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Breastfeeding Supportive Hospital Practices in the US Differ by County Urbanization Level

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Abstract

Background—Breastfeeding rates are lower among infants living in rural areas of the United States, yet there are limited data on whether hospital breastfeeding support differs between rural and urban areas.

Objective—This study aimed to describe whether maternity care practices supportive of breastfeeding vary by level of urbanization.

Methods—We linked data from the 2007, 2009, and 2011 Maternity Practices in Infant Nutrition and Care (mPINC) surveys with Rural-Urban Continuum Codes to categorize hospital counties as metropolitan urbanized, nonmetropolitan urbanized, less urbanized, and thinly populated.

Results—From 2007 to 2011, the average hospital mPINC score, a composite quality score ranging from 0 to 100, increased from 64 to 71 in metropolitan urbanized counties and from 54 to 65 in thinly populated areas. Scores were lowest in thinly populated counties in 2007 and 2009 and in less urbanized counties in 2011. Examination of 2011 mPINC scores by 7 domains of care revealed that hospitals in less urbanized counties had lower scores than those in metropolitan urbanized counties for feeding of breastfed infants, breastfeeding assistance, staff training, and structural and organizational aspects of care delivery; for 3 of these practices, scores were 10 or more points lower—breastfeeding assistance, structural and organizational aspects of care, and staff training. In contrast, hospitals in thinly populated areas had higher scores than in metropolitan areas for mother–infant contact and facility discharge care; differences were less than 10 points.

Conclusion—Interventions that specifically target rural hospitals may reduce the gap in access to hospital maternity care practices supportive of breastfeeding by population density.

Keywords

breastfeeding; hospital; maternity care; rural; urban

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Declaration of Conflicting Interests

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Background

The health benefits of breastfeeding are well established for both infants who are breastfed and mothers who breastfeed.^{1,2}

Experts recommend that infants be exclusively breastfed for about 6 months; however, at 7 days after birth, only approximately 60% of infants in the United States are exclusively breastfeeding.^{3,4} By 3 months, 41% of babies are exclusively breastfed.⁴ Hospital practices that a woman experiences during her maternity stay affect her ability to start and continue breastfeeding as well as to meet her own exclusive breastfeeding intentions.^{5–10}

The Centers for Disease Control and Prevention's (CDC) Maternity Practices in Infant Nutrition and Care (mPINC) survey measures the extent to which a hospital or birth center's maternity care practices support breastfeeding women and infants. Previous mPINC data reports demonstrate the variability in hospital maternity practices that support breastfeeding and highlight states and regions of the country with higher scores on the practices assessed.^{11,12} However, even though breastfeeding rates are lower among infants living in rural areas of the United States, there are limited data on how hospital practices supportive of breastfeeding vary by level of urbanization. The limited data that do exist suggest that hospital practices in rural areas may differ from those in more urbanized areas. For example, a recent study of obstetric care practices found that uncomplicated births were more likely to result in a cesarean section in rural areas than in urban areas.¹³ Our objective was to describe whether maternity care practices supportive of breastfeeding vary by hospital county level of urbanization.

Methods

The mPINC survey is a national census of maternity care hospitals and birth centers conducted by the CDC every 2 years, beginning in 2007. The survey assesses infant feeding and maternity care policies and practices and is completed by the person(s) at the facility most knowledgeable about the relevant practices. We analyzed data from the 2007, 2009, and 2011 mPINC surveys (response rate > 80% for all survey years, n = 2666–2738). Free-standing birth centers were excluded from this analysis (n = 118–143); > 99% of all US births occur in hospitals,¹⁴ and birth centers are less common in rural areas and often have practices that differ from hospitals. As part of the mPINC survey, each hospital receives an overall score (range, 0–100) that is an average of the subscores of 7 domains of care (Table 1).¹⁵ The counties where hospitals are located were identified using the American Hospital Association (AHA) database, so hospitals not included in the AHA could not be included in the analysis (n = 44–74 hospitals across survey years). Rural-urban status of the counties where hospitals are located were determined using the US Department of Agriculture's 2013 Rural-Urban Continuum Codes (RUCC); RUCC categorize metropolitan counties by the population size of their metropolitan area, and nonmetropolitan counties by degree of urbanization and adjacency to metropolitan areas.¹⁶ For this analysis, to make results clearer, the 9 RUCC were combined to create the following 4 categories: (1) metropolitan urbanized counties (RUCC 1, 2, 3); (2) nonmetropolitan urbanized counties (RUCC 4, 5); (3) less urbanized counties (RUCC 6, 7); and (4) thinly populated counties (RUCC 8, 9).¹⁷

We calculated the average total mPINC score for each survey year by hospital county urbanization level. We additionally calculated the 7 subscores by urbanization level using the 2011 mPINC data. Because mPINC is a census, the prevalence estimates presented are not subject to sampling error and no statistical tests were performed. Use of this publicly available data did not require ethical approval.

Results

Hospital size corresponded to county urbanization level, with median births per year of approximately 1300 in hospitals in metropolitan urbanized counties, compared to approximately 50 in thinly populated counties (Table 2). Across the 3 surveys, the average mPINC score increased within each level of urbanization. However, in general, the mPINC score was higher for hospitals located in more densely populated counties. From 2007 to 2011, the average mPINC score increased from 64 to 71 among hospitals in metropolitan urbanized counties and from 54 to 65 among hospitals in thinly populated counties. The gap in mPINC scores between metropolitan urbanized and thinly populated counties decreased from 10 points in 2007 to 6 points in 2011. However, in 2011, the overall mPINC score for hospitals in less urbanized counties was 9 points lower than in metropolitan urban counties.

Examination of the 7 subscores by hospital county urbanization level in mPINC 2011 revealed that subscores were lower among hospitals in less densely populated counties for feeding of breastfed infants, breastfeeding assistance, staff training, and structural and organizational aspects of care (Table 3). For breastfeeding assistance, staff training, and structural and organizational aspects of care, the gap between scores was particularly large, at 10, 26, and 17 points higher, respectively, for metropolitan urbanized counties compared to thinly populated counties. In contrast, thinly populated areas had the highest mPINC subscores for mother–infant contact and facility discharge care; however, thinly populated counties had the lowest scores for these domains. Scores were generally similar across urbanization levels for labor and delivery care.

Discussion

To our knowledge, this is the first study to describe how US maternity care practices supportive of breastfeeding differ by the urbanization level of where the hospital is located. This has important public health implications, since breastfeeding rates are lower among infants living in nonmetropolitan areas.¹⁸ Among infants born in 2011, the prevalence of breastfeeding initiation was 71.4% in nonmetropolitan areas, compared to 83.5% in metropolitan areas (CDC unpublished data).

Encouragingly, mPINC scores in rural areas have been increasing since 2007; however, if we consider the difference between overall mPINC scores of hospitals located in less urbanized and thinly populated counties compared to more urbanized counties, the gap has decreased little. Public health practitioners, faced with decisions allocating limited resources, may overlook rural areas when trying to reach the greatest number of people. Of facilities included in our study, about 6% of infants each year were born in less urbanized and thinly populated counties as designated by this study. However, people in rural areas

tend to have lower incomes and are more likely to live below the poverty level, groups that are already at risk for poorer infant feeding practices.^{18,19} Even though the reach may not be as large by targeting improvement of maternity care practices in rural hospitals, persons living in these areas may be a disparate group, and it is important to ensure that they have access to equitable care.

Our analysis showed a pattern of lower hospital quality scores in more rural areas of the United States. Data from 2011 suggest that these differences in the overall score may be driven by particularly large differences in policies and practices around providing breastfeeding assistance, staff training, and structural and organizational aspects of care. With fewer financial and staff resources, rural hospitals may struggle more than larger, urban hospitals to improve some of these elements. However, developing collaborative models of quality improvement that include and incentivize participation of rural hospitals may foster the problem solving and economic solutions needed to address these institutions' unique needs.

This study has limitations. The 4 general urbanization categories used for this analysis mask within-county differences and existing regional differences. Also, mPINC is a self-reported survey filled out by a key informant(s) at each hospital. Although a standard protocol is followed to identify the key informant and hospitals are encouraged to get input from different key staff as needed, the responses may not accurately represent all practices. Due to the exclusion criteria for this analysis, mPINC scores described may not exactly match previously published scores. Strengths include that mPINC is a census of all maternity hospitals in the country, with a high response rate.

Conclusion

Our analysis revealed improvements from 2007 to 2011 in hospital practices supportive of breastfeeding in both urban and rural US counties, but differences by population density exist. Although some progress has been made in narrowing the gap, hospitals located in rural areas continue to score lower than hospitals in more urbanized areas. In 2011, the widest gaps were in staff training and structural and organizational aspects of care delivery. Targeted interventions to improve maternity care practices, particularly related to where the widest gaps exist, may improve access to quality services in rural areas.

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Well Established

Use of evidence-based maternity care practices is critical for helping women establish breastfeeding. Breastfeeding rates are lower in rural areas, but it is unclear how hospital practices vary by area level of urbanization.

Newly Expressed

Maternity care practices improved from 2007 to 2011 among hospitals across urbanization levels; however, hospitals in more urbanized areas were generally more likely to implement hospital practices supportive of breastfeeding compared with hospitals in more rural areas.

Table 1

Maternity Practices in Infant Nutrition and Care: 7 Domains of Care.

| Domain | Types of Policies and Practices Included |
|--|--|
| 1. Labor and delivery care | Upon delivery, the newborn is placed skin-to-skin with the mother, allowing uninterrupted time for breastfeeding. |
| 2. Feeding of breastfed infants | The breastfeeding infant is offered only pacifiers and supplements (formula, water, and glucose water) when medically indicated. |
| 3. Breastfeeding assistance | Assistance is offered to the breastfeeding mother and infant using consistent standards for supportive patient education and assessment. |
| 4. Contact between mother and infant | The infant is enabled to stay with the mother 24 hours per day, without unnecessary separation or restrictions. |
| 5. Facility discharge care | The breastfeeding mother and infant are assured ambulatory breastfeeding care; patient discharge gifts contain no infant formula marketing samples. |
| 6. Staff training | All staff with primary responsibility for care of the breastfeeding mother and infant receive appropriate breastfeeding skills training and assessment. |
| 7. Structural and organizational aspects | Best practices are implemented for staffing, care process, and communication expectations in perinatal patient education and care settings; are supportive of breastfeeding employees; and are free from financial conflict of interest. |

Table 2
Average Maternity Practices in Infant Nutrition and Care (mPINC) Overall Score by Level of Urbanization.

| | No. of Hospitals ^a | Median No. of Births per Year ^a | Average mPINC Overall Score | | |
|---------------------------|-------------------------------|--|-----------------------------|------|------|
| | | | 2007 | 2009 | 2011 |
| Metropolitan urbanized | 1542–1581 | 1289–1340 | 64 | 66 | 71 |
| Nonmetropolitan urbanized | 314–326 | 519–551 | 61 | 63 | 67 |
| Less urbanized | 558–588 | 234–239 | 57 | 60 | 62 |
| Thinly populated | 64–77 | 51–57 | 54 | 58 | 65 |

^aRange of sample size and median births per year across the 3 survey cycles.

Table 3
Average Maternity Practices in Infant Nutrition and Care (mPINC) Domain of Care Subscores by Level of Urbanization, mPINC 2011.^a

| | Average mPINC Domain of Care Subscores | | | | | | | |
|---------------------------|--|--------------------|---------------------------|--------------------------|-----------------------|-------------------------|----------------|---------------------------------------|
| | No. of Hospitals | Labor and Delivery | Feeding Breastfed Infants | Breastfeeding Assistance | Mother-Infant Contact | Facility Discharge Care | Staff Training | Structural and Organizational Aspects |
| Metropolitan urbanized | 1581 | 70 | 82 | 86 | 73 | 49 | 63 | 76 |
| Nonmetropolitan urbanized | 318 | 69 | 79 | 83 | 72 | 45 | 52 | 68 |
| Less urbanized | 558 | 66 | 77 | 79 | 71 | 41 | 41 | 60 |
| Thinly populated | 64 | 69 | 78 | 76 | 77 | 57 | 37 | 59 |

^aFor descriptions of the 7 domains of care, see Table 1.