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A Dietician's Perspective on Diabetes among Migrant Farmworkers

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Background

The 6th leading cause of death in the United States is diabetes. The number of Americans diagnosed with diabetes has more than doubled in the last twenty years. In 1980, the rates were 5.8 million people living with diabetes; in 2004, the number was 14.7 million. Adding to this number are the more than 5 million people who are thought to have undiagnosed diabetes.¹ A recent article in the *New York Times* highlighting the epidemic of diabetes, especially childhood diabetes, is one of many in the mass media recently that are raising public awareness of the issue.²

The morbidity associated with diabetes includes heart disease, stroke, amputation, renal disease, and blindness. People with diabetes have twice the mortality rate of those without the disease of similar ages.¹ The financial burden of diabetes is estimated to be \$132 billion annually.³

Disease management regimens prove effective for many individuals with diabetes. However, both efficacy and adherence to evidence-based regimens complicate matters. Furthermore, diabetes and one of its most significant risk factors—obesity—are now far more prevalent in the U.S. than in the past, especially in minority communities. For all age groups, African Americans and Hispanics have diabetes rates significantly greater than those of Whites. Data from 2004 indicate that 5.1 out of every 100 White males has diabetes, compared with 7.6 for Black males and 7.0 for Hispanic males. Women follow the same pattern with White women having rates of 4.3 per 100, compared with rates of 7.8 for Black women and 6.8 for Hispanic women.¹

Rising Prevalence in Children

The number of children diagnosed with type 2 diabetes is also on the rise. The lifetime risk of developing diabetes (either type 1 or 2) for individuals born in

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the year 2000 is 23% for males and 39% for females. The average reduction in life expectancy for individuals whose diagnoses of diabetes occurred before age 40 is 12 to 19 years.⁴

The mean age distribution of the diagnosis of childhood diabetes is between 12 and 16 years. An increased insulin resistance occurs during puberty related to growth hormones and sex steroids.⁵ As puberty is a peak age for determining the diagnosis of children with diabetes, the use of screening and detection programs during each primary care visit is critical.

The increase in diabetes during childhood is tightly linked to obesity.⁶ Children who are overweight, especially those who are obese, are at increased risk for developing type 2 diabetes during childhood, adolescence, and later in life. Certain genotypes associated with particular populations may account for all or some of the increased risk for the disorder in those populations.⁷

Following the same pattern as the adults, there are more children from minority groups than White children being diagnosed with type 2 diabetes.⁸ The overall prevalence of metabolic syndrome among adolescents is 4% overall; however, the percentages escalate to 30–50% among children who are obese.⁶ African American adolescents have obesity rates of 23.6% and Hispanics have rates of 23.4%, twice as high as those of White adolescents (12.7%).⁹

Prevention

The Diabetes Prevention Program (DPP), a major clinical trial sponsored by the National Institute of Diabetes and Digestive and Kidney Diseases, showed that intensive lifestyle changes (e.g., losing 5 to 7% of weight through increased physical activity and a reduced calorie diet) prevented or delayed the onset of type 2 diabetes by 58% in people at high risk for the disease. The DPP also showed that metformin, an oral diabetes drug, reduced the onset of type 2 diabetes by 31%.¹⁰

Several national agencies have focused on diabetes prevention. The Centers for Disease Control and Prevention's (CDC's) Division of Diabetes Translation has established four objectives for their work, whose achievement will require strong collaborations with other agencies and organizations:

1. Raise physicians' awareness about the disease.
2. Develop a standard case definition(s).
3. Determine the magnitude of the problem.
4. Assess and improve the quality of care among children and adolescents diagnosed with type 2 diabetes.¹¹

Reaching high-risk communities with health messages and health care requires intensive intervention. These interventions should be focused on helping people to make lifestyle changes. Using a variety of professional and paraprofessional Community Health Workers is essential in delivering these programs. Community Health Workers may be involved in direct patient care or they may provide assistance in education sessions taught by health professionals. Improvements in physiological measures as well as an increase in knowledge have been noted in studies of the

effectiveness of Community Health Workers.³ Recruiting and training community members who are able to bridge the gap between primary care providers and the patient/community is an effective way to reach at-risk communities.

The National Diabetes Education Program (NDEP) is a joint initiative of the CDC and the National Institutes of Health (NIH), charged with reducing the burden of diabetes and its complications. The NDEP has designed materials to educate health care providers, parents, and community members about the risk of type 2 diabetes.¹² Other federal programs that offer nutrition education and food vouchers, such as the Women, Infants and Children (WIC) program, play a vital role not only in educating families about healthy eating, but also in providing food packages. A recent revision of the WIC package will allow family's access to more fruits and vegetables with an emphasis on whole fruits versus fruit juice. The WIC program already promotes use of low fat dairy products, and breastfeeding, two practices that have been linked to lower weight and reduced rates of diabetes.^{13,14,15}

An example of a system change, promising possible benefits to children nationwide, has been recently announced by the *Alliance for a Healthier Generation*, a collaboration among the William J. Clinton Presidential Foundation, the American Heart Association, Cadbury Schweppes PLC, Coca-Cola Co., PepsiCo Inc., and the American Beverage Association. In May of 2006, beverage companies agreed to sell only water, unsweetened juice, and low-fat and non-fat milk to elementary and middle schools. This will affect over 35 million public school students.¹⁶

Some states engaged early in the fight against childhood diabetes. David Hoffman, Director of Chronic Disease Programs for the New York State Department of Health, sees diabetes programs as critical in meeting the needs of underserved communities. "Type 2 diabetes in our children is a serious public health problem that could have costly personal and economic impact on future generations in New York State. The New York State Department of Health has taken a pro-active approach in dealing with this threat by awarding eight projects for the Prevention of Type 2 Diabetes in local communities across the state. This initiative builds on our commitment to children by involving home, school, and community environments in promoting healthier lifestyles for children. The projects provide interventions to increase opportunities for physical activity and healthier food choices for New York State's children who are most at risk for this disease, including those from minority, underserved populations" (personal communication, David Hoffman, May 1, 2006).

Hudson River HealthCare

Hudson River HealthCare (HRHCare), a network of Federally Qualified Health Centers (FQHCs) whose target populations are poor families from both urban and rural areas, is one of the eight programs that received funding from New York State's Prevention of Type 2 Diabetes Program. A not-for-profit, state-licensed community and migrant health center providing innovative programs and comprehensive services to medically underserved populations throughout the Hudson Valley, HRHCare officially opened its doors 30 years ago to provide health care

to low-income, uninsured, and underinsured populations in Peekskill. To meet the growing needs of the region's uniquely diverse communities, HRHCare has expanded to include 13 sites serving 40,000 people through 170,000 visits annually, throughout a 9-county region. The mission of HRHCare is *to increase access to comprehensive primary and preventive health care and to improve the health status of our community, especially for the underserved and vulnerable*. Special populations targeted by HRHCare include high-risk adolescents, multiply challenged children, migrant farmworkers, pregnant women, new immigrant day laborers, persons with HIV/AIDS, residents of public housing, and homeless individuals and families.

Diabetes programs for farmworkers at HRHCare: Community health worker training. Hudson River HealthCare has conducted special programs in diabetes with the high risk communities it serves for the last 15 years. Many of these programs have focused on adults in the communities. For example, a grant from the New York State Department of Health-Diabetes Control Division provided support for recruiting and training community health workers (CHWs) from the migrant and seasonal farmworker community in a three-county area. Over 200 farmworkers completed the CHW training through this program. The CHWs learned to recognize the signs and symptoms of diabetes, the risk factors for the development of diabetes, and how to manage diabetes. Materials from the CDC formed the basis of the training and demonstrations. After completing training, the CHWs presented information in migrant Head Start parent meetings, migrant camps, and migrant education parent meetings. Health professionals integrated it into presentations they made as well.

Bilingual exercise video. Hudson River HealthCare has also produced an exercise video for bilingual patients. Produced initially as part of the Orange County Diabetes Prevention and Control Program, the video has reached beyond the farmworker community to WIC recipients in a three-county area through another HRHCare program.

Health Disparities Collaboratives and HRHCare. Another major initiative in which HRHCare is engaged is the Health Disparities Collaboratives through the Bureau of Primary Health. The impact of this program is on the delivery of primary care services for patients with diabetes. Hudson River HealthCare uses a patient registry system to track all patients with the diagnosis of diabetes. This system manages care for farmworkers with support from the Migrant Outreach staff and clinicians. Using the patient registry, they track the average hemoglobin A1C as well as other test results that must be monitored on a regular basis. With this system, HRHCare has been able to reduce the average hemoglobin A1C by over 1% for this population.

Adolescent programming at HRHCare: Fit4Ever. Efforts will continue with the adult population in the migrant community, but staff members have become convinced that working with youth is critical. Therefore, they applied for New York State Department of Health funding for the Fit4Ever program, in an effort to strengthen the HRHCare's work with children and adolescents.

The region encompassed by the grant includes Dutchess, Orange, Sullivan, Westchester and Ulster counties, and includes both rural and urban sites. Peekskill,

Poughkeepsie, and Beacon schools are located in urban areas. Each of these school systems serves a racially and ethnically diverse population. The Valley Central school system is located in a more rural environment, in Orange County, and has some racial and ethnic diversity in its student population. Each school is located near a HRHCare Community Health Center site. In addition to working with the school systems, Hudson River has been joined in these efforts by the Dutchess and Orange County Departments of Health. Students from the middle schools in the four locations, ranging in age from 11 to 14 years, participate in the program. In addition to the four school systems, a fifth site, located in the farm area of Orange County, New York is offering a program for children, age 11–15 years, from families who are working as migrant or seasonal farmworkers.

Fit4EverProgram design. An after-school program in four school systems, Fit4Ever's program goal is to reduce overweight, obesity and the incidence of type 2 diabetes, and to increase health and well-being in children and youth through lifelong healthy eating and physical activity. The three major components of the Fit4ever curriculum are (i) the adoption of healthy eating behaviors both at home and outside the home; (ii) limited consumption of non-nutritious foods; increased levels of regular physical activity; and (iii) limited time with media (TV, video games, computer). The program offers a wide array of activities all of which focus on all three components.

The Fit4Ever program is funded for a total of 5 years by funding from the New York State Department of Health; as of this writing, it is in its first year. The program is offered 3 times each school year with a maximum number of 20 students in each session. During the summer months, Fit4Ever is offered in recreation programs in 2 of the communities. Over 700 students are expected to participate in the summer sessions.

The curriculum of Fit4Ever has been designed for the target populations. Physical activity including dance and other activities are integrated with each of the twelve sessions, as are behavioral and nutrition components. The dance components reflect the cultural diversity of the students participating in the program.

The curriculum was developed by a team of staff members and AmeriCorps*VISTA (Volunteers in Service to America) members using several existing lesson plans as well as some public health resources. We Can! (Ways to Enhance Children's Activity and Nutrition), one of the curriculums used, was designed for a culturally diverse group of students.* A physical activity component and behavioral component form part of each of twelve sessions as well.

Two nutritionists lead the program with support from an AmeriCorps*VISTA member for each site. Before each of the sessions, students provide diet and activity histories to enable the staff to assess the baseline nutritional and exercise practices of participants. After the completion of the program, the staff again assesses participants' food intake and activity level, and again at 6 month and 12 month intervals.

*The We Can! Curriculum was developed by the Department of Health and Human Services–National Institute of Health in December 2005 and is available over the Internet at www.wecan.nhlbi.nih.gov.

As complete results are not yet available for the first year as the year is incomplete, they have not yet been published and are not reported here.

Fit4Ever for migrant peer leaders. With some modification to the curriculum, the three components of the program are offered to migrant youth ages 11–15 years of age, training them to become peer leaders in the area of diabetes for younger children in a summer program for farmworker youth. The teen participants learn new ways of preparing foods that are lower in fat and calories than more traditional recipes. In some cases, the curriculum substitutes more traditional Mexican foods for American foods. As at the other Fit4Ever sites, physical activities (including dance, yoga and traditional Mexican activities) form an important part of the curriculum for migrant peer leaders.

The first group of 6 peer leaders will reach approximately 200 children through workshops integrating the lessons they have learned during the course of the summer of 2006.

Participants in the migrant peer leaders program have learned about the high risk of diabetes in their community. Each peer leader in this group has a family member with diabetes. Few participants going into the program realize that genetics is an underlying reason that so many people from their community have diabetes, although many identify poor diet as a cause of diabetes.

While the overarching goal of the Fit4Ever curriculum remains the same for this group as it is for the four school systems, we also hope that their participation will encourage the migrant peer leaders to consider a career in health care, and we point out career options and the paucity of bilingual, bicultural health professionals during training to suggest this.

Personal reflections. My practical experiences are in keeping with the published literature and programs discussed above. In several cases in my experience, patients (usually patients who emigrated from poor countries where food was scarce) were overwhelmed by the variety of available foods in this country, especially those of lesser nutritional value. That food supply, coupled with the families' remembrance of food scarcity, media messages, and fears of violence, creates a situation where a medically underserved population is in pronounced need of interdisciplinary clinical work to prevent and treat diabetes. It is important to note that not only providers have responsibilities in such situations: the patient and/or family members, in their roles as consumers, have responsibilities to inform clinicians about their family history as well as environmental conditions.⁹

Since I have worked for 20 years among migrant and seasonal farmworkers in the Hudson River Valley, I know many people in this community (including many participants in the migrant peer leaders program from the time they were born). Statistics about diabetes take on a very personal and human meaning for me. Each one of the children is at high risk of developing diabetes. I have seen the consequences of poorly controlled diabetes in their family members. I believe that the HRHCare-trained migrant CHWs are some of the most effective change agents in this community. The knowledge that CHWs gain during training stays with them as they return to their home states. The teenagers who have been trained in the

migrant peer leader program will also bring the knowledge to their communities for many years to come.

I am convinced that in order to win the battle against increasing diabetes in children, public officials working with urban and city planning, public health agencies, food assistance programs, schools, and community health centers must recognize the urgency of the problem. That same sense of urgency must be felt at the community level. Teaching community members about diabetes prevention and the terrible toll this disease takes on certain communities is the task of those of us in public health. Removing or changing environmental barriers, which influence the progression of this disease, must become a major focus for everyone working with high-risk populations. Working with immigrant youth, such as the ones in the HRHCare Fit4Ever program, may be part of the solution to this problem. When I look at the faces of the teenagers in this group, I see hope. I understand that they may hold the key to changing the course of this disease.

Future Efforts

The research cited and programs described here must be replicated in multiple sites, especially in minority communities, given the high risks for diabetes there. The need to reduce a health care disparity as well as reduce the significant costs associated with chronic disorders accomplishes a public health goal as well as the goal of health care insurers when prevention, treatment, and maintenance provide an excellent return on investment. It is a research endeavor that could easily be a collaborative effort among researchers and clinicians working with the poor and underserved to achieve some of the national outcomes listed for diabetes in *Healthy People 2010*.¹⁷

Public and private policymakers must hear the voices of consumers, clinicians, public health practitioners, and researchers to understand not only how diabetes can be prevented and treated but also how disparities in health care, especially environmental factors and issues of access, affect the promotion of healthy communities.

Notes

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