Examining Lifestyle Choices in University of Dayton Undergraduate Students to Predict Likelihood of Type Two Diabetes Diagnoses

Elizabeth Lantz, Elijah Richter, Lily Taggart, Ethan Trumbull and Maria Wellmann

Advisor: Claire Wilt, MDN, RD, LD

University of Dayton

Department of Health and Sport Science

Introduction

According to Nwosu (2022), there has been a dramatic increase in the triad of childhood obesity, prediabetes, and Type Two Diabetes in children and young adolescent adults in the United States. The prediabetes precursor to Type Two Diabetes increased 11.6% from 1999-2002 to 28.2% in 2015-2018 in the US. Today, the prevalence of prediabetes in adults is 34% with the likelihood to exceed this statistic. Due to almost 96 million adults living with prediabetes in the United States alone, a lifestyle evaluation of college students at the University of Dayton was performed. The study aims to determine whether lifestyle habits in college, in addition to family history of diabetes, can predict college students' risk for developing Type Two Diabetes (T2D) later in life. Many lifestyle choices such as alcohol and nicotine consumption, diet choices, and physical activity levels were surveyed and evaluated. This study aims to determine whether physical activity, diet, water consumption, and fatigue levels show a significant difference among participants with family history of diabetes and without family history of diabetes.

Methodology

A Google Survey was sent to random groups of University of Dayton undergraduate students and 42 of those students between the ages of 18-22 years filled out the survey. The survey was curated by the researchers, which included demographic questions initially. The rest of the survey focused on lifestyle factors such as: frequency of exercise, diet, amount of fluid drank throughout the day, fatigue, and alcohol and nicotine consumption. The survey also asked participants to answer whether they have a family history of diabetes. The survey questions were then analyzed to determine likelihood of a diabetes diagnosis later in life.

Results

Forty-two undergraduate students at the University of Dayton completed the survey. The average age of the participants was 21.047 (±1.84) years. Eighty-six percent of participants were female (n=36) and fourteen percent were male (n=6). The genders were not separated within the data analysis. Forty-eight percent reported they plan to graduate in 2024 (current juniors), thirty percent graduate in 2023 (current seniors), seventeen percent graduate in 2025 (current sophomores), and five percent graduate in 2026 (current freshman). The average height was reported as 66.59 (±3.71) inches, and average weight was 151 lbs. According to the NIH standards of BMI (body mass index), this puts the average subject in the "overweight" category (within the range of 25-29.9kg/m^2).

T-tests were run for the data sets between the two groups, the group with family history of Type 2 Diabetes and the group without family history of Type 2 diabetes (T2D). The t-value for the t-test of fatigue between the group with family history of T2D and the group without family history of T2D was 0.039493, which indicates association between fatigue and potential risk of T2D. The t-value for the t-test of water consumption between the group with family history of T2D and the group without family history of T2D was 0.0290, which indicates water consumption has an association with potential T2D risk. The t-value for the t-test of sugar and carbohydrate consumption between the group with family history of T2D and the group without family history of T2D was 0.0058, which indicates an association between sugar and carbohydrate consumption with T2D potential. The t-value for the t-test of exercise frequency between the group with family history of T2D and the group without family history of T2D was 0.184095, which indicates no statistical significance between exercise frequency and the potential to develop T2D later in life. Exercise frequency was negated when analyzing the results due to insignificance.

Figure 2

Average of Sugary Food and Drink Consumption Frequency among 41 participants

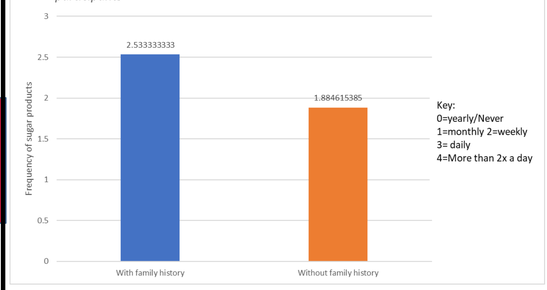

Table 2

t-test Results Comparing Lifestyle Factors With and Without Family History of Diabetes

	Exercise Frequency	Sugar Consumption	Water Consumption	Frequency of Fatigue
t-value	0.184095*	0.0058**	0.0290**	0.039493**

* t-value > .1; insignificant. **t-value <.1; significant.

Table 1

Comparing Lifestyle Factors for Participants With and Without a Family History of Diabetes.

Lifestyle Factor	With Family History (n=15)		Without Family History (n=26)	
	M	SD	M	SD
Exercise Frequency	2.067	1.33	2.615	1.20
Sugar Consumption	2.533	.834	1.885	.588
Water Consumption	1.267	.799	1.885	.864
Frequency of Fatigue	2.933	.704	2.423	.758

Note: M = Mean. SD = Standard Deviation. Exercise frequency is measured on a scale of 0 being 0 days of moderate physical activity per week to 4 being more than 5 days per week of moderate physical activity. Sugar Consumption is measured on a scale of 0 being never consuming sugary beverages and food and 4 being consuming sugary food and beverages more than twice per day.. Water consumption is measured on a scale of 0 being less than 4 cups consumed per day to 3 being more than 12 cups per day. Fatigue frequency is measured on a scale of 0 being never fatigued and 4 being experiencing fatigue on a daily basis.

Findings

Based on the study conducted, it was found that when comparing the two groups, consumption of sugary beverages/high carbohydrate foods, water consumption, and frequency of fatigue hold a significant relationship with developing diabetes in the future. After analyzing the results, it can be concluded that increased amounts of sugar and carbohydrates consumed has a significant association with the development of diabetes later in life. Decreased amounts of water consumed (at or less than four to eight cups daily) can also be associated with the development of diabetes later in life. Finally, increased frequency of fatigue can also be associated with a potential diabetes diagnosis in one's future. This is true for both groups, regardless of family history. It can be inferred that frequency of exercise was insignificant because obesity is a comorbidity to diabetes, and thus might be a reason why participants may have increased their frequency of exercise. From the findings discussed, it seems that there is a significant correlation between lifestyle choices in undergraduate students and risk for developing diabetes later in life.

References

Benjamin Udoka Nwosu. (2022). The Progression of Prediabetes to Type 2 Diabetes in Children and Adolescents in the United States: Current Challenges and Solutions. Endocrines, 3(45), 545–551. https://doi.org/10.3390/endocrines3030045

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