



From Policy to Practice: Implementation of Water Policies in Child Care Centers in Connecticut

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ABSTRACT

Objective: Child care policies may contribute to healthy beverage consumption patterns. This study documented availability and accessibility of water and correspondence with state and federal policy and accreditation standards in child care centers.

Design: One-day observations were conducted in a random sample of 40 Child and Adult Care Food Program-participating preschool classrooms in Connecticut.

Setting and Participants: Child care centers, center directors, and preschool teachers.

Main Outcome Measures: Raters observed water availability and teacher behaviors during lunch, physical activity, and in the classroom. National, state, and childcare center water regulations and policies were reviewed.

Analysis: Descriptive statistics present data on water availability, promotion, and modeling. Bivariate relationships between water availability and accreditation status, center water policy, location of physical activity, and verbal promotion were assessed using the Fisher exact test ($P < .05$).

Results: Many centers were in violation of water-promoting policies. Water was available in most classrooms (84%) but was only adult accessible in over half of those classrooms. Water was available during one third of physical activity periods observed. Verbal prompts for children to drink water were few.

Conclusions and Implications: Support is needed to help centers meet existing water policies and new water requirements included in the 2010 Child Nutrition Reauthorization Act.

Key Words: child care, water, nutrition policy, beverages, child, preschool (*J Nutr Educ Behav.* 2013;45:119-125.)

INTRODUCTION

Diets high in caloric beverages have been linked to overall high caloric intake,¹ and overweight,²⁻¹¹ including in preschool-aged populations.^{3,5,6,10,12} One strategy for improving the mix of beverages consumed in the United States (US) is to promote the consumption of low or noncaloric beverages such as water,¹³ especially among children as they are developing their dietary preferences. Dietary preferences are developed in early childhood, and if healthy habits are instilled early, they are likely to continue into adolescence and adulthood.¹⁴⁻¹⁸ Studies show that young children's main sources of added

sugar are sweetened beverages and desserts;¹⁹ water is rarely consumed as a beverage in children's meals, during which the majority of daily beverages are consumed.²⁰ As nearly 60% of 3- to 5-year-olds attend licensed child care centers,²¹ where it is recommended that they receive one third to two thirds of their daily nutritional allowance,²² the child care environment can have a significant impact on child nutrition. More specifically, the physical availability of water, culture of the child care center, and how staff promotes and models water consumption can have significant impact on development of healthy habits and future health.^{18,23-25}

Policy change is one approach for improving healthy beverage practices in child care. In their 2008 review of US state child care regulations, Benjamin et al report that most states require water to be available in child care centers (80%) and family child care homes (67%), and most state water should be "freely available to children at all times."²⁶ Few studies have systematically documented compliance with regulations and availability and promotion of water in child care in general.²⁷ One California study observed water was both available and child accessible indoors and outdoors in 74% of a sample of child care facilities,²⁸ but only 28% of the centers reported serving water at every meal and snack.²⁹ At the federal level, the 2010 Healthy, Hunger-Free Kids Act (HHFKA) explicitly reinforces the importance of water availability during meals and throughout the day in schools and child care centers participating in federal food programs.³⁰ The Child and Adult Care Food Program (CACFP) is a federally funded meal program, regulated through the HHFKA. Eligible facilities include

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public or private nonprofit child care centers and for-profit centers receiving title XX funds for at least 25% of the children in care. In 2009, CACFP provided meal and snack reimbursements for over 3.2 million preschool-aged children each day.³¹ Because of its reach to a large, vulnerable population, CACFP nutrition-related policies and regulations may have significant impact on the health of the nation's children.

The present study observed water availability and promotion in CACFP-participating child care centers in Connecticut and documented child care water regulations and policies applicable to these centers prior to the implementation of the 2010 HHFKA. The purpose was 3-fold: (1) to assess site practices affecting water availability and accessibility in child care; (2) to document the degree to which water consumption is modeled and promoted by center staff; and (3) to document and evaluate implementation of beverage regulations and guidelines governing CACFP-participating child care centers in 2008 and early 2009 and their correspondence with water availability and accessibility.

METHODS

Participants and Recruitment

Forty centers were randomly selected from all 221 licensed, CACFP-participating Connecticut child care centers. Centers were recruited if they met study inclusion criteria of serving ≥ 13 preschool-aged children, 3-5 years of age. Center directors were told the study would assess the child care environment of 1 full-day, preschool-aged classroom and would include observations of the physical space in the room, and the physical activity and lunch periods, including teacher behaviors. Recruiters explained that the observation was not part of any state regulation or CACFP audits. Fifty-two centers were recruited to reach the desired sample size of 40 centers (participation rate 77%). The study protocol was approved by the Yale University Institutional Review Board.

Measures and Procedures

Environmental audit and center director interview. Two or 3 trained

raters visited 1 classroom in each facility 1 time for 3-4 hours. Raters conducted observations between June, 2008 and January, 2009. Center staff was present during the observation. Center staff chose the classroom for observation if more than 1 was eligible. All observations started mid-morning and extended into the early afternoon. Water availability was assessed through a standardized environmental audit. Development of the full audit is described elsewhere.³² Two domains assessed are relevant to water: (1) availability of water inside the classroom (during the morning classroom period) and during physical activity (during the morning physical activity period, prior to lunch); and (2) teacher's verbal promotion and modeling of water consumption in the classroom and during physical activity.

Water availability was assessed as "Is water available?" (yes/no). If water was available in the classroom at any point during the classroom or lunchtime observation, raters also recorded its accessibility as either adult accessible (eg, counter-level kitchen sink) or child and adult accessible (eg, child-level fountain, sink, or thermos placed at child height with paper cups). All observers assessed water availability and accessibility throughout the indoor observation and lunch periods. A master indoor environment sheet was compiled from all observer assessments at the end of the observations. Any discrepancies were discussed and final outcomes noted.

Raters were unable to collect water availability data during physical activity for 2 of the centers because of inclement weather and lack of indoor physical activity facilities. In the remaining centers, physical activity was observed primarily outdoors (82%), and indoor physical activity was held in a recreation room or gym because of inclement weather. Verbal water promotion was indicated if a teacher or assistant verbally prompted or encouraged any children to consume water over the entire period of the observation. Staff water modeling data were collected through an in-person interview with the center director: directors reported the total number of staff they observe drinking water in front of the children. Director interviews were

conducted on the same day as the observation.

Meal-time beverage availability. During the environmental audit, the raters visually observed water availability during the lunchtime meal. Two sites were excluded from analyses since the meal for that day was not provided by CACFP, but rather brought from home. Thus, 38 centers remained for final lunchtime water serving assessment.

Neighborhood demographics. American Community Survey data³³ on all block groups in the state of Connecticut was extracted and merged with center addresses using ArcGIS (version 9.2, Environmental Systems Research Institute, Redlands, CA, 2006).

Child Care Beverage Regulations and Guidelines in 2008-2009

Federal, State, and Accreditation Standards Applicable to Study Centers. Researchers systematically reviewed Connecticut child care state licensing requirements regarding water availability and meals, and federal CACFP regulations addressing meal components and beverage allowances.³⁴ Researchers clarified any inconsistencies with the Connecticut state CACFP coordinator at the Department of Education and with the US Department of Agriculture (USDA), which regulates CACFP. All centers in the sample were subject to these regulations. Some centers were Head Start affiliated. The Head Start program is a federal program under the US Department of Health and Human Services that provides health, education, and nutrition resources to low-income children.²² Many centers were also accredited by the National Association for the Education of Young Children (NAEYC), the largest organization of early childhood educators and a prestigious child care accreditation board in the United States.³⁵ Thus, all Head Start performance standards and NAEYC accreditation regulations and guidelines addressing beverage availability throughout the day and during meals were also compiled. Caring for Our Children's (CFOC) National Health

and Safety Performance Standards were also reviewed.³⁶ These standards are considered to be best practices by US child care educators and professionals. Recommendations from the Academy of Nutrition and Dietetics and the American Academy of Pediatrics were reviewed.^{36,37}

Center-Level Standards. Centers typically create their own sets of standards that either reiterate or go beyond state and accreditation guidelines. Standards are communicated to staff and parents through handbooks and other print materials. Print copies of staff and parent handbooks and other materials related to nutrition and physical activity were collected from all centers. They were then coded using the Wellness Child Care Assessment Tool, a validated checklist created to quantify the comprehensiveness and strength of child care center nutrition and physical activity policies.³⁸ Available documents were coded separately, and a single summary cross-document score was computed for each item. Two items addressing water provision are reported in this paper: accessibility of water throughout the day, and availability of water during meals. Policies received a “weak” score if the language was vague or only suggestive, addressed the provision of drinking water throughout the day without mentioning the method for providing drinking water, or addressed the provision of drinking water during outdoor time only. A policy was “strong” when stating that drinking water must be available throughout the day and acceptable methods for providing drinking water was specified.

Data Analysis

Descriptive statistics were computed for water availability, promotion, and modeling in classroom and physical activity settings. The Fisher exact test was used to analyze the association between water availability and accreditation status, center water policy, location of physical activity (indoor vs outdoor), and verbal promotion. The Fisher exact test (2-sided) was used given some comparisons had fewer than 5 cases in a cross-tabulation cell. Researchers

considered $P < .05$ statistically significant, and all analyses were conducted using SPSS (version 17.0, SPSS Inc, Chicago, IL, 2008).

RESULTS

Child Care Center Sample Description

Many centers had affiliations other than CACFP, including Head Start (40%), NAEYC (38%), or both NAEYC and Head Start (15%). Three quarters of the centers served at least 2 meals and 1 snack throughout the day. Sixty percent of centers reported that all children stay for a full day of care (8 hours or more), 13% were in half-day programs, and the remaining 27% had a mix of full- and half-day attendees. Although race/ethnicity data were not collected from each of the children attending child care on the day of observation, the sample represents diverse communities in terms of race and ethnicity (census block group mean black population, 24%; Latino/Hispanic, 36%). Mean block group median household income was slightly above 185% of the 2008 federal poverty level for a family of 4 (\$43,372).³⁹

Water Availability and Accessibility

Sixteen percent of centers had no water available in either the classroom or during physical activity, and a third had water available in both instances (Table 1). Water was available in most classrooms, with adult-accessible faucets slightly more prevalent than child-accessible water fountains or receptacles. Water was available during one third of the observed physical ac-

tivity periods. The association between accreditation status and water availability was assessed, and classroom and physical activity water availability were marginally higher in NAEYC-accredited centers compared to non-accredited centers, though not significantly, and Head Start-affiliated centers were significantly less likely to have water available during physical activity compared to non-Head Start centers ($P = .004$). There were no significant differences in water availability by existence of the center's own written water policies, location of physical activity, or season.

Teacher Promotion and Modeling

Across classroom and physical activity observations, verbal water promotion was low (Table 2). Teachers and staff were more likely to verbally promote water during physical activity when water was available at the outdoor play area than not (67% vs 11%, $P < .001$). Half of centers reported that all staff members consume water in front of the children. Only a few centers reported that no staff consumed water in front of children (no other beverages were assessed). The percentage of centers with at least 50% of staff modeling water consumption did not vary by water availability.

Lunch Beverage Observation

Water was not available for general consumption during any of the observed lunch periods. Only 2 centers served water as an additional beverage option to 1 or 2 children, because of dietary restrictions. As required by CACFP, all centers served fluid milk

Table 1. Water Availability in Child Care Center Classroom and Physical Activity Settings in Connecticut (n = 38)

		Classroom Availability, n (%)		
		Yes	No	Total
Water availability during physical activity	Yes	12 (32)	0 (0)	12 (32)
	No	20 (53)	6 (16)	26 (68)
	Total	32 (84)	6 (16)	38 (100)

Note: Two centers were not observed during physical activity periods due to inclement weather.

Table 2. Staff Verbal Promotion of Water in Child Care Center Classroom and Physical Activity Settings (n = 38)

		Water Promotion in Classroom, n (%) ^a		
		Yes	No	Total
Water promotion during physical activity	Yes	4 (11)	5 (13)	9 (24)
	No	3 (8)	26 (68)	29 (76)
	Total	7 (19)	31 (81)	38 (100)

^aIn the full sample of 40 centers, water promotion was observed in 20% of the classrooms.
Note: Two centers were not observed during physical activity periods due to inclement weather.

at lunch, and in 90%, milk was the only beverage served.

Policy Review

State of Connecticut licensing regulations state that “sanitary drinking fountains or individual disposable drinking cups shall be provided and accessible to the children at all times” and “drinking water shall be available and accessible [in outdoor play spaces].”³⁹

In 2008, CACFP did not stipulate federal-level limitations on availability of water in child care. Meal components required that milk be served during breakfast and lunch, however, state agencies varied in whether they allowed other beverages to also be served at the meal once primary meal requirements are met (K. Randall, USDA Food and Nutrition Service, oral communication, September 2009; S. Fiore, Connecticut State Department of Education, written communication, December 2009).

Beyond noting the importance of water availability in the classroom for hygienic and oral health reasons, CFOC National Health and Safety Performance Standards state that “clean, sanitary drinking water shall be readily available throughout the day.”³⁶ Further, “Drinking water, dispensed in drinking fountains or by single service cups, shall be accessible to children indoors and outdoors,”³⁶ and the standards include guidelines on water fountain placement and proper use and disposal of single-service cups. Caring for Our Children emphasizes the importance of beverages during physical activity: “Before prolonged

physical activity in warm weather, children shall be well-hydrated and shall be encouraged to drink water during the activity.”³⁶ In supporting statements, CFOC emphasizes that between meals, clean water is the best choice for both low-calorie hydration and reduction of cavity-causing acids in the mouth. Caring for Our Children stipulates that state centers should follow the CACFP regulations, policies, and meal patterns in order to provide age-appropriate meals.³⁶

Head Start has no regulations or performance standards regarding water availability,²² nor does the Academy of Nutrition and Dietetics' nutrition benchmarks on child care nutrition and physical activity.³⁷ The NAEYC affirms that “clean, sanitary drinking water shall be readily available throughout the day” in its Early Childhood Program Standards and Accreditation Criteria.³⁵

Center-specific wellness policies and staff handbooks rarely include policies on water availability. Only 15% of center directors have instated policies on accessibility of water throughout the school day. All policies that mentioned water accessibility throughout the school day were scored as “weak”; they address the provision of drinking water throughout the day but do not mention the method for providing water, or they address only 1 specific period during the day (eg, outdoor time).

DISCUSSION

Although most centers in the present sample had water available in the

classroom, many do not provide access during physical activity, when children may be most in need of hydration to avoid heat-related illness.⁴⁰⁻⁴² Review of policies at federal, state, and local levels on water availability in child care demonstrated that in 2008-2009, availability was mandated or recommended in both licensing requirements and professional organization guidance. However, many centers are noncompliant with regulations. There was a marginal relationship between NAEYC accreditation and water availability, suggesting that requiring water in state regulations, child care accreditations, and now federal regulations may improve availability. However, additional oversight may be needed to ensure accreditation standards are met, and reiterating water standards in staff and parent handbooks is one way to remind caregivers of water's importance. Head Start affiliation was negatively associated with water availability during physical activity. Therefore, there may be a need to provide additional training and support to these centers, and resources on the issue are emerging.⁴³ At the national level, language in the 2010 HHFKA and recent nutrition summary reports compiled through the CFOC Consortium should lead to better awareness of the importance of water.^{30,44} Additionally, pilot projects and guidance from Senate Bill 1413 and Assembly Bill 2084 in California, as well as water-promoting regulations in New York City, provide examples of how to promote water availability in structured school settings.⁴⁵⁻⁴⁷ Although key stakeholders in California have expressed interest in offering water at meals,²⁹ other studies report school stakeholders often perceive taste, quality, and regulation barriers to offering tap water in their schools.⁴⁸ As the HHFKA is instated, the USDA should provide clear guidance to states on cost-effective ways to instate clean water systems in schools.

Modeling healthy behaviors is important for behavioral uptake, and many center directors report that staff members consume water in front of children. However, verbal promotion, potentially the most effective form of modeling new food items,^{49,50} was low. Water promotion was higher when available during playtime.

Water promotion, especially during physical activity, should be increased while helping children focus on internal thirst cues that may help them self-regulate consumption.²³

At observed lunches, water was served only to children with dairy dietary restrictions. The lack of water availability during a meal diminishes its importance as a viable beverage choice for young children and highlights a missed opportunity for centers to normalize consumption of noncaloric beverages. As CACFP-participating centers strive to provide optimal nutrition to low-income children, they may prefer to limit the number of beverage options on the table to increase consumption of milk. However, once children have consumed their allotted milk serving, the authors recommend water should be made available to further quench thirst. To this end, CACFP, with its strong influence on mealtime behaviors, should continue to explicitly mention in regulations and guidance that water may be served with meals.⁵¹ This is a cost-neutral policy suggestion that reinforces low-calorie hydration to children as they form their dietary habits, but it does not encroach on milk consumption. The authors recommend that water be provided on the table during snack when juice is not served as the fruit/vegetable snack component. New York State CACFP has required a similar provision since 2009,⁵² and this requirement could be expanded to all states through federal regulation. Current guidance encourages but does not require centers to offer water at snacks when no other beverage is offered.⁵¹

To ensure water availability throughout the day, the authors recommend that all organizations providing guidance to child care should be aligned and adopt the HHFKA language. Strategies for hygienically offering water in outdoor play areas should be shared with center directors, and annual comprehensive water availability enforcement should be stressed during state auditor training. At the center level, healthy beverage policies should be echoed in staff and parent handbooks, thereby communicating the healthy norm to the local community. It is hoped that

this step may translate to healthy change within families, given that children consume 55%-70% of caloric beverages at home.⁵³

Limitations of the present study include geography, in that findings are generalizable only to CACFP-participating centers within Connecticut. In-home facilities were not included in this study; this population warrants analysis. Documentation of beverage-related policies and practices in other states would contribute to a fuller picture of the child care beverage landscape, as would study of a more diverse sample of centers. In addition, including more detailed assessment (eg, full-day observation, staff and center director reports, promotion through internal cues to thirst) of staff water modeling and promotion would improve upon this research and provide more definitive results on staff beverage modeling in child care centers. Finally, since researchers directly observed center staff behaviors, it is plausible that staff may have altered their behavior on the day of observation.

IMPLICATIONS FOR RESEARCH AND PRACTICE

This study is the first to examine water availability in CACFP-participating child care centers and the association with child care regulations, accreditations, and affiliations. Findings from this study may provide information to policy makers, advocates, and the child care community and inform strategies for improving beverage policy at the local level, state, and federal levels. Recent actions by states and localities, including California and New York, and federal policies to address and enforce water availability more directly should continue to be translated into clear CACFP and accreditation guidance on water and its promotion, thus allowing child care centers to normalize consumption of water in early childhood. Such actions are important steps in improving the nutrition environment to support health.

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