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The baseline characteristics of parents and African American girls in an online obesity prevention program: A feasibility study

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ABSTRACT

The objective of this paper was to identify the relationships and associations between child and parent characteristics with child fruit and vegetable (FV) consumption in an online obesity prevention program for 8–10 year old African American girls. Girls and a parent (n = 342 child-parent pairs) in the southwestern US completed baseline data collection from 2012 to 2014. Girls and a parent completed self-report questionnaires online. Girls also completed two unannounced 24 hour telephone-based dietary recalls. The relationships of parent demographic characteristics, child FV intake, and psychosocial variables (child and parent) were examined by analysis of variance. Pearson correlation coefficients were calculated to determine the relationships between psychosocial variables and child FV intake. Child FV intake was significantly greater in the highest household education ($p = 0.001$) and income groups ($p = 0.004$). FV home availability was higher with older parents ($p = 0.007$) and two-parent households ($p = 0.033$). Child FV intake was positively related to child FV preferences ($p < 0.001$), FV home availability ($p = 0.022$), and FV home accessibility ($p = 0.002$) but was negatively related to family barriers to FV consumption ($p = 0.000$). The study highlighted significant findings between child FV consumption and parent psychosocial variables and demographic characteristics that may offer insights for the design of effective obesity prevention interventions for 8–10 year old African American girls.
ClinicaTrials.gov (NCT01481948).

1. Introduction

African American girls have a greater risk of obesity than non-Hispanic white girls (Ogden et al., 2012). For 6 to 19 year old girls, the prevalence of obesity was higher for African American girls (26%) compared to white girls (13%) (Ogden et al., 2012). Obesity in childhood tracks into adulthood (Craigie et al., 2011). Thus, preventing obesity prior to adolescence may reduce the risk of obesity (Singh et al., 2008) and associated health issues, including hypertension and type 2 diabetes (Dietz and Robinson, 2005), during adulthood. Long term energy imbalance contributes to obesity risk, particularly when energy intake is greater than expenditure (Goran and Treuth, 2001). Diet and physical activity contribute to energy balance (Hill and Melanson, 1999; Salbe et al., 2002), and they are modifiable behaviors (Craigie et al., 2011). Thus, they are key targets for obesity prevention programs.

The diet and physical activity behaviors of African American girls contribute to their risk of obesity (Klesges et al., 2008; Ritchie et al., 2007; Robinson et al., 2008). In studies conducted with 8–10 year old African American girls, it was found they consumed a high fat diet and did not meet fruit and vegetable (FV) recommendations (Klesges et al., 2008; Robinson et al., 2008). Consuming more FV reduces overall energy density of the diet, improves satiety, helps with weight management (Tohill, 2005), and reduces the risk for chronic diseases (Bazzano, 2006). A study also reported that physical activity in 8–10 year old African American girls averaged a total of a half hour daily of moderate to vigorous physical activity (Robinson et al., 2008) which is below the daily recommendation of at least 1 h of physical activity for children (U. S. Department of Health and Human Services - Office of Disease Prevention and Health Promotion, 2016). Because diet and physical activity behaviors track into adulthood, establishing these healthy behaviors in childhood may contribute to healthy behaviors in adulthood and reduce the risk for obesity and associated diseases (Craigie et al., 2011).

Parents are the gatekeepers of the home environment; therefore, their participation in child-focused behavior change programs and support for healthful diet and physical activity behaviors are essential (Gruber and Haldeman, 2009). Parent reported FV home availability and accessibility have been associated with child FV consumption (Cullen et al., 2004a; 2001; 2000; 2004c; Hearn et al., 1998). Family barriers to eating FV have been negatively associated with child FV

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Abbreviations

BFG	Butterfly Girls Study
CNRC	Children's Nutrition Research Center
FV	fruit and vegetable
F	fruit
V	vegetable
SES	socioeconomic status

consumption (Cullen et al., 2000). Furthermore, parent characteristics (household income, education) are related to a child's FV consumption (Blanchette and Brug, 2005; Cullen et al., 2001; Kumanyika et al., 2014). Child FV preferences also influence child FV consumption (Domel et al., 1993; Domel et al., 1996; Kim et al., 2014; Krolner et al., 2011).

The literature, however, is limited regarding how these factors and others influence FV intake in African American girls. Exploring the relationships between parent behaviors, the home environment, child FV preferences, and child FV consumption may provide important insights that can inform the development of effective obesity prevention interventions for African American children.

Programs may be well designed and target appropriate behaviors, but if they are not available at convenient times, participation will suffer. Systematic reviews have shown some increases in child FV consumption (Ammerman et al., 2002; Knai et al., 2006), but the changes are not large enough to help children meet national recommendations for FV consumption (Krebs-Smith et al., 2010). Therefore, novel intervention approaches are needed to promote FV intake. Online programs may offer an alternative to traditional approaches. They are both convenient and appealing (Thompson et al., 2015) and have achieved dietary behavior change in children (Cullen et al., 2013; Ezendam et al., 2012; Hamel and Robbins, 2013; Kattelmann et al., 2014; Thompson et al., 2009; Thompson et al., 2012a; Thompson et al., 2015; Whittemore et al., 2013). An online video game for fourth and fifth grade children increased FV consumption (Thompson et al., 2012a; Thompson et al., 2015) and similarly an online program for African American girls was developed to promote healthy lifestyle behaviors (Thompson et al., 2008). Furthermore, an online program for teens was successful in increasing V intake (Cullen et al., 2013). It is also important that interventions be culturally sensitive and appropriate to enhance likelihood of success (Kumanyika et al., 2005). African Americans are heavy users of the Internet (Smith, 2014), and Internet usage is prevalent among children (Rideout et al., 2010). Thus, a culturally appropriate online obesity prevention program would enable healthy behaviors to be presented to African American girls in a familiar and convenient format (Thompson et al., 2012a; Thompson et al., 2015; Thompson et al., 2012b).

Recognizing that African American girls are at a greater risk for becoming obese than their non-Hispanic white peers (Ogden et al., 2012), obesity interventions are needed specifically for African American girls. *The Butterfly Girls Study and the Quest for Founder's Rock* (*BFG*) is an online obesity prevention program created for 8–10 year old African American girls and parents (Thompson et al., 2013). The purpose of this paper is to identify relationships and associations between child and parent characteristics with child FV consumption.

2. Methods

2.1. Study design

This cross-sectional research is a secondary data analysis of the baseline data from a randomized control trial with African American girls. The study protocol was approved by the institutional review boards at Baylor College of Medicine (H-27505) and Texas Woman's University. The protocol for the randomized control trial is registered with ClinicaTrials.gov (NCT01481948) (Thompson et al., 2013).

2.2. Intervention

The BFG study was an 8 episode online program promoting healthy diet and physical activity behaviors to 8–10 year old African American girls (Thompson et al., 2013). A three-group randomized design with three data collection periods tested the efficacy of this approach at changing and maintaining changes in diet and physical activity behaviors. For more detailed description of the intervention, please refer to the methods paper (Thompson et al., 2013). The research reported here uses the baseline data from that study.

2.3. Participants

Child inclusionary criteria included an African American girl, 8 to 10 years old, with Internet access, a personal email address, and a parent or legal guardian willing to participate in data collection; exclusionary criteria included having mental, physical, or medical conditions that limited their ability to participate in data collection activities or taking medications that impact appetite, dietary behaviors, and physical activity. Parent inclusionary criteria included having a child participating in the program, willingness to participate in data collection, and having Internet access and a personal email address; exclusionary criteria included physical restrictions that limited their ability to participate in data collection activities.

2.4. Recruitment

Families were recruited in several ways including the volunteer database at the Children's Nutrition Research Center (CNRC), recruitment announcements on websites (i.e., CNRC, Baylor College of Medicine, and Texas Children's Hospital) and in newsletters, posting flyers in community locations, mailing flyers out to community members and organizations, and community events. The rolling recruitment method was utilized for the study. Recruitment began in November 2012 and ended in October 2014. Written informed parental consent and child assent were received prior to participation in the study.

2.5. Baseline data collection

Data were collected from both parents and girls (Table 1). Parents completed self-report questionnaires online, while girls completed self-report questionnaires online and two dietitian-assisted telephone interviews.

The online questionnaires were hosted on a secure, password protected website. Parents and girls were received separate links and private passwords to complete the online surveys. After completion of baseline data collection, both parent and child each received a $40 check from Baylor College of Medicine.

Table 1
Baseline data collection for the Butterfly Girls Study.

Who	How	What
Girl	Phone	Dietary intake (2 recalls, NDSR 2012)
	Online	FV preferences
Parent	Online	FV intake brief screener
		FV home availability
		FV home accessibility
		Family barriers