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Mishu, Sumaiya and Valero, Maria, "Impacts of Food and Exercise on Blood Glucose: A study for predicting glucose concentration in non-invasive monitoring." (2022). *Symposium of Student Scholars*. 132.

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Impacts of Food and Exercise on Blood Glucose: A study for predicting glucose concentration in non-invasive monitoring.

Abstract

In our daily life, we consume different types of foods. The food we intake greatly balances our blood sugar levels and minimizes highs and lows. It is very important to understand certain food that affects our blood sugar. Maintaining a proper diet can keep our blood sugar within the right range. In this study, we are conducting an analysis of the food that people take in their daily life and how it impacts blood glucose. We have collected data from various sources including National Health and Nutrition Examination Survey performed by CDC(1). We also collected datasets from The Baker Heart and Diabetes Institute (AusDiab) (2). It is hard to get a dataset of the exact same domain. However, we got NHANES 2017-March 2020 Pre-Pandemic Dietary detailed dietary intake information from NHANES participants. The dataset contains types and amounts of foods and beverages (including all types of water) consumed within 24-hr prior to the interview (midnight to midnight) and intakes of energy, nutrients, and other food components from those foods and beverages. Participants were asked questions on salt use, whether the person's overall intake on the previous day was much more than usual, usual, or much less than usual, and whether the participants is on any type of special diet. The food items were indicated by USDA food code. We merged the USDA food code data and NHANES survey data to prepare our dataset. Also, we dropped the unwanted columns as there are many unnecessary inputs. Finally, we prepared our desired dataset of total sugar, calories, protein, and some other important features. We applied Machine learning algorithms on the dataset to estimate the food types that help to maintain blood glucose levels.

References

1. <https://wwwn.cdc.gov/nchs/nhanes/search/datapage.aspx?Component=Dietary&Cycle=2017-2020>
2. <https://pubmed.ncbi.nlm.nih.gov/12062857/>