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Spirituality, Religiosity, and Weight Management among African American Adolescent Males: The Jackson Heart KIDS Pilot Study

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Abstract

Spirituality and religion have been identified as important determinants of health for adults; however, the impact of faith-oriented factors on health behaviors and outcomes among African American adolescent males has not been well studied. The purpose of this study is to examine the relationship between religiosity and spirituality and obesity-related behaviors among 12–19 year old African American males (N=105) in the Jackson Heart Kids Pilot Study. Key variables of interest are church attendance, prayer, daily spirituality, weight status, attempts to lose weight, nutrition, physical activity, and stress. Daily spirituality is associated with whether or not an individual attempts to lose weight. The results from logistic regression models suggest that daily spirituality increases the odds that African American male adolescents attempt to lose weight (OR=1.22, CI: 1.07–1.41) and have a history of diet-focused weight management (OR=1.13, CI: 1.02–1.26). Future studies are needed to further explore the association between religion, spirituality and obesity-related behaviors.

Keywords

African American males; Spirituality; Religiosity; Obesity; Adolescence

Introduction

The poor health profile of African American men has been noted in a number of recent studies that indicate the disproportionately high levels of illness, chronic disease, and premature mortality among this population.^{1–5} Further, African American males are more likely to experience an earlier onset and accelerated progression of chronic diseases such as

chronic kidney disease and cardiovascular disease than other groups of men.^{2-4,6,7} The two leading causes of death among males—heart disease and cancer have long latency periods with disease processes likely starting during youth.^{2,8,9} One approach to improving longevity among African American men may lie in an effort to examine chronic disease risk factors among adolescent African American males.

Childhood obesity is significant risk factor for a number of chronic diseases and disabilities over the life course.¹⁰⁻¹² This condition is particularly salient for young African American males because of their elevated risks for morbidity and mortality. Data from the National Health and Nutrition Examination Survey (NHANES) indicated that the prevalence of obesity among African American male youth has increased steadily from 1999–2012.¹³ This population was the only group of males with significant increases in the prevalence rates of overweight, obesity, and class 2 obesity and was the group with the largest segments of severely obese (BMI ≥ 120% of the 95th percentile or BMI ≥ 35) male children and adolescents.¹³ Childhood obesity has been a major focus of health scientists and practitioners as a number of weight loss and weight gain prevention interventions targeting children and adolescents have been designed and evaluated¹⁴⁻¹⁶; however, studies focusing on obesity among African American male children and adolescents have been largely absent from the literature.⁸ Racial disparities in obesity prevalence are increasing among young males and there is an urgent need for interventions targeting African American male children and adolescents.^{13,17,18}

Family history has been cited as an important risk factor for obesity as it has been linked to genetic, biochemical, behavioral, social and environmental factors shared across generations.¹⁹ One of the ways families can impact weight gain, weight loss, and weight maintenance is the transmission of spiritual and religious beliefs and practices.²⁰ Exploring the relationship between spirituality or religiosity and health is not new in health science and the number of studies in this area has grown considerably in the past decade.²¹⁻²⁸ Spirituality refers to the inner experiences with, awareness of, and connection to the transcendent; religiosity involves behaviors associated with social, doctrinal, and denominational characteristic of an organized religion.^{29,30} Results from studies examining the relationship between religiosity or spirituality and obesity have been mixed.³¹ A number of studies have provided evidence indicating that religiosity was associated with lower obesity risk and prevalence^{23,31-33}; while others have found religiosity to have no effect or, in some cases, be associated with an increased risk for obesity in adults.³⁴⁻³⁸ These conflicting findings can be attributed to inconsistent operationalization and measurement of faith-oriented factors such as religiosity and spirituality. The lack of clear and precise definitions of these related but distinct concepts can contribute to the use of culturally or contextually inappropriate measures that can confound results.³⁰

Studies examining faith-oriented factors and their impact on obesity-related outcomes among children and adolescents are scarce.²⁰ Few studies provide data separately for African American males and no studies to our knowledge have focused exclusively on African American male children or adolescents. Faith institutions have been rich settings for weight loss and obesity prevention interventions targeting adults³⁹⁻⁴² and it is important to determine if faith-oriented factors such as spirituality and religiosity have implications for

obesity-related behaviors among African American male children and adolescents. The purpose of this study is to examine the relationship between religiosity and spirituality and obesity-related behaviors among African American adolescent males using data from the Jackson Heart KIDS (JHS-KIDS) Pilot Study, an observational investigation of cardiovascular disease (CVD) risks among adolescents who were children and grandchildren of participants in the Jackson Heart Study (JHS).⁸

Methods

Data from this study were drawn from the JHS-KIDS Pilot Study, a prospective feasibility study of African-American youth in the greater Jackson, Mississippi area to examine sensitive developmental and transition periods and their associations in the development of obesity, metabolic and CVD related risk factors. Eligible participants for the study were adolescents between ages 12–19 and were either children or grandchildren of individuals enrolled in the JHS, the largest single-site cohort study of CVD among African Americans. Details about the JHS have been published elsewhere.^{43,44} JHS-KIDS was approved by the University of Mississippi Medical Center Institutional Review Board, and the parents of potential participants were recruited through contact with JHS participants. Interested parents or grandparents called the study phone number and answered screening questions to ensure eligibility. Participants and their parents or grandparents who met study criteria traveled to the JHS-KIDS clinic site to complete informed consent and assent forms; to have their blood pressure, height, and weight and waist circumference measured; and to complete self-administered surveys described in a earlier study.⁸ The total number of adolescents participating in the pilot study was 212 and almost half of the pilot study participants were male (N=105).

Outcome Variables

The outcomes of interest were represented by dichotomous variables derived from responses to three items on the self-administered survey completed during the study visit. The attempting to lose weight variable was derived from the question, “Which of the following are you trying to do about your weight?” The responses options were “lose weight”, “gain weight”, “stay the same”, or “I am not trying to do anything about my weight”. Individuals choosing “lose weight” were coded “1” and all other were coded “0”. The weight management through diet variable was derived from the question “Have you ever eaten less food, fewer calories, or food low in fat to lose weight or to keep from gaining weight?” “Yes” responses were coded “1” and “no” responses were coded “0”. The weight management through physical activity variable was derived from the question, “Have you ever exercised to lose weight or to keep from gaining weight?” “Yes” responses were coded “1” and “no” responses were coded “0”.

Independent Variables

Spirituality was measured by the short version of the Daily Spiritual Experiences Scale (DSES). The DSES was developed to assess ordinary daily experiences rather than beliefs or behaviors³⁰. Six domains of the inner experiences with the transcendent were measured through statements responding to the question, “How often do you have the following

experiences?” The statements, “I feel God’s presence”, “I feel strength and comfort in my religious or spiritual tradition”, “I feel deep inner peace and harmony”, “I desire to be closer to or in union with God”, “I feel God’s love for me, directly or through others”, and “I am spiritually touched by the beauty of creation” completed each of the questionnaire items, respectively. The response categories ranged from “never” (coded 0) to “many times a day” (coded 5). The Cronbach’s alpha for the DSES in this sample was 0.87. Religiosity, organized religious activity, was measured with two variables, church attendance and private prayer frequency. Church attendance was derived from the question, “In general, how often do you attend the main worship services of your church or otherwise participate in organizational religion (such as watching services on TV, listening to services on the radio, participating in Bible study groups, etc)?” The response options ranged from “not at all” (coded 0) to “nearly every day” (coded 5). Private prayer frequency was derived from the question, “Within your religious or spiritual tradition, how often do you pray privately or meditate in places other than at church, mosque, temple, or synagogue?” The response options for this item ranged from “never” (coded 0) to “more than one a day” (coded 7).

Body mass index (BMI) in this study was a variable standardized to account for the developmental stages of individuals in the study sample. This variable transformation is typically conducted for samples of individuals under 20 years of age.^{45,46} Participant height and weight were collected using a Shorr Height Measuring Board and a Seca 770 Model scale, respectively and crude BMIs were calculated using the formula, $BMI = \text{weight in kilograms} / \text{height in meters}^2$. The crude BMIs were transformed to z-scores using the LMS method which allows for the development of smoothed growth using the curves and the efficient calculation of z-scores simultaneously.^{46,47} Z-scores were standardized to the reference population for participants’ age and sex. The population-based reference data were the 2000 Centers for Disease Control and Prevention Growth Reference in the United States.^{45,48}

Other covariates in the analysis were drawn from the survey completed during the study visit. The Daily Hassles for Adolescents index was used to measure stress. Participants responded to eighteen statements (e. g., “trying to get good grades”) by selecting one of five possible responses ranging from “not at all a hassle” (coded 0) to “very big hassle” (coded 4). The physical activity measure was derived from the response to the question, “During the past 7 days, on how many days were you physically active for a total of at least 60 minutes per day?” The responses ranged from “0 days” (coded 0) to “7 days” (coded 6). The fruit and vegetable consumption variable was derived from four items beginning with the prompt, “During the past 7 days, how many times did you eat...?” The words “fruit”, “green salad”, “carrots”, and “other vegetables” completed each of questionnaire items, respectively. Response categories ranged from “I did not eat [...] during the past 7 days” (coded 0) to “4 or more times per day” (coded 6). Age (in years) was also included in the analysis.

Analytic Strategy

Sample characteristics were described for the total sample using means and standard deviations for continuous variables and proportions for categorical variables. Three multivariable logistic regression models were estimated to determine the impact of

spirituality and religiosity on whether or not an individual is currently attempting to lose weight, has attempted to manage their weight through diet, or has attempted to manage their weight through physical activity. Model 1 was the full model for current attempts to lose weight. Model 2 and 3 were full models for past attempts to manage weight through dieting and physical activity, respectively. P values less than 0.05 were considered significant. All models were adjusted for age, stress, fruit and vegetable consumption, and physical activity. All tests were two-sided. All statistical analyses were conducted with StataSE Version 12.

Results

The distribution of the select characteristics of the African American adolescent males in the JHS-KIDS is shown in Table 1. Nearly four out of every 10 males in the sample (39.1%) were attempting to lose weight. One-third of individuals in the sample (33.3%) have tried to manage their weight through dieting while 65.7% of study participants attempted to manage their weight through physical activity. The average age of African American adolescent males was slightly over 15 years of age (15.1 ± 2.2) and the mean crude BMI (25.3 ± 7.5) indicated that the average male in the study could be classified as overweight. African American adolescent males had a spirituality score (18.3 ± 6.8) that was greater than the midpoint of the continuum. Their average church attendance (3.7 ± 1.1) was nearly once per week and the mean prayer frequency (4.8 ± 2.2) indicated that African American adolescent males also prayed privately at least once per week. African American adolescent males had a mean score for the adolescent hassles measure (23.4 ± 10.5) that was less than midpoint of total score continuum. African American adolescent males in this study did not eat fruit or vegetables daily (6.0 ± 4.4); however, they did report being physically active for at least 60 minutes for nearly 4 days per week (3.9 ± 2.3) on average.

The relationship between spirituality, religiosity and current attempts to lose weight, past weight management through diet, and past weight management through physical activity are displayed in Table 2. The findings in the first model indicated that spirituality, standardized BMI, and fruit and vegetable consumption were associated with individuals making attempts to lose weight. For every one-point increase in the spirituality score was associated with a 22% increase in the odds of an African American male (OR=1.22, CI 1.07–1.14) in the study making an attempt to lose weight. Fruit and vegetable consumption and standardized BMI were also found to increase the odds of an individual in the study making an attempt to lose weight.

The results in the second model were similar as spirituality, fruit and vegetable consumption, and standardized BMI were all positively associated with the odds of an African American adolescent male having a history of using dietary practices to manage their weight. Spirituality had a positive relationship with past diet-focused weight management. A one-point increase in the spirituality score for African American adolescent males was associated with a 13% increase in the odds of them having a period in which they attempted to gain or lose weight by changing their eating habits (OR=1.13, CI 1.02–1.26) compared to those with no history of dietary weight management. The results for fruit and vegetable consumption and the standardized BMI measure were also similar to the first model as both were associated with an African American adolescent male having higher odds of a history of

diet-focused weight management. The number of days engaged in physical activity was inversely related with weight management through dietary practice. Each additional day of physical activity decreased the odds of a prior attempt to gain or lose weight by dieting by 33% (OR 0.67, CI 0.57–0.89).

Regarding the model for physical activity-focused weight management, increases in fruit and vegetable consumption and standardized BMI were associated with increases in the odds of African American adolescent males having at least one period in which they attempted to manage their weight with physical activity.

Discussion

Obesity is a significant problem for African American male children and adolescents and the development of efficacious weight loss and weight gain prevention interventions are critically needed. Faith institutions have the potential to be important partners in the effort to address obesity and related health conditions among African American adolescent males as churches have been rich settings for weight loss and weight gain prevention interventions targeting African American adults.^{39–42,49–51} However, setting is only a starting point. We believe that faith-oriented concepts and tenets such as religiosity and spirituality can have implications for health and health behaviors and we sought to explore the relationship between spirituality and religiosity and weight maintenance among African American adolescent males using data from the JHS-KIDS pilot study. Findings indicate that spirituality was associated with weight maintenance among study sample members emphasizing the potential importance that inner experiences with or connection to the “divine” or a “higher power” can have on obesity related factors among African American adolescent males.

The results indicated that significant proportion of African American male adolescents in the study were engaged in or had previously engaged in some form of weight management. Two modes of weight management were examined, diet and physical activity, and a larger segment of adolescents in the study reported using physical activity to manage their weight, which is consistent with the way African American men tend to try and improve their weight and health.⁵² The size of the study population was too small to explore differences between these groups; however, it is noteworthy that significant segment of the study population had engaged in some form of weight management. These findings raise questions about the prevailing notions that males in general, and African American males in particular, are not concerned about their health or body image.^{53,54} It should be noted that the adolescent males in this study were either sons or grandsons of JHS participants who had been enrolled in an observational study in which information about cardiovascular disease risk factors, including obesity, had been regularly disseminated. Assessing the degree to which adolescent males in this study were influenced by their parents or grandparents was beyond the scope of this study; however, the intergenerational transmission of ideas about obesity and their implications for health behaviors among young males could be fruitful line of inquiry.^{55,56}

Spirituality was associated with weight loss efforts as well as prior weight management through dietary practices. In both models, deepening spirituality was linked to an increasing

effort to manage or control body weight. These findings were fairly robust given that spirituality was statistically significant even when controlling for other weight-related variables such as crude BMI, physical activity, and fruit and vegetable consumption. The inner sense of connection to the divine or transcendent aspect of life could heighten esteem and efficacy among African American adolescent males in a manner motivating them to improve their health. The feelings of peace, joy, comfort and connection associated with deep spirituality could increase confidence that positive behaviors can lead to equally positive outcomes. Further study along these lines is warranted as recent research has found that college-age African American males report lower confidence in their ability to make healthy behavioral changes than college-age white males.¹⁷

The weight related variable in the model had implications for weight management. The fruit and vegetable consumption variable and the standardized BMI measure were the most robust as they were significant in all the models. The results for body weight were not particular surprising given that adolescence is a period when appearance matters. Research has shown that young men have concerns about their body weight and some seek to address body image concerns through attempts to lose weight.^{57,58} The positive relationship between fruit and vegetable consumption and weight management was intriguing. A larger segment of the study population reported using physical activity for weight management than dietary practice; however, the regression results associated with fruit and vegetable consumption suggest that African American male adolescents may have some awareness about the benefits of healthy eating. It could also be the case fruit and vegetables consumption reflected parental food choices because they had little say about the food they consumed at home or school. Further, fruit and vegetable consumption have become part of religious practice as some churches have periods when parishioners are encouraged to replace meat with fruits and vegetables. Deep exploration in each of these areas extended beyond the scope of this study; however, they lay the groundwork for future investigations.

This study has some strengths that is worth noting. Few studies examining pediatric obesity include a sizable population of African American males. The Bogalusa Heart Study^{59–61} is the most prominent investigation in this small body of research; however, its pediatric data were collected prior to sharp increases in obesity among African American male children and adolescents. Studies examining factors associated with weight gain, weight loss, or weight maintenance among African American male adolescents are important because this population has elevated risks for hypertension and other obesity-related cardiometabolic diseases.^{4,8,10,62} As a result these findings are critical for building this line of inquiry. This study also provided an opportunity to start to disentangle two related but distinct concepts—religiosity and spirituality. The outcomes that were chosen are often understudied in other studies; thus providing for additional understanding of factors that are linked to obesity.

Although this study represents an initial step in the effort to gain a deeper understanding of risk and protective factors for obesity among African American males during adolescence. As such, there are some limitations worth noting. The analytic models are estimated using data drawn from a small sample of African American adolescent males who reside the South and are descendants of individuals enrolled in a longitudinal study; therefore, the results have limited generalizability. Cross-sectional data are used to estimate the analytic models

and causal inferences could not be determined. The small sample size limits the number of independent variables included in regression analysis, thereby limiting the number of factors considered. The bulk of variables in this study are drawn from the self-administered survey; therefore, the usual limitations associated with self-report data, recall bias and social desirability, apply to this study.⁶³

Conclusion

The results from this study suggests that spirituality is an important factor in health education and health promotion efforts to reduce risks for obesity and related conditions among African American male adolescents. These findings indicate that spirituality had a stronger association with weight management among African American male adolescents than measures often identified with religiosity (i.e., church attendance, prayer). This study introduces spirituality as a protective factor that can lower risks for obesity and related chronic conditions among African American male adolescents. Additional studies are needed to examine the degree to which spirituality and religiosity interact with other social, psychological, and behavioral factors to influence health outcomes. Results from this line of research lay the foundation for the inclusion of components that can bolster the effectiveness of behavioral interventions targeting African American male adolescents that can improve their health prospects by lowering risks for unhealthy weight gain, obesity, and related chronic diseases.

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Table 1

Distribution of Select Characteristics of African American Adolescent Males in the Jackson Heart Study-KIDS Pilot Study (N=105)

Variable	
Attempting to lose weight (%)	39.1
Ever attempted weight management through diet (%)	33.3
Ever attempted weight management through physical activity (%)	65.7
Age [mean $\pm$ sd]	15.1 $\pm$ 2.2
Crude BMI [mean $\pm$ sd]	25.3 $\pm$ 7.5
Spirituality [mean $\pm$ sd]	18.3 $\pm$ 6.8
Church attendance [mean $\pm$ sd]	3.7 $\pm$ 1.1
Prayer frequency [mean $\pm$ sd]	4.8 $\pm$ 2.2
Hassles score [mean $\pm$ sd]	23.4 $\pm$ 10.5
Physical Activity [mean $\pm$ sd]	3.9 $\pm$ 2.3
Fruit & Vegetable Consumption [mean $\pm$ sd]	6.1 $\pm$ 4.4

Table 2

Relationships Between Behavioral Factors and Weight Management Attempts among 105 African American Adolescent Males in Jackson Heart Study-KIDS Pilot Study

Variable	Attempting to lose weight OR ^a (95% CI ^b)	Weight management through diet OR ^a (95% CI ^b)	Weight management through exercise OR ^a (95% CI ^b)
Age (yrs)	0.87 (0.66–1.14)	0.89 (0.71–1.14)	0.91 (0.74–1.13)
BMI (z-score)	8.68 (3.29–22.9)	2.97 (1.65–5.33)	1.79 (1.18–2.71)
Spirituality score	1.22 (1.07–1.41)	1.13 (1.02–1.26)	1.06 (0.98–1.14)
Church attendance	0.54 (0.26–1.12)	0.83 (0.43–1.59)	0.83 (0.51–1.34)
Prayer frequency	1.10 (0.82–1.49)	1.17 (0.89–1.54)	1.02 (0.80–1.32)
Hassles score	0.97 (0.92–1.03)	1.00 (0.94–1.05)	1.00 (0.96–1.05)
Physical Activity (days per week)	0.78 (0.57–1.08)	0.67 (0.51–0.89)	0.91 (0.73–1.13)
Fruit & Vegetable Consumption score	1.15 (1.01–1.31)	1.11 (1.00–1.25)	1.14 (1.00–1.30)

^aOR=odds ratio;

^bCI=confidence interval.