

Underutilization of Preventive  
Diabetes Care Among the Poor:  
Barriers and Consequences  
Washington and Lee University

POVERTY & HUMAN CAPABILITY STUDIES CAPSTONE

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## Introduction

“My mother has diabetes, my father has diabetes, both of their parents have diabetes, and my children will probably develop diabetes,” states Nellie Jo, a woman from Lexington, Virginia, who runs the educational segment of the Diabetes Group Medical Visits at the Rockbridge Area Health Center in Lexington. “I was raised on an unhealthy diet and my children were raised on an unhealthy diet.” Nellie Jo’s candidness about the prevalence of type 2 diabetes in her extended family and her willingness to admit the unhealthy lifestyle that caused the development of diabetes in herself and her family members immediately caught my attention. Nellie Jo was diagnosed with diabetes in her early thirties. However, she did not treat her diabetes, did nothing to alter her lifestyle, and continued to consume a poor diet with little to no daily physical activity. She blames her negligence partly on her unwillingness to alter her diet and exercise habits and partly on the lack of access to healthcare. She could not afford medications prescribed by her doctor in a private practice and had no health insurance. In addition, Nellie Jo was hesitant to go to the free clinic because she was embarrassed to get healthcare that was deemed “free.”

Eventually, Nellie Jo’s diabetes became so advanced that it caused her to become insulin-dependent, a cumbersome ailment that required expensive, daily insulin injections. Reality did not set in, however, until Nellie Jo was faced with the fateful prognosis that she was going to be put on dialysis because her kidneys were failing. Nellie Jo immediately realized the gravity of her health status, completely changed her diet, and began to incorporate physical activity into her daily life. She lost almost one hundred pounds, and as a result, she was able to prevent having to go on dialysis and lowered her insulin dependence. Now she teaches other diabetic patients at the Rockbridge Area Health Center

diet and lifestyle improvements that they can actually incorporate into their everyday lives. Nellie Jo serves a perfect example to patients at the RAHC of how quickly the detrimental effects of diabetes can occur and how simple it is to prevent the development of the disease, and patients listen to her as opposed to hearing this information from their health care providers.

Nellie Jo's oldest daughter is eighteen and is already pre-diabetic. Her other three children have a strong predisposition to developing the disease. Nellie Jo now realizes the detrimental implications of the disease and has tried to improve the diets of her children, but she admits it is difficult not only to afford healthy food for five people, but also to pressure her children to make healthy decisions. Nellie Jo's story and outcome is rare among low-income individuals and families affected by diabetes. Not everyone experiences a fateful health complication early enough to be able to completely change her lifestyle and improve her health status, and not everyone has the discipline, desire, time, determination, and support to radically alter her diet and exercise habits. As Nellie Jo's story demonstrates, serious implications can result from not taking preventive measures against diabetes. As obesity rates rise, especially in rural areas of the U.S., diabetes will become an increasingly serious issue. The strong correlation between obesity and low socioeconomic status and the profound effects parents have on their children's healthy lifestyle choices demonstrate the need for intensive preventive measures, both provided by local health clinics and enforced by the affected individual's daily actions. In addition, increased insurance coverage and more proactive measures taken by physicians will increase the poor's ability to utilize preventive services.

This paper focuses on type 2 diabetes amongst low-income individuals and families and their underutilization of preventive diabetes care, which includes both measures to prevent diabetes and to prevent a diagnosed individual from becoming insulin-dependent. I provide not only data about the higher incidence of type 2 diabetes in low-income families, but also data about the lack of resilience among low-income persons once they are diagnosed. Moreover, I discuss both the monetary and functional cost to individuals and society as the result of diabetes. I analyze the plausible causes of the lack of preventive care among low-income individuals by examining the interplay between personal responsibility and the social determinants of health and lifestyle. I also discuss the extent to which institutions are responsible for this preventive care. Furthermore, I examine current access to preventive services and offer policy recommendations in order to improve the quality of effective and accessible care for impoverished pre-diabetics and diabetics. I also offer policy recommendations to increase support of programs that seek to combat educational and cultural factors that encourage the habits that cause early onset diabetes. I use anecdotes and observations gained from my health-related volunteer experiences in Lexington, Virginia in order to provide realistic examples related to the literature and research cited to convey psychological, physical, social, and financial barriers to preventive health care among impoverished community members.

## **Diabetes Prevalence**

### **General Population**

In 2012, 23.6 million people in the United States, or 7.8 percent of the total population, were diabetic. An estimated 90 to 95 percent of diabetics have type 2 diabetes.

The sheer number of diabetics in the U.S., however, is not the most alarming statistic. What is concerning is the fact that 5.7 million of these people have not yet been diagnosed with diabetes (National Diabetes Information Clearinghouse, 2012). Moreover, 33 percent of adults in the U.S. are prediabetic, which means that their blood glucose levels are above the norm but are not high enough to warrant a diabetes diagnosis. However, only about ten percent of prediabetics are aware they have prediabetes (CDC, 2012). If preventive services could be effectively utilized in these undiagnosed people, specifically among low-income groups, diabetes prevalence could be reduced. Preventive measures will become increasingly more important as diabetes rates rise. The incidence of diabetes among the total U.S. population has increased by almost 5 million people from 2007 to 2012 (Tucker, 2013), and a 2010 Centers for Disease Control and Prevention report predicts that “as many as one of three U.S. adults could have diabetes by 2050 if current trends continue” (CDC, 2012). On a global scale, the world population afflicted with diabetes is projected to increase from the current number of 220 million to 300 million by 2025 (Agardh, Allebeck, Hallqvist, Moradi, & Sidorchuk, 2011).

Furthermore, the geographical distribution of diabetes incidence across the U.S. is not congruent. Barker, Kirtland, Gregg, Geiss, & Thompson (2011) defined this geographical area with an especially high incidence of type 2 diabetes as the “diabetes belt,” which includes regions in Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, North Carolina, Ohio, Pennsylvania, South Carolina, Tennessee, Texas, Virginia, West Virginia, and all of Mississippi. In these regions, the incidence of diabetes in the population is 10.6 percent and greater, with the highest being 11.3 percent of the population in Mississippi (CDC, 2012). Barker et al. (2011) propose risk factors, such as the high

prevalence of obesity and sedentary lifestyles in the Southeast as the reason for the disparate diabetes incidence across the U.S.

### Low-SES Population

The higher incidence of diabetes in the Southeast is linked to socioeconomic status (SES), which encompasses income and education levels, unemployment, and the effect of single-parent households. According to Brooks et al. (2010), “low-income communities are more at risk for developing type II diabetes than any other social class,” as a result of “poor diet, a sedentary lifestyle, and poor health education” (p. 3). Agardh et al. (2011) found that a low education level and low income increased the risk of type 2 diabetes by 41% and 40%, respectively. Among the 15,483,000 people living in the U.S. with household annual incomes under \$25,000, about five million were obese and one million were diabetic (Levine, 2011). Levine (2011) also found that “counties with the greatest rates of poverty of poverty have the greatest rates of diabetes too” (p. 2667).

The aforementioned statistics can be illustrated with the concerning prevalence of diabetes in Rockbridge County and surrounding areas. Thirty-eight percent of the population of Rockbridge County is below 200% of the Federal Poverty Level (FPL); the FPL in 2012 was \$23,050 for a four-person household (Simpson, 2012). In comparison, 24.9% of the Virginia population and 32% of the U.S. population lives below 200% of the FPL (Simpson, 2012). Moreover, the unemployment rate, percentage of children living in single-parent households, and percentage of individuals without a high school diploma are higher in Rockbridge County than in Virginia (Simpson, 2012). In the cities of Lexington and Buena Vista, diabetes prevalence and mortality vastly exceeds Virginia and national

statistics. From 2006-2010, 9.40% of the population was living with diabetes in Lexington (compared to the 6.50% national average), and the mortality rate was 43.8 per 100,000 persons (compared to the 26 per 100,000 persons national average) (Simpson, 2012).

Diabetes was the second most reported appointment reason at the Rockbridge Area Health Center (RAHC) in 2012, after hypertension (Rockbridge Area Health Center: Facts, 2013).

Looking at specifically at Rockbridge County demonstrates the direct, important correlation between low income populations and diabetes prevalence.

Furthermore, high diabetes occurrence among low SES populations results from the correlation between obesity and poverty. As a result of poor diet, lack of exercise, genetic susceptibility, and other personal behaviors, the relationship between poverty and obesity has become more apparent as both poverty levels and obesity rates have grown over time.

In a study done across 3,139 counties in the U.S., those with poverty rates greater than 35% had obesity rates 135% greater than counties with more wealth (Levine, 2011). In a study

on diabetes in women, Hu et al. (2001) found that “overweight or obesity was the single most important predictor of diabetes” (p. 790). Additionally, childhood obesity rates have

tripled since the 1960s; in 2008, 33.3 percent of children in the U.S. were at risk for adult obesity (DeMattia & Denney, 2008). Increasing obesity rates can be directly seen in

Rockbridge County public schools and most likely explains why obesity rates in Rockbridge County are higher than national and state averages. While the percentage of overweight or

obese children in the U.S. was 27.6 percent in 2010, “42% of all Rockbridge County elementary school children, 47% of middle school children and 50% of high school

students were overweight or obese” (Simpson, 2012, p. 27).



Furthermore, Moore et al. (2000) determined that maintained weight loss lowered the risk of diabetes in the study individuals by 37%. Individuals who lost 8.1 – 15 lbs. experienced a 33% reduction in diabetes risk, while those who lost more than 15 lbs. lower their risk for the disease by 51%. In addition, studies show that exercise and the implementation of active lifestyle changes have proved to be successful in preventing diabetes. Pan et al. (1997) found that in a study of 577 individuals, those who increased their physical activity by one unit per day (determined by the study authors) reduced their risk for developing diabetes by 46% (Pan et al. 1997). The CDC recommends losing five to seven percent of body weight and committing to at least 150 minutes of moderate physical activity per week as successful prevention measures (CDC, 2012).

## Diabetes Resilience

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Nellie Jo was able to successfully conquer her rapidly worsening case of diabetes; however, most low-SES individuals do not have the capability and personal drive, along with the necessary education and support, to drastically change their lifestyle and continue a normal, fully-functioning life after diagnosis. This lack of resilience among the low-income, poorly educated population further signifies the need for enhanced preventive services and improved social determinants of health, which will be discussed later in the paper. Richardson (2002) defines resiliency as “the process of successful coping with or reintegration from life events, stressors, and adversity through the use of various protective qualities and by accessing one’s innate resilience” (p. 645). Pilkington et al. (2010) believe resilient struggles encompass three themes: balancing competing priorities,

making the best of the situation (i.e. utilizing support from family and friends), and using knowledge and bodily knowing in diabetes self-management.

What causes higher income and more educated people to have greater resilience? Bradshaw, Richardson, and Kulkarni (2007) examined this issue of resilience in that “despite physical challenges that include retinopathy, nephropathy, cardiovascular disease, and neuropathy, some people with type 2 diabetes continue to thrive with hope, optimism, happiness, and vitality, while others continue to feel guilty, overwhelmed, disgruntled, depressed, and unhealthy” (p. 644). The stress placed on poor people and the resulting psychological problems that occur affect their adherence to treatments and recommendations from their health care providers. Furthermore, this problem is exacerbated by physicians who “focus on risk factors and barriers to achieving good health rather than exploring the characteristics and qualities that keep many people with diabetes thriving and hopeful” (Bradshaw et al., 2007, p. 344). Bradshaw et al. advocate for more physicians to adopt a more understanding approach that focuses on nurturing the strengths of the low-income patient. Richardson (2002) formally studied the effect of “resiliency training” on low-income diabetes patients. He found that after three months of training, patients successfully adapted ways to manage diabetes-related stress, and he believes that primary care physicians should undergo resiliency training as well so they can better communicate with their patients. Richardson (2002) also found that patients who received resiliency training made better food choices and less trouble exercising.

The Rockbridge Area Health Center has seen success implementing this supportive approach. After being diagnosed with diabetes, Nellie Jo did not listen to her physician’s recommendations; many health care providers that see a large volume of patients do not

have the time or compassion to fully grasp why their patients are not capable of changing their lifestyles and fully adhering to treatments. Richardson (2002) believes “people have within themselves a force that will drive them to pursue healthy living” (p. 642). Nellie Jo’s educational segments during the RAHC’s group diabetes clinics help these patients achieve this drive and increase their resiliency of the disease because Nellie Jo understands their fears, attitudes, and educational gaps that prevent them from being fully capable of adhering to treatment and lifestyle adaptations. She knows tricks to mask the unappealing flavor of whole grains and sugar-free foods, and she has mastered the art of effectively exercising while watching television. These patients do not listen to their physicians but see Nellie Jo as one of their peers and are inspired by her success story.

Resiliency training and other support and education efforts made to increase the health status of diabetics increase both the opportunity for diabetics to access this care and the capability for diabetics to utilize this care. Norman Daniels (2008) believes that “individuals should enjoy a *fair share* of the normal opportunity range...to correct for special disadvantages that have led to the misdevelopment or underdevelopment of talents and skills” (p. 44). Moreover, in order for an individual to display a normal opportunity range, he or she must sustain normal functioning, which is established by maintaining health needs (Daniels, 2008, p. 42). Daniels list of six health needs consists of needs critical to diabetes resiliency, including “adequate nutrition,” “exercise, rest, and...important lifestyle features,” “preventive, curative, rehabilitative, and compensatory personal medical services (and devices),” “nonmedical personal and social support services,” and “an appropriate distribution of other social determinants of health” (Daniels, 2008, pp. 42-3). Improving these conditions for low-income individuals ensures a “fair equality of

opportunity” (Daniels, 2008, p. 51). However, these normative conditions allow individuals the opportunity and capability to function normally in society only if they make responsible personal choices.

## Consequences of Early Onset Diabetes

### Opportunity Costs for the Individual

Diabetes mellitus, more commonly known as diabetes, results from high levels of blood glucose caused by the body’s inability to produce and use insulin (American Diabetes Association). The production and utilization of insulin in the human body is vital because insulin is needed to break down glucose ingested into the body from food to create the energy and fuel needed for cell production and function (American Diabetes Association). There are three types: Type 1 (previously known as juvenile diabetes), Type 2, and Gestational Diabetes. Type 2 diabetes is the most prevalent form and is the only form that can be prevented with lifestyle actions such as healthy eating and exercising. Moreover, type 2 diabetes is caused by both the genetic susceptibility to the disease and the genetic inheritance of obesity (American Diabetes Association). If diabetes is ignored, serious complications can result, including cardiovascular disease, nerve damage, kidney damage, eye damage, foot damage, osteoporosis, skin and mouth conditions, hearing problems, and Alzheimer’s disease (Mayo Clinic, 2013). Adults with diabetes are two to four times more likely to be at risk for a stroke and to die from heart disease (CDC, 2012). Significant development of the disease also causes individuals to become insulin-dependent (Mayo

Clinic, 2013). Pilkington et al. 2010 estimates that about 50 percent of all diabetes patients will ultimately require insulin.

In addition to the health costs, there are also significant monetary costs that affect diabetes patients. Average medical expenses for individuals with diabetes are twice as much as medical expenses for individuals without diabetes (CDC, 2012). Diabetes patients, especially those without health insurance, incur large costs from medicines and medical supplies, such as blood glucose testers or special orthopedic shoes. Moreover, the working poor may lose money from missing work for doctor's appointments or side effects of improperly treated diabetes (Pilkington, Daiski, Bryant, Dinca-Panaitescu, Dinca-Panaitescu, & Raphael, 2010). The resiliency theme of "balancing competing priorities" influences costs acquired by low-income diabetic persons as well. An affected person may be faced with the difficult decision of whether to provide adequate food for his family or purchase diabetes medications. Furthermore, this person may have to choose between paying for childcare or rent or medications (Pilkington, Daiski, Bryant, Dinca-Panaitescu, Dinca-Panaitescu, & Raphael, 2010). Therefore, preventive diabetes measures should be taken in order to prevent low-income persons from having to make these constant, stress-inducing decisions.

Many diabetic patients are also wary of losing their jobs as result of having to take frequent breaks to check their blood glucose levels, take medication, or eat something, especially because many of the working poor hold "low-quality, insecure jobs" (Pilkington, Daiski, Bryant, Dinca-Panaitescu, Dinca-Panaitescu, & Raphael, 2010, p. 122). Diabetics fear employers may misconstrue their need to take breaks as a limitation that affects their work performance. A recent study found that only 38 percent of the diabetics polled had

employers that let them take special breaks (Vertical Health, 2011). The diabetic patients at the Rockbridge Area Health Center expressed similar troubles with managing a fully-functioning ability in the workplace with diabetes. Many of the patients were either fathers who were the sole income contributors for their family or single mothers, so they held full-time jobs. All agreed that scheduling regular, healthy meals around a full-time work schedule is extremely difficult. As a person's diabetes condition worsens and other complications result, employment may be impossible; this is where the labor market suffers as a result of underutilization of preventive care. Hopper (1981) found that among low-income diabetic patients at a metropolitan public hospital in the Midwest, 91% were unemployed. Although this is an extreme case, nonfunctioning in society, specifically in labor market, is a pressing concern.

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In 2012, the United States spent \$245 billion on diabetes medical costs, a 41 percent increase from the \$174 billion spent in 2007. Of this \$245 billion, \$176 billion accounts for direct medical costs, such as doctors' visits, medications, and hospital care. The other \$69 billion is caused by indirect costs, including premature death and productivity losses, which affects the labor market (Tucker, 2013). Because of the high likelihood of serious medical issues as diabetes develops, Medicare expenditures are most affected by diabetes. One-third of Americans over age 65 have been diagnosed with diabetes and about half of the population is at risk. As a result of the sizeable incidence of diabetes among adults over 65, about one in three Medicare dollars is spent on diabetes care (Tucker, 2013). Furthermore, the impending rise in health expenditures from the Affordable Care Act of 2010 (ACA) is expected to increase the cost of diabetes by \$9 billion per year (Levine,

2011). The rise in obesity and poverty levels will additionally raise costs. The American Diabetes Association (ADA) recognizes these alarming increases in cost as the prevalence of diabetes rises, and it advocates for reform:

We have an incredible epidemic of diabetes that is driving health care expenditures excessively...Unless we do something to stop diabetes, the economic cost will continue to rise," the ADA Chief Scientific and Medical officer, Robert E. Ratner said at a recent press briefing (Tucker, 2013).

### Ability to Function in Society

The societal costs of diabetes are not limited to medical expenditures. Improper care of diabetes affects an individual's contribution to the community and his or her family.

Hopper (1981) explains this effect on the rest of society:

... short-term metabolic complications and long-term vascular and neurological complications may interfere with an individual's capacity to function in society. In addition, the complex diabetic regimen, including diet, exercise, and often medication, may impinge not only upon the life of the diabetic but also upon the lives of others (p. 12).

Persons who let their diabetes become unmanageable lose the ability to adequately function in society; their contributions to the labor market and community involvement weaken. Additionally, diabetes patients risk losing social acceptance as a result of the stigma placed on chronic illnesses. For example, severely affected individuals who suffer from blindness or the loss of a limb may experience reduced social acceptance (Hopper, 1981). Hopper (1981) places the social consequence of diabetes as a result of this stigma into three categories: "the impact on physical activities and routine tasks, alterations in the

person's social roles in such categories as occupation, family or kinship, recreation, and religious life, and changes in the conception of self" (p. 11). Overcoming this stigma is a crucial part of utilizing preventive services and adhering to treatment.

### **Family Relationships**

The development of diabetes also affects an affected person's relationships with their spouse and children. Managing type 2 diabetes "requires a lot of your attention and focus, which may be hard for a partner unfamiliar with the disease to understand" (Rodriguez, 2011). Moreover, the increased frequency of mood swings and the wide range of emotions, such as fear, anger, depression, and denial affect relationships with family members (Rodriguez, 2011). Impoverished families suffer from more stress than higher income families and strained relationships only exacerbate this stress. However, maintaining close familial relationships is crucial to diabetes management and prevention because of the necessity of a comprehensive support system. Pilkington et al. (2010) assert that "there is strong evidence linking social support with better physical and mental health; conversely, social isolation is associated with greater morbidity and mortality" (p. 124). Drawing on support from family and friends is vital to establishing and maintaining personal accountability of lifestyle choices, adherence to treatment, and achieving the ultimate goal of resiliency.

### **Parenting and the Effect on Children**

Type 2 diabetes can be transmitted to children through both nurture and nature. In addition to proven genetic causes, the probability that children of diabetic (and most likely obese) parents will develop similar lifestyle habits promotes the generational



transmission of diabetes. Nellie Jo ate unhealthily because her parents ate unhealthily, and Nellie Jo's children were raised on a similar diet. Because of the serious consequences this cycle of poverty and unhealthy lifestyle habits has on triggering early onset diabetes, prevention early on in a child's life is paramount. As the incidence of diabetes continues to increase, especially in impoverished communities with higher obesity rates, the age of onset of type 2 diabetes is falling at a concerning rate and diabetes diagnoses among persons less than thirty can no longer be considered an uncommon condition (Song & Hardisty, 2008). The decreasing age of diabetes diagnosis is directly caused by increasing obesity rates in the United States. Although genetics do play a strong role in the transmission of obesity, the passing of unhealthy habits that are common in impoverished families from parents to children significantly contribute to the rise in obesity. Therefore, combating risk factors of diabetes in children at an early age is integral to diabetes prevention. A child has a twenty percent chance of being obese as an adult if she is obese by age four and an eighty percent likelihood of being an obese adult if she is obese as an adolescent (DeMattia & Denney, 2008). If parents take proactive measures to prevent obesity in their children and promote healthy lifestyle choices, adult obesity and the consequent probability of early onset of type 2 diabetes, can be effectively diminished.

## **Barriers to Preventive Diabetes Care**

### **Genetic Barriers**

There is a strong genetic presence in the transmission of obesity and diabetes. The American Diabetes Association calculates the risk of a type 2 diabetic's child for getting

diabetes to be one in seven if diagnosed before age fifty and one in thirteen if diagnosed after age fifty. Nguyen, Srinivasan, Chen, and Berenson (2009) researched adult prediabetics and diabetics who had parental history of diabetes and confirmed the concerning development of risk factors early on in the life of a child born to diabetic parents. Nguyen et al. (2009)'s findings were groundbreaking because they indicated that:

...adverse levels of risk variables consistent with the metabolic syndrome, adiposity and measures of glucose homeostasis, in particular, since childhood, and parental history of diabetes even observed in childhood characterize the early natural history of carbohydrate-insulin imbalance. The current findings reinforce a primary role for early prevention and intervention of risk factors beginning in childhood, especially when parental diabetes and obesity are present (p. 539).

Furthermore, the likelihood of a child developing diabetes is greater if the mother is diabetic, and if both parents are diabetics, the risk of diabetes in their child formidably increases to one in two (American Diabetes Association). Offspring of mothers with diabetes not only have an increased risk for diabetes, but also are at risk of other serious health implications. Moore (2000) found that women who were obese and diabetic were three times more likely to have children with craniofacial and musculoskeletal birth defects than mothers who were not obese or diabetic. These alarming statistics are exemplified by the history of diabetes in Nellie Jo's family. Diabetes has had a constant presence in many generations of her family, and she is the first family member to take stance against her condition. Unfortunately, her oldest daughter has already been diagnosed as prediabetic, but hopefully her other three children can be saved by the preventive measures Nellie Jo has implemented into her family's everyday lives.

## Social Determinants of Health

The likelihood of negative consequences of early onset type 2 diabetes among impoverished people compared with diabetics who have higher incomes, and more stable family structures result from a wide variety of barriers to preventive care. Impoverished people at risk for diabetes or in the early stages of diabetes experience diminished access to high-quality food, exercise, general and health education, preventive and therapeutic healthcare, and support. The above factors constitute the social determinants of health, which are defined by the World Health Organization (WHO) as “the conditions in which people are born, grow, live, work and age, including the health system” (World Health Organization, 2013). According to Daniels (2008), the social determinants of health link “health outcomes and social inequalities in income, education, and other factors” (p. 88).

Barriers to the above factors inhibit the ability of an individual to utilize preventive services through the combination of lack of capability and the lack of personal responsibility. Therefore, improving the social determinants of health beyond healthcare are just as important in increasing the utilization of preventive services as improving medical therapeutic and preventive care for diabetes.

## Access to Healthy Food and Exercise

One of the greatest barriers to utilizing preventive diabetes measures among those with low socioeconomic status is the lack of access to high-quality, nutritious food. This lack of access is largely the result of food insecurity, which is defined as “inability to reliably afford safe and nutritious food” (Seligman, Jacobs, Lopez, Tschann, & Fernandez, 2012, p. 233). In 2010, 14.5 percent of households in the United States qualified as being

food-insecure (Seligman et al., 2010). Low-income diabetics who suffer from food insecurity experience “anxiety, limited nutritional options, and trade-offs between food and other basic needs” ( California Pan-Ethnic Health Network, 2010). Food insecurity is largely influenced by the presence of “food deserts,” which are “areas that lack access to affordable fruits, vegetables, whole grains, lowfat milk, and other foods that make up the full range of healthy diet” (Centers for Disease Control and Prevention, 2012). Food deserts exist in both impoverished rural and urban communities. As a result, impoverished adults purchase inexpensive food with low-nutritional quality that sugars, fats, sodium, and carbohydrates, all which are highly detrimental to diabetics ( California Pan-Ethnic Health Network, 2010).

Moreover, impoverished diabetics have trouble adapting a healthier diet because they have spent their entire adult lives consuming unhealthy foods. Patients at the Rockbridge Area Health Center all expressed disgust towards the healthier food options the health educators recommended to them. Likewise, Nellie Jo has had trouble converting her children to the healthy diet that saved her life. Switching to whole wheat products, cutting out sodas, and limiting carbohydrates is a highly difficult task for both poor children and adults. However, blaming the poor diets of impoverished people on the existence of food deserts is controversial. Nutritious, inexpensive food is available to low-income people even in impoverished areas. This is where understanding the combination of personal responsibility and capability is important. A lot of poor people (like Nellie Jo before her fateful prognosis) do not have the personal drive to put forth the effort into cooking and consciously thinking about diet. On the other hand, they may suffer from a loss of capability in choosing and accessing a healthy diet because of the unhealthy traits passed down from their parents. Furthermore, this capability may be diminished because of the lack of

support that poor people have in maintaining diets. At the diabetes prevention education group at the local YMCA in Lexington, Virginia, and in the group medical visits at the Rockbridge Area Health Center, educators and leaders offer support and stress the need to utilize family and friends to support sustainable diet efforts.

In extreme cases, food insecurity can cause a scarcity of all food, which results in individuals having to go to food banks. However, Pilkington et al. (2010) found that most of their diabetic study participants rarely used food banks because they were poorly treated there, they did not like or trust the quality of the food, and the food offered was “unsuitable for a diabetic diet” (p. 122). Diabetic patients at the Rockbridge Area Health Center express similar disdain. Not only do they not like the taste of the healthier food options of the food packages specifically made for diabetics, but also nurses and health educators at the clinic have discovered that these supposedly healthy options actually contain harmful carbohydrates and sugars.

Another food insecurity that complicates low-income diabetics’ diet regimes is the high occurrence of the working poor that are employed in the food industry. One patient at the Rockbridge Area Health Center who works at the fast-food chain Dairy Queen admitted the difficulty of constantly being around sugar-filled foods. Resisting the temptation of breaking his diet routine and eating ice cream has been very difficult for him, especially when his coworkers mock his condition and purposefully tempt him with sweets. Additionally, a Washington and Lee University dining hall worker who is a member of the YMCA diabetes prevention education group expressed her difficulties with adhering to her soda-less and low-carbohydrate diet since she is surrounded by unhealthy food options.

Diabetics with higher incomes are less likely to work in the food industry and thus are able to more easily adhere to their diet regimes.

Another barrier to utilizing preventive care results from the inability of, lack of desire for, and lack of access to exercising. Obese people have limited physical capabilities; however, there are a variety of ways they can increase their physical fitness. One diabetes patient that Pilkington et al. (2011) interviewed explained that diabetics “don’t really want to go out on the street or walk. Mental illness and depression have a lot to do with that. And working really long hours, and having children are also barriers” (p. 505). Moreover, low-income people do have the money to buy gym memberships, take exercise classes, or enroll their children in recreational sports.

#### Access to Education

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Socioeconomic status incorporates educational levels, and numerous studies have proven the link between low SES and health status. In a study conducted by Smith (2007), males without high school diplomas were found to be about 60% more likely to have diagnosed diabetes than college graduated males. Not only do lower educated people have a higher chance of developing diabetes, but they also experience worse outcomes. Cutler and Lleras-Muney (2007) found that better educated people experience lower morbidity and mortality rates. Moreover, the gap of life expectancy between those with and without a college education has grown over time. While the mechanisms that link education and poor health are complex, they are characterized by the “interrelationships between demographic and family background indicators, effects of poor health in childhood, greater resources associated with higher levels of education, a learned appreciation for the importance of

good health behaviors, and one's social networks" (Cutler & Lleras-Muney, Policy Brief: Education and Health, 2007). Additionally, lower levels of education make it more difficult for physicians to communicate effectively with patients. As noted earlier, studies show that diabetes incidence is directly associated with low levels of education. Nearly eighty percent of type 2 diabetics in the United States have only completed high school, compared with forty percent of the general population (Schillinger, et al., 2002).

More specifically, disparities in health literacy between those with low and high SES significantly affect access to preventive care. Schillinger et al. (2002) define health literacy as "a constellation of skills, including the ability to perform basic reading and numerical tasks required to function in the health care environment" and patients with low health literacy "may also have difficulties processing oral communication and conceptualizing risk" (p. 475). Inadequate health literacy especially affects diabetics because they need to be able to not only read prescription labels, but also be able to interpret blood sugar values and medication dosage schedules crucial to their management of diabetes. Schillinger et al. (2002) found that among their study population, poor health literacy was correlated with poor glycemic control (management of blood glucose levels) and a higher incidence of retinopathy and other diabetes complications.

### Access to Healthcare

Diabetes care requires both self-management and clinical preventive care practices in order to successfully combat the detrimental effects of the disease. Recommended preventive care practices include A1c checks, annual foot exams, daily self-monitoring of blood glucose, and annual eye exams (CDC, 2012). However, diabetics do not utilize these preventive services because of various barriers to healthcare. Only 43 percent of diabetics

in the U.S. report that they receive the recommended screenings at consistent intervals (Cutler & Ly, 2011). Furthermore, low-income diabetics with insurance often are denied at private practices because physicians there do not accept Medicaid or Medicare. Diabetics without health insurance cannot afford to see physicians nor can they afford the necessary medications. Therefore, the role of free clinics and community health centers is integral to providing care for uninsured diabetics. However, barriers to these healthcare options also exist. Many hardworking, low-income people are embarrassed to go to free clinics because they feel they will be stigmatized by receiving care that is deemed “free.” Although Nellie Jo could not afford the services and medications offered by her physician she refused to go the free clinic in Rockbridge County because she thought her friends would look down upon her. Thus, it is important for low-income prediabetics to overcome existing stigmas that prevent them from getting the care they need.

As a diabetic’s condition worsens, oral medications begin to become ineffective and the affected individual becomes insulin-dependent, which requires routine insulin therapy. Although insulin therapy is critical to maintain normal function, a lot of diabetics are reluctant to receive the treatment. Lerman et al. (2009) asserted that “reasons for resisting insulin include depression, negative attitudes or myths about insulin, uncertainty about the effectiveness of treatment, lack of knowledge about the consequences of poor adherence, regimen complexity, poor social support, economic problems, and adverse effects” (p. 43). Moreover, some diabetics do not want to take insulin because “stigma stemmed, in their eyes, from associations with drug-taking, or with the need to inject their body with some ‘unnatural substance’” (Hopper, 1981, p. 13). Healthcare providers are also to blame for poor adherence to insulin therapy. Many physicians do not take the time to thoroughly



teach patients how to utilize and incorporate the therapy into their everyday lives (Lerman, et al., 2009).

Furthermore, some scholars place further blame on physicians for their lack of comprehensive care with diabetics. Cutler and Ly (2011) believe:

Medical systems oriented around fee-for-service reimbursement are ill-equipped to care for such patients. Physicians paid on a fee-for-service basis are happy to see patients in their office and to recommend needed therapies, but they have no pecuniary incentive to make sure that follow-up referrals are actually scheduled nor that advice is acted upon. Good chronic care management is very difficult to achieve in a medical care system based on reimbursing only face-to-face interactions (p. 20).

#### Access to Support

Diabetics with low socioeconomic status not only lack support from physicians but have less support from family and friends than diabetics with higher SES. Studies have proven that “when family members behave in ways that support the diabetes regimen, the individual with diabetes is more satisfied with varied aspects of their own adaptation to the illness (e.g., treatment, appearance, activities)” (Trief, Grant, Elbert, & Weinstock, 1998, p. 244). Thus, diabetics in single-parent and unstable families typically have worse outcomes because of reduced support; Trief et al. (1998) found that diabetic individuals experience higher levels of physical function if they perceive their families as cohesive. Because impoverished persons often experience feelings of alienation, powerlessness, hopelessness, and social isolation (Bullough, 1972), barriers to supportive systems must be overcome in order to ensure effective preventive care.

## Ensuring Preventive Care

### Who is Responsible?

The responsibility of ensuring preventive care to diabetics with low socioeconomic status resides on the role of the individual, society, and the government. While individuals are ultimately responsible for their poor dietary and lifestyle habits and deviance from treatments, impoverished diabetics do not have the capability to exercise their individual responsibility without support from family, friends, and healthcare providers or without the appropriate health literacy education. In order to effectively foster this capability, healthcare providers and educators must provide the support and empowerment to convince impoverished, uneducated diabetics to take responsibility for their actions and to allow them to realize the consequences of diabetes treatment neglect. Many professionals do not realize the effectiveness of this approach and instead only take paternalistic measures to teach low-SES diabetics how to live their lives. Daniels believes that in order to protect health, society must uphold its obligations to protect opportunity. He also advocates the importance of preventive medicine and the social determinants of health, such as education, access to support, and access to healthy foods, stating “just health requires that we protect people’s shares of the normal opportunity range by treating illness when it occurs, by reducing risks of disease and disability before they occur, and distributing those risks equitably” (Daniels, 2008, p. 141).

### Current Policies and the Effect of the Affordable Care Act

Currently, many primary care services are not widely covered under both private and social insurance. However, the Affordable Care Act (ACA) will expand coverage to preventive services, including type 2 diabetes screening, diet counseling, and blood pressure screening with no cost sharing if the services are deemed either strongly recommended or recommended by the U.S. Preventive Services Task Force (CDC, 2012). Specifically, Medicaid will offer “an annual wellness visit that includes a personalized prevention plan at no additional cost to beneficiaries” and Medicare will offer diabetes screening tests, diabetes self-management training, and medical nutrition therapy (CDC, 2012, p. 8). Most noteworthy is the fact that no one will have to pay co-pays or deductibles for preventive care. “Deductibles inhibit access to preventive care and other beneficial medical services. They, along with co-insurance, redistribute the costs of health insurance in ways that hurt chronically ill and low-income patients” (Marmor, Oberlander, & White, 2011, p. 930). The removal of co-insurance for preventive services will hopefully increase access and utilization of these services among diabetics with low socioeconomic status.

### Critical Role of Community Health Centers

Barriers to preventive diabetes care are best combated by a close, encouraging relationship between patients and physicians, comprehensive education and health literacy efforts, and the presence of immense support from family and friends. The best healthcare system to address all of these issues is the community health center. Community health centers were first introduced in 1965, “offering a new way of providing preventive and primary care combined with consumer involvement and cross-sectoral action to address the underlying causes of disease” (Lefkowitz, 2007, p. 1). The U.S. Department of Health

and Human Services defines health centers as providing “comprehensive, culturally competent, quality primary health care services to medically underserved communities and vulnerable populations” (Lefkowitz, 2007, p. 1) Community health centers are supported by grants from the federal government and donors, and patients pay for services on a sliding scale based on their income. Some health centers only accept patients who are uninsured, while others will accept patients who have Medicaid, Medicare, or private insurance (Lefkowitz, 2007, p. 26). Despite skepticism from critics pertaining to funding and the poor economic status of these communities, community health centers have proven to be very successful; this success can be attributed to their bipartisan political support, integration with public and private insurance, and ability to close health disparity gaps (Lefkowitz, 2007, p. 24). As poverty rates rise and discrepancies in the quality and access of healthcare widen among socioeconomic status levels, the role of community health centers will become increasingly important.

Not only are community health centers extremely cost-efficient – the cost per patient is \$1.67 at community health centers versus \$2.64 with other physicians (National Association of Community Health Centers, 2010) – but they also promote economic development among other organizations and businesses in the community. Community health centers also give people of all socioeconomic statuses a chance to volunteer and give back to the community. The Rockbridge Area Free Clinic employs both salary-paid and volunteer physicians, nurses, and administrative personnel. By allowing Nellie Jo to run the educational segment of the diabetes group medical visits, the RAHC presenting Nellie Jo with the opportunity to be a contributing member of the community, which promotes her functioning in society that had previous been diminished as a result of her worsening

condition. Moreover, community health centers promote economic development of other organizations and businesses in communities.

There are currently about 8,000 community health centers in the United States that serve more than 20 million patients; however, the capacity of health centers is expected to increase to 40 million patients by 2015 as a result of increased federal support from the Affordable Care Act of 2010 and the impending expansion of Medicaid amongst the low-income population (National Association of Community Health Centers, 2010). The expansion of community health centers will be vital to reducing the incidence of diabetes in the underprivileged U.S. population. Diabetics without insurance often have to resort to hospital emergency rooms for care, which is extremely expensive and does not offer the type of care that is necessary and beneficial for chronically-ill patients. The immense amount of cost-savings that health centers cause and the long-term, comprehensive benefits that they provide make community health centers a vital component of the future of U.S. health care. As more and more low-income citizens begin to receive insurance coverage, community health centers will be necessary to handle this volume of patients and provide the preventive, supportive, nutritional, and mental health services that are essential to maintaining the functioning of low-income individuals and families.

Although community health centers have proven to be successful, the rise in health expenditures and poverty rates will inhibit the ability of community health centers to fully function without constant funding. Most community health centers rely on donations and grants to fund the majority of their expenditures; however, these monetary sources are sporadic and variable. Additionally, some community health centers, such as the RAHC, do not accept patients with Medicaid and Medicare. Because some physician offices do not

accept Medicaid patients, it is crucial for community health centers to offer these patients the healthcare they need. Increased funding to community health centers such as the RAHC will be needed in order to expand their services to those with public insurance. For Medicare patients, community health centers are critical because of the support they provide to chronically ill patients. An increase in Accountable Care Organizations (ACOs) may be able to provide the support that these patients need when community health centers cannot. "ACOs are groups of doctors, hospitals, and other health care providers, who come together voluntarily to give coordinated high quality care to their Medicare patients" (Centers for Medicare & Medicaid Services, 2013).

### **Policy Recommendations**

In order to effectively combat the rise in diabetes, preventive services need to be utilized. To increase the capability of and opportunity for individuals to access preventive measures, an increase of responsibility of the individual, health care providers, and the government and other institutions is necessary. In addition, policies need to be implemented and maintained that seek to improve the social determinants of health for impoverished people.

The most important policy recommendations concern the advocacy and financial support for supportive, educational, and comprehensive preventive diabetes programs that promote the prevention of diabetes, reduction in diabetes development, and resilience after diagnosis. These programs will not only increase the capability of diabetics to improve their personal responsibility but will also improve the responsibility of health care providers. Resiliency-promoting programs such as Diabetes Self-Management Education

programs (DMSE's) have been proven to be successful; the government should devote more resources to establishing and improving programs like these. "DSME programs that focus on support from family and friends, self-efficacy in compliance, exploring feelings about having the disease, providing fewer lectures with more practical interactive exercises, and maintaining follow-up contact have been shown to help reduce complications and improve glycemic control in some patients" (Bradshaw, et al., 2007, p. 644). The Rockbridge Area Health Center's Diabetes Group Medical Visit program has experienced tremendous success in improving the quality of life for impoverished diabetics, and these programs are relatively inexpensive to operate and maintain.

Secondly, the U.S. government should devote a strong focus to preventing early onset type 2 diabetes in children as child obesity rates rise and the incidence of diabetes diagnosis at young ages increase. Obesity-prevention programs already exist in schools, but these programs should begin to better educate children about the seriousness and prevalence of type 2 diabetes. In addition to providing diabetes education to children, these programs should also focus on improving the nutrition of cafeteria food and promoting exercise in children. Furthermore, organizations should be encouraged to offer low-income diabetics incentives to exercise. For individuals enrolled in the YMCA prevention group in Lexington, Virginia, monthly YMCA membership fees are waived. Additionally, they receive special exercise classes from personal trainers that focus on effective and achievable ways to exercise. These policies and programs are important because they address the social determinants of health and strive to reduce the inequalities in education and access to food and exercise that exist between income levels.

The United States can also look to international health systems for improve the quality of patient-physician interactions. In the United Kingdom and the Netherlands, a team-based approach to care has been successfully implemented. Physicians are paid for after-hours care to chronically ill patients and are rewarded for positive outcomes (Cutler & Ly, 2011). If the United States adopted similar reward programs and promoted comprehensive care to chronically ill patients, the poor would receive better support and communication between patients and physicians would be better. These improvements would help impoverished people utilize preventive services and manage their diabetes more effectively.

Furthermore, the advancement of information technology may improve communication between healthcare providers and systems, and as a result, better managed care will be provided to chronically ill patients. Only 25 percent of physicians in the U.S. have “extensive access to electronic medical records and decision support systems” (Cutler & Ly, 2011, p. 21). However, the ACA has invested thirty billion dollars in expanding electronic medical records (Cutler & Ly, 2011). If all hospitals, private practices, and community health centers had access to the same electronic database, communication between providers would be completely seamless and would improve the comprehensive, communicative, and supportive care that impoverished, chronically-ill patients need.

Finally, the increase of insurance coverage through the Affordable Care Act will improve diabetics’ access to healthcare. The American Diabetes Association (2013) states that this health reform will allow diabetics who were previously denied insurance to receive the healthcare they need. Additionally, a lot of diabetics are forced to pay more for their coverage or have limited benefits because of their condition. While the ACA is a



controversial health reform, the expansion of Medicaid will increase the opportunity for healthcare and will allow diabetics to receive the preventive they need. However, the ACA will not improve the personal responsibility and capability of low-income diabetics to adhere to treatments and lifestyle. The policies and programs mentioned above will be necessary to enhance responsibility and capability.

## Conclusion

Diabetes is becoming an increasingly concerning issue in the United States, specifically among groups with low socioeconomic status. Examining the barriers to preventive care, including access to healthy food and exercise, access to education, access to education, and access to support is vital to understanding the interplay of personal responsibility and the social determinants of health on affected individuals' behaviors and ability to manage their diabetes. Promoting utilization of preventive diabetes measures will decrease the incidence of being diagnosed with diabetes, will delay the development of diabetes in diagnosed individuals, and will increase lifelong resiliency among diabetics. Additionally, improving and expanding upon preventive diabetes services among diabetics with low socioeconomic status will be highly cost-effective. Diabetes prevention reduces costs related to diabetes and costs associated with the inevitable development of complications such as hypertension and cardiovascular disease. Reduction of these costs saves patients, health care providers, insurance companies, and the federal government a significant amount of money that could be used to develop beneficial health services, such as community health centers.

Improving the social determinants of health of diabetics, such as education and support, is just as important as improving the availability and quality of medical care to diabetics. Reducing inequalities in social determinants will augment the opportunities for individuals with lower socioeconomic status and will seek to achieve the fair equality of opportunity that must be maintained in order to effectively decrease health disparities in the United States. Moreover, these programs and policies will increase the capability of low-income individuals to make the right lifestyle choices and utilize access to healthy food, education, support systems, and medical care. Increasing the opportunity and capability of the poor, along with encouraging comprehensive care and support from primary care physicians, is critical in enhancing the utilization of preventive services in order to slow down the rapidly increasing prevalence of diabetes (and obesity) in the United States.

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