

# Diaper Need Met Among Low-Income US Children Younger Than 4 Years in 2016

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**Objectives.** To document the collective effort of diaper banks in the United States and to estimate the percentage of low-income children whose diaper need is met through these efforts.

**Methods.** For each state, we compared the number of children younger than 4 years in families living at or below 200% of the federal poverty level with the number of children served by diaper banks in each state. We collected data reporting all 2016 activities from diaper banks ( $n = 262$ ) via survey from January to March 2017.

**Results.** In each state, the percentage of children experiencing diaper need that received assistance from a diaper bank ranged from 0% to 16% per month.

**Conclusions.** The findings from this study highlight that a small proportion of low-income families accessed diapers through the existing community-based safety net provided by a national network of nonprofit diaper banks.

**Public Health Implications.** Policies at the federal, state, and municipal level are needed to alleviate this consequence of poverty for children and their families. (*Am J Public Health.* 2020;110:106–108. doi:10.2105/AJPH.2019.305377)

Nearly half of US families with infants and toddlers live at or below 200% of the federal poverty level (FPL).<sup>1</sup> Families experiencing low income struggle to meet basic needs including a sufficient supply of diapers to keep children clean, dry, and healthy.<sup>2–4</sup> Diaper need is linked to multiple adverse infant and caregiver outcomes. Without diaper changes at regular intervals, young children are susceptible to dermatological and urinary tract infections.<sup>5,6</sup> The stress of diaper rash and the experience of diaper need are associated with parental anxiety and elevated levels of maternal depressive symptoms.<sup>4,5,7</sup>

Families experiencing the most frequent diaper need report struggling with additional, co-occurring forms of material hardship and other challenges of daily living including food insecurity; transportation access; difficulties affording housing, utilities, health care, and nonfood essentials (e.g., toilet paper, toothpaste); difficulty meeting educational goals; and forced school or work absence because of lack of a sufficient number of diapers for childcare attendance.<sup>2</sup> Families experiencing diaper need are often forced to choose

whether to allocate household income toward diapers or other basic needs.<sup>2</sup> Federal policy programs such as Special Supplemental Nutrition Program for Women, Infants, and Children and Supplemental Nutrition Assistance Program exist to provide a safety net for families experiencing food insecurity, but these benefits cannot be applied to nonfood essentials such as diapers. Thus, diaper need is an issue of public health concern with ramifications for population health as well as workforce participation and early childhood education.<sup>2,3</sup>

Increasingly, nonprofit organizations provide access to basic needs and safety net services that government policies fail to address.<sup>8</sup> Diaper banks are 1 example of nonprofit organizations working to fill a gap in basic needs unmet by federal assistance. In the

same way that food banks provide a supplemental supply of food, a diaper bank provides a supplemental supply of diapers. As diaper need is associated with many other challenges of daily living, diaper banks partner with community-based organizations who offer the hygiene products alongside other resources. The nonprofit National Diaper Bank Network (NDBN) provides leadership, resources, and guidance for more than 300 member diaper banks across the United States. The purpose of this study is to document, for the first time to our knowledge, the collective effort of NDBN member diaper banks and to estimate the amount of diaper need among low-income children met through these efforts.

## METHODS

Nonprofit organizations serving as diaper banks, either as their primary function or as one program within a larger organization, are eligible for NDBN membership if they agree to provide diapers freely without discrimination and report their annual activities. All NDBN member diaper banks complete an annual survey documenting the previous year's activities. From January to March 2017, NDBN member diaper banks ( $n = 262$ ) completed an electronic survey detailing 2016 activities including staff and volunteer hours worked, diaper acquisition sources, and number of children served.

Health policy scholars advocate that policies to address basic needs are best informed by measures that are derived by systematically monitoring population-level data rather than

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by tracking patterns of service utilization as this likely only reflects a subset of those in need.<sup>9</sup> We applied this same logic to estimate the number of families susceptible to diaper need by using population-level data about the number of children living in poverty, assuming that many families with young children living in poverty may benefit from diaper bank assistance. For each state, we obtained data from the US Census Current Population Survey on the number of children younger than 4 years whose families' annual income was at or below 200% of the FPL in 2016. We used this income level as a proxy for families who may benefit from diaper bank assistance as 77% of NDBN member diaper banks indicate that their clientele have incomes at or less than 200% of the FPL. We included children younger than 4 years because, on average, children complete daytime toilet training between the ages of 22 months and 4.5 years<sup>10</sup> and complete nighttime toilet training from ages 3.5 to 5 years.<sup>11</sup> We estimated the percentage of children in each state with met diaper need by dividing the total number of children served by NDBN member diaper banks by the number of children younger than 4 years living at or below 200% of the FPL (i.e., number of children susceptible to diaper need).

## RESULTS

NDBN member diaper banks were staffed by both paid ( $n = 1111$ ) and unpaid ( $n = 1560$ ) staff. Nonstaff volunteers donated 1 348 672 hours of time.

With the assistance of 3547 community-based organizations, diaper banks distributed 52 018 854 disposable diapers. The products distributed were acquired through diaper donations (74% of distribution) or through diaper purchases (26%). The \$3 083 889 diaper banks spent purchasing diapers was raised through individual donations, corporate donations, fundraising events, and public or private grants. In addition, 4395 cloth diaper kits were distributed.

In each state, the percentage of children experiencing diaper need that received assistance from an NDBN member diaper bank ranged from 0% to 16% per month (Table 1 and Appendix A, available as a supplement to

**TABLE 1—Estimation of Diaper Need Met Among Children Younger Than 4 Years by State: United States, 2016**

State	No. Children (Aged < 4 Years, ≤200% FPL)	No. Children Served by NDBN Monthly (% Diaper Need Met)
Alabama	123 965	13 009 (10)
Alaska	14 214	120 (1)
Arizona	201 008	2 693 (1)
Arkansas	61 436	130 (0)
California	816 135	21 510 (3)
Colorado	86 492	4 563 (5)
Connecticut	44 452	3 190 (7)
Delaware	13 944	103 (1)
Florida	457 648	12 973 (3)
Georgia	339 172	1 014 (0)
Hawaii	29 539	0 (0)
Idaho	51 737	1 070 (2)
Illinois	291 248	3 857 (1)
Indiana	148 355	927 (1)
Iowa	73 917	1 956 (3)
Kansas	67 073	2 638 (4)
Kentucky	124 966	850 (1)
Louisiana	146 577	623 (0)
Maine	19 202	515 (3)
Maryland	79 485	755 (1)
Massachusetts	83 604	7 420 (9)
Michigan	203 064	17 224 (8)
Minnesota	69 318	580 (1)
Mississippi	81 758	23 (0)
Missouri	111 552	3 398 (3)
Montana	27 834	0 (0)
Nebraska	44 764	531 (1)
Nevada	72 081	544 (1)
New Hampshire	15 935	59 (0)
New Jersey	161 399	2 859 (2)
New Mexico	61 181	125 (0)
New York	345 583	12 019 (3)
North Carolina	244 393	2 951 (1)
North Dakota	15 203	0 (0)
Ohio	282 292	14 422 (5)
Oklahoma	116 630	2 371 (2)
Oregon	75 325	645 (1)
Pennsylvania	224 637	6 113 (3)
Rhode Island	15 759	2 500 (16)

*Continued*

TABLE 1—Continued

State	No. Children (Aged < 4 Years, ≤200% FPL)	No. Children Served by NDBN Monthly (% Diaper Need Met)
South Carolina	84 108	160 (0)
South Dakota	27 332	1 265 (5)
Tennessee	146 141	615 (0)
Texas	756 057	112 719 (15)
Utah	88 464	200 (0)
Vermont	6 756	0 (0)
Virginia	116 390	5 047 (4)
Washington	131 783	6 924 (5)
West Virginia	45 566	144 (0)
Wisconsin	142 758	2 956 (2)
Wyoming	12 634	498 (4)
Washington, DC	15 785	1 130 (7)
United States	7 016 651	277 937 (4)

Note. FPL = federal poverty level; NDBN = National Diaper Bank Network.

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## DISCUSSION

Although staff and volunteers devoted millions of hours to address diaper need in 2016, a small percentage of low-income children in the United States received products from an NDBN member diaper bank. The experience of diaper need puts children at risk for experiencing the pain and discomfort that comes from wearing diapers longer than recommended, disposable diapers previously worn, diapers too small or large, or cloths or plastic bags in the absence of diapers.<sup>2</sup> For families marginalized by poverty, access to the basic need of diapers is recognized as essential. Therefore, diaper banks aim to address diaper need where families are via partnerships with community-based organizations.

Addressing diaper need cannot be accomplished solely through the efforts of a network of nonprofit organizations, though diaper banks will continue to represent a critical component of these efforts. Expanding federal, state, and municipal policies and programs to address diaper need could reach the larger population of children susceptible to diaper need and increase diaper availability

and affordability through direct assistance, repealing sales tax on diapers, and diaper bank support. Policies providing diapers directly to families, purchasing assistance, or eliminating diaper sales taxes would reduce the financial burden of this basic need and similarly increase access. Amplifying the capabilities of diaper banks through expanded policies would build upon an existing infrastructure with demonstrated success for increasing families' access to this basic need.

## PUBLIC HEALTH IMPLICATIONS

Addressing diaper need affects children's physical and socioemotional development, household finances, and parents' mental health.<sup>2–4</sup> Having an adequate diaper supply can have a positive impact on early childhood education participation, parents' work attendance, the ability to keep scheduled appointments, and opportunities to participate in community events outside the home.<sup>2,3</sup> The findings from this study highlight that a small proportion of low-income families access diapers through the existing community-based safety net provided by a national network of nonprofit diaper banks. There may be many families in need of assistance who are currently unable to access diapers through NDBN member diaper

banks, emphasizing the urgency of addressing diaper need with policies at the federal, state, and municipal level to alleviate this consequence of poverty at the population level. **AJPH**

## CONTRIBUTORS

K. E. C. Massengale originated and supervised the study and led the writing. L. H. Comer completed the analyses. A. E. Austin assisted with the analyses and writing. J. S. Goldblum assisted with data interpretation and writing.

## CONFLICTS OF INTEREST

The authors do not have any conflicts of interest to report.

## HUMAN PARTICIPANT PROTECTION

The study did not collect data about human participants and therefore was exempt from institutional board review.

## REFERENCES

- Jiang Y, Granja MR, Koball H. Basic facts about low-income children: children under 3 years, 2015. National Center for Children in Poverty, Mailman School of Public Health, Columbia University. 2017. Available at: [http://www.nccp.org/publications/pub\\_1171.html](http://www.nccp.org/publications/pub_1171.html). Accessed December 27, 2018.
- Massengale KEC, Erasquin JT, Old M. Health, social, and economic outcomes experienced by families as a result of receiving assistance from a community-based diaper bank. *Matern Child Health J*. 2017;21(10):1985–1994.
- Porter S, Steefel L. Diaper need: a change for better health. *Pediatr Nurs*. 2015;41(3):141–144.
- Smith MV, Kruse A, Weir A, Goldblum J. Diaper need and its impact on child health. *Pediatrics*. 2013;132(2):253–259.
- Adalat S, Wall D, Goodyear H. Diaper dermatitis: frequency and contributory factors in hospital attending children. *Pediatr Dermatol*. 2007;24(5):483–488.
- Sugimura T, Tananari Y, Ozaki Y, et al. Association between the frequency of disposable diaper changing and urinary tract infection in infants. *Clin Pediatr (Phila)*. 2009;48(1):18–20.
- Austin AE, Smith MV. Examining material hardship in mothers: associations of diaper need and food insufficiency with maternal depressive symptoms. *Health Equity*. 2017;1(1):127–133.
- Allard S. Nonprofit helping hands for the working poor: new realities and challenges for today's safety net. In: Plotnick RD, Ronich J, Meyer MK, Smith SR, eds. *Old Assumption, New Realities: Ensuring Economic Security for Working Families in the 21st Century*. New York, NY: Russell Sage Foundation; 2011:187–213.
- Loopstra R, Tarasuk V. Food bank usage is a poor indicator of food insecurity: insights from Canada. *Soc Policy Soc*. 2015;14(3):443–455.
- Blum NJ, Taubman B, Nemeth N. Relationship between age at initiation of toilet training and duration of training: a prospective study. *Pediatrics*. 2003;111(4 pt 1):810–814.
- Wright AJ. The epidemiology of childhood incontinence. In: Franco I, Austin P, Bauer S, von Gontard A, Homsy Y, eds. *Pediatric Incontinence: Evaluation and Clinical Management*. Hoboken, NJ: Wiley-Blackwell; 2015:37–60.