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Promising Practices to Prevent and Address Obesity in Rural Communities

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The number of existing cases of obesity among adults and children in the United States has risen dramatically over the past thirty years. More than a third of U.S. adults and almost seventeen percent of children and adolescents are now obese.[1] Obesity causes more preventable deaths in the U.S. than any other risk factor.[2]

Multiple studies have found higher rates of obesity in rural areas than in urban areas. In 2012, the first analysis of obesity prevalence in rural and urban adults using objective measures of weight status found that 39.6 percent of rural adults were obese, compared to 33.4 percent of urban adults between 2005-2008. (The study used data from the 2005-2008 National Health and Nutrition Examination Survey [NHANES]).[3] A 2007 report by the South Carolina Rural Health Research Center revealed that a greater proportion of children in rural areas (16.5 percent) are obese than in urban areas (14.4 percent).[4] Another study using 2003-2004 data from the National Survey of Children's Health found that children in rural areas are 25 percent more likely to be overweight or obese than those in metropolitan areas.[5]

Rates of obesity-related co-morbidities and risk factors are also greater in rural areas.[6] Studies in the rural Mississippi Delta have found elevated rates of cholesterol, diabetes, and hypertension.[7] In the Appalachian region of Kentucky, Tennessee, and West Virginia, most counties (81 percent) have high rates of diabetes and obesity.[8]

Recognizing rural communities' need to develop and implement interventions to improve population health, the Health Resources and Services Administration (HRSA) Office of Rural Health Policy (ORHP) administers the 330A Outreach Authority grant programs. These grants seek to build health care capacity at both the state and local levels by fostering and enhancing health care systems and networks in rural communities that lack essential health services. ORHP contracted with the NORC Walsh Center for Rural Health Analysis and University of Minnesota Rural Health Research Center to identify evidence-based models that have been applied or could be adapted to address obesity in rural populations.

Many rural practitioners recognize the urgency of the obesity epidemic in their communities. Yet knowing that there is a problem and deciding what to do about it are two separate issues. It is not easy to find proven interventions to meet the needs of specific rural populations. Some practitioners may ask whether "evidence-based" obesity interventions will produce desired outcomes in a rural context, since few models have been evaluated in rural settings. Evidence of an intervention's effectiveness with one population does not imply universal effectiveness with all populations.

Rural practitioners need guidance for how to choose interventions that are appropriate to the context, settings, and needs of the populations they serve.[9] The Rural Obesity Prevention Toolkit, developed by the NORC Walsh Center, provides this guidance to ORHP grantees and other rural practitioners. This issue brief highlights information that is presented in

Key Findings

- 330A Outreach grantees and other rural practitioners are carrying out a number of promising interventions to combat obesity in rural communities, schools, and clinics.
- Convening community members and partners in networks can help rural communities make full use of their existing strengths and resources.
- Rural communities may face challenges in finding appropriate evidence-based models due to both the nature of obesity and the limited availability of models that have been tried and tested in rural settings.
- Factors to consider when selecting an evidence-based intervention include available resources, community capital and networks, and whether the program is designed to address individual-level or policy, systems and environmental-level changes.

the toolkit: project methods; reasons for higher rates of obesity in rural areas; approaches to addressing obesity; and steps that rural communities can take to plan, adapt, and evaluate interventions. Lastly, we offer promising practices to prevent and address obesity in rural health clinics, schools, and communities. The "Rural Obesity Prevention Toolkit" is available on the Rural Assistance Center's (RAC) Community Health Gateway website at http://www.raconline.org/communityhealth/obesity/.

Methodology

ORHP charged the NORC Walsh Center with developing a toolkit of evidence-based models that had been implemented to address obesity in three key settings: communities, schools, and clinics. To inform development of content for the toolkit, staff reviewed the literature on obesity prevention and intervention in a rural context and conducted key informant interviews with eight practitioners who have implemented interventions to prevent and address obesity in rural communities. Findings of these activities were summarized in a formative research report that presented recommendations for the content and format of the toolkit.

Staff reviewed the literature across the three settings of interest. Given the breadth of the obesity issue, the range of associated risk factors and diseases, the diversity of efforts to address it across sectors, and the range of settings for intervention, practical limits were set on the scope the review. Information was sought to shed light on strategies that have been effective in, or could be adapted for, addressing obesity in rural areas.

To identify examples of obesity interventions that had been tested in rural communities, we reviewed 330A grant abstracts and grant applications and posted an announcement through an electronic newsletter of the National Rural Health Association seeking input from rural practitioners. We then selected a mix of interventions that had been implemented in rural communities, schools, and clinics. We contacted principal investigators and project directors through an advance letter, inviting them to take part in a telephone interview.

Interviews were conducted with eight practitioners in early 2011, including representatives of six ORHP 330A grantees and two projects that had been funded through other grant mechanisms. An interview protocol was developed to identify evidence-based models of obesity intervention that had been applied or could be adapted to meet the needs of rural residents.

We developed the toolkit using a question and answer format to address eight topics: 1) overweight and obesity in rural communities; 2) using networks to pinpoint problems and find solutions; 3) deciding who to reach and where to reach them; 4) finding evidence-based interventions; 5) selecting, adapting, and planning an intervention; 6) models to address obesity in rural settings; 7) evaluating rural obesity prevention efforts; and 8) a clearinghouse of rural obesity interventions. The toolkit provides resources for each topic area that may be helpful to other communities developing similar programs.

Reasons for Elevated Rates of Obesity and Overweight in Rural Communities

The terms "overweight" and "obesity" are labels for ranges of weight that are greater than is considered to be healthy for a given height. These terms also identify weight ranges that increase the likelihood of many diseases and health problems like heart disease, type 2 diabetes, certain cancers, and hypertension.[10]

Certain attributes of rural communities are associated with greater vulnerability to overweight, obesity, and related diseases. These include demographic and socioeconomic characteristics of populations that may be concentrated in rural areas (e.g., older, increasingly diverse, poorer, less educated). Data from the 2005-2007 U.S. Census indicate that in non-metropolitan areas, a larger proportion of the population is age 65 or over (11.9 percent in metropolitan, compared to 14.6 percent in micropolitan areas and 16.3 percent in non-core areas).[11] The rural elderly often have fewer financial resources and worse health than their urban counterparts. Many suffer from obesity-related chronic health conditions, (e.g., diabetes, heart disease, and arthritis).[12]

Increases in immigration and racial diversity in rural areas have been noted since the 1990s. As of 2010, racial and ethnic minorities made up 21 percent of nonmetropolitan residents, up from 14.1 percent in 1990.[13, 14] As the face of rural America changes, health disparities and elevated obesity rates in minority populations are among the reasons why obesity is an important issue for rural communities. High-need rural populations (e.g., African Americans in the Delta, Native Americans on reservations) have unique cultural characteristics[15] that include dietary and physical activity practices; they require tailored information to help them achieve healthy weight.

The physical landscapes of rural areas can also contribute to obesity and related diseases. Barriers in the built environment (e.g., limited access to parks, few sidewalks, and lack of public transportation), and natural environment (e.g. harsh weather, hilly terrain, and geographic isolation) can make it harder to obtain healthy foods, be physically active, or obtain access to job opportunities, public health and social service resources, and health care.[16]

Broad Approaches to Preventing and Addressing Obesity and Overweight

As a subset of the body of research on obesity, the literature on rural obesity falls into broad categories of "treatment" and "prevention." A treatment approach is oriented toward the individual; it assesses level of risk and manages the individual's condition. A prevention approach is oriented toward the population; it addresses patterns of risk in the population as a whole. Both approaches rely on the concept of "energy balance"—balance between calories taken in by eating and drinking, versus those burned through physical activity,[17] but they have different goals (see the table on page 3).

Comprehensive efforts to address obesity may include a mix of individual-level and population-level strategies.

Due to the geographical and population diversity of rural areas in the United States, an intervention that succeeds in one rural area may not be the right fit for another. Implementing a successful program requires looking at the needs and resources of the community, choosing an appropriate model program, and adjusting that model to meet the community's needs.

Why Evidence-based Practice is Important

Communities have limited resources to address obesity, so it is important that they invest in programs and policies that will have an impact. Rural communities use resources efficiently by choosing "evidence-based" interventions, or ones that show early promise of having an impact ("promising practices").

Levels of Evidence Defined

Evidence-based strategies are published in systematic reviews, syntheses, or meta-analyses whose authors have conducted a structured review of published high-quality, peer-reviewed studies and evaluation reports. Evidence-based strategies produce significant, positive health or behavioral outcomes and/or intermediate policy, environmental, or economic impacts.

Effective strategies are published in high-quality, peer-reviewed studies and evaluation reports. Effective strategies produce significant positive health or behavioral outcomes, and policy, environment, or economic impacts.

Promising strategies are based on evidence from published or unpublished evaluation studies or exploratory evaluations. Promising strategies show meaningful, plausible positive health or behavioral outcomes, and policy, environment, or economic impacts.

Adapted from: Brennan L, Castro S, Brownson RD, Claus J, Orleans T. Accelerating Evidence Reviews and Broadening Evidence Standards to Identify Effective, Promising, and Emerging Policy and Environmental Strategies for Prevention of Childhood Obesity. *Annu Rev. Public Health.* 32: 199-223; Jan. 3, 2011

Deciding "Something Should Be Done" to Address Obesity

Community Networks Can Identify Problems, Find Solutions. The problems of overweight and obesity in rural areas have many causes and no one solution. The factors that contribute to these problems are complex and resources to address them are limited. Bringing community partners together can be one of the most important steps for planning sustainable strategies. Community networks can bring together stakeholders with different backgrounds, expertise, and resources, allowing those with a stake in the community to identify realistic solutions. Networks are most effective when they offer social value, common goals, incentives, and coordinated approaches.

In rural areas, examples of potential partners for planning obesity interventions may include community residents, local health departments, academic institutions, Area Health Education Centers, Cooperative Extension offices, and health-related entities such as hospitals and clinics. Other types of organizations from outside the traditional domain of health—such as schools, local government, the Chamber of Commerce, or elected officials—can also play important roles. Often rural communities already have networks in place that can be engaged and enhanced to plan comprehensive, local solutions.

Planning an effective and sustainable intervention to address obesity can begin with a systematic process of "mapping" community assets—such as individuals' skill sets, organizational resources, physical space, institutions, associations, and elements of the local economy. These resources can be used to overcome barriers to healthy eating and physical activity.

Deciding "What Should Be Done" to Address Obesity

Setting Priorities. Communities can use various methods to pinpoint and take action on local problems like barriers to healthy eating and physical activity. The question of which barriers can be overcome using the resources at hand can help to focus planning efforts. No community has sufficient resources to address every problem that can be identified. A key step in deciding what should be done is to undergo a process of ranking "importance by changeability." That is, "How important is the issue for impacting obesity in the community?" (Importance), and "How easy or difficult will it be to change this issue?" (Changeability).

	Strategies to Reach Individuals *Individual-level (Behavior change)*	**Strategies to Reach Populations** *Policy, Systems, and Environmental (PSE)-Level*
Goal:	Help individuals reach or maintain a healthy weight by balancing calories taken in through food with calories spent through physical activity	Help populations maintain a healthy weight by "making the healthy choice the easy choice"
Approach:	Reduce calories taken in through food and increase calories spent through physical activity	Lower the likelihood of a chronic imbalance between calories consumed and calories spent; avoid chronic, low-level excess of calories that leads to weight gain
What is Measured?	Weight loss	Changes that support healthy eating and physical activity

Decision Matrix for Prioritizing Needed Changes to Prevent and Address Obesity

	Changeability	
Importance	***More Changeable***	***Less Changeable***
More important	High priority for intervention	Priority for innovative intervention; evaluation crucial
Less important	Low priority except to motivate community organizing efforts ("Winnable battles")	Not a priority

Adapted from Green LW and Kreuter MW, Health Promotion Planning: An Educational and Ecological Approach, Third Edition; Mayfield Publishing Company, Mountain View, CA. 1999. See also: http://lgreen.net/commhlth/CommHealth/Chapter04.htm

Identifying Appropriate Interventions. Evidence for strategies to prevent and address obesity is being compiled by various federal agencies, universities, and other sources. By taking the time to review, select, assess the relevance of, and adapt evidence-based, effective, or promising obesity interventions, rural communities can use their limited resources effectively. In addition to the Rural Obesity Prevention Toolkit, sources for information about evidence-based, effective, and promising interventions to prevent and address obesity include: The Community Guide (www.thecommunityguide.org), The Center of Excellence for Training and Research Translation (www.center-trt.org), and What Works for Health: Policies and Programs to Improve Wisconsin's Health (http://whatworksforhealth.wisc.edu).

It is important to involve representatives of the target audience so that the chosen intervention aligns with their priorities. Due to both the nature of obesity and the limited availability of models that have been tested in rural settings, finding the right model can be a challenge. To find the right fit, communities should consider existing community capital and networks; the type of change desired (e.g., individual behavior change; policy, systems, and environmental change); and the needs of the target population.

Rural communities can identify evidence-based, effective, or promising practices by: defining goals and objectives for the planned intervention; matching the desired change to goals and objectives of the evidence-based or promising practice model; looking at whether the context (e.g., community structure, values, resources) and target audience characteristics (e.g., language, socioeconomic status, culture) are similar to those of the model; reviewing program materials and implementation protocols; and consulting with the project team about whether the model intervention can be successfully replicated.

Deciding "How Something Should Be Done" —Adapting and Planning

Stakeholders should play a central role in adapting and guiding implementation of the intervention approach. The fact that an intervention is "evidence-based" does not mean it will be useful for all populations and contexts. When looking for the right intervention for a particular target population, it is important to consider factors such as the culture, literacy level, and learning style of the audience, as well as the setting in which the intervention will take place. It is not always possible to find a fit for all of these components. Some model programs may include activities that are "culturally mismatched" to the needs of intended participants. In such cases, one may need to adapt an existing model.

Changes to the intervention must be made carefully to avoid eliminating the aspects of the program that were responsible for strong results. It is important to find balance between implementing an evidence-based model as it was designed, and ensuring that the intervention is relevant to the intended target population. A program that is not implemented with fidelity may not be effective. Yet a program that is "culturally blind" and does not take into account the specific needs of the target audience may not engage participants.

One of the most common reasons for adapting a model is that it does not fit the cultural needs of the population being served. Cultural adaptations to evidence-based models can be implemented on a "surface level" or a "deep level." Surface level adaptations might include adjusting the language, graphics, examples, scenarios, and activities used during the intervention. Surface level adaptations do not generally reduce program effectiveness. Deep level adaptations include altering a program's structure and goals. Researchers caution against making deep level program adaptations, because they have the potential to reduce program impact.[20]

Evaluating Efforts to Prevent and Address Rural Obesity

Careful evaluation of rural obesity programs is critical to building an evidence base for "what works" in rural communities. Evaluation can help communities to assess the quality, cost, effectiveness, and impact of a policy, program, intervention, initiative, or action to prevent or treat obesity. It requires identifying measures that are appropriate to the intervention setting, target population, and program goals. Evaluation of rural obesity programs may assess individual behavioral changes or policy, system, and environmental changes in the areas of knowledge of health and nutrition, physical activity, and healthy behaviors.

There are a number of challenges to evaluating obesity programs. A problem in evaluating the effectiveness of individual-level approaches is that long-term behavior change (e.g., dietary or physical activity practices) is cyclical rather than linear in nature. For example, a person who changes their diet and loses weight may later regain it. Strategies to prevent

and address obesity in populations often apply a combination of strategies to create policy, systems, and environmental changes. This can make it hard to gauge the effectiveness of individual strategies. Moreover, they may need to look at a wide range of intermediate outcomes. Due to these and other challenges, few rigorous evaluations of rural obesity interventions have been done to date.

Overview of Rural Obesity Intervention Approaches in Different Settings

We identified strategies that have been tested in rural clinics, schools, and communities. Details of these models, including the strength of evidence behind them, are offered online. Here we provide an overview of types of strategies in the toolkit.

Health Clinics. In rural communities, clinical interventions to address overweight and obesity can provide an ongoing source of support, encouragement, expert guidance, and accountability for individual behavior change among patients who are overweight or obese. They can increase the reach of interventions by targeting patient populations that are at increased risk of overweight and obesity, or are experiencing associated health problems (e.g., diabetes, metabolic syndrome, cardiovascular disease). Health care providers can help patients get support for behavior change through community-based organizations. Interventions in clinical settings can be oriented toward providers or patients. They are generally designed to promote behavior change and improvements in intermediate and/or long-term health outcomes in one individual at a time.

Schools. Schools offer a critical setting in which to promote healthy behaviors like healthy eating, physical activity, and decreased screen time. They not only impact children, but can affect families and the greater community—both indirectly and directly. Children who learn about healthy foods at school may influence their families' cooking practices at home. Moreover, schools can serve as a focal point for community social activity and gatherings. School-based interventions can target improved physical activity and/or nutrition, both in school and at home.

Examples of interventions to address obesity in schools include: health and nutrition education classes, increased recess time, elimination of unhealthy food options from cafeterias, offering of nutritious items in vending machines, increased physical education and extracurricular activities, banning the sale of sweetened beverages in school, planting class gardens, and promoting biking or walking to school. School-based screening for obesity can aid in early detection and management. Some communities have pursued joint use agreements with school districts so that community members can use otherwise empty school buildings and playgrounds for recreational and physical activity purposes when schools are not in session.

Communities. A wide array of community-based efforts to prevent and address obesity is taking place across the country. Some communities use behavior modification and counseling/educational approaches to encourage individuals to make positive changes to their lifestyles. Others implement programs such as community walking clubs or church-based education, offering social support to help people lose weight and maintain a healthy weight. A third, newer category of community-based interventions targets changes in the places where people live, learn, work, and play in order to increase opportunities for making healthy choices.

Examples of obesity intervention strategies that communities have implemented include: improving the availability of healthier food and beverage choices in public service venues, improving access to supermarkets, improving access to outdoor recreational activities, and enhancing infrastructure for bicycling/walking. Additional strategies proposed for rural areas include investing in walkable town centers and offering other environmental supports for physical activity (e.g., late buses, carpools, and other transportation improvements).[21]

Implications for Rural Communities

Given the diverse geographic, demographic, economic, and racial/ethnic characteristics of rural areas in the U.S. as well as the broad range of factors that contribute to obesity in general, no single intervention or set of interventions offers "the best solution" to rural obesity. Our review of the literature and findings from key informant interviews suggest that rural communities may often use individual-level approaches to help high-risk individuals modify behaviors. Intervening at the individual level is resource-intensive and requires ongoing contact with the target audience to maintain behavior change. To complement these efforts, communities should explore approaches that address environmental, systems, and policy changes, as well as strategies to evaluate and sustain obesity interventions, and for reaching higher-risk populations.

Participants in the eight key informant interviews conducted for this project included representatives of five ORHP Outreach and Quality grantees and three projects funded through other grant mechanisms. They described a range of approaches that included classroom-based health education, interventions to address organizational practices and norms, coordinated school health interventions, and working with community networks to rank priorities and implement evidence-based strategies to address them. Intensely engaged, caring staff are a critical factor for the success of interventions to address obesity. Although training staff to implement evidence-based models requires an investment of resources, it plays an important role in ensuring staff capacity to engage program participants and is also critical to program sustainability.

The evidence base for existing obesity prevention and treatment interventions that have been tested in a rural context is limited. Existing studies tend to report results of interventions within specific sub-populations. The long-term impact of these interventions is not always reported; and

reported outcomes do not always pertain directly to reductions in body mass index (BMI) or related health outcomes. Thus, there is a strong need for ongoing development of guidance on how to find and adapt proven interventions to prevent and address obesity in rural areas.

This brief and toolkit provide resources and guidance tailored to the needs of rural practitioners. Rural stakeholders can use these resources to connect and learn from one another, tap into the assets and strengths in their own communities, and benefit from a wealth of evidence that is being compiled by federal agencies, universities, and other national organizations.

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