking reflect those variables at the time of the survey, not the time of last pregnancy. We did not account for other factors known to be associated with breastfeeding, such as marital status, parity, income, and employment, because they were collected for the present date but our outcomes could have occurred at any time in the past and were likely to vary. The survey did not collect infant health data such as low birth weight or preterm status.

Due to sample size limitations, we could not assess for effect modification by race/ethnicity or other variables nor conduct multivariable regression analyses. Despite efforts to increase response rates (e.g., contacting households at least 20 times, sending advanced letters, increasing survey publicity), the overall survey response rate was low (28%). However, a higher rate (54%) of those who made contact with interviewers responded. Finally, our results are only representative of the surveyed communities and not generalizable across Chicago; however, our results may be generalizable to similar populations in other U.S. urban centers.

Conclusion

Our study identified disparities in breastfeeding initiation and duration using local-level data from a Chicago population-based community health survey. Our results illuminate local breastfeeding disparities that are not differentiated by city-, state-, and national-level reporting. The Chicago Department of Public Health launched Healthy Chicago 2.0, which lists supporting breastfeeding for the first 6 months of life as one of its key strategies [26]. Our findings support the need for targeted, evidence-based interventions in specific communities and demographic groups that improve breastfeeding practices [27].

Given the geographic disparities observed, hospitals that have not yet achieved Baby-Friendly status, especially those serving NH Black and Puerto Rican women, should prioritize the changes needed to obtain this status given these hospitals are effective in increasing breastfeeding [28]. The reduction of early (within first 2 days of life) formula introduction in hospitals, which often occurs in predominantly NH Black, low-income communities [4], could reduce the observed disparities.

A second key intervention to increase breastfeeding is lactation support from peers or healthcare professionals [4, 28]. Over half of U.S. families with children participate in the U.S. Department of Agriculture's Supplemental Nutrition Program for Women, Infants, and Children (WIC), which supports breastfeeding [29, 30]. Studies show substantial heterogeneity in breastfeeding support services by WIC site that may favor Hispanic or NH White populations [29]. The WIC programs should review practices in predominantly NH Black or Puerto Rican populations in Chicago to ensure these populations are receiving evidence-based support to continue breastfeeding. Women from communities of color may benefit from community-based health education or doulas in addition to traditional prenatal and postpartum health care services [4, 31]. Our hyper-local study design was intended to identify disparities in breastfeeding initiation and continuation, which could then be used in public health planning. With limited resources, the city can prioritize delivering evidence-based interventions in the communities with the lowest breastfeeding rates.

Acknowledgements This work was supported by the Chicago Community Trust (Grant Numbers C2013-00630, C2014-01723, C2015-04294).

Compliance with Ethical Standards

Conflict of interest
The authors have no conflicts of interest to declare.

References

1. Breastfeeding and the use of human milk. (2012). *Pediatrics, 129*(3), e827–e841. https://doi.org/10.1542/peds.2011-3552.
2. Centers for Disease Control and Prevention. (2014). Breastfeeding Report Card
3. Office of Disease Prevention and Health Promotion. (2013). Healthy People 2020. U.S. Department of Health and Human Services, Washington, D.C. 2013. https://www.healthypeople.gov/. Accessed May 30, 2017.
4. Chapman, D. J., & Perez-Escamilla, R. (2012). Breastfeeding among minority women: Moving from risk factors to interventions. *Advances in Nutrition (Bethesda, Md.), 3*(1),95–104. https://doi.org/10.3945/an.111.001016.
5. McKinney, C. O., Hahn-Holbrook, J., Chase-Lansdale, P. L., et al. (2016). Racial and ethnic differences in breastfeeding. *Pediatrics*. https://doi.org/10.1542/peds.2015-2388.
6. Taveras, E. M., Gillman, M. W., Kleinman, K., Rich-Edwards, J. W., & Rifas-Shiman, S. L. (2010). Racial/ethnic differences in early-life risk factors for childhood obesity. *Pediatrics, 125*(4), 686–695. https://doi.org/10.1542/peds.2009-2100.
7. Ahluwalia, I. B., D'Angelo, D., Morrow, B., & McDonald, J. A. (2012). Association between acculturation and breastfeeding among Hispanic women: data from the Pregnancy Risk Assessment and Monitoring System. *Journal of Human Lactation, 28*(2), 167–173. https://doi.org/10.1177/0890334412438403.
8. Forste, R., Weiss, J., & Lippincott, E. (2001). The decision to breastfeed in the United States: does race matter? *Pediatrics, 108*(2), 291–296. https://doi.org/10.1542/peds.108.2.291.
9. Hirschtick, J. L., Benjamins, M. R., & Homan, S. (2017). *Community health counts: Sinai Community Health Survey 2.0*. Chicago, IL: Sinai Urban Health Institute, Sinai Health System 2017.
10. American Association for Public Opinion Research. (2016). Standard definitions: Final dispositions of case codes and outcome rates for surveys.
11. Coronado, G. D., Thompson, B., McLerran, D., Schwartz, S. M., & Koepsell, T. D. (2005). A short acculturation scale for Mexican-American populations. *Ethnicity & Disease, 15*(1), 53–62.
12. Kimbro, R. T., Lynch, S. M., & McLanahan, S. (2008). The influence of acculturation on breastfeeding initiation and duration for Mexican-Americans. *Population Research and Policy Review, 27*(2), 183–199. https://doi.org/10.1007/s11113-007-9059-0.
13. Anderson, A. K., Damio, G., Himmelgreen, D. A., Peng, Y. K., Segura-Perez, S., & Perez-Escamilla, R. (2004). Social capital, acculturation, and breastfeeding initiation among Puerto Rican women in the United States. *Journal of Human Lactation, 20*(1), 39–45. https://doi.org/10.1177/0890334403261129.
14. Barcelona de Mendoza, V., Harville, E., Theall, K., Buekens, P., & Chasan-Taber, L. (2016). Acculturation and Intention to breastfeed among a population of predominantly puerto rican women. *Birth (Berkeley, Calif.), 43*(1), 78–85. https://doi.org/10.1111/birt.12199.
15. Pitonyak, J. S., Jessop, A. B., Pontiggia, L., & Crivelli-Kovach, A. (2016). Life course factors associated with initiation and continuation of exclusive breastfeeding. *Maternal and Child Health Journal, 20*(2), 240–249. https://doi.org/10.1007/s10995-015-1823-x.
16. Satcher, D. S. (2001). DHHS blueprint for action on breastfeeding. *Public Health Report, 116*(1), 72–73. https://doi.org/10.1093/phr/116.1.72.
17. Chicago Department of Public Health. (2017). Breastfeeding in Chicago: PRAMS 2010–2012. https://www.healthychicagobabies.org/wp-content/uploads/2017/08/HCB-data-breastfeeding-d9ed1011d790f655c3050961a0db3e87.pdf.
18. Lind, J. N., Perrine, C. G., Li, R., Scanlon, K. S., & Grummer-Strawn, L. M. (2014). Racial disparities in access to maternity care practices that support breastfeeding—United States, 2011. *MMWR. Morbidity and Mortality Weekly Report, 63*(33), 725–728.
19. Illinois Department of Public Health. Illinois Hospital Report Card and Consumer Guide to Health Care: Maternal/Child - Breastfeeding. Illinois Department of Public Health. (2015). http://www.healthcarereportcard.illinois.gov/. Accessed April 18 2017.
20. Chicago Department of Public Health. (2012). Breastfeeding and the Baby-Friendly Hospital Initiative. https://d14abeop4cfxkt.cloudfront.net/cms/files/63/files/original/BabyFriendlyHospital32012.pdf.
21. Baby-Friendly, U. S. A. (2017). Designated facilities. Baby-friendly USA. https://www.babyfriendlyusa.org/find-facilities/designated-facilities--by-state. Accessed May 5 2017.
22. Dias, C. C., & Figueiredo, B. (2015). Breastfeeding and depression: a systematic review of the literature. *The Journal of Affective Disorders, 171*, 142–154. https://doi.org/10.1016/j.jad.2014.09.022.
23. Pope, C. J., & Mazmanian, D. (2016). Breastfeeding and postpartum depression: An overview and methodological recommendations for future research. *Depression Research and Treatment*, 2016, 4765310. https://doi.org/10.1155/2016/4765310.
24. Figueiredo, B., Canario, C., & Field, T. (2014). Breastfeeding is negatively affected by prenatal depression and reduces postpartum depression. *Psychological Medicine, 44*(5), 927–936. https://doi.org/10.1017/S0033291713001530.
25. Natland, S. T., Andersen, L. F., Nilsen, T. I. L., Forsmo, S., & Jacobsen, G. W. (2012). Maternal recall of breastfeeding duration twenty years after delivery. *BMC Medical Research Methodology, 12*(1), 179. https://doi.org/10.1186/1471-2288-12-179.
26. Chicago Department of Public Health. (2016). Healthy Chicago 2.0: Partnering to Improve Health Equity. https://www.cityofchicago.org/content/dam/city/depts/cdph/CDPH/HC2.0Plan_322016.pdf.
27. Reno, R. (2017). Utilizing group model building to develop a culturally grounded model of breastfeeding for low-income African American women in the USA. *Journal of Clinical Nursing*. https://doi.org/10.1111/jocn.13791.
28. Centers for Disease Control and Prevention. (2013). Strategies to prevent obesity and other chronic diseases: The CDC guide to strategies to support breastfeeding mothers and babies. U.S. Department of Health and Human Services, Atlanta. https://www.cdc.gov/breastfeeding/pdf/bf-guide-508.pdf.
29. Evans, K., Labbok, M., & Abrahams, S. W. (2011). WIC and breastfeeding support services: does the mix of services offered vary with race and ethnicity? *Breastfeeding Medicine: The Official Journal of the Academy of Breastfeeding Medicine, 6*(6), 401–406. https://doi.org/10.1089/bfm.2010.0086.
30. U.S. Department of Agriculture. Women, Infants and Children (WIC): Breastfeeding Is a Priority in the WIC Program. 2018. https://www.fns.usda.gov/wic/breastfeeding-priority-wic-program. Accessed February 8, 2018.
31. Kozhimannil, K. B., Attanasio, L. B., Hardeman, R. R., & O'Brien, M. (2013). Doula care supports near-universal breastfeeding initiation among diverse, low-income women. *J Midwifery Womens Health, 58*(4), 378–382. https://doi.org/10.1111/jmwh.12065.