Food Security Among Families with Children with Special Health Care Needs

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A thesis

submitted in partial fulfillment of the

requirements for the degree of

Master of Public Health

University of Washington

2013

Committee:

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Program Authorized to Offer Degree:

School of Public Health

University of Washington

Abstract

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Purpose: In 2012, 16.7 million (20.6%) of U.S. children lived in food-insecure households. Objectives of this study were to examine the association between household food security and presence of children with special health care needs (CSHCN) in a university-based pediatric dental clinic.

Methods: Caregivers of patients under 18 years (n=142) at the University of Washington's Center for Pediatric Dentistry were surveyed about food security and CSHCN in their households.

Results: Among households with CSHCN, 37% were food-insecure compared to 26% of households without CSHCN. Households with CSHCN with more health consequences had 2.59 higher odds of experiencing food insecurity compared to those without (95% CI 1.17, 5.72, p=0.019). This relationship was not significant after adjusting for covariates. Among households with CSHCN, those that were food-insecure reported significantly higher service use, functional limitations and need or use of mental health counseling in their CSHCN.

Conclusions: Screening at dental visits identified a high proportion of families with food insecurity, particularly among some families with CSHCN. Screening for food insecurity may improve identification of needed services for children and their families.

Background and Significance:

Food Insecurity

While the United States (U.S.) is one of the world's wealthiest countries, inequalities exist in access to healthy and nutritious foods. Food security is defined by the United States Department of Agriculture (USDA) as "access by all people at all times to enough nutritious food for an active, healthy life" [1]. The prevalence of food insecurity in the U.S. has risen as a result of the economic recession; in 2011, 14.9 percent of households experienced low food security (LFS)[1] at some point during the year and one-third of those experienced very low food security (VLFS)[2] [2]. Washington State experiences comparable rates of food insecurity (15.4 percent LFS and 6.2 percent VLFS) [2]. Risk factors for food insecurity include income below the federal poverty level, households with children, single parent-headed households, Black and Hispanic households, and households with smokers [2,3].

Food insecurity impacts children as well as adults. In 2011, 16.7 million (20.6 percent) of U.S. children lived in food-insecure households, while ten percent of children themselves experienced LFS and one percent suffered VLFS [2]. Even when children themselves are not food-insecure, they are influenced by household level food insecurity. During pregnancy, food insecurity is associated with adverse birth outcomes, impacting children's future health, learning, behavior, and employment [4]. Research has linked food insecurity with a variety of child health outcomes including poorer health, iron-deficiency anemia, increased risk for developmental problems, negative academic and psychosocial outcomes, obesity, and poor oral health [5-13].

[1] Low food security (LFS): Reports of reduced quality, variety, or desirability of diet. Little or no indication of reduced food intake [1].
[2] Very low food security (VLFS): Reports of multiple indications of disrupted eating patterns and reduced food intake [1].

Children with Special Health Care Needs

The effects of food insecurity on children's health and development are detrimental and may be especially harmful to children with special health care needs (CSHCN). Children with special health care needs are defined by the Health Resources and Services Administration's Maternal and Child Health Bureau (MCHB) as "children who have or are at risk for chronic physical, developmental, behavioral, or emotional conditions and who require health and related services of a type or amount beyond that required by children generally" [14]. Conditions qualifying as special health care needs vary widely with the most common being allergies, asthma, and attention deficit disorder/attention deficit hyperactivity disorder [15]. According to the 2009/10 National Survey of CSHCN, 11.2 million children (15.1 percent) under 18 years of age in the U.S. were reported to have a special health care need [15].

Children with Special Health Care Needs and Food Insecurity

Households with CSHCN are at increased risk for experiencing a variety of hardships, including economic, social, and psychological issues, family conflict, and employment and health service difficulties [14, 16]. Children with special health care needs are more likely to live in households that earn below the federal poverty level and to report inadequate insurance coverage [14]. Families with CSHCN are challenged with increased financial burden related to costs for health care, specialized day care, and adaptation of the home environment [17, 18]. Exposure to poverty increases the risk for additional adverse outcomes in this already susceptible population [19]. For families with food insecurity, having CSHCN may limit opportunities for improving their families' economic status through limiting work opportunities, increased out-of-pocket costs, and the need to make tradeoffs between purchasing healthy and nutritious food and other necessities such as rent, utilities and health care expenses.

The dental setting provides a unique and important point of contact for children to access the health care system. Currently, screening for social issues in this context is not routine, however children's oral health status is closely linked to both poverty and CSHCN status [20,21]. Knowing families' food security status and how the presence of CSHCN is associated with food security status can assist providers in targeting populations who would benefit from screening, care coordination, and realistic nutrition education.

Limited research has been conducted on associations between household food security status and the presence of CSHCN in families. Children's HealthWatch recently identified this as an "under-researched area comprising a major gap in our understanding of the causes and consequences of food security" [22]. Screening for food security will be especially important at the Center for Pediatric Dentistry (CPD), in Seattle, WA, a partnership between the University of Washington and Seattle Children's Hospital, which serves a large portion of CSHCN. Objectives of this study are to: 1) determine the prevalence of VLFS at the CPD, 2) examine the association between household food security status and presence of CSHCN and 3) explore the impact of number and types of qualifying CSHCN consequences on household food security status.

Methods

Study Design

The design was a cross-sectional study of responses from a survey of caregivers of children under 18 years of age.

Setting and Participants

The study was conducted at the CPD, a university-affiliated pediatric dental clinic that provides dental and oral health care to families regardless of their ability to pay. In 2010, the

clinic provided 30,000 dental visits to families mainly in western Washington but also from across Washington State, serving children from birth through 20 years of age, including CSHCN [23]. The CPD provides preventative care, restorative care, and sedation and general anesthesia; the center can also provide social work services [23].

A convenience sample of caregivers at the clinic for a child's appointment on days when at least one of the two research assistants was available (10 days from August 15, 2013 through August 31, 2013) were recruited to participate in the study. Caregivers were informed about the study through two methods: 1) flyers were provided at the check-in area and 2) all caregivers in the waiting room were verbally informed of the study by a research assistant. Criteria for inclusion in the study comprised of caregiver age 18 years or older and parent or legal guardian of a child younger than 18 years attending a dental appointment. Caregivers were required to read English. Only one adult per household was eligible for participation and each participant was allowed to complete the survey once. A total of 150 caregivers were recruited to participate.

Data Collection Procedures

Caregivers who indicated they were interested in the study were screened to ensure they met inclusion criteria. Written consent was obtained (see Appendix A). The written survey (see Appendix B) was completed in the clinic's waiting room or during the child's appointment. On average, participants completed the survey in less than 10 minutes. Water bottles and stickers were provided to families that participated. All caregivers received a flyer with information about WithinReach, a local non-profit organization that connects families to health and food resources in their community [24]. Direct referral to the clinic's social worker was available upon request.

The survey included demographic questions about the caregiver and household—number of children and adults in the household, ages of the children and caregiver, race and ethnicity, education of the caregiver, primary language, household smoking status, caregiver's health status, participation in any of the three largest federal food and nutrition assistance programs (Women Infants and Children (WIC), the Supplemental Nutrition Assistance Program (SNAP), and the National School Lunch Program (NSLP)), and enrollment in the Washington State Department of Social and Health Services (DSHS) Medicaid program.

The primary exposure, presence of CSHCN in the household, was measured using a nationally recognized, five-item screening tool, designed to identify CHSCN according to the consequence-based definition developed by MCHB [25]. The screener is non-condition specific and identifies children based on five qualifying health consequences resulting from a physical, mental, behavioral or other condition which has lasted or is expected to last longer than 12 months [25,26]. These five qualifying health consequences include: 1) need or use of prescription medications, 2) an above routine use of services, such as medical care, mental health or education services 3) a functional limitation, 4) need or use of specialized therapies or services such as physical, occupational or speech therapy and 5) need or use of mental health counseling due to an emotional, developmental or behavioral problem [26]. The screener has primarily been used for quality improvement and population-based applications and has been tested for self-administration [25, 27].

Food security, the primary outcome, was measured using the six-item version of the U.S. Household Food Security Module developed by the USDA [28]. The six-item screener has been adapted from a full 18-item version with relatively high specificity and sensitivity [28]. The survey is designed to determine household level food security status over the past 12 months

[28]. The screener asks questions like, "the food that (I/we) bought just didn't last, and (I/we) didn't have money to get more. Was that often, sometimes or never true for you in the last 12 months" [29].

All study procedures and 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). Descriptive statistics were used to describe the sample according to caregiver and household characteristics and the prevalence of food insecurity. Bivariate analyses, including Chi-Square, Fisher's Exact and T-tests, compared food-secure and food-insecure households. Chi-Square and Fisher's Exact tests were also used to compare the types of qualifying CSHCN consequences with food security status within households with CSHCN. The association between number of qualifying health consequences in families with CSHCN by food security status was determined using a Cochran-Armitage test of trend. Food security was dichotomized into two groups: food-secure and food-insecure (see below).

Food Security Status [29]		
Food-secure	High food security (HFS)	No affirmative responses
	Marginal food security (MFS)	1 affirmative response
Food-insecure	Low food security (LFS)	2 to 4 affirmative responses
	Very low food security (VLFS)	5 or 6 affirmative responses

We compared the food security status of households with and without CSHCN using logistic regression to adjust for race, smoking, caregiver education, number of children under age six in the household, Medicaid enrollment, and current participation in federal food and nutrition

assistance programs, which were determined a priori. In a second model, we compared households with less complex CSHCN (answered one or two consequences positively on the CSHCN screener) and more complex CSHCN (answered three to five consequences positively on the CSHCN screener) to having no CSHCN using dummy variables and adjusted for the same covariates. The logistic regression models were used to calculate adjusted and unadjusted odds ratios and 95% confidence intervals for the association between having CSHCN and household food security status. Statistical significance was set at the $p < 0.05$ level.

Results

Demographic Characteristics

Of the 150 caregivers who were recruited, 142 were included in the analysis. The eight excluded did not turn in or complete the survey. The 142 caregivers consisted of 115 mothers, 23 fathers, and four guardians. The number of children per household ranged from one to seven, with a mean of two. Characteristics of the study sample are summarized in Table 1.

Food Insecurity at the CPD

The prevalence of household food insecurity in the study was 45 of the 142 households (32 percent). Figure 1 displays levels of food security among study households. In the sample, household factors significantly associated with household food security status included the number of adults, smoking status, having ever been enrolled in WIC, being enrolled in SNAP now and having ever been enrolled in SNAP, being enrolled in NSLP now and having ever been enrolled in NSLP, current enrollment in any of these three federal food and nutrition assistance programs, having ever been enrolled in any of these three food and nutrition assistance programs, and enrollment in Medicaid. Caregiver characteristics associated with household food security

status included level of education and general health status. There were no statistically significant differences between the food-secure and food-insecure households with regards to number of children in the household, having children under age six in the household, current enrollment in WIC, primary language in the home, caregiver age, and race/ethnicity. These associations are presented in Table 2.

CSHCN and Household Food Security Status

The prevalence of CSHCN in households in this sample was 41 percent. Thirty-seven percent of households with CSHCN were food-insecure compared to 26 percent of households without CSHCN. This difference was not significant; the unadjusted odds of food insecurity in households with CSHCN was 1.67 times greater than households without CSHCN (95% CI: 0.8 – 3.47, p=0.17). After adjusting for smoking, education, number of children under six in the household, Medicaid enrollment, participation in federal food and nutrition assistance programs, and race/ethnicity, CSHCN was not significantly associated with household food security status (OR 1.31, 95% CI 0.55 – 3.13, p=0.54). Education, having children under age six in the household, Medicaid enrollment, and race/ethnicity also were not significant. Smoking (OR 4.68, 95% CI 1.31 – 16.69, p = 0.02) and participation in any of the three largest federal food and nutrition assistance programs (OR 4.18, 95% CI 1.81 – 9.65, p=0.001) were both significantly associated with food insecurity in the adjusted model.

Number of Qualifying CSHCN Consequences and Household Food Security Status

The trend for the association between number of qualifying CSHCN consequences associated with CHSCN and food security status among households with CSHCN was significant (p=0.007); the food-insecure households had a higher proportion of families reporting three to five consequences compared to food-secure households. Figure 2 displays the

distribution of the number of consequences among these families. In the unadjusted model that accounts for complexity, households that qualified for having CSHCN with three to five consequences were significantly more likely to experience food insecurity than households with no CSHCN (OR 2.59, 95% CI 1.17 – 5.72, p=0.019). Qualifying based on one or two consequences was not significantly associated with food insecurity. After adjusting for smoking, education, number of children under age six in the household, enrollment in Medicaid, participation in federal food and nutrition assistance programs, and race/ethnicity, the presence of CSHCN, both less complex and more complex, was not significantly associated with food insecurity (one to two consequences: OR 0.41, 95% CI 0.067 – 2.5, p=0.334 and three to five consequences: OR 1.74, 95% CI 0.68 – 4.4, p=0.245). Smoking (OR 4.26, 95% CI 1.19 – 15.17, p=0.025) and participation in federal food and nutrition assistance programs (OR 4.00, 95% CI 1.73 – 9.29, p=0.001) were significantly associated with food insecurity in the adjusted model. Education, having children under age six in the household, enrollment in Medicaid, and race/ethnicity were not significantly associated with food insecurity in the adjusted model.

Types of CSHCN Qualifying Health Consequences and Household Food Security Status

In this sample, 57 households had CSHCN. Of these, 44 caregivers reported their child/children needs or uses prescription medications, 46 reported above routine use of services, 33 reported functional limitations, 31 reported need or use of specialized therapies or services, and 35 reported need or use of mental health counseling. Among households with CSHCN, food-insecure households were more likely to report that their child/children required services beyond routine levels, had functional limitations, and needed or used mental health counseling. Table 3 summarizes the types of qualifying health consequences reported by food-secure and food-insecure households.

Discussion

This study examined the relationship between having CSHCN in the household and food security status among families at CPD, a university-affiliated pediatric dental clinic. Overall food insecurity at CPD was 32 percent with 9 percent of households experiencing very low food security. Households with CSHCN were more likely to experience food insecurity but this result was not statistically significant. However, when accounting for CSHCN complexity, households that qualified as having CSHCN based on three to five consequences were significantly more likely to experience food insecurity compared to households with no CSHCN in the unadjusted model; this result was not statistically significant in the adjusted model. Among households with CSHCN, food-insecure households compared to food-secure households had statistically significant higher report of 1) above routine use of services, 2) functional limitations, and 3) need or use of mental health counseling.

Food Insecurity at the CPD

We examined very low food security at the CPD, which had not been previously reported. Overall food insecurity in this study was slightly higher in 2012 (32 percent) compared to a previous finding of 28 percent in 2011 [30]. This finding is above the national average of 20.6 percent of children living in food-insecure households. Very low food security at the CPD in 2012 was 9 percent compared to the national average of 5.8 percent for households with children [2]. The CPD is one of few pediatric dental facilities accepting patients with public dental insurance in western Washington and serves a high proportion of lower-income families. Low-income households with income below 185 percent of the federal poverty threshold have higher rates of food insecurity [2]. Additionally, many caregivers of patients at CPD are students and may have temporary food insecurity related to low-income. Factors associated with food

insecurity in this sample were consistent with previous findings including single-parent households [2], smoking [3], use of federal food and nutrition assistance programs [2], enrollment in Medicaid (as a proxy for income) [2], caregiver education [31], and caregiver self-reported general health [32]. Contrary to previous findings, race/ethnicity was not associated with food security status. This is likely because the survey was only given in English, thus the sample underrepresented minorities. Previous studies [2] have also noted that having children under the age of six increases the likelihood of a household experiencing food insecurity, however, in this study, households with children under six had a lower prevalence of food insecurity.

CSHCN and Household Food Security Status

In this study, having CSHCN was not statistically significantly associated with households' food security status. However, it is important to note the results were in the hypothesized direction; households with CSHCN in this sample had 1.67 times higher odds of household food insecurity than households without CSHCN in the unadjusted model. Low power to detect a significant relationship is the most likely explanation for this insignificant finding. Alternatively, there may not be a meaningful difference in food insecurity for households with and without CSHCN. In the adjusted model, smoking and use of federal food and nutrition assistance programs were more strongly associated with household food insecurity.

The direction of our findings aligns with previous studies, which have found positive associations between food insecurity and CSHCN through different measurement methods [33,34]. In a study by Parish et al., families with CSHCN were more likely to provide an affirmative response on specific food security indicators [33]. In a cross-sectional model, Curran found a positive relationship between having a two-year old CSHCN and maternal food

insecurity, but this result was not significant. However, in a longitudinal model, mothers of CSHCN were significantly more likely than mothers without CSHCN to become food-insecure by the time their child reached two-years old [34].

There are several reasons why households with CSHCN may experience a higher prevalence of food insecurity. Stabile, et al. have characterized the economic costs of CSHCN as direct (e.g., resulting from the child's disability, such as out-of-pocket medical care costs or child care), indirect (e.g., job loss or underemployment due to their child's acute illness or appointments), and long-term costs (e.g., reduced family savings over time [35], compromised schooling, and future employment potential of the child) [36]. Newacheck and Kim found that families with CSHCN have out-of-pocket medical expenditures twice that of other families [37]. In regards to employment, lower paying jobs often do not offer paid sick days, forcing parents to take unpaid leave to care for their children [38]. Additionally, in this sample, parents reported poorer general health, which may factor into their employment status. Ensuring household food security requires balancing of family resources so that when income is reduced or expenses increase, households are more likely to become food-insecure. Because money spent on food is more flexible than rent or other fixed bills, quality of food resources may be one of the first areas of the budget to become compromised.

Number of Qualifying CSHCN Consequences and Household Food Security Status

In this sample, the number of qualifying health consequences was significantly associated with food security status among households with CSHCN. Those in food-insecure households reported a greater number of qualifying health consequences for the CSHCN in the household. This is likely related to the complexity of special health care needs, although we are unable to ascertain whether the consequences are attributable to one child or to multiple children in the

household. When accounting for complexity in a logistic regression model, households with CSHCN that qualified based on three to five consequences had 2.59 greater odds of household food insecurity compared to households with no CSHCN; this relationship persisted in the adjusted model but did not remain statistically significant. This is comparable to Curran's findings, where using a different measure of CSHCN, mothers whose child had two or more ongoing needs were significantly more likely to become food-insecure at the follow up when the child turned two years than mothers without CSHCN [34]. Washington State data from the 2009/10 National Survey of Children with Special Health Care Needs found an increasing trend of financial problems for the family with an increasing number of qualifying health consequences [39].

Types of CSHCN Qualifying Health Consequences and Household Food Security Status

Among households with CSHCN, food-insecure households were significantly more likely to report above routine use of services, functional limitations, and need or use of mental health counseling. These consequences, especially functional limitations, are likely associated with complexity. Complexity impacts the previously mentioned direct, indirect and long-term economic impacts associated with having CSHCN, which factors into households' available resources for purchasing food. According to the 2009/10 Survey of Children with Special Health Care Needs, in Washington State, families whose CSHCN had above routine need/use of services and functional limitations more often paid out-of-pocket expenses of $1,000 or more for the past year and more often reported that their child's health condition caused financial problems for the family than families who only qualified on prescription medication use [39].

Prescription medication use was similar among food-secure and food-insecure households with CSHCN in this sample. This is likely because prescription medication use has

the least impact on families' financial resources. Bramlett et al. found that children whose conditions are managed only by prescription medications experienced better overall health and less complex needs, as well as fewer unmet needs and adequate insurance coverage [40].

Limitations

Several limitations are worth noting in consideration of these findings. The sample was a convenience sample conducted at one site, limiting generalizability of these findings to the general population. However, factors associated with food insecurity in our sample were comparable to those reported in the literature. Patients not receiving dental care and thus not attending the clinic were excluded from our sample, further limiting the generalizability of these findings. The study was cross-sectional, so it was not possible to determine whether having CSHCN causes a household to become food-insecure or whether household level food-insecurity causes children to develop special health care needs. However, in terms of identifying families that may have difficulty in purchasing healthy foods in sufficient quantities for the household, knowing which came first is not critical, but rather the knowledge that certain families may have more difficulty is most important. Although standard screening questions were used, data were collected by caregiver report and are subject to recall bias. Due to the scope and time frame of the study, it was not possible to collect a sample size with sufficient power to detect a significant association between having CSHCN and household food security status, when adjusting for other important factors. To our knowledge, no national studies currently contain data on both CSHCN and food insecurity, thus the analyses of number and type of qualifying consequences provide interesting insights and serve as a model for future larger-scale studies.

Implications

There are two main implications of this study: 1) households reporting more qualifying consequences and certain types of consequences for their CSHCN may have a higher likelihood of food insecurity and 2) consideration of social risk factors, such as food insecurity, may improve the provision of oral health care to patients and their families. Children with special health care needs are already at risk for poor oral health for a variety of reasons, including oral medications, poor self oral hygiene or reliance on caregiver for regular hygiene, decreased clearance of foods from the mouth and impaired salivary function, preference for certain foods, a liquid or pureed diet, and oral aversions [20]. Families experiencing limited purchasing power may resort to foods high in sugars and fats as they are often the least expensive and provide the highest energy density compared to fruits and vegetables that are more expensive and provide low energy density [41]. However, these less-expensive foods are also those that place children at high risk for oral health problems. Families who have CSHCN may already face challenges with or have special requirements for their children's diet; household food insecurity may further compound these challenges and make it impossible for families to follow providers' dietary recommendations. This is especially true for families whose child or children require above average use or need of medical, mental health, or educational services, functional limitations, and treatment or counseling for emotional or developmental problems and for those with more complex CSHCN. Families with CSHCN have identified oral health care as their highest unmet health need with financial barriers cited as the most common barrier [42]. Both CSHCN and children from low-income families are at risk for poor oral health and decreased access to care [43,44].

Food security status is not routinely screened for in pediatric dental practices, but has wide implications for children's oral health. The American Academy of Pediatrics and the American Academy of Pediatric Dentistry recommend a dental home for all children, especially CSHCN. One component of a dental home is to provide dietary counseling [45]. However, to provide realistic and effective nutritional counseling to families, it is important to understand their access to foods, particularly at CPD, where families have a higher prevalence of food insecurity than the general population. Consideration of families' circumstances is crucial both in the provision of education and effective care coordination to resources that may provide help to families who are struggling to access healthy and nutritious foods. A study by Garg et al. found that 70 percent of parents agreed their child's doctor could assist them with their social issues and that while almost all clinicians believed screening for social issues was important, only about one in five were actually screening families [46]. With the increased focus on provision of care through a dental home model, the opportunity for assisting families with social needs, including food insecurity, is real.

Acknowledgements

This study is supported by the US Department of Health and Human Services, Health Resources and Services Administration's Maternal and Child Health Bureau (Title V, Social Security Act), grant #T76MC00011.

Thanks to Nick Radant, Sue Coldwell, Amy Kim, Joanna Scott, and Andy Hoegh for their assistance and insights in the development and completion of this study.

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Table 1. Characteristics of Caregivers and their Households (n=142)	
Characteristics	**Total Sample N(%)**
Household Characteristics	
Have children under 6 years	70 (49)
CSHCN *	57 (41)
Single parent households †	45 (32)
Smokers	17 (12)
Food and nutrition assistance programs	
Current WIC enrollment † ‡	20 (14)
Have ever been enrolled in WIC §	89 (63)
Current SNAP enrollment † ‡	52 (37)
Have ever been enrolled in SNAP ‡	77 (54)
Current NSLP enrollment † §	60 (43)
Have ever been enrolled in NSLP ‖	70 (49)
Current enrollment in any food and nutrition assistance program §	77 (56)
Have ever been enrolled in food and nutrition assistance program ¶	101 (71)
Enrollment in Medicaid † ‖	94 (67)
Food-insecure	45 (32)
Primary language (% English)	104 (73)
Caregiver Characteristics	
Age of adult respondent (years) (mean)	38.6 ± 8
Race/ethnicity	
American Indian/Alaska Native	1 (1)
Asian	17 (12)
Native Hawaiian/Other Pacific Islander	2 (1)
Black or African American	10 (7)
Non-Hispanic White	75 (53)
Hispanic	21 (15)
Other	2 (1)
Multiple	14 (10)
Level of education**	
≤ High School	30 (22)
Some college/vocational or higher	109 (78)
Adult general health	
Excellent	35 (25)
Good	87 (61)
Fair	18 (13)
Poor	2 (1)
Relationship to patient	
Mother	115 (81)
Father	23 (16)
Guardian	4 (3)

* n=138
† n=141
‡ 3 participants answered "don't know"
§ 4 participants answered "don't know"
‖ 5 participants answered "don't know"
¶ 2 participants answered "don't know"
**n=139

Table 2. Characteristics of Food-Secure and Food-Insecure Households

Characteristics of Caregivers	Food Secure (n=97) N(%) or Mean ± SD	Food Insecure (n=45) N(%) or Mean ± SD	*P*
Household Characteristics			
Number of children	2±1	2±1	0.83
Have children under 6 years	53 (55)	17 (38)	0.06
Single parent households *	25 (26)	20 (44)	**0.03**
Smokers	6 (6)	11 (24)	**0.002**
Food and nutrition assistance programs			
Current WIC enrollment * †	16 (17)	4 (9)	0.27
Have ever been enrolled in WIC ‡	52 (54)	37 (82)	**0.002**
Current SNAP enrollment * †	24 (25)	28 (62)	**<0.001**
Have ever been enrolled in SNAP †	40 (41)	37 (82)	**<0.001**
Current NSLP enrollment * ‡	28 (29)	32 (71)	**<0.001**
Have ever been enrolled in NSLP §	33 (34)	37 (82)	**<0.001**
Current enrollment in any food and nutrition assistance program ‡	39 (40)	38 (84)	**<0.001**
Have ever been enrolled in food and nutrition assistance programs ‖	58 (60)	43 (96)	**<0.001**
Enrollment in Medicaid * §	54 (56)	40 (89)	**<0.001**
Primary language (% English)	70 (72)	34 (76)	0.67
Caregiver Characteristics			
Age of adult respondent (years)	39±8	38±7	0.69
Race/ethnicity			
American Indian/Alaska Native	1 (1)	0 (0)	0.26
Asian	15 (16)	2 (4)	
Native Hawaiian/Other Pacific Islander	2 (2)	0 (0)	
Black or African American	7 (7)	3 (7)	
White	48 (49)	27 (60)	
Hispanic	16 (17)	5 (11)	
Other	1 (1)	1 (2)	
Multiple	7 (7)	7 (16)	
Level of education ¶			
≤ 12th grade	16 (17)	14 (32)	**0.05**
Some college/vocational or higher	79 (83)	30 (68)	
Adult general health			
Excellent	29 (30)	6 (14)	**0.02**
Good	59 (61)	28 (62)	
Fair	8 (8)	10 (22)	
Poor	1 (1)	1 (2)	

* n=141
† 3 participants answered "don't know"
‡ 4 participants answered "don't know"
§ 5 participants answered "don't know"
‖ 2 participants answered "don't know"
¶ n=139

Table 3: Households with CSHCN: Qualifying Consequences Associated with Food Security Status (n=57)

Consequence	Food Secure (n=36) n(%)	Food Insecure (n=21) n(%)	*P*
Need/use of prescription medications	28 (78)	16 (76)	0.89
Above routine use of services	26 (72)	20 (95)	**0.04**
Functional limitations	17 (47)	16 (76)	**0.03**
Need/use of specialized therapies or services	19 (53)	12 (57)	0.75
Need/use of mental health counseling	16 (46)	19 (90)	**0.001**

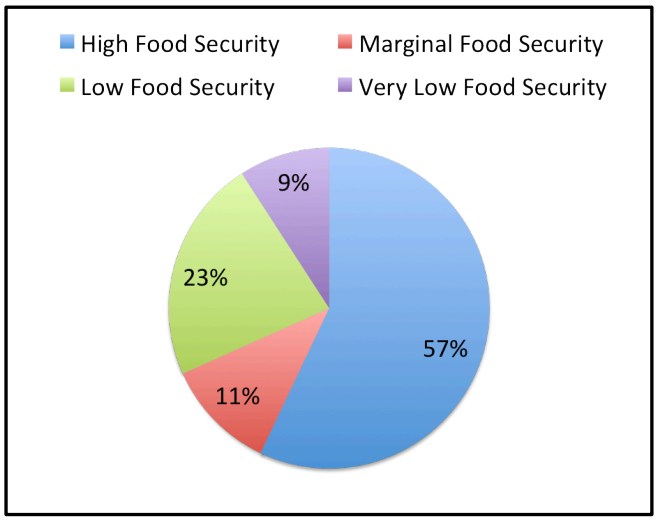

FIGURE 1 Food security among sample households at the Center for Pediatric Dentistry

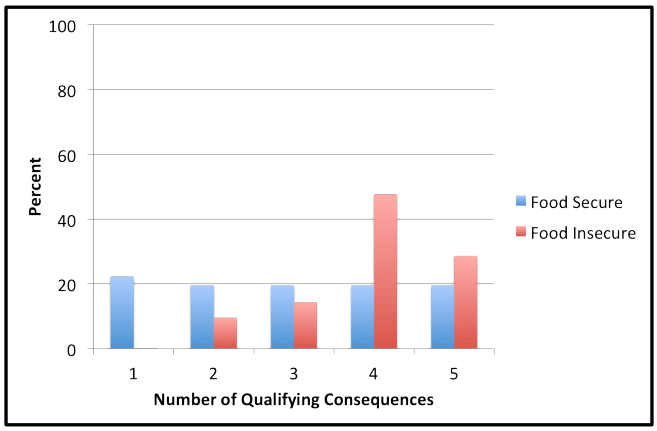

FIGURE 2 Number of qualifying health consequences by food security status among families with CSHCN

Appendix A

UNIVERSITY OF WASHINGTON

CONSENT FORM

Food Availability Survey

Researchers:

Susan Coldwell, PhD, Professor, Oral Health Sciences, 206-616-3087; Donna Johnson, PhD, Professor, School of Public Health, Nutritional Sciences Program, 206-685-1068; Tara Ashleman, RN, MPH Candidate, School of Public Health, 206-257-8010, Nick Radandt, DDS Candidate, School of Dentistry, 360-566-3245; Amy Kim, DDS, Clinical Assistant Professor, Pediatric Dentistry, School of Dentistry, 206-543-6695; JoAnna Scott, PhD, Acting Assistant Professor, Pediatric Dentistry, School of Dentistry, 206-543-6905

24-hour Emergency Telephone Number

Please contact principal investigator Susan Coldwell, PhD (206-409-2325).

Researchers' statement

We are asking you to be in a research study. The purpose of this consent form is to give you the information you will need to help you decide whether to be in the study or not. Please read the form carefully. You may ask questions about the purpose of the research, what we would ask you to do, the possible risks and benefits, your rights as a volunteer, and anything else about the research or this form that is not clear. When we have answered all your questions, you can decide if you want to be in the study or not. This process is called "informed consent." We will give you a copy of this form for your records.

PURPOSE OF THE STUDY

The purpose of this study is to test the accuracy of several short questions that might help dentists identify families who worry about having enough money to buy healthy food. Knowing this information about a family will help dentists advise families on healthy eating and also will let them know which families might need help from food assistance programs available in our community.

STUDY PROCEDURES

You will be given a survey to complete in English. The survey has 32 questions. You will fill out the survey yourself. You may complete the survey while you are waiting for your child's appointment to begin.

We will ask you about the food you usually have in your home. We will also ask you about how many people are in your family, the ages of your children, your health, the health of children, smoking habits, and use of food assistance programs.

You may refuse to answer any question in the survey.

It will take about 20 minutes to complete the survey.

Parents bringing their child back for an appointment within the next eight weeks will be invited to arrive 20 minutes early and participate in a face-to-face interview.

The interview will consist of up to 18 questions about the food you usually have in your home and additional questions to see if you are also caring for children with special health care needs.

You may refuse to answer any questions asked during the interview.

It will take about 20 minutes to complete the interview.

RISKS, STRESS, OR DISCOMFORT

You may feel a little uncomfortable or embarrassed answering questions about how much food is available to your family.

Sample question:

> "Our child was not eating enough because we just couldn't afford enough food. Was that often, sometimes, or never true for your household in the last 12 months?"

ALTERNATIVES TO TAKING PART IN THIS STUDY

You may refuse to participate or may withdraw from the study at any time without penalty or loss of benefits to which you are otherwise entitled. Not taking part in this study will not affect your child's dental care or benefits.

BENEFITS OF THE STUDY

Participants identified as food insecure will be assisted in connecting to WithinReach, a non-profit organization that can help families obtain food resources.

Society will benefit from finding brief ways to ask families about food availability.

CONFIDENTIALITY OF RESEARCH INFORMATION

We will make every effort to keep your child's and your family's personal information confidential. Personal information would be disclosed only if required by law.

Written surveys will be kept anonymous unless the parent agrees to complete the face-to-face interview at a future date. If you choose to participate in the interview, surveys will be linked to the name of the participant with a three-digit code so that they can later be linked to interview data. Personal information will be kept separately from data at all times and will be destroyed upon completion of the study.

Only the researchers listed on this form will have access to the study data

OTHER INFORMATION

You may refuse to participate and you are free to withdraw from this study at any time without penalty or loss of benefits to which you are otherwise entitled.

Parents will receive a small gift (UW pen, lapel pin, etc.) when they turn in the survey.

Parents participating in the 20-min interview will receive a $5 Safeway gift card to compensate them for their time.

Printed name of study staff obtaining consent Signature Date

Subject's statement

This study has been explained to me. I volunteer to take part in this research. I have had a chance to ask questions. If I have questions later about the research, I can ask one of the researchers listed above. If I have questions about my rights as a research subject, I can call the Human Subjects Division at (206) 543-0098. I will receive a copy of this consent form.

Study procedures

Please check appropriate boxes

☐ I consent to participate in the survey.

☐ I consent to participate in an interview at a later date.

Printed name of subject Signature of subject Date

Copies to: Researcher Subject

FAMILY FOOD & HEALTH

Survey

If you have any questions about the research study, please contact:

Dr. Susan Coldwell, Professor
School of Dentistry
University of Washington
(206) 616-3087

If you have any questions about your rights, you may call University of Washington IRB at (206) 543-0098.

UNIVERSITY of WASHINGTON

Thank you for participating in our Family Food and Health Survey. Please take the time to answer the following questions to the best of your knowledge by circling one answer. You may skip any questions you do not want to answer.

1.) How many children **under 18** years of age are living with you in your household?

0	1	2	3	4	5	6	7	More than 7

2.) How many adults **over 18** years of age are living in your household including yourself?

0	1	2	3	4	5	6	7	More than 7

3.) How old are the children in your household? Please circle how old each child is in years.

Child 1	Less than one year	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Child 2	Less than one year	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Child 3	Less than one year	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Child 4	Less than one year	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Child 5	Less than one year	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Child 6	Less than one year	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Child 7	Less than one year	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17

4.) Does anyone in your household smoke?

Yes	No

The next two questions are about *your own* health. Please respond to these questions about yourself.

5.) How would you describe ***your own general*** health?

Excellent	Good	Fair	Poor

6.) How would you describe ***your own dental*** health?

Excellent	Good	Fair	Poor

The next two questions are about the child who has an appointment at the Center for Pediatric Dentistry today. Please respond to these questions about *your child*.

7.) How would you describe ***your child's general*** health?

Excellent	Good	Fair	Poor

8.) How would you describe ***your child's dental*** health?

Excellent	Good	Fair	Poor

The next 7 questions are about the health of *all the children* in your household. Please respond to these questions about *all the children* in your household.

9.) Do any of the children in your household currently need or use **medicine prescribed by a doctor** (other than vitamins)?

Yes	No

10.) Do any of the children in your household need or use more **medical care, mental health or educational services** than is usual for most children of the same age?

Yes	No

11.) Are any of the children in your household **limited or prevented** in any way in their ability to do the things most children of the same age can do?

Yes	No

12.) Do any of the children in your household need or get **special therapy**, such as physical, occupational or speech therapy?

Yes	No

13.) Do any of the children in your household have any kind of emotional, developmental or behavioral problem for which he or she needs or gets **treatment or counseling**?

Yes	No

14.) If you answered yes to any of questions 9 through 13, is this because of ANY medical, behavioral or other health condition?

Yes	No

15.) If you answered yes to question 14, is this a condition that has lasted or is expected to last for *at least* 12 months?

Yes	No

The following questions describe common food assistance programs. Please circle the best answer for *your household*.

16.) The Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) provides food, nutrition counseling, and health care referrals to women during pregnancy, while breastfeeding, and after birth. WIC is also available for infants and children less than 5 years of age.

Do you use WIC now?	Yes	No	Don't Know
Have you ever used WIC?	Yes	No	Don't Know

17.) The Basic Food, Food Stamp, or Supplemental Nutrition Assistance Program (SNAP) provides low-income households with coupons or electronic coupons that can be used like cash money at most grocery stores to buy food for a healthy diet.

Do you use Basic Food or Food Stamps (SNAP) now?	Yes	No	Don't Know
Have you ever used Basic Food or Food Stamps (SNAP)?	Yes	No	Don't Know

18.) The National School Lunch Program provides nutritionally balanced, low-cost or free breakfast, lunches, or dinners to children in school or in after-school programs through the age of 18 years.

Does ***any child*** in your household use the National School Lunch Program now?	Yes	No	Don't Know
Did ***any child*** in your household ever use the National School Lunch Program?	Yes	No	Don't Know

19.) The Washington State Department of Social and Health Services (DSHS) helps families find low cost or no cost health care for their children through Medicaid insurance or coupons. Does ***any child*** in your household receive benefits from DSHS?

Yes	No	Not Eligible	Eligible but not participating	Don't Know

These next questions are about food eaten in your household in the last 12 months, and whether you were able to buy the food you needed. Please read the statement and answer to the best of your knowledge how often these statements have been true for *your household*.

20.) "The food that we bought just didn't last, and we didn't have money to get more." Was that often, sometimes, or never true for your household in the last 12 months?

Often true	Sometimes True	Never True	Don't Know

21.) "We couldn't afford to eat balanced meals." Was that often, sometimes, or never true for your household in the last 12 months?

Often true	Sometimes True	Never True	Don't Know

22.) In the last 12 months, did you or other adults in your household ever cut the size of your meals or skip meals because there wasn't enough money for food?

Yes	No	Don't Know

If you answered **YES** to **Question 22**, please answer the following:

22.a) How often did this happen?

Almost Every Month	Some Months but Not Every Month	Only 1 or 2 Months	Don't Know

23.) In the last 12 months, did you ever eat less than you felt you should because there wasn't enough money for food?

Yes	No	Don't Know

24.) In the last 12 months, were you ever hungry but didn't eat because there wasn't enough money for food?

Yes	No	Don't Know

25.) "We worried whether our food would run out before we got money to buy more." Was that often, sometimes, or never true for your household in the last 12 months?

Often true	Sometimes True	Never True	Don't Know

Please tell us about yourself.

26.) Which of the following best describes your ethnic background?

☐ I am Hispanic or Latino/a. ☐ I am not Hispanic or Latino/a.

27.) Which of the following best describes your racial background? You may check all that are true for you.

☐ American Indian/Alaska Native ☐ Asian ☐ Native Hawaiian or Other Pacific Islander

☐ Black or African American ☐ White ☐ Other (Please describe) _____

28.) What is your highest level of education? _____

29.) Are you: ☐ Male ☐ Female

30.) How old are you? _____ years old.

31.) What is your relationship to the patient: _____

32.) What is the primary language spoken in your home: _____

Thank You!