

**STUCK IN THE MIDDLE: A MIXED-METHODS STUDY EXAMINING THE
ROLE OF SPECIFIC HEALTH KNOWLEDGE AND PERCEIVED RISK IN
THE AFRICAN AMERICAN TYPE 2 DIABETES MELLITUS HEALTH
DISPARITY**

A Dissertation

by

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ABSTRACT

African Americans are disproportionately represented in the United States' Type 2 Diabetes Mellitus (T2DM) statistics. This disparity has long been investigated, but no marked improvement has been made. This study examines knowledge gaps, perceptions of risk and conditions contributing to the persistence of this disparity, utilizing a mixed-methods approach.

This study examines T2DM knowledge and perceptions of risk in middle-class, African Americans living in New Orleans, Louisiana. Specifically, this study: 1) examines the T2DM prevention literature; 2) assesses knowledge levels, and perceptions of severity and susceptibility to T2DM in non-diabetic, or asymptomatic, middle-class African Americans; 3) explores the role of built environments on health behaviors; and 4) examines attitudes and feelings of self-efficacy in relation to preventative health strategies that may deter the development of T2MD.

This study found that the majority of the T2DM literature focused on the treatment of T2DM complications (n=177), not prevention of the disease (n=101). Study designs for T2DM prevention varied widely, from pilot and feasibility studies (n=9) to randomized control trials (n=10); the largest study type, however, was observational (n=19). None of the studies reviewed focused on middle-class African Americans. Income levels or socioeconomic status were largely unspecified (n=62).

The study did not find a correlation between participants' perceptions of risk and actual risk, based on the ADA's risk assessment ($p = .110$). There was a statistically significant, negative correlation ($p = -.748$) found between ADA risk totals and age, with

significance set at the 0.01 level. There was also a statistically significant, negative correlation ($p = -.214$) found between T2DM risks and participant education levels, with significance set at the .05 level.

At large, participants expressed a perceived severity of T2DM. Participants noted, however, that the condition has become somewhat normalized in the African American community. Respondents generally felt sufficiently informed about the condition, which contributed to feelings of high self-efficacy and low levels of concern for developing T2DM. There were knowledge gaps and misinformation that provide grounds for re-evaluating those feelings, however.

DEDICATION

To my mother and father, Edward and Eileen Spears, there are not enough words. Every good thing about me is a product of your love and sacrifice. I share this degree with you, and my grandparents, who built the foundation upon which I have the privilege to stand.

To my siblings, for your undying support and undeserved admiration; for your shared laughter and loving arms; for your friendship.

To my extended family, through connection of blood and/or bond, those physically present and those who dance among the stars, for your encouragement and various roles as I journeyed along my winding path; for every act of kindness and faith advanced on my behalf.

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The data in Chapter II was collected with the assistance of Margret J. Foster, Medical Science Librarian, and analyzed with the assistance of Timethia J. Bonner, a former student from the Department of Health and Kinesiology.

All other work conducted for the dissertation was completed by the student independently.

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CHAPTER I

INTRODUCTION

Diabetes is the seventh leading cause of death in the United States (U.S.) (American Diabetes Association, 2014). An estimated 29 million individuals in the U.S. have diabetes (Centers for Disease Control and Prevention, 2014). Type 2 Diabetes Mellitus (T2DM), a largely preventable condition, represents the largest number of cases in these concerning statistics (American Diabetes Association, 2014). Another estimated 86 million individuals are pre-diabetic (Centers for Disease Control and Prevention, 2014). According to the Centers for Disease Control and Prevention's (CDC) (2014) projections, approximately 30% of those with pre-diabetes will develop T2DM within five years of a pre-diabetes diagnosis. The American Diabetes Association (2015) estimates 8.1 million undiagnosed cases of diabetes in the United States alone. If left untreated, complications from T2DM can lead to irreparable bodily harm or death (National Institute of Diabetes and Digestive and Kidney Diseases, 2014).

T2DM and the conditions that contribute to its development, like obesity, have been the focus of innumerable public health initiatives, health education interventions and health communication campaigns. Unfortunately, the impact of these efforts are negligible when compared to the enormity of the public health crisis. In fact, when comparing T2DM prevalence rates in 2010 to 2014 statistics, there was an increase of three-million cases over this four year period (Centers for Disease Control and Prevention, 2014).

U.S. minorities, as a collective, are represented at disparate rates in T2DM statistics (American Diabetes Association, 2014; Centers for Disease Control and Prevention, 2013; Spanakis & Golden, 2013). African Americans, in particular, are 1.7 times more likely to develop T2DM than non-Hispanic Whites (American Diabetes Association, 2013, 2014; Centers for Disease Control and Prevention, 2014). Additionally, the CDC (2014) estimates that approximately 39% of the African American population has prediabetes.

The African American T2DM health disparity is not a new phenomenon (see Figure 1.1). In 1985, the *Secretary's Task Force Report on Black and Minority Health* called for “an accelerated national assault on the persistent health disparities that made the report necessary” (U.S. Department of Health and Human Services, 1985). This charge included a call to rectify the largely unexplained gaps in community disease rates for conditions like TD2M. Regrettably, in the more than 30 years since the report's issuance, overall African American health disparities rates in the United States have worsened (Airhihenbuwa & Liburd, 2006; Avendano & Kawachi, 2014; Centers for Disease Control and Prevention, 2013). Rates in non-Hispanic whites and blacks changed little from 1980 to 1990. But from 1990 to 2009, the rates of diagnoses increased. In that 20 year span they increased 140% for whites, moving from 2.5 to 6.0 out of every 100. And increased 106% for African Americans, but this group started off higher, so it went from 4.7 to 9.7 of every 100 for blacks (Centers for Disease Control and Prevention, 2015a).

If the public health aim for this issue is to lessen the rate of T2DM rate within the African Americans community, it stands to reason that a major goal of this aim would be to prevent disease development in this population. However, observational analysis of the T2DM literature focused on African Americans suggests that research in this area is focused more on self-care management for those with T2DM than on prevention strategies for those at risk for developing the condition. Very few studies have documented focused efforts on increasing awareness of T2DM risks and/or prevention in African Americans. Furthermore, among the existing studies, there is no preponderance of evidence to suggest that the existing prevention strategies are effectively reaching and motivating change within the target population.

Additionally, current public health recommendations suggest those of low-socioeconomic status be prioritized on the research agenda. This is understandable given the risk associated with this segment of the population, based on things like limited access to healthy food options, resources and/or education. Observational analysis of existing T2DM literature focused on African Americans shows focused efforts lower-socioeconomic status (SES) individuals. However, there is no known study of other segments of the African American population to suggest that other groups, like those of the middle-class, are inherently protected. There is also a paucity in the research studying the African-American middle-class (Lareau, 2013). Moreover, middle-class African Americans often reside in neighborhoods that do not fit mainstream images of middle-class in America (Feagin & Sikes, 1994; Pattillo, 2013).

African Americans in the U.S. have a complicated history with far reaching effects on past and present generations (Krieger, Chen, Coull, Waterman, & Beckfield, 2013). For example, in 2017, a 70 year old, middle-class African American raised in the U.S. would have spent a large portion of his or her childhood living under Jim Crow laws. These laws would have affected everything from where this individual was lived and went to school, to where he or she shopped for food (Jones, Krieger, & Richard, 2016). What impact, if any, does this rearing have on the health determinants of this individual? How would that rearing effect that individual's education and attitude toward food? How would that education effect what that individual taught his or her children? A better understanding of the conditions that contribute to the disproportionate number of African Americans afflicted with T2DM is needed to prevent disease development and improve health outcomes connected to this condition. An authentic appreciation of the circumstances requires thoughtful examination of the target population's knowledge, perceptions, attitudes, beliefs, fears, living conditions, and how those factors encourage and/or hinder health decision making.

This study looks at middle-class, or mid-SES status, African Americans. The definition of SES is not standardized in the literature, but is generally a measure which combines income and educational attainment (Adler et al., 1994; The PEW Charitable Trust, 2015). For the purposes of this study, mid-SES was used to describe individuals with a high school diploma, or its equivalent, who meet an income threshold for middle-class in the State of Louisiana, which is the setting for this study.

The overarching goal of this study is to use quantitative measures, obtained through participant surveys and maps created in Google Earth and Geographic Information Systems (GIS), coupled with qualitative data, collected through semi-structured interviews, to better understand actionable conditions that may be positively impacted by health promotion. This study follows a mixed-method, explanatory design with a quantitative emphasis (Creswell & Plano-Clark, 2011; Ivankova, 2006). The design is sequential, with two main phases. First quantitative data was collected and analyzed, through surveys. Analysis led to the development of a qualitative questioning route intended to explain quantitative findings (Creswell & Plano, 2011). Mapping tools, like Google Earth and ArcGIS are used to illustrate these findings. Specifically, this dissertation: 1) assesses African American knowledge levels, and perceptions of severity and susceptibility to T2DM in non-diabetic, or asymptomatic, African Americans of mid-SES; 2) explores the role of built environments on health behaviors in less examined segments of the African American community, specifically mid-SES African Americans in New Orleans, Louisiana; and 3) examines attitudes and feelings of self-efficacy in relation to preventative health strategies that may deter the development of T2MD, or the negative health outcomes associated with this chronic condition.

The studies research questions and corresponding hypotheses are as follows:

- RQ1: Is there a correlation between T2DM knowledge and perceptions of risk in mid-SES African Americans?
 - HY1: There is a positive correlation between T2DM knowledge and perceptions of risk in mid-SES African Americans.

- RQ2: What is the built environment of New Orleans? Specifically, what are the environmental resources (food, physical land features, etc.) and potential barriers (lack of resources, violence, distance, etc.) that may impact resident health?
- RQ3a: What are mid-SES African American attitudes towards T2DM?
 - HY3a: There is a general lack of knowledge, perceived susceptibility, and perceived severity surrounding T2DM in mid-SES African Americans.
- RQ3b: How do perceptions of the built environment effect health behaviors?
 - HY3b: Positive perceptions of the built environment will promote positive health behaviors. Conversely, negative perceptions of the built environment will discourage positive health behaviors.

This document is separated into five distinct chapters. Chapters II through IV were written as manuscripts for publication in peer-reviewed journals. A brief descriptor of each chapter is provided below:

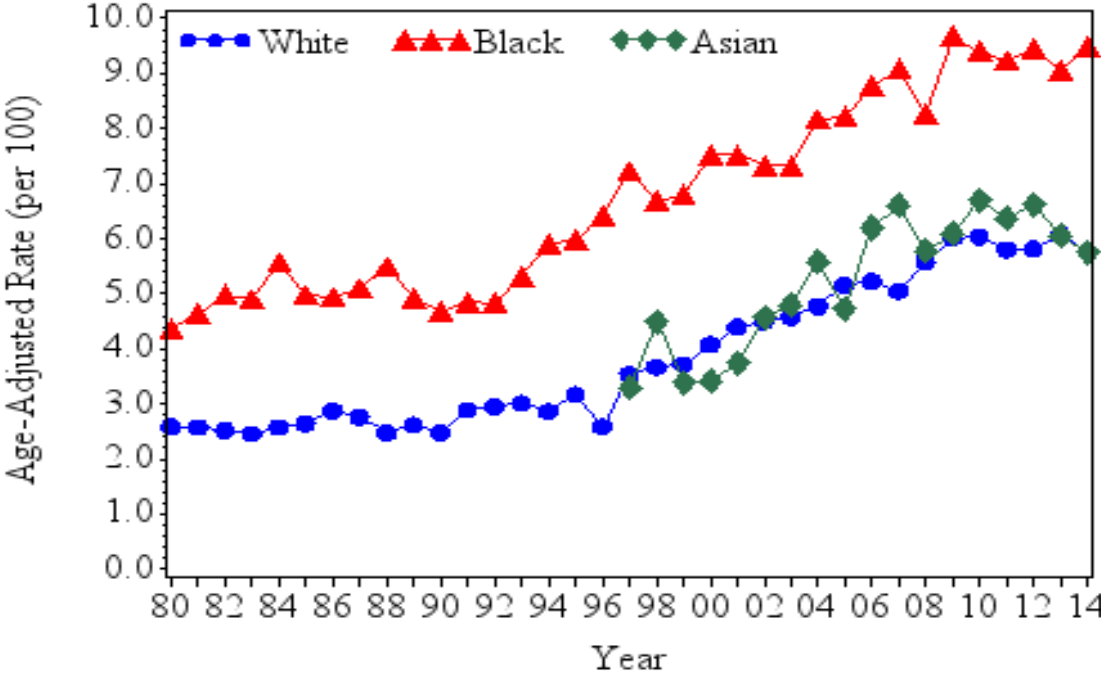
- Chapter 1: a succinct overview of the overall study topic and rationale.
- Chapter II: a scoping literature review of peer-reviewed T2DM publications on the subject of T2DM prevention in African Americans. This study examines existing prevention literature for this population in an attempt to identify gaps that may provide guidance for future research. This chapter represents the first journal article.
- Chapter III: quantitative findings from an online survey, taken by self-identified, mid-SES African Americans to assess T2DM specific

knowledge and perceptions of risk. This chapter represents the second journal article.

- Chapter IV: qualitative findings from semi-structured interviews with mid-SES African Americans to explore knowledge gaps, misinformation, perceptions of risk, and lived experiences of African Americans in relationship to health behaviors surrounding T2DM. Google Earth and ArcGIS are incorporated in this study for spatial analysis of the built environments described during participant interviews. This chapter represents the third and final journal article.
- Chapter V: general conclusions from the study as a whole. This chapter also presents implications for health educators and health communicators. Lastly, this chapter presents recommendations for future research.

Figure 1.1 African Americans and Type 2 Diabetes Mellitus: The CDC's Trend

Analysis



(Centers for Disease Control and Prevention, 2015a)

CHAPTER II

DIABETES PREVENTION STUDIES TARGETING AFRICAN AMERICANS: A SCOPING REVIEW

INTRODUCTION

According to the American Diabetes Association (2015), diabetes remains the seventh leading cause of death in the United States. In 2010, this disease contributed to more than 234,000 deaths (American Diabetes Association, 2014). Type 2 Diabetes Mellitus (T2DM) is the most common form of diabetes (American Diabetes Association, 2011). It is also believed that diabetes-related deaths are underreported and that diabetes is often an underlying cause of death for individuals with co-morbidities like cardiovascular disease and kidney failure (American Diabetes Association, 2015; Centers for Disease Control and Prevention, 2013). T2DM is preventable in many instances, however, making it a model condition for effective intervention.

African Americans are disproportionately represented in T2DM prevalence, negative health outcomes and deaths (American Diabetes Association, 2013). This disparity was acknowledged by the U.S. government over 30 years ago (United States Department of Health and Human Services' Secretary's Task Force, 1985). To date, however, the progress towards health equity in this arena has been slow, if not stagnant (Airhihenbuwa & Liburd, 2006; Avendano & Kawachi, 2014; Centers for Disease Control and Prevention, 2013). The strategies in place to prevent development of this

deadly disease and the associated negative health outcomes, need additional, critical examination.

The U.S. spends more health care dollars on disease treatment and management than prevention (Centers for Disease Control and Prevention, 2009). According to the CDC (2009),

Although chronic diseases are among the most common and costly of all health problems, they are also among the most preventable. Chronic disease prevention, to be most effective, must occur in multiple sectors and across individuals' entire life spans. Prevention encompasses health promotion activities that encourage healthy living and limit the initial onset of chronic diseases. Prevention also embraces early detection efforts, such as screening at-risk populations, as well as strategies for appropriate management of existing diseases and related complications (p.8) .

Prevention is effective and cost efficient (Centers for Disease Control and Prevention, 2009). However, there is no known consensus or established best practice for prevention of T2DM in African Americans.

Cultural sensitivity has been used in the literature, almost recklessly, and has been widely accepted as a best practice of sorts (Dutta, 2007; Kreuter & McClure, 2004). Cultural sensitivity has its own limitations, however. For example, cultural sensitivity is different from culture-centered approaches (Dutta, 2007). Cultural sensitivity takes an arguably superficial approach to culture by emphasizing certain markers associated with the target population (i.e. using a person of color in commercial). Culture-centered approaches builds theories and approaches based on cultural tenants of the target population (Dutta, 2007). African Americans are grouped with other non-Hispanic blacks and treated as a homogenous group in the literature (Agyemang, Bhopal, & Bruijnzeels, 2005; Sellers, Smith, Shelton, Rowley, & Chavous, 1998). This approach

can reasonably be viewed as both insensitive and plausibly ineffective as an approach for reaching high-risk, high-need groups, like certain segments of the African American population (Agyemang et al., 2005). For example, the African American middle-class constitutes roughly 38.4% of African Americans in the U.S., yet very little formal research is done on this segment of the population (BlackDemographics.com, 2016; Feagin & Sikes, 1994; Pattillo, 2013). It can be argued that by failing to address more nuanced aspects of the African American audience, by adjusting for things like income, many public health initiatives and interventions are superficially sensitive to the culture of the target audience (Resnicow, Baranowski, Ahluwalia, & Braithwaite, 1998).

Middle-class African Americans, at large, still face a number of risk factors, not typically associated with their Caucasian counterparts of the same financial means. According to Feagin and Sikes (1994), there is a cumulative impact of race that should not be underestimated and is not assuaged by mere middle-class status. Political and media systems have contributed to the impression of privilege and prosperity in the black middle class, with very little formal research on, or communication with, the black middle-class (Feagin & Sikes, 1994). The lived experiences, neighborhoods, workplace environments, etc. of middle-class African Americans are separate and often unequal to those of the majority population (Feagin & Sikes, 1994; Pattillo, 2013).

In some areas of health, like maternal and child health for example, studies have shown an inverse relationship between socioeconomic status and health outcomes for African Americans (Centers for Disease Control and Prevention, 2017). African American females with higher rates of education and income have also been shown to

have worse outcomes, in terms of infant mortality, than those of lower-socioeconomic status (Pickett, Collins, Masi, & Wilkinson, 2005). No known investigation has examined this possibility for middle-class African Americans and diabetes.

While conventional wisdom suggests a focus on lower-socioeconomic status African Americans, the persistent health disparities in preventable chronic conditions suggests a new approach may be warranted. Race should not be evaluated as a singular, isolated variable (Jones et al., 2016). Race is not a "genetic issue" but it has bearings on where people live, how they are treated, and what they are taught to believe; all these things impact one's health (Jones et al., 2016). For African Americans who were born or have parents who were born prior to 1965, their lives have been shaped in part by discriminatory laws, like Jim Crow, which placed barriers on environmental factors like place (Jones et al., 2016). A middle-class, 70 year-old, black male residing in the United States would spend part of his childhood under these laws. This upbringing has a bearing on what and where his parents obtained his food, and his views on food and health. It is also conceivable that those viewpoints were passed on to his children, even after laws were lifted. Those learned behaviors have the potential to impact health behaviors of middle-class African Americans today, and contribute to the health disparities seen in many preventable conditions.

This review investigates the existing literature surrounding Type 2 Diabetes Mellitus in African Americans. Additionally, this review is intended to summarize existing approaches, in an effort to identify gaps and provide guidance for future studies.

Identifying the Research Question

T2DM continues to negatively affect African Americans at disparate rates (Centers for Disease Control and Prevention, 2015b). Despite ongoing research, no marked progress has been made toward reducing this disparity since it was first recognized by the U.S. government in 1985 (United States Department of Health and Human Services' Secretary's Task Force, 1985). It would appear that more resources are committed to managing complications associated with T2DM than preventing disease onset. Additionally, while there is no known or demonstrated strategy for eliminating this health disparity, prevention efforts have focused almost exclusively on the lower-socioeconomic status segment of the African American population. This strategy leaves a large, yet still vulnerable, segment of the population unexamined and unserved.

The primary aim of this study was to conduct a review of the existing literature describing efforts to address T2DM prevention in the African American population. The second aim of this study was to determine what, if any, documented research has examined middle-class African Americans. The research questions for this scoping review include:

1. Overarching research question: How is the African American T2DM examined in the literature?
2. Has the literature focused sufficiently on prevention?
3. Is the focus of the T2DM prevention literature on primary or secondary prevention?
4. Has the literature addressed middle-class African Americans?

METHODS

A scoping review of literature was conducted. Scoping reviews are intended for areas of research not extensively reviewed or heterogeneous in nature (M. D. Peters et al., 2015; Pham et al., 2014). This approach was adopted to allow the flexibility needed to provide an overview of the largely inconsistent approach to African American T2DM prevention research. The review focused on study purpose, specifically primary or secondary T2DM prevention, and study population.

Identifying Relevant Studies

In August 2016, an electronic database search was conducted using MEDLINE, EMBASE, CINAHL, OVID and the Cochrane Library. Using the U.S. Health and Human Services' Secretary's Task Force Report on Black and Minority Health as a starting point, search dates began with January 1985 and concluded with August 2016. Articles cited in the original articles, or found while writing this manuscript, were also included in the search. A search for the following key words was performed: type 2 diabetes mellitus, non-insulin dependent diabetes mellitus, adult onset diabetes, prediabetes, preventative medicine, preventative health services, health education, health promotion, African Americans, and English language.

Study Selection

Each article was screened for inclusion. The study's first author (ES) performed the initial screening, by article title, then by abstract, and finally full-text screenings. For inclusion, studies had to meet the following criteria: (1) include African Americans; (2) address T2DM; (3) be published in English; and (4) be a U.S. based study. Criteria for

article exclusion included: (1) studies without African American participants; (2) studies that did not list diabetes or diabetes complications in its aims; (3) studies that did not include participants or reported results strictly from secondary data analysis; and (3) reviews, opinions or editorial pieces. The inclusion criteria were discussed and agreed upon through co-author consensus. Articles not easily categorized were discussed between ES and the articles third author (TB) until agreement was reached.

Charting the Available Evidence

Articles selected for study inclusion were coded in Qualtrics, an online platform designed to capture and analyze data. Using Qualtrics, a coding form was developed. Articles were first coded with regard to focus, either prevention of T2DM, T2DM treatment or self-care management, or both T2DM treatment and prevention. Articles focused on T2DM prevention, or both treatment and prevention, were further analyzed. Qualtrics was utilized to capture the following information: year of publication; if T2DM prevention was the primary focus of the article, or if the article focused on other morbidities; study design; methodology; study setting; type of study; population age; population race; population sex; socio-economic status of participants; sample size; intervention style; length of intervention; cultural tailoring; and primary outcome measured.

Articles that presented only part of a study (i.e. methods, baseline data, evaluation, etc.) were coded as such. Articles from the same study were later merged and reported as one study.

RESULTS

The initial search yielded 886 total articles; 653 of those articles were unduplicated. Through title, abstract and full-text screenings, 381 articles were excluded. The remaining 272 articles, yielded 171 articles on T2DM treatment and 101 articles on T2DM prevention, or both treatment and prevention. Among the prevention articles 92 studies were counted (see Figure 2.1).

The majority of the data reported, 86.13%, was measured quantitatively. The majority of the studies had an adult study population, at 63.3%. Of the 33 studies with a youth study population, only seven included an adult or parent component. Approximately 79% had study populations comprised of at least 50% female respondents or more; 22 studies had entirely female study populations; one study had all male participants.

More than half of the articles reported a majority African American study population (n=54). A total of 38.6% were comprised exclusively of African American participants. Income levels or socioeconomic status were largely unspecified (n=62). Of those studies reporting the socioeconomic status of their participants, there were none that targeted middle-class African Americans.

Of the studies analyzed for this review, 34 did not explicitly name an intervention; only 22.7% described a participant education component. There were 35 articles that explicitly identified a co-morbidity in the as a part of the study's focus; 25 of those articles focused on obesity.

FINDINGS

Prevention Studies

The majority of the T2DM literature focused on the treatment of T2DM complications (n=177), not prevention of the disease (n=101). The prevailing methodology of the prevention articles was quantitative (n=87); a small portion utilized mixed or multiple methods (n=8); and an even small number were strictly qualitative (n=6). Study designs for T2DM prevention varied widely, from pilot and feasibility studies (n=9) to randomized control trials (n=10); the largest study type, however, was observational (n=19).

A total of 16 interventions were named, including cultural adaptations of the National Institute of Health's (NIH) Diabetes Prevention Program (DPP). More than one-third (n=34) of the studies analyzed were written without explicitly naming an intervention. Only 22.7% described a participant education component (see Figure 2.2). Sample sizes ranged from two (2) to 27,899 individuals. Reported intervention duration ranged from eight (8) hours to 104 weeks.

Prevention and African Americans

There were a total of 54 articles with a majority of African American participants. Of those articles, two described different phases of the same study. The information from these articles was consolidated into one general entry for the study, to avoid overrepresentation. In total, there were 53 studies, with a majority (greater than 50%) African American sample population (see Figure 2.3). Information for those studies has been presented in Table 2.1. It should be noted however, that this review was

focused exclusively on studies including or targeting African Americans. Accordingly, this figure does not reflect the entire T2DM prevention landscape. Simply stated, of those studies purporting to research T2DM prevention in African Americans, 57.6% were comprised of majority African American study participants.

Income and Socio-Economic Status

None of the studies reviewed focused on middle-class African Americans. Income levels or socioeconomic status were largely unspecified (n=62). Of those that described the income or socioeconomic status of their participants, most were concentrated on the low-socioeconomic segment of the population (n=19); the remainder were simply described as mixed income (n=12).

Prevention in Youth

There were 33 studies that included youth in their study population. Only seven (7) of those studies included an adult or parent component, aside from providing consent for participation.

DISCUSSION

There is a lack of consensus surrounding best-practices for T2DM prevention in African Americans. The scope of T2DM prevention targeting African Americans varies greatly. There are a wide range of study types, sizes, methodologies, and approaches. In diabetes literature, there have been two previous reviews on diabetes prevention: one focused on African American youth; and one examined community-based interventions. There is no known review analyzing T2DM prevention for African Americans. Additionally, there is no known study focused on, or even specifically addressing,

middle-class African Americans. This poses problems for study replication and establishing reliability, both necessary tenants for advancement in this area of research. Additionally, there is a lack of health education interventions documented in the literature. Only one-third of the interventions analyzed in this review, which looks specifically at prevention efforts, reported employing participant education as an intervention strategy.

In 2003, Satterwhite, et al published a review of community-based lifestyle interventions aimed at preventing T2DM. This review included studies from 1990 to 2001, both inside and outside of the United States. Additionally, this article included, but was not focused specifically on, African Americans. The authors noted in their review that there was a “critical need to conduct and publish reports on well-designed community-based diabetes prevention research and share information on the process” (Satterfield et al., 2003, p. 2643). No known reviews surrounding T2DM prevention have been produced in the more than 15 years since that publication. This study also addressed general issues with study design. Specifically, the authors noted only one of the studies reviewed could be considered to have a true experimental design, and that in general, the interventions relied too heavily on community-based participatory research. Each of these issues lessened the ability of the field to “confirm the potential effectiveness of population-based endeavors to foster conditions that allow populations to be healthy, make healthy choices, and prevent diabetes” (Satterfield et al., 2003, p. 2651).

In 2007, Nwobu and Johnson published a review and recommendations from literature aimed at T2DM and other co-morbidity prevention in African American youth. This review addressed studies from 1997 to 2007. Here, the authors noted a need for more community-based input, while Satterwhite et al (2003) argued for less. Additionally, Nwobu and Johnson noted a need for the inclusion of families (i.e. parents, grandparents, etc.) in interventions targeting children. Only seven (7) of the 33 articles reviewed in this study included a parent or family component.

Carter, Pugh and Monterrossa (1996) reviewed existing diabetes literature in relationship to minorities and made recommendations to address disparities in the condition. These recommendations included screenings for any high risk individual, based on CDC guidelines (Carter, Pugh, & Monterrosa, 1996). The American Diabetes Association recommends screening individuals belonging to high-risk populations, including "members of racial or ethnic groups with a high prevalence of diabetes" (Carter et al., 1996). Both these recommendations would extend to the general body of African Americans. There is no evidence that suggests middle-class African Americans would not benefit from intervention. No known study has specifically examined this portion of the population. Of the studies describing the socio-economic status of their participants, they either targeted low-socioeconomic status individuals or treated African Americans as a homogenous group.

While it can be argued that low-socioeconomic status African Americans should be prioritized in prevention efforts, there is no evidence to suggest other segments of this

population should be ignored; in fact there has been no known research done on the subject. According to the CDC (2015),

Health disparities are preventable differences in the burden of disease, injury, violence, or opportunities to achieve optimal health that are experienced by socially disadvantaged populations. Populations can be defined by factors such as race or ethnicity, gender, education or income, disability, geographic location (e.g., rural or urban), or sexual orientation. Health disparities are inequitable and are directly related to the historical and current unequal distribution of social, political, economic, and environmental resources.

Middle-class African Americans, by virtue of race and, often times, environment meet the measure of this definition (Feagin & Sikes, 1994; Lareau, 2013; Pattillo, 2013). The persistence of the T2DM disparity in the African American community warrants further investigation and consideration of unconventional approaches.

CONCLUSIONS

Overall, despite the knowledge we have of the ongoing T2DM health disparity observed in African Americans, little documented evidence is available to show progress towards remedying this issue. African Americans are generally treated as a homogenous group in the literature, or there is an emphasis on those of lower socio-economic status. This approach leaves a large segment of the African American population unexamined and unserved.

In terms of health, middle-class African Americans experience many of the same negative health outcomes seen in the lower-socioeconomic sector of the population. Until it can be definitely established that income and education protect middle-class African Americans from risk factors, like family histories of T2DM, lack of specific health information or misinformation surrounding T2DM, or health damaging factors

present in the built environment, middle-class African Americans cannot reasonably be excluded from the efforts of intervention.

There is an urgent need to conduct and publish results on T2DM prevention research intended to address the T2DM health disparity facing African Americans. Specifically, with respect to health education, there is a need to document strategies prevention strategies intended to increase T2DM awareness and education. Sharing information on the processes, effectiveness, and lessons learned helps to advance the field and influence public health decision making. This study serves a large gap in the existing literature; its findings serve as a starting point and suggestion for future research in this area.

Figure 2.1 Literature Search Flow

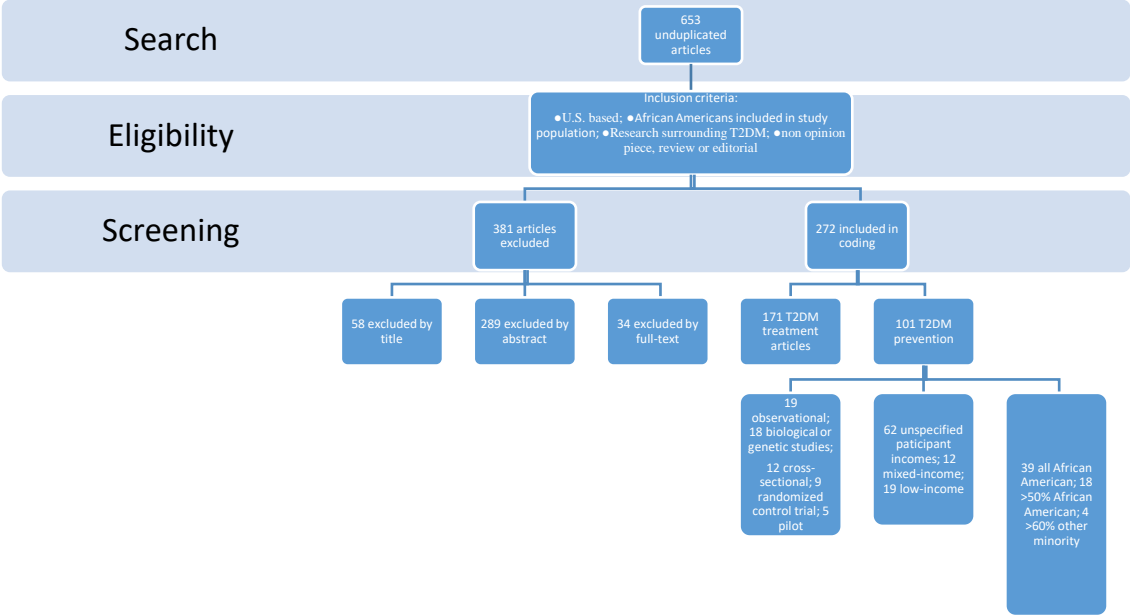
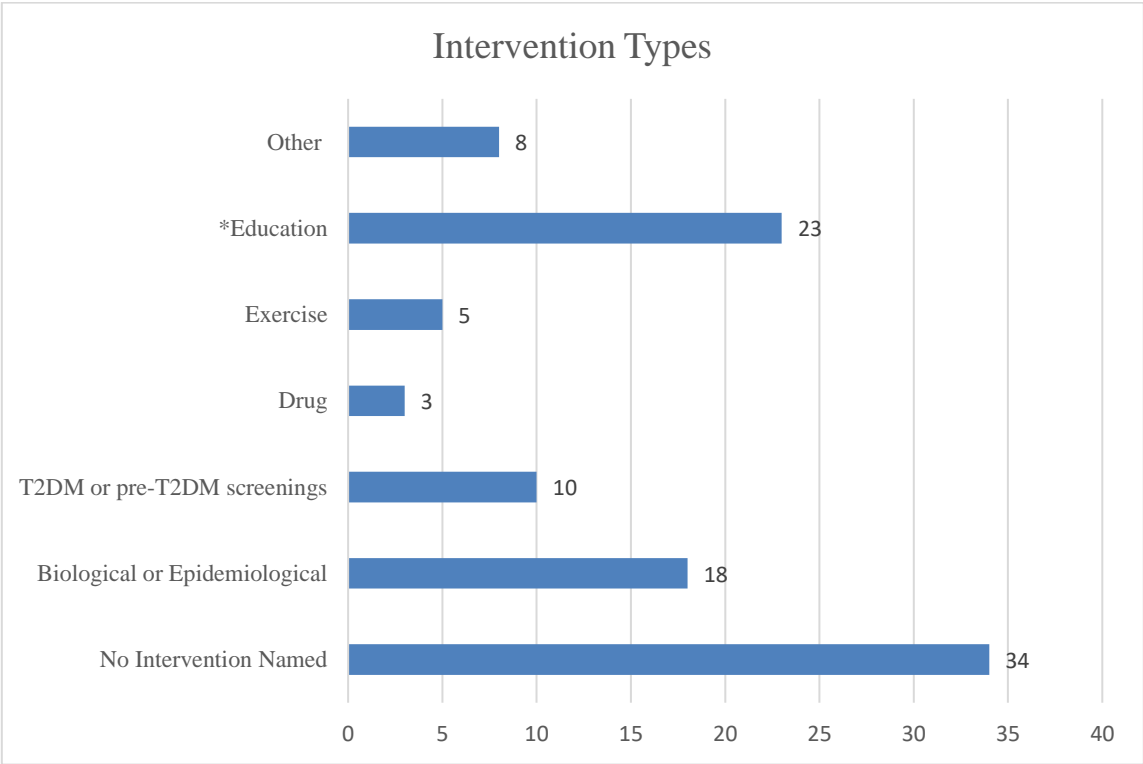


Figure 2.2 Intervention Types



* For the purposes of this study, all studies reporting a participant education component were included in the tally for education. These interventions often included other components, such as: education and exercise (n=13); T2DM screening, education and exercise (n=1); and education and support group (n=1).

Figure 2.3 Racial Composition of Study Population

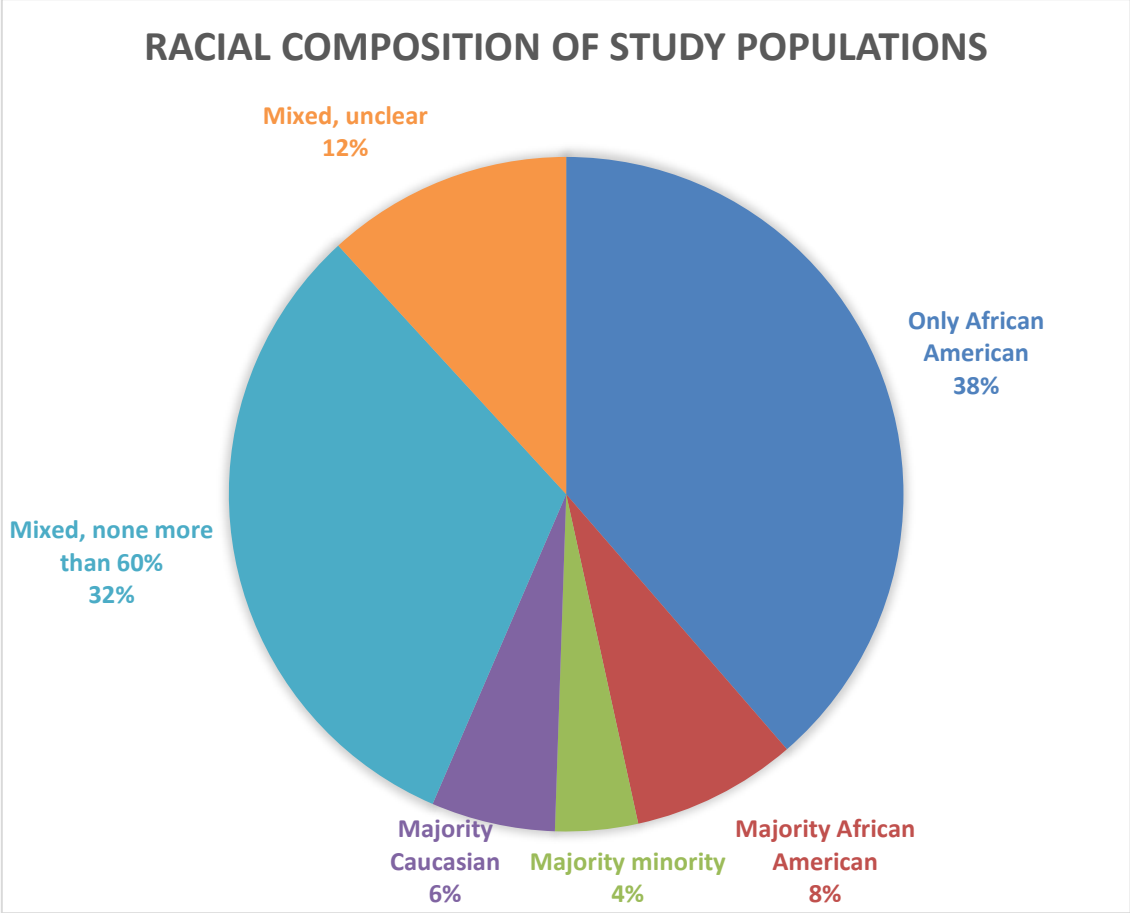


Table 2.1 Prevention Studies with Majority African American Participants

#	CITATION	Primary Focus T2DM Prevention	Co-morbidities	Youth or Adult	% AA	SES	Intervention style	Length (in weeks)
1	Auslander, W., Haire-Joshu, D., Houston, C., Rhee, C. W., & Williams, J. H. (2002). A controlled evaluation of staging dietary patterns to reduce the risk of diabetes in African-American women. <i>Diabetes care</i> , 25(5), 809-814.	Yes		adult	100	Low	education	12
2	Bernstein, A. M., Gendy, G., Rudd, N., Doyle, J., Fay, S., Moffett, K., ... & Golubic, M. (2014). Management of prediabetes through lifestyle modification in overweight and obese African-American women: the Fitness, Relaxation, and Eating to Stay Healthy (FRESH) randomized controlled trial. <i>Public health</i> , 128(7), 674.	Yes	Obesity	adult	100	Unspecified	Education and exercise	6
3	Brezo, J., Royal, C., Ampy, F., & Headings, V. (2005). Ethnic identity and type 2 diabetes health attitudes in Americans of African ancestry. <i>Ethnicity & disease</i> , 16(3), 624-632.	Yes		adult	100	Mixed	no intervention was used	--
4	Burnet, D. L., Plaut, A. J., Wolf, S. A., Huo, D., Solomon, M. C., Dekayie, G., ... & Chin, M. H. (2011). Reach-out: a family-based diabetes prevention program for African American youth. <i>Journal of the National Medical Association</i> , 103(3), 269-277.	Yes	Obesity	youth and adult	100	Mixed	education and exercise	14
5	Carter-Nolan, P. L., Adams-Campbell, L. L., & Williams, J. (1996). Recruitment strategies for black women at risk for noninsulin-dependent diabetes mellitus into exercise protocols: a qualitative assessment. <i>Journal of the National Medical Association</i> , 88(9), 558.	Yes		adult	100	Unspecified	no intervention was used	--
6	Cha, E., Kim, K. H., Umpierrez, G., Dawkins, C. R., Bello, M. K., Lerner, H. M., ... & Dunbar, S. B. (2014). A feasibility study to develop a diabetes prevention program for young adults with prediabetes by using digital platforms and a handheld device. <i>The Diabetes Educator</i> , 0145721714539736.	Yes		adult	53.8		telemedicine	--
7	Cotton, B., Smith, A., Walsh, A., Hansen, I., Davis, C., & Doyle, A. (2006). Physician-directed primary care intervention to reduce risk factors for type 2 diabetes in high-risk youth. <i>The American journal of the medical sciences</i> , 332(3), 108-111.	Yes	Obesity	youth	100	Low	education and exercise	12

Table 2.1 Continued

#	CITATION	Primary Focus T2DM Prevention	Co-morbidities	Youth or Adult	% AA	SES	Intervention style	Length (in weeks)
8	Dabelea, D., Mayer-Davis, E. J., Lamichhane, A. P., D'Agostino, R. B., Liese, A. D., Vehik, K. S., ... & Hamman, R. F. (2008). Association of intrauterine exposure to maternal diabetes and obesity with type 2 diabetes in youth the SEARCH case-control study. <i>Diabetes care</i> , 31(7), 1422-1426.	Yes		youth	54.4	Unspecified	genetics/biology/epidemiological	--
9	Dagogo-Jack, S., Edeoga, C., Ebenibo, S., Nyenwe, E., & Wan, J. (2014). Lack of racial disparity in incident prediabetes and glycemic progression among black and white offspring of parents with type 2 diabetes: the Pathobiology of Prediabetes in a Biracial Cohort (POP-ABC) study. <i>The Journal of Clinical Endocrinology & Metabolism</i> , 99(6), E1078-E1087.	No		adult	56.26	Unspecified	genetics/biology/epidemiological	--
10	Davis-Smith, Y. M., Davis-Smith, M., Boltri, J. M., Seale, J. P., Shellenberger, S., Blalock, T., & Tobin, B. (2007). Implementing a diabetes prevention program in a rural African-American church. <i>Journal of the National Medical Association</i> , 99(4), 440.	Yes		adult	100	Unspecified	education	6
11	Dodani, S., Kramer, M. K., Williams, L., Crawford, S., & Kriska, A. (2009). Fit body and soul: a church-based behavioral lifestyle program for diabetes prevention in African Americans. <i>Ethnicity & disease</i> , 19(2), 135.	Yes		adult	100		education and exercise	--
12	El Bassuoni, E. A., Ziemer, D. C., Kolm, P., Rhee, M. K., Vaccarino, V., Tsui, C. W., ... & Weintraub, W. S. (2008). The ß-cetabolic syndrome is less useful than random plasma glucose to screen for glucose intolerance. <i>Primary care diabetes</i> , 2(3), 147-153.	No		adult	53.55	Unspecified	genetics/biology/epidemiological	--
13	Faridi, Z., Shuval, K., Njike, V. Y., Katz, J. A., Jennings, G., Williams, M., ... & PREDICT Project Working Group. (2010). Partners reducing effects of diabetes (PREDICT): a diabetes prevention physical activity and dietary intervention through African-American churches. <i>Health education research</i> , 25(2), 306-315.	Yes		adult	100	Mixed	education and exercise	52
14	Foley, P., Levine, E., Askew, S., Puleo, E., Whiteley, J., Batch, B., ... & Miller, J. (2012). Weight gain prevention among black women in the rural community health center setting: the Shape Program. <i>BMC public health</i> , 12(1), 1.	No	Obesity	adult	>60		randomized control trial	--
15	Foley, P., Levine, E., Askew, S., Puleo, E., Whiteley, J., Batch, B., ... & Miller, J. (2012). Weight gain prevention among black women in the rural community health center setting: the Shape Program. <i>BMC public health</i> , 12(1), 1.	No	Obesity	adult	100	Low	other (specify)	78

Table 2.1 Continued

#	CITATION	Primary Focus T2DM Prevention	Co-morbidities	Youth or Adult	% AA	SES	Intervention style	Length (in weeks)
16	Gaillard, T. R., Sherman, W. M., Devor, S. T., Kirby, T. E., & Osei, K. (2007). Importance of aerobic fitness in cardiovascular risks in sedentary overweight and obese African-American women. <i>Nursing research</i> , 56(6), 407-415.	No	obesity and cardio-vascular disease	adult	100	Unspecified	no intervention was used	--
17	Glueck, C. J., Wang, P., Woo, J. G., Morrison, J. A., Khoury, P. R., & Daniels, S. R. (2015). Adolescent and young adult female determinants of visceral adipose tissue at ages 26-28 years. <i>The Journal of pediatrics</i> , 166(4), 936-946.	No		youth and adult	50.4	Unspecified	genetics/biology/epidemiological	--
18	Grey, M., Berry, D., Davidson, M., Galasso, P., Gustafson, E., & Melkus, G. (2004). Preliminary Testing of a Program to Prevent Type 2 Diabetes Among High-Risk Youth. <i>Journal of School Health</i> , 74(1), 10-15.	Yes		youth and adult		Unspecified	education and exercise, other (specify)	16
19	Gutierrez, J., Devia, C., Weiss, L., Chantarat, T., Ruddock, C., Linnell, J., ... & Calman, N. (2014). Health, Community, and Spirituality Evaluation of a Multicultural Faith-Based Diabetes Prevention Program. <i>The Diabetes Educator</i> , 40(2), 214-222.	Yes		adult	58.5	Low	education and exercise	--
20	Gutin, B., Cucuzzo, N., Islam, S., Smith, C., & Stachura, M. E. (1996). Physical training, lifestyle education, and coronary risk factors in obese girls. <i>Medicine and science in sports and exercise</i> , 28(1), 19-23.	No	cardio-vascular disease	youth	100	Unspecified	education and exercise	10
21	Harvey, I., Schulz, A., Israel, B., Sand, S., Myrie, D., Lockett, M., ... & Hill, Y. (2009). The Healthy Connections project: a community-based participatory research project involving women at risk for diabetes and hypertension. <i>Progress in community health partnerships: research, education, and action</i> , 3(4), 287-300.	Yes	Hypertension	adult	100	Unspecified	screenings	--
22	Islam, A., Chen, Y., Poth, M., Smith, Z. P., & Deuster, P. A. (2012). Glucocorticoid receptor density correlates with health risk factors and insulin resistance in caucasian and african american subjects. <i>Experimental and clinical endocrinology & diabetes</i> , 120(08), 477-481.	No		adult	>60	Unspecified	genetics/biology/epidemiological	--
23	Jefferson, V. W., Melkus, G. D., & Spollett, G. R. (2000). Health-promotion practices of young black women at risk for diabetes. <i>The Diabetes Educator</i> , 26(2), 295-302.	Yes		adult	100	Mixed	no intervention was used	--
24	Jones, E. D., Kennedy-Malone, L., & Wideman, L. (2004). Early detection of type 2 diabetes among older African Americans. <i>Geriatric Nursing</i> , 25(1), 24-28.	No		adult	100	Low	no intervention was used	--

Table 2.1 Continued

#	CITATION	Primary Focus T2DM Prevention	Co-morbidities	Youth or Adult	% AA	SES	Intervention style	Length (in weeks)
25	Krishnan, S., Rosenberg, L., & Palmer, J. R. (2009). Physical Activity and Television Watching in Relation to Risk of Type 2 Diabetes The Black Women's Health Study. <i>American journal of epidemiology</i> , 169(4), 428-434.	No		adult	100	Unspecified	no intervention was used	--
26	Krishnan, S., Rosenberg, L., Singer, M., Hu, F. B., Djouss, L., Cupples, L. A., & Palmer, J. R. (2007). Glycemic index, glycemic load, and cereal fiber intake and risk of type 2 diabetes in US black women. <i>Archives of Internal Medicine</i> , 167(21), 2304-2309.	Yes		adult	100	Unspecified	no intervention was used	--
27	Lipman, T. H., Schucker, M. M., Ratcliffe, S. J., Holmberg, T., Baier, S., & Deatrick, J. A. (2011). Diabetes risk factors in children: A partnership between nurse practitioner and high school students. <i>MCN: The American Journal of Maternal/Child Nursing</i> , 36(1), 56-62.	Yes		youth	100	Unspecified	no intervention was used	--
28	Magge, S. N., Stettler, N., Jawad, A. F., & Katz, L. E. L. (2009). Increased prevalence of abnormal glucose tolerance among obese siblings of children with type 2 diabetes. <i>The Journal of pediatrics</i> , 154(4), 562-566. Chicago	Yes	Obesity	youth	100	Unspecified	genetics/biology/epidemiological	--
29	McNabb, W., Quinn, M., Kerver, J., Cook, S., & Karrison, T. (1997). The PATHWAYS church-based weight loss program for urban African-American women at risk for diabetes. <i>Diabetes Care</i> , 20(10), 1518-1523.	Yes	Obesity	adult	100	Unspecified	education	--
30	Murimi, M., Chrisman, M. S., McAllister, T., & McDonald, O. D. (2014). Fostering Healthy Lifestyles in the African American Population. <i>Health Education & Behavior</i> , 1090198114540465.	Yes		adult		Low	education and exercise, screenings, other (specify)	24
31	Murrock, C. J., & Gary, F. A. (2008). A culturally-specific dance intervention to increase functional capacity in African American women. <i>Journal of cultural diversity</i> , 15(4), 168.	No		adult	100	Mixed	exercise	8
32	Newton, R. L., Johnson, W. D., Hendrick, C., Harris, M., Andrews, E., Johannsen, N., ... & Church, T. S. (2015). A randomized controlled exercise training trial on insulin sensitivity in African American men: The ARTIIS study: Major category: study design, statistical design, study protocols. <i>Contemporary clinical trials</i> , 43, 75-82.	Yes	Obesity	adult	100	Unspecified	exercise	20

Table 2.1 Continued

#	CITATION	Primary Focus T2DM Prevention	Co-morbidities	Youth or Adult	% AA	SES	Intervention style	Length (in weeks)
33	Osei, K., Rhinesmith, S., Gaillard, T., & Schuster, D. (2004). Beneficial metabolic effects of chronic glipizide in obese African Americans with impaired glucose tolerance: implications for primary prevention of type 2 diabetes. <i>Metabolism</i> , 53(4), 414-422.	Yes	Obesity	adult	100	Unspecified	genetics/biology/epidemiological	--
34	Osei, K., Rhinesmith, S., Gaillard, T., & Schuster, D. (2004). Beneficial metabolic effects of chronic glipizide in obese African Americans with impaired glucose tolerance: implications for primary prevention of type 2 diabetes. <i>Metabolism</i> , 53(4), 414-422.	Yes	Obesity	adult	100		genetics/biology/epidemiological	--
35	Osei, K., Rhinesmith, S., Gaillard, T., & Schuster, D. (2004). Impaired Insulin Sensitivity, Insulin Secretion, and Glucose Effectiveness Predict Future Development of Impaired Glucose Tolerance and Type 2 Diabetes in Pre-Diabetic African Americans Implications for primary diabetes prevention. <i>Diabetes Care</i> , 27(6), 1439-1446.	Yes		adult	100	Unspecified	genetics/biology/epidemiological	--
36	Owens, C. S. (2008). Diabetes and obesity risks in African American young adult freshmen attending a historically Black college/university. <i>Journal of health care for the poor and underserved</i> , 19(4), 1096-1118.	Yes	Obesity	adult	100	Unspecified	no intervention was used	--
37	Phillips, L. S., Ziemer, D. C., Kolm, P., Weintraub, W. S., Vaccarino, V., Rhee, M. K., ... & Koch, D. D. (2009). Glucose challenge test screening for prediabetes and undiagnosed diabetes. <i>Diabetologia</i> , 52(9), 1798-1807.	Yes		adult	58	Unspecified	screenings	No
38	Rafalson, L., Eysaman, J., & Quattrin, T. (2011). Screening obese students for acanthosis nigricans and other diabetes risk factors in the urban school-based health center. <i>Clinical pediatrics</i> , 50(8), 747-752.	Yes	Obesity	youth		Low	screenings	--
39	Raman, A., Fitch, M. D., Hudes, M. L., Lustig, R. H., Murray, C. B., Ikeda, J. P., & Fleming, S. E. (2008). Baseline Correlates of Insulin Resistance in Inner City High-BMI African American Children. <i>Obesity</i> , 16(9), 2039-2045.	Yes	Obesity	youth	100	Unspecified	genetics/biology/epidemiological	--
40	Ritchie, L. D., Sharma, S., Ikeda, J. P., Mitchell, R. A., Raman, A., Green, B. S., ... & Fleming, S. E. (2010). Taking action together: a YMCA-based protocol to prevent type-2 diabetes in high-BMI inner-city African American children. <i>Trials</i> , 11(1), 1.	Yes	Obesity	youth	100	Low	education and exercise	52 to 104
41	Schuster, D., Gaillard, T., Rhinesmith, S., Habash, D., & Osei, K. (2003). The impact of an insulin sensitizer, troglitazone, on glucose metabolism in African Americans at risk for type 2 diabetes mellitus: a placebo-controlled, 24-month randomized study. <i>Metabolism</i> , 52(9), 1211-1217.	Yes	Obesity	adult	100	Unspecified	drug therapy	--

Table 2.1 Continued

#	CITATION	Primary Focus T2DM Prevention	Co-morbidities	Youth or Adult	% AA	SES	Intervention style	Length (in weeks)
42	Sharma, S., & Fleming, S. E. (2012). One-year change in energy and macronutrient intakes of overweight and obese inner-city African American children: effect of community-based Taking Action Together type 2 diabetes prevention program. <i>Eating behaviors</i> , 13(3), 271-274.	Yes	Obesity	youth	100	Low	education	52
43	Staiano, A. E., Abraham, A. A., & Calvert, S. L. (2013). Adolescent exergame play for weight loss and psychosocial improvement: a controlled physical activity intervention. <i>Obesity</i> , 21(3), 598-601.	No	Obesity	youth	100	Unspecified	exercise	20
44	Stuart, C. A., Gilkison, C. R., Keenan, B. S., & Nagamani, M. (1997). Hyperinsulinemia and acanthosis nigricans in African Americans. <i>Journal of the National Medical Association</i> , 89(8), 523.	No		adult	100	Unspecified	screenings	--
45	Tang, T. S., Nwankwo, R., Whiten, Y., & Oney, C. (2012). Training peers to deliver a church-based diabetes prevention program. <i>The Diabetes Educator</i> , 38(4), 519-525.	Yes		adult	100	Unspecified	other (specify)	8 hours
46	Vivian, E. M., Carrel, A. L., & Becker, T. (2011). Identifying children at risk for type 2 diabetes in underserved communities. <i>The Diabetes Educator</i> , 37(4), 519-527.	Yes		youth	>60	Mixed	screenings	--
47	Warren, T. Y. (2012). Independent association of waist circumference with hypertension and diabetes in African American women, South Carolina, 2007-2009. <i>Preventing chronic disease</i> , 9.	No	Obesity	adult	100	Mixed	education and exercise	60
48	Williams, J. H., Auslander, W. F., de Groot, M., Robinson, A. D., Houston, C., & Haire-Joshu, D. (2006). Cultural relevancy of a diabetes prevention nutrition program for African American women. <i>Health Promotion Practice</i> , 7(1), 56-67.	Yes		adult	100	Unspecified	no intervention was used	--
49	Williams, L. B., Sattin, R. W., Dias, J., Garvin, J. T., Marion, L., Joshua, T., ... & Narayan, K. V. (2013). Design of a cluster-randomized controlled trial of a diabetes prevention program within African American churches: the fit body and soul study. <i>Contemporary clinical trials</i> , 34(2), 336-347.	Yes		adult	100		education and exercise	--
50	Wilson, D. M., Wang, Y., Cullen, K. W., Baranowski, T., Himes, J. H., Gross, M., ... & Robinson, T. N. (2004). Assessing Weight-Related Biochemical Cardiovascular Risk Factors in African American Girls. <i>Obesity research</i> , 12(S9), 73S-83S.	Yes	cardio-vascular disease	youth	100	Unspecified	genetics/biology/epidemiological	12

Table 2.1 Continued

#	CITATION	Primary Focus T2DM Prevention	Co-morbidities	Youth or Adult	% AA	SES	Intervention style	Length (in weeks)
51	Wofford, L., Froeber, D., Clinton, B., & Ruchman, E. (2013). Free afterschool program for at-risk African American children: Findings and lessons. <i>Family & community health</i> , 36(4), 299-310.	Yes		youth	100	Low	education and exercise	12
52	Young-Hyman, D., Schlundt, D. G., Herman, L., De Luca, F., & Counts, D. (2001). Evaluation of the insulin resistance syndrome in 5-to 10-year-old overweight/obese African-American children. <i>Diabetes care</i> , 24(8), 1359-1364.	Yes	Obesity	youth	100	Unspecified	no intervention was used	--
53	TAKING ACTION TOGETHER	Yes	Obesity	youth	100	Low	education and exercise	2
	Fyfe, M., Raman, A., Sharma, S., Hudes, M. L., & Fleming, S. E. (2011). Insulin resistance and self-perceived scholastic competence in inner-city, overweight and obese, African American children. <i>Physiology & behavior</i> , 102(1), 36-41.	Yes	Obesity	youth	100	Low	no intervention was used	--
	Raman, A., Ritchie, L. D., Lustig, R. H., Fitch, M. D., Hudes, M. L., & Fleming, S. E. (2010). Insulin resistance is improved in overweight African American boys but not in girls following a one-year multidisciplinary community intervention program. <i>Journal of Pediatric Endocrinology and Metabolism</i> , 23(1-2), 109-120.	Yes	Obesity	youth	100		education and exercise	2

CHAPTER III

MEASURING TYPE 2 DIABETES MELLITUS KNOWLEDGE AND PERCEPTIONS OF RISK IN MIDDLE-CLASS AFRICAN AMERICANS

INTRODUCTION

African Americans are disproportionately represented in Type 2 diabetes mellitus (T2DM) statistics (American Diabetes Association, 2013; Centers for Disease Control and Prevention, 2013). African Americans are 1.7 times more likely to develop T2DM than non-Hispanic Whites (American Diabetes Association, 2013). African Americans are also more likely to develop and die from complications associated with T2DM, even after adjustments for factors like insurance, socioeconomic status, and behavioral and clinical risk factors (Karter et al., 2002; Lanting, Joung, Mackenbach, Lamberts, & Bootsma, 2005)

Despite numerous interventions at various societal levels disparities rates and excess deaths associated with chronic conditions, like T2DM, for African Americans have worsened over the past 30 years (Airhihenbuwa & Liburd, 2006; Zhang, Wang, & Huang, 2009). Since 1980, the age-adjusted prevalence of diabetes in African Americans, compared to Caucasians, has increased by 66% (Peters, 2003). The issue of health disparities is complex, effected by innumerable variables like place, education, income, etc. Health disparities in the United States have a historical context, and are rooted in present day systems and social constructs (Jones et al., 2016). The problem begs to be investigated in a different way.

According to the CDC (2011), African Americans reported the lowest perceived risk, but were the highest at-risk, racial subgroup. In 2006, the National Diabetes Education Program (NDEP) began collecting data on knowledge and awareness levels surrounding diabetes in United States. NDEP developed its National Diabetes Survey (NDS), to collect data that could be used to inform improvements and new initiatives for the NDEP and the various public and private organizations with whom it collaborates (Piccinino, Griffey, Gallivan, Lotenberg, & Tuncer, 2015). The NDS was administered in 2006, 2008, and 2011. The most recent findings showed an overall decline in perceptions of risk for diabetes were significant among African Americans (Piccinino et al., 2015). Perceptions of risk often influence health behaviors, contributing to action or inaction at the individual level (Bandura, 2004). Piccinino et al (2015), discuss the need for future research focused on specific questions pertaining to behavioral change and identification of strategic efforts that may be used in educational interventions.

Widely respected and utilized surveys like the Behavioral Risk Factor Surveillance System (BRFSS), showcase the prevalence of risk factors and correlations with the participants' general quality of life (Ford, Moriarty, Zack, Mokdad, & Chapman, 2001). Neither the BRFSS nor NNDS thoroughly examine the reasons why these perceptions and risk factors persist among African Americans. In addition, both surveys have been administered via telephone. To date, the NNDS survey has only utilized respondents with land lines. Accordingly, even responses to open-ended questions, like the ones utilized in the NNDS, provide limited information. Open-ended questions, asked in person, by an interviewer who has had a chance to develop rapport

with the respondent and can probe for additional information when warranted, has the potential to provide much richer data. Lastly, aside from sample weighting, neither survey accounted for cultural or environmental factors that may be contributing to the reported health behaviors; neither study teased out data about African Americans by variables other than race.

There is also a paucity in the literature examining the African-American middle-class (Lareau, 2013). Most studies of African Americans and T2DM have concentrated on lower-SES individuals, or there is no distinction made between African Americans of varying socio-economic positions (LaVeist, 2011). However, middle-class African Americans are vulnerable in ways often overlooked by researchers. There are assumptions made that this particular demographic is more firmly rooted in the conventional notions of the middle-class, which has been removed from the dangers of poverty and is protected by their higher levels of formal education (Feagin & Sikes, 1994; Pattillo, 2013). These assumptions neglect key caveats, however. For example, middle-class African American neighborhoods are often segregated and lack many of the resources and health promoting factors associated with the middle-class majority (LaVeist, 2011; Pattillo, 2013).

Piccinino et al (2015), examined the constructs of knowledge and perceptions of risk independently. Examining the relationship between these constructs, within individuals, may identify disconnects that can be targeted in future prevention efforts. This study examines, what has been termed for the purposes of this study, mid-socioeconomic status (SES) status African Americans. Very little attention has been paid

to developing the knowledge base around effective prevention strategies to address the persistent T2DM development rates observed in the African American community. This study attempts to address that gap in the T2DM literature by examining diabetes knowledge levels and perceptions of risk in mid-SES African Americans, a group largely neglected in the existing literature. This study is the first known examination of correlations between knowledge and perceptions of T2DM risk in African Americans.

This study will look at, what I am terming, mid-SES status African Americans. The definition of SES is not standardized, but is generally a measure which combines income and educational attainment (Adler et al., 1994). For the purposes of this study, mid-SES will be used to describe individuals with a high school diploma, or its equivalent, who meet an income threshold for middle-class in the State of Louisiana, which has been calculated as a minimum household income of \$30,066. This value was calculated using Pews definition for middle class and census data for the state of Louisiana (The PEW Charitable Trust, 2015; United States Census Bureau, 2015).

METHODS

Population

This study examines diabetes knowledge and perceptions in mid-socioeconomic status African Americans, residing in New Orleans, Louisiana. The T2DM rate in New Orleans, Louisiana (12.3%) exceeds the state and national averages (10.3% and 8.7%, respectively) (New Orleans Health Department, 2013). The definition of SES is not standardized in the literature, but is generally a measure which combines income and educational attainment (Adler et al., 1994). For the purposes of this study, mid-SES was

used to describe individuals with a high school diploma, or its equivalent, who meet an income threshold for middle-class in the State of Louisiana, which has been calculated as a minimum household income of \$30,066. This value was calculated using PEWS definition for middle class and census data for the state of Louisiana (The PEW Charitable Trust, 2015; U.S. Census Bureau, 2015).

Sample

This study essentially serve as a pilot or “proof-of-concept” study. The literature suggests that a range of 59 to 75 participants is sufficient for a pilot study (Thabane et al., 2010; Viechtbauer et al., 2015). Accordingly, the target number of participants for this portion of the study was 75 participants. According to Thabane, et al (2010), this sample size allows for a 95% confidence interval, with a lower bound of 0.70 and a margin of error of 0.05. The nature of the study (i.e. target population, time frame, financial resources, etc.) lent itself best to snowball sampling. Snowball sampling is a form of convenience sampling. Voicu and Babonea (2007) describe that “snowball sampling is normally used wherever there is little knowledge on the target population, whose boundaries or number are hard to define and the development of a sampling database is difficult if not impossible to achieve by the researcher” (p. 1341). This method has been criticized for attracting individuals with similar socioeconomic and geographic backgrounds (Emerson, 2015). In this study, however, those shared similarities are desired.

Participant Recruitment

Community gatekeepers were engaged to promote and encourage participation within their specific groups and organizations (Tushman & Katz, 1980). Targeted groups included, but were not limited to alumni associations, civic organizations, churches, fraternities and sororities, home owners' associations, and professional networks. The study was also promoted via social media, namely Facebook and Instagram. In an effort to encourage participation, a grand prize of two tickets to the 2016 Essence Festival was offered to all survey participants. The prize was intended to attract potential respondents and reflect New Orleans culture. The Essence Festival is a signature New Orleans event, held annually to “celebrate R&B music, community and black culture” (Johnson, 2014).

Survey Instrument

The survey instrument for this study combined questions used to assess risk and perceptions of risk by combining two separated surveys- the ADA for assessing risk level, and the NDEP for measuring diabetes knowledge. The ADA's *Type 2 Diabetes Risk Test* contains seven questions related to the respondent's health status. Each item was given a prescribed point value. Respondents with score totals of five (5) or higher are considered at increased risk for T2DM development (ADA, 2014). The NDEP's NNDS contains 22 questions regarding: demographics, knowledge of T2DM risk factors, and personal risk factors (Social & Scientific Systems, 2009). An additional 10 questions were added as screeners for participant eligibility. The completed survey is located in the appendix (see Appendix A).

Procedure

A link to the study's survey was sent electronically for online participation. The survey was initiated by 164 unique respondents. There were 121 completed surveys used in the analysis; the response rate was 73.78% (121/164). Surveys that were completed in less than one minute, according to the Qualtrics time stamp were excluded during the data cleaning process; accordingly, nine surveys were eliminated. Surveys without responses beyond the initial screening questions for income, education and residency were also excluded; accordingly, 24 surveys were eliminated. Surveys with more than half of the questions unanswered were excluded for lack of completion; accordingly, four surveys were eliminated. The response rate of eligible respondents that completed the survey was 92.3% (121/131).

Analysis

Survey responses were collected through Qualtrics, a secured on-line survey software. Survey responses were coded and analyzed using the statistical software package IBM SPSS 23. Descriptive analysis included participants' demographics, response frequency, and relationships between knowledge and perceptions of risk. Pearson correlations were computed to analyze relationships between participants' calculated risk total, based on the ADA's Risk Assessment, and perceived risk, age, and education levels.

RESULTS

The sample was restricted to individuals self-identifying as African American, with a household income at or above \$30,066 per year. The mean age was 47 years, with

a median age of 51 years and the range was 19 to 70 years. The majority of the respondents, 86.8%, were female. A total of 39.7% identified as married. The largest portion of the sample had a bachelor's degree (34.7%); 28.1% held a Master's degree; and 17.3% reported having a doctorate or professional degree (See Table 3.1).

T2DM was viewed as a “very serious” condition by 90.1% of respondents. Only 5% of the participants were able to correctly identify all the risk factors presented in the survey; 89.3% of those surveyed missed one or more of the risk factors presented; only 1.7% admitted to not knowing the risk factors. The majority of respondents, 70.2%, were unable to correctly identify all the warning signs of T2DM development from a pre-populated list of choices. Nearly all the respondents, 96.7%, correctly selected that it was possible to have T2DM and not know it. Only 3.3% of respondents correctly identified all risk factors provided as options in the survey as “possible causes” of T2DM development. Lack of exercise was selected as a “definite cause” by 45.5% of respondents; 43.0% of respondents listed heredity as a “definite cause” in T2DM development; 30.6% listed sugar as a “definite cause”; 29.8% listed eating fatty foods as a “definite cause”; 19.8% listed race as a “definite cause”; 7.4% listed salt as a “definite cause” (see Table 3.2).

The difference between those participants who considered themselves to be at risk for T2DM development and their level of risk, according to the ADA's risk assessment, was not statistically significant ($p=0.397$). However, there were statistically significant differences between participants' perceptions of their weight and clinical definitions of overweight, based on BMI ($p=.000$). The majority of participants, 54.5%,

had a singular definition of the term “overweight.” Of that majority, most reported relying solely on the scale for their personal definition of overweight.

T2DM Specific Knowledge

Only 3.3% of respondents correctly identified risk factors provided as options in the survey as “possible causes” of T2DM development. Failure to identify a risk factor by selecting “not a cause,” shows a lack of knowledge. Perhaps just as important to note is the selection of “definite cause,” opposed to “possible cause.” This suggests limited self-efficacy or autonomy in terms of disease development. For example, an individual who believes that heredity (one of the option listed) is a “definite cause” may feel limited self-efficacy or control to prevent T2DM development, if they have a family history of the disease. In another example, an individual who believes too much sugar is a “definite cause” may feel overly confident in his or her ability to avoid T2DM development, because they have conditioned themselves to avoid “sweets.”

Perceptions of Risk

Of those surveyed, 1.7% of participants stated that they did not know the risk factors for T2DM development. The majority of respondents, 62.0%, knew that some types of diabetes were preventable; 38%, however, either did not know T2DM was preventable, or thought that all types of diabetes were preventable. The same percentage of individuals listed age as a possible cause, as listed it as “not a cause of diabetes”, both at 45.5%. This suggests that nearly half the study population are unaware of the fact that their risk for T2DM development increases as they age.

There were statistically significant differences between perceptions of weight and clinical definitions of overweight, a risk factor for T2DM development, based on BMI ($p=.000$). Respondents were asked, via a multiple choice question with the potential to select all answers that applied, how they defined “overweight”. Respondents were given six choices to select from (e.g., the number on the scale, my BMI, what my doctor says, how I look and feel, how I look compared to other people, how I look compared to other people like me). The majority of respondents (54.5%) selected only one option. Of those selecting only one option, the largest percentage of respondents reported defining being overweight solely by the number on the scale (21.5%); 14.9% selected “how I look and feel”, 12.4% selected “BMI”, only 5% selected “what my doctor says”.

Correlations

This study did not find a correlation between participants’ perceptions of risk and actual risk, based on the ADA’s risk assessment ($p = .110$). There was a statistically significant, negative correlation ($p = -.748$) found between ADA risk totals and age, with significance set at the 0.01 level. There was also a statistically significant, negative correlation ($p = -.214$) found between ADA risk totals and education, with significance set at the .05 level (see Table 3.3).

DISCUSSION

This study did not find a statistically significant relationship between participants’ perception of and actual risk for T2DM development. This is important to note because it suggested that participants’ beliefs about, or perceptions of, their risk were often discordant with their actual risk. Piccinino et al. (2015) also found low

perceptions of risk among African Americans when examining trends from the National Diabetes Survey. Knowledge of this disconnect, between perceived and actual risk, may be valuable to health educators. Findings such as this also identify a need for health education within this segment of the population.

It is important to note the misinformation viewed as facts in the study population that may contribute to the high rates of T2DM in the African American population. For example, obesity is often targeted in interventions seeking to impact chronic conditions like T2DM (Dagogo-Jack, 2003). It has been noted, however, that obesity is often defined differently across cultures (Carter et al., 1996; Dagogo-Jack, 2003). In a study of African American women, Jefferson, Melkus, and Spollett (2000) found a “propensity towards obesity, despite education or income levels” (p. 295). Of all the respondents, only 5% included “what my doctor says” in his or her matrix for defining overweight. Participants reported basing their self-assessments on more subject measures like the number on the scale (without relationship to height), or how they looked or felt in their clothes. This has implications for health communicators and public health practitioners seeking to spread T2DM prevention messages by targeting obesity defined by clinical standards, like BMI.

Similar to our findings, Brezo, Royal, Ampy and Headings (2006) found that, “Members of different ethnic communities differ in their evaluation of disease burden, expectations for health providers, interpretation and perception of personal risk, coping, and health-seeking behaviors” (p. 624). Lack of information, or misconceptions, reveal opportunities for health educators and communicators to lessen the knowledge gap

between public health practitioners and lay persons. If individuals believe that T2DM cannot be prevented, or that it is a death sentence, or that it is reversible, it effects the seriousness with which they approach prevention efforts. Bozack, et al, (2013) noted a lack of evidence regarding knowledge change in diabetes prevention programs largely deemed as successful. This reflects a lack of missing baseline measures for participant knowledge upon entering the program. Ascertaining gaps in knowledge in the study population may help researchers and practitioners to address these gaps and misperceptions in prevention efforts.

Many interventions and programs targeting African Americans with T2DM make certain assumptions about the population's knowledge levels in the area of T2DM. For example, messages targeting the “overweight” assume individuals receiving the message, share the sender’s definition of the term. This overlooks self-perceptions of weight appropriateness (Chang & Christakis, 2003). Accordingly, messages about being overweight may miss individuals that do not view themselves as such. Additionally, there have been studies controlling for obesity and specific lifestyle factors that still show increased risk for T2DM development in minority populations (Dagogo-Jack, 2003). The condition is still largely preventable, even if extra caution should be exacted in these populations. Without knowledge of the risk, or the methods by which this risk can be mitigated, however, improvements in the T2DM disparity rates appear unlikely.

Previous studies looking at knowledge levels and perceptions in African Americans have typically focused on one of two main areas. First, examining diabetes knowledge in terms of self-care management, not risk and causality in the undiagnosed.

Second, studies have examined differences between knowledge levels of individuals with and without family histories of diabetes. Brezo, Royal, Ampy, and Headings (2006), found African Americans with family histories of diabetes were more aware of diabetes risk factors and more likely to engage in certain health behaviors than African Americans without such a history. These findings demonstrate a relationship between knowledge and action with respect to African Americans and T2DM. This also suggests, however, a lack of knowledge in those individuals without family histories of T2DM. The authors also noted that family-based communication may lead to misconceptions about T2DM. If the only exposure these individuals have to T2DM information is from relatives with the condition, and this information may be inaccurate, family members may inadvertently be contributing to miseducation of their family members. Noting that African Americans also experience worse T2DM outcomes and die at disproportionate rates from T2DM associated complications, it is worth asking what information is being communicated between family members. If these family members are trusted sources of information, causal, non-targeted or peripheral messages about this condition may be ignored because they do not fit or align with messages received from trusted sources. This makes the job of the health educator perhaps more difficult, but also, more necessary. Brezo, Royal, Ampy, and Headings (2006), also stated, “how a disease is perceived and whether information about the diagnosis, susceptibility, and risk factors is shared in families and communities may also be a function of whether that disease is perceived as stigmatizing” (p. 630). The converse can also be argued convincingly--

information shared about a condition can contribute to the perception of the condition as innocuous, normal, or unavoidable.

Studies similar to this one have been conducted outside of the United States, in areas where T2DM prevalence and associated negative health outcomes were high (Mukeshimana & Nkosi, 2014; Kasinathan, Girijakumari, Marimuthu, Ramar, & Muthusamy, 2013). U.S. studies with other minority populations with disproportionately high T2DM rates, like Hispanic Americans, have also been conducted to examine knowledge gaps (Okosun, Davis-Smith, & Seale, 2012). Okosun, Davis-Smith, & Seale (2012) found awareness of increased risk was associated with the implementation of healthy lifestyle factors in diabetes free Americans. The authors noted, however, that cultural sensitivity of interventions was also paramount for optimal effectiveness.

CONCLUSIONS

T2DM continues to effect African Americans at disproportionate rates. Middle-class African Americans are not inherently protected or exempt from developing this condition, yet little research has examined this population. This pilot study demonstrates gaps in knowledge and overall non-congruent levels of perceived susceptibility that indicate a need for additional research and health education in this segment of the population.

Table 3.1 Survey Participants' Demographics

Category	(N=121)
Age, mean (SD)	47 (12.97)
Sex, n (%)	
Female	105 (86.8%)
Male	16 (13.2%)
Marital Status	
Single	10 (50%)
Married	4 (39.7%)
Divorced	3 (15%)
Widowed	3 (15%)
Education, n (%)	
High School Diploma or GED	21 (17.3%)
Associate's Degree	3 (2.4%)
Bachelor's Degree	42 (34.7%)
Master's Degree	34 (28.0%)
Professional Degree or Doctorate	21 (17.3%)

Table 3.2 Participants' Responses to Question of T2DM Causes

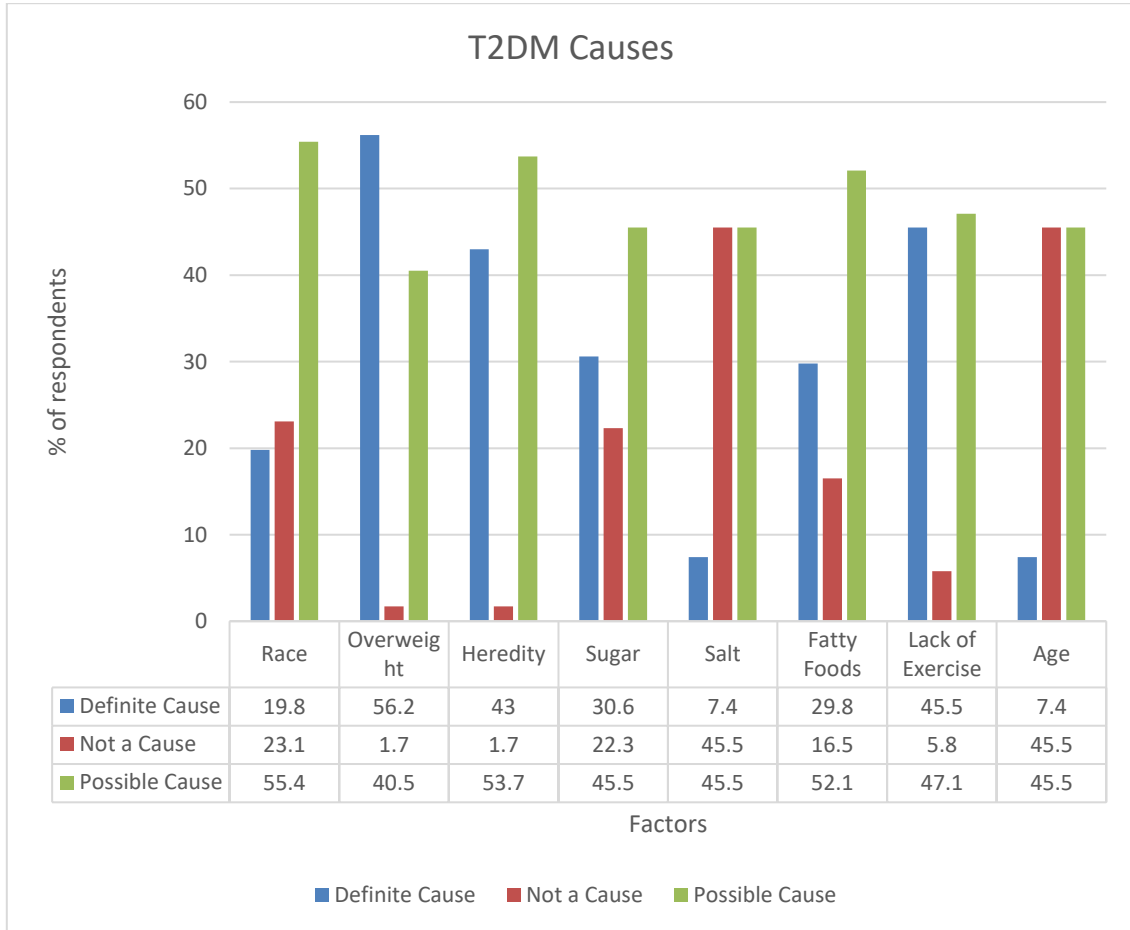


Table 3.3 Correlation to American Diabetes Association’s Risk Assessment

		Correlations			
		RISK_DEV_DIAB_CODE	ADA_RF_TOTAL	Age	[EDU]
RISK_DEV_DIAB_CODE	Pearson Correlation	1	.146	.011	.006
	Sig. (2-tailed)		.110	.903	.951
	N	121	121	121	121
ADA_RF_TOTAL	Pearson Correlation	.146	1	-.748**	-.214*
	Sig. (2-tailed)	.110		.000	.019
	N	121	121	121	121
Age	Pearson Correlation	.011	-.748**	1	.191*
	Sig. (2-tailed)	.903	.000		.035
	N	121	121	121	121
[EDU]	Pearson Correlation	.006	-.214*	.191*	1
	Sig. (2-tailed)	.951	.019	.035	
	N	121	121	121	121
**. Correlation is significant at the 0.01 level (2-tailed). *. Correlation is significant at the 0.05 level (2-tailed).					

CHAPTER IV

**MIDDLE-CLASS AFRICAN AMERICANS AND TYPE 2 DIABETES
MELLITUS: PERCEPTIONS OF RISK AND BARRIERS TO OPTIMAL
HEALTH**

INTRODUCTION

Background

Louisiana has the third largest African American population of any state in the U.S. (World Atlas, 2017). New Orleans is a majority-minority city with approximately 58% African American residents (The Data Center, 2016). Given the well documented Type 2 Diabetes health disparity in the African American community, it seems logical that New Orleans boasts high rates of T2DM (American Diabetes Association, 2013, 2015; Centers for Disease Control and Prevention, 2013). New Orleans residents are at 40% higher risker than their compatriots for developing T2DM (New Orleans Health Department [NOHD], 2013). New Orleans residents have higher rates of T2DM than other cities in Louisiana (10.3%), with rates of 12.3% and 10.3% respectively (NOHD, 2013). New Orleans also surpasses the United States (U.S.) average of 8.7% (NOHD, 2013).

Food systems have been shown to have an impact on health disparities, in both positive and negative ways (Blouin, Chopra, & van der Hoeven, 2009; Neff, Palmer, McKenzie, & Lawrence, 2009). Large sections of New Orleans meet the criterion for classification as food deserts (McAbee, 2013). Food deserts are defined by the CDC as

“areas that lack access to affordable fruits, vegetables, whole grains, low-fat milk, and other foods that make up the full range of a healthy diet” (see Figure 4.1) (“A Look inside Food Deserts,” 2012) . Even for residents with financial means, this means limited access to healthy food options (Ver Ploeg, 2010).

While the traditional public health approach focuses on low-socioeconomic status individuals, African Americans as a whole are at increased risk for T2DM development. African Americans are a heterogeneous group, and there is no known research examining the middle-class in relationship to T2DM knowledge, risk and protective factors. The African American middle-class is comprised of individuals who are frequently still connected to, or even recently removed from, impoverished roots (Pattillo, 2013). Additionally, this group is not far removed from a history of segregation and discriminatory practices that has a present day impact on learned health behaviors and the built environment they inhabit (Feagin & Sikes, 1994; Jones et al., 2016). The conditions present in middle-class, African American neighborhoods are often less than optimal and may discourage healthy choices (Barber, Hickson, Kawachi, Subramanian, & Earls, 2016; Pattillo, 2013). Understanding these conditions and how they affect health behaviors is invaluable information to health promoters and public health practitioners.

In other areas of health, connections between health and environment, which extend beyond the limitations of poverty, have been discussed. According to Hébert et al (2015) disparities in cancer health are “associated with a broad range of sociocultural determinants of health that operate in community contexts” (p. 8). This context includes

built environments that lack sufficient resources and may contribute to the stress and perceived barriers to health (Hébert et al, 2015). Barber, Hickson, Kawachi, Subramanian and Earls (2015) discuss the impact of neighborhood disadvantages on cumulative disease risk, across socioeconomic statuses (SES). Examining perceived barriers within built and physical environments of middle-class African American neighborhoods will add to the field's understanding of the variables mediating optimal health in these communities. Understanding the perceived support, or lack thereof, provided by this setting helps health practitioners to understand the assets and barriers to behavior change that may be leveraged in messaging and interventions targeting this population.

The use of mapping tools, like Google Earth and Geographic Information Systems (GIS), aids in demonstrating connections between place, with its associated benefits and barriers, and health behavior. GIS can be used to help describe the spatial organization and physical spaces where health is supposed to happen. Spatial analysis allows for the examination of the relationship between access and health outcomes (McLafferty, 2003). This tool has been used in public health to inform researchers and policy makers on spatial behaviors and health outcomes across human service systems (McLafferty, 2003). GIS has also been used in previous research to assist in location selection for diabetes resource sites (Curtis , Kothari, Paul, & Connors, 2013; Kruger, Brady, & Shirey, 2008).

Numerous qualitative studies have been conducted to describe the lived experiences of individuals living with T2DM (Samuel-Hodge et al., 2000; Tuomilehto et

al., 2001). No known study has explored the lived experiences of those in danger of developing T2DM, however. This information may help to guide effective prevention strategies for the intended target audience.

For this study, visual images of the built environment are used to help develop a more complete picture of where the study population lives and makes decisions about their health. This study is unique in its use of quantitative findings elicited during phase one of the study to develop semi-structured interview questions. Participant responses are intended to add a level of description and understanding that can only be captured through the narratives of those experiencing the phenomenon in question.

Positionality

The theoretical perspective of this study is post-positivist. Accordingly, assumptions have been made that “the social world is patterned and that causal relationships can be discovered and tested via reliable strategies” (Hesse-Biber & Leavy, p. 8). This assumption compliments my ontological perspective that, in many instances, “the social world is patterned and predictable” (Hesse-Biber & Leavy, p. 4). As variables change in the social world, however, it is important to re-examine patterns, seeking new lessons and ways of understanding.

It should also be noted that I, the lead researcher for this study, am an African-American who was raised in an economically middle-class family in New Orleans, LA. The people and problems of this city are a part of me. T2DM has affected and continues to affect my family in more ways than I can articulate in this paper. It is my personal connection with this disease that has stirred my curiosity and motivated me to pursue

this line of research. Specifically, I am interested in learning about: T2DM knowledge and awareness levels; attitudes surrounding T2DM prevention and management; feelings about the role of environment on disease prevention and/or management efforts.

METHODS

Theoretical Framework

The theoretical framework used to guide this study was the Information-Motivation-Behavior (IMB) model. Simmons-Morton, McLeroy and Wendel (2012) summarize IMB as follows:

The basic idea of the information, motivation, behavior model (IMB) is that behavior is often skill dependent, and skills are influenced by information and attitudes. A primary assumption of the IMB model is that skill is a prerequisite for many behaviors and that skill is largely the product of information and motivation. Motivation includes attitudes and beliefs about the skill and the behavior. Skill and confidence tend to improve as a person obtains useful information and develops appropriate beliefs and attitudes (p. 293).

This framework has been used in other studies surrounding T2DM in minority, disproportionately impacted, populations (Gao, Wang, Zhu & Yu, 2013; Osborn, Amico, Fisher, Egede & Fisher, 2010). Both studies found statistically significant correlations between information, knowledge, and behavior change. The model also aligns with my overarching research hypothesis that a lack of accurate information about T2DM contributes to low perceptions of risk and/or insufficient preventative action in individuals. A diagram of the IMB theoretical model has been provided in Figure 4.2.

Participants

The qualitative strand of this study employed convenience sampling, from a larger purposeful sample used during the quantitative phase of the study. To best explore this

phenomenon, “homogenous sampling of individuals” who share characteristics of the subgroup of interest, which is mid-SES African Americans, were interviewed (Creswell & Plano-Clark, 2011, p. 112). Individuals deemed representative of the population, based on income, education, and location, were invited to partake in semi-structured interviews.

Study participants volunteered to be contacted for participation in the qualitative phase of this study by providing contact information at the conclusion of the quantitative portion of the study, intended to measure T2DM knowledge and perceptions of risk in middle-class African Americans. The sample (n=20) included non-diabetic men and women residing in the Greater New Orleans area. Participants were allowed to select the meeting location, given their homes and public facilities (i.e. libraries, etc.) as options. All interviews were conducted face-to-face and audio recorded, after obtaining signed consent forms.

Interview Questions

The study’s questioning route was generated using existing literature and results from a quantitative survey administered electronically to a larger sample of participants. The questions were then piloted with individuals similar to the study population, but living in Texas and thus ineligible to participate in the study due to the residency requirements. The study was approved by the Texas A&M Institutional Review Board in March 2016.

Informed by the results from the quantitative portion of the larger study, interview questions were designed and piloted with individuals ineligible to participate

in the study, but similar to the study population. These open-ended questions were designed to examine: (a) information or knowledge about T2DM; (b) health beliefs in relationship to perceived risk of T2DM development; and (c) perceived barriers to healthy behaviors, including perceptions of the built environment. The overarching purpose of these interviews was to collect data from individuals representative of the study population, in an effort to gain insight into the study population (Creswell & Plano Clark, 2011, p. 112). Semi-structured interviews were used for data collection. The audio from all interviews was recorded, after obtaining signed, informed consent, for transcription purposes. The complete questioning route is included in the appendix (see Appendix B).

Interview Analysis

All interviews were transcribed, verbatim, by the study's lead researcher (ES), with the assistance of transcriptions software. Participant responses were then analyzed using a phenomenological approach. Phenomenologists assert that experiences are perceived along a variety of dimensions and seek to generate knowledge about how people experience certain phenomena (Hesse-Biber & Leavy, 2011). Interpretive phenomenology aims to “describe, understand and interpret participants’ experiences” (Tuohy, Cooney, Dowling, Murphy & Smith, 2013, p. 18).

ES also generated field notes, by hand, during and after each participant interview, and maintained a field notes journal. Memos were generated during the transcription process. The final interpretation of the participant experiences led to the development of codes and larger themes. Codes were first developed in accordance with the tenants of

the study's theoretical framework, IMB. Additional codes emerged during transcript analysis. Codes were organized, and the corresponding data tracked, through use of Nvivo Pro. The coding process was iterative, and codes were refined as new data became available throughout the interview process. Through inductive reasoning, the analyzed data was used to generate new, thick descriptions and conceptualizations of the lived experiences of mid-SES African Americans in New Orleans, as it relates to health behaviors surrounding T2DM (Thorne, 2000).

Map Development and Analysis

The lead researcher, ES, visited six grocery stores listed by study participants during their interviews to obtain photographs and assess the availability of produce options, based on a subjective, limited list of food options. All stores were visited before 1p.m. during the week of December 11, 2016. Spatial analysis of the stores, in relationship to the participants' addresses, to the nearest intersection, was conducted using Google Earth. For participants who chose not to provide their home address, the intersection of the meeting location was used. GIS shape files were also obtained from the City of New Orleans Regional Planning Commission, which utilizes block group data for each parish based on the 2010 census. This information was used to depict and explain elements of the city's built environment using spatial analysis. Krivoruchko and Gotway (2003), describe spatial analysis as "the study of spatial phenomena using the basic GIS operations such as spatial query, join, buffering, and layering" (p. 713). These descriptive statistics and statistical graphics were used to understand resources and needs facing middle-class African Americans living in the Greater New Orleans area.

RESULTS

Baseline Sample Characteristics

Twenty-one individuals volunteered to be interviewed for this study. One participant was interviewed, but her responses were not included in the results presented for this study, because she had received a T2DM diagnosis after completing the first phase of the study, but prior to her interview. A total of 20 interviews, 18 women and 2 men, were used in the study's analysis. All participants self-identified as African American, with a household income at or above \$30,066 per year, with formal education equal to or exceeding a high school diploma (see Table 4.1). All participants self-identified as residing in the Greater New Orleans area. Participants claimed 10 different Zone Improvement Plan (ZIP) codes, from five (5) distinct areas of the city. The largest number of participants came from Gentilly (n=5) and New Orleans East (n=5). Figure 4.3 presents more detailed descriptions of each area.

Survey Responses for Interview Participants

Eleven of the participants stated that they did not believe they were at risk for developing diabetes; five (5) said maybe, and four (4) said yes. Only 2, or 10%, of the respondents correctly identified all of the possible causes of T2DM; 7 respondents correctly identified all the warning signs or symptoms of T2DM development. Of the risk factors listed, the one most frequently missed by the respondents was old age (n=14), followed by eating too much salt (n=13), your race or ethnic group (n=10), being overweight (n=9), eating too much sugar (n=7), not getting enough exercise (n=6), and heredity (n=5). Nine respondents stated that they were not physically active; 11 stated

that they were physically active, with physical activity defined as 30 minutes or more at least three times per week. Fourteen participants stated that they considered themselves to be overweight. For six (6) respondents, quantifiable measures (i.e. physician recommendation, physical weight, BMI) were not included in the definition they used for defining overweight; these individuals reported using subjective measures (i.e. how they looked) to evaluate their weight status.

General Health Information

All but one of the study's respondents reporting relying upon their physician for health information. Participants stated that they felt comfortable speaking with and asking questions of their physicians. All but one participant described positive relationships with their current primary care physicians. The dissenting opinion was voiced by Participant 13, who stated, "I want another internist, I'll be honest with you. He doesn't say enough to me." Participants also stated that they, at large, trusted the information they received from their physicians. Two participants described poor relationships with previous physicians that affected how they received the information provided. In both instances, the participants explained that they did not trust the recommendations made by their then physicians because of perceived bias. For example, participant 18 stated, "for me it just felt like, oh I'm a black girl and your uncomfortable with my black body," when recounted why she devalued advice she received from a physician she once saw for care, which she felt comfortable doing because her blood work had not revealed any problems. Participant 18 also noted, however, that the same information was communicated later by another physician and it was received

differently. According to participant 18, the information was provided with an explanation that while she may not currently have a problem, as her age increased, given her weight, she may develop a problem. She also noted that this physician was also of African descent and she trusted that the physician understood her perspective and her advice could be trusted. Participant 4 recounted a similar experience, noting that she felt her previous physicians' recommendation had been generic, and did not consider specifics about her as an individual. She stated, "I'm like I know that, because I do have knowledge, but then at the same time, I'm like- why are you just lopping me into this one category- I'm different, but I get it, I get it." Participant 4 also noted, however, that when the same recommendations were given to her by her current physician, a younger, minority physician, although of a different race, she was receptive because she felt that the physician had taken time to get to know her and explain her recommendations.

The internet was the second most frequently cited source of health information (n=14). The Google search engine was the site most frequently cited online source of health information (n=13). Participants reported using the site to look-up symptoms, or attempt to self-diagnose when symptoms of less than optimal health presented themselves. Participant 3 stated, "I google! So, if something is not right or if I don't feel right, or I feel that somethings off, I go online and I check stuff out all the time...all the time. But typically, I just look stuff up online and if it's not broken or bleeding profusely, then I will just figure it out on my own." When asked about specific sites, one-fourth of the participants (n=5) reported seeking health information from WebMD.

Participants were asked if they sought information from notable health organizations like the Centers for Disease Control and Prevention (CDC) or the World Health Organization (WHO). One participant reported utilizing the CDC's website to obtain health information. It should be noted that this respondent was one of three who work in public health. Participants were also asked if they followed or subscribed to updates from health organizations on social media, to which they all responded no. None of the participants reported using the aforementioned sources to find general health information or preventative health strategies.

Participants listed other sources of health information as: friends and family; the Dr. Oz television show; independent reading, from sources like the newspaper, magazines found in the doctor's office, documents received from their insurance companies, and the Association of Retired Persons (AARP). With the exception of friends and family, none of the aforementioned sources was listed by more than 10% of the respondents.

Diabetes Knowledge

The majority of respondents reported obtaining health information from physicians, but few (n=4) could recount specific conversations with a physician about T2DM. When asked to share what they knew about diabetes, only three of the study's participants stated that their diabetes knowledge was lacking. The remaining 17 respondents felt comfortable in the knowledge of the condition; of those 17, only four were able to properly articulate that there were different forms of the condition and what those forms were. All respondents reported an overall awareness of the disease, and

believed there to be different forms- mainly type 1 and type 2- but were generally unaware of the differences between these types. For example, Participant 3 stated, “I know there’s type 1 and type 2...uhh, there’s insulin dependent and non-insulin dependent.” Only 4 of the respondents included gestational diabetes in the diabetes knowledge; only two included pre-diabetes in their description. Only four respondents mentioned gestational diabetes in their description of the various types of diabetes. Of those familiar with the condition, one had been warned of the condition during her pregnancy; the others knew someone that had developed the condition.

Specifically related to diabetes information, participants described learning about the condition from observing family members, friends or acquaintances with the condition (n=7). The participants noted however, that the information was sometimes inaccurate or served more as a cautionary tale. For example, Participant 1 noted that her brother was diagnosed with T2DM. When asked what she learned about the condition from him she stated, “Everything wrong, ok...he once told me, ‘my ACL scores are right.’ I said, ‘I’m sure your anterior cruciate ligament is doing fine. However, your A1C scores are probably off the map ok. He just shook his head and said ‘I don’t want to talk to you about it. You know too much.’” Participant 6, whose sister had been diagnosed with Type 1 diabetes as a child, had incorrectly drawn connections between types 1 and 2, even though she knew there were different forms of the condition. When asked if she was worried about developing T2DM she stated, “ummm...after research and testing, decades of time and coming back with a negative diagnosis, of not having it, I think I’m pretty confident and not as concerned as to getting it.” When it was explained that the

likelihood of developing T2DM increases with age, Participant 6 responded, “I’m concerned! They didn’t tell me that!”

Overweight and BMI

All participants (n=20) reported hearing of, or being aware of, BMI when asked. The majority (n= 17), however, reporting feeling that BMI was not the best measure for assessing what should be considered overweight. Participants reported that the tool was not appropriate for African Americans and unrealistic. When asked if she had heard of BMI, Participant 1 stated, “Yeah, it’s wonderful...you know, for Miss America, but I’m not sure it’s pertinent to me.” Participant 7 said, “I guess when I went to the doctor the first time and he said something about 120 or 125, I said I’d look like I’m dead at that weight.” Participants most frequently listed “how they look and feel” and “the number on the scale” as the basis for considering themselves as overweight. Participants expressed a desire to look good in their clothes, as expressed by Participant 3 who stated, “For me, it’s always been, yeah definitely fitting in my clothes. I like to look however I envision myself looking whenever I wear my clothes...Like, the weight that I’m at right now, my biggest issue is the clothes thing.”

Perceived Severity and Risk

When asked, all participants stated that they consider T2DM to be a serious condition. When asked to describe their level of concern about developing the condition, with the exception of two participants, the responses suggested that the condition was not viewed as life threatening. T2DM was often described as comparatively less severe, when viewed in the context of other conditions. For example, when asked if T2DM

concerned her, Participant 5 stated, “honestly, no. I mean I beat cancer, breast cancer.” When asked if knowing there had been studies suggesting links between T2DM and dementia would increase the participant’s level of concern about T2DM, the responses were split evenly. Those who stated the connection to dementia would change their perceptions of T2DM described dementia as a more frightening condition that they were desperate to avoid. For example, Participant 11 stated, “Oh, yes! I worry about that every day...I’m serious! I worry about it every day, because you know dementia is so prevalent now. We didn’t used to think about it, but think about how many people you know that have dementia and then it seems like people are getting early onset of dementia...so, you do worry about that, because you hear people like in their 60s and I’m like 6 years away from being 60.”

Before the interview and discussion of T2DM, the majority of the participants (n=11) did not feel they were at risk for developing T2DM. Health was most frequently described as the absence of disease or health problems. For example, Participant 3 stated, “I’m not so concerned with the health stuff, umm. I’ve never really had health issues in that regard. So, any inklings about diabetes or anything like that- like hypertension, things of that nature- I’m not concerned about that, I’m just trying to be more comfortable as me. So, the health stuff, it’s not that I’m neglecting it, it just hasn’t ever been an issue for me.” Participant 14 noted that her doctor had expressed concern about her weight and wanted her to “get out of the morbidly obese category.” When asked if this concerned her, she said no. She added, “I don’t have any other health issues.

I'm not on any medications...my pressure is always good, everything else is always good.”

Participants stated that they did not feel that they were at risk for developing T2DM because they had blood work done with no abnormal results. Participant 12 stated, “I don't get into it all. But I probably ignore some of it, because I feel fine; my numbers are good. I think we all do that too. I know there are more preventive things that I should do that I don't...But, I know that I try not to do as much that I know would bring harm to me.” Feelings of self-efficacy were most frequently described as justification for a lack of concern for developing T2DM (n=5).

Participants frequently described avoiding sugar or sweets as their primary prevention strategy for developing T2DM (n=7). However, participants generally had limited definitions of sugar, referencing “added sugar,” “white sugar,” and “table sugar.” Participants often neglected to consider other sources of carbohydrates that would affect blood sugar. When informed of other sugar sources, participant 2 stated, “fruit surprised me and fruit juice surprises me, because I always make sure it's natural fruit juice and there's no added sugar, but I didn't know that fruit...I thought that fructose was not a problem and that's what I assumed was in all fruits. So that's an education for me.” Participant 18 stated, “You got the ‘sugar diabetes’...that's what everybody talks about right? ‘The sugars’ right? [laughter],” explaining why she had not considered factors outside of sweets or desserts.

Participants also listed the absence of T2DM in their family history as support for their belief they were not any particular risk for the condition (n=4). Participant 14

stated, “I mean if it was somebody directly in my family that had it, it probably would spark me more...I’ve had people that had it, but not anybody that’s in my life on a daily basis or all the time.” Participants also stated if they had abnormal results or warnings from their physicians they would be more concerned about developing T2DM. While all participants reported believing that T2DM was a serious condition that they wanted to avoid, they also suggested that the condition had been normalized in their community and they were confident in their abilities to manage the condition if they developed it. When asked if they would be more concerned if they knew that T2DM was linked to dementia, 50% of the participants responded in the affirmative. Participant 11 stated, “I think with diabetes, especially in the African American community, it’s almost to the point where it’s acceptable...it’s been normalized. So, it’s like it’s no big deal. They know so many people that are dealing with it...like I can take care of it. But to your point, having that correlation with dementia...I think that’s the one thing, nobody wants to lose their mind. Because, if I lose my hand or arm or limb or something, I can still think.”

Perceived Barriers to Healthy Behaviors

The perceived barrier to physical activity was described as a lack of time due to competing priorities like work and family (n=11). Participant 10 explained that she was once very physically active, before she needed to return to work full-time. She explained, “when I wasn’t here working, I had more time to do those kind of things [exercise]. I lived right there by UNO [University of New Orleans]. I walked from Elysian Fields and Lakeshore drive all the way to West End and back. That’s 7 miles.

And I used to do that like 4 or 5 times a week...But, I don't have that luxury anymore 'cuz I got bills to pay- had to come to work. Work is what's destroying my health."

Participants also described a lack of support or appealing options as a perceived barrier to physical activity (n=7). Participant 17 stated, "As far as exercising, it's like what I talked about before, they don't seem to be as many options, besides joining a gym, which isn't my preferred method of exercise. There doesn't appear to be as many access to the types of exercise I prefer to do." Participants also described barriers in the built environment that they considered hindrances to their physical activity (n=4). For example, Participant 6 explained that she felt uncomfortable walking around her home for exercise because of a lack of sidewalks. She stated, "I'm not walking the kill service way! I'm not walking." Participant 16 offered a similar perspective with regard to bike lanes. She stated,

So, in Philly I biked everywhere. Here I drive. So it's like, automatically, I'm less active...this isn't a super friendly bike city. And I know they are taking steps to make it more bike friendly, but I have quite a few friends that have been hit by cars and it's not so much an infrastructure thing as it is an education thing and I think a lot of drivers are aggressive towards bikers and the roads are garbage and they're not well lit at night.

Bike lanes in New Orleans are not available everywhere in the city, and vary in quality (see Figure 4.4).

With respect to diet, work was again listed as a barrier. Culture was also described a barrier, but mainly in terms New Orleans having such decadent food options, included in various events, from personal rewards or comfort, to socializing and formal celebrations. Participant 1 stated, "You also come from a culture where you can't have a celebration without food. I mean, this is New Orleans!" Participants also expressed

displeasure with the lack of convenient, healthy food options in their neighborhoods. Participant 8 stated, “What can I say? After the hurricane, it’s a job living here. We, in this community are not getting our fair share of what the other parts of the city are getting, and it’s a constant...it’s a struggle, to speak to city officials...and it’s not that we’re complaining- which they think we’re always doing- but we just want a better quality of life. We want the economic development that everybody else have.”

Food Availability

When asked about influencers in food decisions, time, or convenience, was listed at the top priority in 50% of the responses; taste was listed second with 28%; the third highest priority was cost with 21%. Participants reported going to grocery stores outside of their immediate neighborhoods (n=11). Participants also reported patronizing multiple stores to increase options (n=6) or to decrease costs (n=7). Of the six stores visited, the number of empty bins varied from 0 to 26 (see Figure 4.6 and Table 4.3). Differences were observed in availability between varied locations of the same chain in both instances. There were price differences of more than one-cent between chains for each of the seven produce items evaluated; for chains where more than one location was visited, there were no noted price differences (see table 4.4). Four of the six stores, hosted prepared foods bars that varied greatly by chain. Winn-Dixie offered a prepared food bar, with no fresh food options (i.e. a fruit or salad bar). Both Rouse’s and Whole Foods offered prepared fresh foods.

Health Promoters

Four participants who lived near grocery stores with prepared food bars said the convenience made it easier to have healthy meals. Two participants who lived near a store with a prepared food bar, who both stated they did not like to cook, said having the convenience of the prepared fresh food bar at their local grocery store allowed them to eat salads frequently. One participant, who lived within what she described to be walking distance from her grocery store, stated that the proximity made it easier for her to prepare healthy meals for her family (see Figures 4.5, 4.6, and 4.7). Participant 10 stated, “I walk to the grocery store every day. I don’t walk every day, but I go to the grocery store every day...I’m not planning for a whole week. I’m planning for maybe a couple of days, and I go there and I get it. It’s pretty fresh and my kids like it.”

Participants described moving to areas with, based on their perceptions, better amenities after Hurricane Katrina. For example, Participant 1 stated, “This [the West Bank] is better. This is really better, which surprised me. I always thought the West Bank was the back water, ok. But no this is better than Gentilly; this is better than Gentilly since I moved back here.” Participants in both Mid-city and Gentilly described a shifting neighborhood composition, post Hurricane Katrina, that they felt brought improvements to their built environments. Participant 20 stated,

So this ZIP code 70119. After Katrina it was devastated. There were like no schools. The school across the street right now, that’s the only school in this area...This area now is real quiet. There’s no high school around here, no junior high school; it’s only elementary school. The income levels have shot up. The property values have gone up like 200%. The demographics of this area have changed. And it was a study called “Place Matters,” that they [Tulane University] did and they found they didn’t have like stores, and they put a Whole Foods. So now they have a Whole Foods that’s walking distance. But, it’s like a real

affordable Whole Foods, and they give a lot back to the community- the one on Broad, and they give a lot to the community. There's a bike path! The transportation was bad, after Katrina. They call it the Lafitte Greenway. So, a lot of people bike. You see a lot of bike lanes and everything...The area has changed, I think it's now 35-40% Caucasians. Used to be a lot of Caucasians, when I was growing up; it was a mixed area, and now the area is mixed again. It turned from mixed, to predominately African American, to now it's mixed again, with high income. Some of the houses they building right by the Greenway, they say those houses are going be like 400k houses. There's a lot of people trying to get in this area, because it's very quiet now...The demographics and they income have went up and also the rent in this area has gone up. Like the rent on this block, the rent for a 1 bedroom house rents for like \$950. I'm talking about a place where homeless people were living, now rents \$950! Homeless people move out, demographics have changed, and it's \$950 now [laughter]. They got the Broad Street Theater. They're building more! The whole area of 70119 has changed! And that's because they did a whole study on the health...we used to have to go to Rouse's on Carrolton. They were like that's too far, we're gonna put a whole foods; we're gonna put a theater.

Regarding physical activity, four participants noted programs specifically for seniors that encouraged them to try various classes and remain active. Free or low-cost exercise classes offered through local churches and community organizations were discussed as health promoters by two participants who described themselves as physically active. Participant 20 also described interventions that had taken place in her neighborhood that she stated added to her health knowledge and overall quality of life. She stated,

In this area, it's something called Healthy Cities and Morgan Stanley nutrition education and health screenings. They have that at the community center, they have fitness activities. They have nutrition education and free groceries. During the summer months, what they did, they gave away free fruits and vegetables, but it was fresh food, it wasn't canned food and all that stuff like that...no income requirement or restrictions at all...And then with healthy cities, if you went to the clinic, what they did was they gave you a card, not income based. So, nothing in this area- see the demographics have changed. So, the income is higher. So, there's not income level. So at the community center, if you went to see the doctor, you got a card every month- I think it was up to \$75 or \$150- you can go to whole foods, the farmer's market and shop for free...right, it encourages you

to eat healthy foods. You can go to whole foods or any farmer's market and use it. It's not a food stamp program. It's like a wellness program...they started that in 2015...and you go once a month...I loved it!...the other thing they have is the community cooking classes they have in this area, and that's in the building with whole foods, but it's Tulane, it's called Culinary Medicine, so I participated in that one. And so me and my friend did all the food and it's on the internet and stuff like that, then you eat for free too...anybody can go, but there's a waiting list.

DISCUSSION

The study's participants provided invaluable information relative to the lived experiences that impact their perceptions of risk and motivation to act toward the prevention of T2DM development (additional illustrative quotes have been provided in Table 4.2). At large, participants expressed a perceived severity of T2DM. Participants noted, however, that the condition has become somewhat normalized in the African American community. Respondents generally felt sufficiently informed about the condition, which contributed to feelings of high self-efficacy and low levels of concern for developing T2DM (Tang et al., 2015). There were knowledge gaps and misinformation that provide grounds for re-evaluating those feelings, however.

Study participants at varying levels of formal education, showed a lack of diabetes specific knowledge. Brown-Guion, Youngerman, Hernandez-Tejada, Dismuke, and Egede (2013) found that individuals in the southern United States were less likely to receive diabetes education, even after receiving a T2DM diagnosis. This lack of accurate information may contribute to recent declines in perceptions of risk for diabetes in African Americans found in the National Diabetes Education Program's National Diabetes Survey (Piccinino et al., 2015).

Participants generally described positive relationships and high levels of trust and comfort with their primary care physicians. This differs from the popular narrative of medical distrust in the African American community. However, recent studies have found that this distrust is frequently associated with concerns of research exploitation, or a mistrust of medical researchers, and perceptions of risk associated with risky endeavors, like clinical trials (Hagiwara et al., 2014; Kim, Tanner, Friedman, Foster, & Bergeron, 2015; Toms, Cahill, George, & Van Hemelrijck, 2016). The aforementioned risks are not inherent to the type of preventative care measures involving the physicians discussed in this study. Additionally, while the majority of participants reported relying on their physicians for health information, only one-fourth could recall ever having a conversation about T2DM with their physician. Beck, Daughtridge, and Sloane (2002), in a systematic review of physician-patient communication in primary care offices, found inconsistencies among clinicians in terms of patient-provider communication, both in terms of quality and continuity. These inconsistencies are mirrored in the varying descriptions of the type and amount of information participants in this study reported receiving from their primary physicians. Without controlling for other variables, however, the differences reported in this study may be explained in varying ways.

Participants generally defined health in terms of the absence of disease or significant physical impediment. To that end, participants sought health information when problems presented, not as general preventative health measures. Participants relied heavily upon information received from physicians as cues to action. In some instances, however, participants presented with information from physicians, participants

described the absence of disease or abnormal blood work as justification for minimizing recommendations for lifestyle change. These changes often surrounded weight, based on measures the participants deemed invalid. Studies have shown low knowledge levels, with relationship to normal weight, in African Americans (Chang & Christakis, 2003; López et al., 2014). Participants in this study, however, claimed an awareness of measures like BMI, but often described the measures as discordant with their personal definition of healthy weight. Healthy weight was most frequently described in terms of aesthetic appeal and physical ability. This disconnect between patient and provider highlights an area in need of further investigation and improved health communication and education strategies.

There were varying perceptions of the built environment. This is to be expected, however, given the different areas of the city represented by the study participants. Additionally, many of the participants recounted tales of life and access pre and post Hurricane Katrina which ravished New Orleans in August 2005. Participants described moving to new neighborhoods with better amenities than their previous place of residence. Specifically, three of the four participants interviewed from the West Bank, lived in New Orleans East and Gentilly prior to Hurricane Katrina. These areas vary in racial composition, with the West Bank boasting the highest percentage of white residents. On the contrary, participants also discussed returning to neighborhoods that with already limited options prior to the storm, like New Orleans East. Participants noted a perceived change in resident composition, from home owners to renters, and often blamed this shift for the types of services provided in the area. In areas like Gentilly,

participants also discussed a changing landscape, but referenced gentrification. Interestingly, participants noted that the shifting neighborhood composition, with more white residents moving into the area, appeared to bring new business to their area. Participants who described their built environments as having convenient healthy food options, also reported utilizing these options to support healthy eating habits. Similarly, participants who described exercise opportunities they considered appealing also reported utilizing those options. These reports of inconsistent options across the city are consistent with other studies that have shown differences in food options between predominantly black and predominantly white neighborhoods, even after controlling for income (Block, Scribner, & DeSalvo, 2004; Larson, Story, & Nelson, 2009). Participants who described themselves as physically inactive also discussed limited exercise opportunities (Lefer et al., 2008).

LIMITATIONS

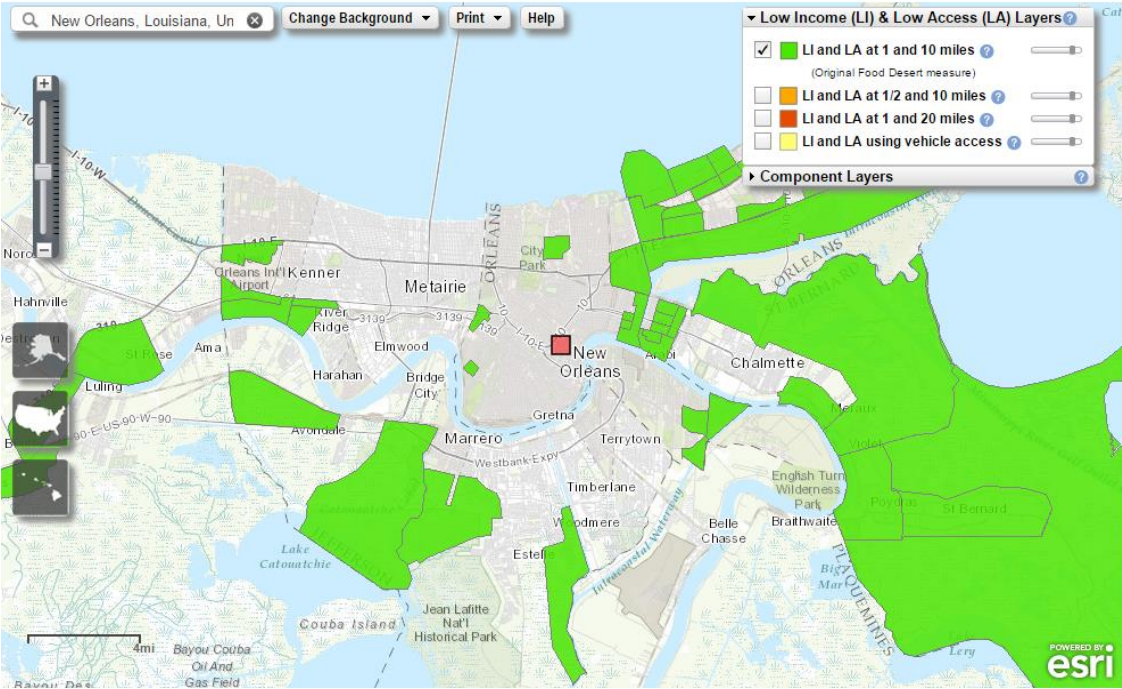
There are several limitations to this study. First, the results may have been effected by selection bias. This study utilized a convenience sample, and participation was self-selected. In addition, the study utilizes a small sample size, the conclusions drawn are not appropriate for generalization. This study serves as a pilot, however, designed to highlight the need to further investigate and intervene in this largely uninvestigated segment of the population.

CONCLUSIONS

This study's findings enhance the existing body of literature and expand the field's understanding of the study population. This information may be useful in future

health promotion efforts intended to prevent or delay the onset of T2DM. Additional investigation is needed.

Figure 4.1 New Orleans Food Access



(United States Department of Agriculture and Economic Research Service, 2015)

Figure 4.2 Information Motivation Behavior Theory as Applied to this Study

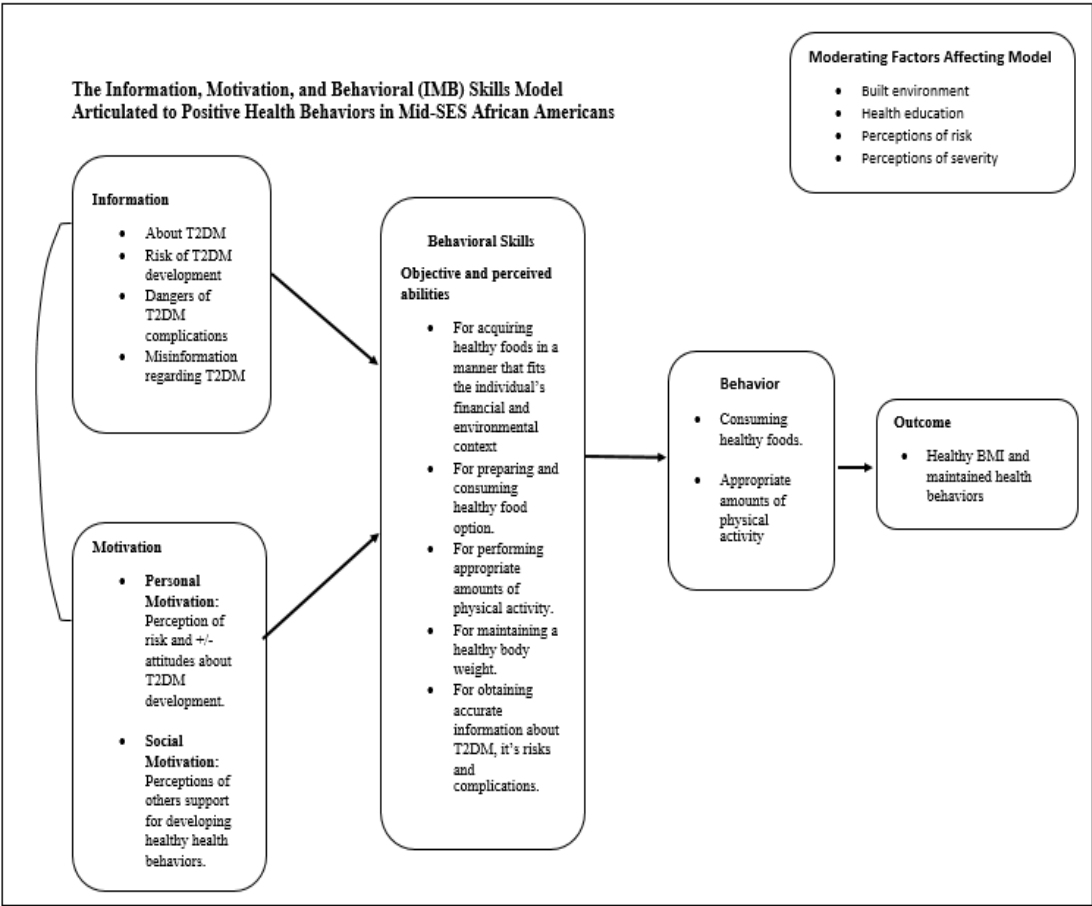
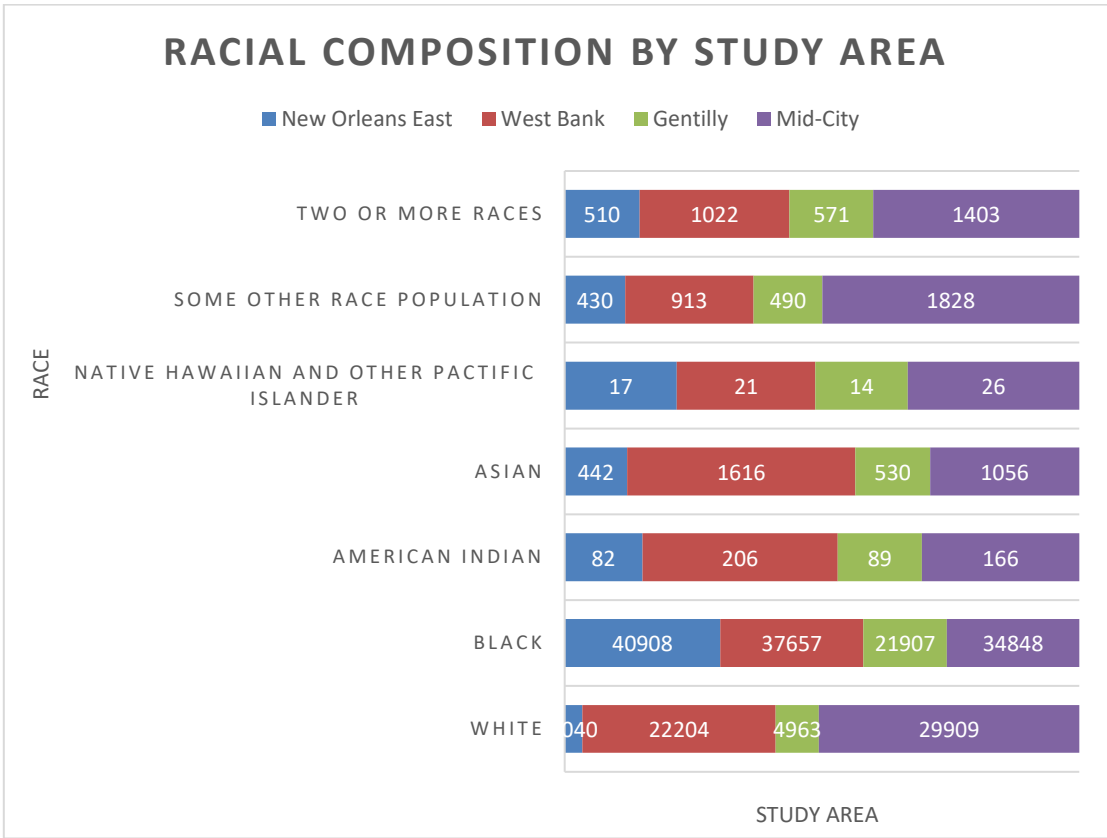


Table 4.1 Interview Participants' Demographics

	N=20
Age, mean (SD)	49.8 (12.7)
Sex, n (%)	
Female	18 (90%)
Male	2 (10%)
Marital Status	
Single	10 (50%)
Married	4 (20%)
Divorced	3 (15%)
Widowed	3 (15%)
Education, n (%)	
High School Diploma	3 (15%)
Bachelor's Degree	7 (35%)
Master's Degree	7 (35%)
Professional Degree or Doctorate	3 (15%)
Employment Status	
Employed	16 (80%)
Retired	4 (20%)
Neighborhood	
Gentilly	5 (25%)
The East	5 (25%)
Mid-City	4 (20%)
The West Bank	4 (20%)
Other	2 (10%)

Figure 4.3 Comparing Study Areas



*Figures compiled using 2010 data obtained from United States Census Bureau (2010).

Table 4.2 Illustrative Quotes

IMB Constructs	Theme	Illustrative Quotes
Information (general health)	Health information is sought and obtained online when there are symptoms. (n=19)	I google! So, if something is not right or if I don't feel right, or I feel that somethings off, I go online and I check stuff out all the time...all the time. (P3)
		Sometimes google...ummm, sometimes, what's the site...med...webMD...but if the google search gives other sites, just go to the sites and skim through to see what I'm looking for...I kinda compile everything- I don't just use one source of information- that's the correct information...or to try to diagnose, well...sometimes you are trying to diagnose yourself, but I don't just use one source. That's not...that doesn't make any sense (P7)
		To be honest with you, I go to the doctor if something is bothering me, or if something is wrong. I kinda go online and read up on it [laughter] I say I gotta go see about this and read about this stuff...I just go to google and I type in what's wrong and it gives me some good answers. And, I have a couple of friends that are nurses, and I might call them, but for the most part I look it up and then I go to the doctor (P13)
Information (diabetes knowledge)	Incomplete information (n=16)	[I don't know] a whole lot...maybe shouldn't eat a lot of starches...that's what I'm thinking and sweets, that's what I'm thinking. (P13)
		I know that there are two types. I should know more, because I had a whole part of this for school...Type two is the one that's more common and one of them is more common in children... I'm not sure how much of this is true, but I feel like there's the notion that if you eat a lot of sugar that you're going to get the diabetes. (P17)
		I got tested for diabetes in July. I don't have diabetes. I have it in my family, but I don't have it. But once you're overweight you have to be cautious about that... I don't know too much else about it really and truly. (P20)
	Inaccurate Information (n=17)	I tell you this, tell me if I'm wrong...diabetes, is that what happens when they go on dialysis, is that because of diabetes? (P13)

Table 4.2 Continued

IMB Constructs	Theme	Illustrative Quotes
		I just know that it's not as horrible as type1, it's a little bit more controllable than type 1 and the effects doesn't last as long as type 1. (P6)
		I don't know that it can be prevented...maybe the effects aren't as severe as uhhh they tend to get-blindness, amputations and all that other kind of stuff...it's usually tied into kidney problems and high blood pressure. (P7)
Motivation (perceived risk)	Health is the absence of disease and the ability do certain physical activities (n=16)	As far as activities is concerned, I'm ok. I've always maintained that I should always be able to run at least a mile without like stopping. I can easily do that. I've always maintained that I should be able to run up a flight of stairs without being winded; I can easily do that. I've always maintained that I should be able to swim, if I just jump in the pool, and not run out of energy, and I'm able to do that. So, as far as activity is concerned, it's not so much that I'm inactive or that my activity levels have dropped so significantly that it's doing me a disservice. (P3)
		I think, like as long as you're not physically impaired from doing...I mean if you're able bodied and you're not physically impaired from doing the day to day tasks that you want to do. If you can walk up a flight of stairs without getting winded or having to take a breath, you know relative to age, as long as your physical body is not getting in the way of you being able to do that kind of stuff. (P16)
Motivation (perceived protectors)	BMI is not appropriate for African Americans (p=17)	So, like, I let them [doctors] go through their thing. But, I feel like BMI is like, 'well, this number, you're over' and I'm like ok, but again, I know...I know people that are within their BMI and they're probably on the way to like pre-diabetes. So, I guess, it's just a number. (P4)
		I think African Americans and Caucasians are different, so it wouldn't be...I don't think it's accurate as it should be. A 110 pound Caucasian and 110 pound African American look different. (P5)

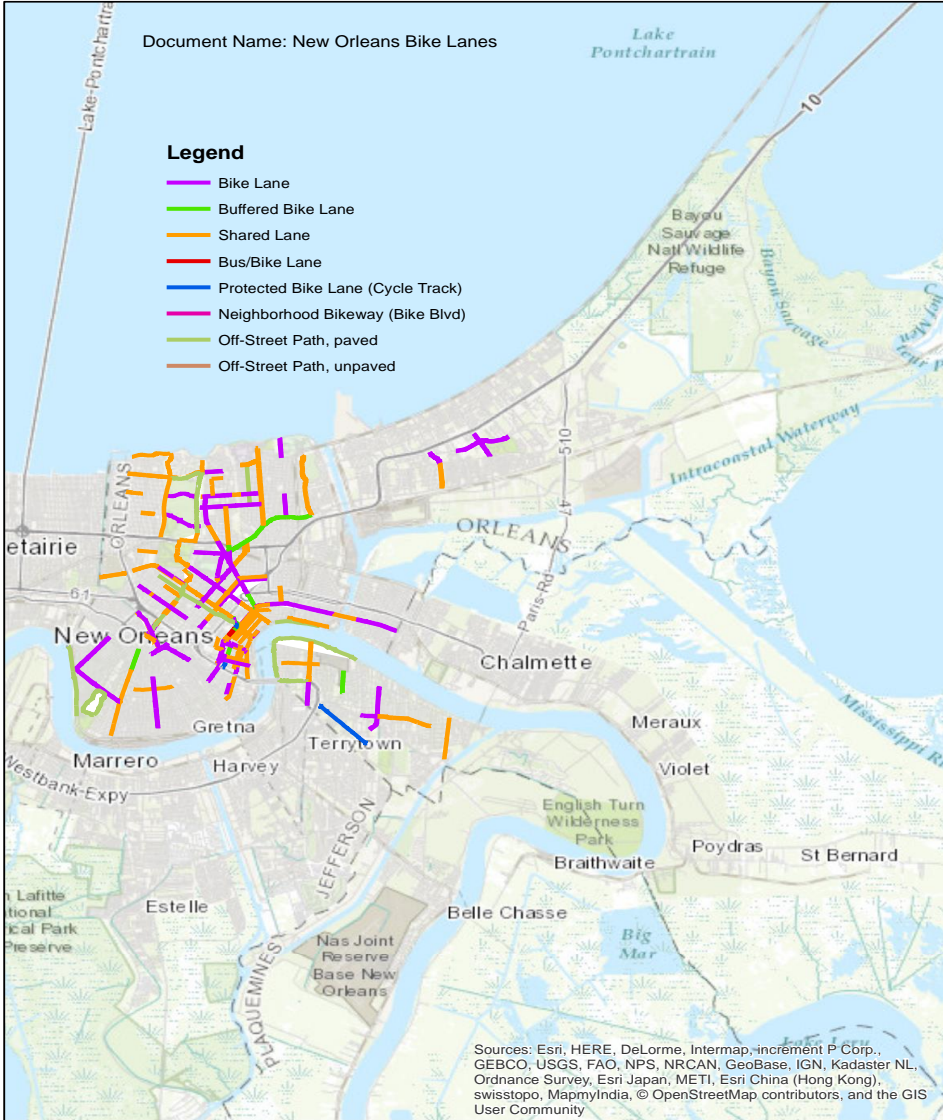
Table 4.2 Continued

IMB Constructs	Theme	Illustrative Quotes
	I'm not worried about diabetes because I don't eat a lot of sweets. (n=7)	The only time I really want something sweet is when I put myself on a diet- when I can't have this or that, when I want it, I start to crave sweets. Other than that, I don't really eat sweets like talking about it. (P14)
		I think over doing sugar is one of the things that causes people to develop a diabetic condition, unless you know, I'm misinformed on that. So, I have used sugar substitutes. When I use them, I don't use sugar a lot in my food. I rarely use white sugar. I sometimes use a little brown sugar and honey. So, I try to stay away from things I know have a lot of sugar...When I do cereal, I never put sugar on cereal. And I always try to buy cereal that doesn't have that built in added sugar, and I'm always aware that a lot of the things that we eat have added sugar and I try to look see if that's the case before I consume it. (P2)
		I mean, I don't want it, but I- I feel like my health isn't at a point where I've taken big steps to prevent it...I guess I don't drink soda anymore, but that wasn't because of diabetes...so not that motivated. (P16)
	I'm healthier than I was or could be. (n=14)	I know there are more preventive things that I should do that I don't. But, I know that I try not to do as much that I know would bring harm to me. (P12)
		It's [my lifestyle] healthier than it was...yeah, less drinking, less smoking...more exercise, less tv... Even that though, I get periods where I like 'I don't have to do none of this, this is bull****. I'm comfortable with my body as it is. I don't need any of this stuff.' And then I'm like you're not doing it just for your body. As much as you like the results, you're not doing it just for your body. And then I start feeling like crap and then I have to re-motivate myself. But I want to get to a place where I'm more consistently working out. Not to the point where I exhaust myself then I don't want to do anything for two weeks. (P18)

Table 4.2 Continued

IMB Constructs	Theme	Illustrative Quotes
Motivation (health barriers)	My job is a barrier to my health (n=8)	I used to run. I like the way it makes me feel. I know it's good for me. I feel better when I do it. I just don't have time. I'm a single mother, working a full time job- period. (P15)
		...when I started working at the school, that's when I gained the weight...they don't want you to leave to get lunch so we got pizza...So the eating habits changed and the exercised changed with the new job. (P20)
	Lack or options and support (n=7)	I think, at least for me, it's a little harder to stay in those healthy habits here [New Orleans]...I feel that here, there's not as much, even general communication about 'here are ways I'm being active or let's be active together'...I was always on a team, I like doing things with other people as opposed to doing them by myself...just because it's harder to motivate myself or keep myself accountable...I thought it [a recreational basketball league] would be a good way to meet people...I just haven't been able to find any leagues like that for women here...There just hasn't seemed to be the same type of access or resources available for me to be able to do that.(P17)
		I'm looking for a black instructor [for yoga class]...I don't have a personal practice, that's just not where I am, and with everything that's going on in the world I don't want to be in a class with white women, but since I've been here, I have done some (P18)

Figure 4.4 New Orleans Bike Lanes



(City of New Orleans, 2017)

Figure 4.5 Residences of Participants

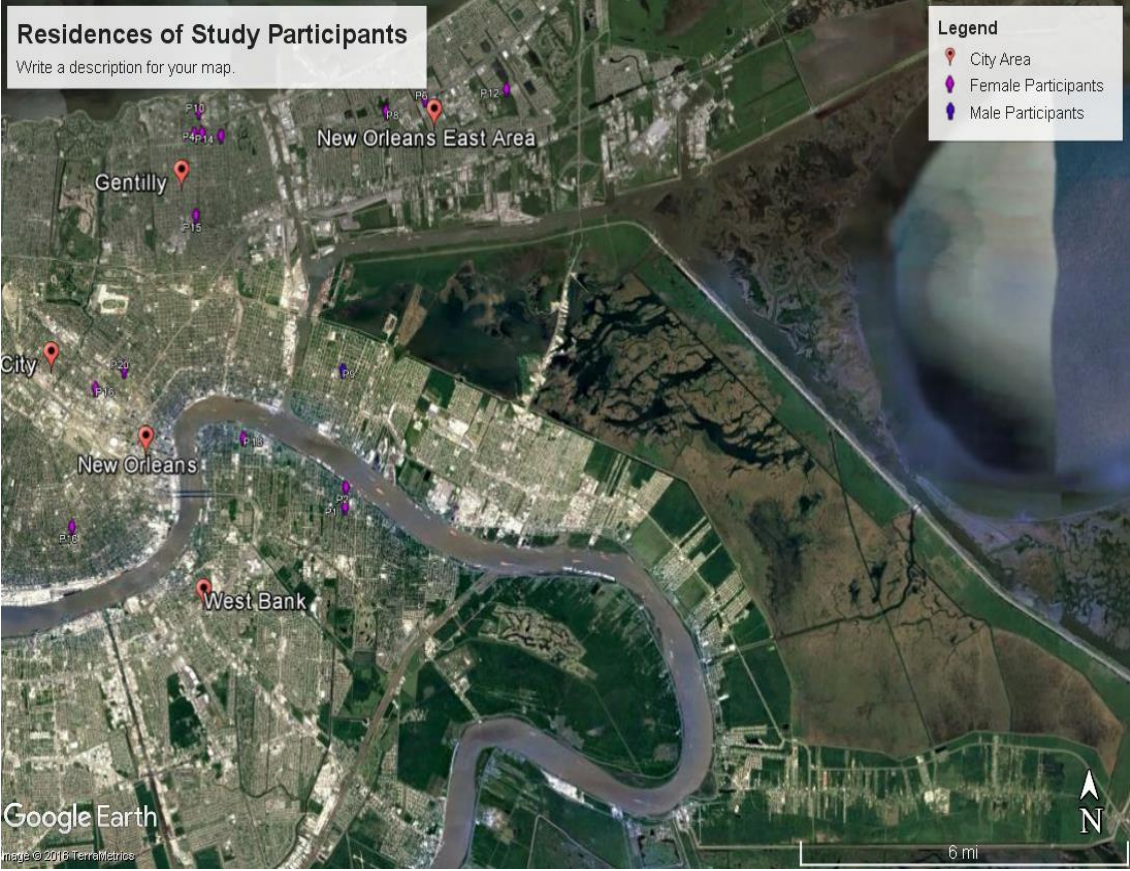


Figure 4.6 Participants' Grocery Stores



Figure 4.7 Participants' Preferred Grocery Stores Using Google Earth

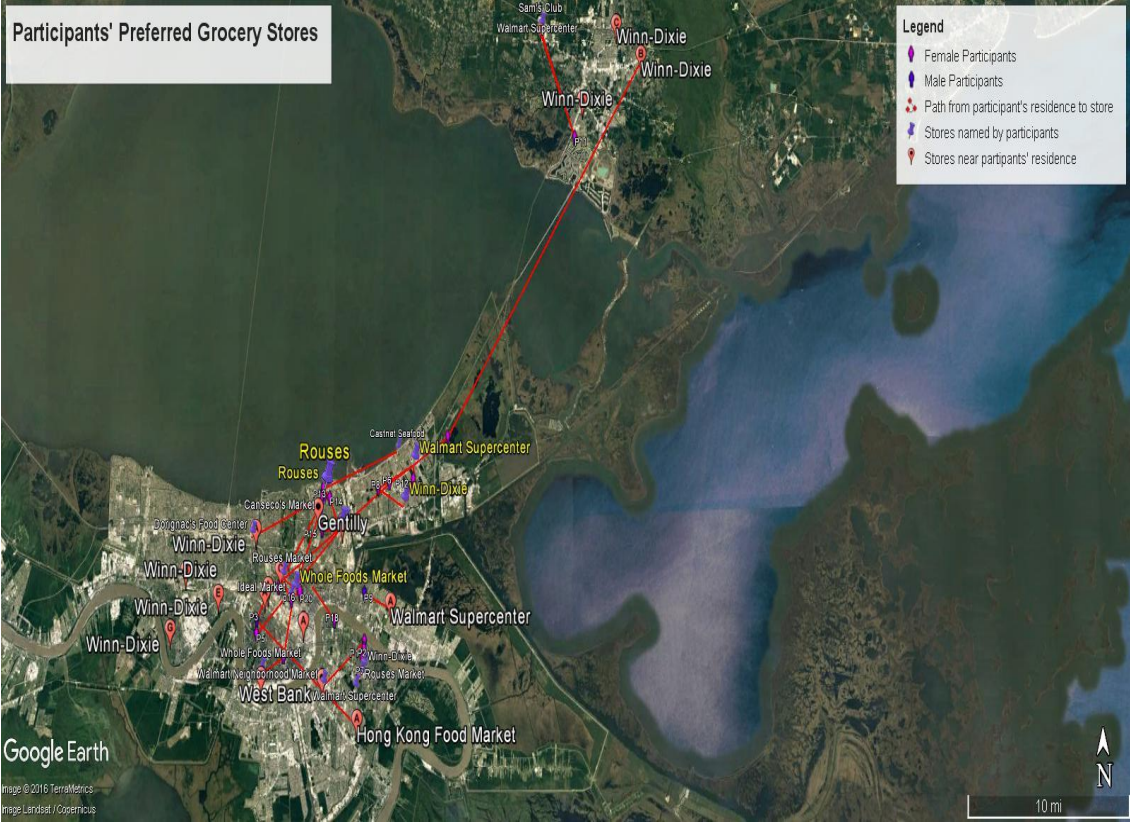


Table 4.3 Store Comparisons: Availability of Fresh Produce Items

Table 3 Store Comparisons- Availability of Fresh Produce Items

	Store	# Empty bins	Asparagus	Broccoli Crowns	Brussel Sprouts	Green Bell Pepper	Cucumber	Kale	Bag Spinach	Food bar	Fresh bar
New Orleans East	Walmart Super Center (6000 Bullard Ave)	26	X	✓	X	✓	✓	✓	✓	X	X
	Winn-Dixie (9701 Chef Menteur Hwy)	2	✓	✓	✓	X	X	X	✓	✓	X
	Winn-Dixie (4600 Chef Menteur Hwy)	0	✓	✓	✓	✓	✓	✓	✓	✓	X
	Walmart (4301 Chef Menteur Hwy)	13	✓	✓	X	✓	✓	✓	✓	X	X
Mid-City	Whole Foods (300 N. Broad St.)	2	✓	✓	✓	✓	✓	✓	X	✓	✓
Gentilly	Rouse's (6600 Franklin Ave.)	0	✓	✓	✓	✓	✓	✓	✓	✓	✓

Table 4.4 Store Comparisons: Price Comparisons

	Store	Asparagus cost	Broccoli Crowns cost	Brussel Sprout cost	Green Bell Pepper Cost	Cucumber cost	Kale cost	Bag Spinach cost
New Orleans East	Walmart Super Center (6000 Bullard Ave)	2.97 per pound	1.74 per lb	0.18 per oz	0.88 each	0.68 each	0.98	0.18 per oz
	Winn-Dixie (9701 Chef Mentour Hwy)	3.90 per pound	1.99 per lb	0.41 per oz	1.19 each	0.75 each	0.99	.37 per oz
	Winn-Dixie (4600 Chef Mentour Hwy)	3.90 per pound	1.99 per lb	0.41 per oz	1.19 each	0.75 each	0.99	.37 per oz
	Walmart (4301 Chef Mentour Hwy)	2.97 per pound	1.74 per lb	0.18 per oz	0.88 each	0.68 each	0.98	.18 per oz
Mid-City	Whole Foods (300 N. Broad St.)	4.99 per pound	1.99 per lb	.49 per oz	1.99 per pound	0.99 each	0.99	n/a
Gentilly	Rouse's (6600 Franklin Ave.)	6.99 per pound	1.79 per lb	.24 per oz	.79 each	0.75 each	1.59	.16 per oz

CHAPTER V

CONCLUSIONS

The majority of current T2DM literature focused on African Americans shows a concentration on reducing complications resulting from T2DM in the African American population, instead of preventing the development of the condition. These studies also treat African Americans as a homogenous group, or focus on those of low-SES. This practice neglects those African Americans in the mid-SES category, who face unique challenges not associated with the middle-class majority.

This study's scoping review showed the glaring inconsistencies in T2DM prevention efforts targeting African Americans. This review failed to produce even a single study examining mid-SES African Americans. In terms of health, middle-class African Americans experience many of the same negative health outcomes seen in the lower-socioeconomic sector of the population. Until it can be definitely established that income and education protect middle-class African Americans, middle-class African Americans cannot reasonably be excluded from the efforts of intervention.

In addition, the types of studies produced in this study's scoping review varied greatly. There are inconsistencies that make it difficult to establish best practices and progress prevention efforts past its current point. Without progress, or a concrete plan for advancement, it is easy to see how disparity rates have persisted, and in many instances worsened, since the issuance of the Secretary's Report on Black and Minority health more than 30 years ago.

There is an urgent need to conduct and publish results on T2DM prevention research intended to address the T2DM health disparity facing African Americans. Sharing information on the processes, effectiveness, and lessons learned helps to advance the field and influence public health decision making. This study serves a large gap in the existing literature; its findings serve as a starting point and suggestion for future research in this area.

The quantitative portion of this study highlighted T2DM knowledge gaps in the study population. While the study found individuals with higher levels of education and income had lower levels of risk, the study also found perceptions of risk that were incongruent with actual risk. With the T2DM disparity rates for African Americans already well established in the literature, knowledge gaps in this population should not be trivialized or ignored. To follow the current practice trends, as suggested by content of the T2DM prevention literature, would be to wait until this group has developed T2DM before intervening. Such an approach does nothing to address the disparity rates in this population.

In the qualitative portion of this study, health information, in terms of food and diabetes information, was often derived from familial sources or the upbringing. Participants frequently used comparatives like, 'healthier than I was,' 'healthier than what my mom raised me on,' or 'healthier than most people in this city.' The comparison requires a baseline in order to be properly understood. Participants demonstrated a motivation to be healthy, or healthier than they once were, based on the information they had, which was often limited and sometimes unreliable, and their

behaviors reflected these limitations. The source and credibility of the information on an individual basis health decisions is important.

The study's majority described positive relationships with their medical professionals, contrary to the traditional narrative of African American distrust of medical professionals. A small subset of the study's participants described less than optimal experiences with past providers, citing age, race, demeanor, etc. as the cause of the discord. For example, participants described physician recommendations that they did not follow, because they did not trust the source providing the information. Participants described feeling as though certain physicians did not understand black bodies. However, when given the same information from physicians willing to explain or discuss their recommendation, the aforementioned participants were willing to take heed. What was perhaps more concerning was the number of participants who reported relying upon their healthcare providers for health information, who also reported never being told about the increased risk of T2DM for African Americans. Participants also reported using "good" blood tests to define "good" health. This suggests that until a problem is identified, which may be too late for intervention in terms of prevention, participants viewed themselves as protected against the condition. For example, participants often described "avoiding sugar" as the key to diabetes prevention. The definition of sugar was specific and pointed to white sugar/table sugar/added sugar. This factor is promoted heavily on food labels in the current market. Many were unaware of other sources of sugar, like breads and fruits. Individuals may have diets heavy in sugar, but think they are safe from diabetes because they avoid deserts and candy.

Participants described a willingness to travel and pay extra for food they considered healthy, because they understand the importance of eating healthily. That understanding of healthy eating was often rooted in incomplete information, however. For example, balance was often described as ensuring there was a vegetable on the participant's plate, but there was no mention of the proportion or preparation of said vegetable. In spite of limited, often inadequate food selections in the immediate proximity, those interviewed, on average did not mind travelling to more distant grocery stores for food items. Price was still listed as a barrier for some, mainly those with dependents. Price did not appear to be a hindrance for those who reported living alone, although they were concerns expressed about value (i.e. 'I don't mind paying more if it's worth it'). The willingness to expend time and resources towards health promotion in this population also suggests that with accurate information and appropriate risk assessments, this group could be motivated to modify health behaviors that may prevent or further delay them from developing T2DM. This connects to the theoretical underpinning for this study. The information about T2DM is askew- what causes it, how it can be prevented. Even the perceptions of the disease, feelings of self-efficacy, which are predicated on beliefs developed around information believed to be true about the condition or how to avoid the condition (i.e. just avoid sweets). If properly motivated, this group has the means to make meaningful changes in diet, and perhaps other modifiable lifestyle factors/health behaviors.

One participant from the quantitative portion of the study was excluded from the qualitative portion of the study after she disclosed that she had received a T2DM

diagnosis after she completed the study's first phase. This individual held a Master's degree in public health, was in her mid-30s and worked as a public health professional. When her frequent urination prompted her to see a physician, she believed she had a urinary tract infection; she attributed her feelings of excessive thirst to a consequence of her frequent urination. When I asked her if she was aware of T2DM before her diagnosis, she responded in the affirmative. When asked if anyone had ever cautioned her about her susceptibility to T2DM, she said no. When asked what she wished she knew before her diagnosis, she responded that she 'didn't think it could happen to her.' She noted that she thought she was doing the right things, or at least, "Wasn't that bad." She noted that after becoming more aware of her diet, after her diagnosis, she realized that her job had often encouraged bad eating habits (i.e. purchasing fast food; eating quickly and mindlessly; not allowing much time for exercise). She noted that even though she worked in health, her area of expertise was not diabetes. She also thought that T2DM was something that happened to older people and didn't think that she had to be concerned about the condition at her age. Her story sounds similar to that of the other participants in this study.

There is still considerable misinformation surrounding T2DM, even among educated, financially stable, African Americans. That misinformation may contribute to motivations to prevent development of the condition. Future health communication campaigns and health education efforts can benefit from the findings of this study, as justification for outreach to a segment of the African American community that has been

largely ignored, but who may greatly benefit from intervention and/or education geared toward T2DM prevention.

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APPENDIX A

SURVEY INSTRUMENT

Q1 Thank you for your time and interest in this study on diabetes knowledge in African Americans. Completing the survey should take less than 10 minutes. Please note that your participation is entirely optional. By completing this survey your consent to participate in the study, and have your responses included in the study's results, is assumed. To refuse consent, simply discontinue by closing the survey now.

Q2 The next five questions are designed to ensure everyone taking the survey actually fits our study populations. Answering should take roughly two minutes.

Q3 What year were you born?

Q4 What is the HIGHEST level of school you've finished or highest degree you have received?

- Less than a high school diploma (1)
- High school diploma (2)
- GED (3)
- Associate's Degree (4)
- Bachelor's Degree (5)
- Master's Degree (6)
- Professional Degree (7)
- Doctorate Degree (8)

If Less than a high school dip... Is Selected, Then Skip To End of Survey

Q5 Is your annual household income equal to or more than \$33,066?

- Yes (1)
- No (2)

If No Is Selected, Then Skip To End of Survey

Q6 Do you identify as African American?

- Yes (1)
- No (2)

If No Is Selected, Then Skip To End of Survey

Q7 Do you identify as Hispanic or Latino?

- Yes (1)
- No (2)

Q58 Do you currently reside in New Orleans or the Greater New Orleans area?

- Yes (1)
- No (2)

If No Is Selected, Then Skip To End of Survey

Q59 Please provide the name of your neighborhood (i.e. The East, Mid City, Westbank, etc.) and ZIP code.

Q57 Have you been diagnosed as a diabetic?

- Yes (1)
- No (2)

Q8 Are you...?

- Single (1)
- A member of an unmarried couple (2)
- Married (3)
- Divorced (4)
- Widowed (5)

Q11 The next section asks for some more specific information about you, to help us better understand who's responding. It should take approximately three minutes.

Q12 Are you a man or woman?

- Man (1)
- Woman (2)

If Woman Is Selected, Then Skip To Are you currently pregnant?

Q13 Are you currently pregnant?

- Yes (1)
- No (2)
- I'm not sure (3)

Display This Question:

If Are you a man or woman? Woman Is Selected

Q14 Have you ever been diagnosed with gestational diabetes?

- Yes (1)
- No (2)

Q15 Do you have a mother, father, sister, or brother with diabetes?

- Yes (1)
- No (2)

Q16 Do you think you are at risk for developing diabetes?

- Yes (1)
- No (2)
- Maybe (3)

Q18 Please identify your weight status using the chart below and select the corresponding point value.

Please identify your weight status using the chart below and select the corresponding point value.

Height	Weight		
4'10"	119-142	143-190	191+
4'11"	124-147	148-197	198+
5'0"	128-152	153-203	204+
5'1"	135-157	158-210	211+
5'2"	136-163	164-217	218+
5'3"	141-168	169-224	225+
5'4"	145-173	174-231	232+
5'5"	150-179	180-239	240+
5'6"	155-185	186-246	247+
5'7"	159-190	191-254	255+
5'8"	164-196	197-261	262+
5'9"	169-202	203-269	270+
5'10"	174-208	209-277	278+
5'11"	179-214	215-285	286+
6'0"	184-220	221-293	294+
6'1"	189-226	227-301	302+
6'2"	194-232	233-310	311+
6'3"	200-239	240-318	319+
6'4" +	205-245	246-327	328+
	(1 point)	(2 points)	(3 points)
	You weigh less than the amount in the left column (0 points)		

- 0 points (1)
- 1 point (2)
- 2 points (3)
- 3 points (4)

Q19 Are you physically active? Here physically active is being defined as moderate to high intensity physical activity, for at least 30 minutes, 3 or more times per week.

- Yes (1)
- No (2)

Q20 Do you consider yourself to be overweight?

- Yes (1)
- No (2)

Q21 Please select all that apply. I define overweight by...

- the number on the scale (1)
- my BMI (2)
- what my doctor says. (3)
- how I look and feel. (4)
- how I look compared to other people. (5)
- how I look compared to other people like me. (6)

Q22 Has a doctor or other health care professional ever told you that you have high blood pressure or hypertension?

- Yes (1)
- No (2)

Q23 Has a doctor or other health care professional ever told you that you have high blood cholesterol?

- Yes (1)
- No (2)

Q24 Have you ever had a blood test to see if you have diabetes or high blood sugar?

- Yes (1)
- No (2)
- I'm not sure (3)

Q25 How serious do you consider diabetes to be?

- Very serious (1)
- Somewhat serious (2)
- Not very serious (3)
- Not serious at all (4)

Q26 The next section is intended to determine what you know about diabetes. It should take less than three minutes.

Q27 Which of the following are risk factors for diabetes? Please select all that apply.

- I don't know what the risk factors are. (1)
- Family history (2)
- Overweight (3)
- Age (4)
- Poor dietary habits (5)
- Race (6)
- Had a baby that weighed over 9 lbs. at birth (7)
- Lack of physical activity or sedentary lifestyle (8)
- High blood pressure (9)
- High blood sugar (10)
- High Cholesterol (11)
- Hypoglycemic (12)

Q28 Nearly 40 percent of adults currently have a condition called pre-diabetes.

- True (1)
- False (2)

Q29 Which of the following may be warning signs of diabetes? Please select all that apply.

- Extreme hunger (1)
- Tingling/numbness in hands or feet (2)
- Blurred vision (3)
- Increased fatigue (4)

Q30 Can diabetes be prevented?

- Yes (1)
- No (2)
- Some types (3)
- I'm not sure (4)

Q31 Which of the following do you think contribute to the high diabetes rates in the U.S.? Please select all that apply.

- I don't know (1)
- Poor diet / unhealthy eating (2)
- Lack of exercise / sedentary lifestyle (3)
- Being overweight (4)
- Being obese (5)
- Lack of education about diabetes (6)
- Lack of access to health care (7)
- Heredity / genetics (8)

Q32 You can have diabetes and not know it.

- True (1)
- False (2)

Q34 Please select the choice that best describes each possible cause of diabetes below.

	Definite Cause (1)	Possible Cause (2)	Not a Cause of Diabetes (3)
Race or ethnic group (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Being overweight (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Heredity (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Eating too much sugar (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Eating too much salt (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Eating fatty foods (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Not getting enough exercise (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Old age (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q35 Last section, we promise! This should take less than two minutes

Q36 Would you be willing to be contacted for participation in the second phase of this study?

- Yes (1)
- No (2)

If Yes Is Selected, Then Skip To Please provide your name and a phone ...

Q37 Please provide your name and a phone number or e-mail address for the study's Protocol Director, Erica Spears-Lanoix, to contact you. This information will also be used to enter you into the grand prize drawing as a thank you for your participation.

Name (1)

E-mail (2)

Phone number (3)

Display This Question:

If you would be willing to be contacted for participation in the second phase of this study? No Is Selected

Q38 You can still be entered into the prize drawing as a thank you for your time and participation. To enter, we must have a name and phone number or e-mail address to

contact you if you win. Your contact information will NOT be used for any other purpose. If you would prefer not to be entered, please feel free to skip this question.

Name (1)

E-mail (2)

Phone number (3)

APPENDIX B
QUESTIONING ROUTE

Participant Name:

Date:

INTRODUCTION	
<p>Researcher introduction- personal and basic purpose of the interview (READ BEFORE RECORDING)</p> <ul style="list-style-type: none"> • First, thank you for agreeing to meet with me and for taking time to do my survey earlier this year. • I'm from New Orleans • My study looks at AA knowledge and perceptions of risk surrounding T2DM. • I'm really interested in getting greater insight into how we think and feel about this topic, in order to make greater progress in addressing this health crisis. Anything you can contribute on the topic is valuable. And because I'm really interested in learning about what you have to say, I'm going to try not to talk too much, or be overly detailed when I'm asking the questions. • Do you have any questions for me before we begin? 	
2.	<p>Question: Let's start with you telling me a little bit about yourself?</p> <p><i>Probes: How long have you lived in New Orleans? What neighborhood do you live in? How long have you lived in that neighborhood?</i></p>
INFORMATION	
3.	<p>Question: Where do you generally get information about your health? How do you decide what to listen to?</p>
4.	<p>What do you know about diabetes?</p>

	<i>Probes: Do you know what causes diabetes? Do you know anyone with diabetes?</i>
5.	Have you heard or has anyone (friend, family, physician, media outlet, etc.) told you something about diabetes that you don't believe is true?
6.	Would you describe your diet as healthy? <i>Possible probes: Would you describe your lifestyle as healthy? When I say "healthy diet" or "healthy lifestyle" what do those things look like to you?</i>
8.	What does a healthy weight look like to you? <i>Possible Probes: How do you define a healthy weight for yourself (number on the scale, how you look compared to other people, how you look compared to other people that look like you, your BMI)? Do you use BMI as a measurement? What do you think about BMI?</i>
MOTIVATION	
9.	Is diabetes something you worry about? <i>Possible probes: Is diabetes something you feel you can avoid? If so, how? How serious is diabetes to you? If I told you diabetes has been linked in recent literature to dementia, would that change your feelings about the subject?</i>

10.	<p>How motivated are you to prevent yourself from developing T2DM?</p> <p><i>Possible probes: Is it something you are worried about for your children/spouse/family? Do you discuss these issues? Why or why not?</i></p>
BEHAVIOR (GIS)	
11.	<p>Would you say that you cook or eat out more?</p> <p>Possible probes: Why? How often would you say you eat out a week? Where do you go when you eat out? How do you decide where and what to eat (i.e. cost, convenience, taste, quality, atmosphere, etc.)?</p>
12.	<p>When you do go grocery shopping, where do you go (ask location)? Why?</p> <p>How do you feel about/do you like the store? Does it make it easier or harder for you to eat healthily in your opinion?</p>
13.	<p>Would you describe yourself as physically active? How often do you exercise? When you exercise, how long do you do it? Are there things in your neighborhood that make it easier or harder for you to be physically active?</p>
14.	<p>Closing question: Is there anything we haven't discussed, as it relates to this topic, that you think I should know? Is there something you think people or</p>

	<p>missing, or a better way for researchers to reach people and educate them about this conditions? Are there any final thoughts you would like to share?</p>
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