HHS Public Access

Author manuscript

Spec Care Dentist. Author manuscript; available in PMC 2015 July 07.

Published in final edited form as:

Spec Care Dentist. 2014 ; 34(4): 185–192. doi:10.1111/scd.12057.

Facilitators and barriers to twice daily tooth brushing among children with special health care needs

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Abstract

Purpose—The oral hygiene routines of preschool-age children with special health care needs (CSHCN) were examined to identify caregiver behaviors and beliefs associated with twice daily tooth brushing.

Methods—Ninety caregivers of CSHCN, ages 23 to 62 months, were interviewed to determine supports or barriers to tooth brushing.

Results—Ninety-eight percent of caregivers had begun brushing their child's teeth and half reported brushing twice daily. Caregivers' brushing skills and the availability of child-friendly supplies were associated with twice daily versus less frequent brushing (p = .02).

Conclusions—This study adds insight into the challenges of establishing daily oral health care for children who must rely on others for their care. The facilitators and barriers to tooth brushing by caregivers of CSHCN are similar to those noted previously among parents of typically developing children. Efforts to improve all caregivers' oral hygiene skills are needed. For caregivers of CSHCN, oral health teaching opportunities may exist among professionals who provide ongoing medical care, special services and therapies.

Keywords

children; children with disabilities; interviews; oral health; oral hygiene; preschool; toothbrushing

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Introduction

Children with special health care needs (CSHCN) are a growing segment of the population. In the United States, CSHCN are defined as children who "have or are at increased risk for a chronic, physical, developmental, behavioral, or emotional condition and who also require health and related services of a type or amount beyond that required by children generally."[1] Based on 2009–2010 national survey data, as many as 15% of children and youth in the United States met the definition of CSHCN. In addition, the proportion of children with special needs has increased over the previous 8 years.[2] The growing prevalence of CSHCN is attributed to, in part, increased access to early diagnoses, better recognition of developmental conditions and an increase in the occurrence of qualifying conditions.[3]

Compared to typically developing children, CSHCN are at increased risk for poor dental health, including tooth decay, due to co-existing medical conditions including oral manifestations of systemic disease and required therapies such as immune suppression or oral surgeries.[4,5] Artificially sweetened medications, more frequent oral infections, and more commonly occurring periodontal disease are additional reasons CSHCN are at elevated risk for poor dental health.[4,6] Children with neurodevelopmental conditions may have delays in acquiring needed self-care skills to promote and maintain oral health,[7] contributing further to poor oral health in this vulnerable population.

Oral health is an important aspect of overall health.[8] Poor oral health may negatively affect a person's quality of life including eating and sleeping.[9] Poor oral health often manifests itself as dental decay and periodontal gum disease. Dental caries, the disease process responsible for tooth decay, is the most common infectious disease among U.S. children and is on the rise in children between 2 and 5 years of age.[10,11] Dental caries in primary teeth is associated with dental caries in permanent teeth and poor oral health, thus primary prevention and early treatment of caries can have long-term benefits.[12] Over time, dental caries can result in an overall decreased quality of life, including chronic pain and suffering.[8,13] For individuals with intellectual disabilities among other special health needs, oral pain or pain upon chewing food often cannot be verbally expressed and may continue unnoticed for long periods of time. Moreover, poor dental health in adulthood is associated with chronic medical conditions, including diabetes and cardiovascular disease.[8]

Dental decay can be prevented through a combination of professional dental services and home oral hygiene.[14,15] Despite the effectiveness of preventative health behaviors, lack of dental care has been listed as the primary health care need of CSHCN.[16] One reason may be professional dental care is less accessible for CSHCN than obtaining medical and therapy services.[17]

Home oral hygiene, specifically regular tooth brushing with fluoridated toothpaste, is associated with lower caries and periodontal disease,[18,19] and twice daily tooth brushing is significantly more effective than brushing once a day.[20] Twice daily tooth brushing is recommended by the American Dental Association, the American Academy of Pediatric Dentists and the American Academy of Pediatrics,[21–23] however, parents of typically developing children report twice daily tooth brushing is challenging to achieve. Frequent

barriers to tooth brushing of typically developing children include parents' oral health beliefs,[24,25] social norms and external constraints such as time pressures and uncooperative child behaviors.[25] Little is known about the home hygiene habits of young CSHCN, but there are reasons to expect caregivers may find twice daily tooth brushing difficult to achieve due to increased demands on time and resources associated with the child's behavior or medical conditions. Difficult temperament and disruptive behaviors, more common in CSHCN, are additional factors that might interfere with regular oral hygiene.[26]

This study examined tooth brushing among preschool age CSHCN. We hypothesized caregivers of CSHCN would report twice daily tooth brushing to be a challenge, similar to parents of typically developing children. Further, we expected there would be unique facilitators and barriers to twice daily tooth brushing to this high dental-risk group. Our purpose was to identify modifiable behaviors or beliefs that could improve the oral health of CSHCN.

Methods

Study design

The design was a cross-sectional semi-structured interview of caregivers of preschool-age CSHCN.

Setting and participants

The study took place in a community-based early intervention center that provides service to pre-school children in accordance with Part C of the federal program of Individuals with Disabilities Education Act (IDEA). IDEA Part C provides early intervention for infants and toddlers with, or at risk for, disabilities and their families at no cost.[27] Available services at the study site included physical, speech, and mental health therapies, special education, and nutrition and feeding counseling. The center was located in a non-fluoridated community in Washington State.

Eligible participants were caregivers of children ages 24 and 60 months who were clients, recent graduates, or children currently on the waiting list for admission and were eligible for services at the center. The sample was recruited to maximize children represented in three age groups: 2, 3, and 4 years of age. Caregivers were recruited to participate in the study in three ways: flyers posted throughout the early intervention center, a letter to caregivers of age-eligible students and graduates, and an advertisement in the center's newsletter. All caregivers were able to complete the study interviews in English. Caregivers of children who were unable to receive medical services in a community-based (vs. hospital) setting were excluded from the study.

Procedures

Caregivers were interviewed at the early intervention center by center-based nurses trained in the study protocol. The semi-structured interview guide included open-ended questions about if, or at what age, caregivers began brushing their child's teeth, how often they brushed, the benefits of brushing, and the facilitators and barriers to twice daily tooth

brushing. To encourage participation and offset the cost of transportation or child care for other children during the interview, caregivers received a gift certificate to a local grocery store for $20.

Notes were taken during each interview and the interviews were audio recorded. The audio tapes were reviewed and interviewers' notes were clarified and augmented, as needed, to create a complete written record of the interview. Most interviews lasted 40 to 50 minutes and were completed without the child present. To identify facilitators, caregivers were asked, "What helps or makes it easier to brush your child's teeth as often as you'd like?" To identify barriers, caregivers were asked, "What makes it difficult to brush your child's teeth as often as you'd like? What gets in the way?" The written records were coded to identify facilitators and barriers to tooth brushing using themes previously identified by Huebner and Riedy[25] including: the caregivers' oral health beliefs, social norms, emotional reactions, self-standards, self-efficacy, tooth brushing skills, and factors external to the caregiver. External factors identified previously included time pressures and the child's cooperation. In this study, the "External Factors" theme was modified to identify each of the following: time pressures, the child's oral aversion, the child's compliance, demands or support due to the presence of other children or siblings, variety of tooth brushing supplies, multiple caregivers' availability, the child's level of fatigue, and the size of the child's mouth. The primary outcome of interest was caregiver-reported frequency of tooth brushing with their CHSCN. This was ascertained by asking "About how often are you brushing [your child's teeth] now?"

All study procedures, including the informed consent process, were approved by the Human Subjects Division at the University of Washington.

Statistical analyses

Statistical analyses were completed using STATA, Version 11 (Stata Corp., College Station, TX, USA). Univariate and bivariate analyses were conducted to test associations between facilitators and barriers and tooth brushing frequency defined as "two or more times per day" versus "less than two times per day." Statistical significance was set at the $p < .05$ level. In addition, associations that reached significance levels of $p < .10$ are discussed.

Results

Demographics

Ninety caregivers participated including 79 mothers, 8 fathers, 1 foster mother, 1 grandmother, and 1 aunt. Caregiver ages ranged from 19- to 66-years old with a median age of 32 years. Most (89%) caregivers were identified as non-Hispanic white, consistent with the larger community in which the early intervention site was located. Four caregivers (4%) had less than a high school education, 21 (23%) had 12 years of education, and 65 (72%) had more than 12 years of education. The children's ages ranged from 23 to 62 months at the time of the interview (37.30 ± 10.90 months). The majority of children had neurodevelopmental conditions associated with developmental delay. The most common three conditions were developmental delay, Down Syndrome, and Autism Spectrum

Disorders. Characteristics of the study sample are presented in Table 1. Other medical and neurodevelopmental conditions affecting at least 15% of the study children are presented in Table 1.

The majority (94%) of children were reported to have dental insurance (see Table 2). More than two-thirds (70%) had public dental coverage. Seventy-two children (80%) had visited a dentist at least once, ever, and 42 (47%) had visited a dentist twice or more in the past year. Fifty-seven children (63%) had two or more preventative medical visits in the past year. Fifty-two children (58%) were reported to have a personal dentist. Nearly all (98%) caregivers had begun brushing their child's teeth at the time of the interview; more than half (n = 45) began brushing before the child reached 12 months of age; 36 (41%) began brushing their child's teeth between the ages of 12 and 24 months. Of those brushing, 44 of 88 (50%) said they brushed twice daily. Less than two-thirds (60%) of those brushing reported using fluoridated toothpaste.

Facilitators of tooth brushing

Analyses of facilitators of tooth brushing were compiled for the 88 caregivers who reported brushing their child's teeth. Eighty-one identified at least one facilitator. Because caregivers could discuss more than one facilitator, the total number of caregiver responses presented in Table 3 exceeds the total number of participants. Facilitators were grouped into themes: the caregiver's oral health beliefs, self-efficacy, social norms, emotional reactions, self-standards, external support, and skills. Each theme is presented, in rank order of frequency, along with an exemplary quote (see Table 3).

Of the caregivers who identified facilitators to tooth brushing, most discussed one (55%) or two (38%) facilitators. The greatest number of facilitators noted by a single caregiver was four. The most common facilitators, described by 55% of the caregivers, included factors external to caregiver specifically the child's cooperation, a variety of tooth brushing supplies, ample time to complete the task, a low level of the child's oral aversion, and the support of others in the family (see Table *3*). Of these, the child's cooperation was most commonly discussed (38%) as a facilitator to twice daily tooth brushing.

Caregivers' self-efficacy in completing tooth brushing with their CSHCN (33%) and a developed skill set for tooth brushing (28%) were frequently reported facilitators of child tooth brushing (see Table *3*). Some themes identified as facilitators by parents of typically developing children were discussed relatively infrequently by caregivers of CSHCN. Specifically, few caregivers (2%) discussed fear of the consequences of poor oral health as motivating them to complete tooth brushing. The least common theme (1%) discussed by caregivers of CSHCN reflected their oral health beliefs, e.g., that dental health is an important aspect of overall health, as a reason to work to achieve twice daily brushing.

Associations between reported facilitators and brushing frequency

Differences in facilitators between caregivers who brushed and did not brush their children's teeth twice daily were tested. Those who brushed twice a day described having a variety of tooth brushing supplies (p = .02). Child cooperation was associated with twice daily tooth

brushing, but differences between groups did not reach statistical significance ($p = .07$). Caregivers' reported facilitators of self-efficacy, skills, social norms, emotional reactions, oral health beliefs, and self-standards did not differentiate between caregivers who brushed twice a day or less than twice a day ($p > .2$).

Barriers to tooth brushing

Analyses of the barriers to tooth brushing included all 90 caregivers in the study. Eighty-two caregivers (91%) reported at least one barrier to twice daily tooth brushing. Because caregivers could discuss more than one barrier to tooth brushing, the number of responses presented in Table 4 exceeds the total number of participants. Table 4 summarizes, in rank order, the barriers to twice daily tooth brushing and gives specific examples of each. Most caregivers who discussed barriers to tooth brushing discussed only one theme (83%), factors external to caregiver, including: time pressures, the child's noncompliance, the child's level of fatigue, distractions due to other children, a chaotic routine, the small size of the child's mouth, having only one caregiver available to carry out this task, and lack of a tooth brush. Among these, the most frequently reported external barriers were not having enough time for tooth brushing (42%) and the child's noncompliance (24%).

Few caregivers reported skills, emotional reactions, social norms, and self-standards as barriers to twice daily tooth brushing (see Table 4). Eight caregivers (9%) reported there were no barriers to twice daily tooth brushing. Of these, 75% (six of eight) reported brushing their child's teeth at least twice a day.

Associations between reported barriers and brushing frequency

Caregivers who reported they lacked tooth brushing skills were significantly less likely to brush their child's teeth twice daily ($p = .02$). Caregivers who reported their own emotional reactions to child tooth brushing as a barrier were less likely to brush their child's teeth twice a day ($p = .08$). Caregivers who reported external barriers including time constraints, the child's compliance, the child's level of fatigue, the child's oral aversion, and misbehavior of other children in the family were also less likely to brush their child's teeth twice a day ($p = .08$). No caregiver described aspects of the child's neurodevelopmental or health condition, functional limitations, or special needs as interfering with tooth brushing.

Discussion

This study examined the home oral hygiene practices of caregivers of preschool-age CSHCN. Similar to national CSHCN data, we found only 47% had received the recommended number of preventive professional dental visits in the previous 12 months.[16] Without consistent access to professional dental services, our examination of home oral hygiene practices in CSHCN is particularly important. Although most caregivers reported initiating tooth brushing, less than half of the study children were reported to receive twice daily tooth brushing. Similar to parents of typically developing children, caregivers said they struggled with tooth brushing.

Caregivers were forthcoming in discussing what helped and what got in the way of twice daily tooth brushing. Facilitators and barriers identified by Huebner and Riedy[25] among

parents of typically developing children did not entirely align with this CSCHN sample. For example, parents of typically-developing children reported their oral health beliefs and self-standards as the top two facilitators to brushing yet, these were the two least frequent facilitators identified by this study's participants. It could be caregivers of CSHCN receive oral health-promoting messages from many different sources and identify these as expected standards of care for their children rather than personal beliefs. Likewise, parents of typically developing children reported self-efficacy as a barrier to twice daily tooth brushing, yet caregivers in this study did not. Perhaps among all of the other needs of their CSHCN, including medical care coordination and therapy services, tooth brushing may be perceived as a relatively "simple" task for caregivers with CSHCN to complete.[26] In addition, incorrect oral health beliefs were associated with less frequent brushing by parents of typically developing children but the theme of inaccurate beliefs did not emerge as a barrier at all in this study. Caregivers of CSHCN often have frequent contact with their children's medical care providers who can be a source of anticipatory guidance and oral health information,[9,28] a potential advantage to typically developing children.

Similar to parents of typically developing children,[25] caregivers of CSHCN reported external factors, specifically time pressures and the child's noncompliance, as the most common barriers to tooth brushing. The availability of a variety of tooth brushing supplies, such as toothpaste that tastes good to the child or a vibrating tooth brush, was significantly associated with brushing teeth twice a day. It is interesting to note none of the caregivers described special supplies chosen to accommodate a specific medical condition or functional limitation. A child's compliance was also discussed as a facilitator to twice daily tooth brushing.

Caregivers who reported a lack of tooth brushing skills were significantly less likely to brush their child's teeth twice daily. In describing lack of skills, they described being forgetful or unable to establish a routine. These barriers were not unique to caregivers of CSHCN. Except for skills, most barriers for caregivers of CSHCN were indistinguishable between those brushing twice daily and those not brushing twice daily. Despite common barriers, half of this sample of caregivers was able to achieve twice daily tooth brushing. Similar to caregivers' descriptions of facilitators, most barriers were not related to the child's neurodevelopmental condition. In addition, caregivers of CSHCN did not identify facilitators or barriers unique to this high-risk group.

When interpreting this study's results, a few limitations must be considered. As with all interview designs, caregiver report and is subject to bias due to inaccurate recall or the tendency to give socially desirable responses. The convenience sample of caregivers whose children were enrolled in, or eligible for, services reflect selection bias in that the sample did not include CSHCN who were not identified, or who were identified but not attempting to access services. In addition, some subgroups of CSHCN were not among the children in the study. None of the children had significant craniofacial anomalies, for example. Children with conditions that affect the mouth or palate, not included here, may have specific limitations that affect home oral hygiene behaviors. This sample does not include many caregivers of racial or ethnic minority status, low education levels. It also does not include many children who are uninsured. A limitation of this study is its findings might not be

generalizable to all caregivers and young children with disabilities or special health care needs.

There are two primary implications of this study. Enhancing skills of caregivers' of CSHCN in routine tooth brushing may be a worthwhile focus for intervention to improve oral health in this vulnerable population who has difficulty accessing professional dental services. An intervention to improve tooth brushing skills could be brief because, as indicated by this study, caregivers identify a level of self-efficacy for tooth brushing. For example, in a busy office practice, simply asking the caregiver how cooperative a child is with tooth brushing may allow providers to focus their guidance on strengthening the caregiver's skills or adding variety to the caregiver's tooth brushing supplies. Perhaps the intervention could also be tailored according to the child's age or condition, as children with different diagnoses and at different ages may have unique needs. Second, avenues currently exist to provide anticipatory guidance to caregivers about oral health behaviors in young CSHCN. Medical and dental providers, parent-to-parent support groups, and early intervention centers interact with caregivers of CSHCN regularly and may be most able to discuss tooth brushing skills. The take-home messages must be standard and consistent across disciplines because, as indicated by this study, caregivers may choose not to brush their children's teeth for various reasons. Health service providers of CSHCN may need training in oral health hygiene to be ready for their educational role with caregivers.

Conclusions

Overall, caregivers of preschool-age CSHCN report challenges to achieving twice daily tooth brushing. Facilitators and barriers to brushing identified in this study were similar to those identified by parents of typically developing children. Among the barriers are modifiable behaviors that could improve the oral hygiene of young CSHCN. Utilizing existing health care and community services as points of intervention is recommended to reach caregivers with oral health education and skills to support twice daily tooth brushing.

Acknowledgements

The project was supported in part by Projects #T76 MC 00011 and #T73 MC 00041 from the Maternal and Child Health Bureau (Title V, Social Security Act), Health Resources and Services Administration, U.S. Department of Health and Human Services. This research was also supported by Award Number U54DE019346 from the National Institute of Dental & Craniofacial Research, National Institutes of Health, Bethesda, MD, USA. The content is solely the responsibility of the authors and does not necessarily represent the official views of the Maternal and Child Health Bureau, National Institute of Dental and Craniofacial Research, or the National Institutes of Health. The authors thank the nursing staff of the School Spokane Guilds' School & Neuromuscular Center and the caregivers and children who participated in this study.

References

1. McPherson M, Arango P, Fox H, et al. A new definition of children with special health care needs. Pediatrics. 1998; 102:137–40. [PubMed: 9714637]
2. Data Resource Center for Child and Adolescent Health. 2009/10 National Survey of Children with Special Healthcare needs: Washington Profile. 2012. Available at: http://childhealthdata.org/browse/snapshots/cshcn-profiles?rpt=9&geo=49. Accessed 24 October 2012
3. Maternal and Child Health Bureau and Health Resources Services Administration. Prevalence of CSHCN; 2006. Available at: http://mchb.hrsa.gov/cshcn05/MI/nf.pdf. Accessed 20 February 2013

4. Foster H, Fitzgerald J. Dental disease in children with chronic illness. Arch Dis Child. 2005; 90:703–8.
5. National Institute of Dental and Craniofacial Research. Proceedings for the face of a child: Surgeon General's workshop and conference on children and oral health; 2001. Available at: http://www.nidcr.nih.gov/DataStatistics/SurgeonGeneral/Conference/ConferenceChildrenOralHealth/default.htm. Accessed 11 February 2013
6. Roberts IF, Roberts GJ. Relation between medicines sweetened with sucrose and dental disease. BMJ. 1979; 2:14–6. [PubMed: 466249]
7. Mouradian, W.; Porter, A.; Keegan, C.; Cantillon, K. Proceedings for promoting oral health of children with neurodevelopmental disabilities and other special health needs: a meeting to develop training and research agendas; Seattle, WA. University of Washington Center on Human Development and Disability; 2002. p. 53-4.
8. Petersen PE. The World Oral Health Report 2003: continuous improvement of oral health in the 21st century—the approach of the WHO Global Oral Health Programme. Community Dent Oral Epidemiol. 2003; 31:3–24. [PubMed: 15015736]
9. Norwood KW, Slayton RL. Oral health care for children with developmental disabilities. Pediatrics. 2013; 131:614–19. [PubMed: 23439896]
10. US Dept of Health and Human Services. Oral health in America: A report of the Surgeon General. US Dept of Health and Human Services, National Institute of Dental and Craniofacial Research, National Institutes of Health; Rockville, MD: 2000.
11. Dye BA, Tan S, Smith V, et al. Trends in oral health status: United States, 1988–1994 and 1999–2004. Vital Health Stat 11. 2007; 248:1–92. [PubMed: 17633507]
12. Li Y, Wang W. Predicting caries in permanent teeth from caries in primary teeth: an eight-year cohort study. J Dent Res. 2002; 81:561–6. [PubMed: 12147748]
13. Hollister MC, Weintraub JA. The association of oral status with systemic health, quality of life, and economic productivity. J Dent. Educ. 1993; 57:901–9. [PubMed: 8263237]
14. Balakrishnan M, Simmonds RS, Tagg JR. Dental caries is a preventable infectious disease. Aust Dent J. 2000; 45:235–45. [PubMed: 11225524]
15. National Institute of Dental and Craniofacial Research. Dental care every day: a caregiver's guide. 2012. Available at: http://www.nidcr.nih.gov/OralHealth/Topics/DevelopmentalDisabilities/DentalCareEveryDay.htm. Accessed 29 January 2013
16. Lewis CW. Dental care and children with special health care needs: a population-based perspective. Acad Pediatr. 2009; 9:420–6. doi: 10.1016/j.acap.2009.09.005. [PubMed: 19945077]
17. Newacheck P, McManus M, Fox H, et al. Access to health care for children with special health care needs. Pediatrics. 2000; 105:760–6. [PubMed: 10742317]
18. Chestnutt IG, Schafer F, Jacobson APM, Stephen KW. The influence of toothbrushing frequency and post-brushing rinsing on caries experience in a caries clinical trial. Communit Dent Oral Epidemiol. 1998; 26:406–11.
19. König KG, Navia JM. Nutritional role of sugars in oral health. Am J Clin Nutr. 1995; 62:275S–283S. [PubMed: 7598084]
20. Nguyen L, Hakkinen U, Knuuttila M, Jarvelin MR. Should we brush twice a day? Determinants of dental health among young adults in Finland. Health Econ. 2008; 17:267–86. [PubMed: 17645280]
21. American Dental Association. Toothbrushes. 2012. Available at: http://www.ada.org/1321.aspx. Accessed 25 October 2012
22. American Academy of Pediatric Dentistry. Fast facts: preventive step 1—good home care. 2012. Available at: http://www.aapd.org/assets/1/7/FastFacts.pdf. Accessed 11 February 2013
23. American Academy of Pediatrics. A pediatric guide to children's oral health. 2010. Available at: http://www2.aap.org/oralhealth/docs/OralHealthFCpagesF2_2_1.pdf. Accessed 29 January 2013
24. Adair PM. Familial and cultural perceptions and beliefs of oral hygiene and dietary practices among ethnically and socio-economically diverse groups. Community Dent Health. 2004; 21:102–11. [PubMed: 15072479]
25. Huebner CE, Riedy CA. Behavioral determinants of brushing young children's teeth: implications for anticipatory guidance. Pediatr Dent. 2010; 32:48–55. [PubMed: 20298653]

26. Macias MM, Roberts KM, Saylor CF, Fussell JJ. Toileting concerns, parenting stress, and behavior problems in children with special health care needs. Clin Pediatr. 2006:415–21. doi: 10.1177/0009922806289616.

27. U.S. Department of Education. IDEA 2004: building the Legacy. Part C (birth–2 years old). 2004. Available at: http://idea.ed.gov/part-c/statutes. Accessed 28 January 2013

28. Lewis CW, Grossman DC, Domoto PK, Devo RA. The role of the pediatrician in the oral health of children: a national survey. Pediatrics. 2000; 106:e84. [PubMed: 11099627]

Table 1

Characteristics of caregivers and their children (n = 90).

	Percent (count) or mean ± SD
Caregivers	
Age (years)	33.80 ± 9.45
Gender (female)	91 (82)
Education (years)	14.39 ± 2.46
Race/ethnicity	
White, not Hispanic	89 (80)
American Indian/Alaska Native	6 (5)
African American	3 (3)
Hispanic	2 (2)
Children	
Age (months)	37.30 ± 10.90
Gender (male)	64 (58)
Developmental and Health conditions	
Developmental delay, autism, or Down syndrome	80 (72)
Gastroesophageal reflux disease (GERD: current or past)	60 (54)
Allergies (including food allergies)	32 (27)
Emotional problems	20 (17)
Heart problems	16 (14)
Asthma	16 (14)
Dental insurance coverage	
Public	70 (62)
Private	26 (23)
None	3 (3)
Don’t know	2 (2)

Table 2

Use of professional dental services and home oral hygiene (n = 90).

	Percent (count) or Mean ± SD
Professional dental services	
Dental visit (ever)	80 (72)
Has personal dentist	58 (52)
Preventive dental visit in past 12 months	
None	21 (19)
1	32 (29)
2	38 (34)
3	8 (7)
4	1 (1)
Home oral hygiene	
Started brushing (yes)	98 (88)
Age started (months)	11.95 ± 6.52
Brushing frequency (if started)	
<1 time / day	5 (4)
1–2 times / day	45 (40)
≥ 2 times / day	50 (44)
Uses fluoridated toothpaste (if started brushing)	62 (53)

Table 3

Associations between brushing frequency and caregiver-reported facilitators (n = 88).

Facilitator ***Example quote***	**Percent (count)**			***p***
	Total[a] (n = 88)	**Brushes < 2/day (n = 43)**	**Brushes ≥ 2/day (n = 45)**	
External support	55 (48)	44 (19)	64 (29)	.06
Child likes it or cooperates *"His willingness or lack thereof."*	38 (33)	28 (12)	47 (21)	.07
Variety of supplies *"Brush with an electric tooth brush."*	10 (9)	2 (1)	18 (8)	.02
Not pressed for time *"If the day is running smoothly…"*	7 (6)	7 (3)	7 (3)	.95
Spouse there to help *"It's even easier with both parents to do this together."*	3 (3)	2 (1)	4 (2)	.60
Less oral aversion *"Less oral aversion."*	1 (1)	2 (1)	0 (0)	.30
Other kids not distracting *"Other kids not being a distraction."*	1 (1)	2 (1)	0 (0)	.30
Self-efficacy *"[When my child says]'no,' it's not an answer that's OK."*	33 (29)	26 (11)	40 (18)	.33
Skills *"We have more than one battery-operated tooth brushes that spin. We turn them on and let him play with them for a while. Then it's easier."*	28 (25)	23 (10)	33 (15)	.30
Social norms *"Watching older siblings as role models."*	18 (16)	23 (10)	13 (6)	.23
Emotional reactions *"We don't force him and let him do it."*	2 (2)	2 (1)	2 (1)	.97
Oral health beliefs *"I just make myself do it because I know it is best for him."*	1 (1)	0 (0)	2 (1)	.33
Self-standards *"It happens no matter what."*	1 (1)	0 (0)	2 (1)	.33
Nothing helps *"Child doesn't like anything in his mouth. He'll do anything to get out of it."*	8 (7)	12 (5)	4 (2)	.21

[a] Caregivers were allowed to list more than one facilitator, thus the total number of caregiver responses exceeds the total number of participants.

Table 4

Associations between brushing frequency and caregiver-reported barriers (n = 90).

Barrier ***example quote***	**Percent (count)**			***p***
	Total[a] (n = 90)	**Brushes < 2/day (n = 45)**	**Brushes ≥ 2/day (n = 45)**	
External barrier	90 (81)	91 (41)	89 (40)	.08
Time *"When there is something planned after."*	42 (38)	49 (22)	36 (16)	.20
Child's mood or child does not cooperate *"She's only so patient."*	24 (22)	24 (11)	24 (11)	.62
Child falls asleep or too tired *"Sometimes he's too tired after lunch and before his nap."*	20 (18)	16 (7)	24 (11)	.29
Other children *"Four kids in home and things just get away."*	8 (7)	11 (5)	4 (2)	.24
Oral aversion *"He doesn't like anything in his mouth unless he has total control of the situation."*	8 (7)	7 (3)	9 (4)	.69
Chaotic routine *"If we're not in our 'normal' routine like on vacation or at grandparents' house."*	6 (5)	2 (1)	2 (4)	.17
Mouth too small *"Her mouth is small and her teeth are crowded."*	3 (3)	0 (0)	7 (3)	.08
Only one caregiver *"Dad is not always at home to help due to work schedule."*	1 (1)	2 (1)	0 (0)	.32
Lost toothbrush *"If the tooth brush is lost…"*	1 (1)	0 (0)	2 (1)	.32
Skills *"Not having a set routine."*	6 (5)	11 (5)	0 (0)	.02
Emotional reactions *"His resistance."*	3 (3)	6 (3)	0 (0)	.08
Social norms *"When her dad stays at home and doesn't brush her teeth. He doesn't see it as a priority."*	3 (3)	4 (2)	2 (1)	.56
Self-standards *"Sometimes I just get too tired and fall asleep."*	3 (3)	2 (1)	3 (2)	.56
Self-efficacy	0 (0)	0 (0)	0 (0)	N/A
Oral health beliefs	0 (0)	0 (0)	0 (0)	N/A
No barriers, no problems *"No real problems. Likes tooth brushing and water and squeezing tooth paste."*	9 (8)	4 (2)	13 (6)	.14

[a] Caregivers were allowed to list more than one barrier to brushing, thus the total number of caregiver responses exceeds the total number of participants.