

## **VEGETARIAN MENU SUBSTITUTION PRACTICES AND NUTRITION PROFESSIONALS' INVOLVEMENT IN THE FOODSERVICE OPERATIONS OF URBAN KANSAS CHILDCARE CENTERS**

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### **ABSTRACT**

#### **PURPOSE/OBJECTIVES**

Interest in vegetarianism has increased in recent years. However, little is known of how this trend has impacted childcare foodservice operations. The purpose of this study was to explore the vegetarian menu substitution practices occurring within childcare centers and to describe the roles of nutrition professionals within these centers.

#### **METHODS**

An online questionnaire was sent to 155 urban Kansas childcare centers participating in the Child and Adult Care Food Program (CACFP). Initial survey distribution occurred on March 7, 2020, and responses were collected through August 2020.

#### **RESULTS**

Representatives from ( $N=85$ ) childcare centers answered the survey, resulting in a response rate of 54.8%. When asked how frequently a vegetarian alternative was offered in lieu of the standard meal, 32.9% ( $n=28$ ) answered "1-2 times/week", 3.5% ( $n=3$ ) answered "three times/week", 15.3% ( $n=13$ ) answered "four-five times/week", and 41.2% ( $n=35$ ) indicated they "never provide a vegetarian alternative". Multiple centers reported routinely serving a vegetarian meal as the main meal center wide. One in four respondents ( $n=21$ ) was unsure if vegetarian meals could qualify for CACFP reimbursement. When asked to indicate the credentials of the individuals involved in their centers' menu process and/or foodservice operations, the most frequently cited credentials were the CACFP Child Nutrition Professional (CCNP), the CACFP Management Professional (CMP), and the School Nutrition Specialist (SNS) credentials which accounted for ( $n=11$ ), ( $n=7$ ), and ( $n=5$ ) responses respectively. Over a third of the centers (36.4%,  $n=31$ ) reported that their menus were written by the owner or an operations team member, and only 5.9% ( $n=5$ ) reported menus being written by a dietitian/nutritionist.

#### **APPLICATION TO CHILD NUTRITION PROFESSIONALS**

The majority of the centers provided a vegetarian alternative at least once a week. However, the lack of confidence surrounding CACFP reimbursement for vegetarian meals highlights an important knowledge gap. In addition, many of the centers' menus were written by the owner or an operations team member suggesting an underutilization of the expertise nutrition professionals have to offer.

**KEYWORDS:** Childcare; Child Nutrition; Feeding Practices; Vegetarian

## INTRODUCTION

Although vegetarian nutrition is an eating pattern that has been observed throughout history, interest in plant-based eating and vegetarianism has increased in recent years (Leitzmann, 2014). Vegetarian menu items are a common offering at restaurants (Hua et al., 2021), and U.S. retail sales of plant-based meat substitutes have grown steadily over the last decade (Mintel, 2021). This increased interest in vegetarian meals can be attributed to a variety of motives including environmental and climate change concerns, animal wellbeing, health concerns, and sustainability issues (Leitzmann, 2014). While the prevalence of vegetarianism varies by country, estimates based on a 2020 Harris Poll survey suggest that approximately 6% of the U.S. adult population never consumes meat, fish, seafood or poultry and that half of the vegetarians, or 3% of the U.S. adult population, is also vegan (Stahler, 2020).

For 5% of the respondents in a recent survey of U.S. parents, vegetarian/vegan is a top priority when selecting a family meal (Mintel, 2020). Similarly, a survey of Italian families revealed that 4.7% followed a vegan or vegetarian weaning regimen (Baldassarre et al., 2020). While the exact number of vegetarian children is unknown, it is reasonable to suggest that many vegetarian parents raise their children following a vegetarian eating pattern (Baroni et al., 2019).

As interest in plant-based eating grows among parents and families, requests for meatless options will likely become increasingly common within child nutrition programs. Although research on the topic of vegetarian meal service within child nutrition programs is limited, middle school catering staff perceived vegan and vegetarianism to be factors influencing students' food choices at schools (Gilmour et al., 2021). Schools do offer meatless lunch entrées (Flores et al., 2019), and one vegetarian lunch option, the yogurt and cheese kit, proved to be the most well-liked lunch option served within one large urban school district (Hanson et al., 2020b). Recently, a childcare center in Seattle gained attention by announcing that it would no longer be serving meat, egg products, or dairy except for milk (Tomky, 2019). Currently, a number of multi-location childcare organizations offer vegetarian meal options.

Childcare centers play an important role in providing nourishment and cultivating healthful habits in young children. To assist childcare centers in fulfilling this responsibility, the Child and Adult Care Food Program (CACFP) provides reimbursement for eligible meals and snacks to help assure the provision of “nutritious foods that contribute to the wellness, healthy growth, and development of young children” (U.S. Department of Agriculture, (USDA) Food and Nutrition Service (FNS), 2017). Under current CACFP rules, childcare centers may serve meat alternates (e.g., cheese, beans, eggs, tofu, and soy products) in place of meat at lunch (USDA, FNS, 2021). Although a vegetarian eating pattern can be nutrient dense, vegetarian diets require thoughtful planning especially during childhood to assure adequate intakes of nutrients such as iron, zinc, and vitamin B-12 (Melina et al., 2016). The CACFP meal pattern requirements are detailed; however, the latitude afforded under the rules has the potential to result in nutrition imbalances (Hanson et al., 2020a). In addition, few states require childcare menus undergo a review by a nutrition professional (Benjamin et al., 2009).

Childcare nutrition practices appear to vary between urban and rural location (Dev et al., 2019). The rate of vegetarianism also appears to vary between urban and rural locations with a recent Harris Poll survey indicating 9% of urban adults practice vegetarianism while only 4% of rural adults do so (Stahler, 2020). Overall, limited research has examined vegetarianism within childcare foodservice operations; given the higher rate of vegetarianism in urban areas, the

logical next step is to explore this topic within urban centers. Hence, the purpose of this study was to explore vegetarian menu substitution practices occurring within urban Kansas CACFP-participating childcare centers and to describe roles of health and nutrition professionals involved in foodservice operations within these centers.

## **METHODS**

### **Design and Participants**

A directory of all childcare centers participating in CACFP was obtained from the Kansas Department of Education (KDE) public website (Kansas Department of Education, 2021). Only those centers located within an urban Kansas area and that also served lunch daily were invited to participate. From 1950 until the 2020 Census, the U.S. Census Bureau defined an urban area as an area with a population over 50,000 (U.S. Census Bureau, 2021). Based on this definition and the 2010 Census results (U.S. Census Bureau, 2012), eight urban areas were identified within Kansas. The eight urban areas with their number and proportion of total eligible childcare centers are as follows: Kansas City (25 facilities; 13.9%), Lawrence (19 facilities; 10.5%), Manhattan (9 facilities; 5%), Olathe (19 facilities; 10.5%), Overland Park (8 facilities; 4.4%), Shawnee (4 facilities; 2.2%), Topeka (30 facilities; 16.7%) and Wichita (66 facilities; 36.7%). In 2019, Kansas had 812 facilities participating in CACFP, 180 of which were located in an urban Kansas area and served lunch daily (Kansas Department of Education, 2021).

This study was approved by the Kansas University Committee on Research Involving Human Subjects prior to implementation. As an incentive to encourage participation, childcare centers were offered a Comark PDT300 food thermometer upon submission of their survey responses. In addition to gathering data regarding vegetarian menu substitution practices and the involvement of nutrition professionals, this survey included questions for the purpose of identifying childcare centers that were providing a vegetarian meal alternative and that were also willing to provide their centers' menus and food preparation details. The information related to the childcare centers that were willing to provide their menus has not been included in this report. Findings from the comparison of the nutrient content of those centers' standard and vegetarian meals have been reported elsewhere (Jindrich et al., 2021).

### **Data Collection**

A 33-item questionnaire was created and distributed through Qualtrics. An email message which included the survey link and a brief description of the study was sent to all eligible centers. The email message included a note about the survey incentive and directed the recipient to have the staff member most knowledgeable of their center's alternative meal needs and requests complete the survey. For the purposes of this study, "vegetarian" was defined as that of a lacto-ovo vegetarian dietary pattern. Prior to implementation, a pilot survey was distributed to six childcare professionals for feedback regarding the readability and ease of completion of the survey. Four provided feedback on the electronic version and two on the paper version. Based on the results of the pilot survey, the questionnaire was deemed ready for distribution.

Initial survey distribution took place on March 7, 2020, and ended March 26, 2020 due to a statewide stay home order issued by Kansas's Governor (Executive Order No. 20-16, 2020) and Kansas State University suspending all non-essential research activities. Ten responses were received during this initial distribution. As it became apparent that the COVID-19 pandemic was impacting childcare centers and the food supply chain, a series of COVID-19-related foodservice

questions were added to the survey prior to re-distribution on July 7, 2020. This revision was approved by the Committee on Research Involving Human Subjects prior to implementation. The findings related to the COVID-19-related foodservice questions have been reported elsewhere (Jindrich et al., 2021).

Facilities that did not respond to the re-distributed survey sent by email on July 7, 2020, received a second email two weeks later. The facilities that did not complete the online survey within four weeks of the initial email were contacted by phone, with a minimum of two attempts to reach each non-responding center. The majority of non-responding centers reported that the Qualtrics email was filtered out as spam. The facilities contacted by phone either requested a new email or located the original email; one facility requested the paper version be mailed. As survey responses were received through Qualtrics, they were reviewed, tallied, and responses needing clarification were identified. For example, when asked if vegetarian options were served for reasons other than medical, religious or parent/guardian preference, one center entered “food allergies” in an open-text box. The center was therefore called to clarify why the food allergy did not fit into the medical category. During the call, the director explained that the substitution was based on a parent’s request that their child have no beef due to the parent’s, rather than the child’s, allergy to beef. The single paper copy of the survey that was mailed per facility request was not returned to researchers. Data collection ended August 25, 2020. Reasonable attempts were made from August 25th to September 10th to contact childcare centers when survey responses needed clarification. Descriptive statistics were used to quantify responses.

## RESULTS AND DISCUSSION

Representatives from ( $N=85$ ) centers answered the survey, yielding a response rate of 54.8%. This response rate is higher than the response rates of 40% and 48% observed in earlier single-state surveys of childcare centers in North Carolina and Maryland respectively (Bandy et al. 2019; Bussell et al., 2018). All eight urban areas within Kansas were represented among the responses collected in the current study. The breakdown of responses per each urban area is as follows: Kansas City 9 (10.6%); Lawrence 8 (9.4%); Manhattan 6 (7.1%); Olathe 9 (10.6%); Overland Park 5 (5.9%); Shawnee 2 (2.4%); Topeka 18 (21.2%); Wichita 28 (32.9%). Not-for-profit childcare centers represented 68.2% ( $n=58$ ) of survey respondents, the remaining 31.8% ( $n=27$ ) were for-profit childcare centers. Surveys were most likely to be completed by center directors (71.8%,  $n=61$ ) versus center staff with other job titles.

The majority of responding centers prepared their meals on-site (76.5%,  $n=65$ ). For those that had meals prepared off-site ( $n=20$ ), the most frequent response was the use of a catering company ( $n=12$ ), followed by a school cafeteria ( $n=6$ ). Likewise, in a survey of Head Start programs in North Carolina, five of the twenty-four responding programs (20.8%) had their meals prepared away from the center and delivered (Bandy et al., 2019).

When asked how frequently a vegetarian alternative was offered in lieu of the standard meal, 32.9% ( $n=28$ ) answered “1-2 times/week”, 3.5% ( $n=3$ ) answered “three times/week”, 15.3% ( $n=13$ ) answered “four-five times/week”, and 41.2% ( $n=35$ ) indicated they “never provide a vegetarian alternative”. Multiple centers reported routinely serving a vegetarian meal as the main meal center wide. This practice occurred at varying frequencies, but most often weekly.

Respondents indicated that their centers provided (or would be willing to provide) vegetarian alternatives for medical reasons (95.3%;  $n=81$ ), for religious reasons (89.4%;  $n=76$ ), and per parent/guardian request (78.8%,  $n=67$ ). See Table 1.

**Table 1.** *Childcare Centers' Willingness to Accommodate Vegetarian Requests (N=85)*

Reason for requests	Center's willingness to accommodate							
	Currently providing accommodation		Would accommodate if asked		Would not accommodate if asked		No response	
	n	%	n	%	n	%	n	%
Medical	46	54.1	35	41.2	4	4.7	-	-
Religious	44	51.8	32	37.6	8	9.4	1	1.2
Parent/guardian request	40	47.1	27	31.8	15	17.6	3	3.5

When asked why the center was not providing a vegetarian alternative, respondents most commonly indicated that no such request had been made ( $n=34$ ). Additional reasons for not providing a vegetarian alternative included unable/unwilling to accommodate vegetarian alternative requests ( $n=3$ ); concern for added time and cost ( $n=2$ ); and currently discussing/considering ( $n=2$ ). Nearly one-half (47.1%,  $n=40$ ) of the centers reported that they allow families to bring food from home in lieu of center-provided meals.

One in four respondents (24.7%,  $n=21$ ) were unsure if vegetarian meals could qualify for CACFP reimbursement, whereas the majority of respondents (68.2%,  $n=58$ ) agreed that vegetarian meals can qualify for reimbursement, and six centers (7.1%) did not respond. When asked, "How confident are you that menu substitutions meet CACFP guidelines?" center responses were as follows: very certain 34.1% ( $n=29$ ), certain 22.4% ( $n=19$ ), neutral 8.2% ( $n=7$ ), uncertain 4.7% ( $n=4$ ), very uncertain 9.4% ( $n=8$ ), not applicable 10.6% ( $n=9$ ) and no response provided by 10.6% ( $n=9$ ). Although uncertainty regarding which foods could be reimbursed by CACFP was reported by only 5.9% of urban Nebraska childcare centers (Dev et al., 2019), our results suggest a larger knowledge gap with regard to reimbursement for vegetarian meals.

Over one-third (37.6 %,  $n=32$ ) of centers reported a credentialed health and/or nutrition expert being involved in their centers' menu process and/or food service operations. Twenty-seven (84.4%) of these centers listed a specific credential while five centers indicated they were uncertain of the credential. The most frequently cited credentials were: CACFP Child Nutrition Professional (CCNP), CACFP Management Professional (CMP), and School Nutrition Specialist (SNS) which accounted for ( $n=11$ ), ( $n=7$ ), and ( $n=5$ ) responses respectively. See Table 2.

**Table 2.** *Credentialed Health and/or Nutrition Expert Involved in Menu Process and/or Foodservice Operations (N=85)*

<b>Credential</b>	<b>n<sup>a</sup></b>	<b>%</b>
CACFP Child Nutrition Professional (CCNP)	11	12.9
Registered Dietitian/Nutritionist (RD, RDN)	8	9.4
CACFP Management Professional (CMP)	7	8.2
School Nutrition Specialist (SNS)	5	5.9
Other: RN, A.S. in Health/Community Health, CCNP in progress	3	3.5
Dietetic Technician Registered (DTR)	2	2.4
Certified Dietary Manager (CDM)	1	1.2
Unsure/unknown	5	5.9
None indicated	53	62.4

<sup>a</sup>Some respondents reported more than one credential.

When asked what tasks the credentialed health and/or nutrition experts were involved with, 31.8% ( $n=27$ ) of the centers indicated their experts “write or approve the menus, 20.0% ( $n=17$ ) indicated their experts “review food allergies and identify appropriate/acceptable alternatives”, and 16.5% ( $n=14$ ) indicated their experts “conduct kitchen inspections”. Twelve centers (14.1%) reported that the credentialed health and/or nutrition expert was involved in writing or approving recipes, as well as completing food orders. Only ten centers (11.8%) indicated that the expert was involved in preparation or service of food.

Seventy-six centers (89.4%) responded to the open-ended question, “What is the occupational title and/or credential of the individual who writes your center’s menus?” The responses were categorized into nine groups: CACFP coordinator, kitchen manager or food director, chef or cook, owner or operations team member, corporate, outside source, dietitian/nutritionist, combination of individuals, and unsure or unknown. Over one-third of the centers (36.5%,  $n=31$ ) reported that their menus were written by the owner or an operations team member. Only 5.9% of the centers ( $n=5$ ) reported that their menus were written by a dietitian/nutritionist. See Table 3.

**Table 3.** *Childcare Menu Writers’ Reported Job Title and Occupational Category (N=85)*

<b>Occupational Category</b>	<b>n</b>	<b>Reported Job Title</b>
Owner/operations team member	31	Owner; Director/owner; Director; Director w/ AA; Director w/ EDE degree; Executive director; Director/Asst. Director; Asst. Director; Director/Administrator/supervisor of all locations; Director, Asst. director or head teacher; Administrator, MS single parent dorm/child development manager: Program director; Program director assistant director; CACFP Approved director of center

Chef/cook	11	Cook; Head cook; Cafeteria cook; Cook overseen by program director; Chef; Chef with RD review and approval
Kitchen manager/food director	9	Kitchen manager; Kitchen supervisor; Food director; Nutrition services director; Director of meals & nutrition; Nutrition team
Outside Source	6	Harvesters; Olathe school district; Caterer; Nutrition services at school district; Unsure who outside source is
Registered Dietitian/Nutritionist	5	Dietitian; Registered dietitian; Nutritionist
CACFP Coordinator	4	CACFP certified; CACFP coordinator; CACFP manager
Corporate	4	Corporate; Corporate nutrition department
Combination	4	Executive Director and cook; Owner/Director/Kitchen cook; Director in partnership with school district or caterer; Caterer- Lunch, Director- snack and breakfast
Unsure/unknown	2	Unknown; Authorized representative with 40 years of experience preparing meal and writing menus
Unanswered	9	

The finding that within urban Kansas childcare centers owners and operators are most heavily involved with menu planning is consistent with what has been observed nationally (Chriqui et al., 2018) as well as in nearby states (Dev et al., 2019; Frampton et al., 2013). Few of the urban Kansas centers ( $n=5$ ) had menus written by dietitians/nutritionists, and this finding mirrors that of Chriqui et al. (2018) who observed that only 6.8% of CACFP facilities in their nationally representative survey ( $n=1341$ ) had menus prepared by a health and/or nutrition professional. Frampton et al. (2013) found that only 8.4% ( $n=7$ ) of Oklahoma childcare centers in their study relied on a registered dietitian/nutritionist for menu planning. Similar results were reported in a study of urban childcare centers in Nebraska ( $n=119$ ) where only 3.4% of the centers reported that a dietitian was responsible for menu planning while 61.4 % reported that either the owner, director, or site supervisor/manager was responsible for this task (Dev et al., 2019).

Like many states (Benjamin et al., 2009), Kansas does not require childcare menus undergo a review by a nutrition professional. With the prevalence of food allergies among children apparently increasing (Jackson, 2013), meal modifications are an important aspect of the child nutrition setting. Although, kids may eat healthier when at childcare than when at home (Robson



et al., 2015; Sisson et al., 2017), meal modification may increase the risk for nutrient imbalances. Meal modifications may occur for a variety of reasons and are not uncommon in child nutrition settings (Hanson et al., 2020c). Because their inclusion in menu planning can help improve diet quality and nutrient content, child nutrition professionals' involvement offers an opportunity to enhance child health and wellbeing.

## CONCLUSIONS AND APPLICATIONS

The results of this study provide an improved understanding of how vegetarianism and plant-based eating trends have impacted childcare foodservice operations. Although roughly four out of every ten centers indicated that they had not received a request for vegetarian alternatives, the majority of the centers provided a vegetarian alternative at least once a week. While the number of alternative meals served is unknown, it appears that the vegetarianism movement has reached the childcare setting. This observation is not surprising given the prevalence of vegetarianism in the adult population (Stahler, 2020) and the importance vegetarian meals have amongst a relatively small (Mintel, 2019) but likely passionate group of parents. Though parent/guardian request is the least likely reason to be accommodated, it is understandable that the majority of urban Kansas childcare centers are able or willing to accommodate vegetarian alternative meals.

Notably, among the responding centers, there was limited confidence surrounding CACFP and vegetarian meal alternatives. Results indicate that centers could benefit from additional support in meeting CACFP requirements. This assistance could include educational support such as in-person educational activities or virtual training. Support may also be provided in the form of meal planning guides and practical recipes which include suggestions for meeting the needs of children requiring or requesting meal modifications. Although resources to support centers are readily available through the USDA, the Institute of Child Nutrition, and state agencies, the ability to utilize these resources may be limited due to the competing demands and responsibilities (e.g., food production, sanitation, food safety, allergen management, and consumer satisfaction) of the childcare foodservice worker. Planning for and allocating dedicated time to the training of childcare foodservice workers may be necessary to increase confidence in meal planning.

With approximately one-half of responding centers indicating they allow families to bring in food from home in lieu of center provided meals, accommodating vegetarian families may increase the number of children receiving reimbursable meals. Potential concerns with centers allowing food to be brought from home include quality differences between foods brought from home and center-provided foods, an increased risk for foodborne illnesses, and allergen issues. Among school-aged children, the proportion of children who eat school lunch was found to be 10% lower among students following a vegetarian diet (Patelakis, 2019). Although this difference in school lunch participation rates was not statistically significant, it suggests that accommodating vegetarian requests may be worth exploring as a strategy to increase child nutrition program participation.

Utilizing a credentialed health and nutrition professional in menu planning may also bring increased participation and added value by improving menu quality, enhancing food safety practices, and increasing responsiveness to meal accommodations requests. The results from this study are consistent with those of previous studies which indicate few childcare centers utilize



registered dietitians/nutritionist. Given these findings, attentiveness to opportunities for shaping future childcare menus policies is needed.

The strengths and limitations of this study are important to note. A strength of the online survey was the high response rate and the representation from all eight of Kansas's urban areas. However, potential differences between urban and rural centers should be considered when interpreting the results. Although Frampton et al. (2013) did not find statistically significant differences between the nutrient content of the planned menus of urban and rural childcare centers, chi square analysis of the data reported by Dev et al. (2019) suggests urban and rural centers vary with regard to the proportion of centers that follow best practices as well as the proportion that experience barriers in serving healthier meals. Therefore, it should be noted that exclusion of childcare centers from the rural areas of Kansas in the current study resulted in a sample that was not representative of all centers across the state. Similarly, results may not be generalizable to areas outside of Kansas. Market research indicates that parents in the Western area of the United States place a higher value on vegan/vegetarian meals than parents in other parts of the country (Mintel, 2020). Lastly, differences in adherence to food-related best practices have been observed between CACFP participating and non-participating childcare centers (Bussell et al., 2018). Given these limitations, future research is needed to better understand vegetarian alternative requests and practices beyond urban Kansas CACFP centers.

With childcare centers being the primary site of care for the nearly 60% of U.S. children under age five who participate in weekly non-parental childcare, the meals served in these centers is of utmost importance (Cui & Natzke, 2021). Many of the childcare centers in this study regularly provided a vegetarian alternative, and market trends suggest that the demand for vegetarian meals is likely to increase. In addition to providing centers with support, research is needed to identify nutritional quality and food safety differences that might arise when vegetarian alternative lunches regularly replace standard childcare lunches. An in-depth evaluation of barriers to providing vegetarian alternatives in CACFP participating childcare centers would also be beneficial for developing more focused resources.

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