

Abstract

In 2022, more than a quarter of patients diagnosed with epilepsy do not respond adequately to usual antiseizure protocols and are therefore diagnosed with refractory epilepsy. More than 100 years ago, reports in the literature documented the beneficial use of low carbohydrate diets in seizure control. Our Precision Ketogenic Therapy (PKT) Program is the 21st century precision medicine approach to ketogenic diet treatment of epilepsy. Precise quantitation of nutrient content of each food prescribed for PKT and available to patients at local markets is required and presented in the Foodomics Database which is the foundation of PKT. It is crucial to know the chemical identity and quantity of nutrients in the food being consumed at that moment so the right dosages can be administered to patients. We manually collected nutrition facts data from products available at the grocery store, entered these data into the Foodomics Database and conducted two audits. This process is tedious and time consuming, so it would be ideal to minimize the frequency with which it needs to be done while also maintaining current, accurate data in the database. The goal of this project was to compare nutrient data collected in January 2022 with previous data for the same products that were collected over the past several years. A difference in fats, carbohydrates, or proteins was recorded as 1 and no change as 0. Column sums indicated how much each category changed. We found differences, especially in carbohydrates, which are most important to monitor for PKT.

Introduction

Precision Ketogenic Therapy (PKT) is a treatment for patients with epilepsy that have not found relief through medication. It requires diets to be carefully monitored to balance patient nutrient levels, and any errors in nutritional values can lead to seizures. We collect nutritional data to create recipes for patients and caregivers to make. Due to the significance of the data on patient health, information on every item in their diets must be carefully maintained, and even minor errors in the database can be dangerous.

Methods

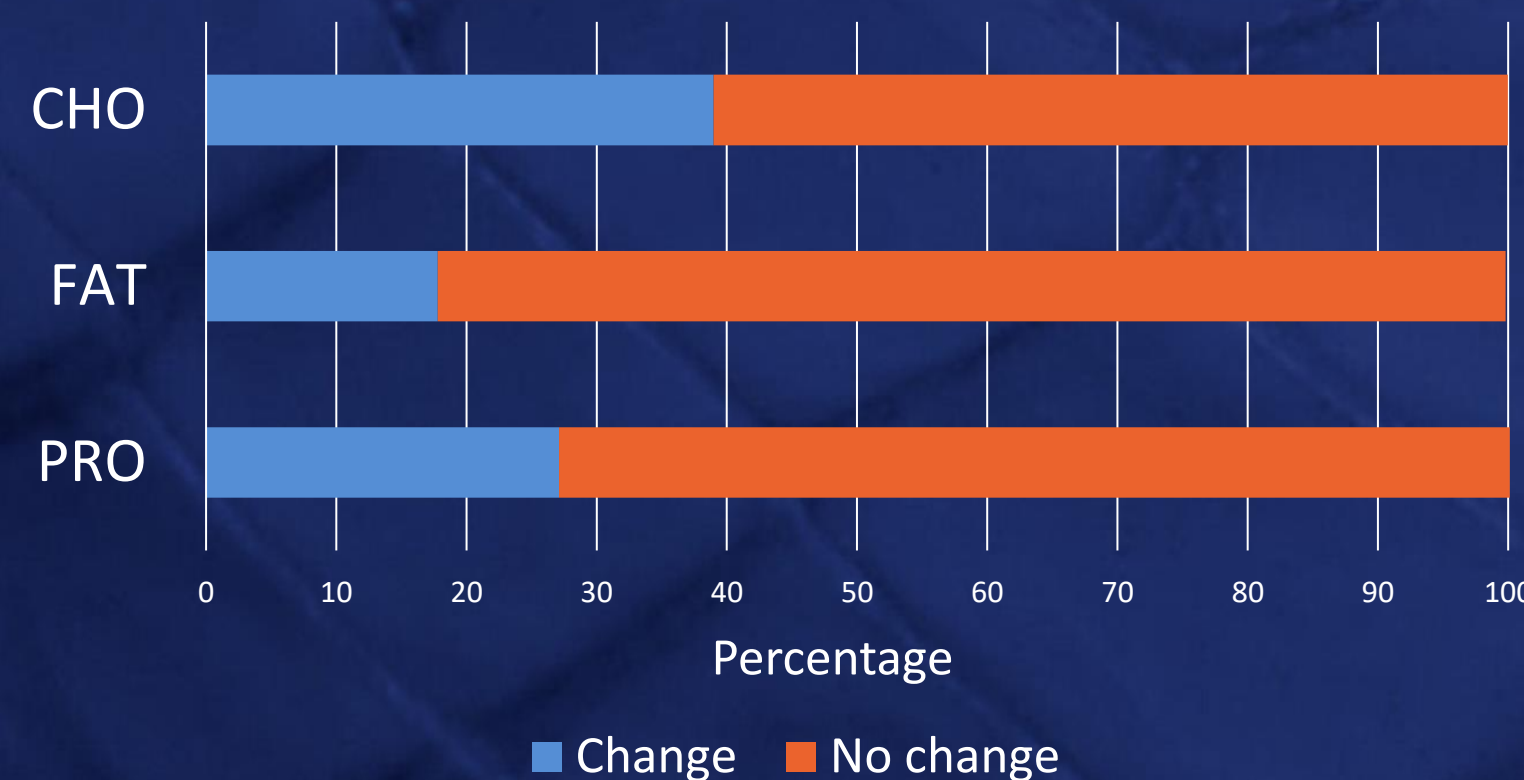
Pictures of the Nutrition Facts of foods were obtained at different grocery stores around the Gainesville area. The data were entered into a database, audited by two other peers, and compared to an earlier run.

Data

We determined the difference between the dates of the food runs. The number of days between the food runs was a mean of 799 days. The median was 715 days. The minimum was 61 days, and the maximum was 2307 days.

NDID	Product Name	grams_Pro_per_100g	grams_Fat_per_100g	grams_Cho_per_100g
ND00068	Gerber Second Foods All Natural Baby Food-Apples (plastic)	0.00	0.00	13.27
ND00068	Gerber Second Foods All Natural Baby Food-Apples (plastic)	0.00	0.00	13.23
ND00080	Earth's Best Organic Stage 2 Baby Food-Bananas (jar)	0.88	0.00	19.03
ND00080	Earth's Best Organic Stage 2 Baby Food-Bananas (jar)	0.88	0.00	19.03
ND00105	Gerber Second Foods Baby Food-Turkey and Gravy (jar)	9.86	5.63	5.63
ND00105	Gerber Second Foods Baby Food-Turkey and Gravy (jar)	9.88	5.64	5.64
ND00107	Gerber Second Foods Baby Food-Chicken and Chicken Gravy (jar)	9.86	8.45	2.82
ND00107	Gerber Second Foods Baby Food-Chicken and Chicken Gravy (jar)	9.88	8.47	2.82
ND00799	Dole Mandarin Oranges, in 100% fruit juice (fruit cups)	0.88	0.00	19.47
ND00799	Dole Mandarin Oranges, in 100% fruit juice (fruit cups)	0.88	0.00	14.60
ND01184	Perdue Boneless Skinless Chicken Breasts (individually packed/sealed)	19.64	2.68	1.12
ND01184	Perdue Boneless Skinless Chicken Breasts (individually packed/sealed)	19.12	1.10	4.14

Change in Macronutrients between New and Previous Food Runs



Results

Between the two runs, 28% of the products had a change in protein amounts, 18% of products had a change in fats, and 39% of products had a change in carbohydrates.

Discussion and Future Work

The large change in carbohydrate amount is most concerning, as carbohydrates are the limiting ingredient in recipes. Accuracy of food composition data is crucial for the patients' health. In the future, we need to determine the optimal frequency of food runs.