Prediabetes, Dyslipidemia, and Dietary Factors in Galápagos, Ecuador

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Background

Although the Galápagos Islands are well known for their rich biodiversity and natural wonders, less attention has historically been paid to their local population of over 25,000 residents.[1] Urbanization in the Galápagos has led to food environment and lifestyle changes that contribute to the dual burden of overweight/obesity and inadequate nutrition.[2,3,4] The Galápagos has the highest rate of overweight out of Ecuador's 24 provinces, at 75.9% of adults from ages 20 to 60.2 Subsequently, type 2 diabetes is another major concern for Galápagos residents, with the issue often going underdiagnosed and undertreated.[5]

Research Questions

Methods

- What is the prevalence of impaired glucose metabolism (prediabetes and diabetes) on the island of San Cristóbal?
- Is impaired glucose associated with food security and/or diet diversity in the Galápagos?
- How do the lipid biomarkers obtained on the island of Isabela compare to normal values?

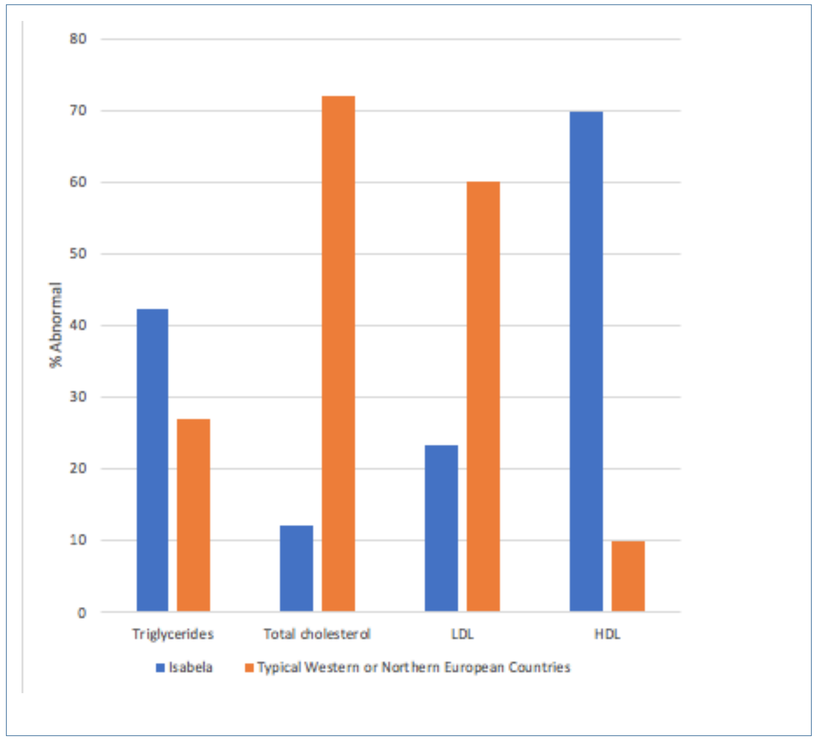
Results

- 26.5% of the sample in San Cristóbal was classified as having impaired glucose
- Controlling for age and sex, logistic regression models showed that individuals with moderate food insecurity had 2.45 times the odds of having impaired glucose compared to no food insecurity (p= 0.058). Logistic regression did not yield statistically significant results for the effect of dietary diversity.
- Using linear regression models adjusted for time since eaten, age, and sex, those with mild food insecurity were found to have an increase in glucose levels by 7.02 mg/dL (p=0.058). Dietary diversity was found to have a significant effect on blood glucose. Each additional food group consumed lowered blood glucose by 3.39 mg/dL (p=0.017).
- Lipid data from Isabela showed higher abnormal triglycerides (42.42%) and HDL levels (69.70%) compared to typical Western countries and lower cholesterol and LDL levels.

Isabela

n=33

	Cutoff for abnormal nonfasting (mg/dL)	Mean	% abnormal		Typical Western or Northern European country (PMID: 27122601)l
Triglycerides	≥175	191.88	42.42%		27%
Total cholesterol	≥190	164.03	12.12%		72%
LDL	≥115	95.33	23.33%		60%
HDL	≤40	34.76	69.70%		10%



Significance

These blood glucose and lipid measurements provide insight into the overnutrition component of the dual burden in the Galápagos. The associations found between diet diversity, food security, and prediabetes lay the the groundwork for further examination of the potential pathways between these factors. This data will inform future measures to address diabetes awareness, management, and prevention for Galápagos communities

References

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