Diabetes Biomarker Study on the Navajo Nation

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The reason for this science fair project was to see if body mass index (BMI), stomach girth, and skinfold measurements indicated whether individuals are pre-disposed to diabetes. The hypothesis was if an individual has a high BMI, stomach girth, and skinfold measurements, then they are more predisposed to diabetes than a person with average BMI, stomach girth, or skinfold caliper measurements. Participants of the experiment read and filled out the consent forms. A skinfold caliper, tape measure, and weight scale were set up. Then height, weight, eight skinfold measurements, and stomach girth measurements were taken of the individual. With collected data, it was analyzed to calculate BMI and then compared with participants with or without diabetes. Individuals with diabetes were found to have a higher BMI and stomach girth compared to individuals without diabetes. Females without diabetes had an average BMI of 30.68 (kg/m2) and stomach girth of 107 cm. Males without diabetes had an average BMI of 30.93 and stomach girth of 91.4 cm. Females with diabetes average BMI was 32.65 and average stomach girth was 111.1 cm. Males with diabetes had an average BMI of 40.74 and average stomach girth is 118.8 cm. The results did not fully support the hypothesis. Individuals with a higher BMI and higher stomach girth are more predisposed to diabetes. The arm skinfold caliper measurements produced mixed results, the measurements were nearly identical for women and men regardless of whether they were diabetic or not.

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