Health outcomes as related to food security status at the Healthy and Fit Children's Clinic

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Background

Childhood obesity is a growing epidemic in the United States and New Mexico. Between 1985 and 2016, childhood obesity rates tripled (5.5% to 18.5%)[1]. This excess accumulation of weight early in life greatly increases the risk of severe health complications in adulthood. Several health conditions (including hypertension, obstructive sleep apnea, vitamin D deficiency, pre-diabetes, and dyslipidemia) have been linked to elevated BMI in childhood[2]. Many social determinants of health influence this risk, but one of particular importance is food security. Lack of consistent access to enough healthy food predisposes a child to nutrient deficiencies and diets high in sugar and low in protein[3]. New Mexican children are also at risk for demographic factors predisposing them to both obesity and food insecurity[4]. Because of the burden these social determinants of health carry, it is crucial to implement early interventions. The Healthy and Fit Children's Clinic (H&FCC) at Carrie Tingley Hospital Outpatient Children's Services treats children ages 2-17 years old who have been referred by their primary care medical provider for elevated BMI (≥85th percentile). The goal of this clinic is to partner with families to lower their child's weight with lifestyle changes before the need for lifelong medication. The H&FCC sees patients from a wide variety of backgrounds. Because successful treatment of the child's weight requires building a plan around the individual child, knowing the patients' food security status is crucial. Prior research has shown a connection between food insecurity and childhood obesity. The patient data at the H&FCC shows a relationship between pediatric obesity and increased prevalence of chronic health conditions. The goal of this project is to directly connect food security status to the incidence of chronic conditions that lead to overall poor health outcomes.

Objectives

At the conclusion of this project, the healthcare team at the H&FCC will be better able to guide families toward healthy balanced lifestyles that will help their child reduce their weight. There are three intermediate objectives on the way to this ultimate goal. The first is to implement the Hunger Vital Sign as standard of care at the clinic. This will assess the prevalence of food insecurity in the clinic's patient population. The second is to identify connections between food insecurity and the most common chronic conditions seen at the clinic. Knowing which conditions are directly tied to food security status will allow the healthcare team to place extra focus on food assistance to those children. The final objective is closing the loop on food insecurity for these families by providing direct referral to food assistance programs.

Methods

Phase 1 of this project was implementing the two question Hunger Vital Sign survey as standard of care at the H&FCC. This survey was initially given as a hard copy, but as the clinic transitioned to telemedicine, every family was asked the survey and the answers were entered in the UNM EMR.

Table 1: FRAC AAP Hunger Vital Sign[3]

1. Within the past 12 months, we worried whether our food would run out before we got money to buy more.	Often True	Sometime True	Never True
2. Within the past 12 months, the food we bought just didn't last and we didn't have money to get more.	Often True	Sometimes True	Never True

Phase 2 of the project is ongoing. The population under investigation is defined as patients seen at the H&FCC between May 2020 and April 2021.

Table 2: Phase 2 metrics

Demographics	Age Sex Race Ethnicity	Language Zip code Height Weight
Most common diagnoses and associated ICD-10 code	Hypertension BMI ≥85th percentile to 95th percentile Childhood obesity (≥95th percentile) Type II Diabetes Mellitus Elevated hemoglobin A1C Elevated ALT Obstructive sleep apnea Dyslipidemia Vitamin D deficiency	10-I10 10-E66.3 10-E66.9 10-E11-9 10-R73.09 10-R74.01 10-G47.33 10-E78.5 10-E55.9

Results

Table 3: Preliminary Demographics (patients seen by Dr. Negrete only)

Descriptive			Race					Ethnicity		Language			Total
Mean Age	Male	Female	American Indian/ Alaska Native	Asian	Black	Hawaiian/ Pacific Islander	White	Hispanic /Latino	Not Hispanic /Latino	English	Spanish	Vietna -mese	
9.55	198	136	41	2	3	2	188	244	57	178	154	2	334

This study is in the early stages of data analysis. Statistical analysis will be done to determine the absolute risk of being food insecure as well as the absolute risk of developing each chronic condition within the pediatric population seen at the H&FCC. The relative risk of being diagnosed with each condition based on food security status (chronically food insecure, sporadically food insecure, never food insecure) will be calculated. Values found from this analysis will answer the question "Are health outcomes in the pediatric population with increased BMI affected by food security status."

Disclosure: Authors of this presentation have nothing to disclose concerning possible financial or personal relationships with commercial entities that may have a direct or indirect interest in the subject matter of this presentation:.

Discussion

Food security is a rapidly growing problem in the United States and New Mexico's rates of food insecurity follow national trends[5]. Food insecurity along with high rates of child poverty, limited access to fresh foods, and limitations on physical activity (unsafe neighborhoods, less time in PE) place New Mexican children at risk for increased BMI and obesity early in life. The adult obesity epidemic in America has placed a huge burden on the healthcare system with millions of people treated for type 2 diabetes and hypertension each year[6]. Unfortunately, the trends in pediatric obesity-related illnesses are increasing even faster. Children, however, have the chance to reverse these health conditions before they become chronic diseases. Strategies used by the H&FCC (nutrition coaching, encouraging physical activity, close relationships with families) are effective. They focus on the social determinants of health that pre-dispose children to increased weight. Food security is a measure that impacts many of these determinants. The results of this study will identify which of the chronic conditions seen in the pediatric obesity population are most closely tied to food insecurity. Focused care is better care. By partnering with local organizations (like the Healthy Food Center at Roadrunner Food Bank), the health team can immediately improve one of the root causes of the child's adverse health status.

This study took place at the onset of the COVID-19 pandemic. While rates are continuously evolving, it is expected that rates of food insecurity in the US more than doubled during this time[7]. Implementing the Hunger Vital Sign as standard of care at the H&FCC allows the clinic to keep monitoring their family's food security status and intervene before they become chronically food insecure. Along with continued education and support, children can develop habits that encourage good weight management and overall healthy lifestyles.

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