OBESITY PREVENTION

in Rural Early Care and Education Settings Compendium

NOVEMBER 2021

HRSA
Health Resources & Services Administration

DEPARTMENT OF HEALTH & HUMAN SERVICES · USA

The publication was produced for the U.S. Department of Health and Human Services, Health Resources and Services Administration, Maternal and Child Health Bureau (MCHB) under contract number HHSH250201800003C.

This publication lists non-federal resources in order to provide additional information to consumers. The views and content in these resources have not been formally approved by the U.S. Department of Health and Human Services (HHS) or the Health Resources and Services Administration (HRSA). Listing these resources is not an endorsement by HHS or HRSA.

U.S. Department of Health and Human Services, Health Resources and Services Administration, Maternal and Child Health Bureau, Obesity Prevention in Early Care and Education Settings Compendium. Rockville, Maryland: U.S. Department of Health and Human Services, 2021.

This communication was printed, published, or produced and disseminated at U.S. taxpayer expense.

Photo credit: iStock.com/bernardbodo

TABLE OF CONTENTS

Introduction 2
- Target Audience and Recommended Use for the Compendium 4
- Compendium Highlights 5
- Compendium Information Sources 6
- Promising Practices and Programs 6

Implementation Considerations 12
- Building on Rural Assets 12
  - Agricultural Familiarity 13
  - Awareness and Creative Use of Local Resources 13
  - Civic and Social Engagement 14
  - Community Cohesion 14
  - Early Care and Education Centers as Community Centers 15
  - Interest in Professional Development 15
- Addressing Common Barriers & Challenges 16
  - Behavior Norms 17
  - Distrust of Outside Agencies 19
  - Landscape and Built Environment 20
  - Isolation 24
  - Menu Control 25
  - Other Potential Challenges 26

Sustainability 28
- Engaging with Partners 28
- Funding Resources 30
- Spotlight on Technical Assistance (TA) 31
  - The Importance of TA 31
  - Initiation of TA 32
  - Methods and Modes of TA 34

Case Studies 38
North Dakota 38
Arkansas 40
North Carolina 42
Alaska 44
Ohio 46
Iowa 48
Iowa 50

Case Studies Lessons Learned 52

Appendices 57
Appendix I: Obesity Prevention in Rural ECE Settings – Subject Matter Expert Organizations 57
Appendix II: Obesity Prevention in Rural ECE Settings - Rural Child Care Providers 58
Appendix III: Obesity Prevention in Rural ECE Settings – Community of Practice Organizations 60
Appendix IV: Obesity Prevention in Rural ECE Settings - 2018 Environmental Scan 61
Appendix V: Obesity Prevention in Rural ECE Settings - Additional Recommended Resources 71
Appendix VI: References 72

LIST OF TABLES AND FIGURES

Table 1
2017-18 National Health and Nutrition Examination Survey (NHANES)
Obesity Prevalence Estimates Among U.S. Population Ages 2 to 19 Years 2

Table 2
Compendium Evidence Categories and Definitions 6

Table 3
Examples of Interventions, Programs, and Implementation Strategies
Related to Obesity Prevention for Children Ages 2 to 5 in Rural Early Care
and Education Settings 7

Table 4
Technical Assistance Methods and the Optimal Delivery Setting for the Method 34

ACRONYMS

Body Mass Index
BMI 3

Centers for Disease Control and Prevention
CDC 2

Child and Adult Care Food Program
CACFP 7

Child Care and Development Block Grant
CCDBG 30

Child Care Aware
CCA 38

Child Care Resource and Referral
CCR&R 28

Child Health Initiative for Lifelong Eating (CHILE)
CHILE 7

Choose Healthy Options Often Start Young
CHOOSY 9

Coordinated Approach to Child Health Early Childhood
CATCH EC 7

Department of Health and Human Services
HHS ii

Early Care and Education
ECE 2

Family Child Care
FCC 3

Health Resources and Services Administration
HRSA ii

Healthy Eating and/or Active Living
HEAL 65

High Obesity Program
HOP 65

I Am Moving, I Am Learning
IMIL 8

Longitudinal Eating and Physical Activity
LEAP 8

Maternal and Child Health
MCH 2

Maternal and Child Health Bureau
MCHB ii

Missouri Move Smart Child Care
MOve 9

National Health and Nutrition Examination Survey
NHANES 2

Northeast Iowa Food & Fitness Initiative
FFI 19

Ohio Healthy Programs
OHP 8

Online Nutrition and Physical Activity Self-Assessment for Child Care
GO NAPSACC 7

Pre-kindergarten
pre-k 3

Quality Rating Improvement System
QRIS 31

Rural Health Information Hub
RHIhub 12

Shape North Carolina
Shape NC 8

Special Supplemental Nutrition Program for Women, Infants, and Children
WIC 28

Sports Play Active Recreation for Kids
SPARK 8

Subject Matter Expert
SME 2

Supplemental Nutrition Assistance Program Education
SNAP-Ed 6

Technical Assistance
TA 2

United States
U.S. ii

United States Department of Agriculture
USDA 2

INTRODUCTION

Photo credit: iStock.com/Rawpixel

INTRODUCTION

In response to gaps related to childhood obesity prevention in early care and education (ECE) settings in rural areas, the Health Resources and Services Administration (HRSA) created a Community of Practice, which met from September 2018 to June 2019, to facilitate and strengthen opportunities for rural ECE providers to improve nutrition knowledge and environments in ECE settings. This Community of Practice, along with subject matter experts (SME) who contributed technical assistance (TA), included HRSA's Federal Office of Rural Health Policy, current and previous HRSA grantees, including Maternal and Child Health (MCH) Nutrition Training Program grantees and Pediatric Obesity Mini Collaborative Improvement and Innovation Network participants, as well as federal partners, including the Centers for Disease Control and Prevention (CDC) and the United States Department of Agriculture (USDA). Each of these key partners brought unique knowledge and contributions to the Community of Practice with the goals of sharing best practices and implementation strategies, disseminating knowledge, and applying principles of collective learning, specifically focused on childhood obesity prevention in ECE settings in rural areas. The result is this compendium of recommendations and implementation strategies targeting stakeholders who work with rural ECE providers to support the prevention of childhood obesity for improved MCH outcomes across the life course. The information included in this compendium is current as of fall 2019."

Childhood obesity is one of the most serious public health challenges of the 21st century. According to the 2017-18 National Health and Nutrition Examination Survey (NHANES), over 16.1% of U.S. children ages 2-19 are overweight and 19.3% have obesity.[1] The prevalence of obesity has more than tripled between 1970 and 2018.[1–3] The data in the table below show the highest childhood obesity rates ever reported in the U.S., based on data from the most recent national estimates.[1]

Table 1: 2017-18 National Health and Nutrition Examination Survey (NHANES) Obesity Prevalence Estimates Among U.S. Population Ages 2 to 19 Years

AGE GROUP	PERCENT OF AGE GROUP WITH OBESITY*
12–19 years	21.2%
6–11 years	20.3%
2–5 years	13.4%

**Data source: 2017-18 NHANES.[1]*

Obesity prevalence varies depending on where children live as indicated by their zip codes.[4–6] The risk of obesity among children 2-19 years living in rural areas is 26% higher than for children of the same age living in larger metropolitan areas.[4] The incidence of severe obesity prevalence

almost doubles (9.4% versus 5.1%) among children in non-urban areas when compared to children in urban areas.[7] The impact of higher obesity rates in rural areas can be magnified by a lack of quality health services, poorer socioeconomic conditions, and increased food insecurity.[8]

Children with obesity or excess weight are five times more likely to have adult obesity compared to children without excess weight. This association is also true for chronic diseases associated with adult obesity, so that a high childhood body mass index (BMI) is associated with adult hypertension, coronary heart disease, type 2 diabetes, fatty liver disease, and certain cancers.[9] Adult obesity is associated with higher rates of mortality and morbidity compared to adults who have a healthy weight.[10] Childhood overweight and obesity, as well as the related chronic diseases, are largely preventable. Investing in early care and education childhood obesity prevention initiatives and programs has the potential to effectively address this public health challenge.

Encouragingly, evidence shows that early overweight and obesity prevention efforts, when a child is younger than five years, are effective and lasting.[11–13] Early interventions for young children establish enduring healthy habits that lead to improved, long-term health with reduced medical costs.[12,14,15] Early intervention may be effective because children's preferences for food and physical activity levels are influenced heavily by food and physical activity exposures early in life.[16,17] Teaching and establishing healthy habits early in life is critical since children in the U.S., rural and urban, are gaining weight at younger ages than ever before and carrying the extra weight into adulthood.[18] Delayed action regarding obesity prevention can lead to devastating burdens of disease and rising health costs. This is critically important in rural communities where obesity risk and economic strains are high, and primary care and health resources can be scarce.[8]

ECE settings provide timely and convenient opportunities to teach and model healthy lifestyle behaviors to young children and their families. In this compendium, "ECE settings" include child care centers, family child care (FCC), pre-kindergarten (pre-k) classrooms, and Early Head Start and Head Start programs. Among urban and rural children, 60% receive care outside the home[19] for most of their waking hours during the work week[20]; it is estimated that two-thirds of these children's meals and physical activity occur in an ECE setting.[21] ECE providers have a unique opportunity to incorporate healthy eating and physical activity into children's daily lives, as well as educate families about the benefits of healthy eating and physical activity.

Compendium Terminology

States and agencies have different terminology for child care settings. For the purposes of this compendium, "ECE settings" will be used as a broad term describing any type of educational or care program that primarily serves infants and young children until they enter kindergarten. The term "FCC" will be used as a specific ECE category where an educational or care program is home-based.

FCC providers are an important component of child care in rural locations. Nationally, 27% of children receive care from FCC providers.[22] Among some rural states (Montana, Oregon, Iowa, North Dakota, and Kansas), 45% or more of children receive care in an FCC.[22] Studies indicate that physical activity, screen use, and menus could be improved in rural FCCs,[23,24] making the child care setting an important venue to spearhead obesity prevention. Much of the obesity research in child care has focused on center-based facilities, with emerging research on Family Child Care Homes (FCCHs and researchers emphasize that FCC providers are often interested in and responsive to training and TA.[25] Given the vital role of FCC providers in rural areas and their active engagement in interventions, FCC providers, along with providers from other types of ECE settings, have significant opportunities for lasting impacts on rural children.

Target Audience and Recommended Use for the Compendium

The *Obesity Prevention in Rural ECE Settings Compendium* provides information on how to address obesity prevention in rural ECE settings. For the purposes of the compendium, "rural" is defined according to HRSA's Federal Office of Rural Health Policy, which ascribes any area outside of metropolitan counties as rural. Metropolitan counties are those counties that include cities or towns with populations of 50,000 or more.[26] The compendium was developed for a diverse audience of individuals and organizations that directly or indirectly support ECE providers located in rural areas. This includes people and organizations, including state and federal agencies, that train, fund, regulate, provide TA to, develop materials for, or assist ECE providers.

The compendium provides background information on early childhood overweight and obesity, promising practices and programs used in rural areas across the U.S., implementation considerations for new or existing programs, ideas for sustainability, and case studies describing how interventions can be adapted to a variety of settings.

Photo credit: iStock.com/Rawpixel

The compendium can be used to:

- Engage a national, state, or regional advisory group
- Formulate strategic plans for rural ECE settings
- Communicate with potential funders
- Help initiate an intervention
- Strengthen existing programs and policies

Compendium Highlights

In this compendium, you will find:

23
recommended interventions, programs, and implementation strategies for obesity prevention in rural settings
PAGES 7-10

7
case studies demonstrating the process and benefits of diverse interventions in rural ECE settings
PAGES 38-51

Descriptions of rural community assets with
7
vignettes from rural ECE providers capitalizing on each asset
PAGES 12-15

5
common challenges for ECE providers in rural communities with
48
suggestions for overcoming challenges
PAGES 16-26

Content based on input from
37
rural ECE providers and SMEs
PAGES 57-62

1
tip sheet on helping rural ECE settings create an environment with healthy foods and physical activity
PAGES 52-55

Photo credit: iStock.com/Rawpixel

Compendium Information Sources

This compendium is a composite of information from published research, SMEs (Appendix I), rural child care providers (Appendix II), a 21-member Community of Practice (Appendix III), and a 2018 environmental scan of obesity prevention in rural ECE settings (Appendix IV). The literature review herein includes PubMed indexed research published between 2008-2018 related to childhood obesity prevention interventions in rural ECE settings. SMEs including national experts, state agency affiliated public health or education professionals, and trainers that deliver professional development to ECE providers, provided feedback regarding aspects of their work, community settings, and obesity prevention efforts (Appendix I). To synthesize information and develop a valuable compendium, a Community of Practice was established with diverse rural and early childhood expertise. The Community of Practice held monthly work sessions over eight months. Each work session was dedicated to a compendium-related webinar, discussion about content, or material review. The goal of the Community of Practice was to develop a compendium with comprehensive and practical information on implementing obesity prevention programs in rural ECE settings for those working with rural providers.

Promising Practices and Programs

Examples of interventions, programs, and implementation strategies specific to rural ECE settings are listed in Table 3 and are categorized as "evidence-based," "effective," "promising," or "emerging" based on the source of their evidence. These examples reflect recommendations by the Community of Practice and subject matter experts (SME). Definitions for each category of evidence are based on the publication by Brownson, et al, in 2009[27] and described in Table 2.

Table 2: Compendium Evidence Categories and Definitions

EVIDENCE CATEGORY	EVIDENCE SOURCE
Evidence-Based	Review study in a peer-reviewed publication and peer-reviewed research set in rural ECE settings with positive results.
Effective	Peer-reviewed research with positive results.
Promising	Published white papers, conference abstracts, and/or evaluation reports with positive results.
Emerging	Pilot studies or recommended by a SME and/or ECE provider.

Also noted in Table 3 is whether the recommended intervention is included in the USDA's Supplemental Nutrition Assistance Program Education (SNAP-Ed) toolkit. The SNAP-Ed toolkit indexes obesity interventions that can potentially help low-income households make healthy choices on a limited budget.[28] The SNAP-Ed toolkit also provides an evaluation framework by

which to assess individual interventions listed. The SNAP-Ed toolkit is an excellent resource and is regularly updated. Interventions listed below (Table 3) indicating SNAP-Ed inclusion were indexed in the SNAP-Ed toolkit before September 2019.

Many of the examples in Table 3 are free and widely available online. Some may have costs associated with aspects of their program; more information can be found in the links provided.

Table 3: Examples of Interventions, Programs, and Implementation Strategies Related to Obesity Prevention for Children Ages 2 to 5 in Rural Early Care and Education Settings (as of November 2019)

	DESCRIPTION	EVIDENCE LEVEL	NOTES ON EVIDENCE
Child and Adult Care Food Program (CACFP)	CACFP is a federal program that reimburses for nutritious meals and snacks to eligible children and adults who are enrolled for care at participating ECE centers, FCCs, and adult day care centers. CACFP is supported by USDA's Food and Nutrition Service.	Evidence-based	Review articles, peer-reviewed research including rural-based studies, and recommended by experts and providers
Online Nutrition and Physical Activity Self-Assessment for Child Care (GO NAPSACC)	GO NAPSACC helps ECE providers assess, plan, and make healthy changes. It has online tools for those providing TA to providers, including progress and success tracking tools. GO NAPSACC is supported by the Center for Health Promotion and Disease Prevention, University of North Carolina.	Evidence-based	Review articles, peer-reviewed research including rural-based studies, recommended by experts and providers, and inclusion in the SNAP-Ed toolkit
Arizona Empower Program	Arizona Empower offers curriculum, policies, and standards that support healthy growth in children. Participating ECE settings pledge to adopt 10 standards that encourage healthy eating, active play, and other healthy habits. Empower is supported by the Arizona Department of Health Services.	Effective	Peer-reviewed research including rural-based studies, and inclusion in the SNAP-Ed toolkit
Child Health Initiative for Lifelong Eating (CHILE)	CHILE is a Head Start* healthy eating, physical activity, and screen use curriculum. CHILE includes parent engagement, grocery store tours, provider training, and food service resources. CHILE is supported by University of New Mexico Prevention Research Center.	Effective	Peer-reviewed research including rural- and indigenous community-based studies
Color Me Healthy	Color Me Healthy provides interactive physical activity and healthy eating lessons for preschoolers. The lessons stimulate the senses with color, music, and exploration. Color Me Healthy is supported by the North Carolina Extension and Division of Public Health.	Effective	Peer-reviewed research and inclusion in the SNAP-Ed Toolkit
Coordinated Approach to Child Health Early Childhood (CATCH EC)	CATCH EC offers curriculum and materials to incorporate physical activity, gardening, and nutrition into a pre-k setting. CATCH EC was developed by the University of Texas School of Public Health and continues to be supported by the CATCH Global Foundation.	Effective	Peer-reviewed research and inclusion in the SNAP-Ed Toolkit

	DESCRIPTION	EVIDENCE LEVEL	NOTES ON EVIDENCE
Family Style Dining Guide	Family Style Dining Guide helps ECE providers implement Family Style Dining. The guide provides tools, instructions, and assessments. The guide was produced by Nemours Children's Health System and the Ohio Child Care Resource and Referral Agency.	Effective	Peer-reviewed research
Farm to ECE	Farm to ECE typically includes edible gardens inside or outside of an ECE setting, nutrition and agriculture information in the curriculum, and serving local food. Curricula and resources are available at the National Farm to School Network link provided.	Effective	Peer-reviewed research and inclusion in the SNAP-Ed Toolkit
Food Friends ®, Longitudinal Eating and Physical Activity (LEAP)	Food Friends®, piloted in the LEAP study, is a 12-week curriculum with a blend of educational and marketing strategies aimed at increasing children's willingness to try new foods to establish a healthful diet. This program was supported by Colorado State University.	Effective	Peer-reviewed research including rural-based studies
I Am Moving, I Am Learning (IMIL)	IMIL seeks to integrate more daily physical activity, improve the quality of movement activities, and promote healthy food choices in Head Start settings. IMIL was started by Region III, Administration for Children and Families and is supported by the Office of Head Start.	Effective	Peer-reviewed research
Natural Learning Initiative	Natural Learning Initiative offers design assistance, professional development, and resources to improve children's use, activity, and experience of the natural environment at the ECE setting. Natural Learning Initiative is supported by the College of Design, North Carolina State University.	Effective	Peer-reviewed research
Sports Play Active Recreation for Kids (SPARK)	SPARK is a pre-k curriculum and training program for fine/gross motor and school-readiness skills. SPARK is supported by a partnership between San Diego State University and Gopher Sport.	Effective	Peer-reviewed research including rural-based studies, and inclusion in the SNAP-Ed toolkit
Better Kid Care	Better Kid Care provides over 200 online evidence-informed professional development trainings for ECE providers to improve the quality of their care and practices. Better Kid Care is supported by a partnership between Penn State Cooperative Extension and the Pennsylvania Office of Child Development and Early Learning.	Promising	Expert recommended and published conference documents
Ohio Healthy Programs (OHP)	OHP is a designation and training program. Ohio's ECE settings earn designation by attending OHP trainings and implementing healthy policies, system, and environment changes. OHP is supported by Columbus Public Health, Ohio Child Care and Resource Referral Agency, and the Ohio Department of Health.	Promising	Expert and provider recommended, and published conference and evaluation documents
Shape North Carolina (Shape NC): Healthy Starts for Young Children	Shape NC helps ECE settings develop policies, systems, and practices that encourage health. It combines Be Active Kids®, Natural Learning Initiative, and GO NAPSACC to promote nutrition and active play. SHAPE NC is supported by the Blue Cross and Blue Shield of North Carolina Foundation; North Carolina Partnership for Children, Inc.; and Corporation for Community and National Service.	Promising	Expert and provider recommended, and published conference and evaluation documents

	DESCRIPTION	EVIDENCE LEVEL	NOTES ON EVIDENCE
Active Early and Healthy Bites: Wisconsin Physical Activity & Nutrition Resource Guides	Active Early and Healthy Bites are guides that support a healthier child care environment with guides, policy examples, video explanations, and slides. They are available online for Wisconsin ECE providers. Active Early and Healthy Bites are supported by a partnership between Wisconsin's Departments of Health Services, Children and Families, and Public Instruction.	Emerging	Expert recommended
Choose Healthy Options Often Start Young (CHOOSY)	CHOOSY uses music and lyrics to promote physical activity, healthy nutrition, and oral health. CHOOSY is produced by Choosy Kids, LLC.	Emerging	Expert and provider recommended with published pilot plan
Early Sprouts	Early Sprouts is a 24-week nutrition curriculum encouraging children to eat more vegetables by growing, harvesting, and preparing them. Several modules are online. Early Sprouts is supported by a partnership between Keene State College's Health Science and Early Childhood Education Departments.	Emerging	Expert recommended
It's Not About the Broccoli	*It's Not About the Broccoli* is a book on how to encourage children to adopt a healthy diet using 3 important habits -proportion, variety, and moderation. It's Not About the Broccoli was written by Dr. Dina Rose.	Emerging	Expert and provider recommended
Missouri Move (MOve) Smart Child Care	MOve Smart provides physical activity standards for all ECE settings, and helps providers evaluate ECE settings. MOve Smart is supported by the Missouri Department of Health and Senior Services.	Emerging	Expert recommended
Rainbow In My Tummy	*Rainbow In My Tummy* is a book with CACFP-compliant menus that have a wide variety of nutritious foods. It has information for children and families on healthy eating using food color as a tool. Rainbow In My Tummy is supported by the Verner Center for Early Learning.	Emerging	Provider recommended.
Square Foot Gardening	*Square Foot Gardening,* a book and training, promotes a gardening approach that optimizes available space. It can help ECE settings with limited space grow their own food. The book was written by Mel Bartholomew and the trainings are supported by the Square Foot Gardening Foundation.	Emerging	Provider recommended
Grow It, Try It, Like It	Grow It, Try It, Like It encourages young children to try new fruits and vegetables by engaging them in garden-themed activities. Grow It, Try It, Like It is developed by USDA's Team Nutrition.	Emerging	Expert and provider recommended

**For more Head Start nutrition resources, visit the Head Start Early Learning & Knowledge Center Nutrition page.*

In addition to recommending specific programs, interventions, and strategies; most SMEs and providers stressed that those available online with ongoing TA opportunities achieve the greatest success. More details about effective TA in rural settings can be found in the "Spotlight on TA" section. SMEs also recognized the importance of interventions that address health and wellness beyond the content of ECE menus and daily schedules, including within ECE curricula, policies, and physical environments.

Most interventions were recommended at least once. However, seven interventions stood out because these interventions were referenced by multiple SMEs and/or providers, as well as in the literature.

Interventions Referenced by Multiple Sources:

- CACFP
- Family Style Dining Guide
- Farm to ECE initiatives
- GO NAPSACC
- Natural Learning Initiative
- Peer-to-Peer Learning Groups
- Grow It, Try It, Like It

CACFP was recommended by multiple SMEs, providers, and published papers as an evidence-based practice available to eligible ECE settings. CACFP eligibility is assessed by specific state agencies and based on a number of factors related to the family incomes of the children cared for in the ECE setting. CACFP has menu requirements for reimbursement, educational materials, cookbooks, and other valuable online resources that support healthy changes in ECE settings. CACFP trainings provided by sponsor and state agencies can serve as an introduction to the importance and means of improving young children's health and wellness.

As previously described, the 2018 environmental scan included a literature search evaluating obesity interventions in rural ECE settings. The literature search ultimately yielded a narrow field of six studies, which documented positive associations between interventions and improved health habits in rural ECE settings, such as increased fruit and vegetable intake or physical activity levels among children. There is a paucity of research on obesity prevention strategies in rural ECE settings. While the lack of research limits the capacity to evaluate interventions and their effectiveness in rural ECE settings, ***it also presents an opportunity for researchers to pilot studies in rural locations and address this gap in the literature.***

Research to Watch For:

HRSA's Federal Office of Rural Health Policy is currently conducting research to better address childhood obesity in rural settings. This research will provide rural specific baseline data and increase the information available on rural childhood obesity.

The Federal Office of Rural Health Policy is also working on strengthening estimates of childhood obesity prevalence in rural areas and characterizing obesogenic communities, as well as ways to better prioritize areas and populations for interventions and/or policy change.

https://www.hrsa.gov/rural-health/index.html

IMPLEMENTATION CONSIDERATIONS

Photo credit: iStock.com/Rawpixel

IMPLEMENTATION CONSIDERATIONS

Every rural community is unique. They differ in topography, racial and ethnic composition, industries, resources, and more. However, by virtue of their size and distance from urban centers, rural communities share some common strengths and challenges, which should be considered when planning obesity prevention strategies in rural ECE settings.

Building on Rural Assets

The 2019 survey by Robert Wood Johnson Foundation, Life in Rural America, documents that adults living in rural communities have a high level of satisfaction with their communities and quality of life. The survey indicates that rural communities, by nature of their size, geography, and isolation, can be enriching places to live and work. Community assets, such as community satisfaction and cohesion, can help overcome project barriers, increase community support, and make a project more successful.[29] The Federal Office of Rural Health Policy's Rural Health Information Hub (RHIhub) emphasizes the importance of recognizing community assets for effective, sustained rural health interventions and offers tools and resources on mapping community assets.[30,31] Although not exhaustive, below is a list of potential rural community strengths that SMEs and providers recommend considering before implementing obesity prevention interventions in rural ECE settings.

Photo credit: iStock.com/Rawpixel

Rural assets include:

- Agricultural Familiarity
- Awareness and Creative Use of Resources
- Civic Engagement
- Community Cohesion
- Early Care and Education Centers as Community Centers
- Interest in Professional Development

Agricultural Familiarity

Often, rural communities are or were active farming areas, which may increase interest in implementing farm to ECE programs. Providers themselves commonly live or previously lived on farms and are motivated by personal experience. Subject matter experts (SME) and providers shared their belief that rural families appreciate farm to ECE opportunities because of their own childhood experiences on farms.

EXAMPLE

- A rural Iowa ECE preschool, located in a preschool through 12th grade school, implemented a farm to ECE program that grew to include many grades at the school. Over the course of a couple years, enthusiasm for the farm to ECE garden resulted in a larger garden with staff and students across the school involved in the garden's success. Their familiarity with farming and agriculture increased staff comfort implementing the school's farm to ECE program. The fourth-grade class works with their teacher to plant, weed, and harvest the school garden. The preschool teacher worked with her class to cook food from the garden, that is shared with the other classes at the school. The school nurse works with the sixth graders to teach agriculture to the younger grades, and the school cook incorporates large bounties of vegetables produced by the garden into school lunches. This type of school-wide support may be due in part to a regional appreciation for and knowledge of farming.

Awareness and Creative Use of Local Resources

Smaller communities with scarce or inaccessible resources highly value the limited community resources that are available, such as local libraries, church halls, and nearby farms. These resources are well-recognized in the community and are often adapted to meet different community needs.

EXAMPLE

- A church in rural Michigan recognized the importance of kindergarten readiness and started offering space for an ECE center to provide school-readiness programs with free haircuts and dental screenings. The popularity of these programs led to the creation of an outdoor play space on church grounds, complete with a music wall, mud kitchen, worm hotel, hammocks, and dramatic play area.

Civic and Social Engagement

Another finding from the 2019 Life in Rural America survey indicated that the majority of surveyed rural adults feel they can make an impact in their communities through participation in civic and social activities, such as volunteering and service, political activities, community meetings, and membership in a variety of groups.[29] ECE settings in rural areas can benefit from this level of engagement through fundraising efforts, advisory groups, or assistance with sourcing materials or foods to support health and wellness changes.

EXAMPLE

A Wisconsin ECE provider needed a bigger space for children to be active in the winter and requested to extend the local community center's hours. The center's board responded swiftly and agreed to modify the policy on hours to provide the children with a play space. In addition, the board held a fundraiser to purchase preschool-appropriate, indoor toys. Now, the center is open at lunchtime every day, and the ECE children enjoy the center's open play space. The change also benefitted community members, who began attending the center during the day in record numbers.

Community Cohesion

The strength of social networks and connections creates cohesion in rural societies and is cited by rural adults as one of the appealing benefits of rural culture.[29] Because of this cohesion, family and community engagement in rural settings is highly valued. Rural providers embedded in their small communities are entrusted with the communities' children, and their activities and information can have a 'ripple effect' beyond the ECE setting.[29,32] Likewise, because of their important status, providers can receive valuable and prompt support from the community.

EXAMPLE

Several providers discussed caring for the second generation of children in a family, as well as children that had extended families in the area. When the ECE providers introduced new foods to the children, a ripple effect took place among the families. Providers described that the parents, grandparents, and sometimes aunts or uncles, of these children began serving new vegetables and other nutritious foods in their homes.

EXAMPLE

An ECE provider mentioned her challenge of sourcing beets for the ECE center's "harvest of the month" program to a parent who circulated the information among the community. The next morning, the provider found a basket filled with beets on the ECE's doorstep thanks to a neighboring farmer who heard about the provider's dilemma.

Early Care and Education Centers as Community Centers

ECE centers in rural areas can act as community hubs, housing the town's largest open space and kitchen. ECE centers, therefore, become gathering places that providers can capitalize on to gain community support and provide the community with greater access to obesity prevention initiatives.

EXAMPLE

A rural North Carolina ECE center organized a temporary farmers market, initially intended for ECE families. However, the market routinely drew community members and ultimately became a regular event for the whole community, leading to increased access to fresh fruits and vegetables for all residents.

Interest in Professional Development

Despite challenges, rural providers shared their interest in professional development trainings, information, and TA. As described in the "Barriers" section, professional development can be scarce in rural settings. One expert described rural providers as "early, quick, and effective adopters of obesity prevention ideas. [Providers'] enthusiasm, the small size of their programs, and [rural providers'] multiple roles in the ECE settings make it easy to adopt changes." This also makes rural ECE settings ideal sites for an obesity prevention pilot.

EXAMPLE

One Iowa provider's enthusiasm to create the healthiest ECE environment resulted in rapid and effective changes in her ECE center. The provider described "hating vegetables" growing up and not actively promoting them in the ECE center. However, after attending a series of trainings on childhood obesity, she learned about the importance of prevention in early childhood and children's early eating habits. In the months following the training, she revised her approach to vegetables by improving the ECE menus, incorporating taste tests for the children with new foods, and increasing opportunities for active play. The provider observed improvements in behavior and felt encouraged to do more: she learned about farm to ECE, built raised vegetable beds, and incorporated farm to ECE into her curriculum.

SMEs and published reports indicate there are myths surrounding obesity prevention interventions in rural settings that impede program support.[33,34] Myths include (1) a lack of interest among rural children and families, (2) a belief that healthy eating and increased physical activity are too difficult in rural areas, and (3) a belief that communities will resist. However, those who work with providers note that obesity interventions in rural ECE settings have been some of the most successful they have managed. Success is likely due in large part to the aforementioned strengths found in rural areas – resourcefulness, civic-minded thinking, community cohesion, and provider interest. Many rural providers recognize the value of healthy eating and physical activity

for the children in their care. They are receptive to trainings and tap into community networks to address challenges. While certain challenges exist in rural settings, there is consensus that significant gains can be made when capitalizing on the assets of rural communities.

Addressing Common Barriers & Challenges

There are common barriers to consider when implementing obesity prevention interventions in rural ECE settings. While many of these barriers are not unique to rural settings, they can be magnified by rural challenges, such as geographic remoteness, small employee pools, and lack of infrastructure,[4,24,29] making the child care setting an important venue to spearhead obesity prevention. Much of the obesity research in child care has focused on center-based facilities, with emerging research on Family Child Care Homes (FCCHs) Despite numerous barriers to implementation, many of the aforementioned strengths can be applied creatively to ameliorate the impact of different barriers. Below is an overview of common barriers and challenges faced by rural providers implementing obesity prevention interventions, programs, and implementation strategies in ECE settings and approaches for addressing those challenges.

Photo credit: iStock.com/monkeybusinessimages

Common Barriers and Challenges in Rural Areas Include:

- **Behavior Norms**
  - Food Preferences
  - Physical Activity Preferences
- **Distrust of Outside Agencies**
- **Landscape and Built Environment**
  - Access to Healthy Foods
  - Access to Physical Activity Opportunities
  - Access to Professional Development
  - Isolation
- **Menu Control**
- **Other Potential Challenges**
  - Access to national programs
  - Licensing and regulations
  - Teacher retention
  - Urban biases

Behavior Norms

Photo credit: iStock.com/encrier

The challenges related to food and physical activity access in rural areas can prevent healthy choices from being realistic or easy. Rural areas are geographically spread out and roads often lack sidewalks or shoulders, which promotes a culture of driving. Similarly, when there is a lack of fresh produce but an abundance of cheap, low-nutrient dense foods at fast food restaurants, local convenience stores, or discount variety stores, diets tend to shift to what is readily available.[8] These facets of rural environments may promote lifestyles with low physical activity and poor nutrition. ECE providers can serve a critical role in engaging rural children and families in meaningful conversations and behavior change to face these challenges.

Behavior Norms: Food Preferences

According to 2015 survey data from rural and urban communities, the prevalence of adults consuming the recommended number of servings of fruits and vegetables is 12.1%.[35] In 37 of 50 states, rural adult produce consumption is significantly lower than that of urban adults.[36]

Rural providers are well positioned to introduce new foods and influence children's food preferences in ECE settings, and rural settings present unique circumstances for influencing healthy behavior changes. For example, SMEs shared their perspective that the relationships rural providers have with families can be distinct from relationships with urban providers. ECE providers often know the families personally and there can be a deeper level of innate trust. However, providers might struggle to recruit or maintain enrollment numbers given the fewer number of children in the communities, which can make providers hesitant to interfere with family beliefs or practices related to food or physical activity. These circumstances suggest that increasing family buy-in related to purchasing and preparing produce may be initially challenging, but ultimately rewarding through the strong provider-family relationships that have the potential to influence lasting behavior change.[34]

STRATEGIES TO ENCOURAGE HEALTHY FOOD PREFERENCES

- **Institute Family Style Dining** to enable ECE providers to model healthy eating for the children and encourages children to try unfamiliar foods.
- **Create family handouts for providers** that parallel the ECE nutrition and food curriculum.
- **Create easy-to-follow ECE recipes** that families can adapt to a home kitchen.
- **Share highlights** regularly with caregivers and families, such as when a child tried a new food, practiced good table manners, and participated in food preparation activities.

- **Organize regular taste tests** of healthy ECE foods during parent pick-up.
- **Encourage family events that incorporate foods** the children are learning about.
- **Identify regional cooking or gardening classes** to promote among ECE families.

INNOVATIVE SOLUTIONS TO ENCOURAGE HEALTHY FOOD PREFERENCES

EXAMPLE

An ECE center in West Virginia used a farmers market as an opportunity for children to model produce consumption for their families. The center created produce vouchers for each preschooler to use at the farmers market. The ECE providers showed the children how to use the vouchers, which provided enough money for the children to choose a family-sized serving of a fresh fruit or vegetable. Many children chose produce that was unfamiliar to their families, and parents were often concerned that these unfamiliar foods would not be eaten. However, providers frequently heard later that children and their families ended up enjoying these child-selected foods.

Attitudes and Beliefs Barrier: Physical Activity Preferences

Although physical activity has demonstrated health benefits, only 20% of Americans meet the recommended amount of daily physical activity. This is disproportionately lower in rural areas.[37] Rural areas can lack access to spaces for physical activity, including sidewalks and bicycle lanes, which can result in very little daily physical activity. Limited walkability, poor or absent facilities for physical activity, and the need for driving in spread-out communities can, over time, foster a culture of driving and limited physical movement.[37]

STRATEGIES TO ENCOURAGE PHYSICAL ACTIVITY

- **Incorporate walking** into the children's daily schedule in ECE settings.
- Encourage ECE staff to **start a walking group**.
- **Use the ECE setting as an after-hours hub** for physical activity classes.
- **Share fliers** about community physical activity classes or recreation teams.
- **Incorporate physical activity for all ages** in ECE family engagement events, such as going for a walk or exploring a nature-based environment.

INNOVATIVE SOLUTIONS TO ENCOURAGE PHYSICAL ACTIVITY

EXAMPLE

A professional development trainer who provided obesity prevention trainings to ECE centers in rural North Carolina wanted to help families be active. She connected providers and families to the free program offered in 12 states and the District of Columbia. Kids in the Park is an American Academy of Pediatrics-endorsed program that encourages families to appreciate the outdoors and hike. It offers self-guided brochures and incentives for participating. Many of the parks are rurally located.

Distrust of Outside Agencies

Photo credit: iStock.com/Rawpixel

Subject matter experts (SME) have indicated that outside groups promoting health programs, including government-supported groups and programs, are not immediately trusted within some rural communities. Multiple SMEs commented that they did not drive state cars when travelling to rural ECE settings, suggesting that doing so would interfere with their ability to build partnerships in those areas. To garner community support, time needs to be dedicated to build trusted partnerships. Connecting and collaborating with an established community partner can help mitigate challenges related to distrust as well as large geographical distances between ECEs. Research on longstanding, successful, rural community-academic partnerships indicates that collaboration through respect, trust, and shared goals is essential to success.[38]

STRATEGIES TO ENCOURAGE TRUST OF OUTSIDE AGENCIES

- **Allow time at trainings for partnership-building exercises** to catalyze relationships between trainers and ECE staff.
- **Partner with local organizations** that are trusted in the community, such as local faith-based organizations or businesses, to help implement programs.
- **Involve ECE staff in intervention planning and problem solving** to support staff autonomy and respect.
- **Build on established networks** that are already trusted in the community.
- **Create an advisory group** for the ECE setting or specific obesity prevention initiatives to increase community awareness and engagement.

INNOVATIVE SOLUTIONS TO ENCOURAGE TRUST OF OUTSIDE AGENCIES

EXAMPLE

Northeast Iowa Food & Fitness Initiative (FFI), a large, rural-based agency, first began working with ECE settings in 2012 using farm to ECE, but the startup process was not without challenges. In addition to being an unfamiliar organization to ECE settings in the area, FFI recognized that the large distances between ECE settings were limiting their ability to "drop in" and build meaningful connections as well as promote obesity prevention-related trainings and materials. As a solution, after learning of many Head Start and Early Head Start sites within the vast county, they reached out to inquire about a potential partnership. FFI began working with one of the Head Start sites, established a strong rapport, and eventually started to see the Head Start adopt healthy changes. FFI encouraged the Head Start site to share their healthy successes with other Head Start and Early Head Start sites in the county. Because the Head Start network in the region was well established and trusted by community members, the network was able to disseminate information about the

successes they were having with the intervention and the partnership that they had built with FFI. As a result of partnering with Head Start, FFI began to gain access and trust in other rural communities, which benefited Head Start, FFI, and the rural communities served.

Landscape and Built Environment

SMEs concurred with published studies that the greatest barriers for rural providers related to landscape and geographic remoteness may be lack of access to in-person professional development opportunities, increased distances to access healthy foods, and poor infrastructure for physical activity.[32,33,39–41] Despite these challenges, ECE providers can implement several strategies to incorporate healthy behaviors and promote healthy lifestyles in rural ECE settings.

Photo credit: iStock.com/Rawpixel

Landscape and Built Environment Barrier: Accessing Healthy Foods

Over the last century, the number of small, diversified, rural farms has decreased.[42] There has been an increase in commodity farming, which has resulted in a shift from readily available produce in rural areas to an absence of produce.[42] The geographic remoteness and topography in rural areas can mean that a provider is 30-60 minutes from a store that sells produce. Available produce is often of poor quality, limited in diversity, and expensive because of the distance travelled to the store. These barriers make it hard for providers to adopt healthier menus or expose children to more produce.

STRATEGIES TO IMPROVE ACCESS TO HEALTHY FOODS

- **Try interventions like farm to ECE** to incorporate locally-sourced foods that can be purchased from nearby farmers or grown at the ECE setting. More farm to ECE information is available from Farm to Preschool and the National Farm to School Network.
- **Organize multiple providers** to establish centralized and/or bulk procurement to purchase greater volumes, improve pricing, and have foods delivered. Use the Shared Services Guide from the U.S. Department of Education.
- **Promote online grocery shopping**, where available, to increase access to produce and limit transportation needs.
- **Help ECE settings implement a menu cycle** to decrease shopping trips and identify nearby wholesale grocers to lower costs.
- **Use USDA's** food hub directory to determine if regional food hubs are near the ECE center.

- **Connect ECE settings** with regional distributors, food banks, or community gardens for alternative sources of fresh produce.
- Locate local, accessible food options in the area.
- **Support ECE settings** organizing on-site farmers markets to increase fruit and vegetable access for the whole community.
- **Identify** local farms or Community Supported Agriculture **programs** that can deliver produce to ECE settings.
- **Find out if there is a Mobile Market** in a nearby area that could extend its boundaries, or initiate a Mobile Market with regional partners and farmers.

INNOVATIVE SOLUTIONS TO IMPROVE ACCESS TO HEALTHY FOODS

EXAMPLE

An ECE center in eastern Tennessee began a 12-week comprehensive obesity prevention program. The program included gardening with the children, lessons about gardening, cooking with the children, and a small weekly farmers market in collaboration with two local farmers.[43] The market coincided with parent pick-up. The ECE center circulated information to the families and center staff about market hours, available produce, and simple-to-prepare recipes. To encourage consumption of new fruits or vegetables, the market provided tastings. The markets engaged the whole family in reinforcing lessons learned at school about healthy, local foods, while providing convenient and affordable food access.

Landscape and Built Environment Barrier: Accessing Physical Activity Opportunities

Physical activity options in rural areas can be limited due to a lack of public spaces and playgrounds. In communities that have playgrounds, equipment may be outdated, unsafe, or uninviting. Roads may not be conducive to non-vehicle activities due to absent shoulders and sidewalks, high-speed travel, and unpaved surfaces. Community centers, which commonly offer space or play materials, can have limited access or limited workday hours. This lack of public infrastructure can limit outdoor play, walking, cycling, and other child-friendly physical activities.

STRATEGIES TO IMPROVE ACCESS TO PHYSICAL ACTIVITY OPPORTUNITIES

- **Take advantage of local landscapes** and identify areas for providers to explore, such as a local farm for a walk and an opportunity to learn about growing seasons.
- **Create walking paths** around the ECE setting.
- **Work with regional recreation centers or pools** to find designated times for the ECE programs to use the facilities.
- **Use existing structures in new ways**, such as church halls used for indoor physical activity.
- **Create "low-tech" physical activity lists** for inside or outside the ECE setting, such as Tuesday dance parties, outdoor scavenger hunts, or a game of red light/green light.

INNOVATIVE SOLUTIONS TO ACCESS PHYSICAL ACTIVITY OPPORTUNITIES

EXAMPLE

A rural Minnesota preschool participated in a study of low-cost approaches to increase physical activity among preschoolers. Researchers worked with the preschool classrooms to institute three five-minute activity bursts every day for 10 weeks.[44] The children took turns selecting the activity burst from a large can with slips of papers listing activities, such as frog jumps, wiggling, or moving like your favorite animal. The activity bursts led to increased physical activity overall among the preschoolers, beyond the additional 15 minutes per day. Using this experimental design, researchers demonstrated that incorporating simple movements throughout the day does not require intensive teacher training or high-cost equipment and results in increased physical activity among preschoolers.[44]

EXAMPLE

A rural midwestern preschool adopted a weekly picnic. When the weather cooperated, the preschool teacher and children would spend the morning organizing the picnic and walking to the picnic site. If the weather was not favorable, the children voted to decide on the best indoor picnic spot in the preschool. Each child invited a toy friend to join the indoor picnic and together they navigated an indoor obstacle course to get to the picnic spot.

Landscape and Built Environment Barrier: Accessing Professional Development

Accessing in-person trainings, TA, or resource centers can be difficult and time-consuming. In rural settings, where there may be small employee pools, the barrier of travel can be compounded by a need to find substitute providers to work in the ECE facilities while staff attend trainings.

STRATEGIES TO IMPROVE ACCESS TO PROFESSIONAL DEVELOPMENT

When wireless Internet is reliable:

- **Offer trainings online with an adult learning approach**, e.g., Better Kid Care, which has over 300 online trainings, Head Start's online Healthy Active Living resources. Read the Designing Technology for Adult Learners: Support and Scaffolding Digital Promise toolkit to develop effective online tools.
- **Provide technology-based TA**, e.g., texts, web conferencing platforms, emails.
- **Arrange online peer-to-peer learning groups**, as mentioned in the Nemours' Early Learning Collaborative Toolkit.

When wireless Internet is unreliable:

- **Offer regional trainings** with funds to defray travel costs.
- **Help providers initiate an assessment process or an obesity prevention program**, e.g., provide written materials, conduct follow-up calls.
- **Create train-the-trainer programs** to train regional partners that can provide trainings and TA in the area.

- **Identify and apply for funding opportunities** to pay for staff relief time for trainings.
- **Connect providers to local public facilities with wireless Internet**, such as public libraries where ECE providers can access online learning opportunities.

INNOVATIVE SOLUTIONS TO INCREASE ACCESS TO PROFESSIONAL DEVELOPMENT EXAMPLE

One remote Virginia secondary school implemented a web-based coaching system to help teachers improve their interactions with students. The school founded their approach on a successful, published, web-based approach,[45] yet the field has struggled to identify rigorously evaluated teacher-development approaches that can produce reliable gains in student achievement. A randomized controlled trial of My Teaching Partner-Secondary--a Web-mediated approach focused on improving teacher-student interactions in the classroom--examined the efficacy of the approach in improving teacher quality and student achievement with 78 secondary school teachers and 2237 students. The intervention produced substantial gains in measured student achievement in the year following its completion, equivalent to moving the average student from the 50th to the 59th percentile in achievement test scores. Gains appeared to be mediated by changes in teacher-student interaction qualities targeted by the intervention. After a topical training, teachers enrolled in coaching twice per month. Before each coaching session, teachers sent brief videos of their classrooms in action, reflections on their teaching, and answers to the coaches' questions. Each coaching session involved a 20-30-minute phone call to review the video submission together. The coaching was strengthened by online monthly trainings or materials that revisited different aspects of each topic. Although this example took place in a secondary school setting, it demonstrates an effective, remote approach to supporting teachers undertaking changes to improve students' environments.

Isolation

Rural providers in small communities are sometimes one of few ECE providers, the only provider, or separated from other providers by vast distances or difficult roads. It can be isolating, difficult to identify current best practices, and challenging to try new approaches without peer feedback.

Photo credit: iStock.com/nicomenijes

STRATEGIES TO ADDRESS ISOLATION

- **Improve access to TA** provided on-site or by phone.
- **Create online peer-to-peer networking opportunities**, such as Early Childhood Learning Collaboratives.
- **Connect providers** with community leaders and stakeholders.
- **Budget for items that reduce isolation** while strengthening the ECE setting, including access to TA and connecting with others in the ECE network.

INNOVATIVE SOLUTIONS TO ADDRESS ISOLATION

EXAMPLE

One CACFP sponsor in rural Ohio recognized there were several FCC providers interested in making healthy changes in their FCCs, but the providers were overwhelmed trying to adopt the first changes. The sponsor organized monthly playgroups at county libraries, located an hour or less from all of the providers. The sponsor provided fruit and vegetable snacks, led simple physical activity exercises for the children, and highlighted one provider that had adopted healthy changes, noting the steps that that provider had used to get started. The providers were very grateful for the events; additionally, the playdates allowed providers to connect with each other and dispel concerns related to making healthy changes.

Menu Control

Some of the barriers identified by rural providers can be common to urban areas, too, such as a lack of menu control. ECE facilities affiliated with school districts, hospitals, or other institutions often have little menu control. Providers interested in improving their menus may need to work with an institution's food service group before making changes. This challenge can be compounded in rural settings where providers have limited food service options that are accessible or economical.

Photo credit: iStock.com/dcdp

STRATEGIES TO ADDRESS MENU CONTROL

- **Encourage food service leads to adopt CACFP-aligned menus**, providing information on the benefits of CACFP.
- **Encourage food service leads to participate in healthy menu trainings**, such as CACFP trainings.
- **Focus efforts on foods or meals that providers have the ability to change**, such as snacks or foods served at special events.
- **Organize leadership support** in the institution to start discussions about menu improvements.

INNOVATIVE SOLUTIONS TO ADDRESS MENU CONTROL

EXAMPLE

- Small Bites Adventure Club, started by a farm to ECE pioneer, is a monthly subscription program of "Taste Test Boxes" serving Georgia and surrounding areas. The boxes offer local fresh produce and corresponding ready-to-make recipes. This is ideal for ECE settings that are not able to prep or source food but want to provide children with the opportunity to taste local, fresh produce.

Other Potential Challenges

Some rural ECE settings face barriers that are important to consider during the planning process but do not have obvious solutions within the context of obesity prevention programs. These include:

Photo credit: iStock.com/Rawpixel

Licensing and Regulations

State policies, regulations, and licensing rules can often be difficult to implement/adhere to for a rural provider due to a lack of access to trainings, limited resources, and limited capacity. This can affect the number of licensed child care providers in a rural community. For example, a rural FCC provider in Iowa had a swing set positioned on top of a sand lot, but licensing requirements stated that swing sets needed to be on rubber mulch chips. The cost of the mulch chips was prohibitive, so the provider elected to keep her swing set and was therefore unable to obtain her license.

Teacher Retention

In 2019, the average pay for a rural ECE provider in a center setting was $24,230 per year or $11.65 an hour, which is a poverty-level wage.[46] As a result, it is hard for ECE directors to attract and retain providers who can earn a higher salary teaching in a school district or working in another profession.[47]

Urban Bias

Similar to policies, resources and trainings for obesity prevention interventions are commonly written and designed with an urban lens. Rural communities that lack similar resources or infrastructure can often feel disconnected from or unable to apply such materials.

SUSTAINABILITY

Photo credit: iStock.com/Sasiistock

SUSTAINABILITY

Engaging with Partners

Why?

Working with partners can result in more positive program outcomes, increased support, and sustained results. Established area partners that are already trusted organizations in the region may be able to help provide resources to ECE settings. This can expand the impact of obesity prevention programs in rural settings where resources are limited and isolation is a barrier. For example, rural ECE providers can partner with local Cooperative Extension offices to support ongoing professional development.

Who?

The four most common rural partners mentioned among subject matter experts (SME) and providers included:

1. Child Care Resource and Referral (CCR&R) agencies
2. State and regional health departments
3. State departments of education
4. State and regional Cooperative Extension offices

Additional partners mentioned included:

5. Head Start
6. CACFP monitors
7. Regional hospital associations or pediatricians
8. Non-profit foundations, such as the W.K. Kellogg Foundation
9. Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) clinics
10. Local business associations

Photo credit: iStock.com/FatCamera

How?

ECE partners can:

- Ask ECE providers who typically supports, influences, or informs their practices.
- Post information about starting a local advisory group, to help address obesity prevention in area ECE settings, and work with ECE providers to determine where to share the information.

Both ECE providers and partners can:

- Ask ECE families for recommendations and introductions to potential regional partners.
- Ask trusted business organizations about identified community leaders.
- Ask Cooperative Extension staff or CCR&R agencies for active contacts in the area.
- Connect with local colleges and universities to identify interest in supporting ECE providers with training and TA.
- Reach out to regional or local health providers, such as pediatricians, to develop consistent messaging and identify potential sources of support for ECE providers.
- Reach out to local faith-based organizations to determine if there is a shared interest in supporting local ECE settings.

Photo credit: iStock.com/monkeybusinessimages

Funding Resources

Funding opportunities, however small, can have a large impact on obesity prevention programs in rural ECE settings. For implementation work at the provider level, there are often small amounts of money available through state agencies or Cooperative Extension. These funds can help defray costs for kitchen equipment, curricula, and training. Larger funding opportunities aimed at infrastructure changes, larger implementation projects, and/or staffing changes, can be identified among national partners and agencies.

Example sources of federal funding opportunities include:

- **CDC's** High Obesity Program is a competitive grant awarded to land grant universities with community extension services in counties where at least 40% of adults have obesity, including rural counties.
- **The Child Care and Development Block Grant** (CCDBG) is the discretionary component of the Child Care and Development Fund that states receive; the CCDBG Guide has state-level information. States have previously included obesity prevention funding for ECE settings in the CCDBG.
- **HRSA's** Federal Office of Rural Health Policy publishes rural health funding opportunities.
- **HRSA's** RHIhub lists rural health funding opportunities by type, sponsor, topic, and state.
- **USDA's** Team Nutrition Grants offer funding to identify innovative and effective training programs for ECE providers, adapted to a variety of settings.
- **USDA's** SNAP-Ed offers nutrition education to people using or eligible for SNAP benefits. Funding is directed by state and local grant processes. Child care programs can partner and collaborate with local funders.
- **USDA's** Farm to School Grant provides funding for implementing farm to school programs for preschool through high school.

Example sources of non-federal funding opportunities include:

- **CATCH Global Foundation's** CATCH Grant Finder **site** is dedicated to obesity prevention grant opportunities catalogued by state and setting.
- **Private foundations, regional non-profits and state-specific foundations**, such as W.K. Kellogg Foundation and Blue Cross Blue Shield state foundations, support early childhood interventions to improve health.
- **Robert Wood Johnson Foundation's** Healthy Eating Research has annual funding opportunities for policy, systems, and environmental strategy research that promotes obesity prevention at the population level.

Spotlight on Technical Assistance (TA)

The Importance of TA

Both subject matter experts (SME) and providers emphasize the value of TA, whether individual TA or within a group. No matter the geographic setting, TA has the potential to increase capacity, skill, and sustainability of interventions.[48] Professional development trainings, independent of TA and hands-on activities, have a limited impact on providers' classroom practices and implementation fidelity.[49,50] However, studies investigating professional development combined with TA, online or in-person, show that TA dramatically improves a teacher's success at implementing new practices and sustaining those practices.[49] In rural settings, TA is valuable because of challenges related to accessing professional development and possible isolation from peers who could provide support, feedback, and modelling. Additionally, TA can have substantial impacts where there may be fewer competing interventions and a significant desire for professional feedback. TA can also be more successful in rural settings because many providers fill multiple ECE roles, (e.g., director, cook, bookkeeper, etc.), which allows for quick decision-making and adoption of recommended changes.

TA can help ECE providers:

- Increase awareness and knowledge
- Feel empowered with information and tools to improve children's health
- Conduct and understand self-assessment tools and processes
- Identify best practices
- Plan intervention timelines, goals, steps, materials, and budgets
- Address specific issues or model techniques with on-site consultations
- Navigate challenges associated with initiating new practices
- Determine alignment of obesity prevention work with other state and national standards and programs, e.g., CACFP, State Quality Rating Improvement System (QRIS)
- Sustain best practices

TA can also help with rural-specific challenges, such as:

- Addressing geographic barriers related to accessing professional development
- Building support among families and communities
- Connecting providers to community resources and partners
- Identifying funding sources and assisting with funding applications
- Connecting providers with local and regional peers

Initiation of TA

The National Association for the Education of Young Children, Child Care Aware of America, and the Administration for Children and Families' Office of Child Care identify "relationship-based" TA as an important aspect of TA models.[51,52] Participants must dedicate time to developing a positive relationship, which happens through listening and sharing opportunities. Research has established that relationship-based TA leads to greater collaborative partnerships and goal attainment.[48] Figure 1 describes the key components to relationship-based TA.

The six stages of relationship-based technical assistance are:

- Engage directors and/or owner
- Hold listening sessions to gather information and build trust
- Indentify needed changes through assessment
- Conduct joint planning
- Support Implementation
- Assess progress and revise

Ad*apted fro*m Le, et al, 2016[53]

Photo credit: iStock.com/Rawpixel

1. **ECE Director or Owner Engagement.** Effective interventions and TA need support from leadership. Directors who choose to participate in interventions because they understand the benefits to the children and the ECE set the stage for a successful program roll out.
2. **Listening Sessions, Information Gathering, and Trust Building.** Effective TA and interventions consider the demographics and context of providers. Listening sessions and opportunities to observe ECE settings enable the adaptation of programs to the ECE context. Listening sessions are critical to trust building for effective TA.
3. **Assessment.** Observational or self-assessments can help directors and providers understand their current practices and identify potential changes to improve health and wellness practices in the ECE setting.

Example Assessment Tools

- Nutrition and Physical Activity Self-Assessment for Child Care is available online (GO NAPSACC) and on paper (NAP SACC) by the Center for Health Promotion and Disease Prevention, University of North Carolina
- Wellness Child Care Assessment Tool by the Rudd Center for Food Policy & Obesity, Yale University
- Child Care Self-Assessment of Practices and Policies by the Minnesota Department of Health
- Health and Wellness Child Care Self-Assessment by the Utah Department of Health

4. **Joint Planning.** Goal setting based on assessment outcomes should be done jointly. Once goals are set, then the optimal intervention can be identified. The emphasis should be on interventions or strategies that fit well with existing ECE schedules, structures, and capacity.
5. **Support Implementation.** TA is needed during implementation to provide continuing motivation and support for the ECE provider, track progress, and help problem solve.
6. **Assessing Progress.** Surveying the impact of interventions and attainment of goals helps maintain provider commitment. Progress can be assessed through follow-up phone calls or a formal reapplication of an assessment tool.

TRUST BUILDING? Consider This:

Who are the influencers in the rural area?

Often it is the Child Care Associations or State Licensing Specialist in the area. Take the opportunity to introduce yourself at the next area Child Care Association meeting or give the specialist a call.

Connect with the influencers and explain the importance of obesity prevention interventions. If influencers recognize the benefits, they can help providers understand the value, too.

Photo credit: iStock.com/Rawpixel

Methods and Modes of TA

Determining the best means of delivering TA is an important component to conducting effective TA. Mentoring, coaching, consulting, and peer-to-peer TA are all effective TA delivery methods but each offers unique advantages and should be selected based on the context of the ECE provider or setting (Table 4). The listening sessions, described on the previous page, present a great opportunity to determine the most appropriate TA method for any situation.

Table 4: Technical Assistance Methods and the Optimal Delivery Setting for the Method

METHODS	MODE	INDIVIDUAL OR GROUP
Mentoring	Face-to-face, Distance-based, Online or Hybrid	1:1
Coaching	Best with Face-to-face component, but can be followed by other modes, such as Distance-based, Online or Hybrid	1:1 or Group
Consulting	Face-to-face, Distance-based, Online or Hybrid	1:1 or Group
Peer-to-Peer TA	Face-to-face, Distance-based, Online or Hybrid	1:1 or Group

Mentoring typically involves a one-on-one interaction between individuals at a similar professional level, but the mentor has a higher level of experience in adult learning and skills for the mentor. The mentor guides the mentee to enhance his or her professional knowledge, capacity, and abilities.

VALUE IN RURAL SETTINGS

- Mentoring is built on a positive, trusting relationship, which is important when distrust is a barrier.
- Mentoring works well in person, online, or over the phone when transportation is a barrier.

Coaching can be one-on-one or with a group. Coaching is provided by a person with expertise or skills that are of value to the recipient. Coaching builds capacity, knowledge, and abilities through the lens of a specific focus, goal, or discipline.

VALUE IN RURAL SETTINGS

- Coaching works through positive, trusting relationships, which are important when distrust is a barrier.
- Coaching can fill the gap of missing professional development opportunities, which is important when accessing professional development is a barrier.
- Coaching can help with targeted implementation support, which is important when peer support is not available.

Note: Coaching needs an on-site component. In a rural setting, where this can be challenging, the on-site visit can occur at initiation and be followed with online conferencing, videos of the provider in action, and/or phone calls.

Consulting is one-on-one or with a group. A consultant provides specific expertise to collaboratively problem solve a specific issue.

VALUE IN RURAL SETTINGS

- Consulting is helpful in environments where there is no peer community.
- Consulting is goal-oriented, which fosters collaborative partnering and trust, important components in areas where distrust is a barrier.
- Consulting can be done on-site, by phone, or online when there are transportation barriers.
- Consulting does not require a lot of resources beyond expertise, which is valuable in areas where resources are scarce.

Peer-to-Peer TA connects professional peers so they may share common experiences, problem solve collectively, and discuss valuable strategies. It can be one-on-one or with a group but is often implemented with facilitators or within a structured process.

VALUE IN RURAL SETTINGS

- Peer-to-peer TA is ideal for isolated providers.
- Peer-to-peer TA is helpful when there is a lack of trust for government entities.
- Peer-to-peer TA can connect rural providers that understand and appreciate each other's circumstances.

Technical Assistance Resources

Recommended Websites

Head Start Guide on Reflection and Feedback in Practice-Based Coaching
https://eclkc.ohs.acf.hhs.gov/sites/default/files/pdf/pbc-brief-rf.pdf

Kentucky's Early Childhood Professional Development Framework
https://kyecac.ky.gov/families/Documents/pd-framework-2011.pdf

Maine's Early Childhood Technical Assistance Competencies
https://mrtq.org/wp-content/uploads/2019/04/TACompetencies.pdf

Recommended Books

The Heart of Coaching: Using Transformational Coaching to Create a High-Performance Coaching Culture by Thomas Crane, 2011[54]

Consultation in Early Childhood Settings by V. Buysse and P. Wesley, 2004[55]

The Early Childhood Coaching Handbook by D. Rush and M. Shelden, 2011[56]

CASE STUDIES
Firsthand Accounts from Rural Providers

Photo credit: iStock.com/Rawpixel

North Dakota

Christyna Bruce is the director of a small ECE center in Cando, North Dakota, a town with a population of 1,064.

Themes

- Child and Adult Care Food Program and Licensing
- Working with a Food Service Director
- Behavior Improvements
- State Resources
- Continuing Education

Changes Made

Christyna Bruce, an ECE director, shares, "When I arrived at the program as a teacher, I was surprised by the food served at the program and provided by parents. The center offered lots of fried meals, desserts after every lunch, and sweets throughout the day. There was a sense that the children would not eat the foods being served to the adults. The thinking was the children should be served what was thought of as 'kid foods', chicken nuggets, pizza and the like." At the same time, the center was trying to manage many disruptive behavioral issues. These behaviors required an increasing amount of teacher focus and, at times, disrupted the entire center. Christyna contacted CCA North Dakota for guidance. She and her staff worked with the CCA North Dakota's Inclusion Specialist, took the CCA curriculum training, and participated in their TA program, the Pyramid Model. Following the training and TA, Christyna took the following steps: (1) she adopted models taught in the CCA curriculum, (2) she divided the center by age groups, (3) she added more structure to the daily schedule, (4) she increased physical activity, and (5) she incorporated healthier eating habits. The teachers observed a decrease in disruptive behaviors and were convinced that the healthy eating and physical activity changes made a big difference.

CACFP helped tremendously with Christyna's efforts to improve the center's menu. The center is located in a regional hospital, which provides the center's food and presents some unique challenges. Initially, the cooks and food service director were hesitant to modify the ECE menu. The food service director believed in offering "kid food." However, after completing a CACFP training that provided a different notion of "kid food" and the importance of good nutrition for children, the food service director supported the proposed menu changes. The food service director adopted the CACFP rules, helped the center improve their menus, and sourced healthier food items. Christyna credits the CACFP training and rules with improving the center's food offerings. "We don't get a lot of funding from CAFCP because we are a small center, but the funding has helped build support for the menu improvements. It made developing a five-week rotating menu, which changes twice a year with the seasonal changes, easier." Now the children in their care consume less sugar and eat more fresh fruits, vegetables, and fiber. For example, the center eliminated juice when they noticed the extra sugar in the mornings increased disruptive behaviors. They now offer fruit and water instead. Families are also restricted in what they can bring to the center. If children bring foods from home that do not align with the ECE menus, the food stays in the children's cubbies and is sent home at the end of the day. The 2017 CACFP rules improved the menus even further, and Christyna notes, "Now I can say that our child care promotes a safe and healthy environment, whereas before I didn't think I could say that."

The center also increased the amount of physical activity. Previously, the children had limited physical activity until after lunch. To improve the children's ability to focus and better align with licensing rules, the center added 30 minutes of exercise in the morning when the children arrive. The children go out again following lunch. Licensing rules in North Dakota require the children to be outside every day over zero degrees with two hours of daily physical activity inside or outside. The center previously had trouble following the licensing requirements due to the different ages being all together and a lack of appropriate space for the different age groups. Now they have two classrooms: one designed for children under two and one designed for children over two, with age-appropriate play equipment in each. The center also converted a conference room to double as a play space to use on cold days when the children cannot go outside due to inclement weather.

The staff continue to learn about optimal ECE environments and engage in continuing education. Christyna, her supervisor, and the food service director attend CACFP courses and take advantage of CCA North Dakota's trainings related to healthy eating and living. In addition, Christyna identifies trainings for staff, recognizing the importance of training them to care for their own health and emotional self-regulation. "If staff are taking care of themselves, they can help teach a child to calm down and cope. If staff understand how to be calm and eat well, then they can support that in the child care. These are not things we are born knowing how to do. We need to learn them, and the children do too."

Impact Seen

Christyna says the impact has been remarkable for children and staff, with the children demonstrating improved focus and ability to learn. There have been fewer disruptive behavioral events. Christyna reflects, "The kids are sleeping better since we got rid of desserts. The teachers are really supportive because there is much less in the way of challenging behaviors that we have to stop the day to work on. Those behaviors were interfering with the whole center, and these changes have decreased those." She notes that the overall atmosphere of the center improved following the menu changes and increased physical activity.

The staff, food service director, teachers, and families were hesitant at first, but now they have adapted to the menu and physical activity changes. In the beginning, it was challenging for teachers to find more time in the daily schedule for increased physical activity and outdoor play. CCA North Dakota consultants reminded the teachers it would take time to adjust to these changes. This guidance helped the teachers remain patient and persistent with the changes. After the first month of incorporating increased physical activity and healthier menus, the schedule became easier to implement, and teachers reported a marked decrease in challenging behaviors. Now, the children love the movement and songs that are part of their daily routine. Christyna observes, "The kids feel safe, comfortable, and happy at the center. It is gratifying when they come in the mornings and everyone gives me a hug. I know they feel loved."

Words of Wisdom

"Just dive right into it. Many providers are worried about making healthy menu changes or increasing [physical] activity because it may not work. But I suggest just trying it. We needed to do something to address our behavior difficulties. We added routine, divided the classes into older and younger, improved the menus, and added more [physical] activity. We reached out to our Child Care Aware. We had help from their Inclusion Specialists and their online trainings. They were and have been really helpful. They helped connect us to important trainings and other resources. We have found Growing Futures, ChildcareAlive! and a lot of the [CCA] inclusion materials very helpful. Whatever helped decrease behavior challenges we kept doing. You may have resistance at first, but everyone will adapt."

Photo credit: iStock.com/Rawpixel

Programs and Organizations Referenced

Child and Adult Care Food Program

CACFP provides aid to child and adult care institutions and family or group daycare homes for the provision of nutritious foods that contribute to the wellness, healthy growth, and development of young children, and the health and wellness of older adults, and chronically impaired, disabled persons. It is administered through state agencies. Contact your state agency administering CACFP.

Child Care Aware North Dakota

CCA North Dakota provides child care providers with resources and trainings. They offer several different levels of TA. Christyna participated in the CCA Pyramid Model. This model includes watching online modules, creating and implementing action plans, and TA provided by a coach specializing in the content. The TA and online trainings span six months with 30-60 minutes of direct TA twice a month by phone and a monthly on-site visit.

Child Care Aware's Healthy Eating, Behavior and Activity Training

CCA's healthy eating, behavior, and activity training is called the ChildcareAlive! curriculum. ChildcareAlive! has nutrition and physical activity lesson plans for children ages 2–5 years in ECE settings. The curriculum focuses on nutrition education, cooking, sensory exploration of new foods, and physical activity. The curriculum website includes curriculum PDFs, family engagement materials, videos, physical activity plans, and materials.

North Dakota Growing Futures

North Dakota Growing Futures is the state registry for ECE professionals. It provided Christyna and her team with training information, credits and credit tracking for trainings, online training access, documentation for license renewal, TA access through an online help center, and a showcase for their professional accomplishments. Most states have a similar registry through their licensing agencies.

Arkansas

Debbie Mays is the owner of a FCC in Siloam Springs, Arkansas, a town with a population of 16,567.

Themes

- Adopting Healthy Menu Changes
- Positive Engagement with Families
- Making Celebrations Healthy and Active
- Role Modeling
- Promoting Provider Health

Changes Made

Debbie Mays, owner of Bright Beginnings FCC, spent many years struggling to maintain a healthy lifestyle. As she began to learn more about healthy eating, she realized, "What isn't healthy for an adult can't be healthy for a preschooler." Using guidance from CACFP trainings and materials, Debbie began improving the menus and adopting other changes in her FCC. She increased the number of whole foods she was serving. She offered fresh apple slices rather than applesauce and celery with dip instead of canned vegetables. She taught the children about healthy eating and being active. She created space in her home kitchen, allowing the children to cook with her, recognizing that they were more likely to eat food they helped prepare. She transitioned her outdoor space from playground equipment to a natural learning environment with wood stumps to jump on, mud to play in, and areas for children to hide among the plants. Now the children play outside as much as the weather will allow. The outdoor environment offers a greater mix of gross motor skill activities, including opportunities for vigorous physical activity. Debbie continually works to optimize the FCC for the children.

Debbie's FCC is a part of the Arkansas Better Chance program. With funding from the Arkansas Department of Education, Arkansas Better Chance supports high-quality pre-k (ages 3-5) for children with developmental or socioeconomic risk factors. Thirty-four percent of children in Siloam Springs live below the poverty line,[57] which is 9% higher than other rural communities based on national data from the Economic Research Service at USDA.[58] Debbie's FCC has the highest quality rating possible in Arkansas' QRIS, which enables her to offer completely subsidized care. All sixteen children in her care qualify based on family income levels.

Serving young, low-income families has been rewarding for Debbie, but the menus can be unfamiliar to families. Some families have adopted Debbie's approach to meals while other families are concerned that the FCC's menu is not "filling enough" or is too different from what the children typically eat. Debbie has observed that children eventually adapt to the healthier menus and fill up on what she serves, but it can be a slow adjustment for some children and families. Debbie is thoughtful in her approach to educating families and introducing them to the FCC. She holds a family orientation every September to welcome families and provide an overview of the FCC, including meals and activities. Debbie's CACFP sponsor agency, Northwest Arkansas Family Childcare Association, has also been very helpful. The Association offers meetings, trainings, and resources to learn more about CACFP and suggests strategies for sharing that information with families.

In Debbie's experience working with younger parents, she has found that communications through social media platforms are very effective while paper materials sit in the back of the car. On closed social media sites and with parents' permission, she shares photos of the menu and children eating a meal. Debbie recalls a boy who initially would not eat any fruits or vegetables. The staff did not push him but kept including fruits and vegetables as options on his plate, and after twelve exposures to broccoli, he finally tried some and liked it. After Debbie shared a short video of him enjoying broccoli, his family began making broccoli at home. Despite successes, Debbie still sees food brought in from home that is not consistent with the FCC's menus, which she returns to families. She strives to avoid judgement or confrontation during conversations with families, instead using these conversations to discuss her health and wellness goals and plans for the FCC. She has found that confrontation is not as effective as modeling ways and sharing success stories to make healthy changes.

Impact Seen

The changes in the FCC simplified Debbie's approach to child care and family engagement. The updated menus and increased physical activity improved the health of the children and staff while saving time and expenses. The staff's improved health helped them understand and appreciate the changes in the FCC; Debbie no longer needs to remind staff of the importance of these changes. The staff now take the initiative to make improvements in the FCC themselves, recognizing the connections between the FCC's menus and the children's behavior. The few times staff provided sweet treats, they could see the children were more restless and less focused.

Debbie also began structuring her family engagement events and the FCC's celebrations in healthier ways. Previously, these occasions involved families providing food, which was often of low nutritional value, and Debbie engaging in time-intensive food and activity preparations. Now, Debbie has simplified the events. Instead of having a food-focused event, staff meet families at the beautiful, nearby creek. They walk together, let the children play in the creek, and then read a story together. The focus of the celebrations has shifted from food to physical activities, games, and/or crafts. Family attendance at these

events has not changed, and Debbie is happy to model healthy activities with the families.

Incorporating more whole foods also resulted in less meal prep time without increased expenses. For example, Debbie can spend more time with the children when she offers hummus with cut vegetables compared to when she spent 30-40 minutes deep frying chicken nuggets. While her staff continue shopping at the same low-cost grocery stores, they buy more fresh fruits and vegetables. These menu changes did not impact food costs or the overall FCC budget.

Debbie strongly believes in investing in the health of child care providers. A 2020 review study of research on ECE providers' health found over 85% of ECE providers were overweight or had obesity.[59] In order to make healthy changes in ECE settings, Debbie believes that children need role models who demonstrate healthy habits and behaviors. As she notes, "[Overweight and obesity] can interfere with a provider's ability to get down on the floor and engage with the children." Her experience has been that providers who improve their own health understand the importance of healthy eating and physical activity for children. Those providers can model healthy eating, physically participate in activities, and spend more time outdoors with the children. Debbie stresses the importance of sensitivity and the need to avoid the term "obesity," which may be perceived as judgmental. "There needs to be a focus on self-care for providers and educators, but it has to be done with sensitivity. If [providers] care for themselves, they can better care for the kids."

Words of Wisdom

Debbie believes that FCC providers have a special level of connection with children and families. Families stay in touch with Debbie for years. "FCC providers are often considered babysitters. We are educators and much more. There are three rooms in my house dedicated to the children. It is homey because it is in a home. When they are playing, they are in a home. When they are helping cook, they are in a home kitchen. FCC [providers] have a unique position with families in a longer and deeper way than a center [provider] might. We can make an impact on these children's health habits. It does not cost as much as an FCC [provider] might think to provide fresh fruits and vegetables. It has been simpler to put meals together. When I share with the parents that the child has tried a new vegetable, they are open to serving that vegetable at home, but often not before that. [This is] caring for a future generation and helping children have lifelong healthy habits."

Programs and Organizations Referenced:

Arkansas Better Chance Program

The Arkansas Better Chance program is a multifaceted state program and serves to support the healthy development of children who have developmental or socioeconomic challenges.

Child and Adult Care Food Program

CACFP provides aid to child and adult care institutions and family or group daycare homes for the provision of nutritious foods that contribute to the wellness, healthy growth, and development of young children, and the health and wellness of older adults, and chronically impaired, disabled persons. It is administered through state agencies. Contact your state agency administering CACFP.

Northwest Arkansas Family Childcare Association (CACFP Sponsor Agency)

The Northwest Arkansas Family Childcare Association is a non-profit organization that promotes quality child care through CACFP sponsorship, trainings, and professional development for FCC providers. Similar agencies exist across the U.S. To find a location near you, contact your state agency administering CACFP. They will have information about sponsoring agencies in the different regions of the state.

North Carolina

Katherine Davis is the director of a large ECE center in Asheboro, North Carolina, a town with a population of 25,844.

Themes

- Starting Small
- Positive Engagement with Families
- Teacher Support
- Budget Management
- State Resources

Changes Made

In 2011, Katherine Davis, an ECE director, participated in free trainings offered by Shape NC: Healthy Starts for Young Children. Shape NC is an initiative of Blue Cross and Blue Shield of North Carolina Foundation, The North Carolina Partnership for Children, Inc., and the Corporation for Community and National Service. It offers professional development trainings on healthy eating, increasing physical activity, and naturalized outdoor play areas for children ages 0-5 years. The trainings, which emphasized the important role ECE settings can play in improving children's habits and their health, inspired and empowered Katherine to make changes. Initially, the center made small changes. Katherine and her staff improved their indoor and outdoor play areas with TA from Shape NC and Natural Learning Initiative, a North Carolina State University research and design program. Then they made simple food replacements, switching fried chicken nuggets for baked nuggets and decreasing the fat content in the milk they were offering. The center also surveyed families about what the children were eating at home and how often families were eating out. The survey results helped inform Katherine and her staff of children's diets and improvements they could make in the center to meet the children's dietary needs. Katherine and the center cook reviewed costs and formulated a new budget to assess the impact of potential changes. Katherine required staff to take the Shape NC trainings so that all of the teachers understood the changes. By mid-2012, the staff turned their attention to revising the menus and adding health education components to the curriculum.

The center now has a substantial outdoor learning environment with vegetable garden beds, blueberry bushes, and apple trees. The menus have changed drastically, and the children are trying new foods; for example, the center recently served pinto beans, slaw, and tilapia with fresh peppers. Implementing CACFP has been helpful and the ECE staff frequently use the CACFP sponsor agency's helpline to obtain additional guidance. The center has become a model for other centers and hosts visitors who want to learn from the center's changes. The ECE staff have also continued their professional development trainings.

Katherine noted that she has found the following programs and trainings extremely helpful for her and her staff:

- Grow it, Try It, Like It
- CHOOSY
- Color Me Healthy
- Growing Minds' Farm to Preschool Toolkit

Katherine and the staff continue to strive to be thoughtful and innovative, engaging families throughout the process. Some families initially provided feedback that they were uncomfortable with children playing in the cold or getting dirty. For example, one parent would pick up their child instead of letting the child play outside when it was cold. Rather than pushing the center's health and wellness philosophy, Katherine has instead provided information about the purpose of activities and the center's policies. Over time, the families have become supportive of the changes and have communicated with each other about the benefits related to the new changes. The ECE staff continues to incorporate and educate families as much as they can, using informational poster boards at the school, email updates, paper newsletters, and regular ECE events like "Tasty Tuesdays" where families can enjoy a taste test at Tuesday pick-up.

Impact Seen

Katherine reflects on the improvements they made: "At first it was overwhelming to make changes. The University of North Carolina Extension and Shape NC really helped with planning, logistics, and menus. The Randolph County Partnership for Children, a non-profit organization working to improve quality care in the region, provided the center with Shape NC trainings and TA. [The Randolph County Partnership's] work and [their convening of community] meetings unified the child care providers in the area and pulled all the directors together. It made us feel more supported and connected."

The improvements, made gradually, are now embedded in the ECE center's policies and practices. Initially hesitant teachers and families are now supportive and enthusiastic, having seen the children excited about nutrition and eating. The children enjoy trying new foods, and families report seeing benefits at home. The family support is very important as ECE staff hope families will reinforce what the children learn at the center. Katherine encourages families to serve healthy meals at home and promotes Shape NC's free cooking classes.

Katherine and her cook work hard to keep food costs down. They take time to shop frugally by using a membership-only wholesale grocery store and selecting ingredients that are on sale each week. The cook was initially unsure of the changes. However, after seeing the children enjoy the new menu and observing their calmer mealtime behavior, the cook is excited

about the changes and works hard to limit costs. The cook shares, "[I am] always watching the children as they eat, noticing what they like and do not like. This allows me to try new things for the children. I love being a part of teaching the children about nutrition and seeing the difference it makes in their lives." All the ECE menus are within CACFP parameters and seasonal. *Rainbow In My Tummy* menus[60] and Shape NC trainings helped the center find low-cost, CACFP-aligned recipes. The ECE menus have added more economical protein sources, such as beans or cheese, several days each week. Katherine notes, "Children learn what they live. If you introduce healthy foods, children start making healthier choices."

Words of Wisdom

"It is important to know that you can start very small. I suggest thinking through it and setting small goals for your center to make small differences. Not every center is going to have Shape NC, but there are other trainings that can help you make those small changes. I am passionate about it now. I realize that the outdoors is my third teacher. The passion I have for children to eat well and be outside keeps me going. My teachers also keep me going, and their health is important. I had teachers do a walking competition. I now have incentives for the teachers to be walking during the day and staying healthy. We incorporate the outside as much as we can. When we can, we even have [the children] nap outside. We take their cots outside and have them nap when it is a 70-degree day with sunshine and the wind blowing. You can't beat that."

Programs and Organizations Referenced:

Child and Adult Care Food Program

CACFP provides aid to child and adult care institutions and family or group daycare homes for the provision of nutritious foods that contribute to the wellness, healthy growth, and development of young children, and the health and wellness of older adults, and chronically impaired, disabled persons. It is administered through state agencies. Contact your state agency administering CACFP.

Choose Healthy Options and Start Young

CHOOSY is an adaptation of the I Am Moving, I Am Learning curriculum created for Head Start. CHOOSY includes ECE provider trainings and music for the I Am Moving, I Am Learning curriculum, as well as a comic hero to encourage children's healthy eating and physical activity.

Color Me Healthy

Color Me Healthy is a healthy eating and physical activity curriculum available for purchase. Color Me Healthy comprises twelve lessons. Each lesson offers recipes, family engagement materials, videos, and activities. The program has music, posters, and teacher guides to support ECE setting implementation.

Growing Minds' Farm to Preschool Toolkit

Growing Minds offers a free, downloadable farm to preschool toolkit. The toolkit includes lesson plans, garden activities, cooking guidance for ECE settings, and family engagement newsletters.

Grow it, Try It, Like It

This is a garden-focused nutrition education curriculum for ECE staff. The free materials, provided by USDA, include books and CDs focused on several lesson plans. Each lesson incorporates hands-on activities, planting activities, nutrition education, and opportunities for at-home activities.

Natural Learning Initiative

Natural Learning Initiative offers evidence-based design evaluation and redevelopment of outdoor learning environments. They have professional development trainings and resources to help others adapt outdoor environments that maximize physical activity and engagement among children.

Shape NC: Healthy Starts for Young Children

Shape NC was created to increase the number of North Carolina's children starting kindergarten at a healthy weight. The program promotes healthy eating and physical activity through play in ECE settings using 3 interventions: Be Active Kids, Preventing Obesity by Design, and GO NAPSACC, in addition to facilitating community support for healthy child care settings. For those outside of North Carolina, there may be similar programs being run through local extension offices.

CASE STUDIES
Firsthand Accounts from Rural Providers

Alaska

Natalie Ray is the director of a large ECE center in Palmer Alaska, a town with a population of 7,306.

Themes

- Starting Small and Adapting to Change
- Gardens as a Teaching Tool
- Importance of Supporting Local Culture
- Building Children's Confidence and Self-Sufficiency
- Working with Special Populations

Changes Made

Natalie Ray, director of a large, rural ECE center, has been interested in farming and gardening since she was young. It seemed natural to her to incorporate gardening when she started working in ECE settings four decades ago. Over the years, she has learned how to adapt her farm to ECE activities to different states and spaces, as well as to children of varied ages and ability levels. Her first farm to ECE challenge was adjusting to a new climate when she moved to Alaska. To begin, she reached out to the local Cooperative Extension office and other farmers to learn about the best crops and growing season in the Alaskan climate. Through trial and crop loss, she also learned how to contend with a unique rural environment. For example, she initially lost a lot of produce to moose until she learned to plant the gardens near the building and use deterrents such as bars of soap hung on fruit-bearing trees.

When Natalie expanded the number of ECE centers she directed, she adapted her farm to ECE activities to new locations and new groups of children. She worked with building owners at new center locations to determine rules and regulations related to growing and maintaining gardens. Over time, she has found that raised beds are best suited for her ECE gardens. However, since raised beds are harder for the younger children, Natalie has learned to work with them to start indoors with certain vegetables – such as peas, carrots and kale – prior to providing them with pots or fenced-in, smaller gardens outside. Natalie has also begun using plastic grow-sacks indoors to allow all children a chance to work with the dirt and learn about growing food. Over the years, she has cared for many children with special needs, including those with Down syndrome and autism. One great benefit of farm to ECE is its adaptability as a teaching tool since many activities can be adjusted to fit a range of ages and capabilities.

Natalie has taken advantage of small funding opportunities offered by state agencies and Cooperative Extension. She has used the funds to add new farm to ECE components, such as the addition of worm farms. Over 42 years, Natalie has expanded activities gradually: she repeats reliable farm to ECE activities that children enjoy and learn from, then adds a novel activity when feasible. While she started out by engaging the children to help her in a small garden, she has progressed to composting and hydroponics with beta fish. Natalie emphasizes that she started small and worked on one addition at a time.

"I was raised on a ranch. I gardened with my own kids, which grew to include the kids in my home day care program. When I started a larger center and moved to a rental space, I added raised beds. I let kids older than 2½ years have their own square in the raised beds following Square Foot Gardening.61 It is important to start small and doable." The Square Foot Gardens help ensure that all children are able to participate in gardening activities. The children take ownership over their Square Foot Gardens, maintaining their own space and appreciating how their homegrown produce tastes.

Originally, Natalie did a lot of the gardening and teaching herself. However, as her ECE business expanded, she increased the number of staff members and trained the other teachers on farm to ECE. The teachers' interest grew over time as they observed the impact it was having on the children. Now, teachers and staff appreciate how easily garden activities are incorporated into the curriculum, family engagement activities, and interactive lessons. The Square Foot Gardening approach provides structure and lesson ideas for teachers.61

Impact Seen

Natalie believes that children, staff, and families have all benefited. "Children try more foods and bring that [openness] home to the family. They bring home extra food that is harvested and talk about it with their family. They love their Square Foot Gardens. They decide what to plant, care for it, and harvest it. Kids will try foods if they grow it themselves. Also, growing potatoes in plastic sacks for younger kids has been great. It has been more manageable and saves ground space. Kids love these because they can open up the bag and harvest potatoes, which is like a treasure hunt."

Farm to ECE means the children are outside more often and, as a result, become more comfortable being outside. Natalie and her staff believe the children are happier when they are outside and can discover interesting things in the nature around them, such as worms, slugs, or dirt. Teachers use the outdoors as a tool to teach biology, the cycle of life, and agriculture. It has reengaged children in understanding the importance of where food comes from and the role of soil in food production.

Natalie and her staff also believe their work with farm to ECE has benefitted the children's self-esteem. This is especially important among a growing number of indigenous tribal children being cared for at Natalie's centers. Many of these

children are in the Alaska foster care system, often cared for by non-indigenous families. Natalie and her staff help these children learn about their cultures in an effort to help build self-confidence and support the children's family heritage. For example, they work with university specialists to teach children about sledding, caring for sled dogs, native foods (e.g., whale blubber), gathering local foods, and how native culture facilitated survival in the Alaskan setting. Cooking and harvesting plants are a big part of their efforts to share indigenous culture. They believe that this work and farm to ECE efforts help native and non-native children build a positive self-image by teaching them self-sufficiency. Children learn that they do not need to rely on an adult or store but can independently gather or grow food. Natalie and her teachers praise the children when they try new things and encourage them to be persistent.

Words of Wisdom

Farm to ECE "has been great because it makes a difference in a child's eating habits and their life. The better we make their nutrition, the better their life will be." Natalie reflects on how it teaches the children other lessons, too, about self-sufficiency and science. At the center, "[We] have moved away from everything refined. We grind our own flour. We bake so they can learn how to bake and knead their own bread. We use different local herbs to flavor the bread and ask the kids about the different flavors. If we didn't have stores, what would we do? This helps kids understand in their minds that they can do this on their own. Children need this understanding and these skills. It builds their characters. Really encourage children to work in the dirt. It's therapeutic and keeps them grounded. My whole summer revolves around this type of work. Don't give up."

Programs and Organizations Referenced:

Cooperative Extension

The Extension Service was established to provide farmers with information on agriculture, related research, and improved farming methods. Now its programs include instruction in child care programing, arts, cooking, mental and emotional health, and more. Cooperative Extension programs exist across the U.S. Contact the closest office to your work and learn about current ECE program offerings.

Farm to ECE

Farm to ECE increases children's access to local food, gardens, and activities teaching them about food and agriculture. Farm to ECE is an effective obesity prevention strategy. The National Farm to School Network has materials, webinars, and information about state partners.

Photo credit: iStock.com/Rawpixel

Ohio

Theresa Claypool is the owner of a FCC in Fayetville, Ohio, a town with a population of 315.

Themes

- Benefits of the Child and Adult Care Food Program
- Federal and State Health and Wellness Programs
- Budgeting Healthy Changes
- Behavior Improvements

Changes Made

Theresa, an FCC owner in rural Ohio, says, "I always avoided fried and sugary foods in my child care program, but CACFP and the Ohio Healthy Programs [OHP] made me really go further. I changed my approach." Theresa learned from online research about the increasing rates of childhood obesity and the potential for healthy diets to improve children's behavior. She researched how to improve her menus but needed training to help her take the next step, so she reached out to her local CCR&R agency. The agency recommended state-level trainings through OHP, a state designation program that helps providers create healthy ECE environments by offering trainings focused on improving menus, implementing healthy policies, incorporating increased physical activity, and engaging families. Theresa found OHP informative and helpful. She appreciated the clear steps on implementation, critical budgeting advice, and practical tips that OHP trainings included to improve ECE menus and physical activity. For example, OHP designation requirements include menus that offer a different non-fried vegetable each day of the week, a whole grain food each day, only beverages without added sugar or sweeteners, and fried foods no more than once a week.

Theresa used free resources from national, state, and local programs to learn how to implement changes, including resources from OHP, her CACFP sponsor, USDA's Team Nutrition, and national authors. Theresa used menus provided by OHP, as well as her CACFP sponsor. These menus were not only healthier but were adapted to the locality and season. She also used the Grow It, Try It, Like It education kit and other free resources sent by USDA's Team Nutrition to ECE providers. "Those [materials and information] are great, and I use a four-week rotating menu to help make the menus that I use healthier and less expensive. A really good book I read that helped is *It's Not About the Broccoli* by Dina Rose.[62] It presents a [healthier] way of thinking about how children should be interacting with food." In addition to a healthier eating environment, Theresa implemented other improvements in the FCC following OHP recommendations. She eliminated screen time, added parts of Family Style Dining, involved children in food preparation, and began ordering groceries online to cut costs. Theresa also changed her daily structure to include an additional 30 minutes of physical activity prior to lunch for the children. Theresa continues to research best practices for children's health and wellness, and she takes every affordable health training that fits her schedule.

Impact Seen

Theresa believes the children in her care benefitted from the healthy changes she implemented, noting that the children are now more aware of what they eat and how their food choices relate to their health. Theresa recalls that when she started making menu changes, it became clear that "the children did not know an orange from an apple." Now the children connect different foods with ways in which the foods make them stronger and healthier. She also observed significant positive behavior changes following the implementation of the new policies and practices in the FCC. She recalls one child whose previous diet included a high amount of sweets and minimal fresh produce: "One boy I care for had been kicked out of every program and class before he came to me because of his uncontrollable behavior. When I made the menus healthier, I kept sugary, colored treats out of the center. His food was better and his behavior improved. Now, he is in kindergarten, and I see him after school." The changes Theresa saw in him and the other children after adding fresh whole foods to their meals convinced her of the impact diet can have on behavior.

Theresa notes that the children are now more open to trying new foods and are more likely to eat foods at home when she persists in serving a new food multiple times at the center. "I have parents share their excitement with me that their children ask for certain foods they first tried here, that are less processed and more healthy. From a business perspective, in a rural setting, there is no better advertising. Parents know and appreciate the fact that you are willing to go the extra mile for their child's wellbeing."

The increased physical activity in the FCC also affected the children. Theresa noticed that having more physical activity multiple times a day dramatically improved the children's lunch behavior and the flow of the day. "I made physical activity part of the curriculum. We go hiking even. This has given us a better schedule, and I can also do physical assessments without kids knowing. Kids have adapted to all the changes. They try all the foods. They love all the [physical] activity, and they don't ask for screens anymore. It is great knowing those children went home well fed and had fresh air. I know I have done the best for these children for that day—food-wise, physical activity-wise, curriculum-wise, and self-esteem-wise."

CASE STUDIES
Firsthand Accounts from Rural Providers

Words of Wisdom

"Adding [CACFP and other changes] is a lot of work at the beginning. It will take a couple of evenings to research and set up the four-week rotating menu. Then, once you have that done, it's cake. When CACFP [required] whole grains one time each day, we laughed because we only use whole grains [all day, every day]. Don't be afraid of food waste or budget increases. Because of menu planning and online grocery shopping, my budget is only $125 per week. These healthy changes have not gone over budget. Be creative about spices and dipping. Kids don't know what foods go together. We don't have a lot of waste. The kids are open, and it is a lot easier than it looks."

Photo credit: iStock.com/SbytovaMN

Programs and Organizations Referenced:

Child and Adult Care Food Program

CACFP provides aid to child and adult care institutions and family or group daycare homes for the provision of nutritious foods that contribute to the wellness, healthy growth, and development of young children, and the health and wellness of older adults, and chronically impaired, disabled persons. It is administered through state agencies. Contact your state agency administering CACFP.

Child Care Resource and Referral Agencies

There are over 400 CCR&R and CCA agencies in the U.S., with at least one location in every state. CCR&R agencies help families find child care near their home or work. They also assist child care providers with trainings, materials, and resources. They can provide TA and alert providers to different healthy eating or physical activity opportunities to improve their ECE settings.

Grow it, Try It, Like It

This is a garden-focused nutrition education curriculum for ECE staff. The free materials, provided by USDA, include books and CDs focused on several lesson plans. Each lesson incorporates hands-on activities, planting activities, nutrition education, and opportunities for at-home activities.

Ohio Healthy Programs

OHP is a healthy eating, physical activity, and development training for early childhood health professionals that promotes policy, systems, and environmental changes in ECE settings. Although the trainings Theresa references are currently available only for Ohio providers, OHP has free downloadable materials, including activity and menu cards, a child care action kit, posters, and family engagement materials.

USDA's Team Nutrition

Team Nutrition is a USDA initiative to support ECE settings with materials, training, and TA. The free materials offered are for providers, foodservice staff, children, and caregivers. Some materials are also available in multiple languages.

Iowa

Jo Karmer is the owner of a FCC in Wacoma, Iowa, a town with a population of 246.

Themes

- The Value of Technical Assistance
- Benefits of Outdoor Play
- Increasing Physical Activity in a Small Space
- Home Gardens as a Teaching Tool

Changes Made

For Jo Karmer, an FCC owner, seeking outside TA was a positive experience that strengthened her program. "A couple years ago, I was approached by Northeast Iowa Food & Fitness Initiative (FFI) about having their help adding nutrition [education] to my program's activities and more physical activity. That was years ago and it is still happening. They come twice each month when the older preschoolers are here. FFI brings a food-of-the-month with teaching materials and food to sample." Jo is dedicated to making her FCC a high quality and nurturing environment, so FFI's suggestion to add nutrition and other activities aligned with her philosophy. FFI's monthly visits focus on a food-of-the-month curriculum with recipes and farm to ECE materials. After each FFI visit, Jo continues to incorporate the food-of-the-month into taste tests, play activities, lunch items, and stories to reinforce what the children learned. The children help Jo plant her own family garden, and she uses the produce from the garden to provide taste tests. Jo reflects on the small size of her garden and that it does not take much space to connect children to how food grows. "It's a small garden that one of the kid's grandpa tills for me, but it helps teach the children about food growing and gives the children a chance to taste food right from a plant."

With FFI's encouragement, Jo made changes to her program schedule to increase the amount of time spent outdoors as well as incorporate additional structured and unstructured physical activity overall. The children now go out every day, and usually twice each day. She has seen improvements in behavior with these changes, especially with the increased time outside. Jo has limited space inside, so she worked with FFI to figure out how to increase physical activity in a smaller space. She uses a growing list of indoor movement activities, including indoor obstacle courses, favorite animal races, keeping the balloon off the floor, and follow-the-leader.

Like most FCC providers, Jo cares for children 0-5 years old altogether. Finding ways to include the children under two years in farm to ECE activities, lessons about nutrition, and physical activities required additional thought and planning. She and the FFI trainer have been working with the younger children, teaching them to sit and learn together at the table. They are motivated to learn this skill because they want to take part in the same lessons as the older children. Jo also adapted the taste tests and physical activities to each age group to be more inclusive. Jo notes, "With flexibility and thought, children at all ages can be included."

Impact Seen

The changes Jo made impact the children, the FCC's environment, the families, and Jo, herself. The children enjoy learning about different foods and are more open to eating the foods they discuss as part of a lesson as well as foods they see growing in the garden. The children surprise Jo by how excited they are to try new foods, even less traditional foods like raw golden beets. It has changed how she teaches them about food and the types of food she serves. She has increased the diversity and number of fruits and vegetables she offers. The children are also more comfortable sitting quietly at a table during FFI lessons, which translates to a calmer eating environment during meals. Jo believes the children's ability to engage attentively and politely at the table increases their readiness for kindergarten.

Increased time outside also made a noticeable difference for everyone. "Going outside is easier because space is not an issue. It makes me happier, and if the provider is happy, everyone is happy. But I can tell the children are happier outside because there are no discipline problems [when the children are outside]." The families are supportive of the changes, and even bring fruits or vegetables for the children to learn about and taste.

Jo continues to work to optimize the care she provides children. Working with FFI has made incorporating healthy eating and physical activity easier, but it also has additional benefits. "It takes a special kind of person to be a Family Child Care provider. It can be lonely, especially in a rural area." Jo notes that her work with FFI and her efforts to improve eating and physical activity in her FCC made her feel like part of a larger effort by connecting her to peers and additional support. The families appreciate her efforts to improve children's health and tell her directly that they support the way she runs her program.

Words of Wisdom

Jo reflects, "FFI's curriculum, visits, and lessons added new activities to our program and a new way of thinking about food. It made me feel less isolated, and we are experiencing new ideas for everyone's sake. I know that word spreads, and the community agrees with how I run the program. I can tell because I always have a wait list."

Northeast Iowa Food & Fitness Initiative (FFI) Snapshot

A technical assistance program success story, as described by Haleisa Johnson, FFI Early Childhood Program Coordinator.

FFI was founded in 2007 with support from the W.K. Kellogg Foundation to improve regional health, access to locally grown food, and opportunities for physical activity in rural Northeast Iowa. Initially, FFI collaborated with area hospitals to improve adolescent health, capitalizing on a grassroots systems approach at the regional level to improve policies and practices related to children's health in the high schools. In 2012, FFI began working with ECE settings to encourage healthy habits at an earlier age through farm to ECE. FFI's goal was to provide intensive TA to support ECE settings in adopting local food sourcing, gardens, and food and agriculture education in the curriculum.

FFI began their farm to ECE work with regional Head Start programs. Over six years, FFI expanded farm to ECE across the region, adding one new ECE sector annually. FFI trained and provided TA to Head Start, Early Head Start Home Visitors, school district preschools, large unaffiliated ECE centers, and recently, regional FCCs. As of 2018, FFI has trained over 550 ECE providers, engaged hundreds of families, and reached approximately 4,000 children.

FFI's program coordinator, Haleisa Johnson, attributes the organization's success to working within existing systems and cultivating critical partnerships through listening. "In a rural environment there is a lot of [physical] distance that can be a barrier. Getting to locations can take your whole day. Relationships and trust are also key in such communities. FFI used existing systems, such as Head Start, to help start our ECE work. This gave us access to locations and existing partnerships. Then we utilized the relationships we had built by working in the district high schools to start working in those same districts' preschools. Trusted relationships are critical. [Trusted relationships] come from transparency, consistency, and frequent contact, even if by email. This is especially true when you have people caring for children in these areas." Recognizing strong regional systems to support its work helped FFI manage the two most common barriers to success in rural settings: access and relationships.

FFI employs a three-pillar approach for implementing farm to ECE:

1. Professional development for providers on wellness, family engagement, and systems change;
2. "Transformational" family engagement based on listening and partnering; and
3. Increasing access to healthy foods.

In all three pillars, FFI focuses on listening to and recognizing the needs of ECE settings, families, and food producers. Haleisa emphasizes that making a long-term impact with providers requires patience, trust, and listening to teachers' needs. Healthy eating and physical activity changes need to be embedded into the curriculum seamlessly and in partnership with providers. "No two ECE [settings] are alike. FFI can't come in [to the ECE setting] as the knower without listening to their needs. We need to be a learner, too. No one knows their ECE [setting] like [the teachers] do and what they need to make this work. FFI uses this grassroots approach." FFI views family engagement the same way. Haleisa explains the "transformational" approach, "[You] need to know what the family needs. Do the families have a fridge, storage, and cooking options? Are they on food benefits? The family is the expert on their situation and that needs to be understood. FFI can then adapt parent engagement [to that environment] with varied opportunities, such as healthy grocery or convenience store tours, materials on how to use SNAP benefits to buy healthy foods, or cooking classes for different income levels."

Haleisa believes, "We have been successful because of the work we put into cultivating relationships and maintaining them. This has been true in all our work in the area but especially in ECE [settings]. We don't come in as the experts but as a learner that listens. That way we have everyone sharing their knowledge and creating a system together. Individuals need person-to-person interactions, even if it's by email. They need to be appreciated and heard." FFI deploys this philosophy by building partnerships at every level, including with funders, administrators, teachers, families, and children. FFI's success demonstrates the importance of building relationships and providing TA through listening and partnering.

Programs and Organizations Referenced:

Farm to ECE

Farm to ECE increases children's access to local food, gardens, and activities teaching them about food and agriculture. Farm to ECE is an effective obesity prevention strategy. The National Farm to School Network has materials, webinars, and information about state partners.

CASE STUDIES
Firsthand Accounts from Rural Providers

Iowa

Dee Christophersen is the executive director of a large ECE center in Decorah, Iowa, a town with a population of 7,594.

Themes

- The Value of Technical Assistance
- Implementing Family Style Dining
- Building Capacity Through Teacher Engagement
- Benefits of Community Networks and Resources

Changes Made

The large rural ECE center, where Dee Christophersen is executive director, wanted to change its dining area and menus. Dee and her team approached the Iowa CCR&R agency for ideas. The Iowa CCR&R's consultants recommended implementing Family Style Dining, a meal service approach where children and adults sit together for a meal and children serve themselves, when possible. In addition to the guidance on Family Style Dining, the center also received TA and support from FFI to integrate farm to ECE during the same period. "Everything kind of came together at the same time. We use CACFP, which recommends Family Style Dining as a best practice. At around the same time, we were approached by the Northeast Iowa Food & Fitness Initiative about adding farm to ECE. Even though it seemed like a lot at the time, they fit together. We knew we wanted to improve our eating environment with Family Style Dining and then we knew we needed to improve the food content in the meals."

To accomplish these two goals simultaneously, the center relied on TA from both FFI and the Iowa CCR&R agency. The center used TA from FFI to implement farm to ECE, improve menus, create nutrition and health lessons, offer taste tests, develop activities, create a garden, and teach children hands-on about growing food. Consultants at the Iowa CCR&R agency provided TA on implementing Family Style Dining. The center used grant funds from FFI to purchase materials for both Family Style Dining and farm to ECE. Eventually, both programs became so important that the center added positions to support the work.

Implementing Family Style Dining was initially a big challenge. The center serves infants through 12 years, with older children present before and after school as well as during school breaks. Initially, all of the children ate together in the cafeteria, which was loud, had big tables where the youngest diners' feet could not touch the floor, and was often a location for disruptive behaviors. Dee and her team knew they wanted a different eating environment. They wanted appropriately sized tables for smaller children, and an atmosphere that was more conducive to learning and quieter conversations. When Dee and the staff toured another center using Family Style Dining, they were impressed; mealtime was quiet, conversations were occurring between preschoolers and teachers at the table, and table manners were on display. "The children were behaving like little ladies and gentlemen out to a restaurant."

Dee recognized they needed help with logistics if they were going to switch to Family Style Dining. Creating the dining environment they wanted meant the children needed to eat in their classrooms instead of the cafeteria. This change required modifying both mealtime schedules and room arrangements. The Iowa CCR&R consultants helped create an inventory of materials and room changes needed to accommodate Family Style Dining. Gradually changing to Family Style Dining in the classrooms allowed the center to resolve problems as they came up, with CCR&R consultants providing valuable strategies.

Family Style Dining and farm to ECE initially presented drastic changes for teachers, including modified classroom schedules and new teacher roles. For example, it resulted in more time needed to set up, clean up, and manage classrooms. Teachers also worried about losing the opportunity to go to a different space during the day since Family Style Dining kept the children in classrooms for meals. As a solution, the center created a new indoor play space. Ultimately, the children adapted quickly to Family Style Dining and eating in the classrooms. Children adopted similar table manners to those Dee had observed at the center they had toured. The new indoor place space helped increase physical activity by providing space to play when the weather outside was poor. The staff was amazed at the change they saw in the children and how quickly they was able to successfully incorporate the new dining style. Teachers at Dee's center now join the meals to model good behavior and facilitate conversations.

Overall, implementing Family Style dining resulted in:

- Fewer physical transitions around mealtimes, which had been challenging for some children
- Children helping with set up and clean up for meals
- Quieter meals
- Safer seating with children's feet on the floor
- Opportunities for children to learn and practice manners

Farm to ECE was also a culture shift for teachers. Teachers were unsure of the value of gardening for the young children and were concerned about children getting dirty. However, the more the teachers were out in the garden with the children, the more they realized the value of the garden and the benefits of allowing children to get their hands dirty. "Now teachers have dirt tables inside for kids to explore—it has changed teachers' thinking about all of this."

Dee is patient and supportive of her ECE staff, encouraging them to help problem solve. Dee recognizes that she is coming into their space and asking them to make large changes. "You have to be respectful of [teachers'] knowledge and make sure they are involved in the process. The teachers know their classroom routines, the temperaments of their children, and how to adapt their space. We have regular meetings to talk about what is and isn't working." Dee uses a team approach

and sees the teachers as critical to successful program implementation.

In addition to the Iowa CCR&R consultants and FFI, the center utilized other community resources to help support their healthy changes. The center arranged with the local college to have a student come each week to lead the children in physical activities. Collaboration with the center helped the local college build interest in their Early Childhood Development courses and related degrees. The center also drew on the skills and networks of families and community members who serve on its board of directors. For example, parents who work in county development alert the center to funding opportunities and assist with grant applications. Taking advantage of these community resources has had reciprocal benefits in strengthening the center's community connections and family engagement.

Impact Seen

"The impact with Family Style Dining was felt right away. We used to go down to the school's dining area, which was loud and overwhelming. When we switched to the new approach of eating in the classroom Family Style, the children were calm and tuned in. The teachers appreciated the decrease in chaos and came around quickly [to being in favor of the change]." The advanced planning, touring another facility, budgeting, and preparations made the transition smooth and positive.

The greatest impact was among four-year-old children. "They have been the picky eaters, but [the teachers] have really worked on this with introducing new foods, learning about foods, and being patient." Family Style Dining creates a more relaxed environment and eases the rush of transitions to and from the cafeteria. Children are more receptive to trying new foods in a calm environment with their peers and teachers eating the same foods. The staff see less food going back to the kitchen. Families observed improvements at home, as well, with children trying more new foods. One parent noticed the influence of the rituals related to Family Style Dining and mentioned, "My child pushed their chair in at the table. This is coming from preschool because it has never happened at home before."

The center works to engage both children and teachers by designating a teacher as the lead for farm to ECE activities, incorporating gardening into the curriculum, and teaching the children to cook and eat from their own garden. Each classroom chooses what to plant in the garden. They use FFI's farm to ECE curriculum and materials to help guide their work. The garden is a large part of their program and they hope it will continue to flourish. Eventually, Dee hopes to have enough produce for a farmer's market for the families.

"I am most proud of the teachers coming on board and everything they are doing. The families really care what is happening at the school. The more they see what [healthy eating and physical activity] we are doing with the ECE [center], the more the families are interested and involved. We feel very supported by families, and our activities are well attended."

Words of Wisdom

Dee reflects on the assistance that FFI provided and shares that some of FFI's support is indirect. For example, knowing that other providers in Northeast Iowa are working to make their ECE settings healthier provides encouragement and reassurance. "[The] more there are these types of healthier programs at young ages, then [ECE providers] feel more supported in what we do. The parents become better educated. Parents begin to realize that this young age is a critical age, and we need to start early with healthy habits. Farm to ECE has helped us think that we don't just go to the store and get food. The food comes from somewhere. The children understand that now. They are also benefiting from being outside and learning out there. There are times when parents share that at home, the kids are outside, enjoying their yards, and creating their own entertainment. This makes children feel grounded. They are learning the ability to create their own fun and play with what we have before us, whether that is a Lego set or a bunch of sticks."

Programs and Organizations Referenced:

Child Care Resource and Referral Agencies

There are over 400 CCR&R and CCA agencies in the U.S., with at least one location in every state. CCR&R agencies help families find child care near their home or work. They also assist child care providers with trainings, materials, and resources. They can provide TA and alert providers to different healthy eating or physical activity opportunities to improve their ECE settings.

Family Style Dining

Family Style Dining is considered a best practice when eating with children in ECE settings. Providers sit at the same table with the children, children serve themselves when possible, and everyone eats together while sharing pleasant conversations. Children learn to engage in mealtime conversations, respond to their internal hungry/full cues, and pass food to one another from serving dishes.

Farm to ECE

Farm to ECE increases children's access to local food, gardens, and activities teaching them about food and agriculture. Farm to ECE is an effective obesity prevention strategy. The National Farm to School Network has materials, webinars, and information about state partners.

Northeast Iowa Food & Fitness Initiative

FFI is funded by the W.K. Kellogg Foundation in an effort to transform food and physical activity through policy, environment and system change, including incorporation of farm to ECE.

CASE STUDIES
Lessons Learned

Key Case Study Tips for Implementing Obesity Prevention Programs in Rural ECE Settings

Tips for Planning and Training

- Take advantage of free national, state and local resources, such as training and TA, to learn about best practices and learn how to implement changes.
- Tour another facility that has adopted best practices to increase understanding of the logistics required for implementing changes.
- Plan and budget for the changes in advance to help smooth the transitions.
  - Develop a rotating menu that incorporates seasonal items.
  - Add more economical protein sources, such as beans, to the menu.
  - Shop at a wholesale grocery store and select ingredients that are on sale.
  - Maximize purchase of non-perishable foods that are on sale and can be stored for later use.
  - Order groceries online.
- Involve teachers and staff in the process from the beginning. Provide ongoing training for all staff so they understand the changes that are occurring.
- If working with a food service provider, encourage them to undergo CACFP training to increase buy-in.
- Start with small changes. As staff observe positive results introduce additional changes one at a time.
- Engage staff through regular meetings to discuss what is and isn't working.
- Collaborate with other ECE centers to facilitate connection and peer support.

Tips for Incorporating Mealtime Changes

- Substitute processed foods with whole foods. For example, serve apple slices instead of applesauce, or celery with dip instead of canned vegetables.
- Provide multiple opportunities for exposure to new foods. For example, incorporate a new "food of the month" into taste tests, play activities, lunch items, and stories.
- Implement Family Style Dining, a meal service approach where children and adults sit together for a meal and children serve themselves.
- Divide children by age group, if possible, for appropriate seating at mealtime.
- Encourage the children to participate in preparing food.
- Implement food policies that help your ECE to stay on track.
  - Offer a variety of fruits and non-fried vegetables on each day of the week.
  - Offer a whole grain-rich food at least once per day.
  - Limit fried foods to once a week or less.
  - Only offer beverages without added sugar or sweeteners.

CASE STUDIES
Lessons Learned

Key Case Study Tips for Implementing Obesity Prevention Programs in Rural ECE Settings

Tips for Increasing Physical Activity

- Structure the day so there is ample time for physical activity in both the morning and the afternoon and encourage as much outside time as possible.
- Transition outdoor spaces from playground equipment to a natural learning environment to encourage creative outdoor play and increase the children's comfort in nature.
- Modify indoor spaces so the children have a place to play inside. If the ECE center has limited indoor space, incorporate creative movement activities, such as indoor obstacle courses, favorite animal races, keeping the balloon off the floor, and follow-the-leader.
- Eliminate screen time.
- Divide children by age group, if possible, to facilitate age-appropriate play.
- Partner with local high schools or universities. Have students come in and lead the children in physical activity.

Tips for Teaching Where Food Comes From

- Incorporate gardening to teach children where their food comes from.
- Learn about the local growing season and environment to determine what kinds of foods grow well.
- Gardening is modifiable for kids of all ages and abilities. Teach older children how to garden using raised beds. Younger children can start vegetables indoors and transition to pots or a smaller garden outside.
- Use plastic grow-sacks indoors to allow children a chance to work with dirt and learn about growing food.
- Ensure all children are able to participate by using The Square Foot Garden method, where each child is given their own square to tend in a raised garden bed.
- Use growing food as a way to teach about and connect with the local culture.
- Design outdoor spaces with garden beds, berry bushes, or fruit trees.

Tips for Engaging Families

- Orient new families to the program by providing an overview of the center, including meals, activities, and the center's policies related to food, nutrition, and physical activity.
- Model ways to make healthy changes and share success stories with parents at pick-up or by using informational poster boards, email updates, or newsletters. For example, share when a child tries a new vegetable after initially hesitating or when the children harvest their gardens and eat the fruits of their labor.
- Design family engagement events that are activity-focused instead of food-focused. For example, take families for a walk outside or a trip to the park, followed by group story time or a group craft.

Programs and Organizations that Provide Support

Arkansas Better Chance Program
The Arkansas Better Chance program is a multifaceted state program and serves to support the healthy development of children who have developmental or socioeconomic challenges.
→ **This resource is mentioned in the following Case Study: Debbie Mays**

Child and Adult Care Food Program
CACFP provides aid to child and adult care institutions and family or group daycare homes for the provision of nutritious foods that contribute to the wellness, healthy growth, and development of young children, and the health and wellness of older adults, and chronically impaired, disabled persons. It is administered through state agencies. Contact your state agency administering CACFP.
→ **This resource is mentioned in the following Case Studies: Christyna Bruce, Debbie Mays, Katherine Davis, and Theresa Claypool**

Child Care Aware North Dakota
CCA North Dakota provides child care providers with resources and trainings. They offer several different levels of TA. Christyna participated in the CCA Pyramid Model. This model includes watching online modules, creating and implementing action plans, and TA provided by a coach specializing in the content. The TA and online trainings span six months with 30-60 minutes of direct TA twice a month by phone and a monthly on-site visit.
→ **This resource is mentioned in the following Case Study: Christyna Bruce**

Child Care Aware's Healthy Eating, Behavior and Activity Training
CCA's healthy eating, behavior, and activity training is called the ChildcareAlive! curriculum. ChildcareAlive! has nutrition and physical activity lesson plans for children ages 2–5 years in ECE settings. The curriculum focuses on nutrition education, cooking, sensory exploration of new foods, and physical activity. The curriculum website includes curriculum PDFs, family engagement materials, videos, physical activity plans, and materials.
→ **This resource is mentioned in the following Case Study: Christyna Bruce**

Child Care Resource and Referral Agencies
There are over 400 CCR&R and CCA agencies in the U.S., with at least one location in every state. CCR&R agencies help families find child care near their home or work. They also assist child care providers with trainings, materials, and resources. They can provide TA and alert providers to different healthy eating or physical activity opportunities to improve their ECE settings.
→ **This resource is mentioned in the following Case Studies: Dee Christophersen and Theresa Claypool**

Choose Healthy Options and Start Young
CHOOSY is an adaptation of the I Am Moving, I Am Learning curriculum created for Head Start. CHOOSY includes ECE provider trainings and music for the I Am Moving, I Am Learning curriculum, as well as a comic hero to encourage children's healthy eating and physical activity.
→ **This resource is mentioned in the following Case Studies: Katherine Davis**

Color Me Healthy
Color Me Healthy is a healthy eating and physical activity curriculum available for purchase. Color Me Healthy comprises twelve lessons. Each lesson offers recipes, family engagement materials, videos, and activities. The program has music, posters, and teacher guides to support ECE setting implementation.
→ **This resource is mentioned in the following Case Studies: Katherine Davis**

Cooperative Extension
The Extension Service was established to provide farmers with information on agriculture, related research, and improved farming methods. Now its programs include instruction in child care programing, arts, cooking, mental and emotional health, and more. Cooperative Extension programs exist across the U.S. Contact the closest office to your work and learn about current ECE program offerings.
→ **This resource is mentioned in the following Case Studies: Natalie Ray**

Family Style Dining
Family Style Dining is considered a best practice when eating with children in ECE settings. Providers sit at the same table with the children, children serve themselves when possible, and everyone eats together while sharing pleasant conversations. Children learn to engage in mealtime conversations, respond to their internal hungry/full cues, and pass food to one another from serving dishes.
→ **This resource is mentioned in the following Case Studies: Dee Christophersen**

CASE STUDIES
Lessons Learned

Farm to ECE
Farm to ECE increases children's access to local food, gardens, and activities teaching them about food and agriculture. Farm to ECE is an effective obesity prevention strategy. The National Farm to School Network has materials, webinars, and information about state partners.
→ **This resource is mentioned in the following Case Studies: Natalie Ray, Jo Karmer, and Dee Christophersen**

Growing Minds' Farm to Preschool Toolkit
Growing Minds offers a free, downloadable farm to preschool toolkit. The toolkit includes lesson plans, garden activities, cooking guidance for ECE settings, and family engagement newsletters.
→ **This resource is mentioned in the following Case Studies: Katherine Davis**

Grow it, Try It, Like It
This is a garden-focused nutrition education curriculum, available in two versions, for ECE staff in child care centers or operators of family day care homes. The free materials, provided by USDA, include books and CDs focused on several lesson plans. Each lesson incorporates hands-on activities, planting activities, nutrition education, and opportunities for at-home activities.
→ **This resource is mentioned in the following Case Studies: Katherine Davis and Theresa Claypool**

Natural Learning Initiative
Natural Learning Initiative offers evidence-based design evaluation and redevelopment of outdoor learning environments. They have professional development trainings and resources to help others adapt outdoor environments that maximize physical activity and engagement among children.
→ **This resource is mentioned in the following Case Studies: Katherine Davis**

North Dakota Growing Futures
North Dakota Growing Futures is the state registry for ECE professionals. It provided Christyna and her team with training information, credits and credit tracking for trainings, online training access, documentation for license renewal, TA access through an online help center, and a showcase for their professional accomplishments. Most states have a similar registry through their licensing agencies.
→ **This resource is mentioned in the following Case Studies: Christyna Bruce**

Northeast Iowa Food & Fitness Initiative
FFI is funded by the W.K. Kellogg Foundation in an effort to transform food and physical activity through policy, environment and system change, including incorporation of farm to ECE.
→ **This resource is mentioned in the following Case Studies: Dee Christophersen**

Northwest Arkansas Family Childcare Association (CACFP Sponsor Agency)
The Northwest Arkansas Family Childcare Association is a non-profit organization that promotes quality child care through CACFP sponsorship, trainings, and professional development for FCC providers. Similar agencies exist across the U.S. To find a location near you, contact your state agency administering CACFP. They will have information about sponsoring agencies in the different regions of the state.
→ **This resource is mentioned in the following Case Studies: Debbie Mays**

Ohio Healthy Programs
OHP is a healthy eating, physical activity, and development training for early childhood health professionals that promotes policy, systems, and environmental changes in ECE settings. Although the trainings Theresa references are currently available only for Ohio providers, OHP has free downloadable materials, including activity and menu cards, a child care action kit, posters, and family engagement materials.
→ **This resource is mentioned in the following Case Studies: Theresa Claypool**

Shape NC: Healthy Starts for Young Children
Shape NC was created to increase the number of North Carolina's children starting kindergarten at a healthy weight. The program promotes healthy eating and physical activity through play in ECE settings using 3 interventions: Be Active Kids, Preventing Obesity by Design, and GO NAPSACC, in addition to facilitating community support for healthy child care settings. For those outside of North Carolina, there may be similar programs being run through local extension offices.
→ **This resource is mentioned in the following Case Studies: Katherine Davis**

USDA's Team Nutrition
Team Nutrition is a USDA initiative to support ECE settings with materials, training, and TA. The free materials offered are for providers, foodservice staff, children, and caregivers. Some materials are also available in multiple languages.
→ **This resource is mentioned in the following Case Studies: Theresa Claypool**

APPENDICES

Photo credit: iStock.com/goldenKB

APPENDICES

Appendix I: Obesity Prevention in Rural ECE Settings – Subject Matter Expert Organizations

Subject Matter Experts from the following organizations were consulted in development of this compendium:

- Arkansas Department of Health, WIC Program
- CCA of Arkansas
- CCA of North Dakota
- Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Division of Nutrition, Physical Activity, and Obesity
- East Tennessee State University, Center for Rural Health Research
- Health Resources and Services Administration, Federal Office of Rural Health Policy, Community-Based Division
- Health Resources and Services Administration, Maternal and Child Health Bureau, Division of State and Community Health
- Iowa Department of Public Health, Bureau of Nutrition and Physical Activity
- Louisiana Department of Health, Community and Preventative Health
- Luther College and Northeast Iowa Food & Fitness Initiative
- National Farm to School Network
- Nemours National Office of Policy and Prevention, Nemours Children's Health System
- NORC Walsh Center, University of Chicago, Public Health Research Department
- North Carolina State University, Center for Environmental Farming Systems, Farm to ECE Initiative
- North Dakota Department of Health, Division of Family Health and Nutrition
- Ohio Department of Education, Office of Early Learning and School Readiness
- Public Health Law Center
- Renewing the Countryside
- United States Department of Agriculture, Food & Nutrition Service, Policy and Program Development Division
- United States Department of Agriculture, Food & Nutrition Service, School Programs and Food Distribution Branch
- United States Department of Agriculture, Food and Nutrition Service, Western Regional Office
- West Virginia University, College of Physical Activity and Sport Sciences, Department of Coaching and Teaching Studies
- Wisconsin Division of Public Health

Appendix II: Obesity Prevention in Rural ECE Settings - Rural Child Care Providers

NAME	PROVIDER TYPE	LOCATION	POPULATION SIZE (2018)
Christyna Bruce**	Director, ECE Center	Cando, North Dakota	1,064
Josie Mercado Chavez	Director, Head Start	Yuma County, Arizona	Serves all Rural Head Starts in Yuma with >50% migrant workers
Dee Christophersen**	Director, ECE Center	Decora, Iowa	7,594
Theresa Claypool**	Owner, FCC	Fayetteville, Ohio	315
Susan Cogdill	Executive Director, Regional Non-Profit Organization	Wilkes County, North Carolina	Serves all towns in Wilkes county, the largest of which has a population of 4,246
Sara Converse	Provider, School District Preschool	Turkey Valley School District, Iowa	3,300
Katherine Davis**	Executive Director, ECE Center	Asheboro, North Carolina	25,844
Haleisa Johnson**	ECE Program Coordinator, Regional Non-Profit Organization	Northeast Iowa	Serves all towns in area, the largest of which have populations <8,000
Kari Kapp	Owner, FCC	Jamestown, North Dakota	15,226
Jo Karmer	Owner, FCC	Wacoma, Iowa	246
Debbie Mays**	Owner, FCC	Siloam Springs, Arkansas	16,567

NAME	PROVIDER TYPE	LOCATION	POPULATION SIZE (2018)
Karen Lineau Peterson	Director, ECE Center	Mazomanie, Wisconsin	1,652
Shanna Putnam	Learner Advocate, School District Preschools	Decora, Iowa	7,594
Nathalie Ray**	Owner and Director, ECE Center	Palmer, Alaska	7,306
Denise Tapcott	Director, Head Start and Early Head Start	Decora and Waverly, Iowa	7,594 and 10,000

**Included in the compendium case studies.

Appendix III: Obesity Prevention in Rural ECE Settings – Community of Practice Organizations

Members of the following organizations comprised the Community of Practice that led to the development of this compendium:

- Arkansas Association for Infant Mental Health
- Association of State Public Health Nutritionists
- CCA of Arkansas
- CCA of North Dakota
- Curricula Concepts
- Centers for Disease Control and Prevention, Division of Nutrition, Physical Activity, and Obesity
- East Tennessee State University, Center for Rural Health Research
- Health Resources and Services Administration, Federal Office of Rural Health Policy, Community-Based Division
- Health Resources and Services Administration, Maternal and Child Health Bureau, Division of Maternal and Child Health Workforce Development
- Health Resources and Services Administration, Maternal and Child Health Bureau, Division of State and Community Health
- Iowa Department of Public Health, Bureau of Nutrition and Physical Activity
- Louisiana Rural Health Association
- Nemours Children's Health System
- NORC Walsh Center, University of Chicago, Public Health Research Department
- North Carolina State University, Center for Environmental Farming Systems, Farm to Early Care and Education Initative
- Renewing the Countryside
- Washington State Department of Health, Prevention and Community Health
- West Virginia University

Appendix IV: Obesity Prevention in Rural ECE Settings - 2018 Environmental Scan

Introduction

One in five U.S. children and adolescents has obesity, triple the prevalence observed in the 1970s.[63] The NHANES reported the highest ever rates of childhood obesity in the most recent iteration of the survey in 2015-16. Obesity prevalence was highest among adolescents, 12–19 years (20.6%), compared with children aged 6–11 years (18.4%) and aged 2–5 years (13.9%).[2,3] It is important to note that these rates vary greatly depending on zip codes.[4–6] The prevalence of obesity among children 2-16 years living in larger metropolitan areas was about 17%, whereas the prevalence among rural children was 21.7%. More disconcerting, severe obesity was 84% more prevalent in rural communities than among urban zip codes.[7]

Rural zip codes carry a greater risk of obesity than other factors associated with obesity, such as older age, limited education, low income, minority status, or certain lifestyle factors.[64] According to a 2014 Robert Wood Johnson Foundation report, the higher rates of obesity and subsequent chronic disease mean that "residents of rural communities have worse health, on average, compared to the general population, lack access to quality health services, endure poorer socioeconomic conditions, and experience increased food insecurity".[8] Obesity is associated with higher rates of mortality and morbidity. Children with obesity or excess weight are five times more likely to suffer from adult obesity [odds ratio 5.21]. This positive association is also true for the adult diseases associated with adult obesity, so that a high childhood BMI is associated with adult hypertension, coronary heart disease, type 2 diabetes, fatty liver disease and certain cancers.[9]

Encouragingly, evidence shows that early obesity prevention interventions with children younger than five years establishes enduring healthy habits that lead to improved long-term health and reduced medical costs.[11,12,14,15] Intervening early is critical because children in the U.S., both in rural and urban areas, are gaining weight at younger ages than ever before and carrying the extra weight into adulthood.[18] Early intervention is helped by the fact that children's preferences for food and levels of physical activity are set by the time children are 2-3 years old.[16,17,65] It is easier to impact the habits of children under 5 years than habits that are entrenched in adulthood.[17] Therefore, it is not surprising

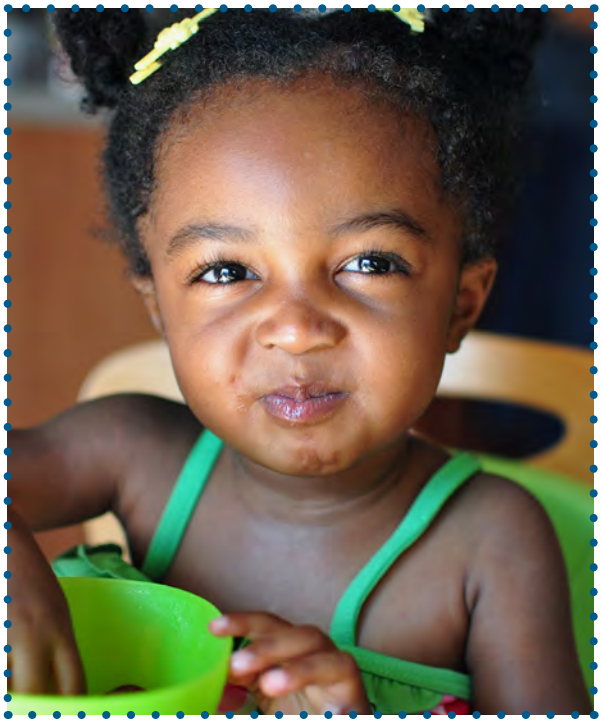

Photo credit: iStock.com/EyenEye

that interventions focused on positively influencing food and physical activity choices of children 2-7 years old have been effective, resulting in lasting habit changes . Delayed obesity prevention can lead to the devastating burden of disease and rising health costs, while early intervention can lead to decreased health risks and costs later in life. This is critically important in rural communities, where obesity risk, high economic strains, and an absence of primary care are common and compounding issues.

Early intervention among the ECE-age children could improve the health and economic well-being in a rural community. ECE settings can be a rural community focal point for such interventions. Among urban and rural children, 60% are being cared for outside the home[19] and for most of their waking hours during the work week[20]. It is estimated that two-thirds of these children's meals and physical activity happen in ECE settings.[21] This means ECE settings are a great way to reach young children and incorporate healthy eating and physical activity into their daily lives.

The environmental scan that follows will provide a snapshot of current obesity prevention practices, policies, and programs happening in rural ECE settings. The scan will identify existing activities, barriers agencies and providers face, critical partners to engage in rural settings, success stories, remaining gaps, and recommendations to make greater impacts. Organizations may use this scan for building a strategic plan to address rural obesity and create the building blocks for a strong intervention approach.

Methods

SMEs provided input and a literature review was conducted to gather information for this scan. A literature search via PubMed covering the past 10 years and using the keywords 'rural, intervention, obesity prevention, and preschool' yielded 76 studies. Once results were screened for U.S.-based interventions reaching children under five years of age in ECE settings, there were 23 studies remaining. A similar search with keywords 'city or urban, intervention, obesity prevention, and preschool' yielded 63 (out of 150 screened) results. This was not a systematic, exhaustive literature sampling, but this threefold difference indicates limited data and research happening in rural ECE settings in the area of obesity prevention.

In addition to literature reviews, twenty-two stakeholders provided their expertise and feedback as SMEs working in rural health, obesity prevention in early childhood, early childhood development, and provider professional development. SMEs provided information on their experiences related to obesity prevention efforts in rural ECE settings. They represented federal health-focused agencies, state entities (public and private), non-profit firms, national rural health organizations, and early childhood enterprises as national experts, state public health or education professionals, and child care trainers. Most of the trainers and some of the state public health professionals worked directly with rural child care providers in Arkansas, Iowa, Louisiana, Minnesota, North Carolina, North Dakota, Ohio, and West Virginia, and these are referred to as "local" SMEs where appropriate in the text to follow.

Results of Subject Matter Expert Input and Literature Reviews

Current obesity prevention activities referenced by SMEs focus heavily on utilizing online training programs, commonly GO NAPSACC, farm to ECE preschool curriculum, and peer-to-peer learning groups using a state-generated curriculum. SMEs mentioned using I Am Moving, I Am Learning; CHOOSY; Nemours' Family Style Dining Guide; or a farm to ECE curriculum.

Literature from the past 10 years references the following programs and curricula: GO NAPSACC,[40] CHILE,[66–68] Farm Fresh Foods for Healthy Kids,[69] Empower program among Arizona Indian Tribal Organizations,[33] and Colorado's LEAP[70]. Only GO NAPSACC and CHILE are referenced multiple times. LEAP and Farm Fresh are methodology-only publications with their final results due to be published in 2019.[69,70]

All SMEs indicated a growing interest at the state and national level in rural health. Aside from ongoing work, however, there were no plans for additional funding or a requirement to work in rural settings. The exception to that were those states that received CDC's High Obesity Program (HOP) funding. There are currently 15 states that receive HOP funds, each through a land grant university. HOP's focus is to increase access to healthier foods and safe places for physical activity in counties that have more than 40% of adults with obesity. HOP requires recipients to work in specific counties, many of which are rural counties. One SME mentioned that HOP funds were the sole support for their work in rural areas.

There were several common barriers that SMEs identified as challenging for ECE providers trying to implement healthy eating and/or active living (HEAL) practices in rural settings. The primary barriers were all access related. Rural providers lack access to fresh food, inexpensive and diverse produce choices, infrastructure to safely engage in outdoor activities, transportation to professional development, other providers, CACFP sponsors, reliable internet (although several local SMEs said this was improving), quality TA, and grocery stores. The literature reviewed concurred that rural providers lacked access to training, CACFP sponsors, grocery stores, resources for physical activity and fresh produce.[32,33,39–41]

Photo credit: iStock.com/Tetiana Soares

A couple state SMEs shared other barriers they observed in rural ECE settings. Settings that were interested in improving their menus but were affiliated with school districts were often restricted to district school food choices even though the school

foods did not adhere to best practices. SMEs also described an abundance of cheap, low nutrient density foods from fast food restaurants, local convenience stores, or low-cost general stores in the rural communities surrounding the ECE settings. One said, "You can't compete with cheap, accessible food." This barrier was compounded by what SMEs described as a "culture of eating cheap food and not eating fruits and vegetables." One local SME said "[that parents'] low to non-existent fruit and vegetable intake made it difficult to get children to eat fruit and vegetables." This is also characterized in a recent farm to ECE report, which describes the barrier a rural HEAL program faced trying to gain parent involvement from "parents who have grown up primarily with convenience food and are unfamiliar with how to purchase and prepare fresh foods".[34] SMEs reported similar observations regarding physical activity. For example, they mentioned that driving is critical to life in many of these spread-out communities where the nearest town or grocery store is often 20 miles away. Shifting to walking or biking will take investment and a "generation" according to one SME.

SMEs shared that the relationship rural providers have with parents is distinct from an urban setting and can be a barrier. In rural settings, ECE providers often have small numbers of children in their care, sometimes not reaching a critical number for solvency. Parents trust providers, but providers have to protect their relationships with parents to make sure they don't lose children. Therefore, providers can be hesitant to interfere with parents' beliefs or practices related to food or physical activity.

SMEs reported barriers they face in their own organizations when trying to fund, implement, or evaluate programs in rural ECE settings. They said these barriers came from organizational leadership or agendas, providers, funders, and the logistics of reaching rural providers. The agencies that SMEs worked for have a limited understanding of rural settings and the extent to which rural communities lack resources and infrastructure. One example of this was a state agency booklet distributed to local SMEs that recommended working on creating bike lanes in their strategic areas. An SME said that the areas she works in did not even have paved roads. The lack of understanding was not only a barrier to implementing HEAL programs but to even achieving basic health and safety requirements among some rural ECE settings. SMEs said that national or state agencies often set policies and agendas based on their urban perspectives. An illustration of this was an FCC provider who wanted a swing set in her backyard but could not source or afford the expense of the turf required for that swing set's base. SMEs recommended that policy-setting state agencies hold focus groups for policies and agendas with rural providers. Focus groups would help agencies understand rural providers' needs, capacity, and resource access.

Numerous state and local SMEs mentioned the need to set aside additional time in rural areas to address rural-specific needs. For example, developing relationships with rural providers is critical, but it takes time to invest in and foster these connections. In addition, an absence of infrastructure or resources causes delays while alternatives or solutions are put into place. "Funders need to

understand carryover funds are [commonly requested] because things require more time [in rural settings].” Work can also be delayed by outreach impediments, such as simply finding rural providers. There is a lack of unifying organizations locally and nationally for ECE settings, which makes it hard to find sites in rural and urban areas. In addition, SMEs mentioned that there are numerous “informal” unlicensed sites in rural communities that are known simply by word of mouth.

Photo credit: iStock.com/monkeybusinessimages

Multiple local SMEs indicated that outside groups promoting health programs, including government and university-supported groups and programs, are often not immediately trusted within some rural communities. Two SMEs commented that they did not drive state cars when travelling to rural ECE settings, suggesting that doing so would interfere with their ability to build partnerships in those areas.

Finally, and perhaps most critically, SMEs pointed out that often their own agencies are the barrier when it comes to funding. Funding for obesity prevention activities is commonly limited. Where funding exists, it is directed towards the densest number of children, not in rural settings.

Despite the numerous barriers that SMEs identified, there were resources and tools that have been effective in rural settings. Peer-to-peer learning along with learning collaboratives were consistently cited as effective approaches for sustained HEAL changes among rural providers. SMEs speculated that rural providers are more isolated from other providers than those in urban settings, and therefore gain a lot from the knowledge sharing, problem solving and support that occurs in these approaches. Many SMEs mentioned the increased impact interventions have when the ECE setting and/or communities are the leads in problem solving during the different stages of HEAL programs. Other effective tools SMEs mentioned were CACFP, although sponsors can be scarce in rural areas. SMEs also cited the following resources as effectual among rural ECE providers: economical physical activity ideas, HEAL resources for smaller spaces, incentives, connecting providers with local farms, pop-up farmers markets, and different methods for group procurement of fresh foods.

Rural communities around the U.S. are diverse in size, distant from other communities, can have limited resources and different employment opportunities, but SMEs mentioned common partners among these communities that help facilitate HEAL work. The four most common partners are CCR&R agencies, state or regional health departments, departments of education,

and Cooperative Extension. CCR&R agencies are critical to training and TA activities. State agencies are significant funders and providers of other forms of support. Cooperative Extension is a trusted source of information in communities, having been in most rural communities for numerous decades and offering services on a range of topics. Additional partners mentioned by three or more SMEs were Head Start, CACFP monitors, regional hospital associations or pediatricians, the W.K. Kellogg Foundation, and other private foundations or non-profits in the state. Similar partners were utilized among published research or methods teams, along with state universities or community colleges. SMEs indicated that increased impact or quicker results are observed when partners involved in the work are long-established and trusted in the community, such as Extension. Some SMEs adopted a protocol of identifying the trusted organizations in a community before applying for funding to make sure those partners could engage and support SMEs' work if funding was attained.

Rural providers and communities have numerous strengths that SMEs believe should be capitalized on to successfully adopt HEAL policies and programs. Rural communities "are cohesive and look out for each other." The rural providers are embedded in their small communities and trusted with the communities' children. Providers' activities and information can have a 'ripple effect' beyond the ECE setting according to both the literature[14,23,33] and SMEs. The following examples illustrate that effect: multiple generations in a family followed an ECE provider's advice; ECE providers had a community center open during the day for the children to be active in poor weather, which resulted in the larger community attending the center during the day; an ECE provider who had difficulty sourcing beets for the classroom mentioned her frustration to a parent and found beets on her doorstep the next morning because word spread to the local beet farmer; and an ECE-supported pop-up farmers market increased produce access beyond the ECE center to nearby residents. In some communities, the ECE setting is a community hub and/or has one of the largest kitchens in the community, so it becomes a gathering place and providers can capitalize on that. One SME characterized the collaborative nature of rural communities in this way: "[the] dynamics of rural culture is very grassroots."

Photo credit: iStock.com/Benoit Bruchez

SMEs working on farm to ECE type projects felt that a major strength to the rural setting is the agricultural literacy. Communities are either active or former farming areas, so implementing a farm to ECE program is well-received. Often the providers themselves live on farms and are motivated by personal experience. Providers also felt that rural parents did not object to "dirty produce" or activities that get their children dirty because

they had similar childhood experiences and appreciated the program's objectives. One pre-k teacher in Iowa worked in a pre-k through 12th grade school. She described the wider school interest and "group effort" behind their farm to ECE program. Her pre-k class cooks food from the garden and shares with other classes at the school. The school nurse teaches the sixth graders about agriculture, and the sixth graders in-turn teach the younger grades. Fourth graders plan, seed, and harvest the school garden, and the school cafeteria incorporates the produce from the garden into school lunches.

Another strength identified by the local SMEs was that rural providers are "hungry" for training, information and TA because these tend to be scarce in rural settings. They are responsive to trainings. One SME described it in the following way: "[Rural providers] are often early, quick, and effective adopters of HEAL because of their enthusiasm [and] the small size of their programs. [Their] multiple roles in the ECE setting makes it easier to adopt HEAL." Another SME said rural providers are easy and early adopters because "they don't have a lot of conflicting information." Three SMEs independently mentioned that these strengths make rural ECE settings ideal for piloting HEAL programs, policies, and activities. Additionally, several SMEs mentioned that the common lack of resources requires that providers be creative and that is apparent with addressing barriers or engaging children.

SMEs also recognized that the organizations they worked for, or aspects of the states they worked in, sometimes lend themselves to supporting rural providers more. One agency was able to pilot and innovate more easily because it is a small non-profit unrestrained by state requirements. One state's licensing requirements for physical activity training help engage busy rural providers in online trainings and increase their use of related lending library kits. Several states recognize the value of coaching and TA. This type of service has a big impact among rural providers, especially when the coaches are from the same or a similar rural community. A couple states have a strong partner program. These programs are often W.K. Kellogg Foundation-funded, Extension, or a home visiting program. These states leverage the partnerships to employ consistent messaging, coordinate work with ECE settings, share expertise, and optimize support available to each provider. Another state has a strong state coalition that helps them engage multiple partners active in rural settings to better support rural providers addressing HEAL. Several SMEs mentioned that where CACFP and WIC exist in rural settings, it is a "game changer." These programs provide them with some infrastructure to build HEAL policies or programs.

SMEs indicated that the greatest behavior changes among children and providers in rural ECE settings are when there is community support and/or individual coaching for the ECE providers. Examples SMEs cited included farm to ECE programs implemented with consistent and ongoing TA, online programs such as GO NAPSACC or Better Kid Care with an additional in-person support component, and individual HEAL TA or a peer-to-peer learning collaborative. Peer-to-peer learning was cited, repeatedly, as successful among many SMEs, especially when it goes with a structured HEAL program or hands-on activities. CACFP was also recognized as a vehicle

Photo credit: iStock.com/monkeybusinessimages

for success, when available with TA to help ECE providers with the administrative component. Similarly, the literature describes statistically significant changes when interventions include self-assessments, in-person regional workshops, or incentives.[12,40,55,68] A study interviewing rural ECE providers determined that ECE providers understand the importance of HEAL, but providers believe that to impact children, interventions need to involve parents and local primary care practitioners.[71] In rural settings, success requires some form of in-person support, e.g., individual TA, multiple series of live trainings.

Despite SME recognition that not all rural communities present the same challenges, SMEs and references shared recommendations applicable for supporting obesity prevention work in most rural ECE settings. Recommendations frequently focused on how to improve access to funding, fresh produce, and substantial HEAL training. Funding in most states is tied to licensing and/or QRIS requirements, but those requirements can be unattainable in rural settings. SMEs recommended involving rural representation in licensing and regulatory decisions to help communicate rural needs and diminish licensing disparities. Another suggested solution was to use focus groups in rural settings to obtain feedback on policies. SMEs recounted that many rural providers, especially FCC providers are "informal," unlicensed because they cannot realistically meet licensing requirements. Several SMEs recommended piloting distinct "rural" requirements that accommodate rural provider limitations.

Similarly, CACFP often provides monetary support; however, SMEs regularly mentioned the absence of CACFP sponsors in remote regions. SMEs recommended expanding CACFP sponsorship and using centralized kitchens to have multiple providers procure food, adopt CACFP, and share the CACFP administrative burden. Ohio is doing this in urban settings among Head Start providers, where they share "the back office" staff to combine and pool administrative tasks. A similar model could be employed among multiple ECE settings with CACFP.

Funders and researchers rely on anthropometric measurement, behavioral, and other relevant data to determine funding or intervention allocations. This type of data is insufficient or absent in rural areas, commonly eliminating their opportunities to secure funds or intervention opportunities. In addition, many funders or researchers look for a nominal infrastructure to build their programs, such as functional kitchens or playgrounds. SMEs recommended creating a specific set-aside dedicated to rural settings either to support more intensive data collection, infrastructure improvements, or resource allocation. Three SMEs reiterated how ideal rural settings are to pilot interventions and recommended that be communicated to universities, funders, and researchers. In rural settings the population can be homogeneous, staffing is small, confounders are minimal, and providers are eager to help. These SMEs believed that sharing this opportunity with researchers would help draw pilots, and therefore resources, to rural ECE settings.

The issue of accessing fresh produce is a critical challenge that needs to be ameliorated. SMEs recommended expanding the success seen in rural ECE settings that used farm to ECE to help overcome access issues. Farm to ECE includes ECE settings growing their own produce, procuring it from local farmers, hosting farmers markets to support produce access, or assisting with centralizing procurement for multiple settings. In addition to applying these approaches, ECE providers must encourage consumption among children and parents. When access is a challenge, most local diets are deficient in produce consumption. West Virginia and Iowa SMEs cited the 2018 CDC's Fruit and Vegetable report verifying low consumption rates in their states.[72] ECE providers can empower children to model produce consumption for their parents. For example, an SME working with an ECE center that provided their 3-5 year-olds with produce vouchers on pop-up market day reported that when children chose the produce, the children ate the produce. Similarly, SMEs recommended involving parents in cooking or meals incorporating produce into an ECE settings' family events. This approach is particularly effective when the children have been exposed to and learned about the fruit or vegetable served. SMEs agreed increasing produce access and acceptance is key to HEAL success in rural settings.

In addition to the recommendations on funding and access to produce, SMEs emphasized a need to improve and extend HEAL training with intensive TA, collaboration, or peer-to-peer opportunities. SMEs underscored that to succeed in rural settings, time needs to be dedicated to building relationships to create trusted partnerships that can support implementation and sustained work. Recommendations included setting aside time at each initial training for collaboration or partnership-building exercises to catalyze relationships. SMEs suggested allowing time in trainings for community problem solving, which would provide the community autonomy to create solutions for themselves. In addition, online and in-person trainings could provide opportunities to apply learning to rural settings.

Many state and national SMEs indicated that FCC providers, licensed or unlicensed, are the most "common" rural provider. The literature confirms that home-based care is utilized by families

roughly 53% in rural areas versus 42% in urban regions.[73] Rural FCC providers often have the greatest training gap. SMEs remarked at the even greater gap in resources for the FCCs versus rural centers. SMEs recommended trainings and resources specific to FCCs' challenges and strengths are needed. Such resources would support HEAL in the FCC.

SMEs and other published reports have indicated there are myths surrounding HEAL in rural settings, which impede program support in those areas.[33,34] These myths include a lack of interest among rural children and parents, a belief that HEAL is too difficult, community resistance, an assumption that sourcing produce will be too hard to support HEAL, and more. However, many local SMEs said that HEAL programs in rural ECE settings have been some of the most successful they have supported. SMEs believe the aforementioned strengths of rural providers, especially their receptiveness and resourcefulness are a keystone to the success of HEAL programs. Providers recognize the value of HEAL for the children in their care and work to make those programs succeed. Local SMEs agreed that where there is a small amount of TA and support, there are large gains in rural settings.

Photo credit: iStock.com/AaronAmat

Appendix V: Obesity Prevention in Rural ECE Settings - Additional Recommended Resources

Early Care and Education (ECE)

Farm to ECE Wisconsin Resources

The Spectrum of Opportunities Framework for State-Level Obesity Prevention Efforts Targeting the Early Care and Education Setting

Georgia Farm to Early Care & Education

Harvest for Healthy Kids

Healthy Kids, Healthy Future

Preventing Childhood Obesity in Early Care and Education Programs

Free resources to support your Farm to Child Care program

The State of Childhood Obesity

Checking In on the Child Care Landscape – 2019 State Fact Sheets

Appendix VI: References

1. Fryar C, Carroll M, Afful J. Prevalence of Overweight, Obesity, and Severe Obesity among Children and Adolescents Aged 2–19 Years: United States, 1963–1965 through 2017–2018. National Center for Health Statistics; 2020. Accessed December 28, 2020. https://www.cdc.gov/nchs/data/hestat/obesity-child-17-18/overweight-obesity-child-H.pdf
2. Fryar C, Carroll M, Ogden C. Prevalence of Overweight, Obesity, and Severe Obesity Among Children and Adolescents Aged 2–19 Years: United States, 1963–1965 Through 2015–2016. National Center for Health Statistics; 2018. Accessed July 15, 2019. https://www.cdc.gov/nchs/data/hestat/obesity_child_15_16/obesity_child_15_16.pdf
3. Hales CM, Carroll MD, Fryar CD, Ogden CL. Prevalence of Obesity Among Adults and Youth: United States, 2015-2016. NCHS Data Brief. 2017;(288):1-8.
4. Johnson JA, Johnson AM. Urban-Rural Differences in Childhood and Adolescent Obesity in the United States: A Systematic Review and Meta-Analysis. Child Obes. 2015;11(3):233-241. doi:10.1089/chi.2014.0085
5. Joyner H, Charron L, Lindberg S. Wisconsin Health Atlas: One Size Fits All Doesn't Work for Obesity Prevention: Obesity in Wisconsin, 2015-2016. University of Wisconsin School of Medicine and Public Health; 2018. Accessed December 1, 2018. https://www.wihealthatlas.org/
6. Powell-Wiley TM, Cooper-McCann R, Ayers C, et al. Change in Neighborhood Socioeconomic Status and Weight Gain. Am J Prev Med. 2015;49(1):72-79. doi:10.1016/j.amepre.2015.01.013
7. Ogden CL, Fryar CD, Hales CM, Carroll MD, Aoki Y, Freedman DS. Differences in Obesity Prevalence by Demographics and Urbanization in US Children and Adolescents, 2013-2016. JAMA. 2018;319(23):2410-2418. doi:10.1001/jama.2018.5158
8. Rockeymoore M, Moscetti C, Fountain A. Rural Childhood Obesity Prevention Toolkit. Robert Wood Johnson and the Leadership for Healthy Communities; 2014. Accessed December 18, 2018. https://www.rwjf.org/en/library/research/2014/10/rural-childhood-obesity-prevention-toolkit.html
9. Simmonds M, Burch J, Llewellyn A, et al. The use of measures of obesity in childhood for predicting obesity and the development of obesity-related diseases in adulthood: a systematic review and meta-analysis. Health Technol Assess. 2015;19(43):1-336. doi:10.3310/hta19430
10. Llewellyn A, Simmonds M, Owen CG, Woolacott N. Childhood obesity as a predictor of morbidity in adulthood: a systematic review and meta-analysis: Childhood obesity and adult morbidity. Obes Rev. 2016;17(1):56-67. doi:10.1111/obr.12316
11. Baidal JAW, Taveras EM. Childhood Obesity: Shifting the Focus to Early Prevention. Arch Pediatr Adolesc Med. 2012;166(12):1179. doi:10.1001/2013.jamapediatrics.358
12. Dennison BA, Russo TJ, Burdick PA, Jenkins PL. An Intervention to Reduce Television Viewing by Preschool Children. Arch Pediatr Adolesc Med. 2004;158(2):170. doi:10.1001/archpedi.158.2.170
13. Wen LM, Baur LA, Simpson JM, Rissel C, Wardle K, Flood VM. Effectiveness of home based early intervention on children's BMI at age 2: randomised controlled trial. BMJ. 2012;344(jun26 3):e3732-e3732. doi:10.1136/bmj.e3732
14. Finkelstein EA, Graham WCK, Malhotra R. Lifetime Direct Medical Costs of Childhood Obesity. PEDIATRICS. 2014;133(5):854-862. doi:10.1542/peds.2014-0063
15. Campbell F, Conti G, Heckman JJ, et al. Early Childhood Investments Substantially Boost Adult Health. Science. 2014;343(6178):1478-1485. doi:10.1126/science.1248429
16. Birch L, Savage JS, Ventura A. Influences on the Development of Children's Eating Behaviours: From Infancy to Adolescence. Can J Diet Pract Res. 2007;68(1):s1-s56.

17. Schwartz C, Scholtens PAMJ, Lalanne A, Weenen H, Nicklaus S. Development of healthy eating habits early in life. Review of recent evidence and selected guidelines. Appetite. 2011;57(3):796-807. doi:10.1016/j.appet.2011.05.316

18. Cunningham SA, Kramer MR, Narayan KMV. Incidence of Childhood Obesity in the United States. N Engl J Med. 2014;370(5):403-411. doi:10.1056/NEJMoa1309753

19. Corcoran, L, Steinley, K. Early Childhood Program Participation, Results from the National Household Education Surveys Program of 2016. National Center for Education Statistics, Institute of Education Sciences, U.S. Department of Education; 2019:1-72. Accessed May 5, 2019. https://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2017101rev

20. Laughlin, Lynda. Who's Minding the Kids? Child Care Arrangements: Spring 2011. U.S. Census Bureau; 2013:1-23.

21. Wright DR, Kenney EL, Giles CM, et al. Modeling the Cost Effectiveness of Child Care Policy Changes in the U.S. Am J Prev Med. 2015;49(1):135-147. doi:10.1016/j.amepre.2015.03.016

22. Administration for Children and Families' Office of Child Care. Family Child Care Brief, 2015. Administration for Children and Families; 2015. Accessed November 20, 2018. https://www.acf.hhs.gov/sites/default/files/documents/occ/occ_fcc_brief.pdf

23. Erinosho T, Hales D, Vaughn A, Gizlice Z, Ward D. The Quality of Nutrition and Physical Activity Environments of Family Child-Care Homes in a State in the Southern United States. J Acad Nutr Diet. 2019;119(6):991-998. doi:10.1016/j.jand.2018.11.012

24. Francis L, Shodeinde L, Black MM, Allen J. Examining the Obesogenic Attributes of the Family Child Care Home Environment: A Literature Review. J Obes. 2018;2018:1-20. doi:10.1155/2018/3490651

25. Tonyan HA, Nuttall J, Torres J, Bridgewater J. Engaging With Quality Improvement Initiatives: A Descriptive Study of Learning in the Complex and Dynamic Context of Everyday Life for Family Child Care Providers. Early Educ Dev. 2017;28(6):684-704. doi:10.1080/10409289.2017.1305152

26. Federal Office of Rural Health Policy. Defining Rural Population. Published online December 2018. Accessed January 12, 2019. https://www.hrsa.gov/rural-health/about-us/definition/index.html

27. Brownson RC, Chriqui JF, Stamatakis KA. Understanding Evidence-Based Public Health Policy. Am J Public Health. 2009;99(9):1576-1583. doi:10.2105/AJPH.2008.156224

28. UNC Center for Health Promotion and Disease Prevention. SNAP-Ed Toolkit: Obesity Prevention Interventions and Evaluation Framework. USDA; 2016. Accessed August 21, 2019. https://snapedtoolkit.org/

29. Harvard T.H. Chan School of Public Health. Life in Rural America: Part II- Experiences and Views from Rural America on Economic and Health Issues and Life in Rural Communities. NPR/Robert Wood Johnson Foundation/Harvard School of Public Health; 2019. Accessed June 22, 2019. https://www.rwjf.org/en/library/research/2019/05/life-in-rural-america--part-ii.html

30. Kretzmann J, McKnight J, Dobrowolski S, Puntenney D. Discovering Community Power: A Guide to Mobilizing Local Assets and Your Organization's Capacity. Asset-Based Community Development Institute; 2005. https://community-wealth.org/content/discovering-community-power-guide-mobilizing-local-assets-and-your-organization-s-capacity

31. NORC Walsh Center for Rural Health Analysis, in partnership with the University of Minnesota's Rural Health Research Center and Rural Health Information Hub (RHIhub). Rural Community Health Toolkit [Online] Rural Health Information Hub.; 2016. Accessed June 22, 2019. https://www.ruralhealthinfo.org/toolkits/rural-toolkit/about-this-toolkit

32. Drummond RL, Staten LK, Sanford MR, et al. Steps to a Healthier Arizona. Health Promot Pract. 2009;10(2_suppl):156S-167S. doi:10.1177/1524839908331267

33. Ickes M, Slagle K. Targeting Obesity in Rural and Appalachian Children and Families: A Systematic Review of Prevention and Treatment Interventions. Univers J Public Health. 2013;1(3):51-64. doi:10.13189/ujph.2013.010303

34. pfc social impact advisors. Good Food, Great Kids: Making Practice and Policy Work for Farm to Early Childcare & Education. pfc social impact advisors; 2018. Accessed May 3, 2019. http://media.wix.com/ugd/968e52_42ac5c9fa50f43e4ac0523988b11ffc9.pdf

35. Lee-Kwan SH, Moore LV, Blanck HM, Harris DM, Galuska D. Disparities in State-Specific Adult Fruit and Vegetable Consumption — United States, 2015. MMWR Morb Mortal Wkly Rep. 2017;66(45):1241-1247. doi:10.15585/mmwr.mm6645a1

36. Lutfiyya MN, Chang LF, Lipsky MS. A cross-sectional study of US rural adults' consumption of fruits and vegetables: do they consume at least five servings daily? BMC Public Health. 2012;12(1):280. doi:10.1186/1471-2458-12-280

37. Park T, Eyler AA, Tabak RG, Valko C, Brownson RC. Opportunities for Promoting Physical Activity in Rural Communities by Understanding the Interests and Values of Community Members. J Environ Public Health. 2017;2017:1-5. doi:10.1155/2017/8608432

38. Baquet CR, Bromwell JL, Hall MB, Frego JF. Rural Community–Academic Partnership Model for Community Engagement and Partnered Research. Prog Community Health Partnersh. 2013;7(3):281-290. doi:10.1353/cpr.2013.0028

39. Foster JS, Contreras D, Gold A, et al. Evaluation of Nutrition and Physical Activity Policies and Practices in Child Care Centers within Rural Communities. Child Obes. 2015;11(5):506-512. doi:10.1089/chi.2015.0030

40. Battista RA, Oakley H, Weddell MS, Mudd LM, Greene JB, West ST. Improving the physical activity and nutrition environment through self-assessment (NAP SACC) in rural area child care centers in North Carolina. Prev Med. 2014;67:S10-S16. doi:10.1016/j.ypmed.2014.01.022

41. Smith C, Morton LW. Rural Food Deserts: Low-income Perspectives on Food Access in Minnesota and Iowa. J Nutr Educ Behav. 2009;41(3):176-187. doi:10.1016/j.jneb.2008.06.008

42. USDA Economic Research Service. Farming and Farm Income. USDA Economic Research Service; 2019. Accessed April 28, 2019. https://www.ers.usda.gov/data-products/ag-and-food-statistics-charting-the-essentials/farming-and-farm-income/

43. Parry J. Farm-to-Preschool in East Tennessee: Evaluation of a Small-scale Farmer 's Market at a Childcare Center on Household Fruit and Vegetable Availability and Preschoolers' Consumption of Fruits and Vegetables. Published online August 2016. Accessed June 20, 2019. https://trace.tennessee.edu/cgi/viewcontent.cgi?article=5060&context=utk_gradthes

44. McCrady-Spitzer SK, Sagdalen V, Manohar CU, Levine JA. Low-Cost, Scalable Classroom-Based Approach to Promoting Physical Activity in Preschool Children. J Child Obes. 2016;1(2). doi:10.21767/2572-5394.10008

45. Allen JP, Pianta RC, Gregory A, Mikami AY, Lun J. An interaction-based approach to enhancing secondary school instruction and student achievement. Science. 2011;333(6045):1034-1037. doi:10.1126/science.1207998

46. U.S. Bureau of Labor Statistics. Occupational Outlook Handbook: Childcare Workers. U.S. Bureau of Labor Statistics; 2019. : https://www.bls.gov/ooh/personal-care-and-service/childcare-workers.htm

47. Allegretto S, Mishel L. The Teacher Pay Penalty Has Hit a New High: Trends in the Teacher Wage and Compensation Gaps through 2017. Economic Policy Institute; 2018. Accessed June 22, 2019. https://www.epi.org/publication/teacher-pay-gap-2018/

48. Joyce BR, Showers B. Student Achievement through Staff Development. 3rd ed. Association for Supervision and Curriculum Development; 2002.

49. Hemmeter ML, Snyder P, Kinder K, Artman K. Impact of performance feedback delivered via electronic mail on preschool teachers' use of descriptive praise. Early Child Res Q. 2011;26(1):96-109. doi:10.1016/j.ecresq.2010.05.004

50. Winton PJ, McCollumn JA, Catlett C, eds. Practical Approaches to Early Childhood Professional Development: Evidence, Strategies, and Resources. Zero to Three; 2008.

51. National Association for the Education of Young Children, National Association of Child, Care Resource & Referral Agencies. Early Childhood Education Professional Development: Training and Technical Assistance Glossary.; 2011. Accessed June 30, 2019. https://www.naeyc.org/sites/default/files/globally-shared/downloads/PDFs/our-work/public-policy-advocacy/glossarytraining_ta.pdf

52. Office of Child Care and Office of Head Start, Administration for Children and Families. A guide to effective consultation with settings serving infants, toddlers, and their families. Published online 2011. Accessed June 30, 2019. https://childcareta.acf.hhs.gov/sites/default/files/public/effective_guide_to_consultation.pdf

53. Le LT, Anthony BJ, Bronheim SM, Holland CM, Perry DF. A Technical Assistance Model for Guiding Service and Systems Change. J Behav Health Serv Res. 2016;43(3):380-395. doi:10.1007/s11414-014-9439-2

54. Crane TG. The Heart of Coaching. FTA Press; 2010.

55. Buysse V, Wesley PW. Consultation in Early Childhood Settings. Paul H. Brookes Pub; 2005.

56. Rush DD, Shelden ML. The Early Childhood Coaching Handbook. Paul H. Brookes Pub. Co; 2011.

57. American Community Survey. American Community Survey 5 Year Estimates: Poverty Status in the Past 12 Months, 2018, Table S1701. U.S. Census Bureau; 2018. Accessed April 29, 2020. https://www.census.gov/programs-surveys/acs/

58. U.S. Department of Agriculture: Economic Research Services. Rural Poverty & Well-Being. U.S. Department of Agriculture: Economic Research Services; 2020. Accessed April 29, 2020. https://www.ers.usda.gov/topics/rural-economy-population/rural-poverty-well-being/

59. Lessard LM, Wilkins K, Rose-Malm J, Mazzocchi MC. The health status of the early care and education workforce in the USA: a scoping review of the evidence and current practice. Public Health Rev. 2020;41(1):2. doi:10.1186/s40985-019-0117-z

60. Rainbow in My Tummy Family Cookbook / by Verner Center for Early Learning. Verner Center for Early Learning; 2014.

61. Bartholomew M. All New Square Foot Gardening with Kids: Learn Together: Gardening Basics: Science and Math, Water Conservation, Self-Sufficiency, Healthy Eating. Cool Springs Press; 2014.

62. Rose D. It's Not about the Broccoli: Three Habits to Teach Your Kids for a Lifetime of Healthy Eating. First edition. Perigee; 2014.

63. Ogden CL, Carroll MD, Lawman HG, et al. Trends in Obesity Prevalence Among Children and Adolescents in the United States, 1988-1994 Through 2013-2014. JAMA. 2016;315(21):2292. doi:10.1001/jama.2016.6361

64. Befort CA, Nazir N, Perri MG. Prevalence of obesity among adults from rural and urban areas of the United States: findings from NHANES (2005-2008). J Rural Health. 2012;28(4):392-397. doi:10.1111/j.1748-0361.2012.00411.x

65. Birch LL. Development of Food Preferences. Annu Rev Nutr. 1999;19(1):41-62. doi:10.1146/annurev.nutr.19.1.41

66. Morshed AB, Davis SM, Keane PC, Myers OB, Mishra SI. The Impact of the CHILE Intervention on the Food Served in Head Start Centers in Rural New Mexico. J Sch Health. 2016;86(6):414-423. doi:10.1111/josh.12393

67. Cruz TH, Davis SM, Myers OB, O'Donald ER, Sanders SG, Sheche JN. Effects of an Obesity Prevention Intervention on Physical Activity Among Preschool Children: The CHILE Study. Health Promot Pract. 2016;17(5):693-701. doi:10.1177/1524839916629974

68. Davis SM, Sanders SG, FitzGerald CA, Keane PC, Canaca GF, Volker-Rector R. CHILE: An Evidence-Based Preschool Intervention for Obesity Prevention in Head Start. J Sch Health. 2013;83(3):223-229. doi:10.1111/josh.12018

69. Seguin RA, Morgan EH, Hanson KL, et al. Farm Fresh Foods for Healthy Kids (F3HK): An innovative community supported agriculture intervention to prevent childhood obesity in low-income families and strengthen local agricultural economies. BMC Public Health. 2017;17(1):306. doi:10.1186/s12889-017-4202-2

70. Bellows LL, Johnson SL, Davies PL, Anderson J, Gavin WJ, Boles RE. The Colorado LEAP study: rationale and design of a study to assess the short term longitudinal effectiveness of a preschool nutrition and physical activity program. BMC Public Health. 2013;13(1):1146. doi:10.1186/1471-2458-13-1146

71. Kracht CL, Sisson SB, Walker D, et al. Early Care and Education Teacher's Role in Obesity Prevention and Healthy Development of Young American Indian Children. J Transcult Nurs. 2019;30(1):75-85. doi:10.1177/1043659618786363

72. State Indicator Report on Fruits and Vegetables, 2018. Division of Nutrition, Physical Activity, and Obesity, National Center for Chronic Disease Prevention and Health Promotion; 2018. Accessed November 18, 2018. https://www.cdc.gov/nutrition/data-statistics/2018-state-indicator-report-fruits-vegetables.html

73. Swenson K. CHILD CARE ARRANGEMENTS IN URBAN AND RURAL AREAS. Office of the Assistance Secretary for Planning and Evaluation, U.S. Department of Health and Human Services; 2008. https://aspe.hhs.gov/report/child-care-arrangements-urban-and-rural-areas

Photo Credits

Front Cover

Top - iStock.com/LightFieldStudios
Middle - iStock.com/monkeybusinessimages
Bottom - iStock.com/Rawpixel

Back Cover

Top - iStock.com/M-image
Middle - iStock.com/STEFANOLUNARDI
Bottom - iStock.com/mmg1design

HRSA
Health Resources & Services Administration