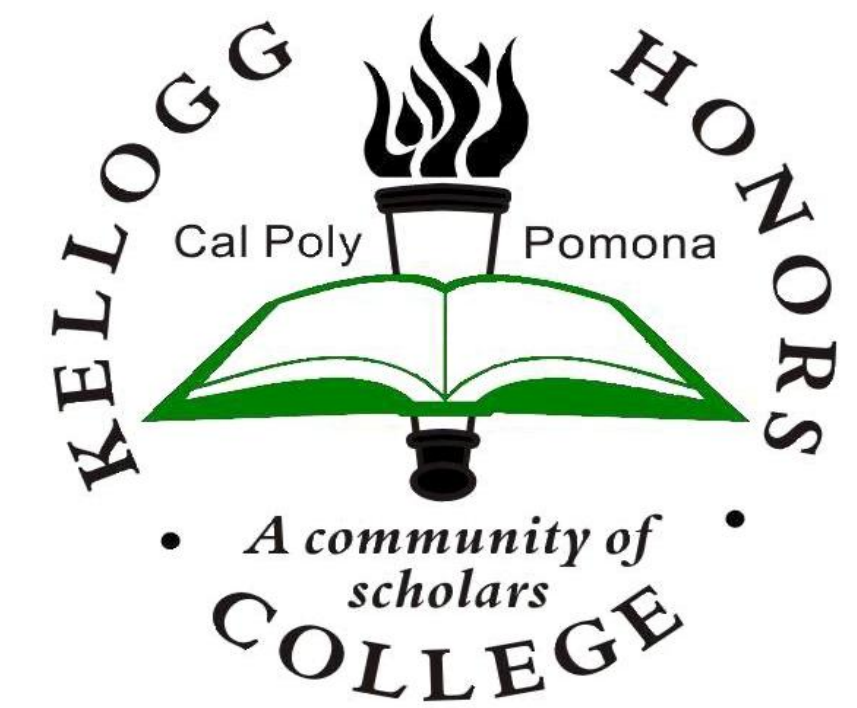# The History, Prevalence, and Risk Factors of Gestational and Type II Diabetes

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Abstract

Diabetes and obesity have grown to epidemic proportions in the United States and globally. One in every ten Americans is diagnosed with diabetes. There are three distinct diabetes diagnoses: Type I, which is related to the body's inability to produce insulin Type II, which is related to insulin-resistance in the body, and gestational, which occurs during pregnancy. A diagnosis of diabetes can be made through the utilization of an HbA1c test, or through an oral glucose tolerance test. The accuracy of these tests may depend on the specific diabetes diagnosis, so the use of a test is typically linked to the hypothesized type a patient may have. Diabetes poses an increased risk for other health issues, and women with gestational diabetes may have increased risk for Type II diabetes development later in life as well as their offspring. A variety of factors such as being overweight or having a family member with diabetes, all pose additional risks for a diagnosis of diabetes. Pre-diabetes is a reversible condition that can be diagnosed through an HbA1c test and can be treated with lifestyle changes. The purpose of this research poster is to review the history, prevalence, and risk factors of type two diabetes mellitus, gestational diabetes, and obesity in the United States over the past two decades.

Objectives

The objective of this project is to provide an understanding of the prevalence and risk factors of obesity and diabetes with hopes to educate and prevent the continuous global increase of these diseases.

Methods

This project was completed by means of a literature review.

Discussion

Currently, one in 10 Americans has diabetes (1). There has been a drastic increase in those diagnoses with diabetes in the last two decades. In 2000, 6.0 % of the United States population had a diagnosis of diabetes which increased to 9.1% in 2018 (2). According to the Centers for Disease Control and Prevention, 88 million Americans are pre-diabetic (3). When untreated, pre-diabetes can become type II diabetes in under five years (3). Pre-diabetes is a large risk factor in a person's future diagnosis of type II diabetes. Both type II diabetes and pre-diabetes are preventable disease states of the body and result from an increased blood glucose concentration, and cause insulin resistance (1). Insulin is an important peptide hormone produced by the pancreatic beta islet cells and functions in glucose regulation through transportation into the cells for storage or utilization (5). Obesity is commonly presented with diabetes and is a risk factor for diabetes, however, it is not always the case (6).

There are a variety of different risk factors for type II diabetes including a diagnosis of gestational diabetes during pregnancy. Gestational diabetes is a form of insulin resistance in a pregnancy women who did not previously have diabetes (4). A maternal diagnosis of gestational diabetes increases her risk of being diagnosed with diabetes later in life and there is a risk that her offspring may have type II diabetes. In the National Health and Nutrition Examination Surveys from 2007 to 2014, gestational diabetes was diagnosed in 7.6% of the population, and of those 19.7% were diagnosed with type II diabetes later in life (8). Other potential characteristics that are associated with an increased risk of diabetes include being overweight or obese, having a family history of diabetes, being over the age of 45, a sedentary lifestyle, and being of a certain ethnicity (9). The ethnicities with a higher prevalence of type 2 diabetes in the United States are Blacks, Hispanic/Latino, American Indian, and Alaskan Native (9). There is a higher prevalence of type I diabetes in the White population (9).

The HbA1c test is an accurate way to diagnosis a patient with diabetes (7). Figure 1 shows the HbA1c diagnostic ranges of diabetes.

Type II diabetes and pre-diabetes are preventable and treatable with dietary and lifestyle changes.

Figure 1: HbA1C Result Range

HbA1C test results can help to diagnose patients with diabetes. A healthy, normal result would fall at our below 5.7%. A pre-diabetes diagnosis can be determines from a result of between 5.7% and 6.4%. A diabetes diagnosis can be made from an HbA1c result of 6.5% or higher (7).

HbA1c Results

Diabetes 6.5% or higher

Prediabetes 5.7 to 6.4%
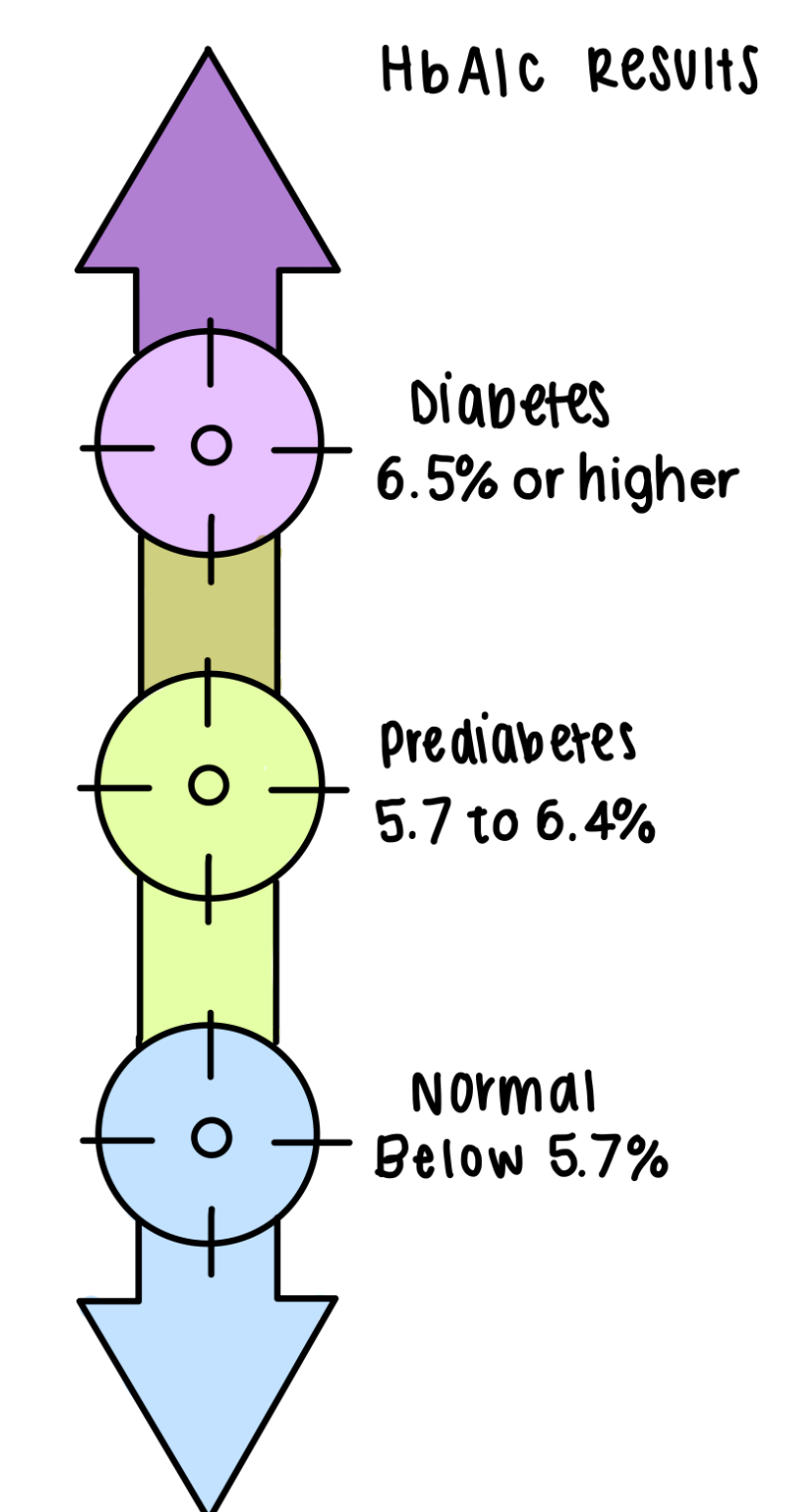
Normal Below 5.7%

Figure 2: Diabetes and Obesity Prevalence Heat Maps in 2004 and 2016

These heat maps are from the Centers for Disease Control and Prevention (6). The key shows by color low, medium and high percent prevalence of diabetes, obesity, and both in the United States. In 2004, there was a much lower frequency of individuals with diabetes, obesity, and both in the United States. There is a drastic increase in the percent of the population with obesity, diabetes and both by 2016.
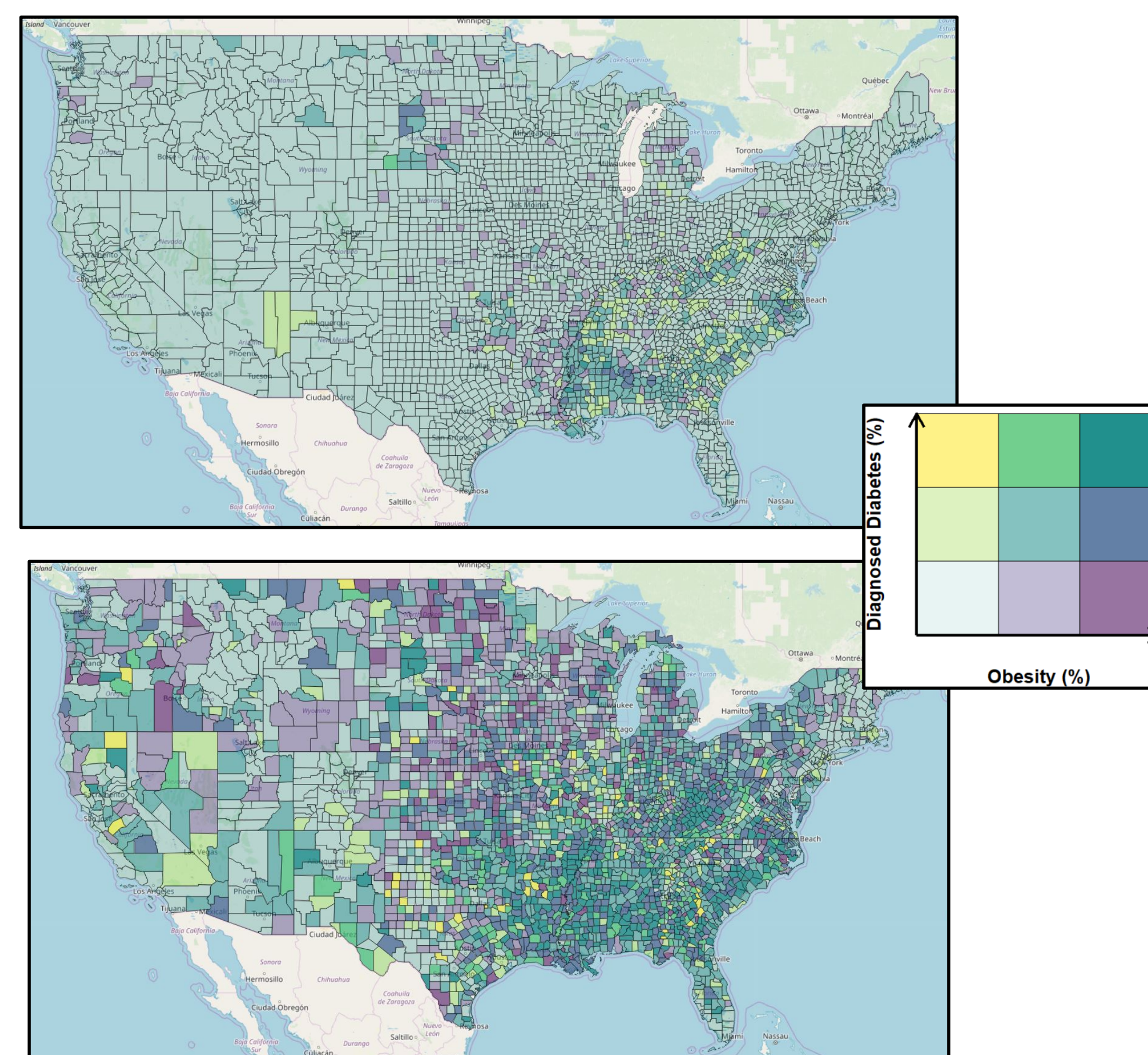
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Acknowledgements