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The Perception of Men's Preferred Female Body Size and Weight Control Behaviors of Afro-Caribbean Women in the United States Virgin Islands

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2020

Abstract

The Perception of Men's Preferred Female Body Size and Weight Control Behaviors of Afro-Caribbean Women in the United States Virgin Islands

by

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MPH, Tulane University School of Public Health, 1991

BS, The Pennsylvania State University, 1986

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

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Abstract

The prevalence of obesity among Afro-Caribbean women living in the United States Virgin Islands (USVI) is a health care issue that can have detrimental effects on society. To reverse the spread of this disease, factors contributing to its prevalence must be understood so that they can be addressed. The purpose of this cross-sectional study was to examine Afro-Caribbean women's perception of the female body size preferred by Afro-Caribbean men and the influence of that perception on the women's weight control behaviors of diet and physical activity. The reasoned action approach was the basis for the theoretical foundation. The research problem was addressed through the use of a convenience sample (n=183) using an original, validated online survey that included demographic and behavioral information, images of the female Pulvers silhouettes, and information related to diet and physical activity levels. For diet, with the addition of the covariates of income (p=.02) and education level (p=.01), women's perception of the female body size that men preferred was not significant in predicting women's weight control behaviors. For physical activity the perceived body size preferences as indicated by silhouettes 2-3 and 4, were significant predictors of using physical activity for weight control. However, this association was lost with the addition of covariate education level (p=.01). This study may contribute to social change by providing health care professionals and policy makers with a better understanding of factors that influence the weight control behaviors of Afro-Caribbean women in the USVI. The results of this study inform current literature and justify the need for further research on the topic.

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Dedication

I dedicate this to my father, Oscar Emmanuel Henry (R.I.P). I finally finished!

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Chapter 1: Introduction to the Study

Introduction

Obesity and overweight are prevalent among Afro-Caribbean women living in the United States Virgin Islands (USVI). The Centers for Disease Control and Prevention (CDC, 2017a) indicated that in 2016, 41.0% and 33.4% of women living in the USVI were obese and overweight, respectively. This was an increase from 2010, when 35.7% of women were found to be obese and 28.9% of women were overweight (CDC, 2017a). Data separating women by race were not available; however, the 2010 USVI census data showed that 76% of the population was Black and that women made up 52% of the overall population (University of the Virgin Islands, 2013). Therefore, it was assumed that the percentages reflected members of the dominant population, Afro-Caribbean women. These data showed that the prevalence of obesity in women living in the USVI is increasing. In fact, the situation may be more serious than stated due to the phenomenon of underreporting of obesity and overweight among women (Clarke, Sastry, Duffy, & Ailshire, 2014; Polivy, Herman, Trottier, & Sidhu, 2014). Engaging in the weight control activities of healthy eating and/or physical activity is important when individuals are attempting to reduce their body size. There is a dearth of research examining the determinants of weight control behaviors among Afro-Caribbean women in the USVI. Without data related to this phenomenon, the problem of the increasing prevalence of obesity among Afro-Caribbean women will be difficult to control in the USVI.

This chapter provides the background about the problem and outlines the problem statement, purpose, research questions, theoretical framework, and definitions of terms, as well as the assumptions, limitations, and significance of the study.

Background

Afro-Caribbean populations may have less stigma surrounding being overweight, and may be less likely to engage in weight control behaviors (Alvarado, Murphy, & Guell, 2015; Bramble, Cornelius & Simpson, 2009). There is no evidence-based research among Afro-Caribbean women living in the USVI that identifies factors affecting their engagement, or lack of engagement, in weight control behaviors. Tull et al. (2001) examined the cultural perception that men living in the Caribbean preferred larger women but found no such overall preference. The study is dated, but it is useful because it is the only study involving this phenomenon among the Afro-Caribbean population. In this study, women's perception of men's preference for women's body size was not examined, leaving a gap in the literature. An examination of this perception is important because an individual's behavior can be affected by various societal influences. Currently researchers are looking at how these types of influences affect an individual's actions and can then be used in interventions seeking to affect behavioral change (Miller & Prentice, 2016). The reasoned action approach (RAA) as a theoretical foundation considers perceptions of societal norms as predictors of individuals' intentions and actions (Fishbein, 2008). Furthermore, researchers using the RAA have found the injunctive norms of social approval to be a predictor of intentions for health protection behaviors, including exercise and diet (Conner, McEachan, Lawton, & Gardner, 2017).

For this study the RAA was used as the theoretical foundation for examining Afro-Caribbean women's perceptions of men's female body-size preference as a societal norm and the effect on woman's weight control behaviors.

Differences in health outcomes among various groups of African descent have been found. In the United States, foreign-born Black people have been found to have lower risk of obesity that those born in the United States (Mehta, Elo, Ford, & Siegel, 2015). Furthermore, in terms of general health, Caribbean immigrants have lower odds of reporting poor health than African Americans (Hamilton & Hummer, 2011). These findings in health status among various subsets of Black people based upon place of birth highlight the need to conduct studies separately for Black people based upon country of origin. There are differences in morals, values, and beliefs among various groups of African descent (Agyemang, 2005). Therefore, the results of studies involving weight control behaviors of African American women should not be considered applicable to Afro-Caribbean women simply because of race. To address this gap in the literature, there is a need for research on factors affecting the rate of obesity among Afro-Caribbean women living in the USVI.

Problem Statement

There is little evidence-based data to determine factors affecting overweight and obese Afro-Caribbean women's participation in weight control behaviors. Identifying such factors is vital to developing evidenced-based strategies to curtail the rising prevalence of obesity among women in the USVI. Aside from wanting individuals to be healthy for themselves, reducing the prevalence of obesity has positive impacts at the

societal level as well. A society with fewer health issues is more productive with a better economy (Wang, McPherson, Marsh, Gortmaker, & Brown, 2011).

There are many studies on weight control behaviors among African American women. However, studies that involve this phenomenon among Afro-Caribbean women are limited. Although more research is being done on obesity among the Afro-Caribbean population, it is still in the early stages with researchers examining barriers to physical activity (Alvarado et al., 2015), the effect of neighborhood environments on obesity (Sullivan, Brashear, Broyles, & Rung, 2014), and social norms and dietary intentions (Tull, Cort, Taylor, & Wickramasuriya, 2013). There are different cultural norms among Black people living in the United States and Black people living in the USVI that can affect weight behaviors. Therefore, it is necessary to continue conducting separate studies populated by Afro-Caribbean women. To address this gap in the literature, factors potentially affecting weight and weight control behaviors of Afro-Caribbean women were examined.

Purpose of the Study

The purpose of this quantitative study was to determine Afro-Caribbean women's perception of the female body size preferred by Afro-Caribbean men and the relationship of that perception on the women's weight control behaviors of diet and exercise. Callwood, Campbell, Gary, and Radelet (2012) identified two leading health concerns within the Virgin Islands as diabetes and heart disease. Because obesity and overweight are related to both of these health threatening chronic diseases, it is important to identify factors affecting weight control behaviors of Afro-Caribbean women living in the USVI.

For the purposes of this study, the independent variable was the body size Afro-Caribbean women thought Afro-Caribbean men preferred. The two dependent variables were physical activity and diet. The identified covariates of diet were education and income levels while the covariates for physical activity were education level and the participant's self-reported body size.

Research Questions and Hypotheses

1. RQ1 (descriptive): What are the perceptions of Afro-Caribbean women regarding the female body size preference of Afro-Caribbean men?

2. RQ2 (inferential): Is there a relationship between the perceived female body size that Afro-Caribbean women think that Afro-Caribbean men prefer and the women's dietary behaviors?

$H_0$2: There is no relationship between the perceived female body size that Afro-Caribbean women think that Afro-Caribbean men prefer and the women's dietary behaviors.

H_a2: There is a relationship between the perceived female body size that Afro-Caribbean women think that Afro-Caribbean men prefer and the women's dietary behaviors.

3. RQ3 (inferential): Is there a relationship between the perceived female body size that Afro-Caribbean think that Afro-Caribbean men prefer and the women's physical activity levels?

$H_0$3: There is no relationship between the perceived female body size body-size preference women think body-size preference men prefer and the women's physical activity behaviors.

H_a3: There is a relationship between the perceived female body size body-size preference women think body-size preference men prefer and the women's physical activity behaviors.

Theoretical Framework

The theoretical framework for this study was the RAA, which looks at individuals' perceived norms as predictors of their intentions and actions. The theory, developed by Fishbein (2008), recognizes an individual's intention to perform a behavior, considering attitudes, and perceived norms. Furthermore, Fishbein stated that attitudes towards a behavior (which can be affected by social norms) guides an individual's intentions to engage or refrain from the behavior. In this study, I sought to determine if Afro-Caribbean women's weight control behaviors depended upon the perceived norm of an Afro-Caribbean men preference for heavier women. Promoting change in health behavior can be positively affected by changes to attitudes and norms (Sheeran et al., 2016). The RAA was used to understand the attitudes and norms that affect weight control behaviors among Afro-Caribbean women in the USVI. Chapter 2 provides more detail regarding the RAA and its relevance to the study.

Nature of the Study

A cross-sectional, survey design was used to examine the perceptions that Afro-Caribbean women have regarding Afro-Caribbean men's female body size preference. Such a design was appropriate because I surveyed participants at one moment in time. The two dependent variables were physical activity and dietary behavior. The independent variable was the perceived body size that Afro-Caribbean women believe that Afro-Caribbean men prefer. The survey was created and administered online, and the results were collected online using the encrypted website, Survey Monkey. The Pulvers silhouettes were used as a selection tool to determine the body size that Afro-Caribbean women perceive that Afro-Caribbean men prefer (Pulvers et al, 2004). The silhouettes were determined to be a reliable and valid tool for general surveys involving body size (Yepes, Viswanathan, Bovet, & Maurer, 2015). Survey questions were included to determine if and what type of weight control behaviors are used: diet and/or exercise.

Two modes of participant recruitment were initially planned for this study. A convenience sample of Afro-Caribbean women was going to be used to recruit participants from the USVI Department of Health (DOH). In addition, Afro-Caribbean women who were born and/or raised in the Caribbean and who were presently living in the USVI were going to be invited to participate in the study via an e-mailed invitation including the Survey Monkey website link. However, the necessary approval could not be obtained from the DOH. Therefore, the second method, recruitment via Facebook, was the only one used. The survey link was posted on my personal Facebook page and

six other local USVI-focused Facebook groups. The verbiage that would have appeared in a printed consent form was posted above the link. Descriptive information such as age, education, and income level were included to determine characteristics of the sample population. Data were analyzed using the IBM SPSS Version 25 student package.

Definitions

Afro-Caribbean Woman: A woman of African descent who was born in the U.S. Virgin Islands and/or raised on any of the four islands and presently living there.

Larger size (d): Weight that visually larger than the overweight or obese category. This was operationalized using the Pulvers silhouette card images with the 5th image being considered overweight and 6-9 being obese (Pulvers et al., 2004).

Body mass index (BMI): Weight in kilograms divided by the square of height in meters $Wt(kg)/Ht(M)^2$ (CDC, 2015).

Overweight: A BMI of 25.0 to <30.0 (CDC, 2015).

Obesity: A BMI that is greater than or equal to 30.0 (CDC, 2015).

Weight control behavior: Any physical activity or dietary modification that is used to manage body weight (Williamson, Martin, & Stewart, 2005).

Assumptions

The assumptions of this study were as follows: (a) the Afro-Caribbean women were concerned with their weight, (b) the Afro-Caribbean women were concerned with how they were perceived by Afro-Caribbean men, (c) individuals who did not meet eligibility requirements were truthful and opted out of completing the survey if they did

not meet the eligibility requirements, and (d) individuals would not have completed the survey more than once using different computers (I fixed the settings that allowed the completion of only one survey per IP address). These assumptions were necessary because the absence of any of them would negate the usefulness of the study.

Scope of the Study

The scope of this study was limited to Afro-Caribbean women living on any of the islands making up the USVI. Afro-Caribbean women from all socioeconomic and educational backgrounds were included in this study.

Limitations

One limitation of the study was that it depended on individuals being truthful about their eligibility to take the survey. Another limitation was that some of the Afro-Caribbean woman criteria may have been open to interpretation by participants: the definition of being raised in the Virgin Islands was not quantitatively defined, nor was the definition of living in the Virgin Islands. This may have caused some ambiguity in the minds of individuals as to their eligibility, especially those living in the USVI part time. An additional limitation was that individuals not meeting any of the criteria may have elected to complete the online survey. However, due to the survey topic, it was not expected that individuals outside of the target population would be motivated to complete the survey. A fourth limitation was the use of the event per variable method to calculate the sample size. More study is warranted to determine the ideal factor that should be used when calculating the sample size. Therefore, the power of the test may have been

affected if the sample size was too low. A final limitation was related to the generalizability of study results. The Afro-Caribbean population in the USVI is heterogeneous with representation from many of the Caribbean islands. However, the societal influence of the United States on the island's population is not as prevalent on islands that are not U.S. territories. Therefore, the results of this study should not be generalized to other Afro-Caribbean populations.

Significance

This research contributes to the scant literature on gender-based Afro-Caribbean perception of body size and its relation to weight control behavior in a location where the rates of obesity and overweight are high among women. In the USVI, despite an understanding that diet and physical activity are important, the prevalence of obesity and overweight are high and increasing, as are related diseases. Two of the three leading health concerns in the USVI are heart disease and diabetes, and healthy diet and exercise have been found to be of importance to residents (Callwood et al., 2012). However, a disconnect seems to exist between understanding the importance of healthy eating and regular physical activity and the increasing epidemic of obesity among Afro-Caribbean women in the USVI. Understanding factors that inhibit or promote weight control behavior among Afro-Caribbean women could lead to evidence-based intervention programs that could help to reverse the increasing trend of overweight and obesity.

Another goal for this study was also to impact positive social change. At the community and societal levels, the negative economic effects of obesity include decreased work productivity and absenteeism (Biener, Cawley, & Meyerhoefer, 2018;

Lehnert, Sonntag, Konnopka, Riedel-Heller, & König, 2013). At the individual level, the high prevalence of obesity is associated with chronic disease, anxiety disorders, reduced quality of life and premature mortality (Biener et al., 2018; Cash et al., 2013; Taylor, Forhan, Vigod, & Mcintyre, 2013). This study has the potential to encourage social change by identifying factors to further the understanding of how to reduce the negative impacts of obesity among Afro-Caribbean women in the USVI.

Summary

This chapter included a foundation for the study's contribution to the literature on factors that contribute to obesity among the target population. Chapter 2 will provide a review of the literature relevant to the study.

Chapter 2: Literature Review

Introduction

The purpose of the study was to determine Afro-Caribbean women's perception of the female body size preferred by Afro-Caribbean men and how this this perception influences women's weight management behaviors of diet and exercise. The population studied was Afro-Caribbean women on the island of St. Croix, USVI. Within this study, the term "larger sized" or "heavier" refers to women who are overweight or obese. According to the CDC (2017b), overweight and obesity both refer to weight ranges that are greater than those considered healthy as determined by the BMI. BMI, calculated as weight in kilograms divided by the square of height in meters, is useful because it is correlated with outcomes of diseases like diabetes, heart disease, and hypertension (CDC, 2015), which are on the rise in the USVI (Callwood et al., 2012). The RAA focuses on factors that affect an individual's intention to perform an action (which, for the purpose of this study, included weight management behaviors) and was the foundation of the study.

This chapter includes a review of the literature related to the following: (a) the RAA and its use in studying health-related behaviors, (b) obesity and overweight factors related to Black women in general and Afro-Caribbean women in particular, (c) factors that affect weight control behaviors among Black women in general and Afro-Caribbean women in particular, and (d) Afro-Caribbean men's preference of women's body size. Review of studies in these topic areas provided essential information to guide the research in this study.

Literature Search Strategy

The following online references were used: the Thoreau search engine from the Walden University library, SAGE Journals, SAGE Knowledge, and Google Scholar linked to the Walden library (which returns references from PubMed). Quantitative studies were the primary study type reviewed; qualitative and mixed-method studies included only if relevant. Studies from the years 2010 through 2019 were included, and studies from years prior to 2010 were included if they were seminal or otherwise important studies in the relevant content areas. Studies were limited to the geographical region of North America and the entire Caribbean region. Studies focusing solely on individuals under the age of 18 were excluded.

Few studies related to overweight and obese Afro-Caribbean women currently exist that could be used to develop evidence-based strategies leading to improved weight management behaviors. A literature search using the terms "overweight OR obesity," "Afro-Caribbean OR Caribbean," "woman OR female," and "weight loss OR weight management" and also included different Caribbean island names yielded only six potentially useful results. Key words/phrases used in varied combinations included the following: *Afro-Caribbean, African-American, Black, body size, body image, body satisfaction, body-size preference, weight control, weight control behavior, weight management, diet, exercise, physical activity, quantitative, perceived norms, societal norms, weight culture, and RAA.* All of the cited studies included were peer reviewed to ensure the highest level of confidence in the reported data. Websites of major credible

organizations (e.g., CDC) were accessed for supportive information related to the included research studies.

Theoretical Foundation

The theoretical framework for this study was the RAA. The RAA integrates the theory of reasoned action (TRA) and the theory of planned behavior (TPB). The RAA, developed by Fishbein (2008), recognizes an individual's intention to perform a behavior, considering attitudes, and perceived norms. The inclusion of an individual's attitude towards the behavior is what sets the RAA apart from the TRA and TPB. Although attitudes were not a consideration in this study, future studies based on the current study may include attitudes. Therefore, the RAA was adopted with this in mind.

Inclusion of social norms was the main reason RAA was selected as the theoretical framework for this study. Both types of social norms, descriptive and subjective, can help predict behavioral intention and action in relation to behaviors such as healthier eating or exercising (Conner et al., 2017). Descriptive norms refer to actual behaviors that occur within a population, such as rates of alcohol consumption among college students. These norms have been found to be predictors of health risk intention and health risk behaviors (Connor et al., 2017; McEachan, Sutton, & Meyers, 2010). Such norms, however, were not the focus of this study. Subjective norms (sometimes called injunctive norms) refer to the perceived pressure to perform a behavior. These norms (such as this study's focus on women's perception of the body size men prefer and its role in weight management behaviors) are predictors of health protection intention and behaviors like physical activity (McEachan et al., 2010; Rhodes, Matheson, & Mark,

2010) and healthy eating (Conner et al., 2017). Therefore, subjective norms were the focus of this study. The real or perceived social norms of an individual's social circle or community (social networks) can affect weight control behaviors and weight status. However, there is limited understanding of the processes by which such social networks cause such health conditions.

Regarding the social network involving romantic partnership, there is evidence that individuals seeking marriage may lower their BMI (Powell et al., 2015). The study population, however, was primarily White. Although such a phenomenon may be prevalent in White Western culture, the same assumption should not be made for Black populations. The theme of the romantic relationship and the social norm of weight control was central to my study of Afro-Caribbean women, and there is a gap in the literature in terms of studies solely including this population. Differences in real and perceived social norms can differ based on the region of the world in which individuals of African descent live. Agyemang (2005) noted that Black people are not a homogenous group. Therefore, studies of Afro-Caribbean women in the USVI should be conducted independently to understand population-specific norms.

Only one study in the literature reviewed for the current study addressed such social norms and diet in Afro-Caribbean women. Tull et al. (2013) examined the effect of social norms on intentions to engage in dietary behaviors associated with obesity and chronic disease risk. The study of 183 Afro-Caribbean women (ages 18-55) took place on the island of Barbados. The purpose of the study was to determine the effect of social norms on the intention to consume high fat foods, alcohol and fruits, nuts, and vegetables.

The theoretical framework used was the TRA, the precursor to the RAA. The TRA states that attitudes towards a behavior (which can be affected by social norms) guide an individual's intentions to engage or refrain from the behavior. The women were asked to answer questionnaire items related to subjective norms. Questions included family and friends' views about dietary behaviors and subjects' motivation to conform to the social network. Tull et al. found that intentions to eat foods high in fat, nuts, fruits and vegetables, and to consume alcoholic beverages were all positively influenced by supportive social norms ($p<.05$ for each intention). In the case of alcohol and high fat foods, supportive social norms were associated with reduced consumption. For fruits, nuts, and vegetables, supportive social norms were associated with increased consumption. One noted limitation of the study was that the study sample was not randomly selected and the design was cross-sectional; therefore, causation could not be determined. As this was the sole study focusing on Afro-Caribbean participants related to the effect of social norms on weight management behaviors, it should be considered a starting point for future studies among this target population.

Aside from the association between social norms and health behaviors within the general friends-and-family category, there is evidence that if one partner within a romantic relationship chooses to engage in healthier behaviors, the relationship may be negatively affected (Leahey, Doyle, Xu, Bihuniak, & Wing, 2015). Furthermore, when overweight women engage in healthier behavior, the percentage of women who retained relationships with their overweight partners decreased (Leahey et al., 2015). This is an important finding because I examined women's beliefs about how their body size may

affect current or potential romantic relationships. With social pressures and perceived social norms influencing overweight or obesity status, it is important to identify as many factors as possible to help construct evidence-based interventions and/or to develop policies to help individuals make positive lifestyle changes. Health behaviors are positively affected when information is gained that causes changes in attitudes and norms (Sheeran et al., 2016). If Afro-Caribbean women are not engaged in healthy weight management behaviors because they perceive that men prefer them to have a larger body size, then targeted information can be developed to counterbalance that belief. Afro-Caribbean women's perception of men's female body-size preference as a social norm needs to be studied to determine its potential role in inhibiting the behavioral intention and/or action to attain a healthier weight.

The end goal of my study was to obtain data that can lead to the creation of evidence-based weight control intervention methods for overweight and obese Afro-Caribbean women in the USVI. Using evidence-based theoretical foundations when designing programs optimizes successful outcomes and allows for better reflection and evaluation of the program design success following program completion (Gans et al., 2003; James, Pobee, Oxidine, Brown, & Joshi, 2012; Yeary et al., 2015).

Literature Review Related to Key Variables and Concepts

Obesity and Weight Control Practices

Obesity is a widely studied chronic disease. Despite advances in understanding various causal factors, it continues to be a worldwide epidemic that increases the risk of many other chronic diseases (Friedrich, 2017; World Health Organization, 2013).

According to the CDC (2018), people who are obese are at increased risk for the following diseases: hypertension, Type 2 diabetes, coronary heart disease, stroke, gallbladder disease, osteoarthritis, sleep apnea, certain cancers, mental illness, and chronic body pain. Causes of overweight and obesity are multifaceted and include health choices, an individual's environment, genetics, certain drugs, and family history (CDC, 2018). To combat obesity, there are three main nonsurgical weight management practices: physical activity, making dietary modifications, and a combination of the two (American College of Obstetrics & Gynecology, 2014; CDC, 2018, U.S. Department of Health and Human Services, 2018). In comparison to other groups, African American women have been shown to lose less weight on behavioral management weight loss programs (Tussing-Humphreys, Fitzgibbon, Kong, & Odoms-Young, 2013). They have also been underrepresented in behavioral weight loss intervention trials (Fitzgibbon et al., 2012).

Comparing women of all races and ethnicities who engaged in behavioral weight management programs, greater long-term weight loss was found among those combining exercise and diet versus diet or exercise alone (Johns, Hartmann-Boyce, Jebb & Aveyard, 2014). Black women, when compared to White women, lost less weight during weight loss programs and maintained a lower percentage of long-term weight loss (Tussing-Humphreys et al., 2013). A suggested biological reason for this discrepancy in realized weight loss between African American women and their White counterparts is that severely obese African American women appear to have lower baseline calorie requirements (Delany et al., 2014). Calculations of caloric needs among Black

populations are intrinsically different than the White populations on whom these calculations are based. There may be a need to revise caloric calculations for African American populations if successful weight loss is to be realized.

Studies among the African American population reveal the complexity of obesity and the associated risk for many chronic and debilitating diseases. With so few studies of this topic focusing on this population, increased research is warranted to find new evidence-based approaches to reduce the problem among Afro-Caribbean women. Current strategies and interventions (based on data gathered from other racial and ethnic groups) may be ineffective. To make inroads into solving this complex program, factors affecting overweight and obesity that are specific to the Afro-Caribbean population need to be determined. Designing an evidence-based program is vital in optimizing the chance of women's' success in overcoming obesity.

Biological Mechanisms of Obesity in Black Women

A markedly high risk of obesity is found among African American women compared with other racial or ethnic groups in the United States (Masters et al., 2013). It may seem that the same weight management techniques would be applicable across racial and ethnic groups and that all interventions would have the same efficacy despite racial and ethnic differences. However, there is evidence of race-based biological factors that may contribute to the disparate rates of obesity among Black women.

Adiponectin is a protein hormone that plays a role in insulin resistance. The difference in the levels found in Black and Caucasian women appear to also play a role in the difference in the prevalence of obesity among the two groups. Low adiponectin

levels are associated with the obesity-related diseases of metabolic syndrome and atherosclerosis (Matsuzawa, Funahashi, & Nakamura, 2011). In addition, low levels are associated with higher levels of visceral abdominal fat (VAT) that also surrounds internal organs (Bidulescu et al., 2013). Adiponectin levels are lower in obese individuals than in individuals of normal weight, and lower levels of the hormone have been found among Black women when compared to Caucasian women (Agyemang & Powell-Wiley, 2013). Because of these differences at the hormonal level, Black women are more susceptible to obesity-related diseases. Leptin, like adiponectin, is another hormone that acts differently in Black women when compared to other groups. Leptin is critical to appetite and weight control and is partially responsible for regulating energy expenditure and food intake by causing feelings of fullness (satiety). Agyemang and Powell-Wiley, (2013) reported that African American women had higher levels of leptin and fewer leptin receptors than women in other racial or ethnic groups. Black women may have a higher threshold for satiety and are less likely to feel full as quickly as women in other ethnic groups. If Black women eat more to experience the same feelings of satiety, then this is another biological explanation for higher levels of overweight and obesity. These findings support the need for future research on Black women and the existence possible unique, race-specific biological factors for obesity.

Researchers continue to provide data that suggest there may be biological differences in Black women that affect their weight status. African American women have lower energy expenditure than Caucasian women in response to physical activity (Carpenter et al., 1998; Kushner, Racette, Neil, & Scholler, 1995; Weinsier et al., 2000).

DeLany et al (2014) indicated that African American women required fewer calories to lose weight than their Caucasian counterparts, which suggests a need to revisit caloric requirement calculations for African Americans. Therefore, it is important to continue obesity studies that focus on identifying race-related differences that may affect health outcomes. Health recommendations for Black women based on research findings from studies of White women do not take into consideration such differences. Identifying and acknowledging possible undiscovered biological differences could lead to more successful outcomes when health care professionals are formulating weight control interventions for Black women.

Factors Affecting Weight Control Behaviors of Black Women

Body satisfaction. The pressure to reach the Americanized thin ideal is not widely embraced by Afro-Caribbean women living in the USVI. There may be satisfaction derived from being of larger size, and as a result, these women may feel little need engage in weight control behaviors. However, there is a lack of research related to body satisfaction that focuses on Afro-Caribbean women for evidence-based conclusions. In one qualitative study of Black women and body satisfaction, a Caribbean woman stated, "A Size 4 Caribbean woman, that would be hard to find because we are thick!" (Capodilupo & Kim, 2014, p. 43). Dijkstra, Barelds, and Brummen-Girigori (2015) examined how body satisfaction was affected in women aged 30 years and under from the Netherlands (predominantly White) and Curacao (predominantly Black). Both groups were asked to imagine stepping on a scale, perceiving themselves to have gained 2.5 kg (5.5 lb.). In the study, only among women from The Netherlands was imagined

body satisfaction negatively affected by imagined weight gain. European-based weight ideals for measuring body satisfaction, therefore, may not be valid for use with Afro-Caribbean women. Forbes et al. (2012) noted such cultural differences in beauty ideals between women living in Argentina compared to women living the United States. Findings such as these supports the anecdotal evidence of Afro-Caribbean women's indifference to adopting the Western thin ideal, even to the point of possibly embracing a larger body size as the ideal.

There has been a shift in the focus of body satisfaction research involving African American women. Historically, African American women have indicated greater body satisfaction than White women, despite having a larger body size (Baird, Morrison, & Sleigh, 2007; Hawkins, Tuff, & Dudley, 2006; Henriques, Calhoun, & Cann, 1996; Kronenfeld, Reba-Harrelson, von Holle, Reyes, & Bulik, 2010). However, researchers are finding that body dissatisfaction does exist among African American women, but that other factors such as societal pressures and financial constraints (rather than the sole desire to be thin) play a role (Bakhshi, 2011; Capodilupo & Kim, 2014; Gustat, Carton, Shahien, & Anderson, 2016). Furthermore, African American women do seem to be concerned about their body image but do not value thinness in the same way as White women (Capodilupo & Kim, 2014). Talleyrand, Gordon, Daquin, and Johnson (2017) revealed body image themes of African American women that differ from those of White women, noting that their body sizes as more "hippy" compared to other groups, and that being a size 2or 4 is unrealistic (p. 478). Nevertheless, African American women were

still concerned with the size and appearance of their bodies, but from their own culturally-specific perspective.

African American women, like their European American counterparts, have body image issues (Capodilupo & Kim, 2014; Gustat et al., 2016). It is important to dispel the belief that Black women are satisfied being overweight. Such a perception of satisfaction may lead health care providers to place less emphasis on trying to get Black women to engage in weight control behaviors. It may also lead to Black women internalizing the message that they should be happy being overweight, even if they are not.

No studies on body satisfaction have been conducted that focus specifically on Afro-Caribbean women. The USVI is a territory of the United States and is influenced by Western culture through media and immigration. Therefore, it may be assumed that body satisfaction conclusions from data involving African American women would be applicable to their Afro-Caribbean counterparts. There is evidence that, as women migrate to Western countries, they begin to idealize the thin physique, and over time, women will engage in practices to meet the norm (Bakhshi, 2011; Swami, et al. 2010). However, the physical distance between the United States and the USVI, in addition to the islands being predominately populated by people of African-descent, likely contributes to limiting the thin ideal from being more widely adopted among Afro-Caribbean women in the USVI. This was discussed in the previously mentioned study by Dijkstra, et al, (2015). Because there is little research on Afro-Caribbean women, and their weight control behaviors, there is no evidence regarding the contribution of the thin ideal.

Body size misperception. As previously stated, African American women do experience body dissatisfaction due to being overweight and obese. However, there is research in which African American women are included in the study population indicating that overweight and obese individuals can misperceive their body size as being normal or underweight (Dorsey, Eberhardt, & Ogden, 2008; Lynch & Kane, 2014; Mogre, Abidande & Salifu, 2014). Some overweight African American women have even been found to exhibit a desire to weigh more (Parham-Payne, 2013). Such body size misperception can result in a lack of engagement in weight management behaviors (Duncan et al., 2011). Ultimately, if people do not consider themselves overweight or obese, they may make little effort to control their weight.

Adding to the misperceptions among African American women is the divide between colloquial and medical terminology related to body size. It has been found that even when clinically overweight or obese, African American women do not categorize themselves using the colloquial term "too fat" (Lynch & Kane, 2014). Extrapolating from the findings of Duncan et al. (2011), there would likely be a lack of engagement in weight management behaviors among this population. This also suggests that use of the word "overweight" may not have significant meaning when discussing weight management decisions with African American women. In fact, Lynch and Kane (2014) suggest that more research is needed related to the understanding of the terms "overweight" and "obese" among the African American population. More complete understanding of these terms could lead to self-revelations among African American women that would lead them to make greater efforts to control their weight. While

having a positive body image is desirable, it is problematic if such a misperception dampens the individual's ability to identify a health problem (such as obesity) that needs to be managed.

Mistrust and trust in healthcare professionals. Mistrust in health care providers is an additional factor affecting weight control behaviors of Black women. Specific to my study is the notion that such mistrust may affect Afro-Caribbean women's belief that there is a health-related need for them to lose weight. It may also lead them to ignore weight-related advice given by health care professionals. Cultural mistrust among African Americans towards aspects of the health care system, stemming from historical racism as well as language barriers, has been discovered (Bailey, et al, 2017; Bhopal, 1998; Singleton & Krause, 2009). However, trust in health care providers is necessary to facilitate improved management of chronic diseases. African American patients with high trust in the primary care physicians were found to be more compliant with medication adherence (Blackstock, Addison, Brennan, & Alao, 2012; Elder et al., 2012).

Communication is a key variable through which a health care provider and patient can establish trust. However, communication may be affected health care professionals' perceptions of their clients. Paternotte, Dulmen, Lee, Scherpbier, and Scheele (2015) indicate that some doctors generalize about patients based on their race. By extension, if doctors perceive that Black women are satisfied with their weight, they may feel less motivated to provide relevant health information, under the erroneous assumption that it will be ignored and/or poorly received. Adding to the problem of miscommunication, overweight Black patients have reported providers who do not spend enough time with

them or explain topics well in comparison to reports by their White counterparts (Wong, Gudzone, & Bleich, 2015). Such communication issues between Black women and health care professionals can increase the likelihood misunderstandings, which may contribute to mistrust.

Lack of trust in health care providers may also contribute to women's resistance in following instructions or weight control behavior instructions. In contrast, a positive patient-provider relationship has been found to be an important starting point for more successful patient outcomes (Murray & McCrone, 2014). Only one study was found that included cultural beliefs related to health behaviors and attitudes among the Afro-Caribbean population in the USVI (Callwood et al., 2012). One theme these researchers uncovered was mistrust and a general lack of confidence in health care providers from the US mainland. In the USVI, participants listed the DOH as their principal source of health information while family and friends were mentioned as the second (Callwood et al., 2012). Therefore, if obese Afro-Caribbean women receive health information from a provider that they mistrust, it may be more difficult for them to achieve successful weight control outcomes. There are no studies related to trust and the patient-provider relationship specifically among Afro-Caribbean women in the USVI. Patient-provider trust in relation to health advice adherence among this population is an area that should be considered for future study since it may affect the prevalence of obesity and overweight among Afro-Caribbean women in the USVI.

Black women, exercise, and hair. Along with the potential for mistrust of health care providers among Afro-Caribbean women, another limiting factor for communication

is that non-Black health care professionals may fail to consider or understand the hair needs of Black women. An understanding of this issue is important as it may hinder engagement in many of the weight control behaviors that are often suggested. Due to the texture of natural or processed Black hair, most is not wash and go. Washing and re-styling Black hair after physical activity can be time consuming. If women go to the beauty salon to have their hair styled, they may be reluctant to risk ruining their hairdos after going to such expense. To optimize the success of intervention programs targeting Black women that focus on weight control, this phenomenon needs to be understood and considered. Hair maintenance has been listed as a barrier to weight loss and maintenance in African American women (Barnes et al., 2007). Some avoid physical activity altogether to avoid messing up their hair (Alvarado, et al., 2015; Gathers & Mahan, 2014; Hall et al., 2013). Further, researchers revealed that African American women do not find that their doctors understand the care of black hair (Gathers & Mahan, 2014).

Black women may be seen by health care professionals of another race for help with weight management. Therefore, it is important that they communicate any physical activity barriers related to hair, as this will not likely be obvious to providers who are not Black. It is equally important that providers become aware of these concerns and find ways to help Black women strategize to overcome this possible barrier. In so doing, health care providers can build or improve relationships of trust in which their clients feel understood. As previously mentioned, trust in and communication with health care professionals may result in better health outcomes (Blackstock, et al., 2012; Elder et al.,

2012). Because this may influence the choice of engagement in weight control behaviors for many Black women, this is an important phenomenon to examine further.

Afro-Caribbean men's female body-size preference. While Afro-Caribbean men's actual female body-size preference was not the focus of my study, it was important to review the literature since it is related and could be used to build the foundation for a follow-up study. Researchers investigating this topic have examined factors that affect men's preference of women's body size and found that female body size affects how men select female partners. Studies among Afro-Caribbean men, however, are extremely limited. A literature search by this researcher identified 1023 peer-reviewed studies from 2000 to 2018 on the larger topic of men's preferred female body size, but only two of these studies were specific to Afro-Caribbean islanders.

Afro-Caribbean men on the island of St. Kitts were found to have no significant preference for heavier women (Tull et al., 2001). However, the men were asked to select their preferred female body type using images from the UCLA Body Matrices (Gray & Frederick, 2012), an instrument not tested for reliability. Therefore, it is not suitable to use the results from this study as a source of scientific conclusions regarding the female body-size preference of Afro-Caribbean men. Among Afro-Caribbean men on the islands of Barbados and Dominica, it was concluded that the perception of an Afro-Caribbean woman of men's preference of female body-size had no effect on her weight control behavior (Tull et al., 2001). This study was very similar in scope to my study; however, problems with the research design and analysis used in it should be noted. First, only five neighborhoods on each island within a seven-mile radius of the study coordinating center

were used. Drawing participants from such a homogenous area may not yield the same results as would be generated had the researchers sampled a larger cross-section of each island's population. A final noteworthy limitation was that the researchers did not mention limitations anywhere in their published study.

With such limited data, aside from asking men directly, Afro-Caribbean women can only guess at the general female body size that Afro-Caribbean men prefer. It is, therefore, important to study the perceptions of these women to determine if their weight control behaviors are affected by their beliefs. Obtaining scientific data is the first step to creating evidence-based intervention techniques to help reverse the spread of obesity among Afro-Caribbean women living in the U.S. Virgin Islands.

Summary and Conclusions

There is a global epidemic of obesity leading to many studies seeking solutions to reverse the spread of this disease. A void exists in obesity-related research focused solely on African American women in general, and on Afro-Caribbean women in particular. Researchers have uncovered biological differences between Black and White women (Agyemang & Powell-Wiley, 2013; Carpenter, et al., 1998; Delany, et al., 2013; Weinsier, et al., 2000) and further research is needed to determine causation. Many comparison studies have been conducted between Black and White women and/or other subgroups (Dijkstra, Barelds, & Brummen-Girigori, 2015; Fitzgibbon, et al., 2012). Such studies are important as they provide data about certain phenomenon among groups living in the same society. However, more recent studies focusing only on Black women have been conducted in an effort to define race-specific causes of obesity, and this

research will invariably lead to the development of evidence-based interventions to target this particular population.

Among Afro-Caribbean women, the paucity of obesity-related research is more pronounced. Further, very few studies exist that examine the relationship between societal norms and weight control behaviors among this population (Alvarado et al., 2015; Tull et al., 2001; Tull et al., 2013). Agyemang (2005) discusses the need to acknowledge differences in norms among different populations of African descent that can affect attitudes and behaviors. The term African American is a subjective term that can encompass many individuals of African descent. Unless researchers include a verification method with specific criteria, a Black person from any part of the world wanting to self-identify as African American can do so by selecting that category. Therefore, data related to societal norms from African American populations should not be used to generalize and make conclusions about Afro-Caribbean populations. My study was designed to address the gap in the literature related to obesity phenomenon specifically among Afro-Caribbean women; in particular, factors affecting decisions to engage in weight loss behaviors. Data collected from this study can be used to guide future research on this topic. The research methodology is found in the following chapter.

Chapter 3: Research Method

Introduction

Obesity and overweight are prevalent among Afro-Caribbean women living in the USVI. Among this population, there is a paucity of research on the determinants of obesity and weight control behaviors. The purpose of this study was to determine the

effect Afro-Caribbean women's perception of the female body size Afro-Caribbean men prefer has on their weight management behaviors. Knowledge of key determinants is important so that evidence-based interventions can be developed to reduce the increasing rate of overweight and obesity among Afro-Caribbean women in the USVI. In this chapter, the following will be discussed: the research design and rationale of the study, the methodology for data collection and analysis, threats to validity, and ethical procedures.

Research Design and Rationale

For this quantitative study, a convenience sample of Afro-Caribbean women was used to investigate their perception of the female body type Afro-Caribbean men prefer and the association of this perception with their weight control behaviors of diet and physical activity. The purpose of the study informed the research design and research questions that dictated the dependent and independent variables. The two dependent variables were the weight control behaviors of diet and physical activity, and the independent variable was the perceived body size Afro-Caribbean women believe Afro-Caribbean men prefer. The identified confounding variables were the income, education, and self-reported body size. All data were collected via a validated, cross-sectional online survey (See Appendix B).

I could not find a survey that would be appropriate for my research question; therefore, I created a unique survey, using the female Pulvers silhouettes scaled from 1 (underweight) through 9 (obese). Demographic data were also collected (e.g., categorical age, education and income level). The survey was evaluated for functionality by a panel

of three expert registered dietitians – one with a PhD and the other two having practiced for over 25 years each. A form was provided to each expert that addressed: instrument construction, content validity, construct validity, face validity, item bias, consequential validity, internal consistency, and potential for reliability (Appendix A). The sample of the survey was given to the panel on paper with written explanations as to how it would function when administered online. They all agreed that the survey was easy to understand and that the target population should be able to complete it in an online format. One expressed concern over the appearance of the figures in the Pulvers silhouettes as not representative of the Black population. However, as mentioned in Chapter 1, it was explained that the Pulvers instrument had been proven to be a reliable and valid tool for general surveys involving body size among the Black population (Yepes et al., 2015). Two of the three requested that participants be allowed to list the type of diet they follow instead of simply being allowed to select "other." Although that information may be interesting, the purpose of the survey did not warrant collection of that type of data. The type of diet was not as important as finding out if the women were on a diet.

Online surveys are convenient, can reach large numbers of participants, and are cost effective. Survey research can be used to obtain data of a population's behavior (Creswell, 2009). However, accommodations for the online environment need to be made to satisfy the same ethics requirements regarding consent, privacy, anonymity, confidentiality, and autonomy that are required when using paper surveys (Buchanan & Hvizdak, 2009). The USVI consists of three main islands, therefore, using the online

survey minimized costs associated with distributing the survey in three separate locations. It also allowed for the ability to analyze the data to identify possible differences in results between the three islands and of the USVI as a whole. An additional advantage of using online surveys is the ability to randomize the order in which questions are asked or displayed (Brace, 2004). The online survey was created on the Survey Monkey website, which allows for the creation and dispersion of surveys as well as data collection.

Methodology

Population and Statistical Calculation of Sample Size

The target population was adult females between the ages of 18-50 years who self-identified as Afro-Caribbean. Individuals were assumed to be honest and self-exclude themselves from taking the survey if they did not meet the criteria. The approximate target population size using the 2010 census was 40,000 (University of the Virgin Islands, 2013). Bujang, Sa'at, Sidik, and Joo (2018) discussed two methods for deriving sample sizes when using binary logistic regression. One is obtaining a minimal sample size of 500 and the other is using the event per variable (EPV) calculation of $n = 100 + xi$, where x equals a multiplication factor of 10 to 50, and i refers to the number of independent variables. Scholars have indicated that a factor of 10 (i.e., $10i$) was acceptable (Concato, Peduzzi, Holford, & Feinstein, 1995; Peduzzi, Concato, Kemper, Holford, & Feinstein, 1992). Smeden et al. (2016), however, noted an "urgent need" for new research to guide calculations of sample sizes in binary logistic regression analyses. Noted problems included that a difference in simulation study designs may result in different outcomes even when the same EPV is used. Additionally, when separating data

sets within simulation studies, outcomes can be affected – especially when using lower EPV values. In my study, using the full model that included the covariates, the analysis run for diet as the dependent variable contained four independent variables (income, education, self-reported body size, and the body size the women thought men preferred). The analysis with physical activity as the dependent variable contained three independent variables (education, self-reported body size, and the body size that women thought men preferred). If the sample size is too low, then the power of the test may be sufficient to detect important significant effects when analyzing the results (Field, 2013). For this reason, I decided to increase the minimum value of x from 10 and selected the multiple of 20. Therefore, the sample size for the dependent variable of diet and physical activity would be 180 and 160, respectively. I obtained a sample size of 183, which is appropriate given the current uncertainty related to calculations of the same for binary logistic regression models.

Procedures for Recruitment, Participation, and Data Collection

To recruit participants for the sample, I used the social media platform Facebook, and posted the survey link with the consent form verbiage appearing above the link. The link and verbiage were posted on my personal Facebook page and six local USVI-related Facebook groups. The text of the consent form included the purpose of the study, researcher information, declaration of voluntary participation, potential risks and benefits, privacy policy, and sample questions. Clicking the survey link implied consent.

Survey Monkey allows for participants to use a password-protected, cloud-based account that uses the McAfee security platform (Survey Monkey, 2018). Study data were

collected through the Survey Monkey website, which has a secure, encrypted connection. My contact information was listed in case there were any questions or concerns. Through Facebook, individuals were also able to send me direct messages. Demographic data collected included age, income level, relationship status, and educational level. For convenience, I created the survey so that participants had the option to save their responses and return to complete the survey at a future time. The questions appeared one at a time, and respondents were required to complete each question before advancing to the next.

Instrumentation and Conceptualization of Constructs

The Pulvers silhouette showcards were used to determine the body type Afro-Caribbean women perceive Afro-Caribbean men prefer. The silhouette has been determined to be a reliable and valid instrument for general surveys involving body sizes of individuals of African descent (Pulvers et al., 2004).

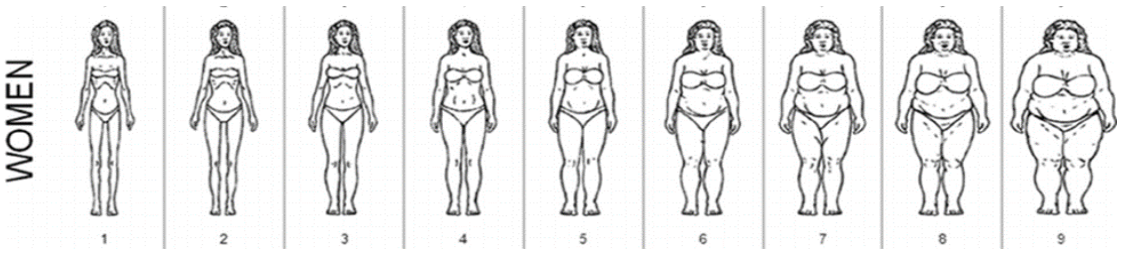

Figure 1. Pulvers silhouettes: Women. Adapted from "Development of a Culturally Relevant Body Image Instrument Among Urban African Americans," by M. Pulvers, R. Lee, H. Kaur, M. Mayo, M. Fitzgibbons, M. Jeffries, … J. Ahluwalia, J, 2004, *Obesity Research, 12,* pp. 1641-1651. Reprinted with permission.

The mean correlation coefficients of the self-reported silhouettes with measured BMI were 0.80 in men and 0.81 in women ($P < 0.001$; Pulvers et al., 2004) with high interrater reliability (Cronbach $\alpha = 0.95$; Yepes et al., 2015). Pulvers (2004) noted one limitation was that reliability and validity were determined only through face-to-face interviews. For the purposes of this study, the silhouette was used for self-identification purposes among participants to determine their weight status. This is a limitation, but it is the best method by which weight data can be obtained using the online survey. Silhouettes depicting body sizes with a BMI of 25.0 – 29.9 (Silhouettes 4 and 5) were considered overweight, and those of 30.0 and over (Silhouettes 6 through 9) were considered obese as determined by CDC indicators (CDC, 2015, Pulvers et al, 2004).

Plans for Data Analysis

Survey data were analyzed using the most recent available version of IBM SPSS, presently Version 25 student package (IBM, 2018). The research questions for this study with the null and alternate hypothesis are as follows:

1. RQ1 (descriptive): What are the perceptions of Afro-Caribbean women regarding the female body size preference of Afro-Caribbean men?

2. RQ2 (inferential): Is there a relationship between the perceived female body size that Afro-Caribbean women think that Afro-Caribbean men prefer and the women's dietary behaviors?

$H_0$2: There is no relationship between the perceived female body size that Afro-Caribbean women think that Afro-Caribbean men prefer and the women's dietary behaviors.

H_a2: There is a relationship between the perceived female body size that Afro-Caribbean women think that Afro-Caribbean men prefer and the women's dietary behaviors.

3. RQ3 (inferential): Is there a relationship between the perceived female body size that Afro-Caribbean think that Afro-Caribbean men prefer and the women's physical activity levels?

$H_0 3$: There is no relationship between the perceived female body size that Afro-Caribbean women think that Afro-Caribbean men prefer and the women's physical activity behaviors.

$H_a 3$: There is a relationship between the perceived female body size that Afro-Caribbean women think that Afro-Caribbean men prefer and the women's physical activity behaviors.

A binomial logistic regression was used to analyze the data because both dependent variables are categorical in nature and have only two levels (yes or no; Field, 2013). All variables were coded categorically. Category 2 was for the body size women think men prefer, which had a small sample size (n=2); therefore, Categories 2 and 3 were combined to form a separate category entitled "2-3" in my SPSS data set. This combined category replaced the two individual categories 2 and 3 during analysis, but the two individual categories 2 and 3 remained intact within the data set. The chi square statistical test was used to test each demographic variable to determine if it should be included as a confounding variable. The demographic variables for each of the two dependent variables and the independent variables were examined separately for

differences. A p value $\leq .05$ indicates that the demographic variable is a confounder and should be controlled for in the regression analysis. A crude model with the dependent and independent variables was run, and the results are reported. Additionally, I ran an adjusted model for each of the dependent variables with the independent variables plus the confounders, and the results were reported. A p-value of less than .05 was used for the level of significance along with a 95% confidence interval. These results are found in Chapter 4.

Threats to Validity

Validity refers to how well a testing instrument measures what it was designed to measure. Threats to the validity can occur at any stage of the study and are of two types: external and internal. External validity refers to the degree to which study conclusions from the representative sample can be generalized to the larger target population being studied. According to Ondercin (2004), there are three main threats to external validity: nonrepresentative samples, an artificial laboratory environment, and testing effects. For this study, the representative sample was obtained via Facebook–a social media platform. Drawing participants from such a large social media site reduced the threat of having a sample that was not representative of the target population at large. For this study, the use of an artificial lab and testing were a nonissue as this was not part of the research design. Internal validity refers to the accuracy of the results and is not likely to occur due to a chance, bias, confounding, or unsuitable methodology (Leighton, 2010). For this study, sociodemographic data were analyzed and went through statistical analysis to determine the effect on the two dependent variables of physical activity and dietary

behavior. The study required participants to answer an online survey. There was no treatment group or pre- or post-testing that could have affected threats to validity such as history, testing, maturation, statistical regression, or selection. However, because the research design was cross-sectional in nature, the unavoidable threat to internal validity was that causation between the two variables could not be determined.

Ethical Concerns

The institutional review board (IRB) of Walden University determined that all ethical guidelines were followed before the study began and also reviewed the study while it was under way to observe whether any relevant situations had arisen (Approval # 06-26-19-0446443).

The American Psychologist's Association's Ethical Principals of Psychologist's Code of Conduct (2018) states that participants must be informed about (a) the purpose of the research, expected duration and procedures; (b) their right to decline to participate and to withdraw from the research once participation has begun; (c) foreseeable consequences of declining or withdrawing; (d) reasonably foreseeable factors that may be expected to influence their willingness to participate such as potential risks, discomfort, or adverse effects; (e) any prospective research benefits; (f) limits of confidentiality; (g) incentives for participation; and (h) whom to contact for questions about the research and research participants' rights. Participation in this study was voluntary and anonymous, and participants were able to opt out of the study at any time. Survey Monkey encrypts all data, which further ensured anonymity during the study and during the data storage period. All recruitment took place via Facebook posts, and the consent form verbiage

included addressed all foreseeable ethical concerns. All data were stored on an external hard drive and will be kept in my possession for 7 years. All documents containing data have been physically destroyed.

Summary

In this chapter, I outlined the components of the quantitative analysis that used primary data collected via a survey of Afro-Caribbean women. The two dependent variables were the weight control behaviors of diet and physical activity of Afro-Caribbean women, and the independent variable was the perceived body size the women believe men prefer. Sociodemographic variables were included as descriptive variables. The Pearson chi-square analysis was used to determine if a relationship exists between Afro-Caribbean women's weight control behaviors and their perception of the female body size Afro-Caribbean men prefer. The study results are found in the following chapter.

Chapter 4: Results

Introduction

Obesity and overweight are prevalent among Afro-Caribbean women living in the USVI. The purpose of this quantitative cross-sectional study was to determine Afro-Caribbean women's perception of the female body size preferred by Afro-Caribbean men and the relationship of that perception to women's weight control behaviors of diet and exercise. The research questions and hypotheses of the study were as follows:

1. RQ1 (descriptive): What are the perceptions of Afro-Caribbean women regarding the female body size preference of Afro-Caribbean men?

2. RQ2 (inferential): Is there a relationship between the perceived female body size that Afro-Caribbean women think that Afro-Caribbean men prefer and the women's dietary behaviors?

$H_0$2: There is no relationship between the perceived female body size that Afro-Caribbean women think that Afro-Caribbean men prefer and the women's dietary behaviors.

H_a2: There is a relationship between the perceived female body size that Afro-Caribbean women think that Afro-Caribbean men prefer and the women's dietary behaviors.

3. RQ3 (inferential): Is there a relationship between the perceived female body size that Afro-Caribbean think that Afro-Caribbean men prefer and the women's physical activity levels?

$H_0$3: There is no relationship between the perceived female body size that Afro-Caribbean women think that Afro-Caribbean men prefer and the women's physical activity behaviors.

H_a3: There is a relationship between the perceived female body size that Afro-Caribbean women think that Afro-Caribbean men prefer and the women's physical activity behaviors.

In the next chapter, I will describe the data collection method, the analysis of the demographics of the participants, and the analysis of which covariates were included in the final model, in addition to discussing treatment fidelity issues. Lastly, the results of the statistical analysis will be presented along with a summary.

Data Collection

Primary data collection began in June 2019 after obtaining approval from Walden University's IRB. I posted the consent form verbiage with a link to the online survey on my Facebook page and six other USVI-specific Facebook pages. The online survey consisted of nine multiple choice questions (four related to demographics and five related to diet and exercise habits). The women's Pulvers silhouette images (Figure 2) were included as the selection tool for the body size the women felt that men prefer, as well as participants' self-reported body size.

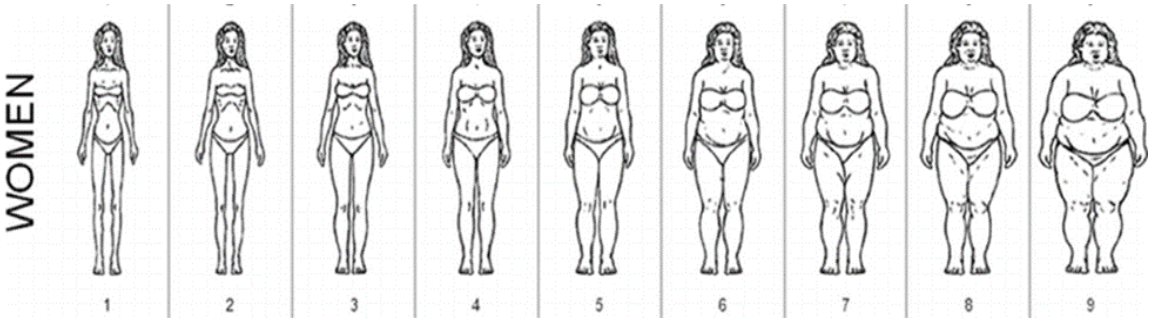

Figure 2. Pulvers silhouettes: Women. Adapted from "Development of a Culturally Relevant Body Image Instrument Among Urban African Americans," by M. Pulvers, R. Lee, H. Kaur, M. Mayo, M. Fitzgibbons, M. Jeffries, … J. Ahluwalia, J, 2004, *Obesity Research*, *12*, pp. 1641-1651. Reprinted with permission.

I posted the consent form verbiage and the link in the morning at least three times a week until the required survey sample was obtained. The process took approximately one month. As mentioned in Chapter 3, the online survey was designed so that participants had to complete each survey question in order to go on to the next. This

eliminated the possibility of having incomplete surveys returned. Adjustments in the data collection process that differed from Chapter 3 will be discussed later in this chapter in the Treatment and/or Intervention Fidelity" section.

Demographic Data

One hundred and eighty-three individuals completed the online survey. Table 1 (see page 45) shows the results for the study participants. The majority of the respondents were 26-35 years of age (27.9%), single (33%), had some college education (38%), and had an income of 30-50K (36%). USVI 2010 census data reported that Black people were the majority of the entire population (noncategorized by gender) at 76% (University of the Virgin Islands, 2013). In addition, the census revealed that the median age of women was 39.7 years and that 23% were unmarried, separated, divorced, or widowed. In addition, 14.8% had some college education, and individuals making $30-50K (not broken down by gender) represented 26.8% of the population.

I used a convenience sample, but in comparison to the USVI 2010 census data, it was fairly representative of the target population. Regarding weight control behaviors, 59% of the respondents did not diet to control their weight, and 63% exercised for weight control. The majority of the women were overweight or obese, represented by Pulvers silhouettes 5 to 9 (52.4%). Silhouettes 4, 5 and 6 were the body sizes that participants felt men most preferred (21.9%, 29% and 24% respectively; Pulvers et al., 2004). Table

Table 1

Frequency Distribution of Sociodemographic and Body Size Data Among Afro-Caribbean Women Living in the United States Virgin Islands, 2019

Variables	n	%
Age Group (years)		
18-25	25	13.7
26-35	51	27.9
36-44	45	24.6
45-54	41	22.4
55+	21	11.5
Income in U.S. Dollars		
$<15K*	19	10.4
$15k-<30K	47	25.7
$30k-<50K	66	36.1
$50k-<75K	32	17.5
$>75K	19	10.4
Relationship		
Single	60	32.8
Single, living alone, has significant other	38	20.8
Single, living with significant other	35	19.1
Married	50	27.3
Education Level		
No High School (HS) Degree	14	7.7
HS Degree	46	25.1
Some College	45	24.6
College Degree	69	37.7
Post-College Degree or pursuing	9	4.9
Exercises to Control Weight		
Yes**	63	63.4
No	37	36.6
Participants responding that they diet to lose weight		
Yes	75	41.0
No	108	59.0
Body size participants think men prefer		
1	1	0.5
2	5	2.7
3	29	15.8
4	40	21.9
5	53	29.0
6	44	24.0
7	7	3.8
8	4	2.2
9	0	0
Participant's self-reported body size		
1	4	2.2
2	16	8.7
3	30	16.4
4	27	14.8
5	34	18.6
6	33	18.0
7	16	8.7
8	13	7.1
9	10	5.5

Note. *K = Multiple of $1000
**Yes = Exercising 4 or more days per week (moderate and/or vigorous intensity) 30 minutes per session

Covariate Inclusion Analysis

There were five demographic and behavioral variables included in the survey: age, income, education level, relationship status, and participant's self-reported body size. These variables were analyzed to determine inclusion in the final statistical model. I ran the chi-square test to determine the significance of variables with each of the two dependent variables of diet (Table 2) and physical activity (Table 3). For the dependent variable of physical activity, the variable of education (p=.014) was found to be significant and was added into the final model for analysis. For the dependent variable of diet, the variables income (p=.016) and education (p=.006) were found to be significant and added into the final model for analysis. Tables 2 and 3 are found on the following pages.

Table 2

Chi Square for Diet with Sociodemographic and Behavioral Variables

Variable	Diet (Yes)		Diet (No)		Total		
	N	%	N	%	N	%	*p*
Age Group (years)							0.21
18-25	6	8.0	19	17.6	25	13.7	
26-35	24	32.0	27	25.0	51	27.9	
36-44	20	26.7	25	23.1	45	24.6	.
45-54	19	25.3	22	20.4	41	22.4	
55+	6	8.0	15	13.9	21	11.5	
Total	75	100	108	100	183	100	
Income in U.S. Dollars*							0.02*
$<15K	4	5.3	15	13.9	19	10.4	
$15k-<30K	21	28.0	26	24.1	47	25.7	
$30k-<50K	21	28.0	45	41.7	66	36.1	
$50k-<75K	20	26.7	12	11.1	32	17.5	
$>75K	9	12.0	10	9.3	19	10.4	
Total	75	100	108	100	183	100	
Relationship							0.66
Single	21	28.0	39	36.1	60	32.8	
Single, living alone, has significant other	18	24.0	20	18.5	38	20.8	
Single, living with significant other	5	20.0	20	18.5	35	19.1	
Married	21	28.0	29	26.9	50	27.3	
Total	75	100	108	100	183	100	
Education Level*							0.01*
No High School (HS) Degree							
11.3	13	12.0	14	7.7			
HS Degree	13	17.3	33	30.6	46	25.1	
Some College	20	26.7	25	23.1	45	24.6	
College Degree	36	48.0	33	30.6	69	37.7	
Post-College Degree or pursuing	5	6.7	4	3.7	9	4.9	
Total	75	100	108	100	183	100	
Participant's self-reported body size							0.53
1	2	2.7	2	1.9	4	2.2	
2	4	5.3	12	11.1	16	8.7	
3	14	18.7	16	14.8	30	16.4	
4	10	13.3	17	15.7	27	14.8	
5	16	21.3	18	16.7	34	18.6	
6	15	20.0	18	16.7	33	18.0	
7	7	9.3	9	8.3	16	8.7	
8	2	2.7	11	10.2	13	7.1	
9	5	6.7	5	4.6	10	5.5	
Total	75	100	108	100	183	100	

Note. *Significant at $p \leq 0.05$; will be included in final regression models

Table 3

Chi Square for Physical Activity with Sociodemographic and Behavioral Variables

Variable	Physical Activity (Yes)		Physical Activity (No)		Total		
	N	%	N	%	N	%	*p*
Age Group (years)						0.86	
18-25	14	12.1	11	16.4	25	13.7	
26-35	33	28.4	18	26.9	51	27.9	
36-44	29	25.0	16	23.9	45	24.6	
45-54	25	21.6	16	23.9	41	22.4	
55+	15	12.9	6	9.0	21	11.5	
Total	116	100	67	100	183	100	
.							
Income in U.S. Dollars							0.16
$<15K	8	6.9	11	16.4	19	10.4	
$15k-<30K	30	25.9	17	25.4	47	25.7	
$30k-<50K	48	41.4	18	26.9	66	36.1	
$50k-<75K	19	16.4	13	19.4	32	17.5	
$>75K	11	9.5	8	11.9	19	10.4	
Total	116	100	67	100	183	100	
Relationship							0.62
Single	35	30.2	25	37.3	60	32.8	
Single, living alone, has significant other	25	21.6	13	19.4	38	20.8	
Single, living with significant other	25	21.6	10	14.9	35	19.1	
Married	31	26.7	19	28.4	50	27.3	
Total	116	100	67	100	183	100	
Education Level*							0.01*
No High School (HS) Degree	5	4.3	9	13.4	14	7.7	
HS Degree	23	19.8	23	34.3	46	25.1	
Some College	30	25.9	15	22.4	45	24.6	
College Degree	51	44.0	18	26.9	69	37.7	
Post-College Degree or pursuing	7	6.0	2	3.0	9	4.9	
Total	116	100	67	100	183	100	
Participant's self-reported body size						0.12	
1	3	2.6	1	1.5	4	2.2	
2	9	7.8	7	10.4	16	8.7	
3	23	19.8	7	10.4	30	16.4	
4	18	15.5	9	13.4	27	14.8	
5	23	19.8	11	16.4	34	18.6	
6	22	19.0	11	16.4	33	18.0	
7	8	6.9	8	11.9	16	8.7	
8	8	6.9	5	7.9	13	7.1	
9	2	1.7	8	11.9	10	5.5	
Total	116	100	67	100	183	100	

Note. *Significant at $p \leq .05$; will be included in final model regression models

Treatment and/or Intervention Fidelity

During the first week the survey and consent form were posted on Facebook, a woman who was known to me indicated that she had completed the survey. She was living in the United States and was not part of the target population, and she admitted that she had not read the consent form in its entirety. Because the possibility existed that others would follow suit, the characteristics of the desired target population were written into the first question of the survey (Appendix B). None of the 17 surveys that had already been collected up to that point were used in the final analysis. The survey was revised and the resulting link along with the consent form verbiage was posted for the remainder of the data collection process. The initial survey was deleted from my Survey Monkey account so that no one who clicked on a post containing the link to this survey would have access.

Initial plans involved creating the survey so that a message would alert participants at the end of the survey if all of the responses had not been completed. When creating the survey, this option was not available. However, the option to have participants complete one question before going on to the next was available and was incorporated.

Another change was to include the verbiage of the consent form along with the heading "Consent Form" above the survey link when doing the Facebook posts instead of making the consent form part of the survey. I thought that having the consent form visible along with the survey link would increase the likelihood of people reading it.

Finally, initial plans had included recruiting participants via the employee e-mail listserv of the USVI Department of Health. The necessary approval for this process was not obtained, so this method could not be completed.

Results

The results for the first research question were presented in the "Data Collection" section of this Chapter. This section provides results for Questions 2 and 3.

Research Question 2

To answer this question, two binary logistic regressions were performed: one including the dependent variable of diet with only the independent variable of the preferred weight women think men prefer (Table 3). I also performed the same version including the additional independent variables of income and education level (Table 4). The categorical predictor variables were dummy coded. The dependent variables coded as 1=*yes*, 2=*no*. Less than $15,000 was the reference for income, no high school diploma was the reference for education, and Pulvers silhouette 1 (Pulvers et al., 2004) was the reference for both the participant's self-reported body size and the body size women think men prefer. Table 4 is found on the following page.

Table 4

Binary Logistic Regression for Diet Alone Predicting the Body Size that Afro-Caribbean Women Think Men Prefer

Variable	*p*	OR	95% CI Lower	95% CI Upper
Body size participants think men prefer				
1		REFERENCE		
2-3	0.21	1.50	0.80	2.82
4	0.68	1.12	0.65	1.92
5	0.23	1.44	0.79	2.63
6	0.27	2.50	0.49	12.90
7	0.53	1.00	0.14	7.09
8	0.42	1.00	0.17	9.25

Note: No participants selected body size category 9
* Results from categories 2 and 3 were combined due to small sample size
** Significant at $p < 0.05$

No body size categories compared to the reference, category 1, were significant at the 0.05 level. This indicates the body size Afro-Caribbean women think Afro-Caribbean men prefer alone does not predict the odds that women will diet to control their weight in the unadjusted model. The next regression analysis was the adjusted model that controls for income and education (Table 5). In this adjusted model, the perceived body size 2-3 (OR=0.74; 95% confidence interval [CI]: 0.29-1.92), 4 (OR=0.44; 95% CI: 0.17-1.11), 5 (OR=0.63; CI: 0.24-1.65), 6 (OR=1.02; 95% CI: 0.15-6.85), 7 (OR=0.34; 95% CI: 0.03-3.49), and 8 (OR=0.63; 95% CI: 0.15-1.09) as compared to body size category 1 was still not associated with diet even after controlling for education and income. Table 5 is found on the following page.

Table 5

Binary Logistic Regression for Diet with Added Covariates of Income and Education Level Predicting the Body Size that Afro-Caribbean Women Think Men Prefer

Variables	*p*	OR	95% CI Lower	95% CI Upper
Income in U.S. Dollars				
<$15K				
REFERENCE				
$15-<30K	0.62	1.49	0.30	7.29
$30-<50K	0.78	0.85	0.28	2.63
$50K-<75K	0.32	1.70	0.60	4.76
$75+K	0.18	0.47	0.16	1.43
Education				
No HS		REFERENCE		
HS**	.01**	20.93	1.92	227.91
Some College**	.04**	3.70	1.05	13.06
College Graduate	.39	1.70	0.52	5.47
Post College or Pursuing	.49	1.42	0.52	3.92
Body size participants think men prefer				
1		REFERENCE		
2-3*	0.54	0.74	0.29	1.92
4	0.08	0.44	0.17	1.11
5	0.35	0.63	0.24	1.65
6	0.99	1.02	0.15	6.85
7	0.36	0.34	0.03	3.49
8	0.53	0.63	0.15	1.09

NOTE: No participants selected body size category 9
* Results from categories 2 and 3 were combined due to small sample size
** Significant at $p \leq 0.05$

Research Question 3

Is there a relationship between the perceived female body size that Afro-Caribbean think that Afro-Caribbean men prefer and the women's physical activity levels?

The first regression analysis with the dependent variable of exercise served as the comparison with only the single predictor variable of the body size that women think that men prefer (Table 6 on the following page).

Table 6

Binary Logistic Regression for Physical Activity Alone Predicting the Body Size that Afro-Caribbean Women Think Men Prefer

			95% CI	
Variable	*p*	OR	Lower	Upper
Body size participants think men prefer				
1		REFERENCE		
2-3**	0.00**	0.33	0.16	0.68
4**	0.02**	0.51	0.29	0.91
5	0.55	1.20	0.66	2.17
6	0.71	0.75	0.17	3.35
7	0.34	0.33	0.35	3.21
8	0.31	0.03	0.27	3.13

No participants selected body size category 9
* Results from categories 2 and 3 were combined due to small sample size
** Significant at $p \leq 0.05$

The perceived female body size category 2-3 and 4 as compared to category 1 was associated with physical activity in the unadjusted model.

In the adjusted model (Table 7 below), the perceived body size 2-3 (OR=0.51; 95% CI: 0.19-1.37), 4 (OR=0.71; 95% CI: 0.29-1.71), 5 (OR=2.12; CI: 0.85-5.28), 6 (OR=0.85; 95% CI: 0.16-4.53), 7 (OR=0.48; 95% CI: 0.40-5.87), and 8 (OR=0.80; 95% CI: 0.25-4.93) as compared to body size category 1 was not found to be associated with physical activity, even after controlling for education level.

Table 7

Binary Logistic Regression for Diet Alone Predicting the Body Size that Afro-Caribbean Women Think Men Prefer

			95% CI	
Variable	p	*OR*	*Lower*	*Upper*
Education Level				
No HS		REFERENCE		
HS Degree	0.38	1.81	0.49	6.70
Some College	0.71	1.19	0.49	2.92
College Degree	0.13	0.50	0.21	1.22
Post-College Degree or pursuing	0.01**	0.35	0.16	0.76
Body size participants think men prefer				
1		REFERENCE		
2-3	0.97	0.51	0.19	1.37
4	0.18	0.71	0.29	1.71
5	0.44	2.12	0.85	5.28
6	0.11	0.85	0.16	4.53
7	0.85	0.48	0.40	5.87
8	0.57	0.80	0.25	4.93

Note: No participants selected body size category 9
* Results from categories 2 and 3 were combined due to small sample size
** Significant at $p \leq 0.05$

Two assumptions of binary logistic regression that were met and appropriate to the study were as follows: (a) the dependent variables are required to be binary and ordinal and (b) the observations were independent of each other, not from repeated measurements (Field, 2013).

Summary

The results for Question 1 were summarized in the Data Collection section of this chapter. Chi-square was run to determine which covariates should be added to answer inferential research questions 2 and 3. A total of 4 binary logistic regressions were then performed to answer the same research questions. The first two binary logistic regressions were used to answer the first research question and determine if Afro-Caribbean women used diet as a weight control behavior based on the body size they thought Afro-Caribbean men preferred. With the covariates of education and income added to the model, the null hypothesis for Question 2 was not rejected. The last two binary logistic regressions were used to answer the second set of research questions to determine if Afro-Caribbean women used physical activity as a weight control behavior based on the body size they thought Afro-Caribbean men preferred. The null hypothesis for Question 3 was rejected for the crude model, but not rejected with the added covariate of education level.

Chapter 5: Discussion, Conclusions, and Recommendations

Introduction

The purpose of this study was to determine Afro-Caribbean women's perception of the female body size preferred by Afro-Caribbean men and to discover whether this perception influences women's weight control behaviors of diet and exercise. In this chapter, the research findings and recommendations are discussed. Because there is a dearth of research related to this topic focusing on the target population, this study contributes to the literature. This is the first study targeting solely Afro-Caribbean women living in the USVI in which data has been collected to determine factors influencing their weight control behaviors. When certain key variables (education and income) were added as covariates, Afro-Caribbean women in the USVI do appear to engage in physical activity and diet to control their weight. However, without the covariates, the perceived body size these women believe Afro-Caribbean men prefer does not appear to influence their diet and exercise behaviors.

Interpretation of the Findings

Research Question 2

Is there a relationship between the perceived female body size Afro-Caribbean women think Afro-Caribbean men prefer and the women's dietary behaviors?

The logistic regression models indicated that independently, the body-size Afro-Caribbean women perceive that Afro-Caribbean men prefer is not a good predictor of women dieting to control their weight. After adjusting for the covariates of education (p=.006) and income (p=.016), the final model failed to reveal a relationship between this

predictor and women's dietary behavior. Income level was not found to be significant in the final model. This may indicate an intercorrelation between income level and some other variable or variables contributing to the prediction, which could be the basis for future research.

Research Question 3

Is there a relationship between the perceived female body size Afro-Caribbean women think Afro-Caribbean men prefer and the women's physical activity behaviors?

The logistic regression models showed that independently and after adjusting for the covariate of education, the body-size preference Afro-Caribbean women think Afro-Caribbean men prefer is a good predictor of women engaging in physical activity to control their weight. However, the association was lost in the final model after controlling for education.

To summarize the finding of both questions, women do not seem to base their weight control behavior of diet on the body size they think men prefer. However, for the weight control behavior of physical activity, the perceived body-size categories 2-3 and 4 were significant predictors. In addition, although the majority of the participants self-reported as either overweight or obese, the majority of these women reported that they diet and/or exercise to control their weight. This agrees with findings from studies of African American women which show that body dissatisfaction does exist within such populations (Capodilupo & Kim; Gustat et al., 2016). This study reinforces the need to dispel the belief that Black women are satisfied being overweight, a conclusion reached in prior studies (Alvarado et al., 2015; Baird et al., 2007; Kronenfeld et al., 2010).

Paternotte et al. (2015) found that some doctors generalize about patients based on their race. The perception that Black women are satisfied being overweight may lead health care providers to place less emphasis on attempting to encourage Black women to engage in weight control behaviors. It may also lead to Black women internalizing the message that they should be satisfied being overweight, even if they are not. Finally, this study was consistent with the findings of a similar study among Afro-Caribbean women that concluded women's perception of men's female body-size preference had no effect on their weight control behavior (Tull et al., 2001)

Limitations of the Study

One limitation of this study was that it depended on individuals being truthful about their eligibility to take the survey. Another limitation is that some of the Afro-Caribbean Virgin Islander criteria can be subjective. The criterion of spending a significant part of childhood and/or adulthood in the USVI is open to interpretation. As the survey was administered online with no requirement for proof of eligibility, individuals not meeting the criteria may have elected to complete the survey. Therefore, the participants may not have reflected a true representation of Afro-Caribbean women living in the USVI. However, due to the survey topic, it is not expected that individuals outside the target population would have been motivated to complete the survey.

The study design was cross-sectional, and this type of study may not be used to establish cause and effect. Although relationships were found between diet, exercise, and various independent variables, it is impossible to conclude that the association of any of the independent variables on diet and exercise was due to cause and effect. Also, self-

reported data on individual behavior were gathered via the online survey. Participants' responses to questions about physical activity may have been exaggerated, which could cause a response bias that would affect the findings of the study (Rosenman, Tennekoon, & Hill, 2011).

The study design also created a risk for sample bias. Since the survey was posted on my personal Facebook page, the sample population may have been skewed towards particular demographics (e.g. age, income level, education level). In addition, individuals on my Facebook page may have been aware of my status as a dietitian. Therefore, response bias may have been a factor since respondents may have provided answers that they thought I wanted to hear, even though anonymity was ensured.

The use of the event per variable method to calculate the sample size was also a limitation. More study is warranted to determine the ideal factor that should be used. Therefore, the power of the test may have been affected if the sample size for this study was too low.

Although Pulvers silhouettes were found to be a valid tool for predicting weight categories in women designated as African American, as yet, there has been no testing conducted solely on the Afro-Caribbean population. However, it is unlikely that a geographical difference would cause participants to select a size that they did not think represented their body type.

A final limitation is related to the generalizability of study results. The Afro-Caribbean population in the USVI is heterogeneous with representation from many of the other Caribbean islands, which are not under U.S. control. However, the societal

influence of the United States is not as prevalent on islands that are not U.S. territories, many of which are independent or are territories of other countries (France and England). Therefore, results from this study should not be generalized to other Afro-Caribbean populations.

Recommendations

The findings from this study provide a foundation for future research related to weight control behaviors among Afro-Caribbean women in the USVI. Most of the women who engaged in weight control behaviors had at least some college education or a college degree. Research among women based on education level should be conducted to determine variables related to weight control behaviors.

The majority of participants were overweight or obese; however, the majority of respondents reported exercising at moderate and/or vigorous intensity at least four days per week. To reconcile this incongruity, a follow-up qualitative study focusing on more detailed qualitative data related to dieting and physical activity would be beneficial.

Although the covariate of education did not add to the final model, a significant association was found between diet and exercise among Afro-Caribbean women and the body size that they believe men prefer. Very little health-related quantitative and qualitative data exist about Afro-Caribbean women, in particular, those living in the USVI. A qualitative study focused on gaining more information on the topics revealed in this study would add to the literature and provide a foundation on which other studies could be designed.

Implications for Professional Practice and Positive Social Change

Obesity and overweight are prevalent among Afro-Caribbean women, along with related chronic diseases such as diabetes, stroke, and heart disease. The results of this study agree with BRFSS data indicating that a large percentage of women in the USVI are overweight or obese (CDC, 2017b). The finding that factors exist which inform women's decisions to engage in weight control behaviors emphasizes the need for policy makers, health professionals, and public health advocates to promote public education about the dangers posed by these risk factors. Health professionals should engage overweight and obese clients in discussions related to such factors to build awareness and help improve health outcomes. In addition, Afro-Caribbean women should strive to increase their awareness of the benefits of a healthy diet and physical activity on their health and quality of life. Support should also be provided to enable further research which would build on the findings of this study.

Public health professionals who believe that Black women are satisfied with their weight should dispel this idea and further, professionals should be encouraged use interactions with patients to engage in dialogue promoting weight control behaviors. Policy makers and public health advocates should consider policies and activities related to weight control for Afro-Caribbean women to develop initiatives to promote social change in this population in the USVI. Information from such research can be used to apply for data-driven federal and NGO funds that are available to manage obesity in the USVI. Without such research and the activity resulting from the information gleaned

from future studies, the prevalence of obesity, a condition that affects the quality of life for all Virgin Islanders, will continue to be problematic.

This study contributes to efforts to encourage positive social change related to reducing the incidence of obesity in the USVI. I plan to post an abbreviated version of the study results on all Facebook pages where I originally posted the survey. In addition, I intend to distribute the written summarized results to stakeholders, including the Department of Health the Department of Human Services and NGO that can make use of the information to enhance their efforts. I also plan to contact the local media (newspaper, radio, and television) to spread the results of this study to the population at large. This study provides a call-to-action for all community health professionals and activists to examine the methods by which obesity among Afro-Caribbean women in the USVI is being tackled. It also serves as a first step in identifying as many factors as possible to help construct evidence-based interventions and/or develop policies to help individuals make positive lifestyle changes. The overall goal is to continue to conduct research to assist in reversing the upward trend of obesity among Afro-Caribbean women in the USVI.

Conclusion

In this study, I examined the extent to which Afro-Caribbean women's weight control behaviors of diet and exercise are influenced by the body size they think Afro-Caribbean men prefer. I found no significant overall relationship between the weight control behaviors of Afro-Caribbean women living in the Virgin Islands and the female body size they believe men prefer. Little is known about the health care practices

underlying the increasing prevalence of obesity among Afro-Caribbean women in the USVI. Further studies are needed to examine other possible factors affecting the prevalence of obesity in this population. Data identifying the sources of this problem can lead to research-based strategies. Until such data are gathered, strategies based on research conducted on other populations will continue to provide a suboptimal solution.

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Appendix A: Form Used in Survey

FORM FOR REVIEW AND EVALUATION OF VALIDITY AND RELIABILITY BY A PANEL OF EXPERTS FOR THE QUANTITATIVE INSTRUMENTATION OF:

Perception of Men's Preferred Female Body Size: Impact on Weight Control Behaviors of Afro-Caribbean Women in the United States Virgin Islands

Instructions:

Please review the attached Quantitative Instrumentation of *Perception of Men's Preferred Female Body Size: Impact on Weight Control Behaviors of Afro-Caribbean Women in the United States Virgin Islands* and the corresponding table of specifications and respond to the following questions regarding the construction, validity and potential reliability for the Quantitative Instrumentation *Perception of Men's Preferred Female Body Size: Impact on Weight Control Behaviors of Afro-Caribbean Women in the United States Virgin Islands* in light of the phenomenon being researched, examined, assessed, evaluated or measured.

Section I. VALIDITY EVALUATION

A test, survey, questionnaire, evaluation or assessment instrument is valid to the extent that the instrument measures the construct(s) that the instrument purports to measure.

1. Instrument Construction:

1. (a). Are the instructions for completing the instrument clear?

Yes ρ No ρ (if no, please explain)

Yes ρ provided the following actions are taken:

1.(b). Is the application and results of the Quantitative Instrumentation of "Perception of Men's Preferred Female Body Size: Impact on Weight Control Behaviors of Afro-Caribbean Women in the United States Virgin Islands" reflected in this instrument?

Yes ρ No ρ (if no, please explain)

Appendix A, cont.

Yes ρ provided the following actions are taken:

1. (c). What items would you add?

1. (d). What items would you delete?

2. Content Validity:

Will the scores yielded by Quantitative Instrumentation of *Perception of Men's Preferred Female Body Size: Impact on Weight Control Behaviors of Afro-Caribbean Women in the United States Virgin Islands* represent the content or conceptual domain of the construct being measured? In other words, does the instrument have adequate and appropriate items that constitute a representative sample of the complete domain of items used to generalize the construct being measured? Please see the attached table of specifications [instrument blueprint] that reflect which items and how many items within the instrument are designed to measure each type of content domain.

Yes ρ No ρ (if no, please explain)

Yes ρ provided the following actions are taken:

3. Construct Validity:

Quantitative Instrumentation of *Perception of Men's Preferred Female Body Size: Impact on Weight Control Behaviors of Afro-Caribbean Women in the United States Virgin Islands* is designed….. Please see constructs definition:

3. (a) Does the Quantitative Instrumentation of *Perception of Men's Preferred Female Body Size: Impact on Weight Control Behaviors of Afro-Caribbean Women in the United States Virgin Islands* represent concepts or constructs it should represent and does not represent concepts it should not represent? In other words, does the Quantitative Instrumentation of *Perception of Men's Preferred Female Body Size:*

Impact on Weight Control Behaviors of Afro-Caribbean Women in the United States Virgin Islands adequately represent the constructs it purports to represent?

Yes ρ No ρ (if no, please explain)

Yes ρ provided the following actions are taken:

Appendix A, cont.

3. (b) Is the Quantitative Instrumentation of *Perception of Men's Preferred Female Body Size: Impact on Weight Control Behaviors of Afro-Caribbean Women in the United States Virgin Islands* inclusive of the important dimensions or facets of the constructs it purports to measure.

Yes ρ No ρ (if no, please explain)

Yes ρ provided the following actions are taken:

3. (c) Does the Quantitative Instrumentation of *Perception of Men's Preferred Female Body Size: Impact on Weight Control Behaviors of Afro-Caribbean Women in the United States Virgin Islands* avoids excess reliable variance, ensuring no items are easier or harder for some respondents in a manner relevant to the interpreted construct?

Yes ρ No ρ (if no, please explain)

Yes ρ provided the following actions are taken:

D. Face Validity

Does the Quantitative Instrumentation of *Perception of Men's Preferred Female Body Size: Impact on Weight Control Behaviors of Afro-Caribbean Women in the United*

States Virgin Islands look valid? Does it appear to represent a measure of the construct it purports to measure?

Yes ρ No ρ (if no, please explain)

Yes ρ provided the following actions are taken:

Appendix A, cont.

E. Item Bias

Does the wording or placement of an item avoid affecting someone's response? (This includes the avoidance of double-barreled items, words or phrases, which raise emotional red flags, ambiguous wording, gender bias, racial/ethnic bias, and the manipulative placement of an item or wording of an item)

Yes ρ No ρ (if no, please explain)

Yes ρ provided the following actions are taken:

F. Consequential Validity

Does the Quantitative Instrumentation of *Perception of Men's Preferred Female Body Size: Impact on Weight Control Behaviors of Afro-Caribbean Women in the United States Virgin Islands* embody desirable values and have potentially positive consequences for the discipline or field it reflects?

Yes ρ No ρ (if no, please explain)

Yes ρ provided the following actions are taken:

Section II. RELIABILITY EVALUATION

A test, survey, questionnaire, evaluation or assessment instrument is reliable to the extent that whatever construct(s) the instrument measures, it measures the construct(s) consistently.

A. Internal Consistency

Are the items that make up the Quantitative Instrumentation of *Perception of Men's Preferred Female Body Size: Impact on Weight Control Behaviors of Afro-Caribbean Women in the United States Virgin Islands* consistent with each component and/or the constructs being examined, assessed, evaluated or measured?

Yes ρ No ρ (if no, please explain)

Yes ρ provided the following actions are taken:

Appendix A, cont.

B. Potential for Reliability (Potential for Consistent Responses)

Understanding that research participants completing this instrument will vary in their understanding and experience with *Perception of Men's Preferred Female Body Size: Impact on Weight Control Behaviors of Afro-Caribbean Women in the United States Virgin Islands* and thus vary in their responses, is there anything about this instrument that would lead you to believe that this instrument would not consistently measure *Perception of Men's Preferred Female Body Size: Impact on Weight Control Behaviors of Afro-Caribbean Women in the United States Virgin Islands* the application of consistently.

Yes (if yes, please explain) No

Yes ρ provided the following actions are taken:

Please provide any additional comments, suggestions for improvement, and/or any other thoughts regarding the construction, how the survey to be easier to complete, validity and/or reliability of *Perception of Men's Preferred Female Body Size: Impact on Weight Control Behaviors of Afro-Caribbean Women in the United States Virgin Islands*

Panel Member
Printed or typed name:

Title:
Department:
Organization:
Location:

Signature _____

Date _____

Appendix B: Online Survey

About You

1. * By completing this first question, I agree that I am an Afro-Caribbean woman who was born and/or raised and presently living in the United States Virgin Islands*

My age range is:

- 18-25 years
- 26-35 years
- 36-45 years
- 46-55 years
- 56 years and over

2. My income range is ($):

- 0 - 10,000
- 10,001 – 25,000
- 25,001 - $40,000
- 40,001 – 65,000
- 65,001 and over

3. What is Your relationship status:

- Single
- Single, live alone, but I have a significant other
- Single, living with my significant other
- Married

4. What is Your Education Level:

- I have no high school diploma or equivalent
- I have a High School Diploma or equivalent
- I have completed some college or trade school
- I have a college or trade school degree
- I have a post college degree or working towards it

5. Do you try to control your weight by dieting?

- Yes
- No

6. Do you exercise on a regular basis? *If no skip to question 9*

- Yes
- No

Appendix B, cont.

7. I get AT LEAST 30 minutes of moderate-intensity exercise:

NOTE: Examples of moderate-intensity aerobic activity are:

- Brisk walking (at least 2.5 miles per hour)
- Dancing
- Gardening
- Strenuous housework
- Aerobics class
- Biking slower than 10 miles per hour

  - 6-7 days per week;
  - 4-5 days per week
  - 3 days or less per week

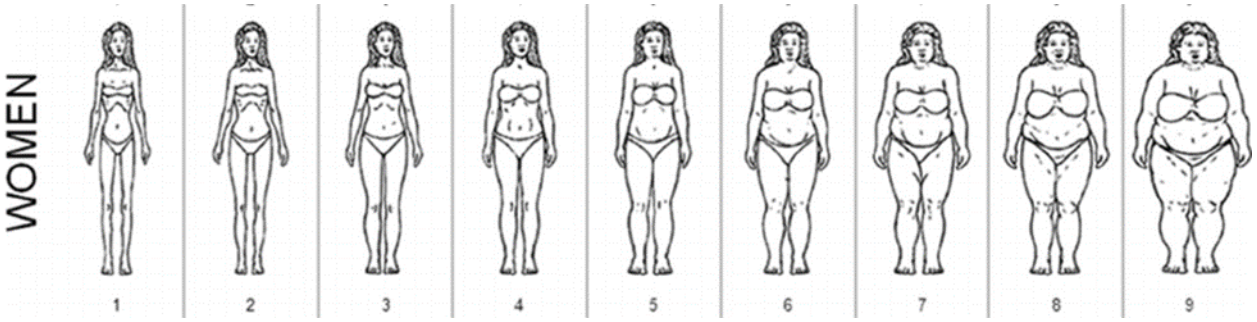
8. I get AT LEAST 30 minutes of vigorous aerobic activity:

NOTE: Examples of vigorous aerobic activity are:

- hiking uphill or with a heavy backpack
- running
- swimming laps
- aerobic dancing
- heavy manual yardwork
- tennis (singles)
- cycling 10 miles per hour or faster
- jumping rope

  - 6-7 days per week;
  - 4-5 days per week
  - 3 days or less per week

9. Look at the images below and answer the following:



Appendix B, cont.

Which of the body sizes do you think that Afro-Caribbean men prefer?

1
2
3
4
5
6
7
8
9

Which of the body sizes do you have?

1
2
3
4
5
6
7
8
9

*Pulvers silhouettes from Pulvers, K., Lee, R., Kaur, H., Mayo, M., Fitzgibbon, M., Shawn, K., et al. (2004). Development of a culturally relevant body image instrument among urban African-Americas. *Obesity Research, 12,* 1641-1651.

Appendix C: Consent Form

CONSENT FORM

You are invited to take part in a research study about the body size that an Afro-Caribbean woman thinks that men prefer. The researcher is inviting Afro-Caribbean adult women aged 18-50 to be in the study. This form is part of a process called "informed consent" to allow you to understand this study before deciding whether to take part.

This study is being conducted by a researcher named Alice V. Henry, who is a doctoral student at Walden University You might already know the researcher as the Nutritionist of the Virgin Islands Department of Human Services, but this study is separate from that role.

Background Information:
The purpose of this study is to determine how a woman's perception of the body size that men prefer affects her diet and exercise behaviors.

Procedures:
If you agree to be in this study, you will be asked to complete an online survey that will take about 20 minutes. The survey will include questions about dietary and exercise behaviors. Also, you will be asked to select images about body size. After starting the survey, you will be able to save your answers to complete at a later time.

SAMPLE QUESTIONS:

- I get at least 30 minutes of moderate-intensity aerobic activity _____ days per week.
- I worry about the way I look. (Scale of 0-4; 0 = never; 1 = seldom; 2 = sometimes; 3 = often; and 4 = always)
- People my own age like my looks (Scale of 0-4; 0 = never; 1 = seldom; 2 = sometimes; 3 = often; and 4 = always)
- Relationship Status:
    - Single
    - Single with significant other, living together
    - Single living with significant other
    - Married

Voluntary Nature of the Study:
This study is voluntary. You are free to accept or turn down the invitation to participant in the study. At any time, you can exit the survey without completing or sending it and disenroll from the study. In addition, if you decide to be in the study now, you can still change your mind at a later time.

Appendix C, cont.

Risks and Benefits of Being in the Study:
Being in this study should not pose risk to your safety or well-being. The data obtained will be used to better understand causes of obesity among women in the Virgin Islands and create better intervention programs and activities.

Payment:
There is no payment for participating in this study.

Privacy:
Survey Monkey will be used to collect the answers to your surveys. All information will remain anonymous via encryption and pass-word protection Only the researcher will have access to the account password. Due to the nature of the survey, even the researcher will not know who you are. The survey does not ask your name and Survey Monkey allows you to fix your settings so that you can submit your survey without your email being visible. Data will be kept for a period of at least 5 years, as required by the university.

Contacts and Questions:
If you have any questions, you may contact the researcher via phone or email. If you want to talk privately about your rights as a participant, you can call the Research Participant Advocate at. Walden University's approval number for this study is **IRB will enter approval number here** and it expires on **IRB will enter expiration date.**

Please print or save this consent form for your records.

Obtaining Your Consent

If you feel you understand the study well enough to make a decision about it, please indicate your consent by clicking the link below.

Appendix D: Approval to Use Pulvers Culturally Relevant Body Image Silhouette Instrument

From: Kimberley Pulvers
Sent: Thursday, October 25, 2018 1:53 AM
To: Alice Henry
Subject: RE: Request for Permission to use Pulvers Culturally Relevant Body Image Questionnaire

Hi Alice,

You're welcome to use the instrument. I attached the PDFs and instructions, as well as two articles that provide some guidance regarding BMI. I recommend you conduct a literature search to see whether any other researchers have published BMIs for the figures.

Best wishes with your work!
Kim Pulvers, PhD, MPH
Department of Psychology
California State University San Marcos

From: Alice Henry
Sent: Wednesday, October 24, 2018 12:50 PM
To: Kimberley Pulvers
Subject: Request for Permission to use Pulvers Culturally Relevant Body Image Questionnaire

Good day, Dr. Pulvers,

I am presently as PhD student at Walden University writing my dissertation tentatively titled: "The Perception of the Female Body-Size Preference of Afro-Caribbean Men: The Impact on Weight Control Behavior of Afro-Caribbean Women." I want to determine if Caribbean women (who have high obesity rates) are comfortable being larger because they perceive that men like larger women. I would appreciate being able to use the Pulvers silhouette showcards as part of my survey so that women can use it to select the image they feel reflects the one that men prefer. I am developing the survey via Survey Monkey, therefore the instrument would be uploaded and used online. If the instrument, scale and any scoring instructions are available, I would truly appreciate those as well. I wish to categorize the images into BMI categories.

Thank you for your consideration of my request. If you have any further questions, please do not hesitate to contact me.

Best wishes,

Alice V. Henry
PhD Student - Walden University