**Team Diabetes: Type 2**

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**Social Assessment**

**Health Condition**

Type 2 diabetes is a significant issue in the United States. In 2017, diabetes was the seventh leading cause of death among Americans. (CDC 2020). Type 2 diabetes is the inability of the body being able to regulate glucose. This condition can result in the body having too high levels of glucose or too low levels of glucose which can lead to disorders of the circulatory, nervous, and immune systems. (Mayo Clinic 2019). There are two different problems that are interrelated in type 2 diabetes. One problem is the pancreas is unable to produce enough insulin. At the same time cells also do not respond well to insulin. Type 2 diabetes is typically known as “adult onset diabetes” but can begin in childhood. Symptoms of the onset of type 2 diabetes includes increased thirst, frequent urination, increased hunger, unintended weight loss, fatigue, blurred vision, slow-healing sores, frequent infections, numbness or tingling in the hands and feet, and areas of darkened skin which is typically in the armpits or neck. (Mayo Clinic 2019). Unfortunately, there is no cure for diabetes, but it can be managed with diet, exercise, and eating healthy foods. If these things do not work, some may need insulin therapy or an oral medication (Mayo Clinic 2019).

There are many different quality of life issues that can affect people with type 2 diabetes. For example, diabetes often requires constant care. This includes monitoring blood sugar, eating carefully, exercising, scheduling and planning meals and when to check blood glucose levels, as well as fear of potential complications. (American Diabetes Association). People with diabetes also can fall into hypoglycemia or hyperglycemia. Some Type 2 diabetics do not have to inject insulin, but others do. It often depends on how early the person is found to have diabetes. (NIH 2014).  All these things can impact one’s quality of life. In a study done by the American Diabetes Association, nearly 30% of people reported having cardiovascular problems as well 61% of type 2 diabetics reported taking oral medication to help, and 14% of type 2 diabetics reported using insulin therapy. Dealing with the fear of complications of diabetes as well as the multiple check-ins daily all can reduce quality of life.

**Primary Target Population**

Type 2 diabetes can affect anyone, but certain races and ages are at a higher risk. According to the National Institute of Health, “The prevalence of diagnosed type 2 diabetes by racial/ethnic group is as follows: Asians 9.0%, African Americans 13.2%, Hispanic 12.8%, and non-Hispanic whites 7.6%.” (Rodriquez and Campbell 2017). This data highlights how type 2 diabetes is prevalent most among African Americans. There are multiple factors that contribute to minority groups having a higher rate of diabetes including biological and clinical factors as well as social factors. People can develop type 2 diabetes at any age, including childhood but those over the age of 45 are at a higher risk. (NIH 2020). Data has shown that 75% of children who have type 2 diabetes typically have a close relative that have it too. (CDC 2020). However, as childhood obesity rates have increased it is being seen more often in children and adolescents without a close connection to the disease. (CDC 2020). In a report posted by the CDC it was noted how between 2002 and 2015 the incidence rate of diabetes increased in all age, sex, and race/ethnicity groups, with the exception of non-hispanic whites. (CDC 2020). For the purpose of this assessment, non-hispanic blacks ages 18-44 are considered the primary population.

**Setting of Focus**

South Carolina ranks 5th highest in the nation in the percent of the adult population that have diabetes. (SCDHEC 2020). Approximately 1 in every 6 African-Americans in South Carolina have diabetes. (SCDHEC 2020). South Carolina has a population of 5.149 million as of 2019 reported by the United States Census Bureau. The current population of non-hispanic blacks in South Carolina as reported by the United States Census Bureau is 1.363 million. More specifically, Orangeburg county has the 17.6-23.4% prevalence of diabetes among adults in the area, and is one the counties with the highest rate of diabetes in South Carolina. (MUSC 2019). According to the US Census Bureau Orangeburg’s population is 62.1% black non-hispanic and only 34.8% white. Orangeburg will be the focal point for the target population of non-hispanic black people ages 18-44, being the primary group most affected by type 2 diabetes.

**EPIDEMIOLOGICAL ASSESSMENT**

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| **Possible behaviors that contribute to the health problem** | **Possible environmental factors that contribute to the health problem** | **Biological and other factors that contribute to the health problem** |
| * Diet high in saturated and trans fats, increases cholesterol levels (Mayo Clinic Staff, *Type 2 diabetes* 2021)      * Lack of exercise and physical activity (Mayo Clinic Staff, *Type 2 diabetes* 2021)      * low level of [HDL](https://www.niddk.nih.gov/Dictionary/H/HDL-cholesterol) cholesterol or a high level of [triglycerides](https://www.niddk.nih.gov/Dictionary/T/triglycerides) (Mayo Clinic Staff, *Type 2 diabetes* 2021) | * Safety of area for outdoor physical activity (Dendup, Feng, Clingan, & Astell-Burt, 2018) * Walkability (and safety to do so) (Dendup, Feng, Clingan, & Astell-Burt, 2018) * Food environment/ food deserts (Dendup, Feng, Clingan, & Astell-Burt, 2018) | * Family history, (mother, father, sister brother, can increase your risk) (NIH, *Risk factors for type 2 diabetes* 2016) * Being 45 or older (NIH, *Risk factors for type 2 diabetes* 2016) * African American, Alaska Native, American Indian, Asian American, Hispanic/Latino, Native Hawaiian, or Pacific Islander (NIH, *Risk factors for type 2 diabetes* 2016) |

There are many behavioral factors that can raise a person’s risk for developing type 2 diabetes. While the true cause of type 2 diabetes is largely unknown, we do know that obesity and lack of physical activity are two factors that can increase someone’s risk. When type 2 diabetes occurs, “cells in muscle, fat and the liver become resistant to insulin. Because these cells don't interact in a normal way with insulin, they don't take in enough sugar” which causes an increased need for insulin. (Mayo Clinic Staff, *Type 2 diabetes* 2021). The pancreas essentially stops producing enough insulin as it once did.

Behavioral factors that can contribute to a high risk of developing type 2 diabetes are being overweight, lack of physical activity, and an unhealthy diet. If someone is overweight, they are more likely to have a sedentary lifestyle and an unhealthy diet. This combination of factors can lead to health problems such as type 2 diabetes later on in life. If people are aware of their risk of developing type 2 diabetes, they can make lifestyle changes in order to reduce their risk altogether. It is easiest to make these behavior changes early in life, but specifically between the ages of 18-44. All people have an increased risk for developing type 2 diabetes at the age of 45, so making lifestyle changes before will help combat this issue.

 Environmental factors also play a role in increasing someone’s risk for developing type 2 diabetes. Some of these factors include walkability, safety of the outdoor area to perform physical activity, availability of healthy affordable foods, presence of a food desert, access to preventative medicine and diabetes education and resources, availability of affordable gyms in safe areas, and stress. If someone experiences just one of these environmental factors, their risk for type 2 diabetes can increase. If someone experiences multiple factors, then their risk will almost certainly increase.

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|  | **More Important** | **Less Important** |
| **More Changeable**  ***usually newly adapted*** | * Unhealthy diet * Lack of physical activity | * Alcohol and drug use |
| **Less Changeable**  ***Usually more culturally engrained*** | * Access to diabetes education * Access to health affordable foods * Access to safe places for outdoor physical activity | * Race * Gender * Age |

**Focus: Make lifestyle changes**

 Our group has chosen black non-Hispanic individuals aged 18-44 for our target group. We chose this group because they are at a higher risk for developing type 2 diabetes based on their race. We chose the age group of 18-44 because the risk for developing type 2 diabetes increases at age 45. If we can urge people to use preventive medicine and make lifestyle changes early on, then we can improve the rate of type 2 diabetes within black non-Hispanic individuals.

**Key Stakeholders and Relationship with Program Planners**

Stakeholders play a very important role in the program planning and implementation of the program. For our program, the major stakeholders include clinics and hospitals around Orangeburg such as Regional Medical Center- Orangeburg Hospital, Orangeburg VA Clinic, Orangeburg Calhoun Free Medical Clinic, Singleton Health Center, and HopeHealth Center Orangeburg. Many of these offices, hospitals, and clinics will be able to provide diabetes testing. Orangeburg has roughly 27.5% people living below the poverty line according to the census Bureau. This means that Orangeburg Calhoun Free Medical Clinic will be an important stakeholder in offering free testing for diabetes. This center will need to be marketed in the area in order for people to know they have access to a free clinic and they should use it to go get tested for diabetes. Regional Medical Center encourages their patients to manage type 2 diabetes at home and provides links on their website to help people learn how to do this. (RMC Health 2020). The program planners will need to work with Regional Medical Center in order to get more education programs out in person. The program planners can work with the Regional Medical Center to offer education programs on where to go to get a free glucose test if someone does not have health insurance, as well as educate members of the community on healthy eating habits and exercise. This can help prevent people from getting diabetes, know if they are in the pre-diabetic range, and help get them the right sources to manage their diabetes. The program planners will work hard with the Regional Medical Center and free clinic to ensure the target population is reached. Infographics can be made and passed out in order to promote the warning signs and symptoms of diabetes as well as where and how to get tested. Also infographics on how to prevent diabetes as well as statistics for the area can be made and passed out as well. The program planners, hospital, and free clinic will work together to ensure more free testing and resources are available to the community in order to make sure people can get the testing and resources they need. Since the area contains a high percentage of people living below the poverty line, program planners will also work with public transportation in order to make sure people are able to find transportation to events and the clinic. All events can be advertised outside populated areas such as grocery stores, churches, and neighborhoods. The program planners will work with the hospital to ensure these events are advertised outside these areas.

**Educational and Ecological Assessment**

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| **Factor Type** | **Factor** | **Explanation of relationship with behavior** |
| **Predisposing** | Black, non-hispanic individuals, aged 18-44, who lack scientific evidence 1) which predicts whether perceptions of tobacco use influence a diagnosis of type 2 diabetes and 2) if the evidence is reported by a knowledgeable trusted individual | Black, non-Hispanic individuals, aged 18-44, who lack scientific evidence which predicts: 1) whether perceptions of tobacco use influence the body’s ability to develop type 2 diabetes and 2) if evidence is reported by a knowledgeable trusted individual, they may be more inclined to change their behavior. |
| **Enabling** | Black, non-Hispanic individuals, aged 18-44,­­ who have access to quality 1) healthcare and 2) environmental conditions | Black, non-Hispanic individuals, aged 18-44, who have access to quality: 1) healthcare and 2) environmental conditions are more likely to exhibit enabling behavior, which is crucial when it comes to preventing type 2 diabetes. |
| **Reinforcing** | Black, non-Hispanic individuals, aged 18-44 who do not continue 1) meeting the recommended weekly physical activity goal 2) accurately self-reporting weight management. | Black, non-Hispanic individuals, aged 18-44, who do not continue: 1) meeting the recommended weekly physical activity goal and 2) accurately self-reporting their weight management may unintentionally be reinforcing sedentary behaviors, which is a risk factor for type 2 diabetes. |

A powerful relationship presents itself between the predisposing, enabling, and reinforcing factors and the behavior, an increased risk of type 2 diabetes among black, non-hispanic individuals, aged 18-44.

It appears that individuals who tend to live sedentary lifestyles are most likely to succumb to severe ailments, such as type 2 diabetes. Unfortunately, there are predisposing factors, which are antecedents to a behavior which provide motivation for a behavior. For example, while there is scientific data which proves that partaking in sedentary lifestyles increases the likelihood of a diagnosis, most people do not believe it. Despite what a person believes, engaging in physical activity is good for people. It is not until a knowledgeable, well trusted associate presents them with the same data that they go about believing it. While this news is not new to them, there appears to be some correlation of hearing this information from a close acquaintance which kicks their mind into drive about beginning a particular behavior.

         Once an individual has decided a particular change is necessary, enabling factors begin to allow a motivation to be acknowledged. While not everyone has the same chance, having access to quality healthcare plays a major part in putting a plan into motion. As of 2019, 28.9 million nonelderly individuals were uninsured (Kaiser Family Foundation, 2020). There are many reasons, but it appears that cost and the complexity of choosing a plan is one of the leading causes. In the United States, individuals may qualify for Medicaid based on family size and income, which some people qualify for at little to no cost.

         Although people may see their plan through to the end, there are also reinforcing factors, which may or may not encourage individuals to continue their new behavior(s) once they have met their desired outcome. The Department of Health and Human Services recommends that adults get at least 150 minutes of moderate aerobic activity or 75 minutes of vigorous aerobic activity, or some mixture of both per week (Laskowski, 2019). While this may seem like an enormous amount of time per week, some end up neglecting these changes once their goal is attained. Doing so allows patients to reinforce sedentary lifestyles, which is a risk factor for type 2 diabetes.

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