EVALUATING THE KNOWLEDGE OF PHYSICAL ACTIVITY AND DIETARY GUIDELINES SURVEY (KOPA-DIGS-40) AS A BRIEF ONLINE E-HEALTH INTERVENTION WITH ADULT AFRICAN AMERICANS: PREDICTORS OF HIGH KNOWLEDGE OF AND SELF-EFFICACY FOR ADHERENCE TO GUIDELINES

by

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Abstract

EVALUATING THE KNOWLEDGE OF PHYSICAL ACTIVITY AND DIETARY GUIDELINES SURVEY (KOPA-DIGS-40) AS A BRIEF ONLINE E-HEALTH INTERVENTION WITH ADULT AFRICAN AMERICANS: PREDICTORS OF HIGH KNOWLEDGE OF AND SELF-EFFICACY FOR ADHERENCE TO GUIDELINES

Shamen Radcliffe

In light of health disparities involving African Americans having disproportionately high rates of obesity, type II diabetes, cancer risk, heart disease and hypertension, the study was conducted with an all-Black adult sample (n= 470). Some 53.0% were female and the sample had a mean age of 32 years. The study evaluated the Knowledge of Physical Activity and Dietary Intake Guidelines Survey (KOPA-DIGS-40) as a new True-False knowledge test—with all True items. The study found moderately high levels of knowledge using the KOPA-DIGS-40. Findings using paired t-tests found evidence that ratings for (1) knowledge of guidelines and (2) self-efficacy for adherence to guidelines were significantly higher after taking the test. The study found noteworthy predictors of a higher KOPA-DIGS-40 score to be older age, higher education, and higher Body Mass Index. The study focused on three time periods (1-before the COVID-19 pandemic, 2-during the pandemic, 3-currently) and ratings on four health dimensions (1-physical health, 2-mental/emotional health, 3-physical activity level, 4-eating a healthy diet). Findings showed declines on the four dimensions during the pandemic, yet by Spring 2023 there were significant improvements—with a return by Spring 2023 to pre-pandemic levels. Findings suggested evidence of resilience after experiencing the stress of a global pandemic. Thus, a resilience theory and framework may be vital in guiding a future era of health disparities

research with African Americans. Further, the study found an increase in social support during the pandemic, which continued into their current lives. Future research should continue to utilize the innovation of the genre of research reflected in this study's use of the new Knowledge of Physical Activity and Dietary Intake Guidelines Survey (KOPA-DIGS-40)—as a True-False test with all True items; this follows from evidence the KOPA-DIGS-40 served as a brief online e-health intervention associated with increases in (1) knowledge of the guidelines and (2) self-efficacy for adherence to physical activity and dietary intake guidelines. Given the high rates of obesity, type II diabetes, cancer risk, heart disease and hypertension for African Americans, the findings make an important contribution to the literature—while suggesting future directions in research and interventions

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Dedication

To my mother and Black Queen, Betty Riley, thank you for being the hardest working woman that I know. Thank you for being my biggest supporter, while raising 4 children. Thank you for your tough love and encouraging words. Since the day I was born, you never let a day go by where I questioned my worth and what I can accomplish. After my father passed away, you gave me the strength to continue to keep my head in the books because of your guidance.

Because of you, as you saw my potential at a very young age, I am the first in our family to graduate with a bachelor's degree and graduate degree. I am the first in our family to obtain 3 master's degrees and the first in our family to become a doctor, specifically a public health doctor, from an IVY League institution.

You are appreciated and I will continue to make you proud.

Chapter 1: INTRODUCTION

There is a need to ensure that African Americans are aware of the guidelines in the United States (U.S.) for physical activity and dietary intake, given the work of numerous researchers who have emphasized the links between physical activity and dietary intake and health status, including chronic disease conditions (Gerber et al, 2023; Joseph et al, 2023). The COVID-19 pandemic has presented challenges to adherence to recommended guidelines for physical activity and dietary intake (Choi et al, 2023; Um et al, 2023).

Numerous conditions have been documented to be linked to non-adherence to U.S. physical activity and dietary intake guidelines. Consider an introductory overview to this issue.

1.1 Heart Disease and Cardiovascular Disease

According to Cyriac et al (2021), African Americans have the "highest rates of coronary heart disease and stroke-related deaths" (p. 7). African Americans continue to have suboptimal cardiovascular health related to diet and physical activity behaviors compared with Whites/Caucasians (Cyriac et al (2021),

Holt et al (2017) reported that "cardiovascular disease is still the leading cause of death among Blacks" (p. 2). Also, African American are "affected by cardiovascular disease at earlier ages than white Americans" (p. 5). Cardiovascular disease risk factors manifest earlier in African Americans than in other subgroups, "leading to higher mortality rates in the African American community" (p. 7).

According to Ezekwe and Bhuiyan (2020), "more than 40% of African Americans have hypertension" (p. 7). Of note, "African Americans develop hypertension at an earlier age than

Whites" (p. 5). Regarding mortality. African Americans suffer from a "higher death rate from cardiovascular complications" (Ezekwe & Bhuiyan, 2020, p. 9).

Skolarus et al (2018) discussed how "African Americans have a higher prevalence of hypertension than Whites," as a hypetension epidemic (p. 1). Also, "African Americans are less likely to have their blood pressure controlled" and "are at higher risk of stroke than Whites" (Skolarus et al, 2018, p. 2).

Winham et al (2020) focused on the manner in which heart disease and hypertension are "more prevalent in African Americans" (p. 848). Also, "cancer death rates remain disproportionally high among African Americans" (Winham et al, 2020, p. 849).

Ralston et al (2014) reported that African Americans "experience higher mortality rates for heart disease than Whites" (p. 70). African American deaths are associated with "cardiovascular disease" that arises from elevated blood pressure" as well as high cholesterol (p. 76). Hence, "reducing the risk for cardiovascular disease is a top priority" to improve the health of African Americans. (Ralston et al, 2014, p. 79).

1.2 The Additional Burden of Diabetes

Sue et al (2019) reported that compared to Whites, "African Americans experience significantly higher rates of cardiovascular disease" (p. 1180). Meanwhile, African Americans also have a "higher rate of type II diabetes." (Sue et al, 2019, p. 1184).

In a similar vein, Bauer et al (2020) indicated that "African Americans are disproportionately burdened by diabetes and heart disease" (p. 30). Thus, concerns for African Americans go beyond their being more likely to "experience more related poor health outcomes related to heart disease" (p. 32). Specifically, African Americans present an "increased risk of diabetes” along with “heart disease disparities” (p. 48). In addition, attention must be placed upon how African Americans have a “higher risk of nutritional disparities” (Bauer et al, 2020, p. 45).

Brown et al (2019) also focused upon how “African Americans are disproportionately affected by type 2 diabetes” (p. 694). African Americans develop diabetes at a higher rate than do Whites (p. 701). Also, “African Americans have higher rates of deaths due to diabetes” (Brown, et al, 2019 p. 700).

1.3 The Challenge of Obesity

Vaughn et al. (2018) indicated that African Americans have an “increased risk for developing chronic conditions due to obesity” (p. 2). For example, African Americans aged 18–49 years are “twice as likely to die from heart disease compared to Caucasians” (p. 5). In addition, African Americans are “more likely to have high blood pressure than Caucasians” (Vaughn et al, 2018, p. 8).

Onyegbule et al (2021) noted how obesity in “African American presents a significant problem of public health importance” (p. 352). Hence, there is a need for significant improvement in not only nutrition. Also, “African American women exercise less than other racial/ethnic groups” and are at “increased risk for developing obesity-associated diseases” (p. 351). Improvement is needed with regard to physical activity and weight loss among African American women (Onyegbule et al, 2021).

Derose et al (2019) stated that, although “obesity is a worldwide public health problem,” African Americans are “disproportionately affected by obesity” (p. 590). In fact, African

Americans have the “highest rate of obesity” (p. 591). The high rate of “obesity has increased the risk of serious illnesses among African Americans” (p. 590).

McCoy et al (2017) discussed how African Americans, in general, are “less likely to be physically active than other groups” (p. 2). Further, African Americans are at “higher risk for heart disease, stroke” and type 2 diabetes (p. 4). Also noted was how African Americans “are disproportionately affected by obesity” and diseases for which obesity is a risk factor (p. 3).

1.4 The Role of Diet and Physical Activity

According to Hermstad et al (2018) “diet and physical activity are risk factors for chronic diseases” among African Americans (p. 673). It is important for interventions targeting diet and physical activity to also address the socioenvironmental characteristics and to foster changes in physical environments that are essential for increasing physical activity among African Americans (Hermstad et al, 2018).

Halbert et al (2017) emphasized how obesity and excess weight are significant clinical and public health issues that disproportionately “affect African Americans because of physical inactivity and unhealthy eating” (p. 207). “African Americans have low rates of meeting” physical activity and fruit and vegetable guidelines (Halbert et al, 2017, p. 210).

1.5 The Additional Burden of a High Cancer Risk

Lumpkins et al (2016) focused on the manner in which “African American men carry the heaviest cancer burden than other racial groups” (p. 435). There are higher rates of colorectal cancer among African American men” (p. 455). In light of such data, Lumpkins et al (2016) discussed how “African American men have poorer health” and “health outcomes than the rest of the U.S. population” (p. 453).

As per Allicock et al (2021), African American breast cancer survivors are at “higher risk for overall mortality” and “breast cancer-specific mortality” (p. 158). African American breast cancer survivors “are more likely to be obese” (p 161). There is a need to improve African American “breast cancer survivors’ physical activity and diet behaviors” (p. 165).Allicock et al (2021) evaluated the feasibility and effectiveness of a 4-week tailored physical activity and diet intervention for African American breast cancer survivors in the form of a mobile app, called Creating Healthy Actions through Technology (CHAT). Creating Healthy Actions through Technology (CHAT) was a 4-week pilot intervention that employed an ecological momentary assessment to encourage and “improve African American breast survivors ‘physical activity and diet behaviors” (p. 165). Survivorship care guidelines emphasized the importance of attention to obesity, weight management, and physical activity. The acceptability, feasibility, and impact of a mHealth intervention for African American breast cancer survivors was evaluated. Participants were randomized to intervention or control. All participants completed daily EMAs via smartphone for 4 weeks and wore accelerometers to monitor physical activity for seven consecutive days at baseline, 4 weeks, and 8 weeks. Intervention participants additionally received tailored health messages. Diet was measured using a self-reported questionnaire. Participant engagement was high, and, out of the 84 ecological momentary assessments, the average response was 63. Participant accelerometer wear was utilized for at least 6 of the 7 days for each assessment. Eighty-five percent of participants reported the intervention helped change behaviors. Intervention participants: reduced their sedentary time more than did the controls; reduced their fast food intake by 1.5 servings; and increased their vigorous activity by 0.56

minutes, which was non-significant. In conclusion, the findings showed the potential of the intervention to “positively impact physical activity among African American” breast cancer survivors (Allicock et al, 2021, p. 165).

1.6 Sample Research on Interventions Targeting Hypertension

Ezekwe and Bhuiyan (2020) explored the prevalence and determinants of hypertension among African American adults using a secondary analysis of data from churches, soup kitchens, and health fairs. The study was cross-sectional with a sample of 497 (67.8% females, and 32.2% males) African American adults. The data were analyzed using “descriptive statistics to characterize the sample population. Chi-square test was used to determine the relationships between hypertension and age, gender, income, education, fruit and vegetable consumption (FVC), physical activity (PA), and health insurance. Adults with hypertension among this group were 35.2%, 39.0% had pre-hypertension, while 24.5% had a normotensive rate. Significant associations existed between exercise, availability of personal doctors, and gender; however, associations of hypertension while age, education, income, health insurance, FVC, and awareness of hypertension were not significant. Only 11.0% of the participants consumed the recommended number of daily fruits and vegetables, while 55% did not exercise. This study showed that variables such as exercise, access to a personal doctor, and gender were all determinants for hypertension. Also, among this group, daily fruit/vegetable intake and physical activity were below recommended levels for the adult population. Despite improved access to health insurance and increased awareness of hypertension, the prevalence of hypertension continued to be high in this community. It was suggested that findings from the study will contribute to designing intervention strategies and prevention measures for hypertension. Findings from the study were described as having value for designing long-term hypertension prevention research studies with this population. The goal is to increase “health screening” and promote “healthier lifestyle modifications for African Americans” (Ezekwe & Bhuiyan, 2020, p. 11).

1.7 Sample Research on Interventions Targeting Obesity

Onyegbule et al (2021) evaluated the effectiveness of a group motivational education and empowerment program, using evidence-based approaches, targeting obesity and weight loss management for African American women, while addressing the need to increase engagement in physical activity. They used a quasi-experimental time series design based on the theoretical frameworks of the Empowerment and Health Belief models. Twenty-eight African American women were recruited into a culturally appropriate and responsive weight-loss management program. The weight management programs consisted of nutrition education, physical activities, and focus-group sessions. Measurements included analysis of blood samples for cholesterol, waistline, body mass index, and exercise time. Statistical analysis compared program outcomes at baseline and 3-month intervals for 1 year. Participants were educated on healthy food choices and physical “activities based on National Institutes of Health's food guidelines. The results showed that 90% of participants lost 20 pounds or more and 82% had 6 inches or more waist circumference reductions. Acceptance of personal responsibility to modify behaviors, knowledge of good nutrition, and engagement in physical activities were positive and effective health behavioral changes in promoting health and weight loss management for this population. The study highlighted that this would add to the existing literature on the effectiveness of the NIH recommended guidelines for obesity prevention and help inform future research on “culturally appropriate weight-loss management programs” for obese African American women” (p. 356).

Findings of the study suggested that culturally tailored and effective weight-loss strategies could potentially reduce both health and economic burdens of obesity. To promote health equity, it was concluded that there must be positive health behavioral changes and "significant improvement in nutrition, physical activity, weight loss" among African American women (Onyegbule, 2021, p. 357).

1.8 Sample Research on Interventions Targeting Cancer Risk

Halbert et al (2017) compared the effects of two behavioral interventions on obesity related health behaviors and conducted a comparative effectiveness education trial in a community-based sample of 530 adult African Americans. Given the importance of physical inactivity and unhealthy eating, the study outcome variables were physical activity (PA) and fruit and vegetable (FV) intake. Participants were recruited through self-referrals from newspaper advertisements and flyers that were distributed in community settings. Residency was determined by self-report using zip code. Individuals who had a personal history of cancer and those who self-reported having a cardiovascular event (e.g. heart attack, stroke or heart disease) were ineligible. Outcomes were evaluated at baseline and 1-month following participation in the study, while comparing the option of an integrated interventions about shared risk factors for cancer and cardio-vascular disease versus a group only receiving disease specific education. Findings showed an "increased rate in physical activity" and "increased fruit and vegetable intake among participants" (p. 212). Because of the high rates of hypertension and diabetes, the random group assignment process ensured that participants with hypertension and/or diabetes were balanced across interventions. Specifically, separate random assignment lists were created for participants with hypertension and diabetes, hypertension only, diabetes only and neither diabetes nor hypertension to ensure balance among participants with either condition across integrated or disease specific education. In the stratified analyses that were conducted to examine interactions between education and the intervention group assignment, the effect was most apparent among participants who had a high school education and were randomized to the integrated intervention. Completing the intervention was associated with a 1.78 odds of meeting PA guidelines. It was concluded that "evidence-based strategies must address the lack of physical activity" among African Americans (Halbert et al, 2017, p. 212).

Allicock et al (2021) evaluated the feasibility and effectiveness of a 4-week tailored physical activity and diet intervention for African American breast cancer survivors in the form of a mobile app, called Creating Healthy Actions through Technology (CHAT). Creating Healthy Actions through Technology (CHAT) was a 4-week pilot intervention that employed an ecological momentary assessment to encourage and "improve African American breast survivors 'physical activity and diet behaviors" (p. 165). Survivorship care guidelines emphasized the importance of attention to obesity, weight management, and physical activity. The acceptability, feasibility, and impact of a mHealth intervention for African American breast cancer survivors was evaluated. Participants were randomized to intervention or control. All participants completed daily EMAs via smartphone for 4 weeks and wore accelerometers to monitor physical activity for seven consecutive days at baseline, 4 weeks, and 8 weeks. Intervention participants additionally received tailored health messages. Diet was measured using a self-reported questionnaire. Participant engagement was high, and, out of the 84 ecological momentary assessments, the average response was 63. Participant accelerometer wear was utilized for at least 6 of the 7 days for each assessment. Eighty-five percent of participants reported the intervention helped change behaviors. Intervention participants: reduced their sedentary time more than did the controls; reduced their fast food intake by 1.5 servings; and increased their vigorous activity by 0.56 minutes, which was non-significant. In conclusion, the findings showed the potential of the intervention to "positively impact physical activity among African American" breast cancer survivors (Allicock et al, 2021, p. 165).

Lumpkins et al (2016) investigated the church's role as a social marketer of colorectal cancer (CRC) risk and prevention messages, and whether religiously targeted and tailored health promotion materials will influence screening outcome. They utilized an integrated theoretical approach in an exploration of participants' perceptions of CRC risk and prevention and how promotion messages should be developed and socially marketed by the church. Six focus groups were conducted with men from predominately African American churches. Twenty-eight men participated in six focus groups over a 7-month period. Eligibility criteria included being African American male, member, or regular attender of a predominately African American church, and at least 35 years of age. Analysis showed emergent themes included the roles of masculinity and mistrust of physicians. Also, participants did perceive the church as a trusted marketer of CRC, but believed that promotional materials should be cosponsored and codeveloped by reputable health organizations. It was implied that employing the church as a social marketer of CRC screening promotion materials may be useful in guiding health promotions and addressing the high rates of colorectal cancer found among African American men. Communication and health promotion training was provided by experts to churches. There was promise for community engaged communication action teams helping to inform and "develop effective marketing campaigns within the African American churches and surrounding community" (p. 456). The consensus among participants was that they were deficient in knowledge about CRC risk and symptoms but were somewhat aware of the types of screenings. A deficit in knowledge was prevalent among African American men. Findings suggested that African American churches "can become strong marketers of colorectal cancer prevention" (Lumpkins et al, 2016, p. 458).

1.9 A Focus on Dietary Habits and Cultural Foods

Winham et al (2020) analyzed lifestyle and dietary intake among African American adults in the Southwest, including the use of traditional African American foods, while also seekig to identify barriers to engaging in healthy dietary behaviors, given the high prevalence of hypertension and heart disease, along with cancer-related mortality. Using mixed methods in a study with 97 African Americans aged 25-60 years, participants completed surveys on lifestyle and dietary habits prior to focus group discussions in 3 geographic regions of Arizona. The study identified themes in the qualitative transcripts using an inductive approach informed by Grounded Theory. Survey data were compared by sex and age cohort via chi-square and ANOVA. Analysis of surveys and focus group data focused on dietary intake, perceptions of barriers to healthy eating, sentiments toward traditional foods among African Americans, and motivators or enablers of achieving healthy eating. Qualitative data showed that participants' knowledge of healthy choices was high for most participants, but survey data on dietary intake showed consumption was below recommendations for fruit, vegetables, fiber, and for beans, lentils and peas. Also, identified barriers to consuming a healthy diet were cost, convenience or preparation time, access, lack of nutrition education, and culture. Regarding traditional cultural foods for African Americans, greens, fried chicken and fish, barbequed meats, okra-corn-tomato mix, grits, and sweet potatoes were eaten at least twice a month by 30%-50% of the sample. This data suggested that African Americans retain elements of traditional foods in their diet. It was argued that health education should offer practical solutions for the cited barriers, be culturally relevant, and build on existing knowledge. The study concluded that messaging, which incorporates achievable planning methods for quick and easy meals, may help to circumvent regular reliance on easily accessible convenience foods. Another recommendation was to assist African Americans in identifying and overcoming "barriers to engaging in healthy dietary behaviors" (Winham et al, 2020, p. 859).

1.10 Research on Faith- and Church-Based Interventions

McCoy et al (2017) examined if a health text message intervention could increase physical activity among African Americans in a faith-based weight loss competition, given a higher risk for the population for heart disease, stroke, and type 2 diabetes—as well as obesity and related diseases. The participants that agreed to partake in the text messaging were assigned to the intervention group. Participants that declined to be a part of the intervention, but agreed to contribute to the study, were assigned to the control group. The text messages provided strategies for increasing physical activity that were centered on concepts of the Health Belief Model and the Information-Motivation-Behavioral Skills Model. It was revealed that text messages as an intervention are highly recommended because it addresses the 2020 Healthy People's aim to improve population health outcomes through health communication strategies and health information technology. Participants in the intervention group increased physical activity in walking and running, while participants in the control group only increased physical activity in running. Since the participants resided in a geographic location disproportionately affected by overweight and obesity, the results of the study suggest that text messaging via cellular telephone may be an effective motivational, informative health communication method for providing physical activity options for communities of color to enhance weight loss. The intervention was deemed successful, and a majority of the "participants expressed that the health text messages were effective" because of "increased weight loss and participation in physical activity" (McCoy et al, 2017, p. 10).

Cyriac et al (2021) examined whether participation in an mHealth lifestyle intervention was associated with "improved diet and physical activity psychosocial factors in African Americans" (p. 3). The intervention was a 10-week, behavioral theory–informed, community-based mHealth lifestyle intervention delivered through a mobile app platform. Participants engaged with 3 core FAITH! (Fostering African American Improvement in Total Health) app features: multimedia education modules focused on cardiovascular health with self-assessments of cardiovascular health knowledge, self-monitoring of daily fruit and vegetable intake and physical activity, and a sharing board for social networking. FAITH was highly recommended since suboptimal diet and physical activity are cardiovascular disease factors that have been identified as "contributors to the disproportionate cardiovascular disease among African Americans" (p. 4). Changes in self-reported diet and physical activity-related self-regulation, social support, perceived barriers, and cardiovascular health behaviors were assessed by electronic surveys collected at baseline and 28 weeks postintervention. Changes in diet and physical activity-related psychosocial factors from pre- to post-intervention were assessed using paired 2-tailed *t* tests. The association of changes in diet and physical activity-related psychosocial variables with daily fruit and vegetable intake and moderate-intensity physical activity per week was assessed using Spearman correlation. Associations between baseline and 28-week postintervention changes in diet and physical activity-related psychosocial measures and cardiovascular health behaviors with covariates were assessed by multivariable linear regression. It was concluded that an "mHealth lifestyle intervention can improve diet and physical activities" among African Americans" (Cyriac et al. 2021, p. 10). c

Hermstad et al (2018) investigated whether change in the church social environment was associated with healthier behavior at church, and, in general, at 1-year follow-up. Six churches received mini-grants and technical assistance for 1 year to support policy and environmental changes to promote healthy eating (HE) and physical activity (PA) among African Americans. Eligible participants were at least 18 years old and attended the grantee church at least monthly. Only one adult per household completed the survey. Socioenvironmental (social support and social norms) and behavioral (HE and PA at church and in general) outcomes were derived from baseline and 1-year follow-up church member surveys. Three of six churches demonstrated "significant improvements in socioenvironmental aspects of healthy eating" (p. 677). Two of five churches exhibited significant socioenvironmental improvements for PA at follow-up. Church social environmental changes were related to health behaviors at church, and, in general. Change in social support for HE, social support for PA, and social norms for PA were each associated with three church-based and general behavioral outcomes. Social norms for healthy eating were related to two general behavior outcomes and social norms for unhealthy eating to one general behavioral outcome. The study highlighted that "faith-based organizations are important settings for health promotion" African Americans (p. 680). Within the context of the broader mini-grants intervention project, and consistent with ecological models of health and similar faith-based studies, findings suggested that intervention components addressing social norms and social support should supplement intervention components addressing changes in physical environments. Taken together, this integrated environmental level approach would appropriately reflect the complexity of addressing health behavior change. In conclusion, the study showed that “socioenvironmental characteristics are essential to increasing physical activity among Blacks." (Hermstad et al, 2018, p. 681).

Skolarus et al (2018) measured the impact of the Reach Out processes, a faith-collaborative, mobile health, randomized, pilot, and intervention trial of four mobile health components, to reduce high blood pressure compared to usual care among African Americans. Feasibility was evaluated by participants’ willingness to consent, proportion of weeks participants texted their blood pressure readings, number lost to follow-up, and responses to post-intervention surveys and focus groups. Out of the 425 church members who underwent blood pressure screening, 94 enrolled in the study, and 73 finished the 6-month outcome assessment. Median age was 58 years old, and 79% were women. Participants responded with their blood pressure on average for 13.7 weeks out of 26 weeks that the blood pressure reminders were sent, and all the participants reported satisfaction with the intervention. It was emphasized how faith-collaborative and mobile health interventions, such as Reach Out, have the capacity to target a high-risk population, while it may be challenging to reach African Americans through traditional medical clinic-based efforts. The Reach Out methods were deemed feasible. It was recommended that future study designs assess the optimum dose of text messages and consider additional mobile “innovative strategies to reduce the hypertension epidemic among African Americans.” (p. 8). It was concluded that a faith-collaborative, mobile health intervention “addressing blood pressure among African Americans is feasible” (Skolarus et al, 2018, p. 9).

Vaughn et al. (2018) explored the impact of the 40-Day Journey—a faith-based dietary guidance program using a digital and text messaging platform—on weight change, health knowledge, health behaviors, and clinical outcomes in churches located in an urban setting, given African Americans’ increased risk for chronic health conditions from obesity. The participants enrolled in a group health education program to determine the impact of the Daniel Fast on physical health and the adoption of healthy behaviors. The Daniel Fast is a program described as permitting one to draw closer to God, while participants eat fruits, vegetable, legumes, whole grains, nuts and seeds-while avoiding meat, dairy, sugars, and restricting their fluid intake to onlye water. Participants attended six-weekly health education sessions in two participating churches and were provided with a digital healthy eating platform. There was a statistically significant decrease from baseline to post assessment for weight, waist circumference, and cholesterol. Participants reported a significant improvement in their overall well-being, social and physical functioning, vitality, and mental health. The findings suggest that there may be interest in these types of projects designed to introduce and initiate healthful eating when connected to faith beliefs. It was suggested that understanding the types of programs used in faith settings with an urban African American population may be of value, particularly as the Daniel Fast continues to gain momentum with churches across the country. The study highlighted how understanding more about incentives to engage in a healthy lifestyle change can support others in a church community. In conclusion, the study argued that dietary recommendations and comprehensive group health education delivered in "churches can improve physical health, knowledge, and psychosocial outcomes" (Vaughn et al, 2018, p. 8).

Holt et al (2017) explored factors that facilitate and impede health ministry activities in a sample of African American faith-based organizations (FBOs), as well as their use of technology in these initiatives. The study revealed that African American faith-based organizations (FBOs) can play an important role in addressing health disparities, since churches increasingly offer health fairs, screenings, or education within their health ministries. Evidence-based interventions (EBIs) and additional research opportunities were explored for using technology to support and enhance the capacity of FBO to sustain health-related activities in urban settings. Context involved how public health should play a role in supporting FBOs, by providing African American faith-based organizations straightforward, centralized access to EBIs based on their identified health priorities, and technical assistance with implementation and institutionalization of health promotion practices. In the study, 18 key informant interviews were conducted among African American pastors and FBO leaders, while there were six focus groups with members. It was recommended that interventions should be worthy of inclusion, packaged to facilitate ease of use, and include comprehensive user support. FBO leaders indicated continuing concerns around financial barriers faced by people who do not have computers, Internet access, and/or smart phones. It was concluded that the facilitation of "healthy lifestyle behaviors, through technology" had the potential to "reduce cardiovascular disease" (Holt et al, 2017, p. 8).

Bauer et al (2022) used the Theory of Planned Behavior (TPB) to examine the intent to eat a healthy diet and dietary behaviors among church-affiliated African Americans. It was hypothesized that TPB constructs would positively predict intention to eat a healthy diet. With the intention to eat a healthy diet that being a predictor of fat, fruit, and vegetable intake, it was also assumed that control beliefs would predict reduced fat intake and increased fruit and vegetable intake. Participants were African American men and women, aged 18 to 80 years. Participants' responses indicated high levels of religiosity at baseline and church attendance, with thinking of God and prayer being the most frequent religious behaviors occurring more than once per day. Many of the participants were overweight or obese, and path analyses indicated behavioral, normative, and control beliefs were predictive of intention to eat a healthy diet. The intention to eat healthy was a significant predictor of dietary intake behaviors. Findings of the study provided support for the use of the TPB in examining diet among church affiliated African

Americans. It was suggested that the findings of the study could enhance the perceived feasibility and acceptability of church-based dietary interventions. Therefore, it was concluded that it is crucial to effectively address nutritional disparities affecting African Americans with their increased risk of diabetes and heart disease (Bauer et al, 2020).

Ralston et al (2014) described a theory-driven longitudinal intervention study to reduce cardiovascular disease (CVD) risk in mid-life and older African Americans, given concerns about high mortality rates for African Americans from heart disease linked to high blood pressure, in comparison to Whites. It was argued that church-based health programs can reduce risk factors for CVD, including elevated blood pressure [BP], excess body weight, sedentary lifestyle, and diet. The study compared selected dietary variables (i.e., number of fruit and vegetable servings per day, fat consumption), physical activity (PA), and clinical variables (i.e., Body Mass Index/BMI, girth circumferences, systolic and diastolic blood pressure, and multiple cholesterol measures) from baseline to post-intervention at comparison churches. Noted were participant's background characteristics (life satisfaction, social support, age, gender, educational level, marital status, living arrangement and medication use) at baseline that may confound results. The study incorporated a longitudinal pre/post with comparison group quasi-experimental design; and, community-based participatory research (CBPR) was used to identify community advisors, recruit churches (three treatment, three comparison), and randomly select 221 mid-life and older African Americans, while stratifying for age and gender. An 80-item food and lifestyle habits questionnaire was compiled using instruments that provided assessments of food choice, dietary quality, and physical activity. Clinical assessments augmented survey data. Treatment and comparison groups were similar in background characteristics and health behaviors but differed in selected clinical factors. For the total sample, relationships were noted among background characteristics. Both the treatment and comparison groups consumed slightly more than two servings of fruits/vegetables per day, perceived their fat consumption as moderate, and had low to moderate physical activity levels. Findings revealed that both treatment and comparison groups had BMIs in the obese range, systolic blood pressure at hypertensive levels, and their low-density lipoprotein (LDL) and high-density lipoprotein (HDL) cholesterol levels were outside of recommended levels (p. 78). Lessons learned included how the questionnaire was too lengthy, leading to incomplete surveys. Findings demonstrated that this sample of mid-life and older African Americans had health indicators consistent with the general population of African Americans in this age range. The study underscored how “reducing the risk for cardiovascular disease is a top priority” to improve the health of African Americans. (Ralston et al, 2014, p. 79).

Brown et al (2019) took as the premise for their study the idea that tailored and culturally appropriate church-based programs with pastor involvement can be beneficial in helping African Americans implement strategies to prevent diabetes. They examined diabetes prevention perceptions and practices of African Americans with pre-diabetes who participated in a larger intervention study (the Hosea Project). Interviews and focus groups were conducted across 2 months following the intervention; and, both methodologies were employed to understand the perceptions that underlined and influenced participants’ behaviors, while data generate ideasd for intervention improvement. Focus groups lasted approximately 90 minutes, and interviews lasted approximately 60 minutes. A thematic analysis was performed that identified six emergent themes: general understanding of pre-diabetes and diabetes, diabetes prevention knowledge, program benefits, program barriers, lack of participation from men, and behavioral changes after program participation. Findings indicated that not feeling welcomed by other participants emerged as a barrier, as some participants who withdrew cited the unfriendly church members as a barrier to participation (p. 702). Results indicated churches were in a position to impact diabetes risk factors through increasing knowledge and awareness, as well as by providing support and resources for prevention strategies. When asked to describe their pastor's role, participants in both groups repeatedly emphasized the pastor's impact on their continued participation. It was recommended that practitioners assess the readiness for change before implementing an intervention in a church setting. In conclusion, such a church-based program was considered "beneficial in reducing chronic diseases among African Americans" (Brown et al, 2019, p. 704).

Sue et al (2019) aimed to assess health needs in eight African American churches using a two-phase mixed-methods approach. In the first phase of the study, a cross- sectional quantitative survey was administered to members of churches to assess health status, access to health services, health behaviors, and related unmet health needs. This was followed by the second phase of the study whereby pastors from participating churches were interviewed to provide leadership perspectives on pressing health needs among congregation members and the role of the church and health ministry in addressing these needs. Based on quantitative and qualitative data collected from the African American churches, the most prevalent "chronic conditions included hypertension, allergies, arthritis, high cholesterol, and diabetes" (p. 1183). There was evidence of substantial unmet health needs in the African American faith communities, especially in the areas of chronic disease prevention and management. The study also identified several significant correlates of health disparities amongst African American church members; specifically, congregation members who were male, unemployed, delaying utilization of health care due to cost, having lower frequency of church attendance, and feeling down, depressed, or hopeless were more likely to report fair or poor health. Significant predictors of fair or poor health were identified as male sex, unemployment, delayed utilization of health care in the past 12 months due to cost, lower frequency of church attendance, and feeling down, depressed, or hopeless in the past 2 weeks. Pastors from participating churches identified cost as one of the primary barriers to providing church-based health services. In response to prevailing unmet health needs, the study concluded that a “faith-based health program can reduce cardiovascular disease among African Americans” (Sue et al, 2019, p. 1194).

Derose et al (2019) presented results from developing a multi-ethnic, multidenominational faith and public health partnership to address obesity-related health disparities through community-based participatory research. Lessons were learned from participating congregations’ prior work addressing obesity that informed the development of a multi-level, multicomponent, church-based intervention. Church-level intervention were viewed as feasible and acceptable across diverse populations, providing preliminary evidence of effectiveness in reducing weight gain, increasing weight loss, and improving diet quality. Participation by the local health department and community health clinic personnel included the provision of technical expertise and support. Selecting obesity as the health issue for focus, garnered high enthusiasm among partners. The study included innovative aspects such as a text/e-mail messaging component and a community mapping exercise to identify issues for advocacy. Additional funding allowed for an extensive community engagement and successful planning process that was essential in implementing a community-based participatory research approach. Findings from the work of the partnership showed that, among the congregations, there was a statistically significant reduction in weight gain and some weight loss due to the intervention. This was seen as promising, especially since primary weight maintenance has been shown to reduce diabetes risk and burden. It was concluded that a “church-based obesity program can improve health equity for African Americans” (Derose et al, 2018, p. 592).

1.11 Statement of the Problem

There is a need for a brief online e-health intervention that may serve to increase the knowledge of African Americans who are members of church congregations, or community members, in general, given the goals of improving adherence to U.S. guidelines for physical activity levels and dietary intake patterns. The goal is also to reduce risk factors for and address high rates of heart disease, cardiovascular disease, hypertension, type-2 diabetes, and overweight and obesity. As opposed to the highly popular pre-COVID-19 pandemic genre of often lengthy and costly church-based interventions, at present there is a need for brief online e-health interventions that specifically attempt to increase knowledge of U.S. guidelines for physical activity and dietary intake among African Americans.

1.12 Purpose of the Study

The purpose of the study is to introduce and evaluate the Knowledge of Physical Activity and Dietary Intake Guidelines Survey (KOPA-DIGS-40) as a brief online e-health intervention that may serve to increase knowledge of guidelines and increase self-efficacy for increasing physical activity and improving adherence to dietary guidelines. In addition, the purpose of the study is to identify significant predictors of a high score on the Knowledge of Physical Activity and Dietary Intake Guidelines Survey (KOPA-DIGS-40) survey, while controlling for social desirability.

1.13 Research Questions, Survey Parts, and Data Analysis Plan

Given a sample of African American adults (N=470) who respond to a social media campaign using a core message on various online platforms (i.e. "*Inviting Black adults to click on **https://tinyurl.com/KnowHowToBeActiveEatRight** to take a 15- to 20-minute survey on what you know about physical activity and dietary guidelines to prevent or control high blood pressure, diabetes, obesity, etc.—for a 3 in 250 chance to win 1 of 3 $100 Amazon gift cards*"), this study will seek answers to the following research questions:

1-What were their demographic characteristics (i.e. gender, skin color, born in the U.S. [yes/no], annual household income, level of education, employment status [yes/no], and state of residence)?

Part I: Basic Demographics (BD-11)
Data Analysis Plan: Descriptive statistics, including means, standard deviations, frequencies, and percentages

2- To what extent did they present *social desirability* (0 to 10), or were at risk of providing socially desirable responses to survey questions?

Part II: Single Item Rating of Risk of Providing Socially Desirable Responses (SIR-RPSDR-1)
Data Analysis Plan: Descriptive statistics, including means, standard deviations, frequencies, and percentages

3-What health conditions do they report currently having or having had, and what is their Body Mass Index? And for each of three time periods (i.e. for before the COVID-19 pandemic, during the COVID-19 pandemic—especially the years 2020-2021, and currently—especially the past three months), how did they rate their physical health, mental/emotional health, physical activity or exercise level, and effort to eat a healthy diet (more fruits and vegetables, less fat, less added sugar and added salt)?

Part III: Personal Health Background and Body Mass Index (PHB-BMI-17)
Data Analysis Plan: Data Analysis Plan: Descriptive statistics, including paired t-tests

4-How did they rate their receipt of social support for each of the three time periods of before the COVID-19 pandemic, during the COVID-19 pandemic (especially the years 2020-2021), and currently (especially the past three months)?

Part IV: Perceived General Social Support Scale—For Before and During the Pandemic, and Currently (PGSSS-BDP-CC-3)
Data Analysis Plan: Descriptive statistics, including paired t-tests

5-What was their score on the Knowledge of Physical Activity and Dietary Intake Guidelines Survey (KOPA-DIGS-40)?

Part V: Knowledge of Physical Activity and Dietary Intake Guidelines Survey (KOPA-DIGS-40)
Data Analysis Plan: Descriptive statistics, including means, standard deviations, frequencies, and percentages
The KOPA-DIGS-40 score is the study outcome variable

6-Did they indicate whether they *would or would not diffuse the innovation* of taking the new knowledge test by recommending the test to others?

Part IX: Part VI: Decision to Diffuse the Innovation of the Knowledge of Physical Activity and Dietary Intake Guidelines Survey (DDI-KOPA-DIGS-40-1)
Data Analysis Plan: Descriptive statistics, including means, standard deviations, frequencies, and percentages

7-What was found for the following comparisons, specifically: (1) When comparing ratings of their *knowledge level for physical activity guidelines* for before taking the Knowledge of Physical Activity and Dietary Intake Guidelines Survey (KOPA-DIGS-40) versus after taking the KOPA-DIGS-40, was there a significant difference?; (2) When comparing ratings of their *knowledge level for dietary intake guidelines* for before taking the KOPA-DIGS-40 versus after taking the KOPA-DIGS-40, was there a significant difference?; (3) When comparing ratings of *self-efficacy for adhering to physical activity guidelines* for before taking the KOPA-DIGS-40 versus after taking the KOPA-DIGS-40, was there a significant difference?; and (4) When comparing ratings of *self-efficacy for adhering to dietary intake guidelines* for before taking the KOPA-DIGS-40 versus after taking the KOPA-DIGS-40, was there a significant difference?

PART VII: Pre- and Post-Knowledge Test Ratings for Knowledge of Physical Activity and Dietary Intake Guidelines—And Self-Efficacy to Follow Them (PRE-A-POST-TR-K-SE-8)
Data Analysis Plan: Paired t-tests

8-Were there any significant relationships between selected independent variables and the study outcome variable of **a high knowledge score on the KOPA-DIGS-40?**

Data Analysis Plan: Independent t-tests, Pearson Correlations

9- What were the significant predictors of each of the study outcome variable of **a high knowledge score on the KOPA-DIGS-40?**

Data Analysis Plan: Backward Stepwise Regression Analysis

1.14 Anticipated Findings

First, it is anticipated that paired t-tests will show that:

- participants' mean self-ratings for their knowledge of physical activity and dietary guidelines is higher after taking the KOPA-DIGS-40—in comparison to their self-ratings for their knowledge of physical activity and dietary guidelines before taking the KOPA-DIGS-40
- participants' mean self-ratings for self-efficacy to adhere to physical activity and dietary guidelines is higher after taking the KOPA-DIGS-40—in comparison to their self-ratings for self-efficacy to adhere to physical activity and dietary guidelines before taking the KOPA-DIGS-40.

Second, it is anticipated that, while controlling for social desirability, and using backward stepwise regression, significant predictors of the study outcome variable of **a high knowledge score on the KOPA-DIGS-40** will be:

- *female gender, having a partner (yes), higher level of education, higher household income, higher physical health ratings before the pandemic, higher mental health ratings before the pandemic, higher ratings for level of physical activity before the pandemic, and higher ratings for efforts to eat a healthy diet (more fruits and vegetables, less fat,* *less added sugar and added salt) before the pandemic, higher social support pre-pandemic, decision to diffuse the innovation of the KOPA-DIGS-40 (yes)*

1.15 Delimitations

The study will be delimited to African American men and women who are age 18 or above, and live in the U.S. They must also successfully complete the survey—so they provide data for the study outcome variable of **a knowledge score on the KOPA-DIGS-40.**

1.16 Limitations

The main study limitation involves the use of an online survey that requires access to a smart phone, tablet, laptop, or computer with Internet connectivity. Those of lower income and lacking online access to the survey will be excluded—and these may be those in greatest need of access to the brief online e-health intervention. Also, the survey will take approximately 15 to 20 minutes to complete, so that those under the greatest stress may not be able to endure that burden of time, including mothers of children, for example.

1.17 Conclusion

The chapter introduced the study, while providing the statement of the problem, purpose of the study, research questions, anticipated findings, delimitations and limitations. The next Chapter II will provide a review of pertinent literature, while Chapter III will provide the study methods. Chapter IV will provide the results of data analysis, and a final Chapter V will provide a discussion of the findings, along with implications and recommendations.

Chapter II: REVIEW OF THE LITERATURE

This chapter will provide a review of the existing literature that is relevant to this dissertation. More specifically, this chapter will detail literature related to the following topics: 1-Health Disparities for African Americans Relative to Chronic Diseases, Physical Activity and Dietary Intake; 2-Research and Interventions to Address Cardiovascular Disease; 3-Research and Interventions to Address Obesity; 4-Research and Interventions to Address Hypertension; and, 5-Theoretical Framework Guiding the Research.

2.1 Health Disparities for African Americans Relative to Chronic Diseases, Physical Activity and Dietary Intake

There are considerable health disparities that may be observed in the African American adult population that involve chronic diseases, obestity, and disparities in engagement in physical activity and dietary intake compared to Whites, for example.

Higher rates of chronic diseases are observed in physically inactive people who consume foods with lower nutritional value (Kang et al. (2022). Findings reveal noteworthy health disparities where “African Americans have higher rates of severe hypertension compared to other racial ethics groups” (p. 662). In addition, “African Americans were significantly less likely to adhere to dietary intake adherence,” which increased stroke and heart disease mortality (p.666). Findings showed that hypertension among “African Americans” was “accompanied by an “80% increased rate of heart stroke mortality” and “a 50% increased rate of heart disease mortality” (Kang, 2022, p. 669).

A recent report indicated that African Americans “significantly consumed less fruits and vegetables compared to other racial, ethnic groups” (Bennett et al. (2023, p.1). Factors influencing food choice varied by ethnicity, with education and occupation levels associated with different dietary habits among African Americans and their racial and ethnic counterparts. African Americans were significantly “less likely to report the importance of consuming fruit and vegetables and avoiding unhealthy foods” (p. 9). Findings showed that African Americans were also “least likely to meet recommended vegetable intake (47%) compared to Latinos (52–65%)” and “White groups (63%)” (p. 12). When comparing years, results also showed a significant “decline in African Americans meeting daily dietary intake recommendations” (Bennett, 2023, p. 18).

Regarding other disparities, Bowen et al. (2022) highlighted that African Americans are disproportionately burdened with “overweight and obesity weight-related illnesses” and show a “lack of physical activity compared with other racial-ethnic groups” (p. 58). In addition, black women (25%) are “more likely to be physically inactive than Black men (21%)” (p. 59). A sample of 47 African American women 60 years of age and older and classified as overweight or obese were screened. Measures included baseline and post-intervention assessments to obtain patients’ sociodemographic information. Participants wore Fitbits continuously for 12 weeks (except for charging the device and showering) to assess the number of steps and daily activity minutes. The intervention group received daily physical activity promotion text messages, whereas the control group received one neutral message about general health information weekly. To assess the feasibility and acceptability of the intervention, a project satisfaction questionnaire was constructed. The questionnaire assessed what participants liked most and least about the text messages, the Fitbit devices, their overall participation, and what they would modify to improve the intervention. Findings showed that a “buddy system may be needed for older African American women to fully utilize virtual social support” to adhere to physical activity guidelines (p. 62). Recommendations covered how future studies should include more in-person social support to improve physical activity in a large-scale randomized trial among older African American women. The study was “successful among obese African American women that were in the treatment group” and could be “expanded to reach larger eligible participants while maintaining its effectiveness” (Bowen, 2022, p. 63).

2.2 Research and Interventions to Address Obesity

Obesity has increased significantly in the United States during the last few decades, as the share of “adults experiencing severe obesity nearly doubled by a 95.7 percent increase between 2017 and 2018” (Waidmann et al., 2022, p. 4). More than “4 in 10 adults in the United States are affected by obesity” (p. 3). Based on national and state- and county-level data on obesity and related health conditions from multiple datasets—including the National Health and Nutrition Examination Survey, the National Health Interview Survey, and the Behavioral Risk Factor Surveillance System (BRFSS)—adults residing in the Southeast and Midwest experienced a higher prevalence of obesity. Findings showed that Black adults were more likely to live with obesity “than adults of other racial and ethnic groups,” and “Black women experience the highest rate” (p. 5). Recommendations covered how changes in insurance coverage policy might have the largest impact on obesity; however, this depends, in part, on where high-prevalence populations obtain their health insurance. Concerning conclusions and implications, “state-level policies alone may not completely address the obesity epidemic” because county-level data reveal that the prevalence of obesity and related disease varies within states” (Waidmann, 2022, p. 6).

In general, African American women bear significant health burdens from premature death and obesity-related illnesses (James et al., 2022, p. 140). In fact, “African American women have the highest prevalence of obesity (58%) in the United States" (p. 139). The James et al. (2022) study surveyed 36 African American women in north central Florida who were at least 18 years of age. Participants were smartphone owners and expressed a desire to lose weight. The study used focus group. Data were analyzed into themes by age groups: 18 to 29 (young), 30 to 50 (middle age), and 51 or above. Findings showed "five overarching themes identified for designing mHealth weight management programs": (1) holistic program that goes beyond dieting; (2) social media integration for support and sense of community; (3) self-monitoring app; (4) two-way text messaging; and (5) programs of varying lengths with meaningful incentives. Overall study findings revealed that "participants were receptive to participating in mHealth weight management programs." However, "significant efforts are still needed in retaining African Americans in mHealth lifestyle intervention programs' (p. 146). The study researchers recommended that holistic mHealth interventions for African American women should assess body image perception, readiness for change, and motivation for achieving and maintaining a healthy weight—while also including other outcome measures such as blood pressure, blood glucose, and blood lipids (James, 2022, p. 146).

According to Saleem et al. (2023), "obesity affects over 40% of the adult population" and is a major risk factor for morbidity and mortality due to cardiovascular disease (p. 40). Overall, "African American women have one of the highest" prevalence rates for obesity, insulin resistance, hypertension, and cardiovascular events in the U.S. (p. 42). Therefore, a sample of 88 obese African American women aged 18 to 60 was surveyed. In this study, obesity was defined as having a BMI between 30 and 45. Findings showed that "BMI was positively correlated with plasma F2-IsoPs, while inversely correlated with insulin sensitivity in obese African American women" (p. 48). Recommendations included the need for longitudinal and interventional studies to understand better the mechanisms underlying the disproportionately high prevalence rate of obesity, reduced insulin sensitivity, and type 2 diabetes in African American women (p. 50). In addition, there is a need to "investigate the relationship" between biomarkers "for obesity, chronic inflammation," and "oxidative stress in obese African Americans" (Saleem, 2023, p. 51).

In the U.S., "obesity prevalence is around 21% among older adolescents" aged 12–19 years, which is higher than that of younger children and adolescents (Ardakani et al., 2023, p. 1). In general, "the obesity prevalence is higher among African American" youth in comparison to White youth (p. 2). This cross-sectional study included 211 African American parents or caregivers of 10-17-year-old adolescents. The study examined the demographic characteristics of both the adolescents and the parents, household food security, household acculturation, and participation in federal food assistance programs. Findings showed that "adolescent and parent sex were meaningfully related" to the BMI percentile of the adolescent (p. 9). Fewer male adolescents (40.6%) were in the normal weight group than female adolescents (63.5%). Adolescents whose primary caregiver was female were in a better weight status than those whose caregiver was male. Results showed that "family meal frequency plays a more important role in ensuring a healthy weight status among African American adolescents" in comparison to parenting styles and food parenting practices (p. 11). It was recommended that future studies focus on parenting styles and practices regarding African American adolescents' weight status and dietary habits (Ardakani, 2023, p. 11).

According to Tumwebaze et al. (2022), southern states have "the highest percentage of African Americans," and "the average prevalence of obesity in the southern states was 33.6%" in 2018 (p. 2). For example, in Alabama, a southern state with approximately 25% African American population, "obesity rates in the Black Belt region has exceeded 40%" for several counties such as Bullock County (p. 3). Overall, Bullock County consistently exhibited poor health indicators such as adult obesity, low food environment index, physical inactivity, and socioeconomic factors such as poverty and poor education among African American. A sample of 192 African Americans between 18 and 65 years of age participated in a health knowledge surveys and focus group discussions. The focus group discussions and health knowledge surveys determined the content for nutrition education and physical activity intervention modules. Measures included a 33-item self-administered survey that consisted of three sections: knowledge, attitudes, and perception. Survey participants were requested to attend a focus group discussion, nutrition education, physical activities, and assessments. Findings showed that "most participants were knowledgeable about obesity being a serious public health problem (90.6%)" and "a risk factor for chronic health conditions" (p. 7). In addition, most participants regarded obesity as reaching epidemic levels. Participants viewed obesity as the result of an abundance of high caloric intake and they were aware of multiple risk factors for obesity, including genetic, socioeconomic, environmental, and behavioral factors. Participants also agreed that obesity among children was increasing, as was their vulnerability to type 2 diabetes (80.5%). Findings concluded that "strategies aimed at increasing knowledge" and "changes in lifestyle are likely to reduce the risk for chronic diseases among African Americans" (p11). Recommendations suggest that researchers should "develop strategies to implement dietary practices that are geographically" and "culturally specific to prevent or reduce obesity among African Americans" (Tumwebaze, et al, 2022, p. 12).

According to Cockerham et al. (2022), "African Americans have the highest prevalence of obesity" (nearly 50%) of any racial group in the U.S. (p. 47). Overall, "African American women have the highest prevalence of obesity" (nearly 57%) by sex and race (p. 48). A sample of 739 African American men and 1,351 women between the ages of 50 and 64 years were surveyed. The mean age of participants in the study sample was around 57 years, with nearly 60% of both sexes having a 4-year college degree. Measures included five indicators of obesity-related health lifestyles collected at baseline (2000−2004), as follows: (1) eating the American Heart Association (AHA) recommended amount (4.5 cups) of fruit/vegetable servings per day; (2) drinking not more than the AHA-recommended amount of (<36 ounces or 450 kcals) of sugary beverages per week;--and, meeting the AHA's Life's Simple 7 metric for (3) ideal physical activity, (4) alcohol consumption, and (5) smoking. Findings showed that "late-middle aged African American men generally engage in worse health behaviors than African American women" (p. 53). Recommendations suggested additional research on the finding for African American men, and investigations into the mechanisms that could underlie the gender differences (Cockerham, 2022).

2.3 Research and Interventions to Address Cardiovascular Disease

According to a study conducted by Adedinsewo et al. (2022), up to “50 percent of mortally is attributed to cardiovascular disease” among United States citizens with “chronic kidney disease“(p. 145). The prevalence of chronic kidney disease “increased to 29.3 percent from 1990 to 2017 among United States citizens” (p. 146). Despite advances in healthcare delivery, more than “746,000 United States citizens had chronic kidney disease in 2017” that required dialysis or kidney transplantation (p. 147). Study measures included the pathophysiologic process of cardiovascular disease in patients with chronic kidney disease. Findings showed that “United States citizens continue to bear a high burden of clinical and subclinical cardiovascular disease” (p. 150). Study recommendations included that health systems are charged with “optimizing care for chronic kidney disease patients in an equitable fashion,” including effective use of preventive services, providing patient education, and removing systemic barriers to care for all chronic kidney disease patients (Adedinsewo, 2022, p. 152).

According to Pop-Busui et al. (2022), heart failure is a common complication of diabetes, with a “prevalence of up to 22% in United States citizens with diabetes,” while there are “increasing incidence rates” (p. 1672). In addition, the prevalence of diabetes, particularly type 2 diabetes, has increased by 30% among United States citizens (p. 1674). Overall, race-related differences have emerged in the prevalence of diabetes among United States citizens with heart failure. Study measures included the pathophysiologic process of heart failure in patients with diabetes. Findings showed that diabetes prevalence is much higher in Blacks (40.9 %) compared with their White counterparts (27.2%). Advanced hospital management to improve health outcomes for patients with diabetes and acute heart failure was a study recommendation. Moreover, “early diagnosis of heart failure could enable targeted treatment” to prevent the progression of heart disease and “other adverse outcomes among African Americans” (Pop-Busui, 2022, p. 1685).

According to Joseph et al. (2022), “African Americans account for 32% of preventable cardiovascular disease (CVD) deaths” (p. 2). Overall, “Black have lower attainment of cardiovascular health metrics than their racial, ethnic counterparts“(p. 3). Lower attainment of cardiovascular health is a major contributor to African American men having “more years of life lost due to chronic conditions” and “the shortest life expectancy of any race/sex group” (p. 4). This study implemented a community-based lifestyle intervention with 74 African American males at least 18 years of age. Participants were surveyed post-intervention. Measures included the American Heart Association's Life Simple 7 (LS7) framework. Findings showed "increased cardiovascular health scores among African American men" and an increased "likelihood to adhere to the physical and dietary guidelines" (p. 6). Findings also revealed "significant improvements in cardiovascular health" and a decline in cholesterol levels among participants" (p. 4). In addition, recommendations covered how collaborative community-based approaches are urgently needed to addres preventable cardiovascular disease deaths among African Americans. (Joseph, 2022, p. 6).

Cardiovascular risk factors manifest "earlier in African Americans" than in other subgroups, leading to higher mortality rates in the African American community (Clifford et al. (2022), p. 3). For example, the rates for "African Americans remain 20% higher for heart attacks and 40% higher for strokes compared with Whites" (p2). In this study, 505 African Americans between 18 and 29 years of age who owned an iPhone or Android-based smartphone participated in co-design sessions to develop HealthTech Events. Participants were orientated to the issues of cardiovascular risk health disparities and tasked with wireframing prototype screens depicting app features that they considered desirable. Findings "showed factors the target audience would find most engaging" in an app designed to deliver primordial prevention strategies to reduce cardiovascular risk (p. 5). This study highlights the importance of "African Americans being meaningfully involved in designing technologies that are developed to improve cardiovascular disease" (p. 11). Findings support a community-based participatory design approach to solve problems of health inequities. (Clifford, et al, 2022, p. 11).

According to Hof Van't, et al (2022), "African Americans have higher rates of cardiovascular disease risk factors than Whites" (p. 46). In Minnesota, "African American adults aged 35 to 64 years old nearly doubled the rate of cardiovascular mortality" compared with their

White counterparts (p. 47). A survey obtaining sociodemographic characteristics, health beliefs, and self-reported cardiovascular disease and cardiovascular disease risk factors was completed by 644 African American adults. In this study, “participants with greater cardiovascular disease risk perceptions had higher cardiovascular disease prevalence” (p. 53). Findings showed that “risk factors for cardiovascular disease were common and current cigarette smokers had cardiovascular disease” (p. 52). Those with greater perceived cardiovascular disease risk had a higher likelihood of prevalent hyperlipidemia, diabetes, and cardiovascular disease. Trust in health care providers was high but was not associated with cardiovascular or cardiovascular disease risk factors. Results also revealed that African American adults who understand their increased cardiovascular disease risk might be more motivated to adopt lifestyle modifications, use medications for risk reduction, and follow evidence-based CVD prevention recommendations (Hof Van’t, et al, 2022, p. 53).

African Americans have the lowest reported awareness of peripheral artery disease compared to other racial or ethnic groups, with "only 6% of African Americans being aware of the morbid consequences of peripheral artery disease" (Coy et al., 2023, p. 9). Black men in the United States have the highest rates of peripheral artery disease, with an estimated lifetime risk of developing peripheral artery disease of "30% among Black Americans compared to only 20% among non-Hispanic white Americans" (p. 10). A sample of 28 African American/Black, non-Hispanic men with a mean age of approximately 59 years completed a qualitative interview. Most participants did not hold a high school diploma. Several themes emerged such as "advocating for systemic changes to improve the health of the community" and a "desire among participants to increase knowledge about cardiovascular disease" (p. 11). Finding suggest that future research should explore factors that negatively affect African Americans' experiences with or perceptions of healthcare, including fear and mistrust potentially associated with providers' implicit biases or historical injustices toward Black Americans. (Coy, et al, 2023, p. 13).

2.4 Research and Interventions to Address Hypertension

African Americans have the "highest rates of hypertension among racial and ethnic groups in the United States" (Jones et al., 2022, p. 64). For focus group participation, a sample of 31 community-dwelling African Americans 60 years and older, living with hypertension, were recruited from a senior housing community in an urban area of a Midwestern state to inform the cocreation of an intervention to improve self-care behaviors. Participants discussed self-management strategies to improve health behaviors, such as sleep, exercise, and nutrition. Participants expressed financial concerns about accessing the recommended foods to control hypertension. In addition, they expressed confusion about managing hypertension alongside other comorbidities. Focus group findings showed that "participants shared interest in improving their hypertension self-management skills (p. 68). Findings suggested the need to determine the best physician and nurse practitioner follow-up practices on dietary recommendations for older African American adults (p. 70). Moreover, "there is an overarching need for further research and interventions to enhance African American ability to retain dietary strategies over time." (Jones, 2022, p. 72).

It is estimated that "49% of African American women have some type of heart disease" and "40% have hypertension" (Jones et al., 2022, p. 1). In addition, middle-aged African American women have a "69% higher death rate from heart disease" and "double the death rate from stroke compared to White women" (p. 2). Moreover, there "remains a paucity of programs designed using participatory methods with high-risk populations such as midlife African

American women" (p. 7). An intervention study was conducted by Jones et al. (2022) to address a low awareness of personal cardiovascular disease risk that is associated with delays in the presentation of women to the emergency room. A partnership between an existing Community Research Advisory Board (C-RAB) and the Midlife Black Women's Stress and Wellness (B-SWELL) program was designed to raise awareness of cardiovascular disease risk factors, stress, and healthy lifestyles among middle-aged African American women. Sessions of the B-SWELL program were piloted with five women 40 years of age and older. The study findings identified that an "acknowledgment of the expertise derived from lived experiences" and "recognizing the value in the community perspective" are essential to address "health disparities and social inequities" (p 10). Furthermore, fewer programs serve as adjuncts to routine medical care, so it is important to focus on educating and empowering midlife African American women to become active, knowledgeable participants in the health care system. Recommendations addresed how community-engaged research can increase sustainable solutions for midlife African American women with high-risk cardiovascular disease (Jones, et al, 2022, p. 10).

According to Annesi (2022), the "prevalence of hypertension in African American adults is high" and "significantly higher than their White counterparts (45% vs. 29%)" (p. 721). In addition, "African Americans are also less likely to have their blood pressure under control" (p. 722). A sample of 86 obese African American adults 43 years of age or older, with elevated blood pressurem (n = 16) or stage 1 (n = 33) or stage 2 (n = 37) hypertension, participated in a theoretically driven community-based weight-management program. Measures included the Godin Leisure-Time Physical Activity Questionnaire. Findings showed that out of the 86 participants, "28 (32.6%) moved to a lower blood pressure category at month 6" (p. 728). The study concluded that "medical professionals should advocate for increases in exercise" to facilitate blood pressure reductions (Annesi, 2022, p. 728).

2.5 Theoretical Framework Guiding the Study

The theories providing the theoretical framework guiding the study are as follows: Health Disparities Theory (Institute of Medicine, 2012); Social Cognitive Theory: Self Efficacy (Bandura, 1997); and The Diffusion of Innovation Theory (Rogers, 1995). The following section will provide a brief overview of these theories—all of which have informed either the focus of the study, or the selection of survey tools.

According to the Institute of Medicine (IOM, 2012), "personal experiences of discrimination" and "institutionalized racism have affected the health of African Americans by multiple mechanisms" (p. 21). The theory of health disparities covers the following key: (1) the persistence of health disparities; (2) the impact of the economy and increasing poverty; (3) role of race and racism; (4) importance of place, as in residential segregation and the impact of living low-income communities; (5) the need to increase awareness about them, given a low priority level in the public at large; (6) the need for health in all policies; and (7) the role of the community in creating a health disparities agenda (p. 4). It is vital to advance a health equity agenda through policies that target improving population that can address health disparities among African Americans (IOM, 2012).

According to Bandura (1997), the social cognitive theory is a "well-accepted model of individual behavior" and is often "used to explain a variety of performance-related behavior patterns" (p. 193). Social cognitive theory (SCT) suggests that cognition and the environment dynamically influence each other. The theory incorporates a concept called self-efficacy. Self-efficacy relates to an individual's belief in one's capability to perform a specific task. Bandura defines self-efficacy as "people's judgments of their capabilities to organize" and "execute courses of action required to attain designated types of performance" (p. 200). Self-efficacy can "influence decisions about what behaviors to undertake" and "the amount of effort exhibited in attempting those behaviors" (p. 206). The self-efficacy theory also includes the construct of social support which is hypothesized to mediate the relationship between self-efficacy and behavior.

Rogers (1995) created the diffusion of innovation theory to "explain how new ideas or innovations are adopted", including the concept of relative advantage (p. 216). Relative advantage is the degree to which an innovation is perceived as being better than the idea it supersedes. Rogers' (1995) theory suggests that "innovations that have a clear, unambiguous advantage over the previous approach" will be more easily adopted and implemented (p. 220). Rogers (1995) suggested that if there are observable positive outcomes from the implementation of the innovation then the innovation is more adoptable—and my be diffused to others.

2.5 Conclusions

This chapter provided a review of literature on the following topics: 1-Health Disparities for African Americans Relative to Chronic Diseases, Physical Activity and Dietary Intake; 2-Research and Interventions to Address Cardiovascular Disease; 3-Research and Interventions to Address Obesity; 4-Research and Interventions to Address Hypertension; and, 5-Theoretical Framework Guiding the Research.

The next chapter, III, will present the study methods.

Chapter III: Methods

This chapter provides a description of the methods and procedures followed in this study. This includes an overview of the study design and procedures, description of the study participants, description of research instrumentation, the data treatment plan, and the data analysis plan.

3.1 Overview of the Study Design and Procedures

This study utilized a cross-sectional design. An online survey hosted on the Qualtrics platform was administered to a convenience sample of Black men and women of at least 18 years old or above and live in the United States. This section provides an overview of all procedures followed in this investigation.

3.2 IRB Approval

On January 20, 2023, this study received approval under the category exempt from the Teachers College, Columbia University Institutional Review Board (IRB) as Protocol #23-127 (see Appendix A for IRB Approval Letter). The collection of data within this investigation followed receipt of IRB approval.

3.3 Recruitment of Study Participants

Recruitment for this study occurred primarily online via a social media campaign that included the use of LinkedIn, Facebook, Twitter, Instagram, text messaging, and emails. The social media campaign for this study consisted of sending out an essential message that invited Black adults to volunteer for participation in the study, while also succinctly describing the opportunity to win the prize of an Amazon gift card. The core message in this social media campaign was, as follows:

> ***"Black adults click https://tinyurl.com/KnowHowToBeActiveEatRight for a 15-20-minute survey on knowledge of physical activity & dietary guidelines for high blood pressure, diabetes, obesity for 3 in 250 chance to win 1 of 3 $100 Amazon gift cards."***

The recruitment campaign permitted snowball sampling in this study, as the email for the study invited Black or African American adults to share the study opportunity with others. More specifically, emails were sent to Black adults working in health departments and academia, while asking them to share the study link with colleagues and across their networks. For example, the invitation by email was sent to Black adults from the following health departments and academic institutions: New York City Department of Health and Mental Hygiene, California Department of Public Health, Texas Department of Health State Services, New Jersey Department of Health, Georgia Department of Health, Washington University in St. Louis, St. Louis City Department of Health, Missouri Department of Health and Senior Services, Monroe County Department of Health, Washington University in St. Louis, and the University of Rochester.

Regarding other details, the survey link was posted on LinkedIn, Facebook, Instagram, and Twitter. The link was specifically shared in various public health groups on social media such as the following: American Public Health Association (APHA), Young Black Public Health Network, Black Public Health Professionals, Black Men in Public Health, Black Men in Social Work, University of Rochester Black Alumni Network, Clark University Black Alumni Network, Washington University in St. Louis Black Alumni Network, Health Equity Knowledge Network, Behavioral Science in Public Health Network, Rochester Black Young Professionals, and the Public Health Millennials. To post in several of the groups, requests were submitted to the group administrator(s) for approval; once permission was granted, the invitation was posted for group members to access. The survey link was also shared through direct messages to a variety of Black adults on LinkedIn. To reach a larger audience within these social media groups, hashtags such as #publichealth, #blackhealthmatters, #blacklivesmatter, #blackpublichealh, #healthequity, #blackvoices and #blackracism were included in the posts.

3.4 Other Study Procedures

Participants who were interested in participating in the study were able to click an electronic link to begin the survey on Qualtrics. Once directed to the study, participants were asked to read the IRB approved informed consent, which included the participants' rights. To electronically consent to participate, participants had to check a box within the Qualtrics online survey.

3.5 Study Inclusion/Exclusion Criteria

After electronically signing the informed consent, participants then completed a short screening questionnaire to determine if they met the inclusion criteria for the study, as follows:

1-Do you self-identify as a Black or African American?
__Yes __No

2-Are you age 18 or above?
__Yes __No

3-Do you live in the U.S.?
__Yes __No

Participants who answered "yes" to all the questions met the study's inclusion criteria and were permitted to proceed with full access to the study questionnaire. Participants who did not meet the criteria were disqualified from the study and were thanked for their interest in the study and told they did not qualify for study participation; and, finally, they could share the link that allowed them to access the study opportunity with others who might qualify for study participation.

3.6 Generating Prizes: The Study Incentive for Participation

Participants who completed the entire study survey were directed to a webpage where they could enter their email address—thereby officially entering the lottery for a 3 in 250 chance to win one of three $100 Amazon gift cards. Data collection for the study began on February 12, 2023, and closed on February 25, 2023; and, thereafter, the lottery drawing occurred.

Upon closing the study, participants who entered the lottery and won were notified by email of winning and told how to redeem the gift card. The prize lottery webpage was created by the Research Group on Disparities in Health (RGDH) webmaster, Dr. Rupananda Misra, as the administrator who operated the program for selecting the Amazon gift card winners, which kept all participant's email data encrypted. As a result, the principal investigator was not able to view any identifying participant data (i.e., their individual email addresses) and associate them with the study results. Hence, participants' privacy was maintained.

3.7 Description of the Study Participants

The study recruited participants using a convenience sampling technique, which resulted in a final sample of N=819. After removing duplicate computer IP addresses, 631 participants remained. 580 were eligible based on initial eligibility questions and 563 answered at least 1 demographics question. Of the 563 participants remaining, 93 did not contribute to final analyses such as for not sufficiently completing the survey so as to have data for the primary outcome variable. As a result, the final number of completed surveys was 470.

A comparison was made of the study completers (N = 470) to the study non-completers (N = 93). Compared to completers, findings showed that non-completers were significantly ($p < .05$) less likely to have children.

See Table 1 and Table 2

Table 1. Comparing Survey Completers (N = 470) to Non-Completers (N = 93), Independent T-Tests

	Has Primary Outcome Variable? Yes=Completer No=Non-Completer				t-test significant at p <.01		
		N	M	SD	*T*	df	P
Age					-1.439	561	0.151
	Yes	470	30.91	7.649			
	No	93	29.62	8.911			
Skin Color					-0.741	68.366	0.461
	Yes	470	5.44	1.417			
	No	52	5.31	1.181			
Income					1.97	48.292	0.055
	Yes	468	4.96	1.778			
	No	46	5.83	2.939			
Education					1.425	514	0.155
	Yes	470	3.93	1.625			
	No	46	4.28	1.587			

*p<.05, **p<.01, ***p<.001 Bonferroni Adjustment Significance (.05/4, p= .01)
Note: All p values above .01 are considered non-significant, and only those below .01 are considered statistically significant

Table 2. Comparing Survey of Completers (n=470) to Non-Completers (N=93) Via Chi-Square Tests

Has Primary Outcome Variable? Yes=Completer No=Non-Completer		N	Chi-Square test of independence: Chi-Square	Df	P
Children	Yes	43	6.027	1	.014*
	No	50			

*p<.05, **p<.01, ***p<.001 Bonferroni Adjustment Significance (.05/4, p= .01)
Note: All p values above .01 are considered non-significant, and only those below .01 are considered statistically significant

3.8 Description of Research Instrumentation

This study used a survey developed by the Principal Investigator, Shamen Radcliffe, in conjunction with his dissertation sponsor, Professor of Health Education, Dr. Barbara Wallace, Director of the Research Group on Disparities in Health (RGDH), Teachers College, Columbia University. Additionally, sections of the survey were previously used by fellows of the RGDH, while some were adapted specifically for this study's focus.

Part I: Basic Demographics (BD-11)

The Basic Demographics (BD-11) scale was developed by Professor Barbara Wallace for use by the Research Group on Disparities in Health (RGDH) and was adapted for this study's Black adult population. The BD-11 scale has eleven items to capture basic demographics of the sample (e.g., age, race/ethnicity, education level, household income, and employment status). The tool permits descriptive statistics, including obtaining mean, SD, minimum, maximum, as well as percentage and frequency data.

Part II: Single Item Rating of Risk of Providing Socially Desirable Responses (SIR- RPSDR-1)

This is a single item scale created by Dr. Barbara Wallace for use in studies conducted by the Research Group on Disparities in Health (RGDH). For example, Laryea (2019) found that the new one item measure of social desirability was one of two significant predictors of nurses' higher personal skill/ability rating for managing patients' pressure ulcers. This was noteworthy, as the well-known 13-item measure of social desirability (Crowne & Marlowe, 1960) was also found to be a significant predictor of nurses' ratings for a higher personal skill/ability for managing patients' pressure ulcers. Hence, there is value in reducing the burden of time on study participants and using in this study the following one item measure of social desirability:

> 1-I sometimes say things that I think will please people, or what I think they want to hear—versus the honest truth, which might be difficult or painful for other people to hear and accept, or might lead them to judge me harshly…
>
> I rate myself on a scale of 0 to 10, as follows:

0	1	2	3	4	5	6	7	8	9	10
0-I am not like this at all										10-I am like this all the

,

The scale will permit obtaining mean, standard deviation, minimum, and maximum scores, as well as frequency and percentage.

Part III: Personal Health Background and Body Mass Index (PHB-BMI-17)

The Personal Health Background and Body Mass Index (PHB-BMI-17) scale was created by Professor Barbara Wallace for use by the RGHD and has been previously used by RGDH fellows (e.g. Aiyedun, 2014; Afram, 2019; Gallop, 2021; Williams-Gunpot, 2021). Additional chronic health conditions were listed as choices in light of the population and study focus. Also, for three time periods-- (1) before the pandemic; (2) during the pandemic—especially in the years 2020 and 2021; and (3) currently, especially in the past three months—ratings were obtained for their (a) physical health, (b) mental/emotional health, (c) physical activity or exercise level, and (d) effort to eat a healthy diet (more fruits and vegetables, less fat, less added sugar and added salt). Paired t-tests will permit comparing group means across the three periods for each of the four behaviors.

Some questions will permit obtaining a mean, standard deviation, minimum, and maximum scores, as well as frequency and percentage data.

Part IV: Perceived General Social Support Scale—For Before and During the Pandemic, and Currently (PGSSS-BDP-CC-3)

The Perceived General Social Support Scale—For Before and During the Pandemic, and Currently (PGSSS-BDP-CC-3) scale was developed by Professor Barbara Wallace for use in studies conducted in the spring of 2023 by fellows of the RGDH. After introducing the tool in Lian (2017), in recent years, to reduce the burden of time during the stress of the ongoing pandemic, a new one item version of the scale was created by combining the essence of 5 questions into one description of social support. Participants read this description of social support, and then indicate the number of people they have in their life, using the following 5-option scale:

1-I have no one like this in my life right now
2-I have at least 1 person like this in my life right now
3-I have at least 2 people like this in my life right now
4-I have 3-5 people like this in my life right now
5-I have 6 or more people like this in my life right now

Data analysis will permit obtaining mean scores, standard deviations, percentages and frequencies.

Part V: Knowledge of Physical Activity and Dietary Intake Guidelines Survey (KOPA-DIGS-40)

The Knowledge of Physical Activity and Dietary Intake Guidelines Survey (KOPA-DIGS-40) is a new tool created by the Principal Investigator, Shamen Radcliffe, and Dr.

Barbara Wallace, being based on a literature review, the USDHHS (2018) physical activity guidelines, and the USDA/USDHHS (2020) dietary guidelines—which were chosen at the time of the initial review of literature, guiding KOPA-DIGS-40 item creation; the dietary guidelines that were released post-proposal hearing stage were deemed not substantially different, so no updates to the KOPA-DIGS-40 were made. The resultant tool tests knowledge of the U.S. physical activity and dietary intake guidelines, being for first-time use in this study and for future studies of the RGDH; updates of the KOPA-DIGS-40 may be made in the future, given revisions to the 2018 physical activity and 2020 dietary guidelines. The KOPA-DIGS-40 reflects a common approach used in studies conducted by the RGDH, specifically, creating a True-False test where all the answers are True. As a True-False test with all True items,this genre of knowledge test used frequently by the RGDH is intended to serve as a brief online e-health intervention (e.g. Aiyedun, 2014; Afram, 2019; Gallop, 2021; Williams-Gunpot, 2021). In this study, while continuing within the RGDH genre of True-False knowledge test research, the KOPA-DIGS-40 has 40 items to be answered on a True-False scale, including an Unsure option. When scoring the KOPA-DIGS-40, True is scored 1, False is scored 0, and Unsure is scored 9; then, a total knowleddge score is arrived at by summing all True = 1 responses. This study will engage in data analysis to arrive at the sample mean, standard deviation, as well as the frequency and percentage of responses.

Part VI: Decision to Diffuse the Innovation of the Knowledge of Physical Activity and Dietary Intake Guidelines Survey (DDI-KOPA-DIGS-40)

The DDI-KOPA-DIGS-40 is a version of a standard tool used by the RGDH that is widely used, typically after exposure to a brief online intervention of True-False knowledge test with all True items (e.g. Aiyedun, 2014; Afram, 2019; Gallop, 2021; Williams-Gunpot, 2021).

This tool elicits a “yes” or “no” response to a single question about whether the participant would recommend the online intervention of taking the Knowledge of Physical Activity and Dietary Intake Guidelines Survey (KOPA-DIGS-40) to others; and, specifically, for this study, would they recommend it to other Black adults. This tool allows for descriptive statistics, including obtaining mean, SD, minimum, maximum, as well as percentage and frequency data.

Part VII: Pre- and Post-Ratings for Knowledge of Physical Activity and Dietary Intake Guidelines--Self-Efficacy to Follow Them (PRE-A-POST-TR-KSE-8)

This tool also follows a common approach within the RGDH genre of research using True-False knowledges tests with all True items (e.g. Afram, 2019; Gallop, 2021; Williams-Gunpot, 2021). Here, it is modified to obtain self-ratings of (1) level of knowledge of U.S. physical activity and dietary intake guidelines, and (2) self-efficacy for adhering to the U.S. physical activity and dietary intake guidelines; the participant offers a self-rating of their knowledge and self-efficacy for for *before* and *after* taking this study’s Knowledge of Physical Activity and Dietary Intake Guidelines Survey (KOPA-DIGS-40). More specifically, the ratings are made on a *Scale 1-Physical Activity and Dietary Intake Guidelines Knowledge* and *Scale 2-Adherence to Physical Activity and Dietary Intake Guidelines Self-Efficacy*. A comparison using paired t-tests is made of the participants’ self-ratings for before versus after taking the Knowledge of Physical Activity and Dietary Intake Guidelines Survey (KOPA-DIGS-40). Findings of any significant difference would suggest that Knowledge of Physical Activity and Dietary Intake Guidelines Survey (KOPA-DIGS-40) may serve as a brief online intervention that has the potential to significantly increase knowledge and self-efficacy from before to after taking the KOPA-DIGS-40.

3.9 The Data Treatment Plan

Given a sample of African American adults (N=470) who respond to a social media campaign using a core message on various online platforms (i.e. **"***Inviting Black adults to click on* ***https://tinyurl.com/KnowHowToBeActiveEatRight*** *to take a 15- to 20-minute survey on what you know about physical activity and dietary guidelines to prevent or control high blood pressure, diabetes, obesity, etc.—for a 3 in 250 chance to win 1 of 3 $100 Amazon gift cards*"), this study will seek answers to the following research questions—**using the data analysis plans in bold**:

1-What were their demographic characteristics (i.e. gender, skin color, born in the U.S. [yes/no], annual household income, level of education, employment status [yes/no], and state of residence)?

Part I: Basic Demographics (BD-11)

Data Analysis Plan: Descriptive statistics, including means, standard deviations, frequencies, and percentages

2- To what extent did they present *social desirability* (0 to 10), or were at risk of providing socially desirable responses to survey questions?

Part II: Single Item Rating of Risk of Providing Socially Desirable Responses (SIR-RPSDR-1)

Data Analysis Plan: Descriptive statistics, including means, standard deviations, frequencies, and percentages

3-What health conditions do they report currently having or having had, and what is their Body Mass Index? And for each of three time periods (i.e. for before the COVID-19 pandemic, during the COVID-19 pandemic—especially the years 2020-2021, and currently—especially the past three months), how did they rate their physical health, mental/emotional health, physical activity or exercise level, and effort to eat a healthy diet (more fruits and vegetables, less fat, less added sugar and added salt)?

Part III: Personal Health Background and Body Mass Index (PHB-BMI-17)

Data Analysis Plan: Data Analysis Plan: Descriptive statistics, including paired t-tests

4-How did they rate their receipt of social support for each of the three time periods of before the COVID-19 pandemic, during the COVID-19 pandemic (especially the years 2020-2021), and currently (especially the past three months)?

Part IV: Perceived General Social Support Scale—For Before and During the Pandemic, and Currently (PGSSS-BDP-CC-3)
Data Analysis Plan: Descriptive statistics, including paired t-tests

5-What was their score on the Knowledge of Physical Activity and Dietary Intake Guidelines Survey (KOPA-DIGS-40)?

Part V: Knowledge of Physical Activity and Dietary Intake Guidelines Survey (KOPA-DIGS-40)
Data Analysis Plan: Descriptive statistics, including means, standard deviations, frequencies, and percentages
The KOPA-DIGS-40 score is the study outcome variable

6-Did they indicate whether they *would or would not diffuse the innovation* of taking the new knowledge test by recommending the test to others?

Part IX: Part VI: Decision to Diffuse the Innovation of the Knowledge of Physical Activity and Dietary Intake Guidelines Survey (DDI-KOPA-DIGS-40-1)
Data Analysis Plan: Descriptive statistics, including means, standard deviations, frequencies, and percentages

7-What was found for the following comparisons, specifically: (1) When comparing ratings of their *knowledge level for physical activity guidelines* for before taking the Knowledge of Physical Activity and Dietary Intake Guidelines Survey (KOPA-DIGS-40) versus after taking the KOPA-DIGS-40, was there a significant difference?; (2) When comparing ratings of their *knowledge level for dietary intake guidelines* for before taking the KOPA-DIGS-40 versus after taking the KOPA-DIGS-40, was there a significant difference?; (3) When comparing ratings of *self-efficacy for adhering to physical activity guidelines* for before taking the KOPA-DIGS-40 versus after taking the KOPA-DIGS-40, was there a significant difference?; and (4) When comparing ratings of *self-efficacy for adhering to dietary intake guidelines* for before taking the KOPA-DIGS-40 versus after taking the KOPA-DIGS-40, was there a significant difference?

PART VII: Pre- and Post-Knowledge Test Ratings for Knowledge of Physical Activity and Dietary Intake Guidelines—And Self-Efficacy to Follow Them (PRE-A-POST-TR-K-SE-8)
Data Analysis Plan: Paired t-tests

8-Were there any significant relationships between selected independent variables and the study outcome variable of **a high knowledge score on the KOPA-DIGS-40?**

Data Analysis Plan: Independent t-tests, Pearson Correlations

9- What were the significant predictors of each of the study outcome variable of **a high knowledge score on the KOPA-DIGS-40?**

Data Analysis Plan: Backward Stepwise Regression Analysis

3.10 Data Management

The data was downloaded from Qualtrics. The data was then transferred to SPSS and analyzed using SPSS 28.0.

3.11 Conclusion

This chapter provided a description of the methods and procedures followed in this study. This included: the study design and procedures, description of the study participants, description of research instrumentation, the data treatment plan, and the data analysis plan. The following chapter, IV, will provide the results of data analysis.

Chapter IV

RESULTS

This chapter provides a detailed presentation of the study results. Findings are presented by research question and in table format.

4.1 Data Analysis Results by Study Question

4.1.1 Results for Research Question #1-What were their demographic characteristics (i.e. gender, age, race/ethnicity, skin color, birthplace (US born yes/no), annual household income, employment status, student status if applicable, etc.)? [Part I: Basic Demographics (BD-17)]

Part I: Basic Demographics (BD-17). The study sample used for final data analysis was comprised of 470 Black adults (N = 470). Chapter III provided details on how this final sample emerged, including a comparison of survey completers (N = 470) versus non-completers (N = 93).

The sample was 53.0% female (n = 249) and 47.0% male (n = 221). The mean age was 32.86 (SD = 7.649, min = 18, max = 71). For race/ethnicity, the sample was 100% Black/African American (n = 470). 29.1% (n= 137)—with a mean skin color of 5.44, which was between "medium to dark" and "very dark (SD = 1.417, min = 1, max = 7). Some 96.6% reported that they were born in the United States (n = 454). Also, 50.0% were married (n = 235) and 60% (n = 282) had children. The mean household yearly income was 4.98 for closest to category 5 for $50,000 to $99,999 (SD = 1.778, min = 1, max = 11). Most were employed full time (76.2%, n = 356). The sample was well educated with 19.6% (n = 92) having a master's degree, 16.0% (n = 75) a bachelor's degree, 11.7% (n=55) an associate or technical degree, and 4.0% (n=19) a doctoral or professional degree.

See Table 3.

Table 3. *Basic Demographics (BD-11) (N=470)*

	N	%
Gender (N=470)		
Male	221	47.0
Female	249	53.0
Transgender	0	0
Age (N=470)		
18-25	95	20.2
26-30	197	41.9
31-35	101	21.5
36-40	30	6.4
41-45	17	3.6
46-50	13	2.8
51-57	11	2.4
58-71	6	1.2
Mean age (30.91), SD (7.649)		
min (18), max (71)		
Marital Status (N=470)		
Yes	235	50.0
No	235	50.0
Children (N=470)		
Yes	282	60.0
No	188	40.0
Race/Ethnicity (N=470)		
Black/African American	470	100.0
Skin Color (N=470)		
1-White	7	1.5
2-Very Light	16	3.4
3- Light	15	3.2
4- Medium to Light	65	13.8
5- Medium to Dark	127	27.0
6- Dark	103	21.9
7-Very Dark	137	29.1
Mean (5.44), SD (1.417)		
min (1), max (7)		

Born in U.S. (N=470)		
Yes	454	96.6
No	16	3.4
Other Countries of Origin (N=16)		
Afghanistan	1	.2
Armenia	1	.2
Brazil	1	.2
Congo	1	.2
Cote d'Ivorie	1	.2
Ghana	1	.2
Honduras	1	.2
Jamaica	1	.2
Nigeria	5	1.1
Trinidad	1	.2
United Kingdom	1	.2
Other	1	.2
Annual Household Income (N=470)		
1-Less than $10,000	11	2.3
2-$10,000-$19,000	24	5.1
3-$20,000 to $39,000	79	16.8
4-$40,000 to $49,000	64	13.6
5-$50,000 to $99,999	88	18.7
6-$100,000 to $199,999	127	27.0
7-$200,000 to $299,000	57	12.1
8-$300,000 to $399,000	6	1.3
9-$400,000 to $499,999	4	.9
10-$500,000 to $799,000	5	1.1
11-$800,000 or more	3	.6
I do not know	2	.4
Mean (4.98), SD (1.778)		
min (1), max (11)		
Education Level (N=470)		
1-Some high school, or less	16	3.4
2-High school graduate or GED	90	19.1
3-Some college credit, no degrees	123	26.2
4-Associate or technical degree (e.g. AS)	55	11.7
5-Bachelor's degree (e.g., BA, BS)	75	16.0
6-Master's degree (e.g., MA, MS, MEd)	92	19.6
7-Doctorate or Professional degree (e.g., PhD, EdD, MD, DrPH, DDS, JD)	19	4.0
Mean (3.93), SD (1.625)		
min (1), max (7)		

Employment Status (N=470)		
Full Time	356	76.2
Part Time	60	12.8
Per Diem	35	7.4
Currently Unemployed	13	2.8
Currently Retired	4	.9

4.1.2 Results for Research Question #2- To what extent did they present *social desirability* (0 to 10), or were at risk of providing socially desirable responses to survey questions?**[Part II: Single Item Rating of Risk of Providing Socially Desirable Responses (SIR- RPSDR-1)]**

Part II: Single Item Rating of Risk of Providing Socially Desirable Responses (SIR- RPSDR-1). The mean risk of providing socially desirable responses was 5.63 (SD = 2.8655, min= 0, max = 10), indicating a moderate level of social desirability.

See Table 4.

Table 4. *Single Item Rating of Risk of Providing Socially Desirable Responses (SIR-RPSDR-1) (N = 470)*

	N	%
I sometimes say things that I think will please people, or what I think they want to hear—versus the honest truth, which might be difficult or painful for other people to hear and accept, or might lead them to judge me harshly… (N = 470)		
	50	10.6
0 - I am not like this at all		
1	10	2.1
2	18	3.8
3	26	5.5
4	31	6.6
5	59	12.6
6	66	14
7	65	13.8
8	76	16.2
9	45	9.6
10 - I am like this all the time	24	5.1

[Mean risk of providing socially desirable responses = 5.63; SD = 2.865; Min = 0; Max = 10]

4.1.3 Research Question #3-What health conditions do they report currently having or having had, and what is their Body Mass Index? And for each of three time periods (i.e. for before the COVID-19 pandemic, during the COVID-19 pandemic—especially the years 2020-2021, and currently—especially the past three months), how did they rate their physical health, mental/emotional health, physical activity or exercise level, and effort to eat a healthy diet (more fruits and vegetables, less fat, less added sugar and added salt)? And, when comparing the time periods, were there any significant differences? **[Part III: Personal Health Background and Body Mass Index (PHB-BMI-17)]**

Part III: Personal Health Background and Body Mass Index (PHB-BMI-17).

Regarding responses on the Personal Health Background and Body Mass Index (PHB-BMI-17) scale, 29.1% (n=137) reported that they have hypertension/ high blood pressure, with 27% (n = 127) overweight, and 24.9% (n=117) obese. The mean for Body Mass Index (BMI) was 24.04 for healthy weight (Min= 7.14-underweight, Max=68.65-obese, SD=9.25). Some 68.5% (n=322) have now, or had COVID-19 in past 2 years; and, 20.9% (n = 98) currently have now or had long COVID-19.

The study examined 3 time periods (i.e. 1-before the COVID-19 pandemic, 2-during the COVID-19 pandemic—especially the years 2020-2021, and 3-currently—especially the past three months). For each of these 3 time periods, participants rated themselves on 4 health dimensions: 1-physical health, 2-mental/emotional health, 3-physical activity or exercise level, and 4-effort to eat a healthy diet (more fruits and vegetables, less fat, less added sugar and added salt).

As shown in Table 5, for all 3 time periods and across all 4 health dimensions, participants' self-ratings were all closest to rating 3 for a fair rating. For example, for each of the 4 categories of health variables, self-ratings showed:

1-Some 36.6% (n=172) rated their physical health before the COVID-19 pandemic as fair, 31.5% (n=149) rated their physical health during the COVID-19 pandemic (especially 2020-2021) as fair, and 30.9% (n=145) rated their physical health currently (especially in the past three months) as fair.

2-Some 34.0% (n=160) rated their mental/emotional health before the COVID-19 pandemic as fair, 35.5% (n=167) rated their mental/emotional health during the COVID-19 pandemic (especially 2020-2021) as fair, and 41.5% (n=195) rated their mental/emotional health currently (especially in the past three months) as fair.

3-Some 33.8% (n=159) rated their physical activity or exercise level before the COVID-19 pandemic as fair, 33.0% (n=155) rated their physical activity or exercise level during the COVID-19 pandemic (especially 2020-2021) as fair, and 33.0% (n=155) rated their physical activity or exercise level currently (especially in the past three months) as fair.

4-Some 34.7% (n=163) rated their effort to eat a healthy diet (more fruits and vegetables, less fat, less added sugar and added salt) before the COVID-19 pandemic as fair, 34.7% (n=163) rated their effort to eat a healthy diet (more fruits and vegetables, less fat, less added sugar and added salt) during the COVID-19 pandemic (especially 2020-2021) as fair, and 33 % (n=155) rated their effort to eat a healthy diet (more fruits and vegetables, less fat, less added sugar and added salt) currently (especially in the past three months) as fair.

See Table 5.

Table 5. *Personal Health Background and Body Mass Index (PHB-BMI-17) (N=470)*

	N	%
1-I have now, or had COVID-19 in past 2 years (N=470)		
1) No	127	27
2) Yes	322	68.5
3) Not sure	21	4.5
2-I Currently have, or had, long COVID-19 (N=470)		
1) No	340	72.3
2) Yes	98	20.9
3) Not sure	32	6.8
3- I think COVID-19 is a hoax; it does not exist. (N=470)		
1) No	311	66.2
2) Yes	89	18.9
3) Not sure	70	14.9
4- I have also had, or currently have, the following: (please check all that apply) - Selected Choice Hypertension, high blood pressure (N=122)		
1) Hypertension, high blood pressure	122	26
2) Heart Disease	69	14.7
3) Cardiovascular Disease	83	17.7
4) Prior Stroke	58	12.3
5) Prior Heart Attack	87	18.5
6).Lung Disease	53	11.3
7) Type 1 Diabetes	86	18.3
8) Type 2 Diabetes	56	11.9
9) Overweight	137	29.1
10) Obesity	117	24.9
11) Cancer (Please explain type of cancer)	7	1.5
12) HIV/AIDS	6	1.3
13) Other health conditions (please explain)	16	3.4
14) Not applicable, none apply to me	132	28.1
Body Mass Index (BMI) (N = 470)		
Mean (24.04) – Normal, Healthy Weight		
SD (9.25)		
min (7.14; <18.4 = underweight)		
max (68.65; >40 = obese)		

Health Domain # 1: Physical Health for 3 Time Periods

1-I rate my physical health BEFORE the COVID-19 pandemic as: (N=470)

1) Very Poor	36	7.4
2) Poor	64	13.6
3) Fair	172	36.6
4) Good	136	28.9
5) Excellent	63	13.4

Mean (3.27), SD, (1.09), Min (1), Max (5)

2-I rate my physical health DURING the COVID-19 pandemic, especially 2020-2021 as: (N=470)

1) Very Poor	48	10.2
2) Poor	109	23.2
3) Fair	149	31.5
4) Good	118	25.1
5) Excellent	47	10.0

Mean (3.01), SD, (1.14), Min (1), Max (5)

3- I rate my physical health CURRENTLY, especially in the past THREE MONTHS as: (N=470)

1) Very Poor	36	7.7
2) Poor	86	18.9
3) Fair	145	30.9
4) Good	149	31.7
5) Excellent	54	11.5

Mean (3.21), SD, (1.11), Min (1), Max (5)

Health Domain # 2: Mental Health for 3 Time Periods

1-I rate my mental/emotional health BEFORE the COVID-19 pandemic as: (N=470)

2) Very Poor	27	5.7
3) Poor	70	14.9
3) Fair	160	34.0
4) Good	159	33.8
5) Excellent	54	11.5

Mean (3.30), SD, (1.04), Min (1), Max (5)

2-I rate my mental/emotional health DURING the COVID-19 pandemic, especially 2020-2021 as (N=470)

1) Very Poor	60	12.8
2) Poor	81	17.2
3) Fair	167	35.5
4) Good	121	25.7

5) Excellent	41	8.7
Mean (3.00), SD, (1.14), Min (1), Max (5)		
3-I rate my mental/emotional health CURRENTLY, especially in the past THREE MONTHS as: (N=470)		
1) Very Poor	22	4.7
2) Poor	80	17.0
3) Fair	195	41.5
4) Good	126	26.8
5) Excellent	47	10.0
Mean (3.20), SD, (.993), Min (1), Max (5)		
Health Domain # 3: Physical Activity for 3 Time Periods		
1-BEFORE the COVID-19 pandemic my physical activity or exercise level was: (N=470)		
1) Very Poor	34	7.2
2) Poor	89	18.9
3) Fair	159	33.8
4) Good	126	26.8
5) Excellent	62	13.2
Mean (3.20), SD, (1.11), Min (1), Max (5)		
2-DURING the COVID-19 pandemic — especially 2020-2021 — my physical activity or exercise level was: (N=470)		
1) Very Poor	52	11.1
2) Poor	109	23.2
3) Fair	155	33.0
4) Good	102	21.7
5) Excellent	52	11.1
Mean (2.99), SD, (1.16), Min (1), Max (5)		
3-CURRENTLY — especially in the PAST THREE MONTHS — my physical activity or exercise level is: (N=470)		
1) Very Poor	35	7.4
2) Poor	100	21.3
3) Fair	155	33.0
4) Good	118	25.1
5) Excellent	62	13.2
Mean (3.15), SD, (1.13), Min (1), Max (5)		
Health Domain # 4: Healthy Diet for 3 Time Periods		
1-BEFORE the COVID-19 pandemic my effort to eat a healthy diet (more fruits and vegetables, less fat, less added sugar and added salt) was: (N=470)		
1) Very Poor	36	7.7
2) Poor	66	14.0

3) Fair	163	34.7
4) Good	147	31.3
5) Excellent	58	12.3
Mean (3.27), SD, (1.09), Min (1), Max (5)		
2-DURING the COVID-19 pandemic — especially 2020-2021— my effort to eat a healthy diet (more fruits and vegetables, less fat, less added sugar and added salt) was: (N=470)		
1) Very Poor	33	7.0
2) Poor	94	20.0
3) Fair	163	34.7
4) Good	137	29.1
5) Excellent	43	9.1
Mean (3.13), SD, (1.06), Min (1), Max (5)		
3-CURRENTLY— especially in the PAST THREE MONTHS — my effort to eat a healthy diet (more fruits and vegetables, less fat, less added sugar and added salt) is: (N=470)		
1) Very Poor	22	4.7
2) Poor	83	17.7
3) Fair	155	33.0
4) Good	159	33.8
5) Excellent	51	10.9
Mean (3.29), SD, (1.03), Min (1), Max (5)		

Part IV: Paired T-Test Comparisons for Before COVID-19, During COVID, and Currently for Physical Health, Mental Health, Physical Activity, and Healthy Diet. Using the Bonferroni Adjustment Significance level for 12 comparisons ((.05/12, p=.004), findings showed the following:

Health Domain # 1: Physical Health Comparisons for 3 Time Periods.

1-There were statistically significant differences (t = 5.184, df = 469, p = .000) using paired sample t-tests when comparing physical health status *before* the COVID-19 pandemic (mean = 3.27 , SD = 1.090) versus ratings for *during* the pandemic (mean = 3.01, SD =1.138), *indicating better physical health before the COVID-19 pandemic*.

2-There *was not any statistically significant difference* (t = 1.262, df = 469, p =.208) using paired sample t-tests when comparing physical health status *before* the COVID-19 pandemic (mean = 3.27 , SD = 1.090) versus ratings *currently* (mean = 3.21, SD =1.106).

3-There were statistically significant differences (t = -3.823, df = 469, p = .000) using paired sample t-tests when comparing physical health status *during* the COVID-19 pandemic (mean = 3.01, SD =1.137) versus ratings *currently* (mean = 3.21, SD =1.106), *indicating better physical health currently*.

<u>Health Domain # 2: Mental Health Comparisons for 3 Time Periods</u>

1-There were statistically significant differences (t = 5.991, df = 469, p = .000) using paired sample t-tests when comparing mental/emotional health status *before* the COVID-19 pandemic (mean = 3.30 , SD = 1.042) versus ratings for *during* the pandemic (mean = 3.00, SD =1.137), *indicating better mental/emotional health before the COVID-19 pandemic*.

2-There *was a noteworthy trend that did not achieve statistical significance* (t = 1.959, df = 469, p = .051) using paired sample t-tests when comparing mental/emotional health status *before* the COVID-19 pandemic (mean = 3.30 , SD = 1.042) versus ratings *currently* (mean = 3.20, SD =.993), *with a trend toward better mental/emotional health before the COVID-19 pandemic*.

3-There were statistically significant differences (t = -4.161, df = 469, p < .001) using paired sample t-tests when comparing mental/emotional health status *during* the COVID-19 pandemic (mean = 3.00 , SD = 1.137) versus *currently* (mean = 3.20, SD =.993), *indicating better mental/emotional health currently*.

<u>Health Domain # 3: Physical Activity Comparisons for 3 Time Periods</u>

1-There were statistically significant differences (t = 3.910, df = 469, p < .001) using paired sample t-tests when comparing physical activity levels *before* the COVID-19 pandemic (mean = 3.20 , SD = 1.113) versus ratings *during* the pandemic (mean = 2.99, SD =1.156), *indicating better physical activity levels before the COVID-19 pandemic*.

2- There was *not any statistically significant difference* (t = .822, df = 469, p = .412) using paired sample t-tests when comparing physical activity levels *before* the COVID-19 pandemic (mean = 3.20 , SD = 1.113) versus ratings *currently* (mean = 2.99, SD = 1.156).

3-There were statistically significant differences (t = -3.077, df = 469, p = .002) using paired sample t-tests when comparing physical activity levels *during* the COVID-19 pandemic (mean = 2.99, SD = 1.156) versus *currently* (mean = 3.20 , SD = 1.113), *indicating better physical activity levels currently..*

<u>Health Domain # 4: Healthy Diet Comparisons for 3 Time Periods</u>

1- There was a noteworthy trend that did not achieve statistical significance (t = -3.077, df = 469, p = .009) using paired sample t-tests comparing extent of eating a healthy diet *before* the COVID-19 pandemic (mean = 3.27 , SD = 1.089) versus *during* the pandemic (mean = 3.13, SD = 1.06), *indicating a better extent of eating a healthy diet before the COVID-19 pandemic.*

2- There was was *not any statistically significant difference* (t = 2.613, df = 469, p = .706) using paired sample t-tests comparing extent of eating a healthy diet *before* the COVID-19 pandemic (mean = 3.27 , SD = 1.089) versus *currently* (mean = 3.91, SD = 1.028).

3-There were statistically significant differences (t = -.378, df = 469, p = .002) when using paired sample t-tests comparing extent of eating a healthy diet *during* the COVID-19 pandemic (mean = 3.13 , SD = 1.060) versus *currently* (mean = 3.29, SD = 1.028), *indicating a better extent of eating a healthy diet currently.*

See Table 6.

Table 6. *Paired T-Test Comparisons for Before COVID-19, During COVID, and Currently for Physical Health, Mental Health, Physical Activity, and Healthy Diet.*

	Before, During, and Now COVID Self-Rating			t-tests		
	N	M	SD	t	df	P
Health Domain # 1: Physical Health Comparisons for 3 Time Periods						
1-1 Self-Rating of Physical Health				5.184	469	0.000***
Physical Health Before COVID-19	470	3.27	1.090			
Physical Health During COVID-19	470	3.01	1.138			
1-2 Self-Rating of Physical Health				1.262	469	.208
Physical Health Before COVID-19	470	3.27	1.090			
Physical Health Currently	470	3.21	1.106			
1-3 Self-Rating of Physical Health				-3.823	469	0.000***
Physical Health During COVID-19	470	3.01	1.137			
Physical Health Currently	470	3.21	1.106			
Health Domain # 1: Mental Health Comparisons for 3 Time Periods						
2-1 Self-Rating of Mental Health				5.991	469	0.000***
Mental Health Before COVID-19	470	3.30	1.042			
Mental Health During COVID-19	470	3.00	1.137			
2-2 Self-Rating of Mental Health				1.959	469	.051
Mental Health Before COVID-19	470	3.30	1.042			
Mental Health Currently	470	3.20	.993			
2-3 Self-Rating of Mental Health				-4.161	469	0.000***
Mental Health During COVID-19	470	3.00	1.137			
Mental Health Currently	470	3.20	.993			

<u>Health Domain # 3: Physical Activity Comparisons for 3 Time Periods</u>						
3-1 Self-Rating of Physical Activity				3.910	469	0.000***
Physical Activity Before COVID-19	470	3.20	1.113			
Physical Activity During COVID-19	470	2.99	1.156			
3-2 Self-Rating of Physical Activity				.822	469	.412
Physical Activity Before COVID-19	470	3.20	1.113			
Physical Activity Currently	470	3.15	1.126			
3-3 Self-Rating of Physical Activity				-3.077	469	.002**
Physical Activity During COVID-19	470	2.99	1.156			
Physical Activity Currently	470	3.15	1.126			
<u>Health Domain # 4: Healthy Diet Comparisons for 3 Time Periods</u>						
4-1 Self-Rating of Healthy Diet				-3.077	469	.009
Healthy Diet Before COVID-19	470	3.27	1.089			
Healthy Diet During COVID-19	470	3.13	1.060			
4-2 Self-Rating of Healthy Diet				2.613	469	.706
Healthy Diet Before COVID-19	470	3.27	1.089			
Healthy Diet Currently	470	3.91	1.028			
4-3 Self-Rating of Healthy Diet				-.378	469	.002**
Healthy Diet During COVID-19	470	3.13	1.060			
Healthy Diet Currently	470	3.29	1.028			

*p<.05, **p<.01, ***p<.001 Bonferroni Adjustment Significance (.05/12, p=.004)
Note: All p values above .004 are considered non-significant, and only those below .004 are considered statistically significant

4.1.4 Research Question #4-How did they rate their receipt of social support for each of the three time periods of before the COVID-19 pandemic, during the COVID-19 pandemic (especially the years 2020-2021), and currently (especially the past three months)? And, when comparing the time periods, were there any significant differences? **[Part IV: Perceived General Social Support Scale—For Before and During the Pandemic, and Currently (PGSSS-BDP-CC-3)].**

Part V: Perceived General Social Support Scale—For Before and During the Pandemic, and Currently (PGSSS-BDP-CC-3). Regarding the participants' perceived general social support for each of the three time periods of 1- before the COVID-19 pandemic, 2-during the COVID-19 pandemic (especially the years 2020-2021), and 3-currently (especially the past three months), findings showed the following:

1-Time Period 1 – Before the COVID-19 pandemic, the perceived general social support mean was 2.93 (SD=1.25, Min=1, Max=5) for closest to having at least 2 people in their lives providing social support. For example, 26.4% (n=124) indicated having at least 2 people providing social support in their life before the COVID-19 pandemic.

2-Time Period 2 – During the COVID-19 pandemic (especially in the years 2020 and 2021), the perceived general social support mean was 3.13 (SD=1.07, Min=1, Max=5) for closest to having at least 2 people in their lives providing social support. For example, 36.2% (n=170) indicated having at least 2 people providing social support in their life during COVID-19 pandemic (especially in the years 2020 and 2021).

3-Time Period 3– Currently (especially in the past three months), the perceived general social support mean was 3.19 (SD=1.12, Min=1, Max=5) for closest to having at least 2 people in their lives providing social support. For example, 31.1% (n=146) indicated having at least 2 people providing social support in their life currently (especially in the past three months).

See Table 7.

Table 7. *Part V: Perceived General Social Support Scale—For Before and During the Pandemic, and Currently (N = 470)*

	N	%
Please indicate the extent to which you experienced SOCIAL SUPPORT in your life BEFORE the COVID-19 pandemic (N=470)		
1-I have no one like this in my life right now	73	15.5
2-I have at least 1 person like this in my life right now	110	23.4
3-I have at least 2 people like this in my life right now	124	26.4
4-I have 3-5 people like this in my life right now	107	22.8
5-I have 6 or more people like this in my life right now	56	11.9
Mean (2.93), SD (1.25)		
min (1), max (5)		

Please indicate the extent to which you experienced SOCIAL SUPPORT in your life DURING the COVID-19 pandemic - especially in the years 2020 and 2021 (N=470)

1-I have no one like this in my life right then	35	7.4
2-I have at least 1 person like this in my life right then	91	19.4
3-I have at least 2 people like this in my life right then	170	36.2
4-I have 3-5 people like this in my life right then	128	27.2
5-I have 6 or more people like this in my life right then	46	9.8

Mean (3.13), SD (1.07)
min (1), max (5)

Please indicate the extent to which you experienced SOCIAL SUPPORT in your life CURRENTLY the COVID-19 pandemic - especially in the past 3 months (N=470)

1-I have no one like this in my life right then	31	6.6
2-I have at least 1 person like this in my life right then	103	21.9
3-I have at least 2 people like this in my life right then	146	31.1
4-I have 3-5 people like this in my life right then	128	27.1
5-I have 6 or more people like this in my life right then	63	13.4

Mean (3.19), SD (1.12)
min (1), max (5)

Paired T-Tests Comparing Social Support for 3 Time Periods. Paired-t test comparing social support for each of the three time periods (i.e. before the COVID-19 pandemic, during the COVID-19 pandemic, and currently) showed the following:

1-Comparison One. There was a statistically significant difference (t = -4.769, df = 469, p <.000) using paired sample t-tests comparing social support *before* the COVID-19 pandemic (mean = 2.92, SD = 1.248) versus social support *during* the pandemic (mean = 3.13, (SD =1.069), *indicating greater social support during COVID-19 pandemic*.

2- Comparison Two. There was a statistically significant difference (t = -5.032, df = 469, p=0.00) using paired sample t-tests comparing social support *before* the COVID-19 pandemic (mean = 2.92 , SD = 1.248) versus social support *currently* (mean = 3.29 (SD =1.121), *indicating greater social support currently*.

3-Comparison Three. There *was not a statistically significant difference* (t = -1.405, df = 469, p=.161) using paired sample t-tests comparing social support *during* the COVID-19 pandemic (mean = 3.13 , SD = 1.069) versus social support *currently* (mean = 3.19 (SD =1.121).

See Table 8.

Table 8. *Paired T-Test Comparisons for Before COVID-19, During COVID, and Currently for Social Support (N=470)*

Before COVID-19, During Pandemic, and Now Social Support Ratings				**Paired t-tests**		
	N	M	SD	t	df	P
1-Comparison One				-4.769	469	0.000***
Social Support Before COVID-19	470	2.92	1.248			
Social Support During COVID-19	470	3.13	1.069			
2- Comparison Two				-5.032.	469	0.000***
Social Support Before COVID-19	470	2.92	1.248			
Social Support Currently	470	3.29	1.121			
3- Comparison Three				-1.405	469	.161
Social Support During COVID-19	470	3.13	1.069			
Social Support Currently	470	3.29	1.121			

*p<.05, **p<.01, ***p<.001 Bonferroni Adjustment Significance (.05/3, p=.02)
Note: All p values above .02 are considered non-significant, and only those below .02 are considered statistically significant

4.1.5 Research Question #5-What was their score on the Knowledge of Physical Activity and Dietary Intake Guidelines Survey (KOPA-DIGS-40)? **[Part V: Knowledge of Physical Activity and Dietary Intake Guidelines Survey (KOPA-DIGS-40)]**

Part V: Knowledge of Physical Activity and Dietary Intake Guidelines Survey (KOPA-DIGS-40). The sample's mean score on the Knowledge of Physical Activity and Dietary Intake Guidelines Survey (KOPA-DIGS-40) was 27.56 (SD= 9.83, Min = 1, Max =

40), indicating a moderately high knowledge level. The following are the top-ranked knowledge items that study participants indicated as "True:"

- (Item # 6) Adults need to sit less throughout the day and be more physically active (80.6%, n= 379).
- (Item # 25) Children, adolescents, and adults need to consume *whole fruits* (apples, bananas, berries, grapefruit, papaya, etc. (80.4%, n= 378).
- (Item # 28) Children, adolescents, and adults need to *consume vegetables* (broccoli, spinach, kale, okra, peppers, etc. (80.0%, n= 376).
- (Item # 7) Per week, physically able adults need *from 2 ½ hours to 5 hours a week of moderate-intensity physical activity* (walking, biking, swimming, running, volleyball, basketball, playing double tennis, pushing lawn mower), *or 1 ¼ hour to 2 ½ hours of vigorous-intensity aerobic* (increases heart rate and body's use of oxygen) *physical activity* (jogging, racewalking, hiking uphill, cycling, swimming fast, dancing fast, strength training)—or a *combination of the two types* (77.9%, n= 366).

Of note, deficits in knowledge also emerged, as with the following items that were endorsed as "True" for less than 50% of the sample:

- (Item #12) Adults with chronic conditions or disabilities, who are able, should perform at least 2 ½ to 5 hours of *moderate-intensity* physical activity or 1 ¼ to 2 ½ hours of *vigorous-intensity* aerobic physical activity per week—or a *combination of the two types.*(18.3 %, n= 286)
- (Item #40) Women planning to get pregnant, who are pregnant, or breast feeding should consume 8 ounces (1/2 pound) to 12 ounces (3/4 pound) of seafood per week (46.9%, n= 217)

See Table 9.

Table 9. *Knowledge of Physical Activity and Dietary Intake Guidelines (KOPA-DIGS-40) (N=470)*

Item	**N**	**%**
1- Preschool-aged children (ages 3-5 years old) need to be *physically active throughout the day* to enhance growth and development—and children and adolescents (ages 6-17 years old) need *1 hour or more of moderate-to-vigorous physical activity* every day.		
1. True	347	73.8
2. False	61	13.0
3. Unsure	62	13.2
2- Children and adolescents (ages 6-17 years old) need *60 minutes or more of moderate-to-vigorous aerobic* (increases heart rate and body's use of oxygen) physical activity every day.		
1. True	335	71.3
2. False	70	14.9

3. Unsure	65	13.8
3- Within their 60 minutes of physical activity per day, children and adolescents need *muscle-strengthening physical activity*—at least 3 days a week.		
1. True	285	60.6
2. False	88	18.7
3. Unsure	97	20.6
4- Within their 60 minutes of physical activity per day, children and adolescents need *vigorous-intensity physical activity*—at least 3 days a week.		
1. True	266	56.6
2. False	113	24.0
3. Unsure	91	19.4
5- Within their 60 minutes of physical activity per day, children and adolescents need *bone-strengthening physical activity*—at least 3 days a week.		
1. True	294	62.6
2. False	66	14.0
3. Unsure	110	23.4
6- Adults need to sit less throughout the day and be more physically active		
1. True	379	80.6
2. False	59	12.6
3. Unsure	32	6.8
7- Per week, physically able adults need *from 2 ½ hours to 5 hours a week of moderate-intensity physical activity* (walking, biking, swimming, running, volleyball, basketball, playing double tennis, pushing lawn mower), *or 1 ¼ hour to 2 ½ hours of vigorous-intensity aerobic* (increases heart rate and body's use of oxygen) *physical activity* (jogging, racewalking, hiking uphill, cycling, swimming fast, dancing fast, strength training)—or a *combination of the two types.*		
1 True	366	77.9
2 False	57	12.1
3 Unsure	47	10.0
8- Adults need to spread *aerobic activity* (increases heart rate and body's use of oxygen) throughout the week.		
1 True	353	75.1
2 False	58	12.3
3 Unsure	59	12.6
9- Adults need to perform *muscle-strengthening activities* of *moderate to vigorous intensity* that involve all the major muscle groups for 2 or more days a week.		
1 True	339	72.1
2 False	45	9.6
3 Unsure	86	18.3
10-Adults need to exceed (go beyond) 5 hours *of moderate-intensity* physical activity per week.		
1 True	268	57.0
2 False	119	25.3
3 Unsure	83	17.7
11- Both during pregnancy and postpartum, *women* should perform 2 ½ hours of *moderate-intensity aerobic activity* (increases heart rate and body's use of oxygen) per week.		
1 True	272	57.9
2 False	98	20.9

3 Unsure	100	21.3

12- Adults with chronic conditions or disabilities, who are able, should perform at least 2 ½ to 5 hours of _moderate-intensity_ physical activity or 1 ¼ to 2 ½ hours of *vigorous-intensity* aerobic physical activity per week—or a *combination of the two types.*

1 True	286	18.3
2 False	86	60.9
3 Unsure	98	20.9

13-Adults with chronic conditions or disabilities, who are able, should do muscle-strengthening activities of _moderate to vigorous intensity_ that involves all the major muscle groups for 2 or more days a week.

1 True	297	63.2
2 False	65	13.8
3 Unsure	108	23.0

14- A dietary pattern involves the *amounts* of foods eaten, the *percentages* (proportion) of different foods eaten, the *variety* of different foods eaten, the *combination* of different foods and drinks taken in, the *nutrients* eaten (nourish the body by giving it what it needs)—and the *frequency* (how often) they are taken in (eaten, consumed).

1 True	358	76.2
2 False	39	8.3
3 Unsure	73	15.5

15- At every stage of life (and at every age) a healthy dietary pattern should be followed.

1 True	375	79.8
2 False	47	10.0
3 Unsure	48	10.2

16- A healthy dietary pattern incorporates for adults involves consuming 1 ½ to 2 cups of fruit and 2–3 cups of vegetables per day— and children need to eat about a handful size (less than ½ a cup) portion of fruit or vegetable 5 times a day.

1 True	351	74.7
2 False	54	12.1
3 Unsure	62	13.2

17- There is a MyPlate image that shows people how to serve their food plate, which should consist of ½ vegetables and/or fruit, ¼ protein (such as a serving of meat, fish, or tofu the size of a deck of cards), and 1/4 grains (such as a serving of brown rice the size of your fist)—as a way to eat a healthy diet at every age and stage of life.

1 True	319	67.9
2 False	73	15.5
3 Unsure	78	16.6

18- The dietary pattern should limit the consumption (eating) of foods and beverages (drinks) with added sugars, saturated fats (solid at room temperature, like butter and cheese), and sodium (salt).

1 True	337	71.7
2 False	68	14.5
3 Unsure	65	13.8

19- Children aged 2 years old and older need limited intake of foods and drinks with sugar added—so it is less than 10% of their total calories consumed each day.

1 True	334	71.1

2 False	52	11.1
3 Unsure	84	17.9
20- Children younger than 2 years old *should not be fed any* foods or beverages that have sugar added to them.		
1 True	297	63.2
2 False	93	19.8
3 Unsure	60	17.0
21- For older adults (age 60 and above) to help reduce their risk of developing chronic diseases like high blood pressure, hypertension, heart disease, and diabetes, they should only consume (eat, drink) foods with little to no added sugar, saturated fats, and sodium.		
1 True	315	67.0
2 False	102	21.7
3 Unsure	53	11.3
22- Older adults (age 60 and over) need to consume (eat) enough protein to maintain their muscle mass.		
1 True	334	71.1
2 False	62	13.2
3 Unsure	74	15.7
23- Older adults (age 60 and over) can add to meals foods like seafood, dairy or fortified (vitamins added) soy alternatives, as well as beans, peas and lentils—in order to help maintain their muscle mass.		
1 True	327	69.6
2 False	68	14.5
3 Unsure	75	16.0
24- Older adults (age 60 and over) must make sure they consume foods that provide them with potassium, calcium, vitamin D, dietary fiber, and vitamin B12.		
1 True	358	76.2
2 False	56	11.9
3 Unsure	56	11.9
25- Children, adolescents and adults need to consume *whole fruits* (apples, bananas, berries, grapefruit, papaya, etc.).		
1 True	378	80.4
2 False	51	10.9
3 Unsure	41	8.7
26- Children, adolescents and adults need to consume *whole grains* (brown rice, millet, oatmeal, bulgur, whole-wheat bread, etc.).		
1 True	354	75.3
2 False	75	16.0
3 Unsure	41	8.7
27- It is recommended that children, adolescents, and adults *consume low-fat or fat free dairy* (milk, yogurt, cheese, lactose-free dairy) and fortified (vitamins added) soy (soy milk, soy yogurt).		
1 True	349	74.3
2 False	65	13.8
3 Unsure	56	11.9

28- Children, adolescents and adults need to *consume vegetables* (broccoli, spinach, kale, okra, peppers, etc.).

1 True	376	80.0
2 False	52	11.1
3 Unsure	42	8.9

29- Children, adolescents and adults need to *consume proteins*, such as lean (have less fat) meats (chicken breasts, chicken thighs, turkey, veal, pork, etc.), lean seafood (cod, tilapia, whiting, flounder, trout, sea bass, etc.), eggs, beans, lentils, nuts, seeds, and tofu.

1 True	366	77.9
2 False	56	11.9
3 Unsure	48	10.2

30- Children, adolescents and adults need to *consume* oils, such as vegetable oil, olive oil, and oils in foods like seafood, avocado, and nuts.

1 True	330	70.2
2 False	75	15.7
3 Unsure	66	14.0

31- It is *better to feed a child*: *unsweetened cereal*, instead of a cereal with added sugars; *sliced fruit like apples*, instead of fruit bars; and *lean ground meat* instead of hot dogs.

1 True	366	77.9
2 False	46	9.8
3 Unsure	58	12.3

32- Adolescents (age 14 and older) and adults should consume less than 1 teaspoon of salt (2,300 milligrams/ mg of sodium) per day (in all foods and drinks)—and those high blood pressure and other health concerns should take in even less salt per day.

1 True	301	64.0
2 False	75	16.0
3 Unsure	94	20.0

33- Children ages 9 to 13 *should not consume* more than approximately ¾ (three quarters) of a teaspoon of salt (or 1,800 milligrams/ mg of sodium) per day.

1 True	275	58.5
2 False	81	17.2
3 Unsure	114	24.3

34- Children ages 4 to 8 *should not consume* more than approximately 2/3 (two-thirds) of a teaspoon of salt (or 1,500 milligrams/ mg of sodium) per day.

1 True	299	63.6
2 False	51	10.9
3 Unsure	120	25.5

35- Children ages 1 to 3 *should not consume* more than approximately 1/2 (one-half) of a teaspoon of salt (or 1,200 milligrams (mg) of sodium) per day.

1 True	298	63.5
2 False	43	9.2
3 Unsure	128	27.3

36- Those of all ages should replace saturated fats (are hard at room temperature such as butter, ghee, lard, coconut oil, palm oil; cakes, biscuits; fatty meats, sausages, bacon; cured meats like salami, chorizo, pancetta; cheese) with unsaturated fats (olive oil, peanut oil, canola oil; avocados, almonds, pecans, hazelnuts; pumpkin and sesame seeds, etc.).

1 True	320	68.2
2 False	84	17.9
3 Unsure	65	13.9
37- In a single day a person should consume *less than 12 teaspoons* (50 grams) *of added sugars*		
1 True	316	67.4
2 False	65	13.9
3 Unsure	88	18.8
38- In a single day a person should consume *less than 5 teaspoons* (20 grams) of *added saturated fats* (are hard at room temperature such as butter, ghee, lard, coconut oil, palm oil; cakes, biscuits; fatty meats, sausages, bacon; cured meats like salami, chorizo, pancetta; cheese).		
1 True	311	66.3
2 False	62	13.2
3 Unsure	96	20.5
39- In order to consume omega-3 fatty acids and other desirable nutrients—and to prevent heart disease, *adolescents and adults should consume in a week 8 ounces or ½ pound of seafood—while children should consume less than that amount*.		
1 True	307	65.5
2 False	55	11.7
3 Unsure	107	22.8
40- Women planning to get pregnant, who are pregnant, or breast feeding should consume 8 ounces (1/2 pound) to 12 ounces (3/4 pound) of seafood per week.		
1 True	217	46.9
2 False	112	23.8
3 Unsure	134	28.5
Mean (27.56), SD (9.83), Min (1), Max (40)		

4.1.6 Research Question #6-Did they indicate whether they *would or would not diffuse the innovation* of taking the new knowledge test by recommending the test to others?**[Part VI: Decision to Diffuse the Innovation of the Knowledge of Physical Activity and Dietary Intake Guidelines Survey (DDI-KOPA-DIGS-40-1)]**

Part VI: Decision to Diffuse the Innovation of the Knowledge of Physical Activity and Dietary Intake Guidelines Survey (DDI-KOPA-DIGS-40-1). Some 89.4% (n = 414) indicated "yes" for recommending *the KOPA-DIGS-40 to other Black adults as an online Intervention (Diffusion of the Innovation*. Some 3.0% (n = 14) reported no and 7.6% (n = 35) were unsure.

See Table 10.

Table 10. *Do They Recommend the KOPA-DIGS-40 to Other Black Adults as an Online Intervention (Diffusion of the Innovation)? (DDI-KOPA-DIGS-40-1)(N=470)*

	N	%
1-Would you recommend the Knowledge of Physical Activity and Dietary Intake to other Black adults?		
1 Yes	414	89.4
2 No	14	3.0
3 Unsure	35	7.6

***4.1.7 Research Question** #7*- What was found for the following comparisons, specifically: (1) When comparing ratings of their *knowledge level for physical activity guidelines* for before taking the Knowledge of Physical Activity and Dietary Intake Guidelines Survey (KOPA-DIGS-40) versus after taking the KOPA-DIGS-40, was there a significant difference?; (2) When comparing ratings of their *knowledge level for dietary intake guidelines* for before taking the KOPA-DIGS-40 versus after taking the KOPA-DIGS-40, was there a significant difference?; (3) When comparing ratings of *self-efficacy for adhering to physical activity guidelines* for before taking the KOPA-DIGS-40 versus after taking the KOPA-DIGS-40, was there a significant difference?; and (4) When comparing ratings of *self-efficacy for adhering to dietary intake guidelines* for before taking the KOPA-DIGS-40 versus after taking the KOPA-DIGS-40, was there a significant difference?**[PART VII: Pre- and Post-Knowledge Test Ratings for Knowledge of Physical Activity and Dietary Intake Guidelines—And Self-Efficacy to Follow Them (PRE-A-POST-TR-K-SE-8)]**

Part VII: Pre- and Post-Knowledge Test Ratings for Knowledge of Physical Activity and Dietary Intake Guidelines—And Self-Efficacy to Follow Them (PRE-A-POST-TR-K-SE-8). The following paired t-tests were conducted:

- **Knowledge of Physical Activity Guidelines**

There was a statistically significant difference (-4.405, df = 461, p < .001) using paired sample t-tests comparing self-ratings of level of knowledge of physical activity guidelines *before* taking the knowledge test (mean = 3.87 , SD = 1.275) versus ratings *after* taking the knowledge test (mean = 4.10, SD = 1.275), *indicating better knowledge of physical activity guidelines after taking the knowledge test.*

- **Knowledge of Dietary Guidelines**

There was a statistically significant difference ($t = -5.466$, $df = 461$, $p < .001$) using paired sample t-tests comparing self-ratings of level of knowledge of dietary guidelines *before* taking the knowledge test (mean = 3.89, SD = 1.325) versus ratings *after* taking the knowledge test (mean = 4.19, SD = 1.249), *indicating better knowledge of dietary guidelines after taking the knowledge test.*

- **Self-Efficacy for Adhering to Physical Activity Guidelines**

Here ($t = -1.506$, $df = 461$, $p =.133$) using paired sample t-tests comparing self-ratings for level of self-efficacy (confidence) for adhering to physical activity guidelines for *before taking* the knowledge test (mean = 4.02, SD = 1.281) versus ratings *after* taking the knowledge (mean = 4.10, SD = 1.292*), findings showed no difference in self-efficacy for adhering to physical activity guidelines from before to after taking the knowledge test*

- **Self-Efficacy for Adhering to Dietary Intake Guidelines**

There was a statistically significant difference ($t = -5.256$, $df = 461$, $p < .001$) using paired sample t-tests comparing self-ratings of self-efficacy for adhering to dietary guidelines for *before* taking the knowledge test (mean = 3.95, SD = 1.297) versus ratings *after* taking the knowledge (mean = 4.23, SD = 1.320), *indicating better self-efficacy for adhering to dietary guidelines after taking the knowledge test.*

See Table 11.

Table 11. *Paired T-Test Comparisons for Before to After Taking the Knowledge of Physical Activity and Dietary Intake Guidelines Survey (KOPA-DIGS-40)*

Before Versus After Taking Knowledge Test				**Paired t-test**		
	N	M	SD	t	df	P
1-Rating of Knowledge of Physical Activity Guidelines				-4.405	461	.000***
Before Knowledge Test	462	3.87	1.275			
After Knowledge Test	462	4.10	1.239			
2- Rating of Knowledge of Dietary Guidelines				-5.466	461	.000***
Before Knowledge Test	462	3.89	1.325			
After Knowledge Test	462	4.19	1.249			
3- Self-Efficacy for Adhering to Physical Activity Guidelines				-1.506	461	.133
Before Knowledge Test	462	4.02	1.281			
After Knowledge Test	462	4.10	1.292			
4- Self-Efficacy for Adhering to Dietary Guidelines				-5.256	461	.000***
Before Knowledge Test	462	3.95	1.297			
After Knowledge Test	462	4.23	1.320			

*p<.05, **p<.01, ***p<.001 Bonferroni Adjustment Significance (.05/4, p=.013)
Note: All p values above .013 are considered non-significant, and only those below .013 are considered statistically significant

4.1.8 Research Question #8-Were there any significant relationships between selected independent variables and the study outcome variable of a higher score on the Knowledge of Physical Activity and Dietary Intake Guidelines Survey (KOPA-DIGS-40)?

Independent t-Tests Comparing Dichotomous Group on the Outcome Variable for Knowledge of Physical Activity and Dietary Intake Guidelines. In total, four groups were compared on the outcome variable of a higher score on the Knowledge of Physical Activity and Dietary Intake Guidelines Survey (KOPA-DIGS-40. Thus, the Bonferroni

Adjustment Significance (.05/4, p = .013) level was p<.01. The following group comparisons were significant using independent t-tests:

- When comparing the mean KOPA-DIGS-40 scores for survey respondents who do not have children (mean = 31.57, SD = 7.998) to those who have children (mean = 24.89, SD = 10.037), there was a significant difference (t = 7.643, df = 468, p <.001); those with no children had a *significantly higher score on the KOPA-DIGS-40* (p<.01, Bonferroni Adjustment Significance level).
- When comparing the mean KOPA-DIGS-40 scores for survey respondents who did not have a history of COVID-19 (mean = 30.48, SD = 10.512) to those who had/have COVID-19 (mean = 26.26, SD = 9.227), there was a significant difference (t = 4.369, df = 468, p <.001); those who did not have COVID-19 had a *significantly higher score on the KOPA-DIGS-40* (p<.01, Bonferroni Adjustment Significance level).

See Table 12.

Table 12. *Independent t-Tests Comparing Dichotomous Groups for Knowledge of Physical Activity and Dietary Intake Guidelines Survey (KOPA-DIGS-40) Score*

Knowledge of Physical Activity and Dietary Intake Guidelines (KOPA-DIGS-40)				**Independent t-tests**		
	N	M	SD	*t*	df	p
Gender participant				-1.302	468	.197
1 Female	249	27.01	9.167			
2 Male	221	28.19	10.508			
If married				.802	468	.423
0 no	235	27.93	9.161			
1 yes	235	27.20	10.459			
If has children				7.643	468	.001***
0 no	188	31.57	7.998			
1 yes	282	24.89	10.037			
If had COVID/has COVID				4.369	468	.001***

0 no	146	30.48	10.512
1 yes	324	26.26	9.227

*p<.05, **p<.01, ***p<.001 Bonferroni Adjustment Significance (.05/4, p=.013)
Note: All p values above .013 are considered non-significant, and only those below .013 are considered statistically significant

Pearson's Correlations Examining Associations with the Outcome Variable of Knowledge of Physical Activity and Dietary Intake Guidelines. Correlations between 31 independent variables were examined with the primary outcome variable of a higher score on the Knowledge of Physical Activity and Dietary Intake Guidelines Survey (KOPA-DIGS-40). Thus, the Bonferroni Adjustment Significance level (.05/22, p = .002) was p <.002.

Significant correlations (p < ,002) showed that the **higher the score** on the Knowledge of Physical Activity and Dietary Intake Guidelines Survey (KOPA-DIGS-40), then the:

- **Higher** the rating for physical health before COVID-19 (r = .190, p = .001)
- **Higher** the rating for physical health during COVID-19 (r = .229, p = .001)
- **Higher** the rating for physical health currently (r = .186, p = .001)
- **Higher** the rating for mental health before COVID-19 (r = .151, p = .001)
- **Lower** the risk of providing socially desirable responses (r = -.216, p = .001)
- **Higher** the rating for self-efficacy for adhering to dietary intake guidelines after taking the KOPA-DIGS-40, or post-test (r = .173, p = .001)
- **Higher** the rating of self-efficacy for adhering to physical activity guidelines after taking the KOPA-DIGS-40, or post-test (r = .204, p =.001)

See Table 13.

Table 13. Correlations with the Knowledge of Physical Activity and Dietary Intake Guidelines Survey (KOPA-DIGS-40) Score

Knowledge of Physical Activity and Dietary Intake Guidelines (KOPA-DIGS-40) Score	Pearson's **r**	P
Selected Variables		
Age	.067	.147
Skin Color	.132	.004**
Income	-0.057	.221

Education	.133	.004**
Medical Conditions	.015	.739
BM1 (Body Mass Index)	.112	.015*
Physical Health Before COVID-19	.190	.001***
Physical Health During COVID-19	.229	.001***
Physical Health Currently	.186	.001***
Healthy Diet Before COVID-19	.074	.113
Healthy Diet During COVID-19	.011	.821
Healthy Diet Currently	.041	.379
Mental Health Before COVID-19	.151	.001**
Mental Health During COVID-19	.111	.016**
Mental Health Currently	.140	.002**
Physical Activity Level Before COVID-19	.113	.014**
Physical Activity Level During COVID-19	.051	.270
Physical Activity Level Now COVID-19	.097	.036*
Risk of Providing Socially Desirable Responses	-.216	.001***
Social Support Before COVID-19	.116	.012**
Social Support During COVID-19	.021	.652
Social Support Currently	.120	.009**
Knowledge of Physical Activity Intake Guidelines (Before), Pre-Test	.017	.718
Knowledge of Physical Activity Intake Guidelines (After), Post-Test	.096	.040**
Knowledge of Dietary Intake Guidelines (Before), Pre-Test	-.074	.113
Knowledge of Dietary Intake Guidelines (After), Post-Test	.011	.821
Self-Efficacy for Adhering to Physical Activity Guidelines, Pre-Test	.041	.379
Self-Efficacy for Adhering to Physical Activity Guidelines, Post-Test	.204	.001***
Self-Efficacy for Adhering to Dietary Intake Guidelines, Pre-Test	.058	.214
Self-Efficacy for Adhering to Dietary Intake Guidelines, Post-Test	.173	.001***

*p<.05, **p<.01, ***p<.001 Bonferroni Adjustment Significance (.05/31, p =.002)
Note: All p values above .002 are considered non-significant, and
only those below .002 are considered statistically significant.

4.1.9 Research Question #9- What were the significant predictors of a higher score on the Knowledge of Physical Activity and Dietary Intake Guidelines Survey (KOPA-DIGS-40)?

For the purposes of this study, the outcome variable of interest was a higher score on the knowledge true-false test, which was explored via backward stepwise regression analysis, while controlling for socially desirable responses.

Independent variables. After reviewing descriptive statistics, including dichotomizing some variables, where indicated (e.g., if has children or not). The following 12 independent variables were selected for inclusion in the backwards stepwise regression model: 1-if partner (yes/no—dichotomous variable); 2- if child (yes/no—dichotomous variable); 3- if Covid (yes/no—dichotomous variable); 4-age (continuous variable); 5-skin color (continuous variable); 6-education (continuous variable); 7-Body Mass Index (continuous variable); 8-physical health currently (continuous variable); 9-social support currently (continuous variable); 10-knowledge physical guidelines, pre-test (continuous); 11- knowledge diet guidelines, pre-test (continuous); 12-self efficacy dietary guidelines, pre-test (yes/no—dichotomous variable).

Backwards stepwise regression. The model began with the above list of 12 independent variables in one regression model. Each time the model was re-run, the variable with the weakest association with the outcome variable was removed. Using the $p < .05$ level of statistical significance, the backward stepwise program repeated the elimination process, doing so until only those variables that were statistically significant were left in the regression model.

Controlling for social desirability. An exception was made during the backward stepwise regression process to not eliminate the "risk of providing socially desirable responses" variable. Instead, the variable was forced into the model as a control variable, regardless of the significance level. This decision allows the regression model to effectively control for social desirability.

Backward stepwise regression results. The following significant predictors of **a higher scor**e on the Knowledge of Physical Activity and Dietary Intake Guidelines Survey (KOPA-DIGS-40) were found using backward stepwise regression:

- **No For Having** Children ($B = -8.467$, $p = .000$)
- **Yes Has** a Partner ($B = 2.497$, $p = .011$)

- **No History of COVID (B= -2.376, p =.011)**
- **Older** Age (B = .198, p = .001)
- **Darker** skin color (B = 1.791, p = .000)
- **Higher** education (B = .705, p = .014)
- **Higher** BMI (Body Mass Index) (B = .097, p = .042)
- **Better** Physical Health, Now (B = 1.130, p = .005)
- **Less** Social Support, Now (B = -1.261, p = .002)
- **Higher** self-rating of knowledge of physical guidelines before taking the KOPA-DIGS-40, or Pre-Test (B = .953, p = .026)
- **Lower** self-ratings of knowledge of dietary guidelines before taking the KOPA-DIGS-40, or Pre-Test (B = -1.026, p = .015)
- **Higher self-ratings for** self-efficacy for adhering to dietary guidelines before taking the KOPA-DIGS-40, or Pre-Test (B = .968, p = .007)

It was found that, according to this model, 30.4% of the variance was predicted (R^2 = 0.323, Adjusted R^2 = 0.304) by the factors above.

See Table 14.

Table 14. *Significant Predictors of a Higher Knowledge of Physical Activity and Dietary Intake Guidelines Survey Score (KOPA-DIGS-40) Using Backwards Stepwise Regression*

Variables	B	SE of B	P
No For Having Children	-8.467	1.038	.000***
Yes Has a Partner	2.497	.896	.006**
No History of COVID-19	-2.376	.934	.011**
Older Age	.198	.060	.001**
Darker skin color	1.791	.309	.000***
Higher education	.705	.286	.014**
Higher BMI (Body Mass Index)	.097	.047	.042*
Better Physical Health, Now	1.130	.400	.005**
Less Social Support, Now	-1.261	.395	.002**
Higher knwldge of physical guidelines (Before) Pre-Test	.953	.427	.026*
Lower knwldge of diet guidelines (Before) Pre-Test	-1.026	.419	.015**
Higher self-efficacy for diet gudelns (Before) Pre-Test	.968	.968	.007**

*p<.05, **p<.01, ***p<.001; R^2 *(0.323); Adjusted* R^2 *(0.304) – meaning 30.4% of variance was explained by this model. F = 16.404, p < .000*

4.2 Conclusion

This chapter presented the results of quantitative data analyses through tables. Chapter V will present a discussion of the results, along with implications, recommendations, and a conclusion.

Chapter V: DISCUSSION, IMPLICATIONS, RECOMMENDATIONS, AND CONCLUSION

This chapter will present a discussion of findings, implications of the findings, and recommendations for future research. The limitations of this study and the conclusion will also be included in this chapter.

5.1 Discussion of Results

5.1.2 Discussion of Findings on Demographic Characteristics

The online cross-sectional research study used an email invitation and social media recruitment strategy to evalue a new True-False knowledge test—with all True items—as a brief online e-health intervention, and to investigate predictors of high knowledge for adherence to physical and dietary guidelines. The study had an all Black adult sample of convenience (n= 470) that was 53.0% female (n = 249) with a mean age of 32.86 (SD = 7.649, min = 18, max = 71). Comparisons may be made with a prior pandemic era all-Black sample of adults (n=188) where William-Gunpot (2021) reported 83.5% (n = 157) were female in an evaluation of a knowledge test on COVID-19 transmission. Afram (2019) had an all Black pre-pandemic sample (n=194) that was 100% male in a study evaluating a knowledge test on prostate cancer and prostate cancer screening.

Moslimani et al (2023) indicated that the median household income for Black U.S. households in 2021 was $46,400, and a quarter (26%) of all Black U.S. adults ages 25 and older had a bachelor's degree or more education. In this present study, the mean annual household income was between $50,000 to $99,999 (SD = 1.778, min = 1, max = 11).

Williams-Gunpot (2021) found the income mean to be between $40,000 and $99,999. Afram (2019) reported the income mean to be between $40,000 and $49,000. In the present study, 39.6% held a bachelor's degree or more, while in Williams-Gunpot (2021) 70.8% held a bachelor's degree or more. And, in Afram (2019, some 43.8% held a bachelor's degree or more. In the present study, 76.2%, were employed full time, while in Williams-Gunpot (2021), 46.3% were employed full-time. In the Afram (2019) study, 86.9% were employed full time.

5.1.3 Discussion of Findings on Rating of Risk of Providing Socially Desirable Responses

As something to keep in mind when evaluating this study's subsequent findings using a variety of scales, the present study found a mean moderate risk for providing socially desirable responses was 5.63 (SD = 2.865, min= 0, max = 10). William-Gunpot found a low moderate risk for providing socially desirable responses with a mean of 3.75 (min= 0, max=10, SD=3.009.

5.1.4 Discussion of Findings on Personal Health Background

The present study examined 3 time periods (i.e. 1-before the COVID-19 pandemic, 2-during the COVID-19 pandemic—especially the years 2020-2021, and 3-currently—especially the past three months). For each of these 3 time periods, participants rated themselves on 4 health dimensions: 1-physical health, 2-mental/emotional health, 3-physical activity or exercise level, and 4-effort to eat a healthy diet (more fruits and vegetables, less fat, less added sugar and added salt). While the present study found physical health status before the pandemic was fair, William-Gunpot (2021) found physical health was closest to good before the COVID-19 pandemic. In comparison, Afram (2019) found physical health status was between good and very good. Also, while this study found the before COVID-19 pandemic mental/emotional health status to be closest to fair, William-Gunpot found the mental/emotional health status before the COVID-19 pandemic to be closest to good.

The present study found a significant difference (p = .000) when comparing physical health status *before* the COVID-19 pandemic versus ratings *during* the pandemic, *indicatng better physical health before the pandemic*; and, also found was *better physical health currently* in comparision to *during* the pandemic (p = .000); and, there was *no significant difference in health status between before the pandemic and currently.*

Similarly, in the present study, when comparing mental/emotional health *before* the pandemic versus *during* the pandemic findings showed statistically significant (p = .000) *better mental/emotional health before the pandemic*; and, also found *better mental/emotional health status currently*, in comparision to *during* the pandemic (p = .000); and, there was *no significant difference in meantal/emotional health status between before the pandemic and currently.*

Thus, physical health status and mental/emotional health status both declined during the height of the pandemic, yet by Spring 2023 there were significant improvements; and the Black adults appeared to return by Spring 2023 to their pre-pandemic levels of physical health and mental/emotional health.

In a similar manner, Williams-Gunpot (2021) found a significant (p = .000) decline in physical health status when comparing before the pandemic versus during the pandemic ratings made during Spring 2021. Further, Williams-Gunpot (2021) found a significant (p = .000) decline in mental/emotional health status when comparing before the pandemic versus during the pandemic ratings for the same time period.

However, the present study contributes to the literature new evidence of a positive improvement in African-Americans' self-ratings for both physical health status and mental/emotional health status by the Spring of 2023 in the third year of the COVID-19 pandemic in the United States. The Black adults appeared to return to their pre-pandemic levels of physical health and mental/emotional health.This finding is consistent with a literature on African American resilience, such as that of Jones (2023), who writes that the analysis of impacts from racism is balanced by a narrative covering mechanisms that confer resilience and psychological well-being on Black people—such as when they navigate systemic racism. It may be these same mechanisms that confer resilience and psychological well-being that were operating for the Black adults in the present sample across the three years—to date—of the COVID-19 pandemic in the United States. Such mechanisms conferring resilience and psychological well-being could explain the Black adults in the present study sample returning to their pre-pandemic levels of physical health and mental/emotional health—based on their self-ratings; yet, the adults did experience significant declines in both physical and mental/emotional health during the height of the COVID-19 pandemic in America.

Meanwhile, the COVID-19 pandemic had a very real impact on physical activity levels and dietary intake patterns of the Black adults in this study. However, the same pattern of resilience of which Jones (2023) speaks is reflected in the data on (1) physical activity and (2) dietary intake patterns across the three time periods of focus.

First, there were statistically significant differences ($p = .001$) when comparing physical activity levels *before* the COVID-19 pandemic versus *during* the pandemic, *indicating better physical activity levels before the COVID-19 pandemic*; and, also, there was *not any statistically significant difference* when comparing physical activity levels *before* the COVID-19 pandemic versus *currently*; and, there were statistically significant differences ($p = .002$) when comparing physical activity levels *during* the COVID-19 pandemic versus, *indicating better physical activity levels currently.* Does this reflect those mechanisms conferring resilience and psychological well-being of which Jones (2023) speaks that might explain how, after experiencing a decline in physical activity levels during the pandemic, the Black adults in this sample returned (currently, in the past three months) to their pre-pandemic levels of physical activity by Spring 2023? Or, perhaps, a better explanation is how these findings reflect the impact of the easing of COVID-19 restrictions on social distancing and wearing masks, and the "re-opening" (e.g. gyms) and increasing "normalization" of everyday life (e.g. taking walks, going to stores in-person versus ordering online, etc.) by Spring 2023 that accounts for the return to pre-pandemic physical activity levels.

Second, this study found a noteworthy trend that did not achieve statistical significance ($p = .009$; Bonferroni Adjustment Significance level .05/12: $p < .004$), while showing the extent of eating a healthy diet *before* the COVID-19 pandemic versus *during* the pandemic *indicated a somewhat better extent of eating a healthy diet before the pandemic;* and, also there was *not any statistically significant difference* when comparing extent of eating a healthy diet *before* the COVID-19 pandemic versus *currently*; and, there were statistically significant differences ($p = .002$) when comparing extent of eating a healthy diet *during* the COVID-19 pandemic versus *currently, indicating a better extent of eating a healthy diet currently.* Once again, this may reflect the impact of mechanisms conferring resilience and psychological well-being, as per Jones (2023), which might explain how, after experiencing a decline in eating a healthy diet during the pandemic, the Black adults in this sample appear to have returned by Spring 2023 (i.e. currently, in the past three months) to their pre-pandemic levels of eating a healthy diet.

5.1.5 Discussion of Findings on Perceived General Social Support Scale—For Before and During the Pandemic, and Currently

For the participants' perceived general social support for each of the three time periods, findings were, as follows: 1- before the COVID-19 pandemic the sample reported closest to a moderate level of social support (Mean = 2.93), SD =1.25, min 1, max 5);, 2-during the pandmic the sample reported a moderate level of social support (Mean = 3.1), SD -1.07, min 1, max 5; and, 3-for currently (especially the past three months) the sample reported a moderate level of social support (Mean = 3.19, SD=1.12, min 1, max 5.). Similarly, in the Williams-Gunpot (2021) study, the sample reported closest to a moderate level of social support (mean = 2.71; min=0, max=4, SD=1.172).

Of note, the Williams-Gunpot (2021) study,did not investigate social support for before the pandemic versus during the pandemic.

The present study, however, compared three time periods. There was a statistically significant difference (p =.000) when comparing social support *before* the COVID-19 pandemic versus social support *during* the pandemic, *indicating greater social support during the pandemic*. There was also a statistically significant difference (p= .000) when comparing social support *before* the COVID-19 pandemic versus social support *currently*, *indicating greater social support currently*. However, there *was not a statistically significant difference* when comparing social support *during* the COVID-19 pandemic versus social support *currently.*
The pattern of experiencing an increase in social support during the pandemic, and this higher level of social support continuing into the present (currently, past three months) may suggest how people used social support to cope with the stress of the pandemic—as a pattern that has continued up to the present. To explain these findings, consider how the pandemic also increased

the use of Zoom and other social media platforms during the pandemic, and the resultant expanded reliance on social support seems to have continued into their current lives.

In a study with older adults covering experiences in the first year of the pandemic (2020-2021), Joseph, Kobayashi et al (2023) found that the "experience of frailty, in addition to the expected physical and emotional challenges, was also characterized by some elements of hope, resilience, and adaptation" (p. 797). This included what some have described as "not giving up" as well as "keeping going" despite challenges, which seemed to have occurred for some older adults "during the ongoing crisis of the COVID-19 pandemic" (p. 797). Joseph, Kobayashi et al (2023) found that many of their "study participants adapted to pandemic stress and restrictions by finding ways to stay connected to friends and family virtually, or through socially distant outdoor walks" (p. 797). While some of the older adults in their study described taking steps to protect themselves from COVID-19 transmission which led to social isolation, there was also another side to this: i.e. some of the participants "who shared their perspectives in this study paint a much richer picture to also encompass resilience and individual coping strategies" (Joseph, Kobayashi et al, 2023, p. 798).

The present study is unique in not only investigating social support during the height of the pandemic during the years 2020-2021 and 2021-2022, but also before the pandemic, and currently (Spring 2023). Thus, the present study makes a new contribution to the literature in highlighting how the Black adults in the present study experienced an increase in their level of social support, perhaps as a an adaptive coping strategy of seeking out social support during the stress of the COVID-19 pandemic; and, this increase in their level of social support has continued into their current lives.

5.1.6 Discussion of Findings on Knowledge of Physical Activity and Dietary Intake Guidelines

The present study sample's mean score on the Knowledge of Physical Activity and Dietary Intake Guidelines Survey (KOPA-DIGS-40) was 27.56 (SD= 9.83, Min = 1, Max = 40), which indicated a moderately high knowledge level. Using the same genre of research common to the Research Group on Disparities in Health (RGDH, Teachers College, Columbia University) involving a True-False test with all True items, William-Gunpot (2021) reported findings for level of knowledge using Our COVID-19 Knowledge Test (OCKT-44) with an all Black mostly female sample of adults, obtaining a mean of 40.34 (min=23, max=44, SD=3.092) for an excellent level of knowledge. Similarly, and with an all Black male sample pre-pandemic, Afram (2019) reported that the sample's mean score on the Prostate Cancer and Screening Knowledge Test (PC-S-KT-39) was 25.84 (Min=0, Max=37, SD=9.50), or moderately high.

Other pre-pandemic studies within this same genre of using a True-False test with all True items are worth just brief mention for further comparision. For example, with a diverse sample of men, Aiyedun (2014) reported that the sample had a mean of 34.49 (min 5, max 51, SD =12.495), suggesting a moderate level of knowledge. Furthermore, with a diverse sample of mothers with children with asthma, Gallop (2021) reported the sample's mean score on The Asthma Knowledge Test for Parents was 37.90 (Min=22, Max=40, SD=2.768) for moderately high.

As a recent 2023 study, using a sample of dental providers who were 64.6% Black, Indigenous and People of Color (BIPOC), Mutis (2023) found with the Dental Providers' Cross-Cultural Knowledge Test (DP-CC-KT-50) a mean of 28.52 for a moderate level of cross-cultural knowledge (SD = 17.241; Min = 1; Max = 50).

5.1.7 Discussion of Findings on Decision to Diffuse the Innovation of the Knowledge of Physical Activity and Dietary Intake Guidelines Survey

The present study is within a long-standing genre of research within the Research Group on Disparities in Health (RGDH, Teachers College, Columbia University) involving a True-False test with all True items; and, this genre's research protocol requires that, upon completion of the True-False test, it is disclosed that all the answers were True. Immediately following this disclosure, the study participant is then asked if they would recommend the True-False test to others—as a way to increase knowledge on the topic of focus. The answer to this question is simply, Yes or No, while serving to determine whether the study participant is an adopter of the innovation (i.e. Yes answer) of increasing knowledge on the topic of focus by taking the brief online intervention of taking a True-False test with all True items; and, also serving to document diffusion of the innovation, as per the theory advanced by Rogers (1995).

The present study sample of Black male and female adults with a moderate level of knowledge, as found on the Knowledge of Physical Activity and Dietary Intake Guidelines Survey (KOPA-DIGS-40), had 89.4% (N=414) endorse "yes" for recommending the taking of the KOPA-DIGS-40 to other Black adults. In comparison, William-Gunpot (2021) with a sample of mostly female Black adults with excellent knowledge, as found on the Our COVID-19 Knowledge Test (OCKT-44), had 83.8% (N=155) endorse "yes" for recommending the taking of the OCKT-44 to other Black adults. Similarly, the Afram (2019) study with a sample of Black men with moderately high knowledge, as found on the Prostate Cancer and Screening Knowledge Test (PC-S-KT-39), had 90.2% (n=175) endorse "yes" for recommending the PC-S-KT-39 to other Black men as an online intervention, thereby diffusing the innovation.

Of note, Aiyedun (2014) found that 89.6% (n=103) of respondents indicated that they would recommend the avatar video, which contained all the information to which they had also been exposed via a True-False test. Furthermore, the Gallop (2021) study sample with diverse mothers of children with asthma who evidenced moderately high knowledge, as found on The Asthma Knowledge Test for Parents, revealed that 77.4% (n=48) would recommend the TAKT-40 to other mothers with a child with asthma. And, Mutis (2023) reported that 96.1% (n=149) of dental providers would recommend that other providers take The Dental Providers' Cross-Cultural Knowledge Test (DP-CC-KT-50).

5.1.8 Discussion of Findings Using Paired T-Tests Comparing Self-Ratings of Knowledge and Self-Efficcacy for Before Versus After Taking the New Knowledge Test (KOPA-DIGS-40)

As a typical next step, this genre of research within the Research Group on Disparities in Health (RGDH, Teachers College, Columbia University) involving a True-False test with all True items has study participants make two ratings—after the take the test and indicate whether they recommend the test to others or not. Specifically, they are asked: (1) to rate their level of knowledge for what they knew *before* they took the True-False test versus *after* they took the True-False test—and a paired t-test is used to compare these ratings; and, (2) to rate their level of self-efficacy—as per the theory of Bandura (1977)—for performing some behavior or set of behaviors pertinent to the content of the True-False test, making these ratings for *before* versus *after* they took the True-False test. This serves to discern the value of the innovation of the True-Falst test as a brief online e-health intervention with potential value for positively impacting both knowledge and self-efficacy.

For the present study, paired sample t-tests compared knowledge of physical activity guidelines *before* taking the Knowledge of Physical Activity and Dietary Intake Guidelines Survey (KOPA-DIGS-40) (mean = 3.87 , SD = 1.275) versus ratings *after* taking the KOPA-DIGS-40 (mean = 4.10, SD = 1.275), *indicating better knowledge of physical activity guidelines after taking the knowledge tes*t There was also a statistically significant difference using paired sample t-tests, comparing knowledge of dietary guidelines *before* taking the KOPA-DIGS-40 (mean = 3.89, SD = 1.325) versus ratings *after* taking the KOPA-DIGS-40 (mean = 4.19, SD = 1.249), *indicating better knowledge of dietary guidelines after taking the knowledge test*. There were similar increases in self-efficacy for adhering to the physical activity guidelines (p=.000) and in self-efficacy for adhering to dietary guidelines (p=.000)–when comparing the *before* versus *after* scores on the KOPA-DIGS-40, with the *after scores being higher*. These findings were anticipated.

Similarly, William-Gunpot (2021), indicated that there were significant differences in knowledge when comparing the *before* taking versus *after* taking the COVID-19 knowledge test (p = .000) scores; and, also when comparing *before* versus *afte*r scores for self-efficacy to prevent COVID-19 transmission (p= .000)—with *scores being higher after taking the test*. Aiyedun (2014) found ratings of self-efficacy for four HIV prevention behaviors were significantly different when comparing *before* watching the video and taking the HIV/AIDS window period test ratings versus *after* (p < .001) ratings—with *scores being higher afterwards*. Afram (2019) found the same pattern of significant differences for knowledge (p=.000), and for self-efficacy for talking to a doctor about prostate cancer (p=.000) and self-efficacy for prostate cancer screening (p = .000)—with *scores being higher after taking the test.* Gallop (2021) similarly found a pattern suggestive of significant differences for knowledge (p=.040) and for self-efficacy for taking care of their child with asthma, and helping their child achieve asthma control ($p=.03$)—with *the trend in scores being higher for after taking the test*. And, Mutis (2023) found the same pattern of significant differences ($p=.001$) for cross-cultural knowledge and for self-efficacy for delivering health care to diverse patients ($p = .017$)—with *scores being higher after taking the test.*

Thus, the present study builds upon prior work substantiating the value in the innovation of a True-False test with all True items as a brief online e-health intervention with the potential for increasing both knowledge and self-efficacy in relation to various topics of focus. Contemporary investigations into topics where health disparities are of great concern should continue that uses this genre of research pioneered by the Research Group on Disparities in Health (RGDH, Teachers College, Columbia University).

5.1.9 Discussion of Findings on Significant Relationships Between Selected Independent Variables and the Study Outcome Variable of a Higher Score on the Knowledge of Physical Activity and Dietary Intake Guidelines Survey

This study found that just some of the independent t-tests and Pearson correlations involving selected independent variables in relation to the study outcome variable of a higher score on the Knowledge of Physical Activity and Dietary Intake Guidelines Survey (KOPA-DIGS-40) were noteworthy. For example, for independent t-tests, showed that those participants who did not have children had a *significantly higher score* on the KOPA-DIGS-40 ($p < .001$), and those who did not have a history of COVID-19 had a *significantly higher score* on the KOPA-DIGS-40 ($p < .001$).

For Pearson correlations, the higher the score on KOPA-DIGS-40, then the: higher the rating for physical health during COVID-19 ($r = .229$, $p = .001$); and, higher the self-efficacy for adhering to physical activity guidelines, post-test ($r = .204$, $p =.001$).

Further, the backwards stepwise regression, which controlled for social desirability, found significant predictors of a higher score on the Knowledge of Physical Activity and Dietary Intake Guidelines Survey (KOPA-DIGS-40) were found, as follows: No For Having Children (B = -8.467, p = .000); Yes for having a Partner (B = 2.497, p = .011); No for having any history of COVID (B= -2.376, p =.011); Older age (B = .198, p = .001); Darker skin color (B = 1.791, p = .000); Higher level of education (B = .705, p = .014); Higher BMI (Body Mass Index) (B = .097, p = .042); Better Physical Health, Now (B = 1.130, p = .005); Less Social Support, Now (B = -1.261, p = .002); Higher ratings of knowledge of physical activity guidelines, Pre Knowledge Test (B = .953, p = .026); Less knowledge of dietary guidelines, Pre Knowledge Test (B = -1.026, p = .015); and Higher self-efficacy ratings for adhering to the dietary guidelines, Pre Knowledge Test (B = .968, p = .007)—with 30.4% of the variance predicted by the model (R^2 = 0.323, Adjusted R^2 = 0.304).

Of note, among the anticipated findings, the significant independent variables identified included, among those found: *having a partner (yes) and higher level of education.*

It is not surprising that a higher KOPA-DIGS score was associated with older age (i.e. greater experience and wisdom), higher education, better current physical health, higher ratings of knowledge of physical activity guidelines before taking the KOPA-DIGS-40, and higher self-efficacy for adhering to dietary guidelines before taking the KOPA-DIGS-40. The findings suggests that future research could explore additional independent variables, given the model accounted for 30.4% of the variance.

The finding that Higher BMI (Body Mass Index) was a significant predictor of a higher KOPA-DIGS-40 score suggests that the overweight and obese may be well-informed and knowledgeable about what they need to adhere to, but may have other factors operating in explaining their higher BMI. For example, Salem (2023) recommended longitudinal and interventional studies to understand better the mechanisms underlying the disproportionately high prevalence rate of obesity, reduced insulin sensitivity, and type 2 diabetes in African American women, in particular. Further, there is a need to "investigate the relationship" between biomarkers "for obesity, chronic inflammation," and "oxidative stress in obese African Americans" (Saleem, 2023, p. 51).

Williams-Gunpot (2021) indicated that independent t-tests and Pearson Correlations were disappointing—revealing nothing of significance—in relation to the outcome variable of a higher level of COVID-19 knowledge. Also, using backward stepwise regression, controlling for social desirability, Williams-Gunpot (2021) found that the significant predictors of a high level of COVID-19 Knowledge based on Our Covid-19 Knowledge Test (OCKT-44) scores were: if had COVID-19—yes (b =1.026, SEB=.431, p = .018); and, if has been/will be vaccinated—yes (b=.912 SEB=.405, p=.026)—with this model (R 2=.0.060, Adj R 2 =0.044) only explaining 4.4% of the variance.

Of note, it made sense that having had COVID-19 was associated with a higher COVID-19 knowledge score in Williams-Gunpot (2021), as someone who contracted COVID-19 was typically forced to learn about their infection. Whereas, the present study found that not having had COVID-19 was associated with a higher knowledge of physical activity and dietary intake guidelines.

Also, Williams-Gunpot (2021) had a regression model with 28 independent variables, whereas the present study had a regression model with 12 independent variables. Hence, the Williams-Gunpot (2021) regression analysis with the use of 28 independent variables was at greater risk of overfitting of the model, potentially suffering from the inclusion of independent variables that did not perform any useful function, while increasing the risk of prediction mistakes (Hawkins, 2004).

5.2 Implications and Recommendations

The main purpose of the study was to introduce and evaluate the Knowledge of Physical Activity and Dietary Intake Guidelines Survey (KOPA-DIGS-40) as a brief online e-health intervention that was anticipated to be able to increase knowledge of guidelines and increase self-efficacy for adhering to physical activity and adhering to dietary intake guidelines. The KOPA-DIGS-40 was based on a review of literature, the USDHHS (2018) physical activity guidelines, and the USDA/USDHHS (2020) dietary guidelines—and, going forward, will need to be updated as these guidelines change. Most importantly, as anticipated, taking the KOPA-DIGS-40 did increase knowledge of guidelines and increase self-efficacy for adhering to physical activity and adhering to dietary intake guidelines. This builds upon prior work by the Research Group on Disparities in Health (RGDH, Teachers College, Columbia University)–i.e., Aiyedun (2014), Afram (2019), Gallop (2021), Williams-Gunpot (2021), Mutis (2023)—in substantiating the value of the innovation of a True-False test with all True items as a brief online e-health intervention. A solid body of research now supports the value and utility of this genre of research, while giving rise to specific recommendations, as follows:

- Broadly, future research studies should continue to use the RGDH genre of research that creates a True-False test with all True items as a brief online e-health intervention with the potential for increasing both knowledge and self-efficacy—especially in areas where there are health disparities plaguing an underserved and under-researched group, such as Black, Indigenous, and People of Color (BIPOC) groups. Further, there is value in conducting research with a sample that is all Black, as done in prior studies (i.e. Afram, 2019, Williams-

Gunpot, 2021) and the present study. Using an all Black sample takes health disparities research into a new more contemporary era where there is great value in investigating underlying mechanisms operating in health disparities, instead of following a prior era of health disparities research that focused on comparing BIPOC groups or specifically Blacks to White groups. As in the present research study, underlying mechanisms may emerge, such as those pointing toward Black resilience in response to stress, including the stress of a once-in-a-century global pandemic.

- Specifically, future research studies may continue to utilize the innovation of the new Knowledge of Physical Activity and Dietary Intake Guidelines Survey (KOPA-DIGS-40) as a brief online e-health intervention that is able to increase knowledge of guidelines and increase self-efficacy for adhering to physical activity and dietary intake guidelines. These studies may focus on those groups with health disparities involving cardiovascular disease, hypertension, overweight and obesity. And, there may be great value in using the KOPA-DIGS-40 in research with adolescents, or with those having at least a 12th grade reading level, as an early intervention to address any risk for chronic diseases linked to non-adherence to physical activity and dietary intake guidelines.
- Wide dissemination of the new Knowledge of Physical Activity and Dietary Intake Guidelines Survey (KOPA-DIGS-40) as a brief online e-health intervention is also recommended, so that it can be broadly accessed and utilized to increase knowledge of guidelines and increase self-efficacy for adhering to physical activity and dietary intake guidelines. It could be used as an intervention that is followed by focus groups for discussion of the new knowledge learned; and there could be discussion of strategies for enhancing adherence to physical activity and dietary intake guidelines.

Further, an additional purpose of the study was to identify significant predictors of a high score on the Knowledge of Physical Activity and Dietary Intake Guidelines Survey (KOPA-DIGS-40) survey, while controlling for social desirability—highlighting the role of factors such as older age, higher level of education, and higher Body Mass Index (BMI). In particular, the findings on higher BMI being a significant predictor of higher knowledge suggest that approaches for the obese and overweight that focus on providing education alone on physical activity and dietary intake guidelines are not likely to be sufficient. The population of obese and overweight adults will likely need something more. Recommendations for future research emerge as follows:

- The finding provides additional support for the recommendations of Salem (2023) for longitudinal and interventional studies to understand better the mechanisms underlying the disproportionately high prevalence rate of obesity, reduced insulin sensitivity, and type 2 diabetes in African American women—including the search for relationships with biomarkers for obesity, chronic inflammation, and oxidative stress in the obese (Saleem, 2023, p. 51).

As a major contribution that was surprising, the study provided evidence to support the role of resilience. This contribution arises from how this study examined three time periods: 1-before the COVID-19 pandemic; 2-during the height of the pandemic for the years 2020-2021; and 3-the time period of currently, especially the past three months, coinciding with the Spring of 2023 when data was collected. As a consequence of having the vantage point of these three distinct time periods, the present study adds to the literature new evidence of a positive improvement in

African-Americans' self-ratings for both physical health status and mental/emotional health status by the Spring of 2023 in the third year of the COVID-19 pandemic in the United States. The data documents how the Black adults did experience significant declines in both physical and mental/emotional health during the height of the COVID-19 pandemic in America. Yet, the Black adults appeared to return to their pre-pandemic levels of physical health and mental/emotional health. This finding highlights the assertion of Jones (2023) that there are mechanisms that confer resilience and psychological well-being on Black people—such as when they navigated stressors of systemic racism; and, as suggested by the present study, such as when they navigated the once-in-a-century stress of a global COVID-19 pandemic. Implications of this surprising finding on resilience, follow:

- Future research with African Americans should be rooted in resilience theory, and use three or multiple time periods for investigation, as in the present study. Further, comparing multiple time periods may serve as a way to quantify evidence of resilience as a key survival strategy and way to navigate the stress and trauma of systemic racism, or any other stressful or traumatic event, such as a once-in-a-century global pandemic.
- Research using three or multiple time periods for investigation could also begin to provide an empirical basis for a theory of resilience, which should be more fully articulated as having great relevance when examining the lives and coping strategies of African Americans. Resilience framed research would be refreshing and stand in contrast to what has prevailed in prior eras of health disparities research: i.e., research that focused on comparisons with the White population in America, and, perhaps inadvertently infused blame-the-victim and deficit-oriented themes that highlighted problems as being located within the "essentially blamed" African American group being studied; or that ended up locating deficits (in

comparison to White groups) *within* African Americans. Instead, a resilience theory and framework for research that is empirically based in the use of three or multiple time periods for investigation could produce a new era of health disparities research, while illuminating the role of mechanisms that confer the ability to "bounce back," or survive extreme stressors, or involve resilience as a characteristic of African Americans. The legacy of African Americans surviving over 400 years of racism and oppression in America, including making great strides despite systemic racism and structural inequities, is consistent with how resilience should be utilized as an essential framework to guide a new era of health disparities research.

Further, the study revealed how the COVID-19 pandemic also had a very real negative impact on (1) physical activity levels and (2) dietary intake patterns of the Black adults in this study, while the same pattern of resilience of which Jones (2023) speaks emerges from the data. Recall how the Black adults had better (1) physical activity levels and (2) dietary intake patterns before the COVID-19 pandemic compared to during the pandemic; but there was no statistically significant differences when comparing (1) physical activity levels and (2) dietary intake patterns for the periods before the pandemic versus currently; this suggested resilience in returning to their pre-pandemic physical activity and dietary intake patterns by the Spring of 2023. This data may be seen as potentially reflecting resilience, and/or reflecting the impact of the easing of COVID-19 restrictions, society "re-opening" (e.g. gyms), and increasing "normalization" of everyday life by Spring 2023. Yet, not everyone has "bounced back" from negative pandemic impacts on physical activity and dietary intake. Meanwhile, this study's sample of Black adults has "bounced back" and appears to be resilient. The implications of these findings for physical activity and dietary intake, follow:

- Future research into physical activity levels and dietary intake patterns, including for the population of the overweight and obese, can use three or multiple time periods—and compare them, as in this study.
- Future research investigating the onset of obesity, or heart disease, or hypertension could explore the etiology of key events, such as a heart attack or stroke by using three or multiple time periods—such as before the event, for the year of the event, and for the year after the event. This approach could reveal the impact of high-stress (once-in-a-lifetime) triggers that precede hearts attacks or strokes, as well as any evidence of resilience. Again, this research methodology and resilience framework could elevate research into chronic diseases, moving away from blame-the-victim and deficit-oriented approaches that have characterized a prior era of health disparities research.

For social support, the data showed a pattern of experiencing an increase in social support during the pandemic, and this higher level of social support continued into the present period of currently in Spring 2023. This may suggest how people used social support to cope with the stress of the pandemic—as a pattern that has continued up to the present. To explain these findings, consider how the pandemic also increased the use of Zoom and other social media platforms during the pandemic, and the resultant expanded reliance on social support seems to have continued into their current lives. Implications of these findings for social support follow:

- Future research should explore how when African Americans discover an adaptive coping strategy in response to extreme stressors, such as a pandemic, a coping strategy such as increasing social support may be discovered—and thereafter implemented as a way to cope on an ongoing basis.

- Going forward, there should be an emphasis on social support being implemented and investigated, as in interventions to address overweight, obesity, heart disease, and hypertension. This is not surprising if one considers the long history of interventions such as WeightWatchers, which rely on social support and bringing individuals together in groups. The pandemic has illustrated the value of doing this virtually, such as via Zoom and the use of online platforms. The history of church-based interventions, such as for hypertension (e.g. Ezekwe & Bhuiyan, 2020), for promoting healthy eating and physical activity among African Americans (e.g. Hempstad et al, 2018), and for addressing hypertension (e.g., Skolarus et al, 2018) may be seen as incorporating the key variable of social support. However, some of these prior studies have not specifically used this study's recommended use of three or multiple time periods, nor specifically investigated the variable of social support.
- Thus, it is recommended that future research into such church-based interventions specifically use the three or multiple time period methodology used in this study—and specifically investigate the variable of social support.

5.3 Limitations of the Study

The main study limitation involved the use of an online survey that required access to a smart phone, tablet, laptop, or computer with Internet connectivity. The survey length of 15-20 minutes may have been a limitation for busy working adults. The use of a convenience sample of volunteers may have attracted those with certain interests or biases, given the recruitment message that mentioned "what you know about physical activity and dietary guidelines to prevent or control high blood pressure, diabetes, obesity, etc.—for a 3 in 250 chance to win 1 of 3 $100 Amazon gift cards." Participant bias may also have included a higher motivation to win the Amazon gift card, compared to those who did not enter the study. These limitations must be kept in mind when evaluating the study findings.

5.4 Conclusion

In light of health disparities involving African Americans having disproportionately high rates of obesity, type II diabetes, cancer risk, heart disease and hypertension, the problem that this study addressed was the need to ensure that African American adults have access to information that may serve to increase their knowledge about physical activity and dietary intake guidelines; and access to information with the potential to increase their self-efficacy for adhering to physical activity and dietary guidelines. The online cross-sectional research study used an email invitation and social media recruitment strategy, resulting in an all Black adult sample of convenience (n= 470) that was 53.0% female (n = 249) with a mean age of 32 years. The study sought to evaluate the Knowledge of Physical Activity and Dietary Intake Guidelines Survey (KOPA-DIGS-40) as a new True-False knowledge test—with all True items. Participants had moderately high levels of knowledge as revealed by the KOPA-DIGS-40. The study also sough to identify significant predictors of high knowledge for adherence to physical activity and dietary intake guidelines, revealing the role of older age, higher education, and higher Body Mass Index (BMI)—as noteworthy predictors.

Comparisons of ratings for (1) knowledge of physical activity guidelines and (2) knowledge of dietary intake guidelines for before taking the KOPA-DIGS-40 versus ratings after taking it indicated significantly ($p < .000$) better ratings for after taking the KOPA-

DIGS-40. There were similar signifcant differences (p=.000) when comparing (1) self-efficacy for adhering to the physical activity guidelines and (2) self-efficacy for adhering to dietary guidelines, indicating better self-efficacy ratings after taking the KOPA-DIGS-40. This data supported the value in the KOPA-DIGS-40 as a new online brief e-health intervention for promoting increases in (1) knowledge and (2) self-efficacy; and, provided support for the value in the genre of research which uses True-False knowledge tests with all True items—while adding to a prior body of research within this genre (i.e. Aiyedun, 2014; Afram, 2019; Williams-Gunpot, 2021; Gallop, 2021; Mutis, 2023).

The study used an innovative research methodology well-suited to conducting research in the present historical era, including three time periods: i.e. 1-before the COVID-19 pandemic, 2-during the COVID-19 pandemic—especially the years 2020-2021, and 3-currently—especially the past three months. For each of these three time periods, participants rated themselves on four health dimensions: i.e., 1-physical health, 2-mental/emotional health, 3-physical activity or exercise level, and 4-effort to eat a healthy diet (more fruits and vegetables, less fat, less added sugar and added salt). Findings showed declines on these four health dimensions during the height of the pandemic, yet by Spring 2023 there were significant improvements; and, further, the Black adults appeared to return by Spring 2023 to their pre-pandemic levels of health. The findings highlighted the importance of using three or multiple time periods—as a highly recommended research methodology, and the importance of using a resilience theory and framework in future research to advance the field of health disparities. The findings suggested how the Black adults evidenced resilience or bounced back after experiencing the stress inherent in the once-in-a-century event of a global pandemic. Thus, a resilience theory and framework may be vital in guiding a future era of health disparities research with African Americans.

Further, the present study is unique in not only investigating social support during the height of the pandemic during the years 2020-2021, but also before the pandemic, and currently (Spring 2023). Thus, the present study makes a new contribution to the literature in highlighting how the Black adults in the present study experienced an increase in their level of social support, perhaps as a an adaptive coping strategy of seeking out social support during the stress of the COVID-19 pandemic; and, this increase in their level of social support has continued into their current lives.

The study emerges as ground-breaking in highlighting the value of research using a methodology investigating three or multiple time periods—and in revealing the value of a resilience theory and framework to guide future health disparities research. Further, the value of the KOPA-DIGS-40 as a brief online e-health intervention that should be used in future research also emerged. Given the manner in which there are disproportionately high rates of obesity, type II diabetes, cancer risk, heart disease and hypertension for African Americans, the findings of this study make an important contribution to the literature—while suggesting future directions in research and interventions.

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Appendix A

Letter of IRB Approval

Attachments:
• Shamen Radclffe - Informed Consent--for uploading.pdf
• Exemption Notification - IRB ID: 23-127.pdf

TEACHERS COLLEGE
COLUMBIA UNIVERSITY

Teachers College IRB	*Exempt Study Approval*

To: Shamen Radcliffe
From: Amanda O'Hara
Subject: IRB Approval: 23-127 Protocol
Date: 01/20/2023

Thank you for submitting your study entitled, "*Evaluating the Knowledge of Physical Activity and Dietary Guidelines Survey (KOPA-DIGS-40) As a Brief Online E-Health Intervention with Adult African Americans: Predictors of High Knowledge of and Self-Efficacy for Adherence to Guidelines*;" the IRB has determined that your study is **Exempt** from committee review (Category **2**) on 01/20/2023.

Please keep in mind that the IRB Committee must be contacted if there are any changes to your research protocol. The number assigned to your protocol is **23-127**. Feel free to contact the IRB Office by using the "Messages" option in the electronic Mentor IRB system if you have any questions about this protocol.

Please note that your Consent form bears an official IRB authorization stamp and is attached to this email. Copies of this form with the IRB stamp must be used for your research work. Further, all research recruitment materials must include the study's IRB-approved protocol number.

As the PI of record for this protocol, you are required to:

- Use current, up-to-date IRB approved documents
- Ensure all study staff and their CITI certifications are on record with the IRB
- Notify the IRB of any changes or modifications to your study procedures
- Alert the IRB of any adverse events

You are also required to respond if the IRB communicates with you directly about any aspect of your protocol. Failure to adhere to your responsibilities as a study PI can result in action by the IRB up to and including suspension of your approval and cessation of your research.

You can retrieve a PDF copy of this approval letter from Mentor IRB.

Best wishes for your research work.

Sincerely,
Amanda O'Hara

amanda.oharaa@gmail.com

Appendix B

Study Email

<u>AFRICAN AMERICAN MEN AND WOMEN AGES 18 OR ABOVE ARE INVITED TO VOLUNTEER 15-20 MINUTES ANSWERING SURVEY QUESTIONS</u>

About You and Your Views on the Value of a New Tool for Helping African Americans Increase Their Knowledge About the U.S. Physical Activity and Dietary Guidelines

FOR A 3 IN 250 CHANCE TO WIN 1 OF 3 $100 AMAZON GIFT CARDS

IRB Protocol Number 23-127

The Research Group on Disparities in Health within the Department of Health and Behavior Studies at Teachers College, Columbia University, in New York, New York is conducting a study to find out what African American adults know about the U.S. physical activity and dietary guidelines and their confidence level for following them. We are also seeking to obtain your views on the value of a new tool for helping African Americans increase their knowledge about the physical activity and dietary guidelines. Our goal is to obtain information that may lead to wide distribution of short tool that may assist African Americans in learning about the U.S. physical activity and dietary guidelines—as a brief online intervention to promote behavior change, improve health, and decrease the risk from chronic health conditions (e.g. high blood pressure, diabetes, obesity, etc.).

- Participation in this survey is limited to the first 250 volunteers
- Completing the online survey takes about 15 to 20 minutes
- Those who complete the survey will have a 3 in 250 chance of winning 1 of 3 $100 Amazon gift cards
- Please click on the link in the message below to view the informed consent, learn about your rights as a participant and proceed to the survey.
- We also invite you to forward this email to others who may be willing to volunteer, or send them a text message, or tweet using the message, below:

Inviting Black adults to click https://tinyurl.com/KnowHowToBeActiveEatRight for a 15- to 20-minute survey on your knowledge of physical activity & dietary guidelines for high blood pressure, diabetes, obesity for 3 in 250 chance to win 1 of 3 $100 Amazon gift cards (Teachers College IRB # 23-127)

THANK YOU FOR YOUR PARTICIPATION!

If you have any questions or would like to have additional information about the study, please contact:

Shamen Radcliffe, MSW, M.A, *Doctoral Candidate, Department of Health and Behavior Studies, Teachers College, Columbia University, Box 114, 525 W. 120th Street, New York, NY 10027; slr2202@tc.columbia.edu*

BARBARA C. WALLACE, Ph.D., *Director, Research Group on Disparities in Health, Professor of Health Education, Clinical Psychologist, Department of Health and Behavior Studies, Teachers College, Columbia University, Box 114, 525 W. 120th Street, New York, NY 10027; bcw3@tc.columbia.edu; Study Contact Number: 267-269-741*

Appendix C

Study Text/Tweet

Inviting Black adults to click ***https://tinyurl.com/KnowHowToBeActiveEatRight*** *for a 15- to 20-minute survey on your knowledge of physical activity & dietary guidelines for high blood pressure, diabetes, obesity for 3 in 250 chance to win 1 of 3 $100 Amazon gift cards* (Teachers College IRB # 23-127)

Appendix D

Informed Consent and Participant's Rights

Teachers College, Columbia University
525 West 120th Street
New York NY 10027
212-678-3000

INFORMED CONSENT

IRB Protocol Number 23-127

Protocol Title:

Evaluating the Knowledge of Physical Activity and Dietary Guidelines Survey (KOPA-DIGS-40) As a Brief Online E-Health Intervention with Adult African Americans: Predictors of High Knowledge of and Self-Efficacy for Adherence to Guidelines

Principal Researcher: Shamen Radcliffe, MSW, MA
Teachers College, Columbia University
585-713-3569; slr2202@tc.columbia.edu

INTRODUCTION You are invited to participate in this research study called the *"Evaluating the Knowledge of Physical Activity and Dietary Guidelines Survey (KOPA-DIGS-40) As a Brief Online E-Health Intervention with Adult African Americans: Predictors of High Knowledge of and Self-Efficacy for Adherence to Guidelines."* You may qualify to take part in this research study if you are: 1) an African American; 2) age 18 or above; and 3) live in the United States. This study is being done to determine what African American adults know about the U.S. physical activity and dietary guidelines and their confidence level for following them. Approximately 250 people will participate in this study and it will take about 15 to 20 minutes of your time to complete.

WHY IS THIS STUDY BEING DONE? This study is being done to obtain African American adults' views on the value of a new tool for helping African Americans increase their knowledge about the physical activity and dietary guidelines. Our goal is to obtain information that may lead to wide distribution of short tool that may assist African Americans in learning about the U.S. physical activity and dietary guidelines—as a brief online intervention to promote behavior change, improve health, and decrease the risk from chronic health conditions (e.g. high blood pressure, diabetes, obesity, etc.).

WHAT WILL I BE ASKED TO DO IF I AGREE TO TAKE PART IN THIS STUDY?
If you decide to participate in the study, you will answer a series of questions in an online survey. The questions will cover the following: your personal characteristics and background, including your rating your health status and social support (for before the COVID-19 pandemic, during the pandemic, and currently—especially the past three months); what you know about the U.S. physical activity and dietary guidelines to prevent or control high blood pressure, diabetes, obesity, etc.; and, questions about the impact of your taking the new tool on the U.S.

physical activity and dietary guidelines—including your confidence level to follow those guidelines.

WHAT POSSIBLE RISKS OR DISCOMFORTS CAN I EXPECT FROM TAKING PART IN THIS STUDY? The risks of study participation include the possibility that you may feel some discomfort from taking the survey or some stress due to some of the questions. However, your participation in this study is completely voluntary, and you can stop at any time.

WHAT POSSIBLE BENEFITS CAN I EXPECT FROM TAKING PART IN THIS STUDY? There is no direct benefit to you for participating in this study.

WILL I BE PAID FOR BEING IN THIS STUDY? You will not be paid to participate. However, when you complete the survey you will be invited to enter your email address and to hit a "submit" button—so that you are officially entered into a drawing for a chance to receive a prize (i.e., 1 of 3 bar coded Amazon gift certificates for $100). You do not have to enter the lottery drawing to complete the survey. Once you submit your email address, then it will automatically be entered into a private and secure data base that even the principal investigator cannot access. Once 250 people have completed the entire survey, you will have a 3 in 250 chance of winning 1 of 3 bar coded Amazon gift certificates for $100. The www.Amazon.com gift certificates will be sent to three randomly chosen e-mail accounts using a secure online program. This occurs without in any way linking your identity to the survey results. The principal investigator is not able to view any of the e-mail addresses to which the gift certificates are sent. Only the 3 winners will be contacted.

WHEN IS THE STUDY OVER? CAN I LEAVE THE STUDY BEFORE IT ENDS?
The study is over when you have completed the online survey. However, you can leave the study at any time even if you have not finished.

PROTECTION OF YOUR CONFIDENTIALITY The study does not involve collecting any of your personal identifying information, such as your name or address, allowing you to remain anonymous. (NOTE: Recall, as per what is above, you can elect to enter your e-mail address to enter the drawing for a chance to receive a prize. However, this occurs without in any way linking your identity to your survey answers, and the principal investigator cannot view any e-mail addresses.) Teachers College, Columbia University has determined that www.Qualtrics.com provides a secure platform for the online survey you will take. The survey data files will also be saved on the primary researcher's password protected computer. Regulations require that research data be kept for at least three years.

For quality assurance, the study team, and/or members of the Teachers College Institutional Review Board (IRB) may review the data collected from you as part of this study. Otherwise, all information obtained from your participation in this study will be held strictly confidential and will be disclosed only with your permission or as required by U.S. or State law.

HOW WILL THE RESULTS BE USED? The results of this study will be published in journals and presented at academic conferences. This study is being conducted as part of the doctoral dissertation of the principal investigator.

WHO CAN ANSWER MY QUESTIONS ABOUT THIS STUDY?
If you have any questions about taking part in this research study, you should contact the primary researcher, Shamen Radcliffe at 585-713-3569 or at slr2202@tc.columbia.edu.
You can also contact the sponsor/supervisor of this research study, Dr. Barbara Wallace, at bcw3@tc.columbia.edu or 267-269-7411.

If you have questions or concerns about your rights as a research subject, you should contact the Institutional Review Board (IRB) (the human research ethics committee) at 212-678-4105 or email IRB@tc.edu. Or you can write to the IRB at Teachers College, Columbia University, 525 W. 120th Street, New York, NY 10027. Box 151. The IRB is the committee that oversees human research protection for Teachers College, Columbia University.

PARTICIPANT'S RIGHTS

- I have read the Informed Consent Form and have been offered the opportunity to discuss the form with the researcher.
- I have had ample opportunity to ask questions about the purposes, procedures, risks and benefits regarding this research study.
- I understand that my participation is voluntary. I may refuse to participate or withdraw participation at any time without penalty.
- The researcher may withdraw me from the research at his or her professional discretion. I understand that if I take the survey more than once I will be eliminated from the study.
- If, during the course of the study, significant new information that has been developed becomes available which may relate to my willingness to continue my participation, the researcher will provide this information to me.
- Any information derived from the research study that personally identifies me will not be voluntarily released or disclosed without my separate consent, except as specifically required by law.
- I should receive a copy of the Informed Consent Form document. (I understand that I can download it).

By signing electronically, you agree to be in the study and confirm that you are an African American, age 18 or above, and live in the United States.

Provide your electronic signature:

____ **Date**: ______________

Teachers College, Columbia University
Institutional Review Board
Protocol Number: 23-127
Consent Form Approved Until: No Expiration Date

Appendix E

Screening Tool and Study Survey

Teachers College, Columbia University
IRB Protocol Number 23-127

The Research Group on Disparities in Health within the Department of Health and Behavior Studies at Teachers College, Columbia University, in New York, New York is conducting a study to find out what African American adults know about the U.S. physical activity and dietary guidelines and their confidence level for following them. We are also seeking to obtain your views on the value of a new tool for helping African Americans increase their knowledge about the physical activity and dietary guidelines.

To determine if you qualify for study participation, please answer the following questions:

1-Do you self-identify as a Black or African American?
__Yes __No

2-Are you age 18 or above?
__Yes __No

3-Do you live in the U.S.?
__Yes __No

If you answered "Yes" to the above questions, then you are invited to take a survey that will take approximately 15 to 20 minutes to complete. If you answered "No" to any of the above questions, then you do not qualify for this survey opportunity; however, you can send the link that took you to this survey opportunity to someone who you think will be eligible for study participation. THANK YOU.

Please note that if you qualify for study participation and complete the survey that follows, then you will have a 3 in 250 chance of winning one of three $100 Amazon gift cards in a lottery drawing when the study is closed.

STUDY SURVEY

The Knowledge of Physical Activity and Dietary Intake Guidelines Study Survey

Teachers College, Columbia University
IRB Protocol Number _____

INSTRUCTIONS: Please answer the following questions as honestly as possible by either selecting your desired answer or by providing an answer in the text box.

Part I: Basic Demographics (BD-11)

[This is a common tool used by the Research Group on Disparities in Health (RGDH)—with slight modifications depending on the population..]

1-My gender is:
a. Female
b. Male
c. Transgender
d. Other ___________________

2-My age is: _____ [DROP DOWN MENU from 15 to 100—Exit any 17 & below)

3-I am currently:
a. Single
b. Married
c. Separated
d. Divorced
e. Widowed
f. In Domestic Partnership
g. Living with Significant Other

4-How many children do you have? _____ [DROP DOWN MENU 0-10]

5. My race/ethnicity is as follows: (Please check all that apply or specify as you like.)
a. Black / African American→INCLUDE, EXCLUDE ALL OTHERS
b. American Indian / Alaska Native
c. Asian (Asian Indian, Chinese, Filipino, Japanese, Korean, Vietnamese, or other Asian)
d. Hispanic / Latino (including Puerto Rican, Mexican, Mexican American, Chicano, Cuban, other Spanish)
e. Middle Eastern / North African
f. Native Hawaiian / Pacific Islander
g. White / Caucasian / European American
h. Other group(s) (specify) _______

6-My skin color is
7-___Very Dark   6- ___Dark   5- ____Medium to Dark

4- ___Medium to Light 3-___Light 2-____Very Light 1___ White
[NOTE: create a continuous scale from light=1 to very dark=7 education
NOTE: prior research found the darker the skin tone, the higher the ability to perceive racism]

7-Were you born in the United States?

a. Yes
b. No

If you answered "No," please indicate the country in which you were born

Country of______________ [DROP DOWN MENU for countries]

8-My yearly household income is:

1-Less than $10,000
2-$10,000 to $19,000
3-$20,000 to $39,000
4-$40,000 to $49,000
5-$50,000 to $99,999
6-$100,000 to $199,999
7-$200,000 to $299,000
8-$300,000 to $399,000
9-$400,000 to $499,000
10-$500,000 to $799,000
11-$800,000 or More
__I do not know
[NOTE: create a continuous scale from low=1 category to high=11 category; create a mean category]

9-My highest education level/degree obtained is:
1__Some high school, or less
2__High school graduate, or GED
3__Some college credit, no degree
4__Associate degree or technical degree/training (e.g.: AA, AS, Certificate, etc.)
5__Bachelor's degree (e.g. BA, BS)
6__Master's degree (e.g. MA, MS, MEd)
7__Doctorate or Professional degree (e.g. PhD, EdD, DrPH, MD, DDS, DMD, PharmD)
[NOTE: create a continuous scale from low=1 to high=7 education]

10-My employment status is:

a. Full Time
b. Part Time
c. Per Diem
d. Currently Unemployed (explain why_____)
e. Currently Retired (explain why___)

[NOTE: create a dichotomous variable, employed yes=1; no=0]

11-The state where I currently live is: [DROP DOWN MENU OF STATES]

Part II: Single Item Rating of Risk of Providing Socially Desirable Responses (SIR-RPSDR-1)

[Note: This is a new single item scale created for first time use by Dr. Barbara Wallace in studies in 2018 conducted by the Research Group on Disparities in Health [RGDH], and for ongoing use by the RGDH. For example, this tool was used by Laryea (2019). See: Laryea, E. (2019). *An online mixed-methods study assessing nurses' attitudes, knowledge, skill/ability, and perceived barriers with regard to adherence to the national pressure ulcer advisory panel's clinical practice guidelines*. Doctoral dissertation. Teachers College, Columbia University. Note: Laryea (2019) found that the new one item measure of social desirability was one of two significant predictors of nurses' higher personal skill/ability rating for managing patients' pressure ulcers. This was noteworthy, as the well-known 13-item measure of social desirability (i.e. Crowne, D., & Marlowe, D. (1960) A new scale of social desirability independent of psychopathology. *Journal of Consulting Psychology, 24*(4), 349-354.] similarly was found to be the sole significant predictor of nurses' ratings for a higher personal skill/ability for managing patients' pressure ulcers. Hence, there is value in reducing the burden of time on study participants and using in this study the new one item measure of social desirability, especially, given the stress of the pandemic.]

1-I sometimes say things that I think will please people, or what I think they want to hear—versus the honest truth, which might be difficult or painful for other people to hear and accept, or might lead them to judge me harshly…

I rate myself on a scale of 0 to 10, as follows:

0	1	2	3	4	5	6	7	8	9	10
0-I am not like this at all										10-I am like this all the

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Part III: Personal Health Background and Body Mass Index (PHB-BMI-17)

[This is a tool created for use by the Research Group on Disparities in Health (e.g. Williams-Gunpot, 2021). See: Williams-Gunpot, D. (2021). *Evaluating "Our COVID-19 Knowledge Test" as a Brief Online E-Health Intervention with African American Adults: Identifying Predictors of High COVID-19 Knowledge and Self-Efficacy for COVID-19 Risk Reduction Behaviors*. Teachers College, Columbia University. An added item asks about chronic health conditions listed as choices in light of the population; and, also added was a rating of mental/emotional health; ratings for before and now/during the pandemic were provided for physical and mental health status—as an innovation, given the pandemic. Some ending questions were also eliminated. The present study further modifies this tool by adding options for before the pandemic, during the pandemic—especially in 2020 and 2021, and currently—especially the past three months—including for ratings of physical health, mental health, physical activity, and eating a healthy diet. This will permit comparing group means for the three periods of time using one-way analysis of variance.]

1-Please check, below, what best describes you:

__I have now, or had COVID-19 at some point in the past two years **__Yes __No __Not Sure**
__I currently have, or had long-COVID-19 **__Yes __No __Not Sure**
__I think COVID-19 is a hoax; it does not exist. **__Yes __No __Not Sure**

2-I have also had, or currently have, the following (please check all that apply)

__hypertension, high blood pressure
__heart disease
__cardiovascular disease
__prior stroke
__prior heart attack
__lung disease (e.g. asthma, COPD, etc.)
__type 1 diabetes
__type 2 diabetes
__overweight
__obesity
__Cancer (explain type of cancer ______________________)
__HIV/AIDS
__Other health conditions (explain______________________________)
__Not Applicable, none apply to me

3-My current height (feet) [DROP DOWN BOX, 4-9]

4-My current height (inches) [DROP DOWN BOX, 0-11]

5-My current weight (in pounds) [DROP DOWN BOX, 70-400]

[3, 4, 5 – for calculation of BMI)

6-I rate my physical health BEFORE the COVID-19 pandemic as:
1__Very poor
2__Poor
3__Fair
4__Good
5__Excellent

7-I rate my physical health DURING the COVID-19 pandemic, especially 2020-2021 as:
1__Very poor
2__Poor
3__Fair
4__Good
5__Excellent

8-I rate my physical health CURRENTLY, especially in the past THREE MONTHS as:
1__Very poor
2__Poor
3__Fair
4__Good
5__Excellent

9-I rate my mental/emotional health BEFORE the COVID-19 pandemic as:
1__Very poor
2__Poor
3__Fair
4__Good
5__Excellent

10- I rate my mental/emotional health DURING the COVID-19 pandemic, especially 2020-2021 as:
1__Very poor
2__Poor
3__Fair
4__Good
5__Excellent

11-I rate my mental/emotional health CURRENTLY, especially in the past THREE MONTHS as:
1__Very poor
2__Poor
3__Fair
4__Good
5__Excellent

12-BEFORE the COVID-19 pandemic my physical activity or exercise level was

1__Very poor
2__Poor
3__Fair
4__Good
5__Excellent

13-DURING the COVID-19 pandemic—especially 2020-2021--my physical activity or exercise level was

1__Very poor
2__Poor
3__Fair
4__Good
5__Excellent

14-CURRENTLY—especially in the PAST THREE MONTHS--my physical activity or exercise level was:

1__Very poor
2__Poor
3__Fair
4__Good
5__Excellent

15-BEFORE the COVID-19 pandemic my effort to eat a healthy diet (more fruits and vegetables, less fat, less added sugar and added salt) was:

1__Very poor
2__Poor
3__Fair
4__Good
5__Excellent

16-DURING the COVID-19 pandemic—especially 2020-2021-- my effort to eat a healthy diet (more fruits and vegetables, less fat, less added sugar and added salt) was:

1__Very poor
2__Poor
3__Fair
4__Good
5__Excellent

17-CURRENTLY—especially in the PAST THREE MONTHS-- my effort to eat a healthy diet (more fruits and vegetables, less fat, less added sugar and added salt) was:

1__Very poor
2__Poor
3__Fair
4__Good
5__Excellent

Part IV: Perceived General Social Support Scale—For Before and During the Pandemic, and Currently (PGSSS-BDP-CC-3)

[This is a based on a common tool used by the Research Group on Disparities in Health (RGDH), while modified from a prior tool used by Lian (2017). See: Lian, Z. (2017). *Predictors of depression/anxiety, mental health service utilization, and help-seeking for Chinese international students: Role of acculturation, microaggressions, social support, coping self-efficacy, stigma, and college staff's cultural competence and cultural humility*. Doctoral Dissertation, Teachers College, Columbia University. In recent years, to reduce the burden of time during the stress of the ongoing pandemic, a new one item version of the scale used in Lian (2017) was created by combining the essence of 5 questions used in Lian (2017) into one description of what having social support "means." Participants then indicated the number of people they have in their life, using the 5-option scale. This version introduced for studies in Spring 2023 asks about three time periods for social support: i.e., before the pandemic; during the pandemic—especially in the years 2020 and 2021; and currently, especially in the past three months. Multiple paired t-tests will permit comparing the time periods.]

Having SOCIAL SUPPORT means having people in your life who provide the following kinds of support and assistance: you can ask them for advice, or receive words of encouragement; get money or get food in an emergency; or have a place to temporarily wait for help, or stay or live in an emergency.

1-Please indicate the extent to which *you experienced SOCIAL SUPPORT in your life* **BEFORE the COVID-19 pandemic:**

1. I had no one like this in my life then
2. I had at least 1 one person like this in my life then
3. I had at least 2 people like this in my life then
4. I had 3-5 people like this in my life then
5. I had 6 or more people like this in my life then

2-Please indicate the extent to which *you experienced SOCIAL SUPPORT in your life* **DURING the COVID-19 pandemic—especially in the years 2020 and 2021:**

1. I had no one like this in my life then
2. I had at least 1 one person like this in my life then
3. I had at least 2 people like this in my life then
4. I had 3-5 people like this in my life then
5. I had 6 or more people like this in my life then

3-Please indicate the extent to which *you experience SOCIAL SUPPORT in your life* **CURRENTLY—especially in the PAST THREE MONTHS:**

1. I have no one like this in my life right now
2. I have at least 1 one person like this in my life right now
3. I have at least 2 people like this in my life right now
4. I have 3-5 people like this in my life right now
5. I have 6 or more people like this in my life right now

Part V: Knowledge of Physical Activity and Dietary Intake Guidelines Survey (KOPA-DIGS-40)

[This is a new tool created by the Principal Investigator, Shamen Radcliffe, and Dr. Barbara Wallace, being based on a literature review, the USDHHS (2018) physical activity guidelines, and the USDA/USDHHS (2020) dietary guidelines. This is a common approach used in studies conducted by the Research Group on Disparities in Health, RGDH—where all items are true.]

This scale provides study outcome variable # 1.

Please rate the following items as True, False, or indicate if you are Unsure.

1-Preschool-aged children (ages 3-5 years old) need to be *physically active throughout the day* to enhance growth and development—and children and adolescents (ages 6-17 years old) need *1 hour or more of moderate-to-vigorous physical activity* every day.
___*True* **___*False*** **___*Unsure***
2-Children and adolescents (ages 6-17 years old) need *60 minutes or more of moderate-to-vigorous aerobic* (increases heart rate and body's use of oxygen) physical activity every day.
___*True* **___*False*** **___*Unsure***
3-Within their 60 minutes of physical activity per day, children and adolescents need *muscle-strengthening physical activity*—at least 3 days a week.
___*True* **___*False*** **___*Unsure***
4-Within their 60 minutes of physical activity per day, children and adolescents need *vigorous-intensity physical activity*—at least 3 days a week.
___*True* **___*False*** **___*Unsure***
5-Within their 60 minutes of physical activity per day, children and adolescents need *bone-strengthening physical activity*—at least 3 days a week.
___*True* **___*False*** **___*Unsure***
6-Adults need to sit less throughout the day and be more physically active.
___*True* **___*False*** **___*Unsure***
7-Per week, physically able adults need *from 2 ½ hours to 5 hours a week of moderate-intensity physical activity* (walking, biking, swimming, running, volleyball, basketball, playing double tennis, pushing lawn mower), *or 1 ¼ hour to 2 ½ hours of vigorous-intensity aerobic* (increases heart rate and body's use of oxygen) *physical activity* (jogging, racewalking, hiking uphill, cycling, swimming fast, dancing fast, strength training)—or a *combination of the two types.*
___*True* **___*False*** **___*Unsure***
8-Adults need to spread *aerobic activity* (increases heart rate and body's use of oxygen) throughout the week.
___*True* **___*False*** **___*Unsure***
9-Adults need to perform *muscle-strengthening activities* of *moderate to vigorous intensity* that involve all the major muscle groups for 2 or more days a week.
___*True* **___*False*** **___*Unsure***
10-Adults need to exceed (go beyond) 5 hours *of moderate-intensity* physical activity per week.
___*True* **___*False*** **___*Unsure***
11-Both during pregnancy and postpartum, *women* should perform 2 ½ hours of *moderate-intensity aerobic activity* (increases heart rate and body's use of oxygen) per week.
___*True* **___*False*** **___*Unsure***
12-Adults with chronic conditions or disabilities, who are able, should perform at least 2 ½ to 5 hours of *moderate-intensity* physical activity or 1 ¼ to 2 ½ hours of *vigorous-intensity* aerobic physical activity per week—or a *combination of the two types.*
___*True* **___*False*** **___*Unsure***
13-Adults with chronic conditions or disabilities, who are able, should do muscle-strengthening activities of *moderate to vigorous intensity* that involves all the major muscle groups for 2 or more days a week.
___*True* **___*False*** **___*Unsure***
14-A dietary pattern involves the *amounts* of foods eaten, the *percentages* (proportion) of different foods eaten, the *variety* of different foods eaten, the *combination* of different foods and drinks taken in, the *nutrients* eaten (nourish the body by giving it what it needs)—and the *frequency* (how often) they are taken in (eaten, consumed).
___*True* **___*False*** **___*Unsure***
15-At every stage of life (and at every age) a healthy dietary pattern should be followed.

___*True* ___*False* ___*Unsure*

16-A healthy dietary pattern for adults involves consuming 1 ½ to 2 cups of fruit and 2–3 cups of vegetables per day; and for children eating about a handful size (less than ½ a cup) portion of fruit or vegetable 5 times a day

___*True* ___*False* ___*Unsure*

17-There is a MyPlate image that shows people how to serve their food plate, which should consist of ½ vegetables and/or fruit, ¼ protein (such as a serving of meat, fish, or tofu the size of a deck of cards), and 1/4 grains (such as a serving of brown rice the size of your fist)—as a way to eat a healthy diet at every age and stage of life.

___*True* ___*False* ___*Unsure*

18-The dietary pattern should limit the consumption (eating) of foods and beverages (drinks) with added sugars, saturated fats (solid at room temperature, like butter and cheese), and sodium (salt).

___*True* ___*False* ___*Unsure*

19-Children aged 2 years old and older need limited intake of foods and drinks with sugar added—so it is less than 10% of their total calories consumed each day.

___*True* ___*False* ___*Unsure*

20-Children younger than 2 years old *should not be fed any* foods or beverages that have sugar added to them.

___*True* ___*False* ___*Unsure*

21-For older adults (age 60 and above) to help reduce their risk of developing chronic diseases like high blood pressure, hypertension, heart disease, and diabetes, they should only consume (eat, drink) foods with little to no added sugar, saturated fats, and sodium.

___*True* ___*False* ___*Unsure*

22-Older adults (age 60 and over) need to consume (eat) enough protein to maintain their muscle mass.

___*True* ___*False* ___*Unsure*

23-Older adults (age 60 and over) can add to meals foods like seafood, dairy or fortified (vitamins added) soy alternatives, as well as beans, peas and lentils—in order to help maintain their muscle mass.

___*True* ___*False* ___*Unsure*

24-Older adults (age 60 and over) must make sure they consume (eat) foods that provide them with potassium, calcium, vitamin D, dietary fiber, and vitamin B12.

___*True* ___*False* ___*Unsure*

25-Children, adolescents and adults need to consume (eat) *whole fruits* (apples, bananas, berries, grapefruit, papaya, etc.).

___*True* ___*False* ___*Unsure*

26-Children, adolescents and adults need to consume (eat) *whole grains* (brown rice, millet, oatmeal, bulgur, whole-wheat bread, etc.).

___*True* ___*False* ___*Unsure*

27-It is recommended that children, adolescents and adults *consume low-fat or fat free dairy* (milk, yogurt, cheese, lactose-free dairy) and fortified (vitamins added) soy (soy milk, soy yogurt).

___*True* ___*False* ___*Unsure*

28-Children, adolescents and adults need to *consume vegetables* (broccoli, spinach, kale, okra, peppers, etc.)

___*True* ___*False* ___*Unsure*

29-Children, adolescents and adults need to *consume proteins*, such as lean (have less fat) meats (chicken breasts, chicken thighs, turkey, veal, pork, etc.), lean seafood (cod, tilapia, whiting, flounder, trout, sea bass, etc.), eggs, beans, lentils, nuts, seeds, and tofu.

___*True* ___*False* ___*Unsure*

30-Children, adolescents and adults need to *consume oils*, such as vegetable oil, olive oil—and also consume oils in foods like seafood, avocado, and nuts.

___*True* ___*False* ___*Unsure*

31-It is *better to feed a child*: *unsweetened cereal*, instead of a cereal with added sugars; *sliced fruit like apples*, instead of fruit bars; and *lean ground meat* instead of hot dogs.
___True   ___False   ___Unsure

32-Adolescents (age 14 and older) and adults should consume less than 1 teaspoon of salt (2,300 milligrams/ mg of sodium) per day (in all foods and drinks)—and those high blood pressure and other health concerns should take in even less salt per day
___True   ___False   ___Unsure

33-Children ages 9 to 13 *should not consume* more than approximately ¾ (three quarters) of a teaspoon of salt (or 1,800 milligrams/ mg of sodium) per day.
___True   ___False   ___Unsure

34-Children ages 4 to 8 *should not consume* more than approximately 2/3 (two-thirds) of a teaspoon of salt (or 1,500 milligrams/ mg of sodium) per day.
___True   ___False   ___Unsure

35-Children ages 1 to 3 *should not consume* more than approximately 1/2 (one-half) of a teaspoon of salt (or 1,200 milligrams (mg) of sodium) per day.
___True   ___False   ___Unsure

36-Those of all ages should *replace saturated fats* (are hard at room temperature such as butter, ghee, lard, coconut oil, palm oil; cakes, biscuits; fatty meats, sausages, bacon; cured meats like salami, chorizo, pancetta; cheese) *with unsaturated fats* (olive oil, peanut oil, canola oil; avocados, almonds, pecans, hazelnuts; pumpkin and sesame seeds, etc.).
___True   ___False   ___Unsure

37-In a single day a person should consume *less than 12 teaspoons* (50 grams) *of added sugars.*
___True   ___False   ___Unsure

38-In a single day a person should consume *less than 5 teaspoons* (20 grams) of *added saturated fats* (are hard at room temperature such as butter, ghee, lard, coconut oil, palm oil; cakes, biscuits; fatty meats, sausages, bacon; cured meats like salami, chorizo, pancetta; cheese).
___True   ___False   ___Unsure

39-In order to consume omega-3 fatty acids and other desirable nutrients—and to prevent heart disease, *adolescents and adults should consume in a week 8 ounces or ½ pound of seafood—while children should consume less than that amount*.
___True   ___False   ___Unsure

40-Anyone planning to get pregnant, or is pregnant, or breast feeding should consume 8 ounces (1/2 pound) to 12 ounces (3/4 pound) of seafood per week.
___True   ___False   ___Unsure

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Part VI: Decision to Diffuse the Innovation of the Knowledge of Physical Activity and Dietary Intake Guidelines Survey (DDI-KOPA-DIGS-40-1)

[This tool reflects a common approach used in studies conducted by the Research Group on Disparities in Health, RGDH—specifically, disclosing all answers were TRUE, after taking a True-False test where all the answers are Trues, as brief online intervention. For example, see Afram (2019), Aiyedun (2014), Gallop (2021).]

We created the True-False questions you just completed above, as the ***Knowledge of Physical Activity and Dietary Intake Guidelines Survey (KOPA-DIGS-40)*****—with all TRUE items**—as a way to increase knowledge about the U.S. physical activity and dietary guidelines. It is especially important that those with certain health conditions, or at risk for developing them (e.g., hypertension, heart disease, diabetes, pre-diabetes, obesity, overweight) know this information.

After this study, we will widely circulate on the internet a link to the ***KOPA-DIGS-40 Test.*** We will promote this test as a new way to increase knowledge about the U.S. physical activity and dietary guidelines.

1-Would you recommend taking the ***Knowledge of Physical Activity and Dietary Intake Guidelines Survey (KOPA-DIGS-40)*** to others?
___No ___Yes ___Unsure

PART VII: Pre- and Post-Ratings for Knowledge of Physical Activity and Dietary Intake Guidelines--Self-Efficacy to Follow Them (PRE-A-POST-TR-K-SE-8)

[This tool was taken from Afram (2019), yet modified to query about knowledge and self-efficacy regarding U.S. physical activity and dietary intake guidelines—both for before and after taking **Knowledge of Physical Activity and Dietary Intake Guidelines Survey (KOPA-DIGS-40),** above. For the present study, there is a **Scale 1-Physical Activity and Dietary Intake Guidelines Knowledge** and **Scale 2-Adherence to Physical Activity and Dietary Intake Guidelines Self-Efficacy**—and participants rate their knowledge and self-efficacy for both before/after or pre-/post- taking **Knowledge of Physical Activity and Dietary Intake Guidelines Survey (KOPA-DIGS-40).**. This will permit the use of paired t-tests to compare pre- and post- mean scores for any significant difference, which would suggest, if a significant difference, that **Knowledge of Physical Activity and Dietary Intake Guidelines Survey (KOPA-DIGS-40)** may serve as a brief online intervention that has the potential to significantly increase knowledge and self-efficacy from pre- to post-..]

Please answer the following questions…

<u>Scale 1: Knowledge of Physical Activity and Dietary Intake Guidelines</u>
(Pre- and Post-Taking *The KOPA-DIGS*).

1-BEFORE I answered the above questions on the KOPA-DIGS-40, I would **<u>rate what I knew</u> about the U.S. physical activity guidelines** as follows:

1-Very Poor	2-Poor	3-Fair	4-Good	5-Very Good	6-Excellent

2-AFTER I answered the above questions on the KOPA-DIGS-40, I would **<u>rate what I knew</u> about the U.S. physical activity guidelines** as follows:

1-Very Poor	2-Poor	3-Fair	4-Good	5-Very Good	6-Excellent

3-BEFORE I answered the above questions on the KOPA-DIGS-40, I would **<u>rate what I knew</u> about the U.S. dietary intake guidelines (i.e. healthy dietary pattern)** as follows:

1-Very Poor	2-Poor	3-Fair	4-Good	5-Very Good	6-Excellent

4-AFTER I answered the above questions on the KOPA-DIGS-40, I would **<u>rate what I knew</u> about the U.S. dietary intake guidelines (i.e. healthy dietary pattern)** as follows

1-Very Poor	2-Poor	3-Fair	4-Good	5-Very Good	6-Excellent

<u>Scale 2: Adherence Self-Efficacy</u> (Pre- and Post-Taking *KOPA-DIGS-40*). The after taking the KOPA-DIGS-40 self-efficacy rating is study outcome variable # 2.

5-BEFORE I answered the above questions on the KOPA-DIGS-40, I would **<u>rate my level of confidence</u> for following the U.S. physical activity guidelines,** as follows:

0% Confident	20%	40%	60%	80%	100% Confident

6-AFTER I answered the above questions on the KOPA-DIGS-40, I would **<u>rate my level of confidence</u> for following the U.S. physical activity guidelines,** as follows:

0% Confident	20%	40%	60%	80%	100% Confident

7-BEFORE I answered the above questions on the KOPA-DIGS-40, I would **<u>rate my level of confidence</u> for following the U.S. dietary intake guidelines,** as follows:

0% Confident	20%	40%	60%	80%	100% Confident

8-AFTER I answered the above questions on the KOPA-DIGS-40, I would **<u>rate my level of confidence</u> for following the U.S. dietary intake guidelines,** as follows:
:

0% Confident	20%	40%	60%	80%	100% Confident

**--------------------END OF SURVEY--
THANK YOU!**

SHARE WITH OTHERS THE LINK THAT LED YOU TO THIS STUDY!