Correlates of Resource Empowerment among Parents of Children with Overweight or Obesity

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Abstract

Background: Few studies have examined correlates of resource empowerment among parents of children with overweight or obesity.

Methods: We studied baseline data of 721 parent–child pairs participating in the *Connect for Health* randomized trial being conducted at six pediatric practices in Massachusetts. Parents completed the child weight management subscale ($n = 5$ items; 4-point response scale) of the Parent Resource Empowerment Scale; items were averaged to create a summary empowerment score. We used linear regression to examine the independent effects of child (age, sex, and race/ethnicity), parent/household characteristics (age, education, annual household income, BMI category, perceived stress, and their ratings of their healthcare quality), and neighborhood median household income, on parental resource empowerment.

Results: Mean (SD) child age was 7.7 years (2.9) and mean (SD) BMI z -score was 1.9 (0.5); 34% of children were white, 32% black, 22% Hispanic, 5% Asian, and 6% multiracial/other. The mean parental empowerment score was 2.95 (SD = 0.56; range = 1–4). In adjusted models, parents of older children [β –0.03 (95% CI: –0.04, –0.01)], Hispanic children [–0.14 (–0.26, –0.03)], those with annual household income less than \$20,000 [–0.16 (–0.29, –0.02)], those with BMI ≥ 30.0 kg/m² [–0.17 (–0.28, –0.07)], and those who reported receiving lower quality of obesity-related care [–0.05 (–0.07, –0.03)] felt less empowered about resources to support their child’s healthy body weight.

Conclusions: Parental resource empowerment is influenced by parent and child characteristics as well as the quality of their obesity-related care. These findings could help inform equitable, family-centered approaches to improve parental resource empowerment.

Keywords: childhood; empowerment; obesity; overweight; parental resources

Introduction

Empowerment is a group of theories with multiple constructs, including resource empowerment, that can be broadly defined as the process by which one gains greater knowledge of and capacity to control one’s life.^{1–8} Numerous studies have recognized empowerment as an effective intervention domain in diverse settings, in-

cluding prison,⁹ schools,^{10,11} general work environment,^{12,13} and care centers for chronic illness.^{14,15} In the context of childhood obesity, parental empowerment can be defined as the ability to perceive and control children’s exposure to obesity risk factors within socioecological realities governing their families.¹

Recent studies have begun to examine the role of parental empowerment in this context.^{16–20} Hand et al.

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implemented an empowerment program targeting parents from low-income families to promote healthy dietary and physical activity habits of their children and other family members.¹⁶ After participating in a series of workshops conducted by registered dietitian nutritionists, parents reported significant behavioral changes that promoted obesity-reducing behavior in their families.¹⁶ With growing evidence pointing to parents' strong influence on children's obesity-related behaviors, the concept of parental empowerment is worth further investigation.^{3,21}

Among children with overweight or obesity, Jurkowski et al. divide parental empowerment into two subdimensions: parental resource empowerment and parenting self-efficacy.¹ Parent resource empowerment encompasses parents' knowledge of resources and comfort and competency in controlling them.¹ Parenting self-efficacy specific to childhood obesity can be defined as parents' belief about their own ability to competently and effectively parent their children to prevent childhood obesity.¹

While studies have identified predictors of parental self-efficacy with respect to children's dietary and physical activity behaviors (belief in parental modeling, younger child age, and some college or trade school parent education) and observed that greater parental self-efficacy is associated with greater food and physical activity parenting practices, few studies have examined correlates of parental resource empowerment specific to childhood obesity.^{1,16–18} As obesogenic diet and behavior are heavily governed by personal and community resources, factors dictating parental resource empowerment are worth investigating.¹

In this study, we examine predictors of resource empowerment among parents of overweight or obese children. Predictors of parental resource empowerment provide important insights into parental influences of childhood obesity, as having the knowledge and ability to access resources to address a health problem can help overcome the social, structural, and environmental inequalities in childhood obesity prevention.

For example, increases in parental resource empowerment among low-income parents were found to positively correlate with their food and physical activity parenting practices.¹ It is hypothesized that with greater parent resource empowerment, parents have the capacity to navigate risk factors and leverage resources so that they are able to parent their child in a way to prevent childhood obesity in the context of their daily realities. Therefore, a greater understanding of predictors of parental resource empowerment to prevent childhood obesity may improve our family-centered approaches to improve parental resource empowerment and work toward achieving health equity related to childhood obesity.

Patients and Methods

Study Overview

Connect for Health is a randomized controlled trial being conducted at six pediatric practices at Harvard Van-

guard Medical Associates (HVMA) in eastern Massachusetts that serve families who live in communities with the highest prevalence of childhood overweight or obesity. The trial investigates whether integrating clinical care with community resources that address sociocontextual factors will improve childhood obesity and family-centered care. The primary outcomes of the trial include improved child BMI and health-related quality of life over a 1-year intervention period. All study activities were approved by the Institutional Review Board at Partners Healthcare System. Details of study design, randomization, and recruitment are described elsewhere.¹⁹ This analysis examined baseline data of parent-child pairs enrolled in the study.

Participants and Recruitment

Eligibility for *Connect for Health* included the following: (1) child was 2.0–12.9 years old at enrollment, (2) child's BMI was ≥ 85 th percentile for age and sex at enrollment, (3) at least one parent had an active e-mail address, and (4) at least one parent was comfortable communicating in English. Children were excluded if (1) their family was planning to leave HVMA within the study time frame, (2) their clinician did not feel the study was appropriate for them or their families, for example, emotional or cognitive difficulties, (3) their sibling was already enrolled in the study, (4) they or their parents were part of the study's parent/youth advisory board, or (5) they had a chronic medical condition or take medication that substantially interferes with growth or physical activity participation.

Recruitment began in July 2014 and ended in March 2015. At the time of a scheduled visit with a child between the ages of 2–12 years with a BMI ≥ 85 th percentile, clinicians received an alert in the electronic health record to refer eligible children to the *Connect for Health* study. Clinicians were advised to briefly discuss the study and, if the parent and clinician agreed, refer the family to the study. If a sibling was already enrolled, the second child was ineligible. If siblings were referred at the same time, research assistants identified the child for recruitment based on birth order. Five hundred random selection envelopes were generated through Statistical Analysis Software (SAS 9.4). Each envelope instructed research assistants to select the n -th (2–6) oldest child based on the number of children in the family (2–6).

After receiving the referral, study staff sent each family a letter introducing the study and inviting the family to participate with an opt-out phone number to call if parents did not want to be contacted. We called parents who did not refuse additional contact beginning 5 days after mailing the letter and called for ~ 1 month to try to complete the baseline survey and enroll participants in the study. Research assistants established eligibility, explained the study, answered questions, obtained verbal consent, and completed a baseline survey over the phone. Research assistants then verified contact information and e-mailed parents a \$25 gift card for completing the baseline survey.

Overall, 1752 children were referred by primary care clinicians to *Connect for Health*. Of those, 207 children were excluded because they did not meet the initial eligibility criteria ($n=196$) or declined to participate upon receiving the introductory letter ($n=11$). We attempted contact with the remaining 1545 children to assess eligibility. We further excluded 824 children who did not meet the inclusion criteria ($n=71$), actively declined participation ($n=331$), passively declined participation or we were unable to contact ($n=399$), or whose contact information was incorrect or had been disconnected ($n=23$). Thus, a total of 721 child–parent pairs were enrolled in the study, and all 721 parents completed the parent baseline survey.

Measurements

Using survey data collected at baseline from parents of children enrolled in the study, the main outcome of this article was parental resource empowerment. Parental resource empowerment was assessed via parents’ completion of the child weight management subscale of the Parent Resource Empowerment Scale (Table 1).¹ Prior research shows that this scale demonstrates high internal consistency (internal reliability score of $\alpha=0.96$)¹ and is sensitive to change.²⁰ Items ($n=5$) assess parents’ perceived knowledge of resources, ability to access resources, comfort with accessing resources, knowledge of how to find resources, and ability to acquire resources. For each question, parents responded strongly disagree, disagree, agree, or strongly agree, which were worth 1–4 points, respectively. Items were averaged to create a summary parental empowerment score. Cronbach’s α for this score was 0.87.

Table 1. Child Weight Management Subscale of the Parent Resource Empowerment Scale^a

These next questions are about resources related to your child’s healthy body weight. The response options are strongly disagree, disagree, agree, or strongly agree. ^b
I know of resources that I can use to make sure my child has a healthy body weight.
I have the ability to access resources I need to make sure my child has a healthy body weight.
I am comfortable accessing the resources that I need to make sure my child has a healthy body weight.
When I need additional resources to improve my child’s weight, I know how to find them.
When I need additional resources to improve my child’s weight, I usually get them.

^aParental Resource Empowerment Scale broadly measures physical activity, diet, and weight-related resource empowerment.¹ Our study specifically adopted weight-related subscale.
^bResponses were measured on a 4-point scale (1 = strongly disagree, 4 = strongly agree).

Our exposures also included measures collected as part of the baseline survey administered to parents and height and weight data collected at the child’s baseline pediatric visit. These included child characteristics (age, sex, and race/ethnicity), parent characteristics (age, education, annual household income, BMI category, perceived stress, perceived quality of obesity-related care from primary care provider), and a neighborhood characteristic (neighborhood median income).

Parent BMI categories consisted of <25 , ≥ 25 , <30 , and ≥ 30.0 kg/m². Parent perceived stress was assessed with a *Connect for Health* survey question, “How much stress do you feel in your life?” The response options were “I never feel stress,” “I sometimes feel a little stress but it’s no big deal,” “I feel stress fairly often,” “I sometimes feel a lot of stress,” and “I feel a lot of stress most of the time.” This survey question was adopted from the Growing Up Today Study (GUTS).²² Parents reported their satisfaction with their child’s obesity-related care using modified questions from the Patient Assessment of Chronic Illness Care survey.²³

The *Connect for Health* survey used eight questions from the 20-item Patient Assessment of Chronic Illness Care survey, including “At your child’s last visit with their primary care provider, were you” (1) given a list of things your child could do to maintain a healthy weight; (2) assisted in setting specific goals to improve your child’s eating or exercise habits; (3) encouraged to go to a specific clinic or program to learn how your child can maintain a healthy weight; (4) asked questions, either directly or on a survey, about your child’s eating and exercise habits; (5) sure that your primary care provider thought about your values, beliefs, and traditions when they recommended a healthy weight for your child; (6) assisted in making a healthy weight plan that you and your child could carry out in your daily life; (7) contacted after your visit to see how things were going; and (8) encouraged to attend programs in the community that could improve your child’s health.

Selection of eight questions from 20 items was to specifically address parent’s perception of their child’s obesity-related healthcare. Responses were modified from the original 4-point Likert scale to a dichotomous yes/no option because children often only had one visit to reference and thus using a scale may have confused parents. A score for the series was created based on the number of questions that received a “yes” response, with 8 being the highest possible score and 0 being the lowest. Neighborhood median income was obtained by linking the child’s geocoded residential address with the 2006–2010 American Community Survey data at the US census tract level.²⁴

Statistical Analysis

We first confirmed normality of the parental empowerment score by reviewing its skew, kurtosis, QQ plot, and histogram. We then examined descriptive and bivariate analyses to identify associations between parent, child, and neighborhood correlates and parental resource empowerment, using the chi-square test statistic for categorical

Table 2. Characteristics of 721 Children and Their Parents in *Connect for Health*

Characteristics	Mean (SD) or n (%)
Parent	
Age (years)	38.40 (7.69)
Education	
High school or below	101 (14.05)
Some college or technical school	253 (35.19)
College graduate+	365 (50.76)
Annual household income	
<\$20,000	123 (17.42)
≥\$20,000 and <\$70,000	288 (40.79)
≥\$70,000	295 (41.78)
Do not know/missing	15 (1.00)
BMI	
<25 kg/m ²	161 (22.84)
≥25 and <30 kg/m ²	236 (33.48)
≥30.0 kg/m ²	308 (43.69)
Perceived stress	
Never	19 (2.64)
Sometimes a little	295 (40.97)
Often	166 (23.06)
Sometimes a lot	90 (12.50)
Lot most of the time	150 (20.83)
Perceived quality of obesity-related care from primary care provider ^a	3.77 (1.97)
Child	
Age (years)	7.71 (2.88)
Sex	
Male	354 (49.10)
Female	367 (50.90)
Race/ethnicity	
White	247 (34.35)
Black	233 (32.41)
Spanish, Hispanic, Latino	156 (21.70)
Asian	39 (5.42)
Other	44 (6.12)
BMI	
≥85th and <95th percentile	261 (36.45)
≥95th percentile	455 (63.55)

*continued***Table 2. Characteristics of 721 Children and Their Parents in *Connect for Health* continued**

Characteristics	Mean (SD) or n (%)
Neighborhood	
Median neighborhood household income	
<\$20,000	25 (3.47)
≥\$20,000 and <\$70,000	408 (56.59)
≥\$70,000	288 (39.94)
Parental empowerment	
Parental resource empowerment	2.95 (0.56)
^a Perceived quality of obesity-related care from primary care provider refers to parents' opinion of clinician engagement in weight management efforts of their child.	

variables and simple linear regression for continuous variables. Subsequently, we performed multiple hierarchical linear regression analyses to further examine these associations, adjusting for child characteristics (age, sex, and race/ethnicity), parent characteristics (age, education, annual household income, BMI category, perceived stress, and relationship with the healthcare provider), and the median neighborhood household income. In subsequent models in these analyses, we included variables that were clinically or biologically important or that other studies have found are associated with parental empowerment. The analyses were performed using SAS 9.4.

Results

Our study sample consists of 721 parent–child pairs in the *Connect for Health* baseline data. Descriptive analyses of parent and child participants are presented in Table 2. Mean (SD) parent age was 38.4 years (7.7) and mean (SD) child age was 7.7 years (2.9); 34% of children were white, 32% black, 22% Hispanic, 5% Asian, and 6% multiracial/other. Mean (SD) child BMI z-score was 1.9 (0.5). The mean parental empowerment score was 2.95 (SD = 0.56; range = 1–4).

In bivariate analyses of parent, child, and neighborhood characteristics with parental empowerment (Table 3), parents of older children [β −0.02 (95% CI: −0.04, −0.01)], Hispanic children [−0.15 (0.30, −0.01)] (referent: white), those who received some college or technical school education [−0.13 (−0.23, −0.02)] (referent: college graduate+), those with annual household income less than \$20,000 [−0.21 (−0.35, −0.08)] (referent: ≥\$70,000), those with BMI ≥30.0 kg/m² [−0.19 (−0.31, −0.08)] (referent: <25 kg/m²), and those who reported lower quality obesity-related care from their healthcare provider [−0.04 (−0.06, −0.01)] reported feeling less resource empowerment to help their child achieve healthy body weight.

Table 3. Bivariate Associations of Parent, Child, and Neighborhood Characteristics with Parental Resource Empowerment

Characteristics	Parental empowerment score
	Estimate (95% CI)
Parent	
Age (years)	0 (−0, +0)
Education	
High school or below	−0.10 (−0.24, 0.04)
Some college or technical school	−0.13 (−0.23, −0.02)*
College graduate+	REF
Annual household income	
<\$20,000	−0.21 (−0.35, −0.08)*
≥\$20,000 and <\$70,000	−0.05 (−0.15, 0.05)
≥\$70,000	REF
BMI	
<25 kg/m ²	REF
≥25 and <30 kg/m ²	−0.02 (−0.14, 0.10)
≥30.0 kg/m ²	−0.19 (−0.31, −0.08)*
Perceived stress	
Never	REF
Sometimes a little	0.09 (−0.21, 0.38)
Often	−0.04 (−0.34, 0.26)
Sometimes a lot	0.00 (−0.32, 0.31)
A lot most of the time	−0.15 (−0.45, 0.15)
Perceived quality of obesity-related care from primary care provider ^a	−0.04 (−0.06, −0.01)*
Child	
Age (years)	−0.02 (−0.04, −0.01)*
Sex	
Male	REF
Female	0.00 (−0.08, 0.08)
Race/ethnicity	
White	REF
Black	−0.037 (−0.17, 0.10)
Hispanic	−0.15 (−0.30, −0.01)*
Asian	0.03 (−0.22, 0.27)
Other	−0.04 (−0.27, 0.19)
Neighborhood	
Median neighborhood household income	
<\$20,000	−0.27 (−0.01, 0.25)
≥\$20,000 and <\$70,000	−0.16 (−0.06, 0.04)
≥\$70,000	REF

^aPerceived quality of obesity-related care from primary care provider refers to parents' opinion of clinician engagement in weight management efforts of their child.

*Statistically significant variables.

In multivariable adjusted models (Table 4), we found that parents of older children [−0.03 (−0.04, −0.01)], Hispanic children [−0.14 (−0.26, −0.03)], those with annual household income less than \$20,000 [−0.16 (−0.29, −0.02)], those with BMI ≥30.0 kg/m² [−0.17 (−0.28, −0.07)], and those who reported lower quality obesity-related care from their healthcare provider [−0.05 (−0.07, −0.03)] felt less empowered to access resources to support their child's healthy body weight than their respective counterparts. Parental empowerment was not associated with parent age, perceived stress, child sex, parental education, or median neighborhood household income. Referent variables for child sex, child race/ethnicity, parental education, annual household income, parental BMI, parental perceived stress, and median neighborhood household income are male, white, college graduate+, ≥\$70,000, <25 kg/m², “I never feel stress,” and ≥\$70,000, respectively.

Discussion

In this study of more than 700 children with overweight and obesity and their parents, we found several characteristics that correlated with lower levels of parental resource empowerment. Parents of older children, Hispanic children (referent: white), those with household income less than \$20,000 (referent: ≥\$70,000), those with BMI ≥30.0 kg/m² (referent: <25 kg/m²), and those who reported receiving lower quality of obesity-related care reported less parental resource empowerment. Parent age, perceived stress (referent: “I never feel stress”), education (referent: college graduate+), child sex (referent: male), and median neighborhood household income (referent: ≥\$70,000) were not associated with parental empowerment score. These study results also support the criterion validity of the child weight management subscale of the Parent Resource Empowerment Scale.¹

Previous studies have demonstrated empowerment as an effective intervention strategy among populations who experience health inequities.^{9–15} For instance, when a diabetes self-management empowerment program was implemented in a population with poorly controlled diabetes in Los Angeles, the health-related quality of life of the study population was found to increase.¹⁴ In another study, educating parents of adolescents in effective communication strategies to develop healthier relationships with their children led to increased maternal care given to adolescents, decreased conflicts with parents, and decreased adolescent substance use and delinquency.¹¹

There has been, however, limited research that examines predictors of resource empowerment among parents of children with overweight or obesity. Previous studies have examined parental resource empowerment, but not specifically among parents of overweight children.^{1,20} For example, Jurkowski et al. studied parents of children between 2 and 5 years of age enrolled in Head Start centers and found that greater parental resource empowerment was associated with greater diet and physical activity parenting.¹

Table 4. Multiple Hierarchical Regression Models of Parental Resource Empowerment

	Parental empowerment score (model 1 estimates)	Parental empowerment score (model 2 estimates)	Parental empowerment score (model 3 estimates)
Characteristics	β (95% CI)	β (95% CI)	β (95% CI)
Model 1: child characteristics			
Age (years)	−0.02 (−0.04, −0.01)*	−0.03 (−0.04, −0.01)*	−0.03 (−0.04, −0.01)*
Sex			
Male	REF	REF	REF
Female	0.01 (−0.07, 0.09)	0.04 (−0.04, 0.12)	0.04 (−0.04, 0.12)
Race/ethnicity			
White	REF	REF	REF
Black	−0.05 (−0.15, 0.05)	−0.02 (−0.13, 0.08)	−0.02 (−0.13, 0.09)
Hispanic	−0.16 (−0.27, −0.05)*	−0.14 (−0.26, −0.03)*	−0.14 (−0.26, −0.03)*
Asian	−0.01 (−0.19, 0.18)	−0.09 (−0.28, 0.1)	−0.09 (−0.28, 0.1)
Other	−0.05 (−0.23, 0.12)	−0.1 (−0.28, 0.08)	−0.11 (−0.29, 0.07)
Model 2: model 1+parent characteristics			
Age (years)		0 (0, 0.01)	0 (0, 0.01)
Education			
High school or below		−0.05 (−0.19, 0.08)	−0.06 (−0.19, 0.08)
Some college or technical school		−0.07 (−0.17, 0.02)	−0.07 (−0.17, 0.03)
College graduate+		REF	REF
Annual household income			
<\$20,000		−0.15 (−0.29, −0.02)*	−0.16 (−0.29, −0.02)*
≥\$20,000 and <\$70,000		−0.02 (−0.12, 0.07)	−0.03 (−0.13, 0.07)
≥\$70,000		REF	REF
BMI			
<25 kg/m ²		REF	REF
≥25 and <30 kg/m ²		−0.05 (−0.16, 0.06)	−0.05 (−0.16, 0.06)
≥30.0 kg/m ²		−0.17 (−0.28, −0.07)*	−0.17 (−0.28, −0.07)*
Perceived stress			
Never		REF	REF
Sometimes a little		0.1 (−0.16, 0.36)	0.12 (−0.14, 0.38)
Often		−0.03 (−0.29, 0.24)	−0.01 (−0.27, 0.26)
Sometimes a lot		0.01 (−0.26, 0.29)	0.03 (−0.25, 0.3)
A lot most of the time		−0.06 (−0.33, 0.2)	−0.04 (−0.31, 0.23)
Perceived quality of obesity-related care from primary care provider ^a		−0.05 (−0.03, −0.07)*	−0.05 (−0.03, −0.07)*
Model 3: model 2+neighborhood			
Median neighborhood household income			
<\$20,000			0.12 (−0.11, 0.35)
≥\$20,000 and <\$70,000			−0.02 (−0.11, 0.07)
≥\$70,000			REF

Model 1: parental empowerment score was regressed on child characteristics (age, sex, and race/ethnicity).

Model 2: parental empowerment score was regressed on child and parental characteristics (age, education, annual household income, BMI, perceived stress, and perceived quality of obesity-related care from primary care provider).

Model 3: parental empowerment score was regressed on child and parental characteristics and median neighborhood household income.

^aPerceived quality of obesity-related care from primary care provider refers to parents' opinion of clinician engagement in weight management efforts of their child.

*Statistically significant variables.

Our finding of lower resource empowerment among parents of older children is consistent with the study by Nsiah-Kumi et al.¹⁸ Nsiah-Kumi et al. showed an inverse relationship between children's age and parental empowerment, stating that parents of children ≥ 12 years of age expressed lower parental efficacy, which is a component of parental empowerment,¹ than parents of children less than 12 years of age.¹⁸ This pattern may reflect changes in the parent-child relationship as children leave the toddler stage and enter middle childhood. As school-age children face novel challenges and express needs that are more complex in nature, parents may feel less empowered in terms of finding appropriate resources to nurture their children.²⁵

In addition, our finding that household income less than \$20,000 is associated with lower parental empowerment is related to previous studies' findings that mothers' perception of their economic circumstance influences their ability to cope with their circumstance.²⁶⁻³⁰ With disadvantages of having fewer household financial and physical resources,³¹ mothers may exhibit lower perceived competency in controlling the resources. In contrast to previous studies, we found that median neighborhood household income is not significantly associated with parental empowerment score.

Previous studies have found that low-income communities in Massachusetts have fewer full-service grocery stores, exercise centers, recreational facilities and parks, and consequently, these communities exhibit decreased physical activity and nutritional value of consumed food.^{32,33} Perhaps our finding reflects that families living in high-risk environments are able to develop regional strategies to access and control available community resources that lead to healthy lifestyles within families. The dichotomy between parental empowerment within low-income households and low-income neighborhoods warrants further research.

We also found that parent obesity is associated with less parental resource empowerment. One reason could be that lower parental knowledge and/or competency in mobilizing resources for healthy lifestyles contribute to overweight status of both children and parents. Alternatively, it could be that parents' obesity status decreases parent self-esteem and motivation, thereby decreasing their ability to control obesogenic resources.

Underlying social, structural, and environmental inequalities, such as neighbors' obesogenic behaviors reinforcing parents' and their children's obesogenic lifestyle, or higher concentration of fast food restaurants found in the neighborhood, may be associated with less parental resource empowerment found among parents with obesity. In a study by Golan, targeting parents' behavior as the exclusive agent of change decreased overall obesogenic behaviors at home and reduced weight for both parents and their children.³⁴ Increasing risk of childhood obesity with parent obesity has been well documented in prior literature and our finding of close linkage between parent obesity and lower parental empowerment presents a possible mechanism.³⁵⁻³⁷

Less parental resource empowerment among parents who reported lower quality obesity-related care from their healthcare providers also has evidence for plausibility in published literature.³⁸⁻⁴⁶ Perhaps some primary care providers, due to individual differences in clinical practicing styles, spend less time and effort on nutrition and physical activity counseling, or less effectively deliver messages of obesity-reducing behavioral change. In a study by McKee et al., parents voiced their dissatisfaction with primary care providers who offered advice about the need for behavioral change, but not about how they could change their behavior in the context of their complex socioecological dynamics.⁴¹ Parents also expressed their frustration when physicians were dismissive about parents' specific concerns regarding their children's picky eating or undereating habits.⁴¹ Failure to effectively engage parents in discussions about childhood obesity may result in lower parental empowerment.

Across the spectrum of health services, socioeconomic and racial/ethnic disparities have been observed to influence care at the level of healthcare providers.³⁹⁻⁴⁵ For example, Hausmann et al. showed that black or Hispanic patients with pneumonia were less likely to be given smoking cessation counseling, appropriate vaccinations, and first dose of antibiotics within 4 hours of presenting with symptoms than white patients with pneumonia at the same hospital.⁴⁶ It is possible that in our study sample, discrepancies in care could impact socioeconomic or ethnic differences in perceptions of healthcare, resulting in lower parental resource empowerment. Overall, lower perceived quality of obesity-related care from healthcare providers may have decreased parents' access to information and motivation to access and control resources that induce healthy diet and physical activity.³⁸⁻⁴⁶

Our finding of no association between parental age and parental resource empowerment is consistent with the study by Vuorenmaa et al.⁴⁷ By the time people settle down and have a family, many aspects of their lives tend to stabilize, including social, structural, and environmental factors. Perhaps the stasis of such factors with increasing parental age contributes to the lack of association between parental age and resource empowerment.

Our finding that parental education is not associated with parental empowerment can also be compared with the study by Vuorenmaa et al., which found that fathers who received comprehensive/vocational education expressed greater parental empowerment than fathers with college or academic education, while maternal education was not statistically associated with parental empowerment.⁴⁷ As our study predominantly consisted of mothers, it seems that the study results are aligned. It is possible that the effect of education on maternal knowledge of available resources that reduce childhood obesity is minimal, as mothers may gain greater knowledge and competency in controlling these resources as they start their families and nurture their children.

Our finding of no significant relationship between parental perceived stress and parental resource empowerment

implies that parents' perception of difficulties in life is not linked to parents' knowledge and confidence in accessing and controlling resources to increase healthy lifestyles in families. There is no previous study, to our knowledge, that investigated the association between parental perceived stress and parental empowerment.

Strengths of our study include the large number and diversity of study participants, as well as a broad range of potential predictors and possible confounders. A limitation of the study is that we studied a cross-sectional sample, from which causality cannot be determined. There may also be residual confounding, as other possible confounding factors, such as racial/ethnic residential segregation and presence of siblings of the child study participants, were not entered into our study. In addition, generalizability may be questioned, as study participants were drawn from pediatric practices at HVMA in Massachusetts, and do not represent parent-child pairs who do not have a pediatric primary healthcare provider.

We also did not divide our parent study participants into mothers and fathers, as they predominantly consisted of mothers. Therefore, we were not able to examine differences in parental resource empowerment between mothers and fathers. Finally, as the main message of this study is about parental resource empowerment, not parental self-efficacy, which is another component of parental empowerment,¹ we did not measure parental self-efficacy in this study. Thus, the discriminant validity between scales of parental self-efficacy and parental resource empowerment may be questioned.

Conclusion

Lower parental resource empowerment was associated with several child- and parent-specific characteristics. These findings are clinically important because altogether, they allow for a more targeted approach in implementing family-centered interventions to improve parental resource empowerment with the goal to achieve health equity in childhood obesity prevention among populations who experience disparities in childhood obesity. Efforts to improve parental resource empowerment among parents of children with overweight or obesity may enhance intervention strategies to reduce childhood obesity and reduce these inequities.

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Author Disclosure Statement

No competing financial interests exist.

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