Published in final edited form as:

Fam Community Health. 2014 ; 37(2): 104–118. doi:10.1097/FCH.0000000000000024.

The Empowerment of Low-Income Parents Engaged in a Childhood Obesity Intervention

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Abstract

Parents influence children's obesity risk factors but are infrequently targeted for interventions. This study targeting low-income parents integrated a community-based participatory research approach with the Family Ecological Model and Empowerment Theory to develop a childhood obesity intervention. This article (1) examines pre- to postintervention changes in parents' empowerment; (2) determines the effects of intervention dose on empowerment, and (3) determines whether changes in parent empowerment mediate previous changes identified in food-, physical activity-, and screen-related parenting. The pre-post quasi-experimental design evaluation demonstrated positive changes in parent empowerment and empowerment predicted improvement in parenting practices. The integrated model applied in this study provides a means to enhance intervention relevance and guide translation to other childhood obesity and health disparities studies.

Keywords

childhood obesity prevention; community-based participatory research; empowerment; health disparities; parenting practices

Parents, broadly defined to include all primary caregivers, play a fundamental role in shaping children's healthy lifestyle behaviors.^{1–5} Empirical research documents the ways in which parents influence children's diet-, physical activity-, and screen-related behaviors and their risk of obesity.^{1–4,6–11} In conjunction with this work, the Family Ecological Model (FEM)¹² provides a theoretical framework for predicting and explaining real-world influences on parenting (Figure 1). The model emphasizes family ecological factors or family contexts within and beyond families that determine or shape parenting practices and behaviors which must be addressed to ensure the development of healthy family lifestyles

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The authors declare no conflict of interest.

and ultimately obesity prevention in young children. Family ecological factors can include generational poverty, the availability and accessibility of programs and services, the integration of services, and the quality of relationships with staff in support agencies. In turn, these factors shape a family's social and emotional contexts such as parents' knowledge and beliefs about obesity-related behaviors, parents' self-efficacy for promoting healthy lifestyle behaviors, exposure to chronic stressors through competing priorities, a lack of social support, and a lack of parental sense of control.¹² Accordingly, effective family-centered interventions that seek to modify parenting behaviors and sustain changes in such behaviors must address family ecological factors and the social and emotional contexts of the family.

In essence, the FEM communicates relationships between real-world factors and their influence on parenting, and in doing so allows studies to address translation from the outset. The focus of the FEM on contexts that impact parenting is timely, given an increased emphasis on translating efficacious childhood obesity interventions into programs that can be feasibly implemented in diverse communities.¹³ Despite their import, family contexts are rarely addressed in family interventions for childhood obesity prevention.^{7,14} Furthermore, parents, who make decisions within these contexts, are not typically the focus of interventions. When parents are included in interventions targeting childhood obesity, the emphasis is still primarily on children.¹⁴ There are some notable exceptions in which studies have included parents in childhood obesity treatment and demonstrated changes in parenting self-efficacy and parenting practices.^{15–25} Although these studies confirm the importance of involving parents, they still tend to be decontextualized from the broader life circumstances (eg, access to healthy foods and other health-enhancing resources) of families, which ultimately affect their ability to adopt and sustain healthy lifestyle behaviors.^{5,12}

We addressed this gap by drawing on the FEM and using a community-based participatory research (CBPR) approach with an emphasis on engaging parents to develop and pilot test an intervention to promote healthy lifestyle behaviors and prevent and control childhood obesity in low-income families. Our approach differs from the majority of family childhood obesity interventions to date because we target low-income parents *and* acknowledge and address family ecological factors and the social and emotional family contexts that low-income families experience. The FEM provides special theoretical guidance for work with low-income families that are disproportionately burdened by childhood obesity.^{12,26} This family subpopulation typically confronts detrimental community- and organizational-level family ecologies and social contexts such as living in low-income communities where there are growing rates of poverty, decreasing social programs that are often not integrated, and a lack of resources.^{26,27} As a result, they may have fewer personal and community resources and lack the self-efficacy needed to overcome these realities to promote healthy lifestyle behaviors within their families.

This study integrated the FEM with a CBPR approach that engages low-income parents as co-researchers, which facilitated the identification of locally relevant factors of the FEM and enabled the development of a salient and accessible intervention for low-income parents,²⁸ thus improving the ecological validity of the intervention and its potential for translation.¹³ The application of the FEM and CBPR in this study led to the inclusion of Empowerment

Theory (ET) and application of parent empowerment, as a strategy to help parents promote healthy lifestyle behaviors within their families' broader family ecologies. We used ET along with the FEM to guide intervention development and evaluation (Figure 2 details the Communities for Healthy Living [CHL] Integration Model as the overall conceptual framework). Our goal was to provide parents of Head Start children with the necessary tools to overcome social and emotional contexts and family ecological factors to promote food, physical activity, and screen-related parenting practices that reduce children's obesity risk.

Although there are many empowerment frameworks in the literature, this study draws from a genus of ET from family research, community-based public health, and a "2-generation strategy".^{29–35} Studies of families underscore the role of empowering parents to improve child outcomes.^{27–30} Theoretically, empowerment processes and outcomes enable an understanding of "forces that influence life situations *and* the ability to gain control over these forces."^{29–35} Empowerment specific to individuals, such as parents, is considered psychological empowerment.^{29,33–35} Interpretation of parent empowerment was conducted with a participatory process with Head Start staff and a multidisciplinary research team at the outset of the study. It entails parents developing critical consciousness, an in-depth understanding of their life situation, and the ability to mobilize to identify and gain access to health-enhancing resources. It also involves a mastery of skills for obtaining these resources to promote their family's health and well-being.

Parent empowerment was identified as a practical and relevant construct necessary to facilitate healthy parenting practices. Parents of young children experience empowerment when they are able to control their children's risk factors^{29,32} for obesity in the context of their social ecological realities. Moreover, parent empowerment encompasses the perception that parents are able to access and leverage resources that promote healthy lifestyle behaviors within their families. Because of the emphasis placed on resources, one of the main empowerment constructs measured in this study was labeled *parent resource empowerment*. The other empowerment construct measured was parenting self-efficacy specific to childhood obesity risk behaviors, or parents' belief they have the ability to effectively parent their children in a way that promotes healthy lifestyle behaviors.

The CHL intervention was designed using a CBPR approach of parent engagement and guided by the FEM and ET. A detailed description of the CBPR approach, the intervention, and the primary outcomes are described elsewhere.^{36,37} The 10-month pilot study demonstrated improvements in parents' food, physical activity, and screen-related parenting practices and children's diet behaviors and weight status as primary study outcomes.³⁶ This article builds on CHL's primary findings by describing the integration of the FEM, ET, and CBPR in the intervention development process and the effect of CHL on anticipated secondary outcomes particularly parent empowerment. In particular, in this article, we examine (1) pre- to postintervention changes in parents' resource empowerment and parenting self-efficacy, (2) the effects of intervention dose on these secondary outcomes, and (3) whether changes in parent empowerment and self-efficacy mediate previously identified changes in food, physical activity, and screen-related parenting.

METHODS

Setting

The CHL intervention was developed and pilot tested in 5 Head Start centers because of a partnership with a community agency that administers Head Start programs in Rensselaer County in upstate Northeastern New York.³⁶ Head Start provided immediate access to the target population and the ability to accommodate family context by embedding the CHL intervention within an existing system of care. The Head Start mission includes empowering parents to create the best lives possible for themselves and their families, which is consistent with ET defined in this study. The children enrolled in the participating Head Start centers mirrored the demographic features of Rensselaer County, New York²⁷: 38.5% of children enrolled in the centers were non-Hispanic white, 17.8% were non-Hispanic black, 13.5% were biracial, 6.1% were Hispanic/Latino, and 24% did not report race/ethnicity. Ninety percent of households reported speaking English as their primary language.

The research team chose a CBPR approach in which low-income parents were engaged as the majority on the community advisory board (CAB), the study's decision-making body. Parents were trained and deployed as co-researchers throughout the study.³⁷ The combination of parent involvement in the research process and the application of the FEM guided the focus of the CHL intervention on addressing real family needs with practical intervention strategies. The CHL intervention targeted the parents of preschool-aged children because lifelong habits and preferences are established in early childhood and parents of younger children report a high level of self-efficacy in their ability to influence their child's health.^{3,10}

Intervention development

The intervention was developed on the basis of findings from a mixed-methods, participatory community assessment guided by the FEM and 2 community forums during which feedback on the community assessment findings was obtained.^{36,37} The assessment documented relevant family ecologies such as poor accessibility of existing programs and public transportation and a lack of help with child care. Because of these ecological constraints, a lack of ability to leverage access to health-enhancing resources (lack of parent empowerment) was identified. The result was the development of essential structural supports for the ensuing intervention (see Figure 2). For example, intervention activities were incorporated into Head Start center activities and revolved around the Head Start schedule to facilitate parenting efficacy and to accommodate child care and transportation issues. Intervention activities were also incorporated into Head Start processes to facilitate reaching and engaging parents in the intervention. Structural supports for specific intervention components included program times corresponding with the Head Start schedule at the centers, meals and child care provided for parents, and including meals or a healthy snack and activities for the children such as karate, yoga, and basic nutrition education-related art projects.

The CAB and research team also used the assessment and forum findings to make decisions on program components.³⁷ Summarized in Table 1, CHL had 4 intervention components,³⁶

including a health communication campaign to increase parent awareness of childhood obesity, revisions to letters sent home to parents regarding their Head Start child's health status, a family coffee hour with free nutrition counseling, and a parent/child health program. The components included elements that addressed family realities and reinforced parent empowerment.

The communication campaign addressed identified parent beliefs regarding childhood obesity risks, hence addressing some family social and emotional contexts. The campaign included posters displayed at Head Start centers with smaller copies sent home in kids' backpacks. As a result, all families were theoretically exposed to the campaign. It was also assumed that all families were exposed to the revised health letters. As a federal requirement, health letters are sent to all families of children enrolled in Head Start providing results of health assessments, which can be considered an organizational factor of the FEM. As indicated in the community assessment, parents did not find the information very accessible and useful. Parents on the CAB and the research team worked collaboratively to revise the health letters to communicate child body mass index (BMI) information to parents in a culturally appropriate and sensitive way. For example, the revised letters included information about the role of BMI in health status and avoided the use of the word obese, which parents found offensive. The revised letter was provided to the Head Start nurse who used the letter as a template for the letters she sent to parents.

The remaining components of CHL, including family coffee hour sessions coupled with nutritional counseling and a parent and child health program (administered by CHL staff and CAB parents), required active parent participation; as a result, families were selectively exposed.³⁶ The nutrition counseling addressed the identified lack of access to nutrition information appropriate for low-income parents (administered by CHL staff in partnership with a local college nutrition program). The parent program emphasized building parent empowerment and is an example of a peer-to-peer support model. Parents were trained as cofacilitators of the program, and they administered 6 sessions addressing practical needs of parents, which included (1) media literacy, (2) nutrition education, (3) training in conflict resolution focusing on managing family conflict and conflict with a service provider, (4) social networking for resources and job opportunities, (5) communication and advocacy skills with opportunities to practice with pediatric providers, and (6) resource empowerment—knowledge of and leveraging community resources. This program was designed with explicit recognition of the multiple social and emotional family contexts experienced by low-income families and emphasis of critical consciousness of life circumstances that affect families' ability to have healthy lifestyle behaviors. Strategies and resources for leveraging systems of care were taught in the sessions.³⁸

Evaluation design

The CHL intervention was evaluated using a pre-post quasi-experimental design.³⁶ All parents of the 423 children (aged 2–5 years) enrolled in the participating Head Start centers were invited to participate in the evaluation of CHL. Parents were recruited for the evaluation through the Head Start centers by CAB parents, posters displayed in centers, and flyers sent home in children's bags. Parents signed informed consent forms prior to

participation in baseline data collection, which occurred between September and November 2010, for a total of 154 parents. Only parents who participated in the baseline data collection were asked to participate in follow-up data collection. Follow-up data collection occurred postintervention between April 2011 and June 2011 with 108 parents, reflecting 70% retention. At both times of assessment, parents completed a self-report survey and gave permission for the investigators to extract their children's data from Head Start records. The survey included measures of family demographics, parents' resource empowerment, parenting self-efficacy, parenting practices, and parents' self-reported height and weight. The postintervention survey also included items assessing intervention exposure.

Measures

Parent resource empowerment—The CAB engaged in a critical discussion about parent empowerment in the context of the FEM, which led to the conclusion that the resource component of parent empowerment was an essential construct that was linked to the community assessment finding that parents reported a lack of access to resources. Parent resource empowerment measures parents' knowledge of needed resources, comfort leveraging resources, and the degree to which parents feel competent leveraging resources. Rather than a generic measure, the CAB expressed the need to be practical and evaluate parent empowerment with a reference to childhood obesity because they determined it was not realistic to expect parents to transfer the components of parent empowerment to other areas of their lives in the short time span of the pilot study. In the absence of a relevant validated measure of parent empowerment appropriate for this study, a self-report measure of parents' resource empowerment was developed. The development of the scale was based on management, family, and health studies' literature.^{29,30,31,33} A small CAB work group that included the first and second authors worked on the development of the questions, and the larger CAB provided a critique.

The 15-item scale was adapted from the Sprietzer³⁹ Empowerment Scale to assess parent empowerment specific to children's weight, physical activity, and diet, creating a subscale for each child outcome.³⁹ The scale assessed 3 constructs, each with 5 questions, including knowledge of resources, ability to access resources, comfort accessing resources, knowledge of the strategies needed to identify new resources, and ability to obtain those resources. Questions measuring physical activity-, diet-, and weight-related resource empowerment adhered to the same format. Parents responded to each item using a 4-point scale from 1 (*strongly disagree*) to 4 (*strongly agree*). Higher scores reflect higher empowerment. Before finalizing the wording, CAB parents reviewed the scale for ease of reading and responding. Resource empowerment-related survey questions can be found in Table 2. The scale exhibited excellent internal consistency with internal reliability scores of $\alpha = .96$ (baseline) and $\alpha = .93$ (postintervention) for empowerment specific to child weight; $\alpha = .94$ (baseline) and $\alpha = .96$ (postintervention) for physical activity; and $\alpha = .97$ (baseline) and $\alpha = .95$ (postintervention) for diet.

Parenting self-efficacy—Self-efficacy is considered a component of parent empowerment and reflects confidence in the ability to parent for a healthy lifestyle behaviors. Self-efficacy items were developed for this study.³⁶ Four items assessed self-

efficacy specific to limiting child screen time (How confident are you that you can . . . keep your child's bedroom TV free, master the skills necessary to limit your child's screen time [TV, video games, computer], make decisions about what your child watches on television, and continue to influence your child's screen time as he or she gets older). Three items assessed self-efficacy to promote a healthy body weight in children (How confident are you that you can . . . create a home environment that helps your child have a healthy body weight, master the skills necessary to help your child have a healthy body weight, and talk to a health professional about your child's weight). Three items assessed parent self-efficacy to foster a healthy diet (How confident are you that you can . . . offer fruit, offer vegetables, and offer fat-free or low-fat [1%] milk to your child). Response options ranged from 1 (*not at all confident*) to 5 (*very confident*).

Parenting for healthy lifestyle behaviors—Self-reported parenting practices were measured using 8 items from the Activity Support Scale⁴⁰ to measure physical activity (N = 4 items) and screen-related (N = 4 items) parenting practices. All survey items used a 4-point response scale (1, strongly disagree; 2, disagree; 3, agree; 4, strongly agree). Physical activity parenting focused on parental facilitation of child physical activity. These items included the following: I enroll my child in programs where he or she can be active), family coparticipation in physical activity, and parent encouragement of child outdoors play ($\alpha = .80$). Screen-related parental monitoring of screen time (eg, limiting how long child watches TV or DVDs each day; ensuring total screen time does not exceed 2 hours) ($\alpha = .74$). The presence of a TV in children's bedroom was also measured with yes/no response options. Items measuring food parenting were taken from the New York State Eat Well Play Hard in Child Care Settings survey,⁴¹ and the frequency of offering fruit and vegetables was measured using the mean of 2 items (ie, How often do you offer fresh, canned, or frozen fruit to your child at meals and for snacks and How often do you offer fresh, canned, or frozen vegetables to your child at meals and for snacks?). The response options ranged from 1 (less than once per week) to 6 (3 times per day).

Analysis

Significant pre-/postintervention differences in (a) parents' diet-, physical activity-, and weight-related resource empowerment and (b) their diet-, screen time-, and weight-related self-efficacy were assessed using 2-tailed paired-samples *t* tests with statistical significance at $P = .05$, using IBM SPSS Statistics for Windows (version 20.0, 2011; IBM Corp).⁴² When significant intervention effects were identified ($P < .05$), linear regression models were used to examine the effect of dose on pre-/postintervention change in empowerment and self-efficacy. Dose scores ranged from 0 to 4 and reflected the total number of intervention components to which participants reported exposure. The postintervention value for the outcome of interest was regressed onto the preintervention value along with intervention dose.

Generalized linear models were used to examine the predicted effect of change in empowerment on parents' food-, physical activity-, and screen-related parenting practices. To streamline analyses and reduce the likelihood of type II error, the 3 forms of resource empowerment (related to weight, physical activity, and diet) were averaged at each time of

assessment to create a single resource empowerment score. Change in resource empowerment was calculated as postintervention resource empowerment minus preintervention resource empowerment. To determine whether changes in empowerment predicted changes in parenting practices, postintervention parenting was regressed onto preintervention parenting and change in empowerment (or self-efficacy).

RESULTS

Sample demographics

A total of 154 Head Start parents participated in the evaluation of CHL. Participants were predominantly female (92%) and were mostly white (73%) or African American (23%). In addition, 95% of female participants were mothers. Almost three-fourths the sample participants (70%) were never married, and most had at least a high school education. The average age of parents in the sample was 32 years ($SD = 11.32$ years). One-third of parents (32%) were classified as overweight ($BMI=25-29.9$), with another one-third (36%) identified as obese ($BMI \geq 30$).

Pre-/postintervention differences

Compared with baseline, parents at followup had a statistically significant increase in resource empowerment specific to children's weight ($t = 3.235$, $P < .01$), physical activity ($t = 4.459$, $P < .001$), and diet ($t = 4.04$, $P < .001$) (Table 3). When analyses were run as intent to treat, there was a slight decrease in both effect size and mean pre-/postintervention differences across all measures. However, there were no substantive changes in the results, indicating that findings were not a function of selective participant dropout from the study (children's weight: $t = 3.19$, $P < .01$; physical activity: $t = 4.243$, $P < .001$; and diet: $t = 3.957$, $P < .001$) (Table 3). Significant increases in the parents' self-efficacy to control their child's screen time were also recorded ($t = 2.049$, $P < .05$).

The effect of intervention dose on each outcome was assessed. A significant dose effect was identified for resource empowerment specific to children's physical activity ($t = 0.014$, $P < .05$); parents reporting greater exposure to CHL reported greater increases in physical activity resource empowerment. A marginally significant dose effect was observed for resource empowerment specific to child body weight ($t = 1.973$, $P < .051$). Dose effects were not identified for diet-related resource empowerment or screen-related parenting self-efficacy (Table 4).

Results from mediation analyses showed that changes in parents' resource empowerment predicted their physical activity and diet parenting practices at postintervention controlling for preintervention levels (physical activity parenting: $F = 18.67$, $P < .001$; offer vegetables: $F = 3.93$, $P = .05$; and family eats fast food: $F = 8.60$, $P < .01$) (Table 5). In all cases, effects were in the expected direction, with increases in empowerment predicting improvements in parenting.

DISCUSSION

Prior results from this study provide preliminary evidence of the efficacy of CHL including positive intervention effects on the primary outcomes including children's weight, physical activity, and diet as well as food and physical activity parenting practices.³⁶ Building on these findings, this article provides a detailed outline of the process used to develop CHL and its effect on intermediary or secondary outcomes. This process, summarized in Figure 2, integrates the FEM, ET, and parent engagement through CBPR and links the development process with the anticipated secondary outcomes including parent resource empowerment and parenting efficacy. Results presented in this article support positive effects of CHL on parents' resource empowerment specific to children's body weight, diet, and physical activity in addition to parenting efficacy to promote a healthy lifestyle behaviors. Moreover, increases in resource empowerment and parenting efficacy predicted positive changes in food and physical activity parenting practices previously observed.³⁶ Together, the theoretical foundation of CHL, documentation of the processes leading to its development, and presentation of results illustrating its effect on the primary and secondary outcomes provide a detailed road map for the translation of CHL to other settings.

CHL presents innovation in its design and evaluation, including the CHL Integration Model. Family interventions for childhood obesity prevention and control have typically focused on providing parents with the requisite knowledge and skills to adopt parenting practices that foster the development of healthy lifestyle behaviors.^{15–25} Examples of the knowledge distilled include the health benefits of physical activity and age-appropriate diet and physical activity recommendations.^{14,43} Specific skills that have been targeted include meal planning, cooking, parental modeling of healthy behaviors, and goal setting.^{16,18,19,20,24} More recent interventions have begun to address the availability and accessibility of healthy foods and opportunities for physical activity.⁴³ CHL adopts a more holistic view of parenting in low-income families and addresses the broader realities that affect parents' capacity to promote and sustain healthy lifestyle behaviors within their families. A fundamental goal of CHL was to empower parents to attain control over children's health behaviors and health status for childhood obesity prevention. It specifically addressed parents' lack of resources and trained parents to be able to leverage existing resources; therefore, the intervention approach to empowerment was action-oriented.

As with the design of family interventions, evaluations of their success have placed a strong emphasis on child outcomes.^{14,43} In cases where parent outcomes have been examined, assessment has focused on parent media habits, knowledge, attitudes, and beliefs regarding childhood obesity, parental self-efficacy, and parenting styles.^{2–4,6–11} However, there are other relevant parent outcomes that are more closely connected to families' life circumstances. The assessment of parent empowerment as an outcome of the CHL intervention thus contributes practical outcomes to the field of childhood obesity prevention research. Parents in this study showed improvement in resource empowerment specific to children's weight, physical activity, and diet as a result of the CHL intervention. Furthermore, increases in parents' resource empowerment predicted improvement in self-reported food and physical activity parenting practices. While not assessed in this study, there is also the potential that parent resource empowerment specific to obesity prevention

may extend beyond the purview of diet and physical activity behaviors and promote family well-being in other areas.

Limitations

Although this study presents a new approach to family interventions for childhood obesity prevention, there are some limitations. Only 35% of eligible Head Start families consented to participate in its evaluation. Moreover, these families were disproportionately white and were more likely to speak English at home than nonconsenting families. While it is worth noting that the intervention was designed such that all families were at least minimally exposed, the selection bias introduced limits the generalizability of the findings. The internal validity of the results may be limited by the absence of a control group and the use of self-report measures. The lack of a control group conflates the possibility that the results may be explained by secular effects or participant reporting bias. While secular or seasonal effects are unlikely due to the short time span of the intervention and the lack of an obvious link between the weather or season and the constructs assessed, self-reporting bias is a real possibility. The consistent pattern of findings and the evidence supporting parent empowerment as a mediator of intervention effects on the primary outcomes, however, increases the credibility of the results. Finally, because of the relatively small sample size of this pilot study, psychometric testing for validation of the parent empowerment measure is only in the early stages. Results from this study, however, support its internal reliability and predictive validity. Because the measure was developed using a participatory process, we can cautiously assume that it also has face and content validity for low-income parents. Additional testing of this measure, however, is warranted.

CONCLUSION

Notwithstanding the limitations noted, results from the CHL pilot study reported here and elsewhere^{36,37,44} provide evidence of the feasibility of CHL and preliminary evidence of its efficacy. The findings also illustrate the potential advantages of targeting low-income parents in childhood obesity prevention, actively engaging parents in the research process, focusing on social ecological realities, and targeting parent empowerment as an outcome. Of particular note, CHL was designed with translation in mind. The intervention can be readily integrated into Head Start, a service setting reaching more than a million low-income families, and builds on existing resources within this setting and focuses on topics and skills of interest to parents and which are relevant to their broader lives. Furthermore, processes outlined in the CHL Integration Model could be used when developing family interventions targeting other areas of health. Likewise, the practical knowledge and skills necessary for the parent empowerment process defined and measured in this study have potential for translation to other community-based interventions that target parents. Longer interventions that incorporate parent empowerment may find that increases in empowerment may improve other areas of life, such as empowerment skills that are crosscutting. Although currently on the right trajectory, childhood obesity research can still benefit from practical models and strategies that target innovative outcomes in the pathway to childhood obesity prevention. This study adds one new approach that can be applied across diverse community settings.

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Figure 1.
Family Ecological Model.

Figure 2.

CHL Integration Model: A model for translational research in childhood obesity prevention. CBPR indicates community-based participatory research.

Table 1

Parents' Identified Needs and Interests as CHL Intervention Priorities

CHL	Program
Health communication campaign	<i>Problem/issue:</i> Parents identified myths about childhood obesity. <i>Intervention:</i> A health communication campaign was implemented to raise parent awareness about childhood obesity and dispel myths identified ("It's just baby fat, he'll grow out of it"). Five posters were displayed on a rotating basis and sent home as flyers.
Head Start letters revised BMI information	<i>Problem/issue:</i> Parents did not understand letters sent home by Head Start and found wording that talked about BMI distasteful. <i>Intervention:</i> With parent input, the letters were revised and supplemental materials included.
Nutrition counseling integrated into family events	<i>Problem/issue:</i> Parents were unaware of nutrition resources available in the community. <i>Intervention:</i> Nutrition graduate students from a community college attended Head Start family outreach events, provided samples of healthy foods, and answered parents' nutrition-related questions.
Parents Connect for Healthy Families program	<i>Problem/issue:</i> Parents reported a lack of knowledge of resources to support child health behaviors and lack of skills to manage conflict with children and social services. They identified a need for communication and advocacy skills to be able to promote healthy lifestyle behaviors among children. <i>Intervention:</i> A 6-wk parent-led program was developed (2 hr/wk) to build these skills. Parent leaders completed a 2-d training program and cofacilitated sessions with an experienced moderator. Sessions integrated content on healthy lifestyle behaviors. Mini workshops were conducted by the local organization (eg, the local broadcasting station-led session on media literacy).

Abbreviations: BMI, body mass index; CHL, Communities for Healthy Living.

Table 2**Questions Measuring Physical Activity–, Diet–, and Weight-Related Resource Empowerment^a**

The questions below are about resources related to your child’s physical activity (diet, healthy body weight, screen time). Please check the answers that you think are most appropriate. Think about your oldest child enrolled at Head Start:

- a.** I know of resources that I can use to make sure my child is physically active (eats a healthy diet).
- b.** I have the ability to access resources I need to make sure my child is physically active (eats a healthy diet).
- c.** I am comfortable accessing the resources that I need to make sure my child is physically active (eats a healthy diet, has a healthy body weight).
- d.** When I need additional resources to increase my child’s physical activity (eats a healthy diet, has a healthy body weight), I know how to find them.
- e.** When I need additional resources to increase my child’s physical activity (eats a healthy diet, has a healthy body weight), I usually get them.

^aResponse options ranged from 1 (*strongly disagree*) to 4 (*strongly agree*).

Table 3

Pre-/Postintervention Parent Empowerment Outcomes^a

	Participants With Full Data						ITT				Effect Size (<i>r</i>)			
	n	Pre Mean	SD	Post Mean	SD	<i>t</i>	n	Pre Mean	SD	Post Mean	SD	<i>t</i>	Full	ITT
Resource empowerment														
Weight	105	3.38	0.595	3.61	0.860	3.235 ^a	154	3.37	0.627	3.53	0.820	3.19 ^a	0.302	0.250
Physical activity	107	3.15	0.059	3.44	0.064	4.459 ^b	154	3.21	0.627	3.40	0.662	4.243 ^b	0.397	0.324
Diet	108	3.32	0.586	3.54	0.561	4.04 ^b	154	3.33	0.609	3.48	0.598	3.957 ^b	0.364	0.305
Self-efficacy														
TV	108	3.91	0.785	4.08	0.797	2.049 ^c	154	3.93	0.810	4.05	0.819	2.04 ^c	0.194	0.163
Diet	103	4.52	0.512	4.61	0.569	1.513	153	4.56	0.495	4.62	0.532	1.510	0.148	0.122
Weight	108	4.24	0.671	4.46	0.647	1.696	154	4.39	0.673	4.47	0.654	1.692	0.162	0.136

Abbreviation: ITT, intent to treat.

^a $P < .01$.

^b $P < .001$.

^c $P < .05$.

Table 4

Dose Effects on Intervention Parent Empowerment Outcomes

Predictor Variables	Outcome Variable				
	Model <i>df</i>	Estimate	SE	<i>t</i>	<i>P</i>
Resource empowerment physical activity (post)					0.256
Physical activity (pre)	106	0.483	0.093	5.216	.000
Dose		0.140	0.056	2.507	.014
Resource empowerment diet (post)					0.277
Diet (pre)	107	0.496	0.079	6.236	.000
Dose		0.044	0.045	0.962	.338
Resource empowerment weight (post)					0.394
Weight (pre)	104	0.634	0.083	7.637	.000
Dose		0.090	0.046	1.973	.051
Self-efficacy TV (post)					0.207
TV (pre)	107	0.462	0.088	5.231	.000
Dose		−0.008	0.067	−0.117	.907

Table 5

Changes in Empowerment Predict Changes in Parenting Practices

Postintervention Outcome	Predictor Variables	<i>F</i>	<i>P</i>
Physical activity–related parenting	Baseline physical activity–related parenting	20.54	<.001
	Change in empowerment	18.67	<.001
Screen-related parenting	Baseline screen-related parenting	54.29	<.001
	Change in empowerment	0.57	.45
Diet-related parenting	Baseline frequency of offering fruit	40.90	<.001
	Change in empowerment	0.61	.43
Frequency of offering vegetables	Baseline frequency of offering vegetables	42.45	<.001
	Change in empowerment	3.93	.05
Frequency of family eating fast food	Baseline frequency of family eating fast food	14.81	<.001
	Change in empowerment	8.60	.004