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Key considerations for expanding the National Diabetes Prevention Program to Spanish-speaking populations in the state of Georgia

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ABSTRACT

Key considerations for expanding the National Diabetes Prevention Program to Spanish-speaking populations in the state of Georgia

By Stephanie Y. Sun

Hispanic people are disproportionately affected by prediabetes and subsequently diabetes, both nationally and in the state of Georgia. It is estimated that 12.1% of Hispanic people in the United States have been diagnosed with type 2 diabetes, compared to the national average of 9.4%. In Georgia, about 9.1% of Hispanic adults have been diagnosed with diabetes, while an estimated additional 4.5% of Hispanic adults are undiagnosed.

Type 2 diabetes is preventable. The CDC National Diabetes Prevention Program (NDPP) is an evidence-based program that is designed to prevent diabetes among those diagnosed with prediabetes or are at risk for diabetes. The Georgia Department of Public Health (GA DPH) has expressed interest in expanding the NDPP throughout Georgia. Considering that 8% of the Georgia population speaks Spanish as a primary language, there may be an unmet need for diabetes prevention among Spanish-speaking populations. Thus, in order to prevent diabetes amongst those of Hispanic ethnicity in Georgia, GA DPH has an interest in ensuring that Spanish-speaking populations with prediabetes or at high risk of diabetes are connected with appropriate evidence-based programming for prevention.

Developing effective interventions to prevent diabetes among Spanish-speaking individuals in Georgia requires a comprehensive understanding of the scope of the problem at multiple levels of influence. Thus, a gap analysis was conducted using a broad environmental scan of secondary data and interviews with key informants. The primary goals of this gap analysis included: 1) understanding the current landscape of Spanish language NDPP programs in Georgia and assessing the need; and 2) determining facilitating factors and barriers to creating and expanding Spanish-language NDPP programs.

Key findings of this gap analysis include: 1) the causes of increased diabetes risk in Hispanic individuals are multifactorial, 2) there exist knowledge gaps amongst providers and policymakers with respect to diabetes prevention, specifically in Hispanic populations, and 3) tailoring Spanish-language NDPP programs to include culturally relevant materials and partnerships with community resources has been shown to effectively bridge the unmet need in Hispanic communities. Evidence-based recommendations for the GA DPH to expand and create Spanish-language NDPP programs in Georgia, at all levels of influence, are outlined.

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CHAPTER ONE: INTRODUCTION

Diabetes and Prediabetes

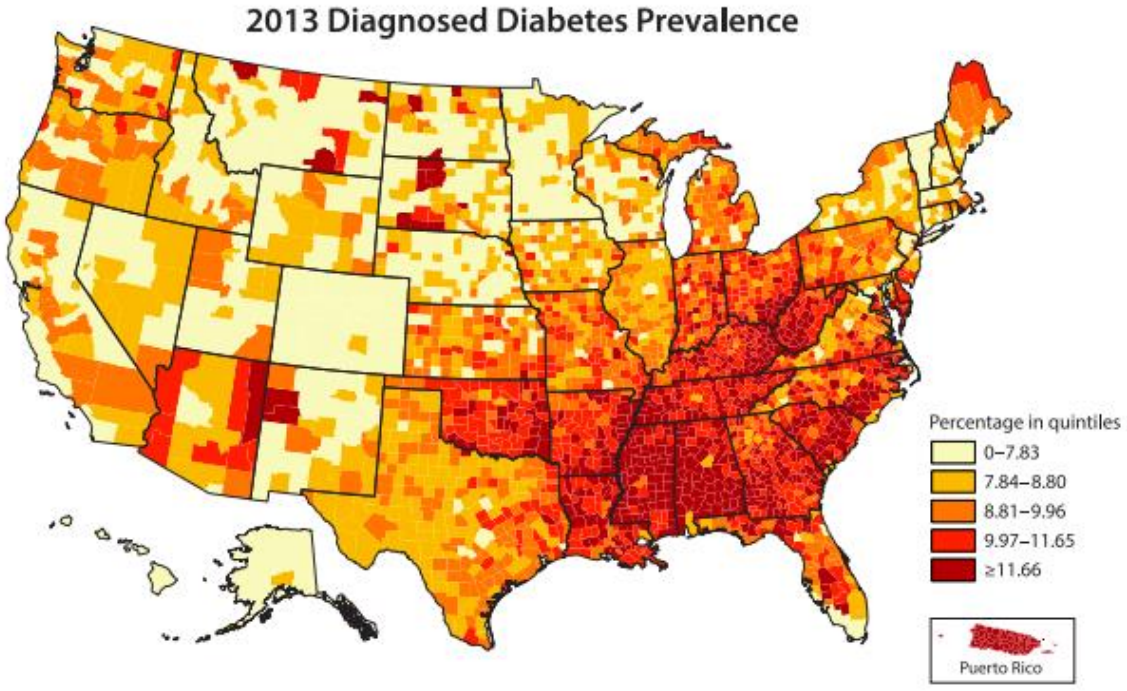
Diabetes is a chronic disease that affects the body's ability to produce or respond to insulin, a hormone that helps to regulate blood glucose levels, resulting in sustained increased blood glucose levels. It is the seventh leading cause of death in the United States, and is the number 1 cause of kidney failure, lower limb amputations, and adult-onset blindness (CDC, 2017). Type 2 diabetes is the most common type, accounting for about 90% of individuals with diabetes, and is characterized by insulin resistance (CDC, 2017).

Currently, in the United States, Centers for Disease Control and Prevention (CDC) estimates that 9.3% of the population has been diagnosed with diabetes, while another estimated 2.9% remains undiagnosed (CDC, 2017). Within the country, Georgia is a state of particular concern, with 10.7% of the adult population diagnosed with diabetes (CDC, 2017). This does not account for the individuals who are undiagnosed, which the American Diabetes Association estimates to be an additional 3.5% of the population (American Diabetes Association, 2017).

Individuals with prediabetes, a condition in which blood glucose levels are elevated but not to the point of overt diabetes, is a strong risk factor for developing diabetes. Individuals with prediabetes are at high risk for heart disease and stroke and are more likely to develop or already have other cardiovascular risk factors, such as hypertension, hyperlipidemia, and obesity (CDC, 2017). Prediabetes affects an estimated 84 million people (33.9%) in the United States (CDC, 2017). However, it is estimated that about 90% of individuals with prediabetes do not know that they have elevated glucose levels (CDC, 2017). Without intervention, research has shown that

around 5-10% of people with prediabetes with become diabetic every year (Tabak et al., 2012).

Figure 1.1: Age-adjusted, county-level prevalence of diagnosed diabetes among US adults aged ≥20 years, 2013 (CDC, 2017).

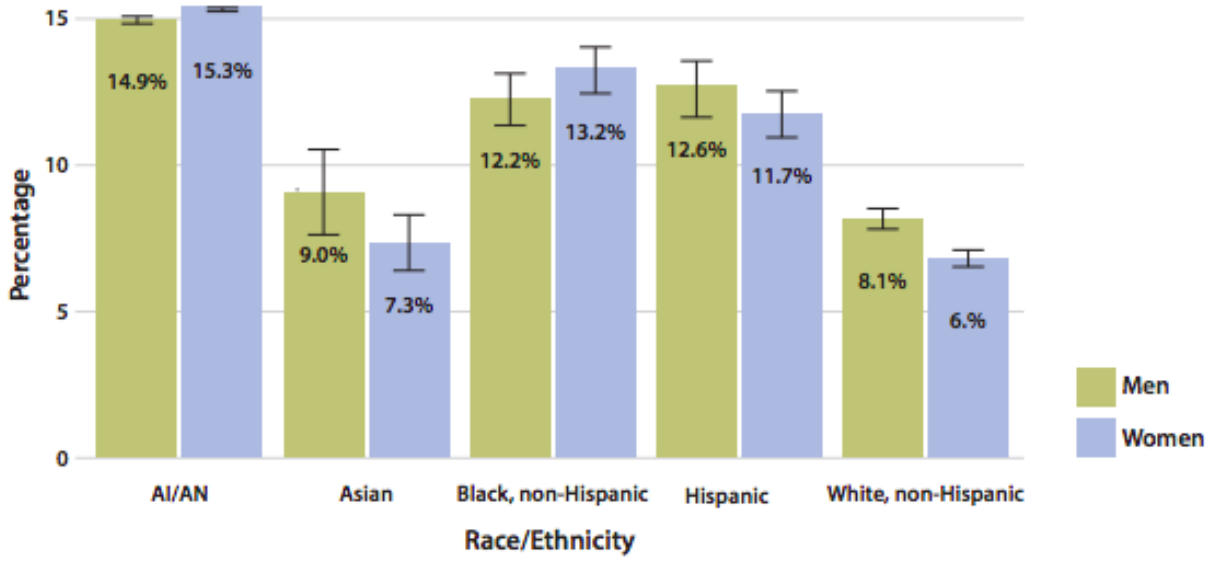


Diabetes and Prediabetes in the Hispanic/Latinx Community

There exists a significant discrepancy in diabetes and prediabetes rates between racial/ethnic minority populations and non-Hispanic white individuals (CDC, 2017). People of Hispanic/Latinx ethnicity (hereafter referred to as "Hispanic"), of any race, are the largest ethnic minority population in Georgia, making up 9.6% of the state's population (United States Census Bureau, 2017). Research has shown that Hispanic people are disproportionately affected by prediabetes, and, subsequently diabetes due to a variety of genetic and environmental factors. It is estimated that in the United States, 12.1% of Hispanic people have been diagnosed with

diabetes, compared to the national average of 9.4% (CDC, 2017). As of 2015, about 9.1% of Hispanic adults in Georgia were diagnosed with diabetes, while an estimated additional 4.5% were undiagnosed (CDC, 2016).

Figure 1.2: Estimated age-adjusted prevalence of diagnosed diabetes by race/ethnicity and sex among adults aged ≥18 years, United States, 2013-2015 (CDC, 2017).



CDC National Diabetes Prevention Program (NDPP)

While type 2 diabetes is a serious problem, it is preventable. By targeting interventions to those with prediabetes and those at risk for diabetes, we may be able to prevent or delay the onset of type 2 diabetes. The Diabetes Prevention Program demonstrated that lifestyle training can reduce the onset of diabetes among those at risk by 58% and that lifestyle prevention was more effective than medical prevention strategies (Diabetes Prevention Program Research Group, 2002). The CDC National Diabetes Prevention Program (NDPP) is a year-long, evidence-based lifestyle change program that seeks to scale up the original DPP approach to the U.S. population; it is

designed specifically for those diagnosed with prediabetes or are at risk for diabetes (CDC, 2017). As of February 2018, Georgia had 35 CDC-recognized National Diabetes Prevention Programs, but the number of Spanish language programs was unknown.

Social Ecological Model: Considering the role of context in scaling up DPP

In order to better tailor diabetes interventions for high risk populations within the Hispanic community, it is important to have a conceptual framework to guide our understanding of the context of the disease. There is increasing evidence that public health and health promotion interventions are most effective when based on a social ecological model, which aims to understand factors affecting behavior and guide successful program development through social environments (Glanz & Bishop, 2010). The social ecological model emphasizes that there are multiple levels of influence and interaction that shape an individual's health behaviors, including individual/interpersonal, organizational, community, and public policy levels (Glanz & Bishop, 2010). Therefore, designing interventions with consideration of these four levels will allow us to better reach our target population at various points of influence, with the goal of increasing the uptake and eventual impact of diabetes prevention efforts amongst Hispanic populations in Georgia.

Goal

The Georgia Department of Public Health (GA DPH) has expressed interest in expanding the National Diabetes Prevention Program (NDPP) throughout all of Georgia. Considering the ethnic composition of the Georgia population, there may be an unmet need for diabetes prevention among adults whose primary language is not English, specifically Spanish-speaking populations.

Thus, in order to address the prevalence of diabetes amongst those of Hispanic ethnicity in Georgia, initiatives must be taken to target prediabetes and those who exhibit additional risk factors for diabetes in Spanish-speaking populations.

To achieve this, it is first imperative to understand the gap in diabetes prevention care in Hispanic communities in the state and to identify barriers and facilitators to expanding Spanish-speaking programs. This gap analysis aims to address the following questions:

1. What is the current landscape of Spanish language NDPP programs in Georgia, and what is the need?
2. What are the facilitating factors and resources required for the creation and expansion of Spanish language NDPP programs?
3. What are the barriers to implementing Spanish language NDPP programs?
4. What are the priority actions and steps that the GA DPH should take to create and expand Spanish-language NDPP programs?

CHAPTER TWO: LITERATURE REVIEW

A comprehensive understanding of the context of current diabetes prevention efforts among Spanish-speaking populations both in Georgia and in other states is imperative to the development of future interventions to reduce incidence of diabetes in this population. This chapter will provide an overview of the current landscape of diabetes and prediabetes in the United States and, wherever data are available, in Georgia as it relates to Spanish-speaking populations and the current efforts being taken to address the gaps.

Diabetes

Diabetes is a chronic disease that affects the body's ability to produce or respond to insulin, a hormone that helps to regulate blood glucose levels, resulting in sustained increased blood glucose levels. It is the seventh leading cause of death in the United States, and is the number 1 cause of kidney failure, lower limb amputations, and adult-onset blindness (CDC, 2017). Type 2 diabetes is the most common type, accounting for about 90% of individuals with diabetes, and is characterized by insulin resistance (CDC, 2017).

As of 2017, CDC estimates that 30.3 million people of all ages (9.4% of the population) in the United States have been diagnosed with diabetes (CDC, 2017). This figure does not account for the estimated 7.2 million adults (2.9%) living with diabetes who have not been diagnosed (CDC, 2017). In Georgia, about 10.7% of the population has been diagnosed with diabetes, with an additional estimated 3.5% of the population who has not been diagnosed (CDC, 2017; American Diabetes Association, 2017).

Diabetes and Prediabetes Definitions

Diabetes is a medical condition in which blood glucose levels are elevated above clinically defined values. Prediabetes is a medical condition in which blood glucose levels are elevated, but not to the point of overt diabetes. Important lab values to note regarding the clinical definition of prediabetes and diabetes are:

***Table 2.1*:** Lab values that characterize normal, prediabetes, or diabetes diagnoses (ADA, 2019)

	Normal	Prediabetes	Diabetes
Fasting glucose (plasma glucose measured after not having anything to eat or drink for 8 hours before the test)	99 mg/dl or lower	100-125 mg/dl	126 mg/dl or greater
Oral glucose tolerance test (Plasma glucose measured 2 hours after a 75gm glucose load)	139 mg/dl or lower	140-199 mg/dl	200 mg/dl or greater
HbA1c (Blood test measuring average blood sugars over the past 8-12 weeks)	4.5-5.6%	5.7-6.4%	6.5% or greater

Epidemiology of Prediabetes

The population with prediabetes is targeted for prevention efforts because it is at higher risk of developing type 2 diabetes, heart disease, and stroke (ADA, 2017). Individuals with prediabetes are also more likely to develop or already have other cardiovascular risk factors, such as hypertension, hyperlipidemia, and obesity (Diabetes Home, 2017). Without intervention, around 5-10% of people with prediabetes with become diabetic every year, and the lifetime risk of developing type 2 diabetes in a 45-year-old individual with prediabetes is 74.0% (Tabak et al., 2012; Ligthart et al., 2016).

There are no clear signs and symptoms to indicate prediabetes, so diagnosis can only be made using blood tests (CDC, 2017) Shared risk factors for diabetes, prediabetes, and its complications

include:

- Being over 45 years of age
- Being overweight or obese
- Being physically active less than 3 times a week
- Having a family history of type 2 diabetes
- Having high blood pressure and/or high cholesterol
- Tobacco use
- A previous diagnosis of gestational diabetes.
- African Americans, Hispanic/Latino Americans, American Indians/Alaska Natives, Pacific Islanders, and some Asian Americans are also at a higher risk (American Diabetes Association, 2017).

As of 2015, CDC estimated that 84 million (33.9%) American adults have prediabetes, based on fasting glucose or HbA1C levels (CDC, 2017). However, only 11.6% of those individuals reported being told by a health professional that they had prediabetes (CDC, 2017). In Georgia, about 6.8% of adults have been diagnosed with prediabetes (American Diabetes Association, 2017). However, like with the United States as a whole, that figure is believed to only be a fraction of the actual population of adults with diabetes and prediabetes. It is estimated that there are an additional 241,000 people (3.1%) do not know they have diabetes, and the actual number of adults with prediabetes in Georgia is closer to 2.6 million, or 36.1% of the adult population (American Diabetes Association, 2017; CDC, 2016).

Prediabetes is reversible. Those who have been diagnosed with prediabetes or are at risk for diabetes can implement lifestyle changes to improve their glycemic status and lower their risk of type 2 diabetes. These changes include incorporating fresh fruits and vegetables into a healthier diet, physical activity, and tobacco-free environments (Diabetes Prevention Program Research Group, 2002). An intervention that is aimed at lifestyle-based approaches to preventing diabetes is the CDC National Diabetes Prevention Program (NDPP).

CDC National Diabetes Prevention Program

The CDC National Diabetes Prevention Program (NDPP) is an evidence-based, year-long lifestyle change program proven to prevent or delay type 2 diabetes in people with a diagnosis of prediabetes or are at risk for prediabetes (National Diabetes Prevention Program, 2016). It supports participants in making lifestyle changes through education on healthy eating choices, increasing physical activity, coping skills, stress management, and problem solving.

The program's effectiveness was demonstrated by a randomized control trial that showed that amongst those who had been diagnosed with prediabetes, lifestyle change, and a weight loss of 5-7% of body weight achieved by reducing calories and increasing physical activity (to at least 150 minutes per week) resulted in a 58% lower incidence of type 2 diabetes when compared to the control group, who were assigned to a placebo (Diabetes Prevention Program Research Group, 2002). For people 60 and older, the program reduced the incidence of type 2 diabetes by 71%. After 10 years, lifestyle change program participants had a 24% lower incidence of type 2 diabetes compared to those who did not participate in this lifestyle change program (Diabetes Prevention Program Research Group, 2009).

The NDPP curriculum consists of 16 weekly meetings, with monthly follow-ups for one calendar year (National Diabetes Prevention program, 2016). At each meeting, participants are weighed and have their vital signs taken to measure progress. Classes are offered through a number of delivery modes: exclusively in-person, exclusively online, or a combination of both, and are facilitated by a trained lifestyle coach, who has completed a training program provided by one of CDC's partner organizations. Lifestyle coaches are not required to have a background in

medicine. Currently, the curriculum is available in English and Spanish.

Diabetes in the Hispanic Population

People of Hispanic ethnicity in the United States are at particularly high risk for prediabetes and carry a disproportionate burden of diabetes and its complications as compared to their non-Hispanic white counterparts (CDC, 2017). CDC estimates that 12.1% of Hispanic people in the United States have diagnosed diabetes, higher than the national prevalence of 9.4% (CDC, 2017). It is also estimated that the lifetime risk of developing diabetes for a Hispanic child born in the United States between 2000 and 2011 is 51.8% for men and 51.5% for women, compared to the national average of 40.0% (Gregg et al., 2014).

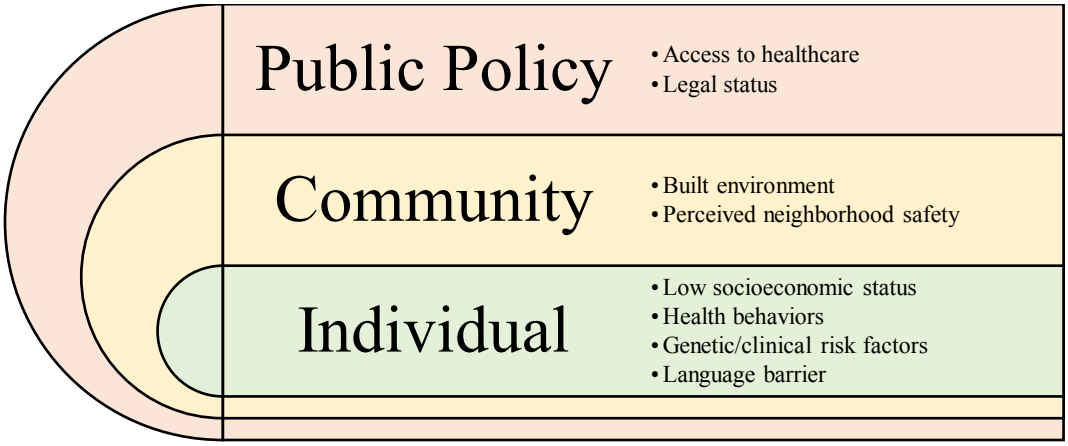
Just as Hispanic people are at greater risk for prediabetes and diabetes nationwide, the same is true within Georgia, where people of Hispanic ethnicity make up 9.6% of the state's population (United States Census Bureau, 2017). Currently, about 9.1% of Hispanic people in Georgia have been diagnosed with diabetes, compared to the state's prevalence of 10.7% (CDC, 2017). Diagnosed, diabetes, however, may be masking underlying high risk of Hispanic adults with respect to diabetes because a substantial portion of Hispanic adults with diabetes have not been diagnosed. An estimated 4.5% of Hispanic people with diabetes in Georgia have not been diagnosed, compared to 2.0% of Whites (CDC, 2016). There are insufficient data to estimate the prevalence of prediabetes amongst Hispanic people.

Applying the Social Ecological Model to Diabetes within the Hispanic Community

The reasons why Hispanics have higher prevalence of diabetes are not yet well understood or

described, but many researchers agree that the higher risk may mostly be attributed to a combination of biological, socioeconomic, and environmental factors. Following the social ecological model, we describe the available literature on the factors that put Hispanic people at higher risk for diabetes. We discuss the role of these factors in facilitating and hindering diabetes prevention in this community.

Figure 2.1: Summary of social ecological model for diabetes risk in Hispanics



Individual/Interpersonal

Socioeconomic factors, including education, occupation, and income, play a significant role in an individual's diabetes risk and may act as a barrier to seeking prevention. Research has shown that controlling for race, low levels of education and income are associated with overall increased risk of type 2 diabetes, as compared to individuals with high levels of those resources (Agardh et al., 2011). A low level of education does not have a direct biological effect on disease, but rather, its effects are mediated by behavioral risk factors that can be biologically related to disease, such as smoking status, body mass index, and physical activity (Sacerdote et al., 2012). Low education may also impair an individual's ability to navigate the complex health

care delivery system, communicate with health care providers, and understand providers' instructions (Tienda & Mitchell, 2006). This is consistent with data on Hispanic populations, as the 2015 United States Census found that amongst Hispanic people, 66.7% had attained a high school degree or more, as compared to the national average of 87.2% (Ryan & Bauman, 2015).

Additionally, research has shown that an individual's socioeconomic status is associated with one's health literacy, which is defined as a person's knowledge, motivation and competences to access, understand, appraise, and apply health information in order to make decisions concerning healthcare, disease prevention and health promotion to maintain or improve quality of life (Stormacq, Broucke, & Wosinski, 2018). Low socioeconomic status is associated with low health literacy, which, in turn, is associated with poor health outcomes such as higher rates of chronic diseases, including diabetes (Stormacq, Broucke, & Wosinski, 2018). However, because health literacy is a modifiable risk factor, enhancing the level of health literacy in the population may be a means to reach a greater equity in health (Stormacq, Broucke, & Wosinski, 2018).

The effects of low socioeconomic status have also been shown to affect Hispanic families' lifestyle decisions and behavioral norms, putting them at increased risk of diabetes (Villegas, Coba-Rodriguez & Wiley 2018). Since 1990, the median annual personal earning of a Hispanic person in the United States has consistently been the lowest among all races and ethnicities, at $24,000, compared to $35,000 in a non-Hispanic white person and the national average of $30,000 (Pew Research Center, 2015).

Studies have shown that due to their limited incomes, many Hispanic families must forgo fresh

produce at the supermarket in favor of cheaper, less healthy food options, such as sugar-sweetened beverages, refined carbohydrates, and foods high in sodium and saturated fats (Villegas, Coba-Rodriguez & Wiley 2018; Siega-Riz et al., 2014). In addition, Hispanic people with low incomes tend to work extended hours at one job or hold multiple jobs concurrently, and thus face time constraints when it comes to cooking healthy meals (Villegas, Coba-Rodriguez & Wiley 2018). Many families will instead opt to eat at fast food restaurants as a method to save time or share quality time with the family, but often meals eaten outside the home are less nutritious, with larger portion sizes, higher levels of fat, and more calories (Villegas, Coba-Rodriguez & Wiley 2018).

However, research has also shown that individuals with low-wage occupations, including Hispanics, obtain greater amounts of occupational physical activity and are more likely to meet physical exercise guidelines of $\geqslant$150 minutes of moderate-intensity activity, $\geqslant$75 minutes of vigorous-intensity, or a combination of moderate-intensity and vigorous-intensity activity totaling $\geqslant$150 minutes (CDC, 2011). As sedentary lifestyles are associated with higher rates of diabetes, this amount of occupational physical activity may be protective against higher rates of diabetes amongst Hispanic populations.

Diabetes also carries a strong hereditary risk, and there is strong evidence that family history may contribute to higher rates of diabetes in Hispanic populations. Though no specific gene has been found, the Framingham Offspring study found that the risk of developing diabetes was 3.5 times greater in individuals with a single parent with diabetes, and those with two diabetic parents had a 6-fold greater risk when compared with offspring without parental diabetes

(Fletcher, Gulanick, & Lamendola, 2002). There is also growing research that shows that nondiabetic Hispanic Americans have a higher degree of insulin resistance as compared to non-Hispanic white Americans, even after adjusting for differences in body fat (Spanakis & Golden, 2013; Goran et al., 2002). However, the extent to which the discrepancy in diabetes rates can be attributable to genetic factors is not yet well understood (Katzmarzyk & Staiano, 2012).

In addition, language barriers may prevent Hispanic people from seeking healthcare and participating in preventative programs. Limited proficiency in English affects Hispanics' ability to seek and obtain health care and reduces access to health information in the media (Tienda & Mitchell, 2006). A recent survey found that 57% of primarily Spanish-speaking Hispanic people have experienced a "frustrating" language or cultural barrier during a healthcare encounter (Steinberg et al., 2016). These encounters generally included poor interpretations, stigma and discrimination due to the language barrier, and fear of being a burden (Steinberg et al., 2016). Because of these, participants reported decreased trust in the healthcare system and decreased likelihood of seeking needed care from a non-Spanish speaking provider. However, the same study also found that participants who saw bilingual providers reported improved patient experiences, increased trust, and better health outcomes (Steinberg et al., 2016).

These socioeconomic, genetic, and language factors may contribute to the disproportionately low number of Spanish-language NDPP programs and emphasize the need for culturally tailored programs in this population.

Community

Neighborhood and community level factors may also contribute to the increased risk of diabetes in Hispanic populations. The built environment in which an individual lives and works can help promote and sustain beneficial lifestyle patterns, or it can contribute to the development of unhealthy behaviors, resulting in chronic health problems such as diabetes (Hilmers, Hilmers & Dave, 2012). Hispanic people with lower incomes tend to live in such neighborhoods, which are associated with higher BMIs and more negative health outcomes (Spanakis & Golden, 2013). These low-income communities tend to have less biomass and park space compared to wealthier communities, factors that generally encourage physical activity (Rabi et al., 2006). There may also be a perception that it is unsafe to walk in a poorer neighborhood, which also deters physical activity and decreases a sense of pride and sense of community, which has been shown to be protective against certain negative health outcomes (Rabi et al., 2006).

Similarly, low income neighborhoods often have limited access to healthy food sources, such as supermarkets, and a higher density of fast food restaurants and convenience stores (Hilmers, Hilmers & Dave, 2012). This barrier of accessibility to healthy foods, combined with the aforementioned research that showed that Hispanic families are often constrained on time to prepare meals and spend time with family, facilitate unhealthy eating habits that ultimately put individuals at higher risk for unfavorable health outcomes (Hilmers, Hilmers & Dave, 2012).

However, the core value of familism amongst Hispanic communities has been associated with better mental and physical health (Corona et al., 2019). Familism is defined as a way of valuing family relationships that highlights a strong attachment to, and identification with, the nuclear

and extended family while promoting warm, close, and supportive relationships that prioritize family before the self (Corona et al., 2019). Research has shown that the emphasis on family cohesion, unity, and collective identity can encourage and promote healthier behaviors, such as committing to an exercise regimen and healthy dietary habits, that may be protective against diabetes and other chronic diseases within Hispanic populations (Corona et al., 2019).

Thus, the tailoring of Spanish-language NDPP programs should take into account the surrounding neighborhood and community, while also including an aspect of familism to achieve the greatest impact on diabetes prevention.

Public Policy

Low income has also been associated with increased risk of diabetes and diabetes-related complications, as it relates to one's ability to access healthcare. Historically, lack of health insurance coverage has been a major problem for Hispanics, who are substantially more likely to be uninsured than non-Hispanic whites (Tienda & Mitchell, 2006). This is often due to occupational characteristics, as Hispanic people are more likely to work in agriculture, construction, domestic and food services, and other low-wage occupations that may not offer employer-provided health insurance (Tienda & Mitchell, 2006). In 2017, it was found that 34% of Hispanics in Georgia are uninsured, compared to 12% in non-Hispanic whites (Kaiser Family Foundation, 2019). Health insurance reduces the out-of-pocket costs of health care and has been shown to be the single most important predictor of utilization. Without health insurance coverage, many people find health care unaffordable and forgo care even when they think they need it (Tienda & Mitchell, 2006).

Finally, a lack of legal status can be a significant barrier to seeking healthcare and other preventive services for many Hispanic people. Many undocumented Hispanics fear that participating in research studies or seeking preventive healthcare may allow for their status to be disclosed, and thus avoid programs such as NDPP (Vincent et al., 2013).

For these reasons, it is of utmost importance that Spanish-language NDPP programs are tailored to accommodate Hispanic individuals who may be uninsured or lack legal status.

Conclusion

Prediabetes and diabetes are serious conditions that disproportionately affect people of Hispanic origin nationwide, and Georgia is no exception. Implementing lifestyle changes, however, may reverse prediabetes and prevent diabetes. Participation in the Diabetes Prevention Program, an educational program designed to improve lifestyle management of prediabetes, has been shown to successfully prevent diabetes. Uptake of the NDPP and eventual adherence to the modules among U.S. Hispanics may be facilitated or hindered by many factors, such as socioeconomic status, genetic factors, language barriers, and community. Taking the broader social ecological factors influencing health outcomes and diabetes in Hispanics will be crucial to develop successful Spanish language NDPP programs for Hispanic populations.

CHAPTER THREE: METHODS

The purpose of this gap analysis is to identify the barriers and facilitators of expanding Spanish-speaking NDPP programs in Georgia. The sources of data for this assessment included: a critical review of the literature, data abstraction from public records, and interview data from key informants at current NDPP sites throughout Georgia. Collectively, these sources of data were used to identify barriers and facilitators of expanding Spanish-speaking NDPP programs, with a focus on Georgia. The methodology is purposefully broad and wide-reaching to highlight issues that relate generally to NDPP programs, as well as specific issues that specifically apply to Spanish-speaking individuals.

Research Design

Literature Review

A series of PubMed and Google Scholar searches using combinations of the following search terms were conducted to obtain peer-reviewed articles related to NDPP programs and/or Spanish-language health promotion practices (not necessarily related to diabetes). Articles were included if they were written in English language, if the studies were conducted in the United States, and if the study population included Spanish-speaking Hispanic populations (Spanish-American was accepted).

Barrier	Education	Implement	Prevalence
Behavior	Ecological	Intervention	Prevent
Chronic disease	Ethnicity	Language	Program
Community	Facilitator	Latino/a	Promotion
Culture	Georgia	Lifestyle change	Race
Diabetes	Health	National Diabetes Prevention Program	Social/socioeconomic
Diet	Healthcare	NDPP	Spanish
Disparity	Hispanic	Prediabetes	Translate

Secondary Data Abstraction

Secondary data of publicly available data was also abstracted using CDC's Behavioral Risk Factor Surveillance System (BRFSS) and U.S. Census Bureau Data. Both state- and county-level data were used. These data were used to better understand the current landscape of Hispanic populations and the need for Spanish-language programs in Georgia.

Key Informant Interviews

As part of a larger study to better understand the current landscape of NDPP programs in Georgia, in February 2018, GA DPH conducted semi-structured phone interviews with program facilitators of the 35 current CDC-recognized NDPP programs. Program facilitators were defined as the individuals responsible for the program's administrative oversight, including recording participant data and submitting them to CDC to maintain recognition. Depending on the size and funding of the programs, the program facilitators were also often lifestyle coaches that worked with the participants. These individuals were identified as key informants given their close involvement with the details of their NDPP programs and frequent interaction with the lifestyle coaches and/or participants. An interview guide (see Appendix A) was created to facilitate interviews.

Phone numbers for key informants were found on the publicly available CDC NDPP website. Three phone call attempts were made to reach each program, and with each unsuccessful attempt, a message to call back was left either on a machine or with an associated person. If, after three attempts, the program had not called back or was still unreachable, the program was marked as "unresponsive."

Qualitative data from the interviews were then analyzed using Microsoft Excel by creating pivot tables to identify themes and patterns. Key themes relevant to this gap analysis from these phone interviews were identified and are reported in Chapter Four.

Limitations

The sample for phone interviews may be impacted by non-response bias, as not all site facilitators were available to complete the interview. There is a possibility that the non-responding sites may offer Spanish-language programs. Also, as the interviews were part of a larger study for GA DPH, there was limited control over the questions asked during the phone interviews, specifically those regarding Spanish-speaking programs. Therefore, this gap analysis may be expanded in the future with additional focus groups or surveys with key informants to garner a better representation of the current landscape of Spanish-speaking NDPP programs. There are also limited data on the success of NDPP programs in Georgia, and NDPP data that specifically relates to Hispanic populations are inaccessible.

Additionally, because no interviews or surveys were conducted with the target population, and the findings outlined in this study are based on a broad search of various studies within the United States, it is possible that the results may not be translatable to the population of Hispanics with prediabetes or other risk factors for diabetes in Georgia. Thus, this study would benefit from additional focus groups or surveys to better understand the perceived needs from the local target population.

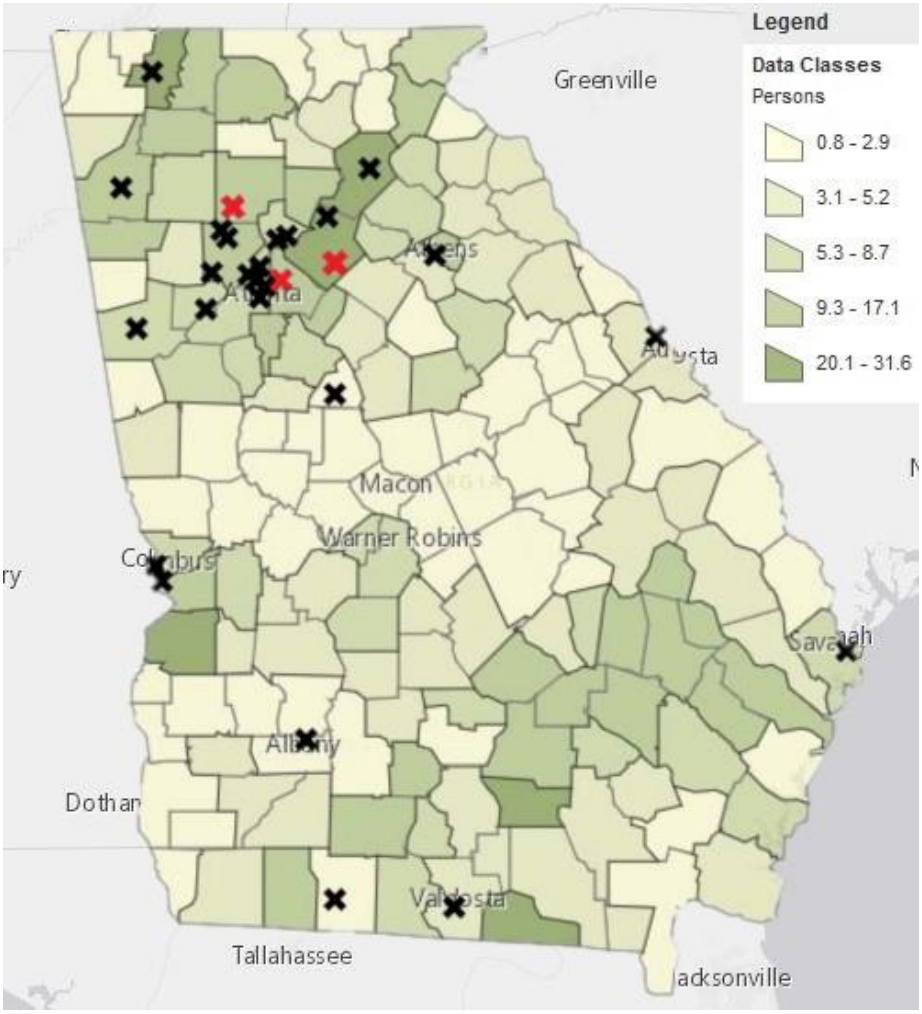
CHAPTER FOUR: RESULTS

Current distribution of NDPP in Georgia

According to the CDC NDPP website, as of February 2018, Georgia had 35 CDC-recognized NDPP lifestyle change programs listed on the NDPP website. 27 of the site facilitators (77.1%) were available to complete the key informant interview, and it was found that 3 of them (1.1%) offered programs in Spanish (Personal communication, 2018).

Twenty-four of the programs (88.9%) were located in the metro Atlanta area (CDC, 2017). The remainder were in other major metro areas of Georgia, including Savannah, Valdosta, and Columbus (CDC, 2017). While having programs in metro areas of the state may be beneficial to meet the needs of large populations of individuals, this may not be meeting the needs of the Hispanic populations in Georgia. As seen in Figure 2.1, the three available Spanish-speaking programs (shown in red) are centralized within the metro Atlanta area, while some counties with high Hispanic populations either have exclusively English-speaking programs or no nearby programs.

Figure 4.1: Current NDPP sites overlaid on a county-level map showing proportion of population of Hispanic origin. English-language sites are indicated by a black X and Spanish-speaking sites are indicated by a red X (United States Census Bureau, 2017).



Facilitators to Implementing Spanish-Language NDPP Programs

Many research studies have shown that a Spanish language NDPP and other diabetes prevention programs for Hispanic populations in the United States are as effective as those offered in

English. However, a successful Spanish language NDPP program requires more than just translating the language; the content must also be culturally-tailored. A summary of the facilitating factors can be seen in Table 4.1.

***Table 4.1*:** Summary of facilitating factors to implementing Spanish-language NDPP programs

Facilitating factor	**Description/Benefit**	**Collaborating partner(s)**
Partner with religious figures	Partnering with local clergymen or other trusted religious figures in the community builds trust and encourages participation (Vincent et al., 2013)	Local religious figures
Community clinics and health fairs	Community clinics and health fairs within the community that provide free education and screening are an effective way to overcome financial or insurance barriers and meet communities where they are (Banister et al., 2004; Murray et al., 2014)	Local health department
Use of *promotoras*	Using a female, lay health worker that is known to the community (*promotora*) to facilitate programs rather than a medical professional is effective in building trust and support (O'Brien et al., 2015)	Local community members
Culturally relevant materials	• Speaking Spanish and using Spanish language course materials allows for better understanding • Informal discussions (*charlas*) rather than formal presentations provides for a more relaxed environment • Use of audiovisual materials for low literacy individuals allows for better understanding • Cooking demonstrations of familiar foods and meal sharing (Vincent et al., 2013)	N/A
Focus on women	Focusing interventions on the women, as they often have the greatest influence on health behaviors in the family and are often the sole meal-preparer of the family (O'Brien et al., 2015)	N/A
Partnering with community centers	Having programs in places that can accommodate the whole family allows for family participation and provides child care (Van Name et al., 2016)	Local community centers
Teach diabetes prevention in schools	Teaching age-appropriate health promotion behaviors in school health education curricula has a positive spillover effect on other members of the family (Berniell, Mata & Valdes, 2013)	GA Department of Education, local schools

Implementing a Spanish-language NDPP program first involves reaching the community. 77% of Hispanic people indicate that they are Christian, and 39% indicate that they attend church at least once a week (Vincent et al., 2013; Flores, Lopez, & Radford, 2017). Partnering with clergymen and other trusted religious figures in the community has thus shown to be effective, as Hispanic people are more likely to trust and participate in programs held within their religious entity (Vincent et al., 2013).

Another way of reaching the community and recruiting participants is through community clinics and health fairs. Research has shown that due to financial barriers and insurance status, people of Hispanic origin tend not to have access or utilize health care services (Murray et al., 2014). Thus, the traditional method of recruiting participants using referrals from healthcare providers may not be the most effective way to reach the Hispanic community. Instead, free community clinics have been shown to be a low-cost way to provide education and follow-up to community members (Banister et al., 2004). Additionally, health fairs that come into the community and provide health education and screenings has shown to meet the unmet public health need in Hispanic communities (Murray et al., 2014). Through these community clinics and health fairs, health departments and NDPP programs have been able to meet communities where they are, provide valuable diabetes education, and recruit participants.

Another important factor is the program facilitator. Traditionally, the program facilitator is a community health worker or medical professional. However, research has shown that the use of a *promotora* is much more favorable to Hispanic program participants (O'Brien et al., 2015). A *promotora* is a lay health worker, usually female, and is often known to the community before

the start of the program (O'Brien et al., 2015). This method has been proven effective for chronic disease management among many racial and ethnic minority populations, as she is able to provide an environment of trust and emotional support to elicit behavioral changes that are culturally salient (O'Brien et al., 2015).

It is also important to have culturally relevant material that is accessible and meaningful to all members of the group (Vincent et al., 2013). This includes hosting the programs in Spanish and providing Spanish language course materials, as this allows for better understanding for those whose primary language is Spanish (Vincent et al., 2013). The use of *charlas,* or short, informal discussions, has also shown to be effective, as many Hispanic participants prefer a relaxed setting as compared to a presentation-style course (Vincent et al., 2013). To accommodate individuals with low literacy levels, the use of audiovisual materials such as simple stories told in pictures (*fotonovelas)* (Vincent et al., 2013). Finally, it is important to cater to the palates of the participants, and thus, there may be cooking demonstrations and meal sharing that reflect the flavors and smells favored by the participants (Vincent et al., 2013).

In terms of participation, a number of studies indicate that the greatest impact was achieved when the focus of the interventions was on the women of the family, as they are often an important influence on the health behaviors of family members and have a respected position of authority Hispanic culture (O'Brien et al., 2015; Ruggiero, Oros, & Choi, 2011). They are also often the member of the family that cooks the family meals, which, if behavior change is successful, can have a multiplicative effect within their families and communities (O'Brien et al., 2015).

Additionally, it has been shown to be beneficial to partner with and hold classes at community centers or schools that can accommodate the whole family (Ruggiero, Oros, & Choi, 2011; Van Name et al., 2016). This way, there may be activities for younger children during the session, which eliminates the need for child care, while also allowing parents and older children to participate together (Van Name et al., 2016). Familism is a key cultural construct with the Latino community, so families should be encouraged to participate together to facilitate family health and model behavior change for the entire family unit (Van Name et al., 2016).

Finally, research has shown that teaching age-appropriate health promotion behaviors in school health education curricula is positively associated with a spillover effect to other members of the family (Berniell, Mata & Valdes, 2013).

Barriers to Implementing Spanish-Language NDPP Programs

There are a number of barriers to implementing successful Spanish language NDPP programs in Georgia, and they can be organized by the three main stakeholders in a successful NDPP program: the individual participant, the program facilitator, and the provider. A summary of the barriers can be seen in Table 4.2.

Table 4.2: Summary of barriers to implementing Spanish language NDPP programs; barriers marked with an asterisk (*) indicate barriers specific to Spanish-language programs

Level of influence	**Barrier**	**Description**	**Collaborating partner(s)**
Individual	Lack of awareness about health status	Hispanic individuals may be unaware that they have prediabetes, often due to a lack of healthcare access, which presents as a barrier to them seeking prevention (Valen, Narayan, & Wedeking, 2012).	Local religious figures, health department
	Low health literacy rates*	Hispanic culture places high value on its traditional beliefs and practices, which often lead to widespread myths that can be a barrier to seeking prevention (Caballero, 2007).	Local religious figures, health department
	Fear of legal status disclosure*	Individuals may be afraid of their legal status being found out and will thus avoid seeking prevention or care (Vincent et al., 2013).	N/A
Program facilitators	Lack of Spanish-speaking program facilitators*	Program facilitators are majority primarily English-speakers, thus creating a language barrier that prevents recruitment and participation of Hispanic participants (Vincent et al., 2013).	Local community members
	Program facilitators' lack of awareness of how to reach Hispanic communities*	Program facilitators may be unaware of how to reach Spanish-speaking communities due to cultural barriers, thus preventing them from recruiting and connecting with Hispanic participants (Vincent et al., 2013).	Local religious figures, community members
Providers	Lack of routine screening, testing, and referrals from providers	No guidelines exist for providers to provide regular screening, testing, and referrals, and therefore many individuals who may benefit from NDPP programs are missed (Stange, 2002).	Local health department, providers

Individual Participant

For the individual participant, the greatest barrier to participating in an NDPP program is often the lack of awareness about their health status, as evidenced by the estimated 90% of individuals who are unaware that they have prediabetes (CDC, 2017). Specifically, in Hispanic populations, this lack of awareness may be attributed to lack of health care access, which may include

multiple factors, such as lack of insurance, transportation, or child care (Valen, Narayan, & Wedeking, 2012; Ruggiero, Oros, & Choi, 2011). Thus, if an individual Hispanic participant is unaware that they have prediabetes or are at risk for diabetes, this individual would see no reason to seek prevention.

Similarly, low rates of health literacy are common amongst Hispanic populations. Health literacy is defined as the degree to which individuals have the capacity to obtain, process, and understand basic health information needed to make appropriate health decisions" (Healthy People 2020, 2019). The low rates of health literacy among Hispanic populations may be attributed to lack of healthcare access and education, but many researchers attribute it to strong cultural beliefs. Much of Hispanic culture is deeply rooted in its values, traditions, beliefs, and practices, which may negatively influence individuals' perception and understanding of disease processes and their treatments (Caballero, 2007). For example, in certain Latin American cultures, being slightly overweight or even obese is not a risk factor for diabetes, but rather a sign of good health and being well nourished (Caballero, 2007). This belief would prevent an overweight or obese individual from seeking prevention, and thus putting them at increased risk for poorer health outcomes.

One study conducted by Vincent et al. (2013) also noted that many of the participants in their study expressed fear of participating in research, as they did not have legal status in the United States and feared that this research study would allow them to be caught and deported. This fear may also be a barrier in many people of Hispanic origin from participating in NDPP programs.

Program facilitators

From a program facilitator's perspective, the greatest barrier to successfully implementing a Spanish language NDPP program is the language barrier. All facilitators who did not currently have a Spanish-speaking program expressed interest in implementing one but did not have any Spanish-speaking lifestyle coaches to facilitate classes.

Similarly, program facilitators have a general lack of knowledge of how to reach Spanish-speaking communities. This can likely be attributed to the cultural and language barrier, which has shown to often discourage Hispanic people, especially those that exclusively speak Spanish, from seeking out traditional, "American" health interventions (Vincent et al., 2013). Program facilitators are thus unable to recruit Hispanic participants for NDPP programs. However, with culturally-tailored approaches, it is possible to overcome this barrier.

Providers

Research has shown that regular health behavior counseling and routine screening and referrals during provider visits are associated with improved health outcomes when combined with standard provider visits of a physical exam and laboratory tests (Stange, 2002). Currently, there are no formal guidelines for providers to provide routine screening, testing, and referring of prediabetic patients for NDPP programs. Because of this, many at-risk individuals who may benefit from NDPP programs may be missed.

CHAPTER FIVE: RECOMMENDATIONS

This gap analysis suggests that there is great need and potential for the GA DPH to expand Spanish-language NDPP programs in Georgia, and existing interventions can be tailored to more effectively implement these programs. The recommendations outlined in this chapter will be based on the social ecological model as mentioned in Chapter 1, as this model suggests that an individual's health behaviors interact with and are influenced by multiple levels, including individual/interpersonal, organizational, community, and public policy levels (Glanz & Bishop, 2010). Therefore, directing interventions at these four levels will enhance GA DPH reach to individuals at their various points of influence, thus increasing the impact of diabetes prevention efforts amongst Hispanic populations in Georgia.

Individual/Interpersonal

For the individual participant, awareness of one's health status and health literacy are an important factor in one's seeking and use of preventive services such as the NDPP (Valen, Narayan, & Wedeking, 2012). To address this, it would be beneficial to partner with local health departments to establish a community clinic in high risk neighborhoods to provide free education and follow-up, as research has found that community clinics are a low cost, effective way to promote health literacy (Banister et al., 2004). We also recommend increasing health fair presence to provide education on prediabetes and diabetes to the community. Research has shown that providing free health education and screenings at local health fairs is an effective way for organizations to overcome financial or insurance barriers and meet the unmet public health need in Hispanic communities (Murray et al., 2014).

While at health fairs and other such educational events, providing culturally appropriate learning materials to be disseminated in the community has been shown to be effective in overcoming the language and cultural barrier that Spanish-speaking individuals often face in the American healthcare system. This includes having a Spanish speaker to communicate with participants, providing materials written in Spanish, as well as providing audiovisual materials for low-literacy individuals (Vincent et al., 2013).

In addition, because familism is a key cultural construct within the Hispanic community, the GA DPH should engage the entire family unit, as this has been shown to be effective in facilitating behavior change (Van Name et al., 2016). In particular, a number of studies indicate that the greatest impact was achieved when the focus of the intervention was on the women of the family, as they often are responsible for preparing meals for the whole family and are an important influence on the health behaviors of other family members (O'Brien et al., 2015; Ruggiero, Oros, & Choi, 2011).

Organizational

As an organization, the GA DPH should focus on increasing awareness and education, to both individuals and providers. As mentioned above, increasing and maintaining GA DPH and NDPP presence at local community health fairs will aid in increasing individuals' knowledge of diabetes and diabetes prevention. Additionally, the GA DPH would benefit from educating providers on the benefits and availability of NDPP programs, especially those providers in community clinics or are otherwise closely associated with the Hispanic community. This includes providing guidelines for and encouraging routine screening, testing, and referring

patients to NDPP programs, as regular health behavior counseling and routine screening and referrals during provider visits have been shown to be associated with improved health outcomes when combined with standard provider visits (Stange, 2002).

Community

On a community level, the use of *promotoras* has been proven effective for chronic disease management among many racial and ethnic minority populations, as she is able to provide an environment of trust and emotional support to elicit behavioral changes that are culturally salient (O'Brien et al., 2015). Thus, the GA DPH should identify Spanish-speaking *promotoras* in the community that may be available to provide education and support and provide NDPP lifestyle coach training to them, with the goal that they will become NDPP program facilitators.

In addition, the GA DPH should identify community resources that are most closely tied with the Hispanic community in that area, and partner with them to host events and programs for outreach. Research has shown that Hispanic people are more likely to trust and participate in programs held within their faith-based organizations, and thus it would be beneficial to partner with the local church (Vincent et al., 2013). Community centers have also been shown to be an effective place to hold NDPP sessions, as they are often centrally located, eliminating the need for complex transportation, and there are activities for younger children, eliminating the need for child care, while also allowing parents and older children to participate together (Van Name et al., 2016).

Public Policy

Research has shown that Hispanic youth are disproportionately affected by the growing rates of childhood obesity and diabetes compared to their non-Hispanic white counterparts (McCurley, Crawford, & Gallo, 2017). It has been found that teaching age-appropriate health promotion behaviors in school health education curricula is positively associated with improved health awareness and a spillover effect to other members of the family (Berniell, Mata & Valdes, 2013). Thus, the GA DPH should partner with the Georgia Department of Education to mandate age-appropriate education of prediabetes and diabetes in school health education curricula, with the goal of improving the individual student's health awareness and enacting a positive spillover effect to students' parents and other family members.

CHAPTER SIX: PUBLIC HEALTH IMPLICATIONS AND CONCLUSION

The Health Toll of Diabetes in Georgia

Diabetes is a significant contributor to morbidity and mortality amongst Americans, and Georgia is no exception. As of 2015, diabetes is the fifth leading cause of death in Georgia (CDC, 2016). In 2015, there were 2,198 deaths in Georgia that listed diabetes as the cause of death, with 9,610 additional deaths attributable to diabetes as a contributing factor (CDC, 2016). In addition, diabetes and its complications are one of the largest costs for employers and insurers, in both medical expenses and lost productivity. The American Diabetes Association (2018) estimates that people with diabetes have medical expenses about 2.3 times higher than those who do not have diabetes, with 1 in 4 healthcare dollars spent in the United States being spent on care for people with diagnosed diabetes. In Georgia, in 2012, it was estimated that the state spent $7.5 billion on direct medical expenses for diagnosed diabetes, while lost productivity due to diabetes cost the state another $2.4 billion in indirect costs (American Diabetes Association, 2017). These figures do not account for those undiagnosed with diabetes or those with prediabetes, and thus highlight the significant burden that diabetes places on society and the importance of prevention and education before an individual is diagnosed with diabetes.

Potential Impact of Spanish-language NDPP in Georgia

Hispanic people are disproportionately affected by prediabetes, and subsequently, diabetes, both nationally and in the state of Georgia. It is estimated that 12.1% of Hispanic people in the United States have been diagnosed with diabetes, compared to the national average of 9.4% (CDC, 2017). Additionally, in Georgia, about 9.1% of Hispanic people have been diagnosed with diabetes, with an estimated additional 4.5% who are undiagnosed (CDC, 2016). Considering that

Hispanic people make up 9.6% of the state's population, there is a great need to address this gap and implement interventions to prevent diabetes in this population.

The CDC National Diabetes Prevention Program (NDPP) is an evidence-based program that has been shown to prevent diabetes by 58% in individuals with prediabetes or those who exhibit additional risk factors for diabetes. At this time, of the 35 NDPP programs available in Georgia, only 3 of them offer programs in Spanish. Additionally, the three available Spanish-language programs are centralized within the metro Atlanta area, while some counties with high Hispanic populations either have exclusively English-speaking programs or no nearby programs at all.

With the successful expansion of NDPP to Spanish-speaking populations, there is the potential to greatly reduce the morbidity and mortality attributable to diabetes, as well as significantly reduce healthcare costs for the state.

Potential Impact Beyond Georgia

Like Georgia, many other states have an unmet need for Spanish language NDPP programs, and have similarly startling statistics regarding morbidity, mortality, and healthcare costs attributable to diabetes. Thus, Georgia's experiences with expanding Spanish-language NDPP could be used to develop a model for expansion to Hispanics in the Southeast and other similar settings.

Conclusion

There is a significant unmet need for diabetes prevention efforts amongst Spanish-speaking populations in Georgia, and without intervention, these disparities have the potential to grow.

Thus, initiatives must be taken to target prediabetes and those who exhibit additional risk factors for diabetes in Spanish-speaking populations. Multiple levels of influence and interaction are responsible for shaping an individual's health behaviors, including individual, organization, community, and public policy levels. Hispanic populations in Georgia face additional challenges that their non-Hispanic white counterparts may not face. This gap analysis presents evidence-based recommendations for the GA DPH to expand and create Spanish-language NDPP programs in Georgia, at all levels of influence. A summary of these recommendations can be seen in Table 6.1.

Table 6.1: Summary of recommendations to implementing Spanish-language NDPP in Georgia

Level of influence	**Intervention**
Individual/Interpersonal	Increase health fair presence to provide education on prediabetes and diabetes to the community
	Provide culturally appropriate learning materials, including: • Spanish speaker • Materials written in Spanish • Audiovisual materials for low-literacy individuals
	Engage the entire family unit, focusing intervention on the women of the family
Organizational	Increase and maintain GA DPH and NDPP presence at local community health fairs
	Educate providers on the benefits and availability of NDPP programs, especially those in community clinics or are otherwise closely associated with the Hispanic community
	Provide guidelines and encourage providers to routinely screen, test, and refer patients to NDPP programs
Community	Identify and train *promotoras* as NDPP lifestyle coaches
	Identify and partner with community resources that are closely tied with the Hispanic community, such as community centers and churches
Public Policy	Partner with the GA Department of Education to mandate age-appropriate education of prediabetes and diabetes in school health curricula

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APPENDIX A: GA DPH INTERVIEW GUIDE

Site:

Summary of Contact Attempts:
Call 1: __ /__/____ Outcome: Completed Survey/LM with Person/ LM on Machine
Call 2: __/__/____ Outcome: Completed Survey/LM with Person/ LM on Machine/NA
Call 3: __/__/____ Outcome: Completed Survey/LM with Person/ LM on Machine/NA

In December 2017 a Diabetes Prevention State Engagement Meeting was held in Georgia with the goal of creating a state-wide plan for expanding and sustaining CDC Lifestyle Change Programs. It was determined at this meeting that more information was needed on the status of current pending and fully recognized sites across the state to understand the Georgia DPP landscape. We would like to ask you a series of questions about your program.

Program Background

1.) When did you apply for pending recognition?
Month and Year

2.) Are you aware of the new 2017 CDC standards for recognition?
Yes / No

Program Logistics

3.) Is your program open to the public or private (employees, internal patients, specific payers/insurers etc)?
Public / Private
If private, who are you offering it to?

4.) Do you have a target population for your program (elderly, men, low-income, etc.)?
Yes / No
If yes, what is your target population?

5.) Do you offer the program at a single location or at multiple locations?
Single / Multiple

6.) Do you offer in-person or virtual classes?
In-person / Virtual / Both / Both-but virtual for makeups only

7.) Do you offer your program in multiple languages?
Yes / No
If yes, what languages?

8.) How many lifestyle coaches do you have?

9.) Do you feel like you have an adequate number of coaches to maintain your participant flow?
Yes / No

Current Program Activity

10.) Are you currently running a cohort?
Yes / No

11.) How many are cohorts are running at the present?

12.) How many participants are in each cohort?
13.) Are you currently recruiting for your next cohort?
Yes / No
14.) What is your goal cohort size?
15.) When do you expect your next cohort to start?
Month and Year
16.) Approximately how much time did it take you to recruit your first cohort(s) and most recent cohort(s)?
First Cohort (s): < 2weeks 2-4 weeks 4-6 weeks 6-8 weeks or more
Most Recent Cohort (s): < 2weeks 2-4 weeks 4-6 weeks 6-8 weeks or more
17.) How have you been recruiting participants?
EHR / Physician Referral / Brochures & Posters / Web Based / Word of Mouth / Other
18.) Are participants attending on a regular basis (are you on track to meet retention requirement)?

Resources and Reimbursement

19.) Have you received a federal, state or local grant to fund your program?
Yes / No
If yes, could you let us know more about the grant
20.) If yes, do you have a plan to continue the program once funding ends?
21.) Have you offered incentives to maintain retention? If so, what incentives?
Yes / No
22.) Do you find the incentives are beneficial to your program's success?
Yes / No / NA

23.) Will you continue to provide incentives?
Yes / No / NA
24.) Do you pursue reimbursement from private insurance?
Yes / No
25.) Do you charge those without insurance to participate in the program?
Yes / No
If yes, do you offer scholarships to low income individuals? Yes / No / NA

Future Plans

26.) When do you believe you will reach full recognition?
Month and Year
27.) Will you pursue Medicare reimbursement once you are eligible?
Yes / No /Undecided

Barriers and Lessons Learned

28.) What barriers have you experience when starting your program?
29.) What barriers have you encountered, or do you foresee encountering as you scale-up your program?
30.) Have you had any difficulty with the data requirement of the program? Do you have quality control measures in place?
31.) What lessons have you learned that other sites could benefit from?

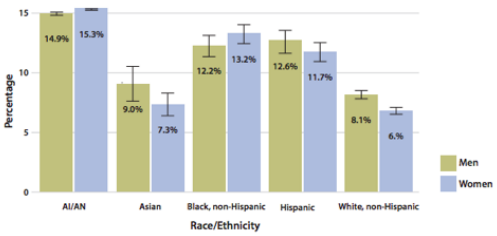
32.) Is there anything you feel like the Department of Public Health could do to help you expand your program and ensure program success?
33.) Is there anything else you would like to share about your program?

APPENDIX B: POLICY BRIEF

BACKGROUND:

Diabetes is a significant contributor to morbidity and mortality in the United States, as well as in the state of Georgia. It is the seventh leading cause of death in the United States, and the fifth leading cause of death in Georgia. The American Diabetes Association estimates that 1 in 4 healthcare dollars spent in the United States is spent on care for people with diagnosed diabetes. In 2012, the state of Georgia spent $7.5 billion on direct medical expenses for diagnosed diabetes, while lost productivity due to diabetes cost the state another $2.4 billion in indirect costs. Prediabetes, a condition in which blood glucose levels are elevated but not to the point of overt diabetes, is a strong risk factor for diabetes.

Research has shown that Hispanic people are disproportionately affected by prediabetes, and, subsequently diabetes, both nationally and in the state of Georgia. It is estimated that 12.1% of Hispanic people in the United States have been diagnosed with diabetes, compared to the national average of 9.4%. Additionally, in Georgia, about 9.1% of Hispanic people have been diagnosed with diabetes, with an estimated additional 4.5% who are undiagnosed. Without intervention, these disparities between the Hispanic community and the general U.S. population have the potential to grow.



Estimated age-adjusted prevalence of diagnosed diabetes by race/ethnicity and sex among adults aged ≥18 years, United States, 2013-2015

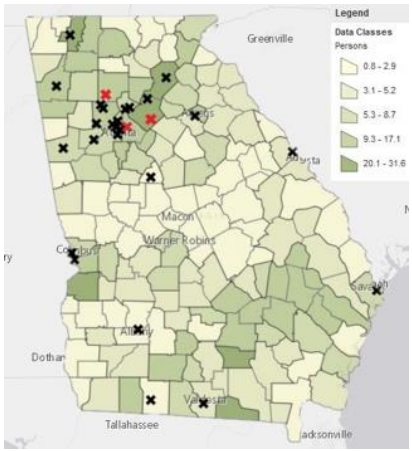
While type 2 diabetes is a serious problem, it is preventable. By targeting interventions to those with prediabetes and those at risk for diabetes, it is possible to prevent or delay the onset of type 2 diabetes. The CDC National Diabetes Prevention Program (NDPP) is an evidence-based program that is designed specifically to prevent or delay diabetes in those diagnosed with prediabetes or are at risk for diabetes. It has been shown to reduce morbidity and mortality attributable to diabetes, as well as significantly reduce healthcare costs.

PROBLEM:

Currently, there are 35 CDC NDPP programs in the state of Georgia, but only 3 of them offer programs in Spanish. Additionally, the three available Spanish-language programs are centralized within the metro Atlanta area, while some counties with high Hispanic populations either have exclusively English-speaking programs or no nearby programs at all.

There is a significant unmet need for expanding the CDC NDPP among Spanish-speaking populations in Georgia. Thus, initiatives must be taken to target prediabetes and those who exhibit additional risk factors for diabetes in Spanish-speaking populations.

Multiple levels of influence and interaction are responsible



Current NDPP sites (Spanish-speaking sites indicated in red) overlaying county-level map showing proportion of population of Hispanic origin

for shaping an individual's health behaviors, including individual, organization, community, and public policy levels. Hispanic populations in Georgia face additional challenges that their non-Hispanic white counterparts may not face. This policy brief presents evidence-based recommendations for the GA DPH to expand and create Spanish-language NDPP programs in Georgia, at all levels of influence.

RECOMMENDATIONS:

Level of influence	Intervention
Individual/Interpersonal	Increase health fair presence to provide education on prediabetes and diabetes to the community
	Provide culturally appropriate learning materials, including: • Spanish speaker • Materials written in Spanish • Audiovisual materials for low-literacy individuals
	Engage the entire family unit, focusing intervention on the women of the family
Organizational	Increase and maintain GA DPH and NDPP presence at local community health fairs
	Educate providers on the benefits and availability of NDPP programs, especially those in community clinics or are otherwise closely associated with the Hispanic community
	Provide guidelines and encourage providers to routinely screen, test, and refer patients to NDPP programs
Community	Identify and train *promotoras* as NDPP lifestyle coaches
	Identify and partner with community resources that are closely tied with the Hispanic community, such as community centers and churches
Public Policy	Partner with the GA Department of Education to mandate age-appropriate education of prediabetes and diabetes in school health curricula