TITLE: Changes in meal serving practices, costs, and training experiences among Boston family child care providers participating in the Child and Adult Care Food Program from before to after implementation of new meal patterns.

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BACKGROUND AND METHODOLOGY. This study examined how recent revisions to the Child and Adult Care Food Program (CACFP) meal pattern impacted the nutritional quality and cost of meals served by family child care home (FCCH) providers. FCCHs are an important source of care for about 1.7 million preschool-aged children, and may be particularly important for lower income and Latino families. CACFP reaches over 780,000 children in FCCHs—nearly half of all children who attend an FCCH. As part of the Healthy Hunger Free Kids Act of 2010, the United States Department of Agriculture updated the requirements for reimbursable meals for CACFP, to bring them more in line with current dietary science. The policy, which went into effect October 1, 2017, was also meant to be cost-neutral for care providers. However, FCCHs may face unique challenges; they do not benefit from the same economies of scale and access to food vendors that larger centers do, and may not have access to as many training opportunities. This study's goal was to investigate the impact of the revisions on food quality and costs in FCCH settings, as well as the types of training and support these providers received.

This study utilized a quasi-experimental design. Participants at baseline (prior to the standards going into effect) included 29 English- and Spanish-speaking family child care providers that participated in CACFP and enrolled preschool-aged children in the city of Boston (45% English-speaking, 55% Spanish-speaking). At follow-up in the summer and fall of 2018, thirteen providers participated. Several Spanish-speaking providers in particular were lost to follow-up due to their programs closing or no longer serving preschool-aged children.

At both baseline and follow-up, providers were surveyed about CACFP-related training and technical assistance, perceptions of food costs and program burden (i.e. time spent doing paperwork), and knowledge of what the changes to the CACFP meal patterns for preschool-aged children actually were. Providers' menus were also collected for a four week period to assess the frequency with which providers met each of the changes to the CACFP meal pattern at both baseline and follow-up, including: 1) limiting 100% juice to once a day; 2) serving both fruits and vegetables at lunch; 3) serving whole grains at least once a day; 4) eliminating grain-based desserts; 5) serving yogurt with ≤23 grams of sugar per 6 ounces; 6) serving breakfast cereals ≤6 grams of sugar per dry ounce; 7) serving unflavored low fat or fat free milk to 2-5 year olds; and 8) eliminating frying as a preparation method on-site. A registered dietician assessed children's dietary intake at participating providers using digital photographs of children's meals before and after consumption at both baseline and follow-up.

FINDINGS: Shortly prior to the standards going into effect, about one quarter of participants reported that they (n=8, 27.6%) had not yet heard about the meal pattern changes. About half (n=13, 48.2%) had heard about a training opportunity related to the meal pattern changes, eight providers (27.6%) reported attending a training. Providers were unaware of most of the specific changes to the CACFP meal pattern for 3-5 year old children; the proportion of providers who were able to correctly identify each specific change ranged from 7.7% to 48.5%. While some

improvements in access to training or support and in knowledge of the changes to the meal pattern were seen at follow-up—nearly all providers knew they had to serve at least one whole grain daily, and almost two thirds knew to limit juice to one serving per day—substantial gaps remained, with less than a third able to correctly identify that a fruit and a vegetable should be served at lunch, for example. Providers indicated they would like more support for meeting the standards in the form of additional training opportunities, lists of acceptable products, and opportunities to learn strategies of other providers.

Despite these gaps in training and knowledge, providers made several positive changes to their meals served, and children's dietary intake showed some improvements as well from before to after implementation of the CACFP meal pattern revisions. Providers were substantially more likely to serve a whole grain daily at follow-up compared to baseline (60.9% of 248 menu-days analyzed at follow-up compared to 36.2% of 224 menu days analyzed at baseline); children increased their intake of whole grains by, on average, about a half serving per day from baseline to follow-up ($p<0.001$). Compliance was high both prior to and after the policy change for serving low fat, unflavored milk; no more than one serving of juice daily; not using frying as a preparation method; serving cereals with limited sugar; and not serving grain-based desserts. Compliance with the standard to serve yogurt with less sugar appeared to be lower at follow-up than at baseline, however, and compliance with serving a fruit plus a vegetable at lunch did not substantially change (around 50%). However, children's actual intake of fruits and vegetables did increase by nearly a full serving on average ($p<0.001$), suggesting that providers may simply have been confused about the standard. Meanwhile, based on the providers' self-reports, these improvements do not appear to have negatively impacted providers' food costs or program burden (i.e. time spent shopping for and preparing food and completing CACFP paperwork).

Our findings suggest that the new CACFP meal standards have the potential to significantly improve children's diets in family child care settings without overburdening providers. However, in order to ensure full compliance with the standards, which our study shows is not currently underway, more support and technical assistance for family child care providers—including training, lists of acceptable food and beverage products, and opportunities to learn other providers' strategies—will be needed.

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