Children First: Using Community Food Systems to

Improve Early Childhood Nutrition in Rural Wisconsin

Background

I was raised on a dairy farm in northern Wisconsin. We had a small herd of Holstein cows, whose milk was picked up daily and trucked to the local cheese cooperative. There our milk was mixed with our neighbors' milk, transformed into curds which were stuffed into molds, and shaped into commodity cheeses like Colby Longhorn, Brick, Muenster and Cheddar. From the cheese factory, the products went off to market, trucked down to Chicago or out East to New York without any trace of the hands that formed the cheese wheels or milked the cows. These cheeses told a story of commerce and progress, using economic exchange as a way to adequately feed a country that survived lean Depression years. They also told a story of severed relationships, of farmers separated from controlling their milk prices; cheesemakers divorced from making cheeses that reflected the seasonality and flavor profiles of the milk; and consumers torn from local farmers and regional foods. These cheeses told a story of broken landscapes, whose livelihoods were driven by outside interests and markets, and the political and cultural shifts that led to this.

But I remember a different story of growing up in rural Wisconsin. I remember each day being shaped by the chores that needed to be done, our family's routine and decisions molded by the needs of the farm. I remember eating the foods of our labors and tasting the seasons – wild onions in the spring milk when the cows grazed the back forty pasture; green beans, peas and tomatoes that we would snitch from the bucket when harvesting the garden; and corn on the cob that somehow held the flavor of sunshine and July heat even when pulled out of the freezer in January. The farm formed us and gave us a pattern of labor and consumption tied to the

place, and connected us with a larger community that taught us shared values. These values kept our farms, families and communities in balance until we left. Until we and the majority of our neighbors left our farms, dramatically changing the shape and structure of our rural town.

The agricultural changes and loss of family farms that my small town experienced happened in communities across rural Wisconsin and America throughout the mid to late 20th century. What I did not realize growing up was that as the health of rural Wisconsin landscapes and ***economies*** declined, so too did the health of rural Wisconsin ***bodies***. I first learned of the larger global and economic forces that eliminated thousands of family farms a decade after we moved. And it took me yet another decade to see that, concurrent with the decline of our rural economy, the health outcomes of people in my small town were declining rapidly. Heart disease, cancer, obesity, diabetes and mental health issues are all on the rise in rural communities across the state, nation and world. Which leads me to wonder, what is the relationship between the health of a rural economy and the health of its people? By improving our rural economies and creating healthy environments, can we start to rebuild individual health and improve community wellness?

Growing up on a farm, I experienced how the health of the landscape and people **are** intimately intertwined. Unfortunately, our current ways of producing food destroy the health of our bodies, communities and natural resources. The industrial agricultural system has brought us market efficiencies, improved production systems, better food sanitation processes and reduced hunger and malnutrition. However, it has created new problems for my and future generations to address: polluted soils, water and air due to pesticides and fertilizers; excessive reliance on fossil fuels for production; working conditions that are neither just nor fair to farmworkers;

economic benefits that reward wealthy corporations and destroy local economies; and a health care crisis with the global rise in obesity, diabetes and other chronic diseases. If we could create a more resilient, balanced food system, would it not also ease some of the pressures off of our ailing health care system?

One way to create community health is to rebuild rural communities' local food infrastructure to emphasize local, sustainable and healthy foods. A community food system is "a collaborative network that integrates sustainable food production, processing, distribution, consumption and waste management in order to enhance the environmental, economic and social health of a particular place (1)." Community food systems increase participation by farmers, consumers and communities, and strengthen these relationships to create locally-based, self-reliant food economies that improve social, economic and environmental health. Community food systems require interdisciplinary teams who collaborate to create plans that integrate the health of rural people, economies and environments.

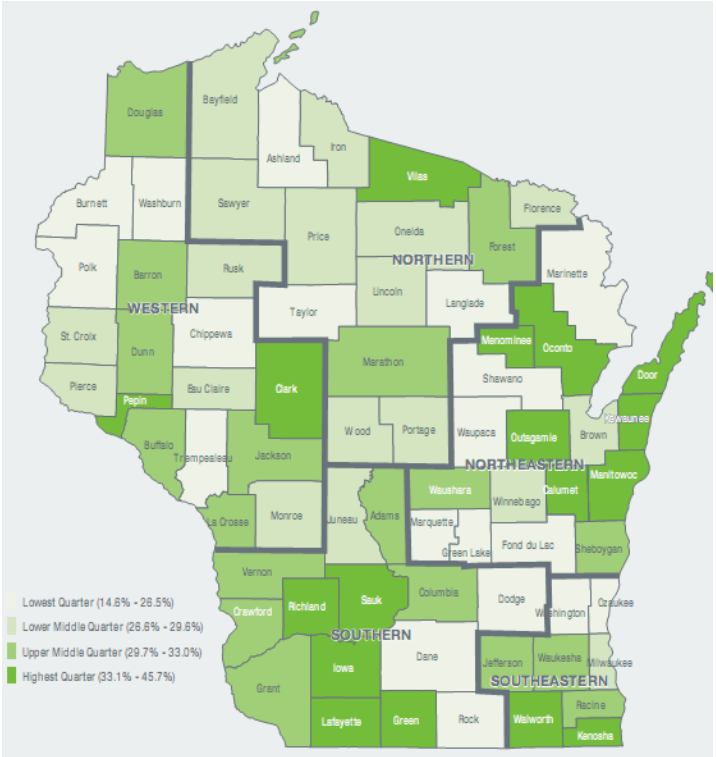
Currently, only 7% of Americans consume the recommended level of fruits and vegetables on a daily basis, and this contributes to many chronic health concerns. But what would happen if the other 93% of Americans suddenly woke up and decided to eat as the American Dietetic Association recommends, meeting the recommended daily allowance of fruits and vegetables? Dr. Mike Hamm, C.S. Mott Chair of Sustainable Food Systems at Michigan State University, states that the United States would not have enough whole, unprocessed fruits and vegetables to supply this need. To meet such a demand, the U.S. would need to turn 13 million acres of land into vegetable production – and find the farmers who would manage it, local markets that would transport, process and distribute the produce, and grocers who could sell it (2).

This story illustrates why community food systems are not just an agricultural issue, but a public health issue. For community food systems to improve *public health*, they need to be designed in ways to mitigate socioeconomic disparities and ensure healthy food access, availability and affordability to all. One important way to ensure good community health is to establish positive eating habits early in children, and to provide parents and providers with appropriate nutrition education, resources to make healthy decisions, and access to healthy foods. This paper describes how a community food systems approach is vital to improve the health of rural lands, economies, and people.

Introduction

Overweight and obesity rates have risen dramatically over the past 20 years. Of particular concern is the increase in childhood obesity. From 1980 to 2000, obesity rates have more than doubled among children ages 2-5 years, from 5.0% to 12.4% and nearly tripled for youth ages 6-11 years, from 6.5% to 17.0% (3). Children who are obese are at a greater risk for multiple health issues, including Type 2 diabetes, cardiovascular disease, metabolic abnormalities, and the likelihood of adult obesity, with poor and disadvantaged populations being at greater risk (4). Because childhood obesity increases life-long risk factors, social disparities and costs to society, early intervention is essential.

Total Overweight Prevalence in Wisconsin Counties by Quartile for WIC Children Ages 2 to 4, 2004-2006



In Wisconsin, overweight and obesity rates are 29% for 2- to 4-year old children who participate in the Women, Infants and Children (WIC) nutrition program (5). The range of rates for this age group varies three-fold by county, from a low of 15% to a high of 46%, with many of Wisconsin's poor, rural counties facing the highest rates (5). Childcare settings provide structured environments where children spend a significant amount of time and consume a high proportion of their dietary food requirements during a growth period critical to shaping lifelong energy regulation (6). Thus, with over 2,500 licensed group centers in Wisconsin and approximately 220,400 children enrolled in licensed group centers (7), these settings offer an important opportunity to implement obesity prevention

strategies for rural Wisconsin children, their parents and communities. To reduce rates of overweight among children in the early childhood age group, nutrition interventions in childcare settings must be combined with community-based, environmental approaches to improve food environments.

Evidence-Based Approaches

Children who consume recommended levels of fruits and vegetables, are physically active, and limit consumption of energy-dense foods establish a pattern for healthy living that reduces risk of obesity and other non-communicable diseases throughout life (8). National dietary guidelines recommend that children between 2- and 5-years consume at least 5 servings of fruits and vegetables daily (9). Despite the health benefits of fruit and vegetable consumption in children, these needs are not being met (10). According to the Feeding Infants and Toddlers Study, between 18% and 33% of infants and toddlers from 7 to 24 months consumed no servings of vegetables, and 23% to 33% consumed no fruits (11). By 15 to 18 months, French fries were the most commonly consumed vegetable (11). To address this, nutrition interventions in childcare centers have emphasized modifying behavior through increased fruit and vegetable consumption, decreased consumption of high energy-dense foods and increased physical activity (8).

Evidence suggests that increasing children's fruit and vegetable consumption in the childcare setting can be done successfully through multi-component behavior-change strategies. These strategies might include establishing healthy food policies, providing a variety of fresh fruit and vegetable options, teaching children about food and nutrition, modeling healthy food habits, following nutrition and meal planning standards, and scheduling structured meals throughout the day (8). Because parents and other adults with purchasing power make most dietary choices for preschool-aged children, it is important to identify ways to connect parents and childcare

providers with nutrition information to promote healthy eating both in centers and at home. A cross-sectional study from rural Missouri assessed the dietary habits of preschool children and their parents enrolled in a parent education program. They found that preschool children who participate in growing food and eat homegrown produce with their families are more willing to try a variety of fruits and vegetables in the childcare setting (13). Healthy eating behaviors start at home, and lifelong patterns are established and enforced by children's family networks (13).

While the home environment shapes eating patterns, childcare centers are increasingly responsible for providing children with a large portion of their daily dietary intake and have the opportunity to model healthy eating behaviors as well (6). A Cochrane review by Summerbell *et al* concluded that multifaceted obesity prevention programs to address dietary change and physical activity are effective in the childcare setting, but may be most successful when they include social support and environmental change (12). A multi-component, community-based intervention in Pennsylvania targeted a low socioeconomic status neighborhood by addressing nutrition and physical education behaviors in the schools, while also working to improve the neighborhood's food environment, sponsoring farmers markets, corner market stands and community gardens. Results from this 2-year study showed a reduction in the incidence of overweight by 50% in the intervention group (14). Childcare center interventions alone cannot reduce rates of obesity, and this study suggests the potential to combine center-based behavior change activities with community-based improvements in the food environment to improve nutrition.

Current Status of Implementation of Early Childhood Nutrition Programs

There are a growing number of community-based efforts in Wisconsin, at both local and state levels, to address childhood obesity in the childcare setting. Many of these efforts employ the Social Ecological Model (SEM) for program planning, which is an evidence-based framework

that can guide communities in making changes at individual, family, community, and policy levels to support healthier diets. Because where we live shapes what we eat, strengthening community-based food systems at multiple levels is a necessary strategy to create healthy food environments in rural Wisconsin communities.

At the local level, community-led initiatives are helping rural schools incorporate more fruits and vegetables into children's meals, teach nutrition classes and offer goal-setting sessions to children and their families. The focus of several efforts, such as Farm to School programs, is to improve the quality of institutional meals by building relationships with local farmers, strengthening community partnerships and incorporating local foods into school meals. In Wisconsin, Farm to School has yet to be integrated into preschool settings, though extending this program to earlier age groups could promote improved nutrition at a vital stage of child development and has been done in other states. Complimentary to Farm to School's goal of improving the quality of school meals, is the work of the UW-Extension Nutrition Education program (WNEP). WNEP implements individual- and community-based nutrition education using evidence-based approaches in settings such as childcare centers. WNEP currently works in 68 of Wisconsin's 72 counties to teach low-income families (including Women, Infant, and Children program participants, who are mothers with children under 5 years) about nutrition and how to prepare low-cost, healthy meals to emphasize individual behavior change. In addition to improving nutrition, childcare centers are setting physical activity goals to improve children's health. Centers engage toddlers in both traditional physical education and gardening activities to get children moving and connect them to vegetables, increasing children's knowledge of and willingness to try foods. These efforts encourage healthy behaviors and often involve local community members and resources.

At the community and policy levels, Wisconsin has demonstrated progress to improve child nutrition and increase the quality of childcare centers' food service options. Through the Department of Health Services, Wisconsin has several obesity prevention initiatives, including the *Wisconsin Nutrition and Physical Activity State Plan* (a long-range planning document) and the Nutrition, Physical Activity and Obesity program (NPAO), which received funding from the Centers for Disease Control and Prevention to plan a comprehensive nutrition and physical activity program for Wisconsin, with funding through 2013. This will set nutrition and menu planning goals for centers to enforce and ensure their food programs meet state guidelines.

Analysis of Barriers in Translating Research into Practice

Despite childcare center, community and policy efforts to improve children's eating behaviors, the majority of rural Wisconsin children in the early childhood age group still fail to meet fruit and vegetable intake recommendations and their obesity rates rise (15). Many interventions have attempted to improve children's nutrition habits by working at multiple SEM levels of change, yet environmental and behavioral obstacles remain. These issues are particularly acute in rural communities, where food access, availability and pricing hinder residents' ability to purchase produce and healthy food options (16). Evidence supports that early childhood settings and schools have the potential to play a role in promoting healthy nutrition, and that multi-component efforts that involve community participation are necessary (17). For early childhood obesity prevention to success in rural Wisconsin, nutrition interventions in the childcare setting must be combined with community-based, environmental approaches to overcome food access barriers.

Children need to access healthy foods both in centers and at home. This reinforces a consistent message for healthy eating and empowers children to make better food choices with their families. Yet multiple environmental barriers exist that limit children's fruit and vegetable intake (18), which include a shift in dietary and lifestyle patterns, the loss of local grocery stores and

other food outlets with fresh produce, the amount of time parents spend working (less time to cook), children's disconnect with where their food comes from, decreasing dietary diversity and knowledge of healthy food traditions (19). Particular to rural areas, is the impact that the loss of and distance to local grocery stores, farmers markets and other food retail outlets have on diet quality. Some of America's poorest regions are rural communities surrounded by farmland that once sustained vibrant communities and food traditions. It may seem ironic that communities surrounded by rich farmland have lower rates of fruit and vegetable consumption, and higher rates of obesity (20). Rural farm families once labored to grow their own food or purchased staples from local grocery stores, but today are frequently fed by fast-food outlets, liquor stores and gas stations (20). Finding healthy food options in these settings is a challenge, as the food outlets available tend to stock highly processed, shelf-stable goods rather than fresh foods. Even in rural communities where residents are aware of and want to purchase healthy foods, the physical, social and economic environments may constrain healthy food decisions (21).

Environmental change is needed to improve parents' and providers' ability to access, afford and utilize healthy foods. PolicyLink, a national research and advocacy institute advancing social equity, recommends the following actions to improve food environments in limited resource communities: provide incentives for retail store development; promote retail innovations, including smaller-scale markets that sell healthy foods; and implement zoning regulations to limit fast-food restaurants (22). But implementing such interventions will require community participation. Community-based interventions can be resource-intensive, and may require new research methods, processes, and partnerships between researchers and communities to develop strategies that address local needs and assets. Thus, perhaps the greatest obstacle to successful childhood obesity intervention is for communities and researchers to create systems that make it easier for local stakeholders to be involved in obesity program planning and evaluation. Obesity interventions could be framed by a community's definition of health rather

than the negative context of obesity, and be integrated within broader planning measures to improve healthy food choices for children, families and centers. This would engage communities to understand that obesity is a health issue, empower them to identify health goals, and ensure obesity interventions are locally-appropriate and sustainable.

Conclusion

Childcare centers are important settings for obesity prevention. They can address children's eating behaviors at an important stage in development, target all socioeconomic populations and promote parental and adult role modeling strategies. Interventions that improve nutrition knowledge and change behavior help establish lifelong dietary patterns that are good for children and their families. And interventions that address environmental factors are crucial to ensure the lessons taught at centers are consistent with what children and their families can access and afford in their community. Moreover, environmental interventions can provide opportunities to engage community members in obesity intervention planning and evaluation. For early childhood obesity prevention to succeed in rural Wisconsin, nutrition interventions in childcare settings must be combined with community-based, environmental approaches to create healthy food environments for all.

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For early childhood obesity prevention to succeed in rural Wisconsin, nutrition interventions that target behavior and knowledge change in the childcare setting must be combined with community-based, environmental approaches to overcome food access barriers.

FIGURE 1

WISCONSIN EARLY CHILDHOOD NUTRITION PROGRAMS
A selection of state and local obesity prevention efforts

Kids First: A Quality Rating System for Early Childhood Care. This report by the Quality Counts Task Force submitted recommendations to Governor Doyle to improve the quality of child care settings. In it, the task force outlines recommendations for food service and meal planning options for youth. While this report was submitted to Governor Doyle in 2004, it has yet to receive funding for implementation [http://www.wisgov.state.wi.us/docview.asp?docid=1736].

Wisconsin Nutrition and Physical Activity State Plan. The Wisconsin Nutrition and Physical Activity State Plan is a long-range planning document that outlines ways to be active, eat well and prevent obesity. Which includes a section with recommendations for how to implement successful strategies in schools, but not specific to early childhood care centers. [http://dhs.wisconsin.gov/health/physicalactivity/pdf_files/WhatWorksSchoolsfinal.pdf]

Nutrition, Physical Activity and Obesity Program. In 2003, the Centers for Disease Control and Prevention awarded the Wisconsin Department of Health and Family Services a grant to plan a comprehensive nutrition and physical activity program for Wisconsin. In 2008, a second round of funding was awarded to implement programs through 2013. Program objectives include developing a statewide Nutrition and Physical Activity Program infrastructure, developing collaborative partnerships, program monitoring and evaluation. [http://dhs.wi.gov/health/physicalactivity/Overview.htm]

Wisconsin Farm to School AmeriCorps Program. The Farm to School program places two AmeriCorps members in a school to support district efforts to increase local food purchases. One member helps the district identify farmers and food businesses that want to sell products to the school, and the other conducts education and outreach workshops about nutrition and healthy eating. The program is a collaborative effort among the Wisconsin Department of Agriculture, the Department of Public Instruction, the Department of Health Services and Wisconsin Homegrown Lunch.

Got Dirt? Garden Initiative. The Brown County UW Extension office received a UW Partnership Fund Implementation grant to increase access to and consumption of fruits and vegetables. The program achieves these goals through hands-on garden trainings in community-based settings.

Nutrition, Physical Activity and Obesity Program (program of the Department of Health Services). The NPAO Program has contracted with four early childhood care centers in Madison to conduct formative assessments. The results of these surveys will influence a statewide intervention plan to address childhood obesity among children ages 2-5 years.

Heal Obesity Program (La Crosse County). Through a grant from the National Center for Chronic Disease Prevention and Health Promotion, La Crosse County will expand its Heal Obesity program. Specifically, the county will extend the efforts of its Fit Families program, a year-long initiative that uses monthly goal setting and counseling to help preschool children and their families develop healthy eating and physical activity habits. The county will also expand a second program component to include obesity prevention in the health curriculum taught to students in kindergarten through eighth grade.