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Overweight in Childhood:

The Role of Resilient Parenting in African-American Households

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Abstract

Background—Some low-income minority children in the U.S. remain at normal weight throughout their childhood despite high risk of obesity.

Purpose—This study examined whether resilient caregiving accounted for children's healthy weight maintenance and dietary compliance over a 4-year period among poverty-stricken African-American families.

Methods—A representative sample of 317 African-American caregiver–children (aged 3–5 years) pairs from low-income areas of Detroit, Michigan was examined in 2002–2003 with a follow-up assessment in 2007. Capacity for resilience among caregivers was defined using 5 individual and environmental protective factors. A BMI score for the children was computed from recorded height and weight, and converted into one of three categories (normal weight, overweight, obese) using age- and gender-specific national references. Dietary information was collected using the Block Food Frequency Questionnaire (FFQ) and Block Kids FFQ. Data were analyzed in 2010 to test whether children's weight transition and dietary compliance varied according to their caregivers' capacity for resilience.

Results—In all, 95 caregivers (29%) were identified as having capacity for resilience. They were younger, had higher levels of educational attainment, and had lower levels of daily soda consumption. The children of these caregivers had a lower likelihood of remaining overweight or obese than being of normal weight (Relative Risk Ratio = 0.5, 95% CI = 0.2, 0.9), and had persistently lower soda consumption over 4 years compared with other children.

Conclusions—This finding demonstrates that some caregivers positively influence children's health weight management and dietary compliance despite material deprivation. Interventions to initiate and promote resilient caregiving could benefit the health and health-related behaviors of low-income African-American children.

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Introduction

Risk for overweight and obesity is disproportionately high among low-income minority children in the U.S.¹ The prevalence among these children dramatically increased over the past 3 decades² with a great proportion experiencing persistent overweight or obesity.³ Yet, some remain at normal weight throughout childhood, and parental influence on children's dietary behavior is considered a critical determinant of healthy weight management.⁴ Research suggests that cognitive stimulation and emotional support in the household protect against childhood obesity,⁵ and parents' food preferences and feeding behaviors shape children's dietary patterns.⁶ Some parents can exert positive influences on children's health despite adversities,⁷ and this process has been defined as resilience.⁸

The literature shows that multilevel factors enable modification of adverse effects in a beneficial direction.⁹ A positive psychological profile is associated with parental nurturance among teenage mothers⁷ and educational success among at-risk children.¹⁰ Furthermore, community and family connectedness reduce risk factors of youth violence perpetration¹¹ and expedite emotional recovery from stress.⁹ A study of low-income women reveals that those living in mixed land-use neighborhoods had lower BMIs and coronary heart disease risk than those living in single land-use areas.¹² Such factors have been used to identify adults with capacity for resilience.¹³

Limited research has been conducted on resilient parenting/caregiving at the population level. Thus, the purpose of this study was to examine whether children's healthy weight maintenance and dietary compliance over 4 years could be a result of resilient parenting/caregiving among an African-American population from high-poverty areas of Detroit, Michigan.

Methods

Study Population

Data for this study were obtained from the Detroit Dental Health Project, a longitudinal cohort study focusing on the oral health of low-income African-American children and caregivers (i.e., a self-identified person who had the authority to make parenting decisions). The study protocol was approved by the IRB for Health Sciences at the University of Michigan and all participating caregivers gave written consent for inclusion in this study.

The households were drawn from a stratified two-stage area probability sample within 39 census tracts in Detroit with the highest proportion of residents at <200% of the poverty level according to the U.S. Census 2000. A caregiver-child (aged 0–5 years) pair was selected per household. In all, 1021 participated in baseline interviews in 2002–2003 (response rate = 74%), and 64% of these ($n=654$) returned to follow-up interviews in 2007. There was no significant difference in BMI or demographic characteristics by follow-up participation. Details of sampling and data collection procedures are available elsewhere.³ Among 654 families, this study focused on 333 with children aged ≥ 3 years at baseline because quantitative dietary data were not collected from younger children. Sixteen caregivers who participated at follow-up did not participate in baseline interviews. Excluding these left a final sample of 317 caregiver-child pairs.

Capacity for Resilience

Adopting the schema from Sanders and colleagues,¹³ the authors used two individual factors (nonsmoking, no depressive symptoms) and three environmental (social support, religiosity, sound housing conditions) factors to identify capacity for resilience. These factors have been found to reliably predict resilience⁹ and health determinants within the context of a low-

income urban population.^{13,14} Caregivers answering no to either of two National Health and Nutrition Examination Survey (NHANES) III questions¹⁵—smoking ≥ 100 cigarettes in the past and currently smoking—were defined as current nonsmokers.¹⁶ Caregivers who scored <16 on the Center for Epidemiologic Studies depression scale were considered to have no depressive symptoms.¹⁷ Social support was assessed by asking caregivers to respond yes or no to the availability of emotional support (someone to confide in) and instrumental support (help with errands, childcare, financial, transportation needs). These questions have reliably measured social support among low-income mothers previously.¹⁷

Given that the usual level of church attendance was at least once a week (79%), those who reported attending church nearly every day were considered religious.¹⁸ Answering no to the question, “Do you have any cracks on the wall or any paint in the home that is peeling off walls or pipes?” indicated sound housing conditions. Each indicator (i.e., current nonsmoker [61%], no depressive symptoms [85%], religious [22%], yes to all five social support domains [63%], no wall cracks/peeling paint [62%]) was given a score of 1. Following the cutoff definition used by Sanders et al.,¹³ those caregivers with summed scores ≥ 4 were considered to have capacity for resilience.

Children’s Dietary Compliance and Weight Transition

Dietary information was collected by interviewers using the Block Food Frequency Questionnaire (FFQ) for caregivers and the Kids FFQ for children. Both instruments were developed by NutritionQuest with acceptable reliability and validity.^{19,20} The data were quantified as daily intake of food items (grams or ml), energy (kcal) and food groups, using NutritionQuest’s algorithm. Children’s dietary compliance was assessed by comparing daily intake with age- and gender-specific MyPyramid recommendations for 30- to 60-minute physical activity.²¹ For soda and fruit drinks, average consumption was reported because there is no established recommendation. Weight and height of pairs were measured according to the NHANES protocol.¹⁵ Based on age- and gender-specific national references, children were categorized as normal weight (BMI $<85^{\text{th}}$ percentile), overweight (BMI from 85^{th} to 95^{th} percentile), or obese (BMI $\geq 95^{\text{th}}$ percentile).²²

Statistical Analyses

Associations between capacity for resilience and demographic and dietary characteristics were examined using t-tests or Chi-squared tests. Multinomial logistic regression analysis was used to test whether capacity for resilience in caregivers predicted children’s likelihood of (1) becoming overweight or obese, (2) becoming normal weight, or (3) remaining overweight or obese, relative to remaining at normal weight, after controlling for potential confounders. Results were considered significant at $p < 0.05$. All analyses were conducted in 2010 using STATA version 10 and weighted to adjust for unequal selection probabilities and differential nonresponse. A small number of missing values were imputed using *IVEware*.²³

Results

Among 317 caregivers, 87% were biological mothers. The average age was 30 years (SE = 0.6, range: 18–70 years) and 43% did not have a high school diploma. Forty-five percent had annual household income $< \$10,000$. At baseline, 50% were obese. Children’s average baseline age and birth weight were 4 years (SE = 0.1, range: 3–6 years) and 6.3 pounds (SE = 0.1, range: 2–11 lbs); 50% were girls.

Ninety-five caregivers (29%) had capacity for resilience. They were younger, had a higher level of education, and had lower levels of soda consumption than nonresilient caregivers (Table 1). For children, caregiver capacity for resilience was associated with high baseline

compliance with recommended vegetable and fruit consumption, and with consistently low soda consumption.

At baseline, 26% of children were overweight or obese, and this proportion increased to 51% after 4 years. The relative risk of remaining overweight or obese versus remaining at normal weight was lower among children with resilient caregivers compared to children with nonresilient caregivers (Table 2; Relative Risk Ratio = 0.5, 95% CI= 0.2, 0.9). Caregiver capacity for resilience, however, did not predict a transition from normal weight to overweight or obesity in the children.

Discussion

This study found that caregivers' capacity for resilience was associated with healthy weight maintenance and low soda consumption among low-income African-American children. A higher predicted probability of persistent normal weight was found among children with resilient caregivers than among children with nonresilient caregivers (71% vs 61%), whereas the opposite pattern arose regarding the probability of persistent overweight or obesity (10% vs 18%). This finding demonstrates a cumulative effect of resilient parenting despite material adversities, consistent with a previous study of the same population that found a low incidence of caries among children with resilient caregivers.¹³

Having capacity for resilience was defined as being nonsmoking, having no depressive symptoms, having social support, being religious, and having sound housing conditions. Each of these has been associated with decreased morbidity,²⁴⁻²⁸ which supports the embodiment concept that socially patterned factors shape health-related behaviors.²⁹ Although the resilience predictors per se may not be a proximal cause of childhood obesity, they indicate the presence of positive personal, family, and community resources conducive to healthy dietary behaviors within a poor urban area.²⁵ Findings imply that addressing contexts that shape dietary behaviors would make lifestyle modification intervention more effective in reducing childhood obesity.²⁹

Another finding that supports the importance of community environments in influencing dietary behaviors and obesity is that follow-up dietary compliance, except soda consumption, did not differ by capacity for resilience. Once children spend more time outside the home, exposure to peers or unhealthy food environments may have a stronger influence than caregivers on their eating behavior. Additionally, issues concerning affordability and access may override the caregiver's ability to provide healthy foods.

This study has several strengths. The longitudinal design made it possible to describe resilience as a process. Second, capacity for resilience was based on a multilevel framework.¹³ Lastly, the study addressed material challenges to raising healthy children by recruiting families from only urban areas with the highest concentration of poor residents. Some limitations of this study include a lack of data on physical activity, and the fact that children's positive health outcomes could reflect genetic traits.³⁰ Although caregiver's obesity status was controlled for, there could be an unexplained biological mechanism in weight transition. An additional limitation is that the resilience cutoff score from Sanders et al.¹³ lacks validity. Future research is needed to assess the validity of this cutoff.

This study demonstrates that some African-American caregivers exhibited capacity for resilience and raised healthy children despite adversities. Interventions to initiate resilience among low-income African-American caregivers could have a positive influence on children's healthy weight maintenance and dietary behaviors.

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Table 1

Caregiver's demographic and dietary characteristics and child's dietary compliance by capacity for resilience among low-income African-American families

	Caregivers with capacity for resilience	Caregivers without capacity for resilience	p-value ^a
<i>n</i>	95	222	
Caregiver's demographic and dietary characteristics			
Age at baseline (years; weighted M (SE))	28.8 (0.9)	31.0 (0.5)	0.04
Education at baseline (weighted %; missing=1) ^b			
< high school degree	32	48	0.05
High school degree +	68	52	
Household income at baseline (weighted %; missing =12) ^b			
< \$10,000	37	48	0.17
\$10,000 +	63	52	
Obesity (weighted %)			
Baseline (missing=2) ^b			
Yes	54	52	0.71
No	46	48	
Follow-up (missing=8) ^b			
Yes	57	62	0.52
No	43	38	
Sugar-sweetened beverage consumption at baseline (weighted M (SE))			
Soda ^c (ml)	289.8 (46.4)	421.4 (39.6)	0.03
Fruit drinks ^c (ml)	593.7 (37.2)	608.1 (28.1)	0.77
Child's dietary compliance ^d			
Baseline			
Grain (weighted %)	32.9%	37.1%	0.90
Meat (weighted %)	68.9%	63.2%	0.07
Dairy (weighted %)	29.6%	34.2%	0.67
Fruit (weighted %)	71.3%	61.1%	0.01
Vegetable (weighted %)	18.1%	10.2%	0.03
Soda ^c (weighted M (SE))	99.5 (18.1)	217.6 (22.8)	0.001
Fruit drinks ^c (weighted M (SE))	338.5 (25.5)	419.2 (42.0)	0.33
Follow-up			
Grain (weighted %)	43.2%	47.9%	0.74
Meat (weighted %)	66.2%	67.1%	0.63
Dairy (weighted %)	15.6%	22.2%	0.44
Fruit (weighted %)	66.2%	57.4%	0.08
Vegetable (weighted %)	10.4%	16.3%	0.60
Soda ^c (weighted M (SE))	95.8 (18.0)	225.9 (31.6)	0.006

	Caregivers with capacity for resilience	Caregivers without capacity for resilience	p-value ^a
Fruit drinks ^c (weighted M (SE))	309.9 (38.7)	401.8 (32.3)	0.30

^a p-value for child's dietary compliance associated with caregiver's capacity for resilience was computed from multivariate regression analysis. For weighted percentage, multivariate logistic regression was used with potential confounders of both caregivers (age, household income, education, weight status) and children (age, gender, birth weight, dietary energy intake). For weighted mean, multivariate linear regression was used with the same set of covariates.

^b These missing data, along with caregiver's relation to child (missing=17), child's baseline weight (missing=4), child's baseline height (missing=3), child's follow-up weight (missing=13), child's follow-up height (missing=34) were imputed using multiple imputations based on the procedures where a sequence of regression models was fit and then imputed values were drawn from the predictive distributions. To impute baseline missing values, a full baseline sample ($n=1021$) was used. Likewise, a full follow-up sample ($n=654$) was used to impute follow-up missing values.

^c Soda excludes diet soda while fruit drinks exclude 100 % fruit juice.

^d A unit of children's daily dietary intake was originally recorded in U.S. Department of Agriculture serving size, and converted to serving size in MyPyramid guidelines in order to assess MyPyramid compliance.

Relative risk ratio (95% CI) from multinomial logistic regression models for weight transition associated with caregiver's capacity for resilience among low-income African-American children

Table 2

Characteristics	Normal to overweight or obese		Staying overweight or obese	
	RRR	95% CI	RRR	95% CI
Child				
Age (years)	1.5	0.9	2.5	1.4
Birth weight 7 + pounds (ref: birth weight < 7 pounds)	0.9	0.5	1.6	1.9
Male (ref: female)	0.6	0.3	1.3	0.7
Energy intake (kcal)	1.0	1.0	1.0	1.0
Caregiver				
Capacity for resilience (ref: no capacity for resilience)	0.8	0.4	1.7	0.5
Age (years)	0.9	0.9	1.0	1.0
Obese (ref: not obese)	0.9	0.4	1.9	3.6
Income: \$10,000 + (ref: Income : <\$10,000)	0.5	0.3	1.0	1.1
Education: high school diploma + (ref: education: < high school diploma)	0.9	0.5	1.6	1.5

Notes: Outcome referent was staying at normal weight.

Numbers in bold indicate significance at $p<0.05$.

Data for 8 children who were overweight or obese at baseline and became normal weight at follow-up were not presented because estimates were not reliable.