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Internet Use, Perceived Social Support, and Obesity Among African American Young Adults

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This is to certify that the doctoral study by

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Abstract

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MPH, Benedictine University, 2013

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Doctoral Study Submitted in Partial Fulfillment

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Abstract

African Americans are disproportionately affected by obesity. Public health practitioners have an incomplete understanding of the social-environmental risk factors and how they affect obesity. The purpose of this quantitative, cross-sectional study was to explore whether internet use and perceived social support predicted obesity among African American young adults. The social cognitive theory guided this study. Secondary data were analyzed from the 2017 Behavioral Risk Factor Surveillance Survey. The sample consisted of 6,765 African American young adults age 18 to 34 and represented the U.S. population using weighted estimates. A Bonferroni correction was performed to reduce Type I error due to multiple comparisons; the criteria for significance was $p < .01$. Controlling for gender, education, and employment status, a binary logistic regression analysis indicated that internet use inversely predicted obesity ($OR = .862$); however, when internet use was analyzed to include perceived social support in the full multivariate model, it directly predicted obesity ($OR = 4.69$). In addition, the analysis indicated that perceived social support predicted obesity ($OR = 3.934$), yet when included in the full multivariate model, the likelihood of obesity decreased ($OR = 2.765$). The findings may be used to develop a media campaign emphasizing social-environmental risk factors to improve obesity-related health outcomes, such as heart disease, stroke, and hypertension. These findings may lead to positive social change through the development and pilot of weight-loss interventions that incorporate social support while using the internet as a platform to sustain accountability for maintaining a healthy weight.

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Dedication

This doctoral study is dedicated to my Lord and Savior for without Him I would not be where I am today. This journey was challenging but God continues to bless me beyond what I believe I can achieve. I also dedicate this study to my husband, Antwoine, and son, Antwoine, Jr. Thank you both for your never-ending love, support, and patience throughout this journey. It was not easy but you both ensured that I had what I needed to be successful to accomplish my goals. Lastly, I dedicate this study to my mom, Althia, for providing continuous encouragement and support. Thank you!

Acknowledgments

I would like to acknowledge my committee members Dr. Mary Lou Gutierrez and Dr. Claire Robb for your guidance and sharing your expertise throughout my doctoral journey. You both have consistently challenged me to think critically and identify alternative ways to extend my study and its findings. Thank you Dr. Daniel Okenu for your thorough review throughout the process as well. Looking forward to the opportunities ahead!

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Section 1: Foundation of the Study and Literature Review

Obesity is a critical public health concern in the United States. Individuals that are obese, a body mass index (BMI) of 30 kg/mg^2 or greater, are at an increased risk for chronic conditions such as heart disease, diabetes, and stroke (National Institute of Diabetes and Digestive and Kidney Diseases, 2015). African American adults were disproportionately affected by obesity with a prevalence of 49.6% in 2017–2018 (Centers for Disease Control and Prevention [CDC], n.d.-b). Researchers revealed that young adults experienced the greatest weight gain compared to other age groups due to drastic lifestyle adjustments, such as living independently (Cheng et al., 2016; Moyer et al., 2020; Munt et al., 2017), increased consumption of energy-dense foods (Bruening et al., 2014; Munt et al., 2017; Steeves et al., 2016), and increased sedentary behaviors (Aghasi et al., 2020; Melton et al., 2014; Yen et al., 2010). African American young adults have demonstrated challenges with maintaining a healthy weight when compared to other racial and ethnic groups (Munt et al., 2017; Neumark-Sztainer et al., 2018; Williams et al., 2018). Examining the social-environmental risk factors associated with obesity could highlight the health disparities experienced among young adults age 18 to 34.

Social-environmental risk factors played a significant role in changes to BMI, particularly internet use and perceived social support. Studies indicated that using the internet, often classified as sedentary behavior, significantly increased the likelihood of being overweight or obese (Aghasi et al., 2020; Matusitz & McCormick, 2012; Salmon et al., 2011). Although some studies addressed general internet use and its influence on obesity, results were mixed. Concerning perceived social support, researchers found this

social-environmental risk factor had a significant association with obesity (Gage, 2015; Yayan & Celebioglu, 2018). Previous studies focused on the association between perceived social support and BMI among children, adolescents, or African American women (Florez et al., 2018; Johnson et al., 2014; Joseph et al., 2015; Rieger et al., 2018; Steeves et al., 2016; Tamers et al., 2013; Yamaguchi et al., 2016). However, less information was known about perceived social support and its influence on obesity among African American young adults using a nationally representative sample to conduct a quantitative analysis.

Understanding the social-environmental risk factors of internet use and perceived social support and their influence on obesity may provide additional knowledge on the dramatic increase in BMI during young adulthood, specifically among African Americans. Positive social change from this study may include the collaboration of community organizations to develop online interventions prioritizing African American young adults. Perceived social support could be used as a method to sustain program accountability of healthy weight maintenance to potentially mitigate increases in BMI.

Problem Statement

Health-promoting characteristics within the social environment, such as perceived social support and internet use, were associated with health behaviors that improve weight-related health outcomes (Brooks & Moore, 2016; Gage, 2015; Pelletier et al., 2014; Yan, 2018; Yayan & Celebioglu, 2018). Health behaviors are independently established during young adulthood when health behavior patterns are more likely to be

sustained. Furthermore, increased weight gain and BMI were prevalent among young adults (Cheng et al., 2016; Munt et al., 2017).

Although obesity disproportionately affects African Americans in general, young adulthood may be a critical time to examine the social-environmental factors that influence BMI. According to the CDC (n.d.-b), the prevalence of obesity among young adults age 20 to 39 was 40% in 2017–2018. African Americans had the highest prevalence of obesity at 49.6% (CDC, n.d.-b). The risk factors influencing BMI include gender, race and ethnicity, family history, age, and unhealthy lifestyle habits (Munt et al., 2017; Top et al., 2019). However, recent data analysis of the social-environmental risk factors of internet use and perceived social support specific to African American young adults was unavailable.

Melton et al. (2014) found that obese youths spent double the average number of minutes per week using the internet compared to youths in other calculated BMI categories, suggesting that internet use impacts obesity. Others found that for each hour per day of internet used, there was an 8% increase in the likelihood of being overweight or obese with an average of 2.5 kilograms of weight gained over 1.5 years (Aghasi et al., 2020; Deforche et al., 2015). Conversely, Berrense-Dias et al. (2016) and Melchior et al. (2014) found that internet use was not associated with being overweight or obese. Both Berrense-Dias et al. and Melchior et al. conducted longitudinal studies; however, their populations were adolescents in Switzerland and young adults in France, respectively, highlighting there was not a significant association between internet use and an increase in BMI over time. Numerous researchers focused on using the internet to seek health

information (Faith et al., 2015; Gopalan et al., 2016; Swoboda et al., 2018) while others concentrated on internet use to evaluate internet-based weight-loss interventions (Ho et al., 2018; McCully et al., 2013; Schwartz & Richardson, 2015), the influence of social media on obesity (Vaterlaus et al., 2015; Waring et al., 2018), or problematic internet use (Bozkurt et al., 2018; Park & Lee, 2017; Tsitsika et al., 2016). Few studies addressed general internet use and its influence on obesity, and this relationship in the African American young adult population was unknown.

Perceived social support is associated with obesity (Gage, 2015; Yayan & Celebioglu, 2018). Similarly, perceived social support is related to physical activity, dietary habits, and obesogenic environments, and their association with health outcomes including BMI was studied among children, adolescents, and African American women (Florez et al., 2018, Johnson et al., 2014; Joseph et al., 2015; Rieger et al., 2018; Steeves et al., 2016; Tamers et al., 2013; Yamaguchi et al., 2016). Researchers studied parental social support among children and adolescents and its association with obesity (Assari et al., 2015; Donnelly & Springer, 2015). However, less was known about perceived social support and its influence on obesity among African American young adults using a nationally representative sample (Assari & Caldwell, 2017).

Despite these findings, there was a lack of understanding regarding the influence of internet use and perceived social support and the likelihood of being obese. African American young adults between the ages of 18 and 34 were seldom studied. Children and adolescents or college students were priority populations used to explore the associations between internet use and perceived social support on obesity. The current study

addressed the association between general internet use, perceived social support, and their influence on obesity among African American young adults age 18 to 34 when controlling for gender, education, and employment status.

Purpose of the Study

The purpose of this quantitative study was to examine whether internet use and perceived social support predicted obesity among African American young adults age 18 to 34 after adjusting for gender, education, and employment status. Young adults have demonstrated challenges with maintaining a healthy weight (Munt et al., 2017; Neumark-Sztainer et al., 2018; Williams et al., 2018). Identifying whether perceived social support and internet use affected African American young adults' weight gain could contribute to the development of culturally appropriate and age-relevant interventions to reduce the prevalence of obesity.

Research Question and Hypotheses

Research Question 1: Is there an association between internet use and obesity among African American young adults age 18 to 34 when controlling for gender, education, and employment status?

H_o1: There is no association between internet use and obesity among African American young adults age 18 to 34 when controlling for gender, education, and employment status.

H_a1: There is an association between internet use and obesity among African American young adults age 18 to 34 when controlling for gender, education, and employment status.

Research Question 2: Is there an association between perceived social support and obesity among African American young adults age 18 to 34 when controlling for gender, education, and employment status?

H_o2: There is no association between perceived social support and obesity among African American young adults age 18 to 34 when controlling for gender, education, and employment status.

H_a2: There is an association between perceived social support and obesity among African American young adults age 18 to 34 when controlling for gender, education, and employment status.

Research Question 3: Is there an association of internet use, perceived social support, and obesity among African American young adults age 18 to 34 when controlling for gender, education, and employment status?

H_o3: There is no association of internet use, perceived social support, and obesity among African American young adults age 18 to 34 when controlling for gender, education, and employment status.

H_a3: There is an association of internet use, perceived social support, and obesity among African American young adults age 18 to 34 when controlling for gender, education, and employment status.

This study addressed the influence of internet use and perceived social support on obesity by testing the hypotheses using a binary logistic regression model. The multiple comparisons of the dependent variable introduced a Type I error, and the binary logistic regression analysis needed to be adjusted for the Type I error rate by performing a

Bonferroni correction. The Bonferroni correction provided a more stringent level of significance by dividing the alpha of .05 by the number of tests (comparisons), which reduced the significance level to .01 (see German et al., 2020).

Theoretical Foundation

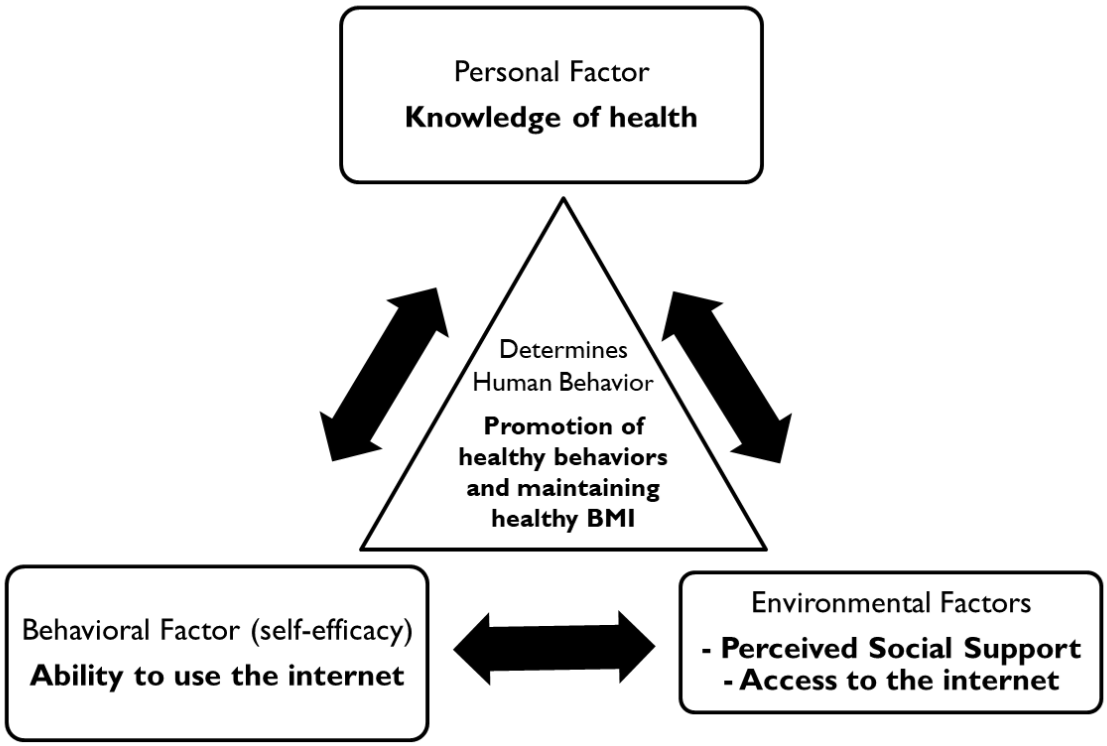
The theoretical framework selected for this study was Bandura's (2004) social cognitive theory (SCT). The SCT describes how an individual's learned health behavior is influenced by personal factors, behavior, and their environment, known as reciprocal determinism (Bandura, 2004). An individual's social environment consists of the interactions between the physical environment and those within their social network that can promote, permit, or discourage a particular behavior (Grim & Hortz, 2017; Kelder et al., 2015). Health behaviors and outcomes are impacted by these characteristics and available resources within the social environment (Berkman & Kawachi, 2000).

As illustrated in Figure 1, the SCT guided this study in understanding self-efficacy in using the internet and the environmental influence of perceived social support in promoting healthy behaviors to obtain and maintain a healthy BMI (see Bandura, 2004). Bandura (2001) explained that interactive technologies can provide education to influence new forms of health behavior or motivate others to act on what was learned through observation. Even those who may not have direct access to interactive technology can still be influenced by others who have been exposed, which can initiate new behaviors as well (Bandura, 2001). Concerning perceived social support, individuals can be influenced by their social network to implement behavior change. Perceived social

support can enhance their perceived self-efficacy by strengthening their interpersonal relationships to enable their ability in health decision making (Kelder et al., 2015).

Figure 1

Application of the Social Cognitive Theory



Although perceived social support may encourage positive health behaviors, using the internet may present an opportunity for young adults to seek health information or participate in online programs to improve BMI. For example, using internet-based interventions while the perception of social support is present can improve the likelihood of achieving a healthy BMI (Adhikari et al., 2018; Hammersley et al., 2017). Adhikari et al. (2018) conducted a systematic review of the literature that utilized the SCT for obesity prevention interventions. Adhikari et al. suggested that self-efficacy and social support were important in understanding the effectiveness of preventing obesity or maintaining a healthy BMI. In contrast, increased use of the internet can be deleterious to health where an individual may not be physically active for long periods of time, which may contribute to the likelihood of being obese (Aghasi et al., 2020). The SCT may help public health practitioners understand how internet use (self-efficacy) and perceived social support influence obesity, which may assist in the development of public health interventions.

Nature of the Study

The nature of this study was quantitative using secondary data with a cross-sectional design to explore how internet use and perceived social support influence obesity among African American young adults age 18 to 34. The independent variables were internet use and perceived social support, the dependent variable was obesity, and the control variables were gender, education, and employment status. Secondary data from the 2017 Behavioral Risk Factor Surveillance Survey (BRFSS) were used for this study. A binary logistic regression analysis was conducted to examine the influence of internet use and perceived social support on obesity while adjusting for the control

variables of gender, education, and employment status. Understanding how to effectively engage with African American young adults may create opportunities for education regarding the risk factors influencing the onset of chronic disease. This study may highlight the importance of developing culturally appropriate and age-relevant interventions to reduce the prevalence of obesity.

Literature Search Strategy

Peer-reviewed journal articles were used for this literature review as well as statistical data reports from reputable government research organizations. For this literature review, the Walden University library database, Google Scholar, and PubMed were the search engines used to obtain relevant and recent literature using key search terms. The CINAHL Plus, Science Citation Index, MEDLINE, ScienceDirect, Social Sciences Citation Index, and SocIndex databases were used to search the following keywords and phrases: *overweight*, *obesity*, *BMI*, *factors*, *influences*, *determinants*, *internet use*, *technology use*, *screen time*, *leisure time internet or computer use*, *sedentary behavior*, *social and emotional support*, *social norms*, *African Americans*, *Blacks*, *young adults*, *health disparities*, *college students*, *emerging adults*, *health behavior*, and *social cognitive theory*. Articles published between 2014 and 2020 were primarily used, and seminal articles were included to strengthen the study.

Literature Review Related to Key Variables

Overview of Obesity

Obesity is a significant public health concern affecting 42.4% of adults in 2017–2018 (Hales et al., 2020). Between 1999 and 2018, the prevalence of obesity increased by

approximately 12% (CDC, n.d.-b). Obesity is defined as an individual's weight that exceeds what is considered a healthy weight for a particular height (CDC, n.d.-d). The CDC (n.d.-d) uses BMI as a screening tool for obesity; however, the CDC (n.d.-d.) cautioned that BMI is not diagnostic of body fatness or individual health.

The risk factors associated with obesity include individual and environmental characteristics such as age, gender, genetics, socioeconomic status (SES), race and ethnicity, neighborhood safety, and accessibility to healthy foods (Lee et al., 2019). Studies showed that the obesity prevalence rates differ within these areas (Munt et al., 2017; Top et al., 2019). Between 2007 and 2016, an increase in the prevalence of obesity by age and gender was not significant among youths; however, changes were apparent among adults (Hales et al., 2018).

Genetics can also increase the susceptibility to weight gain based on an individual's environment (Thaker, 2017). Owen et al. (2017) explored the association between genetic influence on BMI and its variation as a function of neighborhood deprivation and found the relationship to be significant. Based on an individual's social environment, there is a genetic influence, specifically heritability of BMI, on obesity for individuals residing in more disadvantaged neighborhoods (Owen et al., 2017). Therefore, being knowledgeable of family history and assessing the resources available within the neighborhood may assist in determining the likelihood of excess weight gain.

Researchers found SES and obesity were inversely associated throughout the life course but could be subject to change over time (Newton et al., 2017; Tutunchi et al., 2019). For example, racial and ethnic underrepresented youths with low SES had higher

BMI compared to White youths with high SES, and there were more significant differences among girls (Hughey et al., 2017). Claassen et al. (2019) conducted a systematic review and found that both physical and social environmental factors as well as psychological factors such as stress were mediators for the association between SES and BMI; however, neighborhood factors also played a partial role with access to healthy food and safe areas to perform physical activity.

Access to healthy food and neighborhood safety may contribute to healthy lifestyle promotion. Wedick et al.'s (2015) study supported the notion that access to healthy food increases the likelihood of improving health behaviors. Furthermore, Caspi et al. (2012) suggested that accessibility to healthy food could be related to the reliability of transportation as well as neighborhood safety. Forsyth et al. (2015) revealed that perceived neighborhood crime was significantly associated with BMI among ethnically and socioeconomically diverse adolescents. Therefore, both access to healthy food and neighborhood safety may determine the likelihood of increased BMI.

Regardless of some socioeconomic factors, racial and ethnic underrepresented groups, specifically African Americans, being overweight or obese were more likely to be diagnosed with chronic diseases such as hypertension and diabetes (Stommel & Schoenborn, 2010; Young et al., 2018). Although significant associations between higher educational attainment and improved obesity outcomes are apparent, notable disparities exist among racial and ethnic underrepresented groups in which social-environmental risk factors play a role (Singh et al., 2015; Wong et al., 2018). For instance, African Americans tend to reside in varying physical and social environments when compared to

other races and ethnicities; therefore, the likelihood of obtaining optimal amounts of sleep is reduced, which increases food consumption and potentially obesity long-term (Jackson, 2017). Wong et al. (2018) found that a person's social environment was associated with improved health outcomes; however, studies are needed to assess social-environmental factors and their influence on obesity among African Americans utilizing a theoretical lens to further understand this relationship (Bishop et al., 2020).

Overall health is affected by many aspects of an individual's life. The social determinants of health affect individual health outcomes because they are the conditions that affect the way people live, learn, work, play, worship, and age, including access to health services, quality of education, socioeconomic conditions, social support, public safety, literacy, and access to technology (U.S. Department of Health and Human Services, n.d.-a). For example, an individual's living conditions and behavioral risk factors such as obesity based on their social environment has illustrated an increase in social inequalities on cardiovascular disease mortality rates (Singh et al., 2015). Providing individuals with adequate resources within their social environment may better equip them to make appropriate health decisions. Many adults find it challenging to adhere to the recommended physical activity and healthy eating guidelines, yet these are two pertinent behavioral risk factors that influence obesity (Lakerveld & Mackenbach, 2017; Neumark-Sztainer et al., 2018). However, by practicing health-promoting behaviors such as engaging in regular physical activity and increasing intake of fruits and vegetables, individuals may significantly decreased their likelihood of being overweight or obese (Moyer et al., 2020).

Obesity and Young Adults

As of 2017, young adults age 21 to 36 were the largest group of individuals in the United States (Fry, 2018), and understanding the impact of obesity on their health is critical. In 2017–2018, the prevalence of obesity among young adults was 40% (CDC, n.d.-b). During young adulthood, increased weight gain was prevalent due to the establishment of independent lifestyles (Cheng et al., 2016; Moyer et al., 2020; Munt et al., 2017). Young adults moved away from home potentially into obesogenic environments, which included an increase in perceived social support or influence from friends adhering to unhealthy lifestyles (Pelletier et al., 2014; Yayan & Celebioglu, 2018), frequent consumption of fast food (Bruening et al., 2014; Munt et al., 2017; Steeves et al., 2016), and an increase in sedentary behavior such as watching television and using the internet (Aghasi et al., 2020; Melton et al., 2014; Yen et al., 2010). Obesity is a contributing factor to type 2 diabetes, hypertension, and cardiovascular disease (Buscot et al., 2018; Cheng et al., 2016; Lascar et al., 2018). Longitudinal studies revealed that adolescents and young adults who were overweight or obese exhibiting chronic conditions were associated with more prolonged disease exposure, which increased the risk of further health complications (Buscot et al., 2018; Callo Quinte et al., 2019; Lascar et al., 2018). Buscot et al. (2018) suggested that reducing BMI during young adulthood could lead to improved cardiometabolic profiles to decrease the risk of cardiovascular disease. However, recent cross-sectional analyses are warranted to gauge the changing landscape and the impact of obesity among young adults.

Understanding the risks associated with obesity during young adulthood can be critical in determining the onset of chronic diseases in later adulthood. National trends revealed that as unhealthy behaviors persist, African American young adults who are overweight or obese are at increased risk of being diagnosed with diseases that are common at older ages (CDC, n.d.-c). Cheng et al. (2016) conducted a literature review to address the physical and psychological health consequences of young adults who enter young adulthood with overweight or obesity and those who develop overweight or obesity during this time. Although weight gain measurement inconsistencies exist (Fazzino et al., 2019), both weight gain and obesity were highly prevalent among young adults, and many symptoms related to metabolic disease were not visibly present (Cheng et al., 2016). Young adults were less likely to consider or care for their health due to competing priorities, the possibility of being stigmatized by health care providers, and the notion that chronic diseases occur later in adulthood (Cheng et al., 2016). Dowd and Zajacova (2014) used the 1999–2010 National Health and Nutrition Examination Survey (NHANES) data to examine the association between obesity and health risks during young adulthood and its severity in later adulthood. Although weight was self-reported at age 25, Dowd and Zajacova found that obesity during young adulthood presented an increased likelihood of being severely obese in later adulthood. Taking preventive measures during young adult years could mitigate obesity duration into later adulthood (Dowd & Zajacova, 2014). Although Dowd and Zajacova analyzed a national data set, studies targeting racial and ethnic groups most affected by overweight or obesity are

necessary to understand the negative health consequences impacting diverse communities.

Health-promoting behaviors such as physical activity and fruit and vegetable intake are protective factors that can reduce the onset of chronic disease. Moyer et al. (2020) examined the 2013–2014 NHANES data to explore whether young adults adhered to physical activity and dietary intake guidelines as well as the associations between personal factors and leisure-time physical activity and fruit and vegetable intake. Although a small percentage of study participants met the physical activity and dietary intake recommendations simultaneously, the likelihood of being overweight or obese increased among this population (Moyer et al., 2020). Jayawardene et al. (2016) also suggested that young adults who increased their amount of physical activity were more likely to transfer this healthy habit to increase their fruit and vegetable consumption. These studies highlighted the importance of health-promoting behaviors, placing the onus on young adults to reduce the onset of preventable chronic disease morbidity and mortality. However, limited studies addressed the health of young adults age 18 to 34 using a nationally representative sample and the analysis of recent trends, which could reveal a more telling narrative of the social-environmental factors influencing obesity within this group.

Bandura's SCT provided a framework for understanding the social-environmental influences on obesity. Larson et al. (2018) utilized the SCT to elucidate the personal, behavioral, and environmental factors affecting weight gain in young adults. These factors included access to healthy food, eating behaviors, physical activity, and perceived

social support, which play an essential role in influencing health outcomes. Larson et al. found that the inability to maintain a healthy weight was indicative of the young adult's social environment and the unhealthy behaviors of those within their social network. However, the results were not generalizable to young adults at the national level. Jeffries et al. (2018) conducted quantitative research to identify subgroups of young adults based on the clustering of modifiable health-related behaviors. Jeffries et al. revealed that young adults who did not engage in recommended amounts of physical activity with poor dietary intake were more likely to have higher BMI. Jefferies et al. suggested that young adults have an increased likelihood of being influenced by their social environment rather than their physical environment, such as their living arrangements. These studies focused on a regional subset of young adults, which limited generalizability at the national level among young adults regardless of college enrollment and consideration for racial/ethnic groups.

Obesity and African Americans

Obesity disproportionately affects African American communities, and eliminating health disparities could reduce its prevalence (Coughlin & Smith, 2017). According to the NHANES conducted in 2017–2018, the prevalence of obesity was the highest among African American adults at 49.6% (Hales et al., 2020). SES and social-environmental factors influence the onset of obesity (Hales et al., 2020). SES, including income and education, plays a pivotal role in the likelihood of African Americans being overweight or obese (Hales et al., 2020). Tate et al. (2015) and Sa et al. (2016) found an inverse relationship between SES and overweight among African American families.

Additionally, when physical activity and nutrition were examined, Tate et al. found lower SES African American youths were more likely to be physically active and consumed less nutrient-dense foods. Regarding education, both Wong et al. (2018) and Nelson et al. (2018) found lower educational attainment was associated with higher BMI for African Americans, suggesting an increased prevalence of obesity-related health outcomes. Social-environmental factors such as access to healthy, affordable foods, social cohesion, and perceived safety that are specific to African American communities impact obesity outcomes as well (Burton et al., 2017; Wong et al., 2018). The systematic review conducted by Burton et al. (2017) indicated that varying social-environmental factors could enhance intervention development at the community level based on the cultural needs of the priority population; however, as with many studies, there were higher percentages of women participants, presenting limitations and recommendations for additional studies to include equal numbers of men and women. Examining SES and social-environmental factors and their correlation with obesity may address the health disparities endured among African Americans. Studies are needed to identify additional social-environmental factors that could influence obesity to assist public health practitioners in the development of effective interventions.

Although African Americans' health has improved over the past two decades, African Americans remain at the highest risk of chronic disease compared to other racial/ethnic groups. African Americans had a higher rate of cardiovascular disease mortality compared to Whites (Beydoun et al., 2016). Education and income were also associated with health-related behaviors and the onset of chronic diseases (Cunningham

et al., 2017; Qobadi & Payton, 2017). For example, Whitaker et al. (2018) analyzed data from the Coronary Artery Risk Development in Young Adults longitudinal study containing 3,081 participants to examine the mediating effects of socioeconomic factors on cardiovascular health (CVH) behavior scores. Whitaker et al. found that when examining the mediating effects of level of education, annual family income, and employment status, for instance, African Americans had poorer CVH behavior scores compared to Whites. This finding suggested that CVH behaviors, which included physical activity and diet, were significantly less due to the socioeconomic inequality burdens placed on African Americans beyond their control. Qobadi and Payton (2017) revealed similar findings in their quantitative study highlighting racial disparities based on the SES of Mississippi adults. Chang et al. (2017) assessed racial disparities regarding obesity health outcomes at the national level and found that African Americans had a higher prevalence and risk for obesity and obesity-related chronic conditions, including hypertension, diabetes, and stroke. Although these studies provided evidence that African Americans are at the highest risk for chronic disease, limited studies included a nationally representative sample focused on obese African American adults.

Internet Use and Obesity

The way individuals use the internet may determine health outcomes (Chae, 2017; Thomee et al., 2015). One perspective is that internet use can be beneficial for health when individuals seek information to improve their health behavior and later health outcomes (Adhikari et al., 2018). Despite the likelihood of improving health behaviors using the internet, Aydin et al. (2015) found that communities in greatest need of health

information were less likely to have access to new technology. Alternatively, internet use can have deleterious effects on health where individuals spend numerous hours using the internet which contributes to a sedentary lifestyle, a risk factor for obesity (Aghasi et al., 2020; Vaterlaus et al., 2015).

Internet use is often linked with sedentary behavior, an activity that expends a low amount of energy (see Matusitz & McCormick, 2012; Salmon et al., 2011). A few examples of sedentary behavior include sitting watching television, reading, and computer use for long periods of time. Heinonen et al. (2013) found a positive correlation between sedentary behavior and BMI, which may contribute to an increased risk of obesity. The term internet use was also frequently grouped under the categories of screen time, information and communication technology, leisure time computer use, and interactive media. Internet access modalities span across devices that include computers, laptops, tablets, and smartphones used at home, work, and school. According to the PEW Research Center (2019), 90% of adults in the United States used the internet in 2019, predominantly young adults. As the internet is more frequently used, understanding its role in the influence of obesity and the onset of chronic disease may be critical for intervention development.

Researchers found mixed results regarding the association between internet use and obesity. Historically, Matusitz and McCormick (2012) found that the frequency of internet use was directly associated with the likelihood of being overweight or obese among both children and adults. Matusitz and McCormick suggested that internet use may be conducive to increased sedentary behavior.

There is additional evidence that the association between internet use and overweight or obesity is inconclusive. In order to identify the overall relationship between internet use and overweight and obesity, Aghasi et al. (2020) conducted a systematic review and meta-analysis of nine cross-sectional studies. This meta-analysis further supported Matusitz and McCormick's (2012) findings. The study by Aghasi et al. consisted of 38,537 participants age 9 years and older between 2007 and 2016. In the systematic review, six studies examining the relationship between internet use and overweight or obesity were significant; however, two studies did not present a significant association.

The association between internet use and overweight or obesity is linear. In the meta-analysis portion of the study, Aghasi et al. (2020) combined effect sizes from seven studies that reported internet use in hours per day and found that internet use significantly increased the odds of overweight or obesity. For each additional hour per day of internet used, there was an 8% increase in the likelihood of being overweight or obese with an average of 2.5 kilograms of weight gained over 1.5 years (Aghasi et al., 2020; Deforche et al., 2015). Researchers found that obese youths spent double the average number of minutes per week using the internet when compared to their non-obese peers, suggesting that internet use influenced obesity (Melton et al., 2014; Vaterlaus et al., 2015). Although internet use measurements varied by study, research is limited on general internet use. Aghasi et al. (2020) provided supporting evidence that studies conducted in the United States are needed to assess internet use and its influence on the development of obesity

among young adults considering race/ethnic groups that are disproportionately affected by obesity.

Gopalan et al. (2016) was the only study to explore the association between information and communication technology use (internet use) and obesity among racial/ethnic groups. Gopalan et al. (2016) performed a cross-sectional analysis of 267 African American and Hispanic adults in South Side Chicago, which revealed that obese adults were more likely to use the internet in general as well as seek health-specific information. The primary strength of this study focused on racial and ethnic underrepresented groups illustrating a higher prevalence of internet use among obese adults could be due to socioeconomic factors such as poverty that may affect health; however, studies examining a national population of African American young adults is unknown (Gopalan et al., 2016).

In contrast to studies illustrating a significant relationship between internet use and obesity, Barrense-Dias et al. (2016) found that internet use was not significantly associated with increased BMI over time regardless of whether the youths were overweight or obese at baseline. Barrense-Dias et al.'s longitudinal study explored the association between internet use and increased BMI among 621 adolescents in Switzerland. When young adults were assessed and potential confounders were adjusted, Melchior et al. (2014) also found that internet use was not associated with being overweight or obese. Thomee et al. (2015) found similar results between leisure-time computer use and overweight. Kalirathinam et al.'s (2019) cross-sectional study revealed that the total amount of screen time, including internet use, was not significantly

associated with BMI among college students arguing that there could be other factors more strongly associated with BMI.

The association between obesity and using the internet to seek health information was frequently examined as well. Faith et al.'s (2015) study indicated no direct relationship for individuals within an existing BMI category. Nonetheless, young adults were more inclined to use the internet for health information to make informed health decisions (James & Harville II, 2016; McCully et al., 2013; Swoboda et al., 2018); therefore, researchers indicated that internet use can be beneficial for health to improve health behavior. For instance, Chae (2017) found that seeking health information online can increase healthy dietary behaviors. These studies demonstrate the need to explore internet use in addition to other variables and their correlation with obesity. The direct association between general internet use and obesity remains inconclusive.

Prolonged periods of internet use may have implications on the prevalence of adverse health outcomes. Youths that spent more time using the internet was associated with having less time for sleep (Cheng et al., 2016; Kim et al., 2018). Cheng et al. (2016) proposed that increased technology use could contribute to sleep disturbances due to lack of routine, especially among young adults. Comparably, Kim et al. (2018) found that youths using the internet for more than two hours per day were associated with having less time for sleep. Peltzer et al. (2014) highlighted the significant association between heavy internet use and health outcomes, particularly obesity, positive post-traumatic stress disorder screening, and depression. Even though the time spent using the internet was considered a modifiable environmental influence on obesity (Matusitz &

McCormick, 2012), these studies propose additional research to understand health outcomes as it relates to a different demographic such as African American young adults.

Perceived Social Support and Obesity

Social support is characterized as the way in which social relationships can influence health (Cohen et al., 2000). Social relationships can provide individuals with the necessary resources to enhance health-promoting behaviors leading toward positive health outcomes. Holt-Lunstad and Uchino (2015) described that social relationships could be categorized by structural and functional measures. Structural measures are based on an individual's placement in their social network, while functional measures refer to how an individual perceives support and the resources gained from their social network (Holt-Lunstad & Uchino, 2015). Functional social support can be further categorized based on the function of an individual's social network to include emotional support, informational support, instrumental support, and belonging support. Emotional support refers to those within a social network that care for an individual; informational support is providing resources that can assist in decision making; instrumental support provides direct tangible assistance; and belonging support refers to an individual's social availability (Cohen et al., 2000). Yan (2018) suggested that having the amount of perceived social support needed coupled with the actual amount received can positively influence health behaviors. Understanding the amount of perceived social support needed can provide insight into its influence on obesity.

Perceived social support and the social environment are essential in promoting improved health outcomes and preventing the onset of overweight or obesity. It is also

important to note that the measurement and parameters set to define perceived social support varied from study to study (Glonti et al., 2016). Yayan and Celebioglu (2018) conducted a quantitative study examining the effects of an obesogenic environment and perceived social support for health behaviors on BMI among youths. Yayan and Celebioglu found a significant association between an obesogenic environment and BMI. Although Yayan and Celebioglu did not find a statistically significant association between perceived social support and BMI, they observed that as perceived social support increased, BMI decreased. In addition, Yayan and Celebioglu found that as age increased, perceived social support decreased. Overweight and obese young adults were more likely to have overweight and obese social contacts such as family, friends, and romantic partners (Leahey et al., 2011). Leahey et al. (2011) found that if the intention to lose weight within the social network increased, there was an increased likelihood for overweight and obese young adults within the social network to increase their intention to lose weight as well. Overall, researchers have used a variety of perceived social support measurement tools including the Multidimensional Scale of Perceived Social Support (MSPSS) and the Perceived Social Support Scale (PSSS) and can validate their reliability through their study results (Ames & Leadbeater, 2016; Darling et al., 2018; Rigoli et al., 2017).

Despite the negative correlation between perceived social support and BMI as reviewed in previous studies, perceived social support among racial and ethnic underrepresented groups had mixed findings. For example, Johnson et al. (2014) assessed the correlation between perceived social support and BMI among a cohort of 195 African

American women residing in Alabama and Mississippi and found that family and friends both encouraged and discouraged healthy behaviors; however, there was not a significant association between perceived social support and BMI. Assari et al.'s longitudinal study (2015) surveyed 227 African American adults to identify whether there was an association between parental support and a change in BMI. Although the study was not conducted on a national level, Assari et al. found that among females, low perceived social support from mothers during adolescence was associated with a higher increase in BMI when young adults transitioned to later adulthood. Similarly, Chen et al. (2018) found that African American parents with lower perceived social support for their children during adolescence increased the likelihood of metabolic syndrome among their children in young adulthood. Gage (2015) conducted a cross-sectional study with a convenience sample of 179 African American college students to examine the associations between perceived social support and positive health practices as well as self-efficacy and positive health practices. Gage (2015) found a significant association between perceived social support and positive health practices. In addition to using the SCT construct of self-efficacy, Gage (2015) emphasized the importance of social influences on health behaviors among at-risk young adults. Social influences are inclusive of social capital, social support, and social networks. Social capital accounts for the resources available within a social network that can improve individual circumstances (Carpiano, 2006). Carpiano's (2006) study further supports the significant association between social capital and overweight or obesity, especially among African Americans (Childs et al., 2020; Powell et al., 2015).

Perceived social support is an established predictor of physical activity and eating behavior (Ball et al., 2010). Steeves et al. (2016) examined whether there was a relationship between perceived social support from parents and eating behaviors compared to those of friends among urban, low-income African American youths while using the social cognitive and social support theories as a foundation for their study. They found that perceived social support from parents was more frequently associated with healthy eating, while the perceived social support from friends was more frequently associated with unhealthy eating. Steeves et al.'s study suggests that perceived social support varies based on the psychological social ties from one person to another. Consistent with these findings, increased parental involvement in health behaviors can positively impact a child's physical activity, eating habits, and sedentary behavior potentially resulting in decreased BMI (Draper et al., 2015); however, lower rates of parental perceived social support for healthy behaviors exist among racial and ethnic underrepresented and low-income families (Donnelly & Springer, 2015). Siceloff et al. (2014) conducted a quantitative study among an African American underserved population to explore the association between environmental and social factors with physical activity to identify whether physical activity linked these factors with obesity. Siceloff et al. revealed that neighborhood walkability was a predictor of physical activity; however, perceived social support was not significantly associated with physical activity or BMI suggesting that variances within the neighborhood physical environment could potentially play a role in the association between physical activity and obesity (Siceloff et al., 2014). Alternatively, other researchers found that higher frequencies of perceived

social support from family and friends were predictors of physical activity outcomes among a diverse sample of youths; however, additional studies are still needed to assess the health disparities regarding obesity experienced among African Americans on a national level and factors reducing health outcomes such as cardiovascular disease (Ellis et al., 2019; Gill et al., 2018).

Definitions

African American: A person of African ancestral origins who self identifies or is identified by others as African American (Agyemang et al., 2005).

Body mass index (BMI): A measure of body fat that is calculated by dividing an individual's weight in kilograms by the square of their height in meters. BMI values are used to identify weight status categories as the following: < 18.5 is underweight, 18.5–24.9 is normal weight, 25.0–29.9 is overweight, and > 30 is obese (CDC, 2020).

Internet use: An individual who has direct access to the internet; a current internet user (Hoffman et al., 1996). Using the internet to achieve a specific goal such as finding information, communicating with others, to work, or play (Davis, 2001). It can be both beneficial to health for individuals seeking information to change health behavior (Adhikari et al., 2018) as well as deleterious to health by contributing to a sedentary lifestyle (Aghasi et al., 2020).

Metabolic syndrome: A group of risk factors that increase the likelihood of heart disease, diabetes, and stroke (National Heart, Lung, and Blood Institute, 2020). It is largely driven by abdominal obesity (Chen et al., 2018).

Obesogenic environment: "The sum of influences that the surroundings, opportunities, or conditions of life have on promoting obesity in individuals or populations (Swinburn et al., 1999, p.564)."

Perceived social support: An individual perception that family, friends, and others will be available to provide material, psychological and overall assistance in times of need (Holt-Lunstad & Uchino, 2015; Ioannou et al., 2019). It is measured using a Likert scale to assess varying levels of perceived social support.

Social environment: Characteristics of an individual's physical environment that can promote, permit, or discourage a specific health behavior. These characteristics include individuals within the social network, cultural beliefs regarding a behavior, perceptions of encouragement as well as the opportunities and challenges to engage individuals in health behavior (Kelder et al., 2015).

Young adults: Adults age 18 to 34.

Assumptions

There are assumptions that can be made for this study. Although the BRFSS data were collected via telephone surveys and responses self-reported, it is assumed that survey participants were selected at random. BRFSS standard protocols for data collection were followed and responses were submitted truthfully to strengthen its consistency and reliability. Lastly, the BRFSS data performed calculations for the BMI values; therefore, it is assumed that appropriate calculation methods were used to differentiate the BMI categories.

Scope and Delimitations

This study focused on internet use and perceived social support and their influence on obesity among African American young adults. The 2017 BRFSS dataset was used to examine African American adults and their likelihood of being obese as there is a high prevalence of obesity-related health outcomes such as hypertension, diabetes, and cardiovascular disease among this group. The population for this study included African Americans between the age of 18 to 34, used the internet, and had some level of perceived social support from family or friends. Other race/ethnic groups, those under 18 and over 34 years of age, were excluded from this study. Based on the inclusion criteria, the results of this study can only be generalized to obese African American young adults within the Uni. This study was limited due to the use of a cross-sectional quantitative survey and variables were selected from this dataset for analysis. Based on the availability of the BRFSS data, internet use only included those who accessed the internet within the past 30 days. This was a limitation as participants were unable to disclose how, why, and the frequency in which the internet was accessed. Perceived social support was measured by the frequency of social and emotional support needed.

Significance, Summary, and Conclusions

The significance of this study was that it may provide a better understanding of the social support needed by African American young adults to institute health behavior change. This study may also provide evidence on the factors that may cause young adult weight gain as well as highlight obesity disparities that may be experienced among African Americans. Research on the influence of internet use and perceived social

support on obesity is limited. Researchers previously focused on children and adolescents or among college students; however, this study aimed to understand the African American young adult population between the age of 18 to 34. Findings from this study may foster the development of age-specific and culturally appropriate interventions to meet the specific needs of African American young adults. Through increased knowledge about the risk factors associated with obesity, strategies could be identified to reduce the risk of hypertension, diabetes, cardiovascular, and other obesity-related chronic diseases. Although internet use may not provide the same level of perceived social support as in-person, interventions may be developed to include an internet-based component as a venue to host open discussions regarding the challenges of obtaining and maintaining BMI within a healthy range.

Social change implications of this study for health educators and providers may include collaborating with community organizations in the development of obesity prevention interventions that prioritize African American young adults. The intervention could consist of the support from family and friends and using the internet to sustain accountability of healthy weight maintenance. Health policy planners may also utilize the study findings to conduct health promotion campaigns via the internet targeting African American young adults and their social networks, which may assist with improving obesity-related health outcomes. The research design and methodology of this study are described in Section 2.

Section 2: Research Design and Data Collection

The purpose of this study was to examine whether internet use and perceived social support influenced obesity among African American young adults age 18 to 34 when controlling for gender, education, and employment status. Understanding the social-environmental factors of internet use and perceived social support may further elucidate the importance of instituting interventions focused on obesity prevention. In this section, the research design and rationale, methodology, sampling and sampling procedures, data collection process, and plan for statistical analyses are described in addition to potential threats to validity and ethical concerns.

Research Design and Rationale

This study was a quantitative, cross-sectional research design utilizing secondary data analysis as the approach. BMI, internet use, and perceived social support were extracted from the 2017 BRFSS data. A cross-sectional design was appropriate for this study in understanding the prevalence of health outcomes such as obesity (see Setia, 2016). Each year, questions are selected for the BRFSS through a voting process in which the CDC and states elect the questions that are relevant. The questionnaire is composed of core, optional, and state-added content (CDC, 2018). The 2017 BRFSS data set was selected for the current study because it provided a nationally representative sample and was the most recent survey to include a question about internet use. The benefits of using cross-sectional research designs include the ability to collect data quickly and inexpensively compared to other designs (Setia, 2016). The aim of the current study was to understand the influence of the independent variables (internet use and perceived

social support) on the dependent variable (obesity) among African American young adults. The covariate variables in this study included gender, education, and employment status.

Methodology

Population

The target population for this study consisted of African American young adults age 18 to 34 residing in the United States with obesity. The 2017 BRFSS was used for this study because it provided a nationally representative sample of noninstitutionalized adults 18 years and older. The target population was relevant for this study because weight gain and obesity were prevalent among young adults and it disproportionately affected African Americans (see Cheng et al., 2016; Hales et al., 2020). The population for the 2017 BRFSS was 450,016, including 73,420 young adults age 18 to 34 and 35,756 African Americans (CDC, 2018). Data weighting was instituted with the BRFSS to ensure the sample data were representative of the population considering the probability of selection and adjusting for nonresponse bias and noncoverage errors (CDC, 2018).

Sampling and Sampling Procedures

I used publicly available secondary data from the 2017 BRFSS. With a focus on health risk behaviors, the BRFSS contained data collected annually using a random-digit dialing method from phone interviews via landline and cellular phones of noninstitutionalized adults age 18 and older residing in the United States (CDC, 2018). Using both landline and cellular telephone-based surveys is beneficial in improving the validity, quality, and representativeness of BRFSS data (CDC, 2018). Once data were

collected, probability sampling was used for each state, more specifically disproportionate stratified sampling. This process entailed selecting a sample from various subgroups within the population that was disproportionate to the size of the subgroup in the population (Frankfort-Nachmias & Leon-Guerrero, 2018). Afterward, a weighting methodology was applied. To more accurately capture the sociodemographic characteristics of each state while adjusting for over- or underrepresented data, design weights and raking were utilized (Iachan et al., 2016).

Sample Size and Power Calculation

The sample selected for analysis in this study was African American adults age 18 to 34. The 2017 BRFSS data set contained a total of 450,016 survey participants across the United States, and having a larger sample size ensured the accuracy of the inferences being made in the current study (see Creswell & Creswell, 2018). Chan (2019) posited that calculating the power analysis for binary outcomes can be challenging due to its nonlinear nature that does not account for variance. Based on the binary logistic regression test that was used for the current study, an a priori power analysis was performed to assess the effect on obesity in relation to the independent variables (internet use and perceived social support) according to the sample size, level of significance, and effect size (see Rudestam & Newton, 2015). These factors should be considered in sample size calculations (J. Cohen, 1988). Identifying the level of significance (alpha, α) can reduce the rate of having a Type I error, which is rejecting the null hypothesis when it is true, and is set to .05 (Creswell & Creswell, 2018). If the value of α is set lower than .05, it denotes the power level will be lower as well (J. Cohen, 1988). The effect size

determines the strength of the association between the variables (Creswell & Creswell, 2018). Because there were no previous studies that addressed similar research questions, a medium effect size was used, an odds ratio of 3.47 (see Chen et al., 2010). Power determines the likelihood of avoiding a Type II error (beta, β), which is failing to reject the null hypothesis when it is false (Rudestam & Newton, 2015). Power is calculated as 1-β, and researchers balance Type I and Type II errors by using a β value of .2 resulting in a .8 power value (Creswell & Creswell, 2018).

Instrumentation and Operationalization of Constructs

The BRFSS is an annual telephone-based survey developed in collaboration with all of the U.S. states, participating U.S. territories, and the CDC (CDC, 2018). The 2017 BRFSS survey was relevant for the current study because it contained questions regarding social-environmental risk factors, including perceived social support and internet use, as well as the prevalence of health conditions such as obesity. The 2017 BRFSS data were published in 2018 and are publicly available for analysis. Despite moderate values for obesity and perceived social support, Pierannunzi et al. (2013) revealed the reliability and validity of BRFSS surveys were quite high. Although probability sampling could cause differences in the prevalence of obesity when compared to similar national surveys, statistical relationships often remained the same (Pierannunzi et al., 2013).

The 2017 BRFSS was used to determine whether internet use and perceived social support predicted obesity among African American young adults. The independent variables were internet use and perceived social support. For internet use, the respondents

were asked “have you used the internet within the past 30 days?” which was coded as a binomial variable with “did not use” = 0 and “used” = 1. Those who responded with “don’t know/not sure” or “refused” were considered missing data. Perceived social support was an ordinal variable, and respondents were asked “how often do you get the social and emotional support you need?” The responses were coded as “always” = 1, “usually” = 2, “sometimes” = 3, “rarely” = 4, and “never” = 5. The variable was recoded to a binomial variable with “did not perceive social support” = 0 and “perceived any level of social support” = 1. Those who responded with “don’t know/not sure” or “refused” were considered missing data. Researchers of recent studies assessed perceived social support using BRFSS data sets (Brinker & Cheruvu, 2017; Reisinger et al., 2018). Because the BRFSS data set does not measure the actual social support received by survey participants using the survey question “how often do you get the social and emotional support you need?” this question is best viewed as perceived social support (Brinker & Cheruvu, 2017; Reisinger et al., 2018).

The dependent variable was obesity measured by BMI and was calculated using weight in kilograms divided by height squared. BMI was an ordinal variable in which four categories were computed and coded as “underweight (BMI <18.5)” = 1, “normal weight (18.5 ≤ 25)” = 2, “overweight (25 ≤ 30)” = 3, and “obese (30 ≤ BMI)” = 4. However, this measure was operationalized as a binomial variable coded as “BMI < 30” = 0 and “BMI > 30” = 1 to highlight young adults with obesity.

Gender, education, and employment status were the control variables used to test associations between the independent and dependent variables for large data sets like the

BRFSS (Florez et al., 2018; Thomee et al., 2015; Wong et al., 2018). Previous researchers indicated that these control variables could affect the influence of the independent variables on obesity (Florez et al., 2018; Thomee et al., 2015; Wong et al., 2018). Table 1 describes the BRFSS questions and variable operational measures used.

Table 1

Operational Measures for Key Independent and Dependent Variables

Variables	Description	Response category	Variable type
Obesity	Computed body mass index (BMI) - Derived from km/m^2	0 = BMI < 30 1 = BMI ≥ 30	Binomial
Internet use	Internet use in past 30 days (don't know/not sure or refused data is considered missing data)	0 = No 1 = Yes	Binomial
Perceived social support	Social and emotional support received (don't know/not sure or refused data is considered missing data)	1 = Always 2 = Usually 3 = Sometimes 4 = Rarely 5 = Never	Ordinal
Gender	Self-reported gender	0 = Male 1 = Female	Nominal
Education	Level of education	1 = Did not graduate high school 2 = Graduated high school 3 = Attended college or technical school 4 = Graduated college or technical school	Ordinal
Employment status	Employment status	1 = Employed 2 = Unemployed 3 = Student	Nominal

Note. CDC Data Source, 2017 Behavioral Risk Factor Surveillance Survey (BRFSS)

Data Analysis Plan

The IBM Statistical Package for the Social Sciences (SPSS) Version 27 was used for data analyses in this study. Descriptive and inferential statistics were calculated. A binary logistic regression was the appropriate statistical test performed for the research questions because the aim of this study was to predict the probability the independent variables (internet use and perceived social support) fell into one of the two categories of a dichotomous dependent variable (obesity; see Laerd Statistics, n.d.). Gender, education, and employment status were the control variables due to their effect on internet use and perceived social support illustrating an influence on obesity (Florez et al., 2018; Thomee et al., 2015; Wong et al., 2018).

Research Question 1: Is there an association between internet use and obesity among African American young adults age 18 to 34 when controlling for gender, education, and employment status?

H_o1: There is no association between internet use and obesity among African American young adults age 18 to 34 when controlling for gender, education, and employment status.

H_a1: There is an association between internet use and obesity among African American young adults age 18 to 34 when controlling for gender, education, and employment status.

Statistical plan: The independent variable was internet use. The dependent variable was obesity. The statistical test was binary logistic regression. Control variables

were gender, education, and employment status. The null hypothesis would be rejected if $p < .01$.

Research Question 2: Is there an association between perceived social support and obesity among African American young adults age 18 to 34 when controlling for gender, education, and employment status?

H_o2: There is no association between perceived social support and obesity among African American young adults age 18 to 34 when controlling for gender, education, and employment status.

H_a2: There is an association between perceived social support and obesity among African American young adults age 18 to 34 when controlling for gender, education, and employment status.

Statistical plan: The independent variable was perceived social support. The dependent variable was obesity. The statistical test was binary logistic regression. Control variables were gender, education, and employment status. The null hypothesis would be rejected if $p < .01$.

Research Question 3: Is there an association of internet use, perceived social support, and obesity among African American young adults age 18 to 34 when controlling for gender, education, and employment status?

H_o3: There is no association of internet use, perceived social support, and obesity among African American young adults age 18 to 34 when controlling for gender, education, and employment status.

H_a3: There is an association of internet use, perceived social support, and obesity among African American young adults age 18 to 34 when controlling for gender, education, and employment status.

Statistical plan: The independent variables were internet use and perceived social support. The dependent variable was obesity. The statistical test was binary logistic regression. Control variables were gender, education, and employment status. The null hypothesis would be rejected if $p < .01$.

Threats to Validity

Validity conveys the extent to which measures indicate what they are intended to measure (Frankfort-Nachmias & Leon-Guerrero, 2018). Internal and external threats to validity may occur in research experiments; however, it is essential for researchers to address what the potential threats may be to minimize the likelihood of occurrence (Creswell & Cresswell, 2018). Internal threats to validity limit the researcher's ability to accurately make inferences regarding the sample population (Creswell & Creswell, 2018). Selection bias could have presented as an internal threat to validity in the current study; however, the BRFSS uses disproportionate stratified sampling by selecting from various subgroups within the population that is disproportionate to the size of the subgroup in the population to ensure equal distribution (CDC, 2018; Frankfort-Nachmias & Leon-Guerrero, 2018). Another potential threat to internal validity was instrumentation. The BRFSS previously collected data via landlines only; however, since 2011 data collection has included cell phones because researchers demonstrated an increase in households with cell phones only (Blumberg & Luke, 2017). External threats

to validity refer to when the researcher draws incorrect inferences from the sample data, such as generalizing to other racial groups that were not examined in the study (Creswell & Creswell, 2018). Potential external threats to validity for the current study included the timing of the survey and the generalizability of the data. Each year, the BRFSS coordinators working group ensures the survey questions are relevant to the current time and can be compared across states. Once data are collected, data weighting occurs to capture the sociodemographic characteristics and adjust for over- or underrepresented data, thereby reducing the potential threats to validity (Iachan et al., 2016).

Lastly, construct validity may have posed a threat to the current study because the aim was to ensure the concepts being studied were appropriately measured (see Burkholder et al., 2016). Internet use, perceived social support, and obesity were the key variables in the current study. These variables had gone through technical review, cognitive testing, and field testing prior to implementation into the BRFSS questionnaire (CDC, 2018b). Although obesity was a self-reported measure in the current study, potential bias was corrected in the weighting of the data (see Pierannnzi et al., 2014).

Ethical Procedures

Secondary data from the 2017 BRFSS were used to conduct this study. Prior to accessing the data, I obtained approval through Walden University's Institutional Review Board (#10-25-20-0841717). The 2017 BRFSS is publicly available through the CDC and contains de-identified data to ensure respondents' safety and confidentiality. Because it is public health surveillance data, consent from the respondents is not required; however, researchers are cautioned to analyze the data as specifically intended through

secondary analysis and to monitor health behavior risks (Bernstein & Sweeney, 2012). Data used for this study will be stored on a password-protected device made available only to me and will be stored for 5 years.

Summary

This study addressed the influence of internet use and perceived social support on obesity among African American young adults age 18 to 34. This section included the research design and rationale, methodology, sampling and sampling procedures, data collection process, plan for statistical analyses, potential threats to validity, and ethical concerns. De-identified data from the 2017 BRFSS were used to conduct a cross-sectional secondary data analysis to test the hypotheses. A binary logistic regression model was used to examine the association between the independent variables (internet use and perceived social support) and the dependent variable (obesity). All research questions were adjusted for the controlled variables (gender, education, and employment status). The results of this study are presented in Section 3.

Section 3: Presentation of the Results and Findings

The purpose of this quantitative study was to explore whether internet use and perceived social support predicted obesity among African American young adults age 18 to 34 in the United States. The 2017 BRFSS data set was retrieved from the CDC website and was the latest data set to include a variable for internet use. The three research questions in this study were answered using a binary logistic regression model. In this section, the data analysis results are presented to address the three research questions and their hypotheses. The data collection process and data analyses, including descriptive and inferential statistics of the study population, are included.

Data Management and Descriptive Analyses

Data for this quantitative, cross-sectional study were obtained from the BRFSS survey collected in 2017. BRFSS uses disproportionate stratified sampling and a weighting methodology known as raking to more accurately account for the sociodemographic differences between the sampled individuals and the actual population they represent (CDC, 2018). The 2017 BRFSS included a total of 450,016 survey adult respondents age 18 and older residing in the United States. The data included both landline and cellular telephone-based surveys to improve the validity, quality, and representativeness of the U.S. population data (CDC, 2018a). The 2017 BRFSS response rates varied based on the data received via landline (45.3%) or cellphone (44.5%); however, overall response rates were comparable to similar surveys, and an emphasis was placed on weighting data to ensure representativeness of the population (CDC, 2018b).

Data and Variable Derivation

The sample population was limited to African American young adults age 18 to 34, which consisted of 6,765 individuals. The dependent variable (obesity) was categorized according to the BMI levels of *underweight* (BMI < 18.5), *normal weight* ($18.5 \leq$ BMI < 25.0), *overweight* ($25.0 \leq$ BMI < 30.0), or *obese* (BMI ≥ 30.0). For the current study, obesity was transformed into a dichotomous variable measuring whether an individual had a *BMI equal to or greater than 30* or *less than 30*. The independent variables were internet use and perceived social support. Internet use remained as a dichotomous variable with respondents answering *yes* or *no* for using the internet in the past 30 days. Perceived social support was transformed to a binomial variable measuring *did not perceive any social support* (*never*) and *perceived any level of social support* (responses included *always, usually, sometimes,* and *rarely)*. Gender, level of education, and employment status were the categorical control variables used in this study. Gender remained dichotomous, *male* and *female*; level of education also remained as presented in the 2017 BRFSS data set measuring *did not graduate high school, graduated high school, attended college or technical school,* and *graduated college or technical school*; lastly, employment status was transformed to measure *employed, not employed,* and *student*. The control variables were used to test associations between the independent and dependent variables (see Florez et al., 2018; Thomee et al., 2015; Wong et al., 2018).

Management of Missing Data

Missing data and respondents who did not answer the questions present in the 2017 BRFSS survey were excluded in the data analyses. The variables that had missing

data were obesity (10.9%), level of education (0.2%), employment status (1.7%), perceived social support (98.7%), gender (0.1%), and internet use (2.4%). One discrepancy presented from the 2017 BRFSS data set was a large number of missing data for the variable perceived social support. The variable was initially intended to measure the varying levels of perceived social support (*always*, *usually*, *sometimes*, *rarely*, and *never*); however, because 98.7% of the responses were missing for the perceived social support variable, it was transformed into a binomial variable measuring *did not perceive any social support* and *perceived any level of social support* to analyze the logistic regression more effectively.

Descriptive Characteristics of the Study Population

Descriptive statistics were calculated for the study sample, African American young adults age 18 to 34 (N = 6,765). The 2017 BRFSS data were weighted using iterative proportional fitting, also known as raking. To reduce bias, design weighting was performed and the _LLCPWT variable was used as the final weight assigned to each respondent (CDC, 2018a); however, a national weight is still needed to account for the variances within each state, such as race/ethnicity and age, to increase reliability within the study (Iachan et al., 2016).

The total number of respondents in the sample population was N = 6,765 (unweighted data are responses from actual individuals interviewed and the weighted percentages represent the distribution of the total U.S. population). The unweighted and weighted descriptive analyses are presented in Table 2 for the demographic variables. The weighted U.S. population percentages were quite similar to the unweighted study

sample percentages; however, not weighing the data would underrepresent or overrepresent some groups regarding age and education. For instance, individuals within the 18 to 24 age group were underrepresented in the unweighted study sample (35.5% vs. 42.8%) while the 25 to 34 age group was overrepresented (64.5% vs. 57.2%).

The weighted study sample was representative of the African American young adult population age 18 to 34. More than half of the study sample population were in the 25 to 34 age group (57.2%) and were female (54.8%). More than one third attended college or technical school (37.1%), and more than three quarters were not married (86.6%). Two thirds of the population were employed (63.9%), and less than half had an income of less than $25,000 (43.7%).

Table 2

Demographic Characteristics of Study Sample Compared to U.S. Population

Demographics	Unweighted study sample *N*	Unweighted study sample %	Weighted U.S. population %
Age			
18 – 24	2402	35.5	42.8
25 – 34	4363	64.5	57.2
Gender			
Male	2894	42.8	45.2
Female	3865	57.1	54.8
Employment Status			
Employed	4469	67.2	63.9
Unemployed	1142	17.2	17.2
Student	1040	15.6	18.9
Level of Education			
Did not graduate high school	398	5.9	10.1
Graduated high school	2390	35.4	36.5
Attended college or technical school	2304	34.1	37.1
Graduated college or technical school	1660	24.6	16.4
Marital Status			
Not married	5665	84.3	86.6
Married	1052	15.7	13.4
Income Category			
Less than $25,000	2341	43.6	43.7
$25,000 to less than $50,000	1641	30.5	29.4
$50,000 or more	1390	25.9	26.9

Note. 2017 BRFSS Data Set, African American Young Adults, aged 18-34 (*N* = 6,765).

Unweighted and weighted data were also presented for the study's key variables, which included obesity, internet use, and perceived social support. As illustrated in Table 3, more than two thirds of the sample population were not obese (69.7%). Most of the sample population perceived any level of social support (90.1%) and used the internet within the past 30 days (95.5%).

Table 3

Key Characteristics of Study Sample Compared to U.S. Population

Key characteristics	Unweighted study sample *N*	Unweighted study sample %	Weighted U.S. population %
Obesity			
BMI < 30	4045	67.4	69.7
BMI ≥ 30	1958	32.6	30.3
Perceived social support			
Did not perceive support	22	14.9	9.9
Perceived any level of support	126	85.1	90.1
Internet use			
No	322	4.9	4.5
Yes	6295	95.1	95.5

Note. 2017 BRFSS Data Set, African American Young Adults, aged 18-34 (N = 6,765).

Bivariate Analysis

A bivariate analysis was used to determine whether there was an association between obesity and internet use, perceived social support, while controlling for demographic factors. As shown in Table 4, all demographic and key characteristic variables were significantly associated with being obese ($p < .01$). Over a third (36.6%) of young adults who perceived any level of social support (*always, usually*, *sometimes, rarely* vs. *never*) were obese. Over a third (35.1%) of young adults who did not use the

internet within the past 30 days were obese. Females (35.6%) were more likely to be obese than males (24.4%). Unemployed young adults were more likely to be obese (36%). Findings from the bivariate analysis model indicated that perceived social support, internet use, gender, level of education, and employment status were significantly associated at $p < .01$.

Table 4

Internet Use and Perceived Social Support by Obesity

Key independent characteristics	Obese (%)	Chi-square value	*p*-value
Perceived social support		1202.886	< .01
Did not perceive support	18.3		
Perceived any level of support	36.6		
Internet use		3894.331	< .01
No	35.1		
Yes	30.1		
Gender		121171.881	< .01
Male	24.4		
Female	35.6		
Level of education		2325.911	< .01
Did not graduate high school	32.2		
Graduated high school	29.7		
Attended college or technical school	30.0		
Graduated college or technical school	31.0		
Employment status		95427.168	< .01
Employed	31.9		
Unemployed	36.0		
Student	20.8		

Note. 2017 BRFSS. African Americans aged 18-34 (*N*= 6,765). Weighted data was used for analysis.

Logistic Regression Assumptions

A binary logistic regression analysis was used based on the following assumptions: (a) the dependent variable was dichotomous, (b) the model had at least one independent variable, (c) each observation was independent of the other with mutually exclusive and exhaustive categories, (d) there was little or no multicollinearity among the independent variables, and (e) the independent variables were linearly related to the log odds (Stoltzfus, 2011).

Binary Logistic Regression

All three research questions were addressed by conducting a binary logistic regression using SPSS Version 27 to determine whether perceived social support and internet use were significantly associated with obesity while controlling for gender, education, and employment status. To reduce the Type I error rate due to multiple comparisons on the outcome variable, a Bonferroni correction was performed. The correction involves adjusting the *p* value to compensate for the three comparisons; instead of using $p < .05$, the criteria for significance was $p < .01$.

Research Question 1: Is there an association between internet use and obesity among African American young adults age 18 to 34 when controlling for gender, education, and employment status?

H_o1: There is no association between internet use and obesity among African American young adults age 18 to 34 when controlling for gender, education, and employment status.

H_a1: There is an association between internet use and obesity among African American young adults age 18 to 34 when controlling for gender, education, and employment status.

The binary logistic regression model was statistically significant, omnibus χ^2 (7, N = 6,765) = 243900.184, $p < .01$, indicating a good model fit. The Nagelkerke R^2 was used to determine how much variance was explained by the model revealing a 4.2% variation in the outcome.

A binary logistic regression analysis indicated that internet use predicted obesity among African American young adults age 18 to 34 (β = -.149, $p = .000$) as shown in Table 5. The unstandardized beta coefficient (β) indicated a negative correlation between internet use and obesity. The odds ratio for a young adult using the internet is .862 times less likely to be obese compared to those who did not use the internet while controlling for gender, level of education, and employment status (99% CI [.853, .870], $p < .01$). Therefore, the null hypothesis was rejected at $p < .01$.

Table 5

Binary Logistic Regression Internet Use and Obesity

	β	SE	Wald	*df*	Sig.	*OR*	99% CI for Exp(β)	
							Lower	Upper
Internet use								
No*								
Yes	-.149	.004	1499.100	1	.000	.862	.853	.870
Gender								
Male*								
Female	.589	.002	137964.69	1	.000	1.803	1.796	1.810
Level of education								
Did not graduate high school*								
Graduated high school	-.149	.003	2731.692	1	.000	.862	.855	.868
Attended college/technical school	-.091	.003	982.241	1	.000	.913	.906	.920
Graduated college/technical school	-.170	.003	2753.315	1	.000	.844	.837	.851
Employment status								
Student*								
Employed	.627	.002	80486.016	1	.000	1.871	1.861	1.882
Unemployed	.769	.003	77542.831	1	.000	2.158	2.142	2.173
Constant	-1.435	.005	90319.701	1	.000	.238		

a. Variable(s) entered: Internet use, Gender, Level of education, & Employment status
b. Reference categories are denoted with an asterisk (*)
c. Weighted data was used for analysis

Research Question 2: Is there an association between perceived social support and obesity among African American young adults age 18 to 34 when controlling for gender, education, and employment status?

H_o2: There is no association between perceived social support and obesity among African American young adults age 18 to 34 when controlling for gender, education, and employment status.

H_a2: There is an association between perceived social support and obesity among African American young adults age 18 to 34 when controlling for gender, education, and employment status.

The binary logistic regression model was statistically significant, omnibus χ^2 (7, N = 6,765) = 35711.340, $p < .01$, indicating a good model fit. The Nagelkerke R^2 was used to determine how much variance was explained by the model revealing a 40.2% variation in the outcome.

A binary logistic regression model indicated that perceived social support predicted obesity among African American young adults ($\beta = 1.370$, $p = .000$) as shown in Table 6. The unstandardized beta coefficient (β) indicated a positive correlation between perceived social support and obesity. The odds ratio for young adults perceiving any level of social support was 3.934 times more likely to be obese than those who did not perceive social support while controlling for gender, level of education, and employment status (99% CI [3.609, 4.289], $p < .01$). Therefore, the null hypothesis was rejected at $p < .01$.

Table 6

Binary Logistic Regression Perceived Social Support and Obesity

	β	SE	Wald	*df*	Sig.	*OR*	99% CI for Exp(β)	
							Lower	Upper
Perceived social support								
Did not perceive support*								
Perceived any level of support	1.370	.045	1674.860	1	.000	3.934	3.609	4.289
Gender								
Male*								
Female	.832	.018	2237.413	1	.000	2.298	2.196	2.404
Level of education								
Did not graduate high school*								
Graduated high school	-1.362	.022	3734.332	1	.000	.256	.242	.271
Attended college/technical school	-.818	.023	1264.190	1	.000	.441	.416	.468
Graduated college/technical school	-5.360	.062	7546.086	1	.000	.005	.004	.006
Employment status								
Student*								
Employed	2.225	.022	9828.969	1	.000	9.255	8.735	9.805
Unemployed	-.634	.038	271.375	1	.000	.531	.481	.586
Constant	-2.673	.045	3546.110	1	.000	.069		

a. Variable(s) entered: Perceived social support, Gender, Level of education, & Employment status
b. Reference categories are denoted with an asterisk (*)
c. Weighted data was used for analysis

Research Question 3: Is there an association of internet use, perceived social support, and obesity among African American young adults aged 18 to 34 when controlling for gender, education, and employment status?

H_o3: There is no association of internet use, perceived social support, and obesity among African American young adults aged 18 to 34 when controlling for gender, education, and employment status.

H_a3: There is an association of internet use, perceived social support, and obesity among African American young adults aged 18 to 34 when controlling for gender, education, and employment status.

The full model containing all predictors was statistically significant, omnibus χ^2 (8, N = 6,765) = 37628.503, $p < .01$ indicating a good model fit. The Hosmer-Lemeshow test was not used to assess the model's goodness of fit because the result was significant, indicating the model was a poor fit. Previous studies found that data sets with large sample sizes tend to have a higher power with generally small deviations between the observed and predicted outcomes (Paul et al., 2012). The Nagelkerke R^2 was used to determine how much variance was explained by the model revealing a 42% variation in the outcome.

The binary logistic regression analysis indicated that both internet use and perceived social support predicted obesity among African American young adults aged 18 to 34. As shown in Table 7, findings from the full multivariate model revealed that using the internet within the past 30 days was a significant predictor of being obese among African American young adults ($\beta = 1.546$, $p = .000$). The odds ratio for a young adult using the internet is 4.69 times more likely to have obesity compared to those who did not use the internet while controlling for gender, level of education, and employment status (99% CI [4.246, 5.181], $p < .01$).

In addition, findings from the binary logistic regression model indicated that perceived social support predicted obesity among African American young adults. The perception of having any level of social support was a significant predictor of having

obesity (β = 1.017, p = .000). The odds ratio for young adults perceiving any level of social support was 2.765 times more likely to be obese than those who did not perceive social support while controlling for gender, level of education, and employment status (99% CI [2.541, 3.009], $p < .01$). Thus, the null hypothesis was rejected at $p < .01$.

Table 7

Binary Logistic Regression Internet Use, Perceived Social Support, and Obesity

	β	SE	Wald	*df*	Sig.	*OR*	99% CI for Exp(β)	
							Lower	Upper
Perceived social support								
Did not perceive support*								
Perceived any level of support	1.017	.033	957.949	1	.000	2.765	2.541	3.009
Internet use								
No*								
Yes	1.546	.039	1599.099	1	.000	4.690	4.246	5.181
Gender								
Male*								
Female	.818	.018	2131.909	1	.000	2.266	2.165	2.372
Level of education								
Did not graduate high school*								
Graduated high school	-1.528	.024	4201.308	1	.000	.217	.204	.231
Attended college/technical school	-1.058	.024	1881.683	1	.000	.347	.326	.370
Graduated college/technical school	-5.360	.062	7546.086	1	.000	.005	.004	.006
Employment status								
Student*								
Employed	2.220	.022	9785.868	1	.000	9.208	8.691	9.756
Unemployed	-.473	.039	147.842	1	.000	.623	.564	.689
Constant	-3.629	.051	5126.142	1	.000	.027		

d. Variable(s) entered: Perceived social support, Internet use, Gender, Level of education, & Employment status
e. Reference categories are denoted with an asterisk (*)
f. Weighted data was used for analysis

Summary

The results of the binary logistic regression analyses at $p < .01$ indicated that there were significant associations between internet use, perceived social support, and obesity among African American young adults age 18 to 34 when controlling for gender, education, and employment status. The null hypotheses were rejected for all three research questions presented in the current study. Section 4 will provide an interpretation of the findings, the limitations of the current study, recommendations for future research, and implications for professional practice and social change.

Section 4: Application to Professional Practice and Implications for Social Change

The purpose of this quantitative study was to explore whether internet use and perceived social support predicted obesity among African American young adults age 18 to 34 while controlling for gender, education, and employment status. Data were retrieved from the 2017 BRFSS and analyzed using SPSS Version 27. Section 4 includes the interpretation of these findings, limitations of the current study, recommendations, and implications for professional practice and social change.

Interpretation of Findings

All three research questions were addressed by conducting a binary logistic regression to test the association between internet use, perceived social support, and obesity. The null hypotheses were rejected for all three research questions at $p < .01$. The results of the binary logistic regression indicated that internet use was significantly associated with obesity. Interestingly, there was an inverse relationship between internet use and obesity while controlling for gender, education, and employment status when perceived social support was not included in the model. The odds ratio for young adults using the internet was .862 less likely to be obese compared to those who did not use the internet (99% CI [.853, .870], $p < .01$). In contrast, when perceived social support was included in the model, the odds ratio for a young adult using the internet was 4.69 times more likely to be obese compared to those who did not use the internet (99% CI [4.246, 5.181], $p < .01$). Therefore, these findings indicated an interaction between internet use and perceived social support.

Although additional evidence for studies among racial/ethnic groups conducted in the United States is warranted, the findings from this study are supported by previous studies. The findings from the current study align with Aghasi et al. (2020) in which internet use significantly increased the odds of overweight or obesity. Based on the number of hours of internet used per day, internet use significantly increased the odds of being overweight or obese by 8% compared to African American young adults in the current study who used the internet within 30 days at 17.6%.

Other researchers used the term *technology* more broadly, which included internet use. Melton et al. (2014) found that as technology use among obese college students increased, health-related behaviors decreased suggesting that using the internet was less beneficial to one's health. Similarly, Vaterlaus et al. (2015) found a significant association between obese young adults and an increased use of the internet. With 95.5% of the African American young adult population using the internet in the current study, findings suggest that young adults are frequent internet users. However, additional studies are needed to clarify how the internet was used to predict the likelihood of obesity. Other researchers found that being overweight or obese was not associated with using the internet to seek health information (Adhikari et al., 2018; Faith et al., 2015), which is similar to the current study's findings in which internet use, when analyzed independently, was less likely to predict obesity.

Perceived social support also had a significant association with obesity. When perceived social support was analyzed while controlling for gender, education, and employment status without internet use, the likelihood of being obese was greater (*OR* =

3.934) when compared to those who did not perceive social support. In the full multivariate model, the odds ratio for young adults perceiving any level of social support was 2.765 times more likely to have obesity than those who did not perceive social support (99% CI [2.541, 3.009], $p < .01$) demonstrating that an interaction occurred with internet use. Although previous cross-sectional studies focused on children, adolescents, and college students (Florez et al., 2018; Joseph et al., 2017; Yamaguchi et al., 2016), Jeffries et al. (2018) suggested that young adults were more likely to be influenced by their social environment. In support of the current study's findings, Steeves et al. (2016) found that perceived social support from friends was more frequently associated with unhealthy eating than parents, thereby increasing BMI. Similarly, Bravin et al. (2019) found that Hispanic female adolescents perceiving social support from friends had an increased likelihood of being overweight or obese when compared to youths and males, thereby illustrating that depending on age and gender, perceived social support can predict the likelihood of being overweight or obese. Individuals with an increase in social support were more likely to gain weight; therefore, clarity regarding whether social support from family and friends induces the likelihood of increased BMI is warranted (Karfopoulou et al., 2016). This is important to note because the likelihood of practicing healthy behaviors is often dependent on the source of social support (Karfopoulou et al., 2016). In contrast to the current study's findings, researchers found an inverse relationship between perceived social support and obesity. In a cross-sectional study using a sample of African American college students, Gage (2015) found that with an increase in perceived social support and influences on health behaviors, young adults

were more likely to adhere to positive health practices, thereby decreasing the likelihood of obesity. However, similar to the current study, Gage did not identify the source of social support, limiting the understanding of perceived social support and its influence on health behaviors. Yayan and Celebioglu (2018) examined BMI and social support among 270 adolescents using the Child and Adolescent Social Support Scale for Healthy Behaviors measuring adolescent social interactions. Yayan and Celebioglu found a negative correlation between social support and BMI. Although BMI decreased as perceived social support increased, the association was not statistically significant. Similarly, Johnson et al. (2014) found that both family and friends could encourage or discourage healthy behaviors; however, when conducting a linear regression, Johnson et al. did not find a significant association between perceived social support and BMI. In summary, the studies conducted by Gage, Johnson et al., and Yayan and Celebioglu suggest that, based on the findings from the current study, health behaviors may be dependent on the source of perceived social support as well as the level of social support being assessed (perceived vs. actual). Knowing whether an individual's health behavior was dependent on the source of perceived social support could strengthen the argument regarding whether perceived social support is beneficial or negatively impacts healthy behaviors, as suggested by Steeves et al. (2016). Due to obese individuals being at an increased risk of chronic conditions such as heart disease (National Institute of Diabetes and Digestive and Kidney Diseases, 2015), it is imperative to address the social environmental risk factors such as internet use and perceived social support that contribute to changes in BMI (Aghasi et al., 2020; Yayan & Celebioglu, 2018).

Theoretical Applications

The SCT (Bandura, 2004) guided this study to understand how an individual's learned health behavior is influenced by personal factors, behavior, and the environment. Internet use and perceived social support can have beneficial and harmful effects on health outcomes. The current study suggests that self-efficacy in using the internet increases the likelihood of being obese among African American young adults, which correlates with internet use being associated with a sedentary lifestyle. Similarly, environmental influences (perceived social support) increases the likelihood of having obesity as social contacts could influence health behaviors. The SCT aligns with this study as both internet use and perceived social support influence an individual's learned health behavior, thereby predicting an increased likelihood of being obese when analyzed collectively.

Limitations of the Study

There were a few limitations that were identified in the current study. First, the current study was limited to African American young adults age 18 to 34; therefore, the results cannot be generalized to other ethnicities/races or age groups. The results in the current study do not imply causation due to its quantitative, cross-sectional nature. Another limitation was the inability to determine which device and how often the internet was accessed among African American young adults. Similarly, the perceived social support variable did not provide ample information regarding who may have provided the perceived level of support. A post hoc analysis was conducted to determine the final power, which was 30% (N = 148). Having low power was a limitation because this study

had significant results. Drawing conclusions regarding the study population is more difficult when there are significant results with low power, which increases the likelihood of committing a Type II error (Gelman & Carlin, 2014). The current study was limited because the data were not collected specifically for this study. An additional limitation was the absence of responses for perceived social support. Due to the many missing data, the current study's findings may not be sufficient in generalizing among African American young adults. Kang (2013) found that having many missing data could reduce statistical power and the likelihood that the null hypothesis would be rejected when false. Missing data can also significantly reduce the sample's representativeness and selection bias despite the use of disproportionate stratified sampling instituted through the 2017 BRFSS data process (Kang, 2013).

Recommendations

Findings from this study highlight the need for further research addressing the social-environmental factors, such as internet use and perceived social support, and whether they may predict obesity. Future cross-sectional studies should focus on the young adult population. In addition, researchers should also focus on ethnic/racial underrepresented groups at the national level because obesity-related health disparities exist among these groups.

Internet use continues to evolve, and findings addressing internet use and its association with obesity remain inconclusive. Future studies specifying internet use frequency, the type of device used to access the internet, and an individual's reason for using the internet could be used to support additional findings related to BMI. Effective

interventions could also be developed using the internet as a mechanism to drive support and motivation in establishing healthy habits. Regarding perceived social support and its association with obesity, further studies are needed to focus on African American young adults. Another recommendation is to retrieve more responses to the perceived social support question for African American young adults. Further research is needed to identify which social contacts provide support and whether they influence healthy decision making among this population. Knowing whether an individual's health behavior was dependent on the source of perceived social support could strengthen the argument about whether perceived social support is beneficial or negatively impacts healthy behaviors. Findings regarding the association between perceived social support and obesity remain inconclusive. Additional studies are needed at the national level to better understand the health disparities related to obesity among African American young adults. This research may assist public health practitioners in exploring potential opportunities to effectively use the internet and an individual's support system in developing interventions focused on achieving or maintaining a healthy BMI.

Implications for Professional Practice and Social Change

Obesity is a significant public health issue, and the U.S. adult obesity rate has increased by 26% since 2008 (Trust for America's Health, 2021). In addition, obesity continues to present health disparities among ethnic/racial underrepresented groups, specifically African Americans who had the highest prevalence of obesity at 49.6% in 2017–2018 (CDC, n.d.-b). Based on the findings presented in the full multivariate model of the current study, African American young adults who used the internet and perceived

any level of support were more likely to be obese than those who did not. Public health practitioners could strategize and develop policies focusing on the social determinants of health that impact obesity-related health outcomes. For instance, assessing existing community-based resources and implementing policies to provide health education opportunities at local grocery stores and community centers could impact healthy decision making. Despite the obscurity regarding the source of perceived social support and the reason young adults used the internet as presented in the current study, public health practitioners could develop and pilot weight-loss interventions incorporating social support using family and friends as the source. The internet could be used as a platform to sustain accountability for weight maintenance or loss. Current results indicated that 95.5% of young adults used the internet; however, how the internet was used was not clear. This intervention should focus on African American young adults because limited data regarding obesity is currently available. Public health practitioners may be able to use this information to collaborate with community organizations and health educators to conduct further research. Future studies that more clearly define internet use and perceived social support may assist with better understanding the social-environmental influences related to obesity using SCT as a framework. Lastly, health policy planners and health educators could utilize the findings from this study to conduct media campaigns using the internet as a mode for message distribution. The media campaign could target African American young adults and their social networks to improve health behaviors and outcomes. Again, although internet use was positively correlated with

obesity in this study, further exploration of internet use and how it could be beneficial or deleterious for health is warranted.

Conclusion

Individuals who are obese (a BMI of 30 kg/mg^2 or greater) are at an increased risk for chronic conditions. The current study addressed whether internet use and perceived social support predicted obesity among African American young adults age 18 to 34 because limited studies had focused on this population. Based on the results, both internet use and perceived social support were significantly associated with obesity. The results of the full multivariate model indicated that those who used the internet and perceived any level of social support were more likely to be obese. These findings suggest that young adulthood is a critical time to examine the social-environmental risk factors contributing to obesity. Therefore, public health practitioners should develop and pilot weight-loss interventions and develop community-level health education policies to improve health behaviors and outcomes among African American young adults.

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