

1. Project Title & Summary

Project Title: Dietary and Pharmacological Factors for the Control and Treatment of Obesity and Type 2 Diabetes

Summary: I am currently an Epidemiology Ph.D student at the UC Irvine. I have dedicated my dissertation research to understanding dietary and treatment factors that disproportionately affect us, Latinos, in relation to obesity and Type 2 diabetes. Using nationally representative data, I am examining how protein to ultra-processed food (UPF) intake ratios influence glycemic control and mortality risk, while also investigating disparities in access to effective pharmacological treatments. My research aims to fill critical gaps in the scientific literature, bring visibility to health inequities affecting us, and generate evidence that can inform clinical practice and policy to better serve our community.

2. Statement of Need / Problem Description

The issue I aim to address is mutually a public health and health care dilemma. Type 2 diabetes (T2D) and obesity are crises that disproportionately burden the Latino community. Latino adults are nearly twice as likely to be diagnosed with diabetes compared to non-Hispanic whites. In addition, we experience higher rates of complications including kidney disease, amputations, and cardiovascular events. These complications reflect the systemic inequities that have long been under addressed in both research and policy.

As Latinos, we face many obstacles, including language barriers that limit access to health information, economic constraints that make cheap processed foods the most accessible option, demanding work schedules that leave little time for meal preparation, and living in neighborhoods where fresh, nutritious food is simply not available. These structural realities shape what our families eat and inherently tie us to UPFs. Ultimately, these realities often leave us with few choices, contributing directly to the diabetes and obesity epidemic in our communities.

Despite these clear connections, research examining how specific dietary patterns affect diabetes outcomes in Latino populations remains limited or nonexistent. Similarly, while GLP-1 receptor agonists have emerged as highly effective treatments for obesity and diabetes, evidence suggests that racial and ethnic minorities face significant barriers to accessing these medications. Often this is due to clinician biases, insurance limitations, and systemic inequities, only further disadvantaging our community and contributing to poorer health outcomes and quality of life.

I am dedicated to research because these disparities are personal. I lost my grandfather and godfather to cancer. If the circumstances were different and fewer barriers existed, they might still be here today. They faced the same structural obstacles that continue to put our community at risk today. They are why I have dedicated myself to research and why I strive to be the change I want to see in the world. It's not just to understand how to treat disease, but how to prevent it from taking hold in the first place. Our community deserves research that centers our experiences and fights for the attention and resources needed to stop these outcomes before they begin.

3. Target Audience / Community Served

My research uses data from the National Health and Nutrition Examination Survey (NHANES), a nationally representative study. This wide net allows findings to be generalized to the broader U.S. population, including Latino communities. The dietary and glycemic control analyses focus on adults with diagnosed T2D, stratified by age (<45, 45-64, ≥65 years), sex, and race/ethnicity to ensure findings are specifically applicable to Latino subgroups. The prescription disparity analyses utilize UC Irvine Health System data to examine treatment access among individuals with clinical obesity. By using rigorous, population-based data with specific inclusion criteria, my research generates evidence that is broadly applicable and directly relevant to understanding and addressing health inequities in the Latino community.

4. Proposed Program / Activities

My dissertation is shaped by three aims, each designed to highlight different aspects of how dietary patterns and treatment access affect obesity and diabetes outcomes in ways that disproportionately impact the Latino community.

The first aim examines the relationship between protein to UPF intake ratios and glycemic control. Using NHANES dietary recall data, ratios are calculated and analyzed to see how they correlate with HbA1c levels, blood pressure,

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and lipid profiles. This aim reveals whether the dietary patterns shaped by structural barriers in our communities are associated with poorer diabetes control.

The second aim investigates disparities in GLP-1 receptor agonist prescriptions among those with clinical obesity. By analyzing prescription patterns by race/ethnicity, sex, and insurance status, this aim quantifies inequities in access to effective treatments. This brings data to what many in our community already experience, the best available treatments are out of reach for those who need them.

The third and last aim links dietary patterns to long-term outcomes by examining the association between protein to UPF ratios and mortality risk among adults with Type 2 diabetes. This survival analysis provides evidence on how the foods accessible to our communities may be affecting not just disease management, but life expectancy.

Together, these three aims bring light to what is happening in our population and provide the scientific evidence needed to advocate for change.

5. Evaluation & Impact

The outcomes of my research are grounded in the data, by quantifying associations between dietary patterns and health outcomes, and documenting disparities in treatment access. Although the literature has explored these elements individually, my work synthesizes them to build a fuller understanding of what is happening in our community and why. The statistical analyses will shed light on how protein to UPF ratios relate to glycemic control and mortality, along with insight on the extent of prescription disparities. All in all, this will be a contribution to the scientific community that can help guide meaningful action to support Latino health.

The broader impact lies in creating a sense of urgency that these issues demand attention. By publishing this research in peer-reviewed journals and presenting at conferences, I aim to bring visibility to health inequities that have been under addressed. My goal is to inform clinical practice, shape nutritional policy, and advance health equity initiatives. With this, I hope to ensure that the evidence generated from this work benefits the Latino community by advocating for the systemic changes needed to address these disparities.

6. Sustainability & Growth Plan

My dissertation establishes a foundation for continued research and advocacy. My findings will be disseminated through publications and presentations to ensure the scientific community recognizes that diabetes, obesity, and nutritional inequities in the Latino population require sustained attention and resources.

Beyond my dissertation, I am committed to continuing this pursuit of information as my life's work. I want to examine not just the diseases themselves, but the nutritional profiles of Hispanics and Latinos, what we have access to, and how structural barriers create the conditions for the health disparities we see today. By continuing to advocate and research, I hope to build the case for policy changes, clinical guideline updates, and community-level interventions that can meaningfully improve health outcomes for Latino communities.