

The Evolving Epidemic: A Community Program for the Prevention of Diabetes within the Family Unit

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Abstract

Diabetes is a chronic illness that requires continuing medical attention and patient self-care management education to prevent any acute complications and reduce the risk of long-term complications. Diabetes is a huge problem and affects not only those who have the problem but families, communities and society as a whole. It is one the leading disease contributors that impaired quality of life in patient; and it is a costly health problem. Contributing factors for diabetes include behavioral, non-behavioral, social and psychological. Obesity contributes a lot in this epidemic. Many complications associated with Type II diabetes include cardiovascular, eye, kidney disease as well as hypertension, hyperglycemia, high cholesterol. A lot of patients with diabetes use the emergency room for acute care treatment due to the inability to afford a primary care provider. We must think of programs that can mitigate the rise of such deadly disease among the most vulnerable communities. Programs to increase physical activity, affordable healthy food choices and health insurance should be at the center of treatment approach to help the people at risk. It is our responsibilities as primary care providers to execute the required changes. Remaining stagnant can be fatal, we must all act now to prevent this deadly epidemic.

Keywords: *Diabetes, behavioral, non-behavioral, social, psychological, obesity.*

COMPELLING DATA ON DIABETES

Diabetes is a chronic illness that requires continuing medical attention and patient self-care management education to prevent any acute complications and reduce the risk of long-term complications. In spite of the ample knowledge of diabetes that exists in health care, this disease has become a chronic life long disease that affects all different ages. According to the Center of Disease Control and Prevention (CDC, 2018) (2) fact sheet an estimated eighty-four million people have diabetes in the United States. More than eighty million live with this diagnosis of diabetes and niety percent do not even know they have it yet. There are different types diabetes such as type I diabetes, juvenile diabetes, type two diabetes and gestational diabetes.

As defined by the CDC (2019) (2), type I diabetes occurs when the body's immune system destroys

pancreatic beta cells; the only cells in the body that make a hormone known as insulin. Type I diabetes mainly affects children and young adults but can occur at any age. This form of diabetes accounts for only five to ten percent of all diabetic cases. Common associated risk factors of type one diabetes include an autoimmune, genetic and obesity, and decrease physical activity. Type II diabetes also known as non-insulin dependent diabetes occurs due to insulin resistance disorder in which the pancreatic cells do not produce insulin sufficiently and appropriately. As the need for insulin increases, the pancreas loses the ability to produce sufficient insulin which in turn increase the level of glucose in the bloodstream. Type two accounts for 90-95% of all cases of diabetes. Commonly associated risk factors for type two include obesity, older age, family history of diabetes or genetics, history of gestational diabetes, impaired glucose metabolism, decrease in physical activity as well as

ethnicity and socioeconomic background. Gestational Diabetes as defined by CDC (2019) (2) is “a form of glucose intolerance that women with diabetes endure during pregnancy.” Gestational Diabetes occurs more frequently among African Americans. It is commonly associated with a history of Diabetes and obesity.

The commonly associated theme observed among diabetic patients is obesity. If one is obese or has a strong pre-disposition for obesity it places them at more risk for any of the three types of diabetes previously mentioned as well as other associated health problems. According to Faienza et. al (2020) (3) childhood obesity has increased in worrisome epidemic trends over the past thirty years. This statistic is very alarming because of the deadly impact that it has on our youth. With this rise in obesity, it is unavoidable for healthcare agents to witness how diabetes is becoming a growing burden in our society.

METHOD

A non-systematic literature review was completed for this article. Articles were retrieved from the following databases: Cochrane, Medline and Google Scholar. They were saved in Zotero, a software tool available to save articles collected. Articles were selected based on the information provided on the impact of diabetes on patients and the healthcare system as a whole. Additionally, articles displaying information that have direct impact on diabetes, such as obesity and poverty were selected as well for review. Anecdotal evidence made as a primary and psychiatric care provider while treating patients, was also the catalyst and the motivating factor in researching the literature. The reviews reveal, that community base programs to prevent and decrease the rise of diabetes are in fact warranted.

PURPOSE

The purpose of this study is to develop a community education program that is practical and accessible with a strategic plan to include community partners on the planning process. Diabetes is a huge problem and affects not only those who have the problem but families, communities and society as a whole. This article is to examine the behavioral and non-behavioral factors affecting youths in our community. This article will elaborate on factors that directly impact diabetes, its impact on patients' health, quality of life and the healthcare system.

CONTRIBUTING FACTORS

Behavioral factors are those factors over which children and their families have control over making particular changes. Non-behavioral factors are those factors that we cannot control. Both factors, behavioral and non-behavioral influence the social aspects of society. Diabetes is one the leading disease contributors that impaired quality of life in patient; and it is a costly health problem. National Vital Statistics Reports (2017) (5) indicated that diabetes ranks the 7th leading cause of death in the United States. The social issues that exist in children with diabetes include: cost to the family health care system, increased hospitalization due to complications, the lack of access for educational programs for preventative methods to prevent diabetes and disproportionate access to healthcare system among those at most risk. Those with diabetes automatically acquire disadvantages of a certain socioeconomic status, when it comes to seeking professional freedom. For instance those with type II diabetes in many cases, are not allowed to work as commercial pilots. This limitation can alter one's emotional being negatively, because it places a restriction on their professional work, which in essence affects our society.

The psychological aspect needs to be addressed because children who are obese and at risk of diabetes experience different emotional obstacles, such as low-self esteem, bullying that may alter their ability to function effectively in society. This problem has deeply rooted in the public health issues including cultural barrier among health commentators. Every newly diagnosed type II diabetes presents a crisis to the family and the community. Our hope is that the use of a proactive program which we are suggesting in this article will help those with the existing disease as well as help educate those who have not yet contracted this disease.

EPIDEMIOLOGICAL IMPACT

Type II diabetes is the “new” epidemic that affects people of all different ages. The disease that was formerly known to have an “adult onset” is now becoming more susceptible to children and adolescents. According to American Diet Association (2018) (1), about 210,000 American under age 20 are estimated have been diagnosed with diabetes. The same reported indicated that in 2014 to 2015, the annual incidence of diagnosed diabetes in youth

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was estimated at 18, 200 with type I and 5,800 with type II diabetes. Obesity contributes a lot in this epidemic. Xu & Verre (2018) (7) (believed that with early preventative care programs and measures will decrease the morbidities rate as well as decrease the amount of people being newly diagnosed yearly with diabetes.

Many complications associated with Type II diabetes include cardiovascular, eye, kidney disease as well as hypertension, hyperglycemia, high cholesterol. More deaths associated with cardiovascular disease are caused by diabetes, according to the CDC (2019) (2). It also added that heart disease is the leading cause of diabetes-related deaths. The CDC (2019) (2) reiterated that adults with diabetes are four times likely to die from heart disease or have a stroke than those who do not have diabetes. This statistic finding is very concerning. Diabetes is one of the major cause of chronic kidney disease, accounting for 15% of US adults, that is 37 million of people estimated to have chronic kidney disease. percent of new cases. Daily, more than 240 people on Kidney dialysis die. The results of damages cause by diabetes alone include impaired sensation or pain in the feet or hands, slowed digestion of food in the gastrointestinal tract, carpal tunnel syndrome, and other nerve problems. Young adults with diabetes are susceptible to periodontal (gum) disease than those without diabetes. Poorly controlled diabetes before conception and during the first trimester of pregnancy can cause major birth defects such as pulmonary problem due to premature birth, macrosomia and hypoglycemia in the newborns. This disease can indeed cause disastrous complications to its targeted patients.

According to the CDC (2019) (2) the total cost and lost work and wages of diabetes in the United States total \$327 billion yearly. A lot of patients with diabetes use the emergency room for acute care treatment due to the inability to afford a primary care provider. The rising cost of treating diabetics is becoming a burden to an already unstable health care system.

Diabetes results in as many as eighty percent increased in the last three decades. The overall increase of type II diabetes is due to the decrease in activity and increase in food intake. Many experts believe that type II can be delayed or prevented by diet and exercise only. These are risk factors not only places our youth at risk for diabetes, but place them at risk for many

other complications which include diabetes and lung problems.

Another issue health providers faces is that many people don't understand the severity of the disease. Often times people who lack medical coverage may have diabetes for over 7-10 years, remained asymptomatic and never visit a medical facility for check up. Therefore, medical intervention is often started at a later where minimal organs damage has already started. Thus, this delay increases the mortality rate for those in the vulnerable population. Their life expectancy usually decrease as they live with other chronic conditions that alter their daily functions in the society.

It is very important to understand that diabetes is also sociological, anthropological as it is medicine although diabetes don't discriminate people of any class, age or sex. CDC (2019) (2) shows that this is disease is bound with race and money. Diabetes bears an inverse relationship to income. For poverty this usually means the increase in the lack of fresh foods, exercise and health care. The United State poverty rate is 11.8% according to Semeca et al. 2018 (6). This statistic is significant to us in the healthcare because we know how poverty can have direct impacts on diabetes and its management. The CDC (2019) (2) revealed that African Americans and Latinos are the group with the rising population of obesity and diabetes. The lack of access to healthcare puts these vulnerable communities at higher health danger which increases their risk for diabetes and associated complications. We must think of programs that can mitigate the rise of such deadly disease among the most vulnerable communities. Programs to increase physical activity, affordable healthy food choices and health insurance should be at the center of treatment approach to help the people at risk.

BEHAVIORAL DIAGNOSIS

Behavioral diagnosis is the systematic identifications of health practices that appears to illustrate the causes link to the health problem as well as the diagnosis. It examines the relationship that exist between non-behavior causes and behavior causes. Once identifying the behavioral causes, then the goal of the program is geared toward finding objectives that can help prevent and mitigate that behavior.

Non-behavioral factors that contribute to the incidence of type II diabetes in children include genetics,

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environment and modernization. Genetically, people with a predisposition of a family history of diabetes place their offsprings at a higher risk of diabetes. The environment is another non-behavioral aspect that affects obesity and type 2 diabetes in children. In environments where healthcare access or health care education program lack or do not exist, people are placed at higher at risks for diabetes. With the limitation in the number of facilities that exists, triggers one to analyze the basic economic formula of supply versus demand ratio when it comes to price. Once supply, in this case healthcare settings are low and demand in this case the number diabetic patients is high, the result will automatically produce an increase in healthcare cost. Hence, is the analyzes of how can those with a low socioeconomic status will be able to afford the healthcare prices presented to them.

The advancement in technology and modernization are non-behavioral factors that contribute to the epidemic of obesity and diabetes. With the rise in car ownership there is a decrease in walking and cycling. Another common phenomenon is the use of home video games, where people spend hours in one spot playing these electrical video games. This decrease in physical activity and leads to increase in obesity and higher risk of type II diabetes. In the homes the use of modern appliances such as dishwashers and microwaves leads to a decrease of physical labor in addition to the increased convenience of ready-made food without nutritional support. All of these non-behavioral factors directly impacted the increased risks of diabetes.

Behavioral factors are factors that affect patients' obesity and increase the risk of diabetes. Examples of those factors are patients' dietary intake and lifestyle. In today's society bigger portion is perceived as something better. Fryar et al. 2018 (4) reported that people 37% of adults consumed fast food on a given day. This increased consumption of unhealthy nutrients leads to an increase in obesity that often enhances the risk of type II in people. Many school systems have non-nutritional meals in the vending machines making school children along with the staff more susceptible at consuming these unhealthy dietary choices . Additionally, constant television advertisements display fast foods as affordable and harmless food to eat.

Sedentary lifestyle places patients at risk for obesity and increase the risk of type II diabetes. Many children

along with young adults participate in activities such as watching television instead of more physical activities. A phenomenon that parents often contributes to the safety issues for their children. They feel that their children are safer playing inside the house as opposed to playing outside. Families also contribute to the lack of physical activities with televisions in cars during road trips; because children are likely to sit in the car watching their favorite shows instead of going outside for a walk.

The non-behavioral and behavioral factors are very important factors needed to be addressed by healthcare agents and policy makers in order to assist health providers and community leaders in providing health education and access to those in need.

ADDITIONAL FACTORS IN RELATION TO DIABETES

The predisposing factors are components that can either hinder or motivate the need for change. Many people in impoverished communities don't have the abundance of knowledge to understand that excessive use of saturated fat can affect the body and their health negatively.

Cultural factors pose tremendous risk in patients' belief when it comes to alter to a healthy lifestyle. Many believe that change in the nutritional food is a form of disrespect to their ancestors and would not fathom making the change.

Enabling Factors are the forces that facilitate the achievement of the designated outcome. However, the community mostly affected with diabetes often cannot afford the fee required to participate within community resources, such as the young men's christian association (YMCA)

Lack of personal and community Resources is a compelling enabling factor subjecting those communities at risk to more diabetes. Lack of available supplemental funding programs also contributes to the inability to obtain and pay for these preventive education program available within the community. Another Enabling factor is family. Most children do not cook their own food. The parents are usually preparing these meals, but at times junk foods with high in caloric intake are purchased due to price affordability which contribute to the problem.

Society plays a huge role in the enabling factors for those who are obese and have type II diabetes. In a

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society where new and improved modernized items are invented daily; as a society, we adapt so quickly to those new items which often restrict physical activities. A simple example is the creation of remote control for almost every electrical devices. People do not require to move in order to control, their pool, fireplaces or television. One can sit in one place, while controlling almost everything around their household. These enabling factors contribute to the obesity and diabetes epidemic.

Reinforcing factors include those individuals who are committed to the problem. A deficiency in this factor can exacerbate the problem. Lack of support from family and friends can deter a person willingness to modify his or her lifestyle in order to prevent diabetes. Health providers should be readily available to support treatment and education.

PROGRAM ANALYSIS

Program Analysis deals with analyzing the factors affecting the actual disease and creating health care program that is feasible in making tangible and sustainable changes that suitable the healthcare system. For this particular health care program the plan is to target children and families fit the criteria of their specific rank of low socioeconomic background, those who are obese with a body mass index (BMI) of thirty and have type 2 diabetes or at risk with one or more co-morbid characteristics such as hypertension and high cholesterol. The target age group 8-18 years old due to the fact that this age group has more access to junk food, as they can freely purchase them when needed.

The goal of the program is designed to improve the health outcome of overweight, diabetic children between ages 8-18 years old as well as to empower the community with the knowledge and support to make health choices that can last a lifetime. The program looks at symptoms' identification, treatment and management of obese children who have one or more related comorbidities.

PROGRAM DESIGN FOR A COMMUNITY BASED PROGRAM

Patients will have monthly meetings that give families free screening, BMI assessment, initial, six months and yearly bloodwork assessment of those at risk that might qualify for the program. The settings for the program include primary care clinics and schools'

establishment. Consensual collaboration with the involved setting is mandated.

The interdisciplinary team includes the nutritional Specialists which provide helpful information on healthy nutrients in addition workshops on healthy living in regards to nutritional habits. A certified fitness trainer to guide patients on light exercise regimen, a primary care provider to counsel the patients on healthy lifestyle and to interpret the diagnostic blood work; a psychiatric mental health provider for psychological needs to children, family, peer groups and weekly meetings for those at risk.

The program is to provide support coordination where transportation will be made available to those without transportation access. Partnership with local pantries will be in effect in order to have access to nutritional food for patient during meetings.

CONCLUSION

This article provides additional and clear information about the emergent needs for more creation of these community programs. However, much more exhaustive research about community programs to prevent diabetes is needed to incite the public awareness.

Implication for immediate action is warranted to prevent unnecessary death within the healthcare system. As health agents, we need to create programs and initiatives to help build and maintain a better quality of life. Diabetes type two and its health complications can be prevented if it is tackled aggressively by health providers collaboratively. It is our responsibilities as primary care providers to execute the required changes. Remaining stagnant can be fatal, we must all act now to prevent this deadly epidemic.

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