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Barriers to access to local produce in an early childhood setting in rural Appalachia

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Abstract

This case study examines young children's access to fresh local produce in childcare settings in rural Appalachia. In-depth, semi-structured interviews with childcare center directors participating in farm to early care and education programming were conducted in the spring of 2023. Centering the perspective of childcare directors, this research explores why farm to school programming is difficult to implement. It specifically addresses the barriers preventing early childcare centers from providing access to fresh and local produce to enrolled children. Eight primary obstacles to implementing farm to early care and education programming were identified: lack of staff; too wide a variety of tasks for directors; the "extra" work that fresh produce requires; lack of knowledge about how to grow food; lack of required kitchen equipment; need for additional funding; unclear or out-of-date regulations about food safety; and a lack of parental time. Limitations of the research include the specific geographic location of the study and the long-lasting implications of the COVID-19 pandemic. Recommendations drawn from this case study include improving communication between childcare centers and regulatory agencies; creative use of alternative gardening practices; participating in a regional food hub; and improved funding.

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Author Note

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local food, Appalachia, farm to early care, childcare centers, COVID-19, pandemic

Introduction

This case study provides insight into the barriers preventing young children who attend childcare centers from gaining access to fresh local produce. It centers the voices of early childcare providers as they struggle to accomplish the goal of improving access to fresh local fruits and vegetables for children in rural Appalachia. This case study demonstrates that childcare directors strive to provide fresh fruits and vegetables at their centers, but geographic, institutional, and financial obstacles hinder their attempts to do what they feel is best for the children under their care. The primary research question driving this project is: What do childcare directors believe are the barriers preventing young children in childcare centers from having access to locally sourced fruits and vegetables?

Following a literature review and discussion of the study site and the methodology, this case study identifies obstacles to participation in farm to early care programs, from interviews with childcare centers' directors. These state-supported programs connect local farms with childcare centers to encourage the development of community-based and equitable food systems. The study concludes with an examination of its limitations and recommendations for better implementation of existing programs.

Literature Review

A vast multidisciplinary literature establishes the seriousness of child food insecurity in the U.S. However, childhood food insecurity in Appalachia has been found to be three times the national average (Holben et al., 2004). One in six children in Appalachia is food insecure despite a steady national decline in food insecurity from 2010 to 2020 (Appalachian Regional Commission, 2023, p. 33). In the Appalachian counties of North Carolina, 14.2% of the population is food insecure (Appalachian Regional Commission, 2023, p. 109). Gundersen and Ziliak (2014) found that "county rates of child food insecurity are highest in the South and in rural parts of the country" (p. 3). They also explored childcare arrangements and their effects on childhood food insecurity, finding that "low-income preschoolers attending a child-care center had lower odds of both food insecurity in general and very low food security" (p. 7) and that children with other care arrangements, such as being looked after by a relative or unrelated adult, were far more likely to experience food insecurity. Based on these findings, this case study provides a needed and more nuanced examination of the issues childcare directors face as they attempt to address food insecurity.

The geography of the region is a contributing factor to food insecurity because physical distance creates transportation challenges that can influence participation in food banks and the development of gardens (Rodriguez & Maraj Grahame, 2016). Given the realities of transportation challenges in the Appalachian region, spaces where parents and young children are already present, such as early childcare centers, provide a critical source for influencing the nutritional health of the community. It is well established in the literature that children start forming food habits at a very young age, a process that childcare centers can facilitate considerably. Wardle et al. (2003) found that "parent-led, exposure-based intervention involving daily tasting of a vegetable can improve children's acceptance of vegetables" (p. 155). Issanchou (2017) explored various methods of habit formation in children under six and found that repeated and diverse exposure to vegetables supported interest in vegetable consumption. Masento et al. (2023) found that reading young children books about eating vegetables increased their acceptance of vegetables. Given the importance of introducing fruits and vegetables at a young age, it would seem that early childhood education centers would provide an excellent venue for introducing local healthy foods.

Although this case study centers the voices of childcare directors, it is not the first to identify barriers to providing local foods in institutional settings. Perline et al. (2015) discuss the obstacles that farmers and hospitals face when trying to incorporate local foods into hospital menus, many of which are similar to what this study identifies, including high turnover rates of staff and difficulties processing raw food products into meals. The

research thus far does not directly address farm to school or farm to early care programs. Research on programs that support bringing local produce into school settings is now fairly common. Research on programs that support bringing local produce into preschool settings is less common. This gap in the literature is partially addressed by Bloom et al. (2022), who analyzed local food procurement by childcare facilities that participated in the NC Farm to Early Care and Education program led by the Center for Environmental Farming Systems. CEFS is a partnership among North Carolina State University, North Carolina Agricultural and Technical State University, and the North Carolina Department of Agriculture and Consumer Services.[1] Conducted between 2016 and 2017, Bloom et al.'s study found that childcare centers purchased low volumes of local foods at the beginning of their participation in the program which made it difficult to establishing strong relationships with local food suppliers. Childcare directors used strategies such as picking up local food, and combining demand with other centers and families to create more successful programs. This study attempts to further their work by highlighting the experiences of early care directors as they attempt to participate in farm to early care and education programming.

Foundational research by Penchansky and Thomas (1981) on how to measure access to the medical system informs how access to food systems is now commonly defined. Access is broadly defined in terms of availability, accessibility, affordability, accommodation, and acceptability (Penchansky & Thomas, 1981). A systematic review by Caspi et al. (2012) found relatively few studies that measure affordability, accommodation, and acceptability, all of which are important components of farm to early care and education food programming. Rutz et al. (2018) examined farm to early care and education programming in urban North Carolina and found inherent tensions between a "socially embedded food system" that values children's health and early exposure to new foods and a "market-oriented world" (p. 35) that dominates the food system. Rutz et al. (2018) establish the broad context that this study builds upon. Despite the differences between the settings of Rutz et al. (2018) and this study, both find that childcare center directors are constrained by their available resources, thus simply not able to accomplish all they would like to do. for the children under their care.

The distinction between farm to school programming and farm to early care and education programming needs greater attention, as suggested by the work of Shedd and Kelly (2023) evaluating a pilot program for sourcing local foods for early care and education sites. They identify a growing need for literature that examines the nuanced differences between the two settings. This case study addresses this call by focusing on early childcare education in an Appalachian rural North Carolina county.

North Carolina and Farm to School

As a resurgence of interest in putting local foods in cafeterias began in the late 1990s, the North Carolina Department of Agriculture and Consumer Services founded the North Carolina Farm to School program in 1997 (North Carolina Farm to School, n.d.). It was designed to benefit public school children, providing them with a variety of fresh North Carolina–grown produce in their cafeterias and to expand markets for Carolinian farmers, packagers, and processors. The first crops included apples from western North Carolina and strawberries from eastern North Carolina (North Carolina Farm to School, n.d.). The program has continued to grow, with all public schools in recent years encouraged to participate (U.S. Department of Agriculture [USDA] Farm to School Census, 2019). However, these efforts to combat food insecurity are only available to public school children. As public schools enroll children starting around age five, children can go five years without school-based meal assistance.

In the early 1990s, the North Carolina Department of Agriculture and Consumer Services partnered with several state universities to create CEFS, which carries out research and education in sustainable agriculture and local food systems (CEFS, n.d.). Its NC Farm to Early Care and Edu-

[1] https://cefs.ncsu.edu/food-system-initiatives/nc-farm-to-early-care-and-education/

cation program focuses on introducing local produce "through meals and snacks, taste tests, lessons, farmer visits, cooking, growing food, and/or community and parent involvement" (NC State Extension, 2023, para. 1) in North Carolina early childcare centers. The program provides resources to participating farmers and childcare centers, including workshops to help answer questions and fill in knowledge gaps (CEFS, n.d.). This program has been used by the childcare centers at the study site.

Study Site and Methods

In the summer of 2022, the first author was an intern and participant-observer with CEFS in its NC Farm to Early Care and Education program in Wilkes County, NC. The Wilkes Community Partnership for Children worked in tandem with CEFS to provide more local produce options for Wilkes County families and early childcare centers. Wilkes County, the location of this case study, is on the slope of the Blue Ridge, between the Mountain and the Piedmont regions of the state. It is considered by the Appalachian Regional Commission to be a "transitional" county, ranking in the middle between most to least distressed (Appalachian Regional Commission, 2024). Median household income in Wilkesboro, the county seat, is approximately US$46,100 per year (U.S. Census Bureau, 2023). Wilkes County is home to many farming families and to a Tyson Foods plant that is one of the primary area employers. This is an important consideration with regard to the effect that the COVID-19 pandemic had on the community. During the pandemic, the Wilkesboro facility was forced to close temporarily, causing financial loss to poultry farmers and the plant workers (WBTV, 2020). Many of the children enrolled in the childcare centers included in this study were children of Tyson Foods workers and/or farmers.

In Wilkes County, five childcare centers participated in the 2022 NC Farm to Early Care and Education program. For this study, the first author approached the five center directors and was granted interviews with three. Relationships with these sources were developed over the summer of 2022 through the first author's CEFS participant-observation. Semi-structured interview questions focused on the following: (1) how the interview subjects found out about the food program; (2) how they implemented the program; and (3) how the interviewees felt about the programming. The first author conducted interviews following standard protocols (Besen-Cassino & Cassino, 2017).

After receiving IRB approval, each informant was interviewed over Zoom in March 2023; the interviews were audio and video recorded to ensure accuracy. Confidential and potentially sensitive information was removed; no one under 18 was interviewed. Every person interviewed gave consent to be interviewed and for their full names to be used. However, this case study uses anonymized names of the directors and childcare centers to ensure their privacy. The interviews lasted no longer than an hour. The interviews were transcribed by the software system Temi, and reviewed for accuracy by the first and second authors. NVivo software analyzed the transcripts. After identifying critical "stop words," key themes from the interviews were identified. The first author created a priori codes which were guided by the research questions and the relevant literature previously discussed. They then worked inductively to rearrange and sort codes to identify key themes. The first author coded for words such as "kitchen," "participation," and "support." The authors also coded the words used in specific interview questions, such as "expect" and "changes," allowing them identification of material significant to certain themes. The first author developed a codebook that identified: (1) interviewees' impressions of NC Farm to Early Care and Education programming, and (2) the barriers they faced implementing the programs. The first author ran a word frequency query and used the coding stripes function of the NVivo system to highlight significant themes based on the current literature; a word cloud was produced to illustrate the word frequency that emerged (Figure 1).

The word cloud highlights crucial themes with regard to the critical roles that staffing and a general lack of time to accomplish all of the tasks needed in providing support for NC Farm to Early Care and Education programming.

Figure 1. NVivo Word Frequency Cloud (2023)

Childcare Directors' Experiences with Farm to Early Care Programming

Support for Fresh Produce

The directors interviewed wanted to incorporate freshly grown produce, but this was easier for some than for others. For example, Childcare Center Number 1 (which has since closed due to a lack of staffing) was able to incorporate produce from its edible garden but still had to rely on grocery stores to create a full menu. The incorporation of garden-grown produce was highly variable. The former director explains that they support using fresh produce, but face significant challenges in having enough to use fresh produce consistently:

> We could only grow so much because of space and um, we did source a few local farmers and a few area farmers markets, those types of things. But a lot of what it was was just supply and demand. We were feeding 55 people every day and having that [food] just available to us on a consistent basis was really important. (Director A)

Director A went above and beyond in her efforts to provide locally grown food to the children she served. At the center, there were two fruit-producing trees that the children could harvest from. There were also strawberry plants, sunflowers, and squash dotting the playground. Not all directors had the garden space or kitchen facilities required to grow, prepare, and store fruits and vegetables. Some childcare centers do not have a kitchen on site, or if they do, the kitchen may not meet the requirements to prepare meals, such as a triple-basin sink or range hood.

At Childcare Center 2, the existing kitchen met the requirements to cook on site; however, because it is located in the basement of a multipurpose building, the center would need to install a costly ventilation system and other upgrades to meet building codes. Center 2 is able to have container gardens on their property, but an overall lack of green space means that expanding its gardening efforts would be difficult. Vertical gardening is a possible way to expand productive space, but for many childcare centers it is unreasonable as anything that could potentially fall on a child and cause harm is not allowed. Instead, it relies on Walmart and catering for the meals it serves.

Center 2 usually makes a bulk order from Walmart for pick-up each week. The director finds that Walmart supplies reliable, easy-to-prepare produce that she can use as snacks. Buying in bulk from the limited selection available from a local mobile market has proven difficult since on-site storage is limited. With what she buys, she is able to serve a two-food component snack in the mornings and afternoons. For lunch the center caters from a local restaurant, ensuring that the children have a "full hot lunch, you know, all five food components" (Director B). Making sure that the children she serves are well-nourished is important to her. Despite not being able to cook on the property, she made sure new and interesting food was served to the children. She describes how she does this:

> We do serve … cucumbers and we try some sweet peppers, things like that. But we do more things they're not used to as a taste test, just so we're making sure they actually do get some nutrients and they're not just throwing, you know, their food away. (Director B)

Some of the produce she includes in these taste tests comes from what is grown on site. They have very little green space, but they make use of that space through container gardening. Since Childcare Center 2 serves 40–45 children a day, some supplementary produce is needed that the director would hope to acquire at the local farmers market if she had enough time available in her workday. The efforts of this childcare director further demonstrate their staffs' understanding of the importance of, and their dedication to, providing access to fresh fruits and vegetables.

Some directors interviewed in this case study have chosen not to spend any time at the grocery store and instead opt for food procurement options that provide delivery. For example, Childcare Center 3 orders from Walmart and caterers (Director C). Childcare Center 3 also has a garden that it can use to provide snacks or tasting, but only when the produce is ripe and in-season. During the off-season, they have to rely entirely on what is available on store shelves. The director explained that she is waiting until later in the spring to continue gardening efforts.

The North Carolina Cooperative Extension and the Wilkes Community Partnership for Children have been instrumental in aiding local childcare centers. There are no national or state meal programs for children under four, unless they are enrolled in a limited number of Head Start programs. Both the Extension and the partnership are dedicated to strengthening their communities through programming like farm to early care and education. these agencies and contributing partners are creative and entrepreneurial in their food purchasing.

In Wilkes County, 476 children are enrolled in independent childcare centers; this number does not include religious or at-home care centers. If religious and home care centers are included, the number of children enrolled is 587. The three centers operating Head Start programs enroll 82 children who are eligible to apply for the National School Lunch and Breakfast program while the other children are not eligible (Division of Child Development and Early Education, 2023).

The former director of Childcare Center 1 stated that she was a strong advocate for NC Farm to Early Care and Education. If the doors had not closed due to staffing shortages, she would be continuing the center's participation, and she hopes to remain involved in some capacity to help ensure the program's future. For this type of programming to succeed, there have to be support networks within childcare centers among the directors and staff. Director B describes how she and her staff prepared for the NC Farm to Early Care and Education season:

> We've had a great experience, you know, being a part of this initiative. Um, and I feel like we would, you know, continue our journey in this. You know, I told our staff, even if we do a little bit along the way, you know, it's better than not doing anything or exposing these children, um, to anything more. So, we're gonna make a pact to do one [garden]. (Director B)

This statement demonstrates that despite the extra effort involved and the need for additional training (everyone involved had gaps in their knowledge), they received excellent support from North Carolina Cooperative Extension to help with this program. CEFS understands that participants start with varying levels of expertise, so it provides training throughout the program. Training occurred remotely on a weekly basis and involved topics ranging from starting a garden to properly storing produce, and included information on other organizations making strides toward a more equitable food system. The former director of Childcare Center 1 demonstrates her understanding of the literature on early childhood development and comments on the main motivation for childcare centers to involve themselves with the program:

> It's really important for children, not just their social emotional, but as well as their health and

> well-being. We know that working outside and having your hands in the dirt is very good for their social well-being, but it also starts a healthy dietary lifespan. So, children who are introduced and learn to grow their own foods, learn to take that time, have some input, will start out and maintain a better diet throughout their lives. So that was really important to me. (Director A)

She envisioned a future where her students, who ranged from infants to kindergarteners, were able to engage with and have an understanding of the food system. Across from the children's playground there grew sunflowers, strawberries, and cucumbers. Just over the fence, blocking the view of the parking lot, were two fruit trees for the children to pick from and enjoy. The director recalls:

> I wanted our students to have that, that possibility, that ability to eat strawberries warm right out of the garden, and to pick apples off the trees and tomatoes and make their own tomato sauce, make their own spaghetti sauce. Just those things that help them to see where their food comes from, that it doesn't just come from the store. And to have that input and to be able to start them on a, a track towards healthy eating. (Director A)

This is a long-term commitment. Peach trees take approximately three to four years before they begin to produce fruit. For three years, the children at Childcare Center 1 watched the peach tree grow in the small space between the parking lot and the center's gate, waiting for the tree to flower and fruit. When it came time to harvest, the children barely had to reach up to pick the fruit (Figure 2). Once they had enough peaches for themselves, they rinses them and had them for snacks. Children were allowed to save peaches to share with their families. The harvest experience reinforced the importance for the staff of NC Farm to Early Care and Education programming.

The childcare directors wanted to increase their students' exposure to farming and nutritious foods. When asked about her center's participation, Director C said:

> Just to get the children, 'cause some children, you know, don't know nothing about farming and knowing, you know, where this stuff comes from, eating healthy because it's cheaper to eat not healthy [food]. So it was just better so the kids could get a good look at what, how it happens, what goes on, all that.

It is likely that many of the children who attend these childcare centers do not have consistent exposure to fresh produce. Director B shared this concern when asked about their participation in the program:

> Well, just exposure for the children. Um, you know, a lot of them probably aren't gardening at home. Um, maybe not … served fresh fruit and vegetables. So, um, we wanna provide as much opportunity for those things to happen here while they're with us. Um, just, and just for better health, you know, for them we

Figure 2. Peach Picking at a Childcare Center

Photo by Erali Miller.

> wanted to improve what we were serving here as well.

The directors saw changes in their students as they became more familiar with gardening and trying a diverse range of seasonal fruits and vegetables; their interest in the natural world increased. Even with limited space, the children were able to experience small-scale cultivation such as container gardening (Figure 3). This gave the children the knowledge that growing even a small bit of their own food is worthwhile and possible. Discussing the observed shift in her students as a result of the program, one director said,

> We've seen more interest in the children, especially when they see something they plant, produce something. They're more interested, they're more engaged. Um, a lot of 'em will even try it, you know, if they were able to, after five years, our blueberry bushes finally produced last summer and that they were so excited. … [The blueberries are] by our sidewalk to the playground and every time they, you know, or every day they would observe the changes and they started green and we talked about waiting till they were blue. They'd get so excited to see that and pick it and we were able to serve it for snacks. (Director B)

The literature (e.g., Bloom et al., 2022) supports this observation, showing the many benefits of farm to school programs such as increasing children's willingness to try more fruits and vegetables. Farm to early care and education programming can also provide an introduction to sciences such as climatology and biology.

Despite the many benefits of this program and the demonstrated strong support from the childcare directors interviewed, farm to early care programming faces substantial barriers to its widespread implementation. This study identified eight significant barriers to implementation: lack of staffing; too wide a variety of responsibilities for directors; the "extra" work fresh produce involves; lack of knowledge; need for kitchen equipment; funding; regulations; and lack of parental time. These constraints are examined through the eyes of childcare directors, who play a critical role in implementing these programs and whose voices are often overlooked.

Barriers to Farm to Early Care and Education Programming

Childcare directors are responsible for the meals served at their centers; therefore, it is important to understand their lived experiences in order to reduce the barriers to providing local foods to children. The work these women do is worth noticing and their voices matter. Childcare management is a demanding career that requires a broad set of skills that include everything from policy development to budgeting, maintaining sanitation, and forging

Figure 3. Playground and Garden with Trellis to Incorporate Plants into the Small Spaces

Photo by Erali Miller.

strong community relationships (NC State University [NCSU], n.d.). The first part of this case study documented how childcare directors felt about NC Farm to Early Care and Education programming. The following section discusses the barriers that childcare directors face in implementing these initiatives.

While childcare directors have many responsibilities, most will not make more than US$50,000 per year. The number of jobs in this career track is also declining. In 2018 there were approximately 1,750 childcare director jobs in North Carolina. This number dropped in 2019 to 1,690, and to 1,540 in 2020 (NCSU, 2023). The number of childcare director jobs may be dropping, but the birth rate in North Carolina has stayed consistent throughout 2018–2020, with only a small decrease in 2020 (Division of Child Development and Early Education, 2023). The need for childcare directors has not changed; many independent childcare centers in the study site are operating at near maximum capacity (Division of Child Development and Early Education, 2023). The eight common concerns of directors that emerged in the interviews are discussed below.

Lack of Staff and Low Wages

As evident in the word cloud (Figure 1), staffing is always on the minds of childcare directors. The U.S. Bureau of Labor Statistics (2022) reported that in 2021 the median salary of preschool and childcare center directors was approximately US$47,310; low wages clearly contribute to the shortage of childcare providers. Director A had to close one of the few childcare centers located in the study site because of a lack of staff. With constant staffing problems, it is difficult to build and maintain consistent engagement in farm to early care programming.

Wide Variety of Responsibilities and Long Hours

There is much hidden work that childcare directors do every day, making the addition of an extra task such as procuring produce from local farmers extremely challenging. Their responsibilities are altered based on daily needs or activities, such as regulatory visits, teachers calling in sick, and a prospective family requesting a tour. A director described some of these scenarios in greater detail:

> So, the primary responsibilities of the day is working with parents, ensuring that every class, um, and parents and children are greeted and met each day. Before that, making sure that the teachers have what they need, that their classrooms are set up accordingly, the teachers are prepared, um, and then making sure that the center is running functionally. So, and within state guidelines, making sure we have our supplies that we need, that we're running according to policies and procedures set by the state, … making sure the staff has their training, um, making sure that the building is up to code and that we have all of our, um, basically our, i's dotted t's crossed. And then of course there's the business aspect of it as well, making sure that I take care of the financials, um, payroll, those types of things. (Director A)

Director C comments that the "day normally starts as early as 6:30 AM and ends as late as 5:30 PM." These responses just scratch the surface of what a childcare director manages daily, demonstrating their dedication and their wide range of expertise. Given everything that is required to run a daycare center, it is challenging for these women to add another responsibility, such as arranging fresh food delivery, to their schedules.

The Extra Work of Fresh Produce

The three directors interviewed had differing experiences with gardening and gathering fresh produce. One was doing much more than was required for her job. She researched farm-to-table options, picked up ingredients from various sources, and served as the main cook for the center. This center provided breakfast, lunch, and afternoon snacks, Monday through Friday. The director gardened with the children and used the produce in their meals. She described sourcing ingredients for the center primarily from local grocery stores, but that they "would backfill the menu with a lot of our stuff from our garden" (Director A).

It can be challenging to find reliable and affordable local produce; directors typically need

more than one farmer to supply their centers, as few farmers grow every crop that is used in a facility. Directors also have to establish pick-up times for supplies and bulk order purchasing. It can be difficult to find time for these tasks when one's schedule is already full.

Lack of Knowledge

Directors described their knowledge base in regard to NC Farm to Early Care and Education programming. One director grew up gardening and had space available at the center for garden projects. Another director had little gardening knowledge and had very little gardening space available, but she persevered:

> I don't feel like I have all the knowledge I need to, you know, do all the gardening and stuff like that. But, you know, through the trainings that … the Cooperative Extension office has been very helpful. So I feel like we maybe only made a few baby steps last season, but this year I feel like we're more prepared. (Director B)

When met with challenges, she utilized her existing resources, stayed motivated, and looked forward to future efforts. It is worth acknowledging that their participation is not obligatory: they put in the additional work because they feel it is a benefit to the children under their care.

Kitchen Equipment

Not all childcare centers have the kitchen equipment to prepare fresh foods. State regulations are fairly clear about what is required of a center in order to prepare meals. Centers must have "adequate" countertop space, refrigeration, and cooking equipment, and follow the sanitation handbook (Division of Child Development and Early Education, 2007). For example, a center must have a separate sink for handwashing and a commercial ventilation hood if meat is cooked on the stove. The directors understood the rules for operating their facilities well and stayed in compliance with the regulations. Lacking adequate kitchen facilities, however, prevents local produce from being used in meals throughout the day. Renovation costs can be prohibitive and sometimes renovations simply are not possible.

Only one director had a full and operating kitchen; two directors would have to go through expensive and complicated renovations to bring their kitchens up to code. As directors are acutely aware, even with an adequate kitchen, the actual preparation of meals is challenging, which could require additional staffing (Director B). Instead of installing and maintaining commercial kitchens, these directors provide easily prepared snacks such as carrot sticks or apple slices, but they all would like to do more.

Funding

The directors believe that providing local food on site is best for the children, but funding support is not readily available. Even when funding is found, as through the American Rescue Plan Act (2021), it can be difficult to prioritize spending on local food when staff are chronically undercompensated. It may make sense to use emergency funds to ensure that staff are better compensated so that centers stay open. Directors also found the funding application arduous, and extensive reports are due quarterly. Eventually, as funding ended, the centers had to decide how to phase out those extra revenues. This was a difficult task, especially after operating with a steady subsidy for over a year.

The Childcare Stabilization Grant was useful in keeping childcare centers open during the pandemic (Division of Child Development and Early Education, 2022). Its end made things difficult. A director discussed how cost is a major factor in how they currently source meals for the center:

> Right now, our caterer charges [US]$3.00 per child, per meal, or per lunch. So … we feel like we could, you know, offset that a little bit and prepare them here a little bit cheaper. But, you know, to provide those fresh fruits and vegetables each meal, we feel it could be more expensive. Um, so we're trying to weigh, we, we know that's what we wanna do and we know that's what's best for, you know, the children is just working through all those obstacles and logistics of funding and staffing. (Director B)

NC Farm to Early Care and Education programming can be expensive, and childcare directors are aware of these additional costs. It could be more advantageous for centers to purchase from local farms, but often childcare facilities are underfunded and it is simply not an option for them. This barrier may be the most difficult to overcome.

Regulations

Another ever-present hurdle, according to the directors, are regulations. North Carolina regulates the operation of childcare services. Covering fire safety, sanitation, and more, regulations keep children safe. However, becoming familiar with regulations can be onerous. As discussed above, childcare directors are stretched thin. Sometimes they are in the infant rooms giving a teacher a break, or they are giving a tour for an interested family, or they are in the kitchen preparing lunch. They rarely have time to thoroughly evaluate regulatory documents, especially when the documents can appear unintelligible (Director B).

Another director added that the regulatory agencies check in approximately every four months. It was clear that there are many standards to be upheld, and rightfully so. Although every center in this case study was up to code, much stress is associated with meeting these standards (Director A). Childcare directors are familiar with what they need to do to stay in compliance. However, if a new kitchen were built, it would require a close examination of the current regulatory documents. Adding a kitchen to a center is an enormous task. Regulatory barriers are necessary, but they can act as a barrier when they are not easily accessible or ambiguous.

Parental Involvement

Another hurdle faced by directors is inadequate parental involvement. Childcare providers hope that parents will participate in the projects or programs that their children are engaged with during the day, but there are many barriers to the participation of parents and guardians. Sometimes, for a number of reasons, parents do not continue their children's curriculum at home. Some simply cannot afford to integrate their children's curriculum, or they may lack the time or energy. Census data reveal that 22% of the population in Wilkes County lives in poverty, compared to 12.8% in North Carolina as a whole (U.S. Census Bureau, 2023). The purpose of the NC Farm to Early Care and Education program, in part, is to make food purchasing decisions easier and more affordable for families. As part of the CEFS program, in Wilkes County, parents can place an order to purchase a box of produce to pick up at the childcare center. Small boxes were US$10, medium-size boxes for US$15, and large boxes for US$20. These boxes of fresh produce were packed with produce from nearby farms with the help of a local nonprofit.

Once the boxes were packed, they were delivered to the childcare centers. At the end of the day, when parents and guardians came to get their children, they picked up their Fresh Box. The goal was to make these boxes relatively inexpensive so that more families would be able to incorporate farm-fresh produce in their meals. Throughout the summer, the boxes were promoted through posters hung in the centers and through a raffle. While childcare directors went into the project with high hopes, there was less parent participation than expected (Director C).

The children were still exposed to fresh produce and gardening at the center, but not many families ordered produce boxes. Only three of the five centers participating in the project had families place orders. Although disappointed, the directors recognize that parent participation can be hard to elicit. One director understood that successful participation would require a team effort; by reaching out to other childcare directors, she was able to build a network to better support the project, including doing a considerable amount of her own outreach and staff training (Director A).

This director is also an avid gardener and incorporated her experience into her childcare center. For many years, she involved the families that she served in gardening at the center. She spoke about her main motivation for joining the NC Farm to Early Care and Education program:

> So, I've been researching some farm-to-table options for the center before we ever opened because, um, home gardening is a big, it's a big

> thing for me, and I've taught that to my daughter and my stepchildren. So, it was really important to me to have this. Plus, it's very well known that children who grow their own foods tend to eat better, and they'll try more foods. So that was a big thing for me. So, um, I did do some research. I reached out to the state, reached out to the Agricultur[e] Department as well as the Partnership for Children, and found out that there was a program when we started looking at different food options that we could join and become a part of. We did those training classes and really got the staff involved as well as the parents involved in our farm-to-table program. (Director A)

Directors indicate that parent participation can be accomplished by consistent exposure to the programming over time; it can be difficult to gather participation over one season. Parent participation can make a big difference in the outcomes of farm to early care programming.

Limitations of This Case Study

This case study documents the views only of the childcare directors who agreed to be interviewed for this project. Its recommendations may not be generalizable to other settings. Several childcare directors in the same county declined requests for interviews; how their views would have impacted this case study is unknown. Also, this rural Appalachian case could be unique in that the directors all had overall positive experiences with NC Farm to Early Care and Education programming. Food insecurity in urban Appalachia is different than in rural areas as, for example, the price of food can vary greatly between rural and urban Appalachia (Miller et al., 2022). In addition, because of this case study's rural setting, gaining physical access to farm produce through food delivery networks was a consistent challenge. In an urban setting there could be better and more varied local food delivery options. However, little research has been done comparing urban and rural childcare centers in Appalachia. A third important limitation is that these interviews were conducted in March 2023 as the first waves of the COVID-19 pandemic were receding but COVID-19 relief funds were still available. As these funds have dried up, directors have had new challenges to face.

Recommendations

North Carolina Cooperative Extension has laid a strong foundation for providing local fruits and vegetables at childcare centers by offering training, partnership opportunities, and a vast wealth of knowledge (NC State Extension, 2023). However, regardless of setting, childcare centers operate on tight budgets, with limited space, and with strict restrictions on what they can do. These concluding remarks suggest ways to facilitate the work of directors as they struggle to provide local fresh produce to their students.

As demonstrated above, childcare directors need to make strategic purchasing decisions. Directors often depend on local grocery stores and Walmart delivery to provide meals at the lowest possible cost. The convenience of Walmart is important to consider when comparing it to farm to early care and education programs that require directors to be in contact with local farmers to source ingredients. In addition, farmers usually prefer to sell in bulk, which can be problematic for a center because produce has to be consumed relatively quickly. The method of retrieval is another difficulty; Walmart offers delivery, but not all farmers do. Sometimes staff have to drive to farms to pick up produce.

Food Hubs

One possible solution could be participation in a food hub. Currently, the option of buying directly from local farmers is more difficult than purchasing from large commercial growers. How can methods of local food procurement compete? For Wilkes County, an answer may exist in neighboring Watauga County through the High County Food Hub, which receives support from a wide variety of agencies including NC State Extension. With the goal of making purchasing local foods easier, the food hub has developed an online marketplace for direct farm sales.[2] It offer up to 3,000 products

[2] See https://www.ncfoodhubs.org/meet-the-nc-hubs/high-country-food-hub

from more than 90 local businesses and farms. Orders are placed online; the organization collects and dispenses orders once a week at five different pick-up locations. Although its inventory is not comprehensive, nor does it deliver, many foods that a center needs could be ordered from its website and delivered to a reasonably convenient pick-up site.

It may not be possible to cook all meals on-site, but those centers without access to a commercial kitchen could still source their snack items through the food hub. Centers do not have to have access to a refrigerator to serve certain fruits and vegetables. Tomatoes, apples, and peaches can all be stored at room temperature prior to serving. For those centers with commercial kitchens, it could revolutionize the meals they serve.

Alternative Gardening

An additional challenge childcare directors face implementing NC Farm to Early Care and Education programming is lack of gardening space. A center's topography can limit production of fruits and vegetables, as the playground may be sloped, shady, or small. However, some directors had creative solutions to their space problem. Gates can be carefully used as trestles, and plants can live on either side of the fence. One director chose to repurpose old purses, some donated and others bought from a resale store. They were hung along the playground fence and filled with soil and sowing seeds. The children watched the purses fill with herbs and flowers. She explained that as the purses are made of fabric, they drain well, serving as hanging pots. This was but one inexpensive and ingenious solution to limited space.

Increased Communication with Regulatory Bodies

Childcare directors need better understanding of regulatory agencies. Government documents should be current and formatted for legibility (some documents appear to be poorly scanned copies). Ease of access is also important, and; while there is a rule book for compliance and someone to assist in making sure that the rules are met, consultations should also be available for childcare centers wishing to expand their kitchens. The North Carolina Department of Health and Human Services could make appointments available for childcare directors interested in making changes. Local regulatory agencies should also follow suit. There needs to be a clear and open dialogue between regulatory bodies and those they oversee. This dialogue could prevent centers from falling short of code compliance due to changes made without all the necessary information. Make the information easily available would provide centers with an idea of where to start instead of doing the research themselves. By offering consultation meetings for centers looking to make modifications, the improvement of childcare facilities would become far more streamlined and less time-consuming.

Additional Funding

The end of COVID-19 stabilization grants have caused disruptions for many childcare providers. The state could assist in funding for centers looking to expand or upgrade. For many centers, having an operating kitchen feels like an unattainable dream as the costs are so high. If the state assisted in offsetting the costs to renovate centers, it could have remarkable benefits for the centers and for local residents.

With these suggestions, this case study amplifies the voices of childcare directors who balance heavy loads while striving to provide the best possible foods to the young children in their charge. These women providing childcare in Appalachia deserve to have their voices heard and to receive better support from state and national agencies.

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