

# Using the ANGELO Model To Develop the Children's Healthy Living Program Multilevel Intervention To Promote Obesity Preventing Behaviors for Young Children in the US-Affiliated Pacific Region

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## Abstract

**Background:** Almost 40% of children are overweight or obese by age 8 years in the US-Affiliated Pacific, inclusive of the five jurisdictions of Alaska, Hawaii, American Samoa, Guam, and the Commonwealth of the Northern Mariana Islands. This article describes how the Children's Healthy Living (CHL) Program used the ANGELO (Analysis Grid for Environments/Elements Linked to Obesity) model to design a regional intervention to increase fruit and vegetable intake, water consumption, physical activity, and sleep duration and decrease recreational screen time and sugar-sweetened beverage consumption in young children ages 2–8 years.

**Methods:** Using the ANGELO model, CHL (1) engaged community to identify preferred intervention strategies, (2) reviewed scientific literature, (3) merged findings from community and literature, and (4) formulated the regional intervention.

**Results:** More than 900 community members across the Pacific helped identify intervention strategies on importance and feasibility. Nine common intervention strategies emerged. Participants supported the idea of a regional intervention while noting that cultural and resource differences would require flexibility in its implementation in the five jurisdictions. Community findings were merged with the effective obesity-reducing strategies identified in the literature, resulting in a regional intervention with four cross-cutting functions: (1) initiate or strengthen school wellness policies; (2) partner and advocate for environmental change; (3) promote CHL messages; and (4) train trainers to promote CHL behavioral objectives for children ages 2–8 years. These broad functions guided intervention activities and allowed communities to tailor activities to maximize intervention fit.

**Conclusions:** Using the ANGELO model assured that the regional intervention was evidence based while recognizing jurisdiction context, which should increase effectiveness and sustainability.

## Introduction

The prevalence of childhood obesity has increased significantly over the past decades, putting children at risk for lifetime obesity, early onset of disabilities

and chronic diseases as well as reduced life expectancy.<sup>1–3</sup> Children in the US-Affiliated Pacific Region (including Hawaii, Alaska, American Samoa, the Commonwealth of the Northern Mariana Islands [CNMI], the Federated States of Micronesia, Guam, the Republic of the Marshall Islands,

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and the Republic of Palau) also are affected by this problem. Findings from a meta-analysis of available data from the region imply that children ages 2–8 years have a combined prevalence of overweight and obesity of 21% at age 2, increasing to 39% by age 8.<sup>4</sup>

The Children's Healthy Living (CHL) Program for Remote Underserved Minority Populations of the Pacific Region received funds for 5 years (2011–2016) from the USDA's National Institute for Food and Agriculture (NIFA) to address childhood obesity in the US-Affiliated Pacific. CHL works through the Land Grant institutions in the region. These public colleges and universities (usually one in each US state or jurisdiction) were established under US federal law to teach practical skills (e.g., agriculture, engineering, and home economics) and extend teaching into surrounding communities (<http://ext.wsu.edu/documents/landgrant.pdf>). CHL's mission is "to elevate the capacity of the region to build and sustain a healthy food and physical environment to help maintain healthy weight and prevent obesity among young children." Overall, CHL is working to increase nutrition-related professional and data capacity of the region, and a major aim of CHL is to develop, conduct, and test a multilevel intervention to prevent or decrease child obesity in this vast Pacific region.<sup>5</sup>

The development of the CHL multilevel intervention was led by CHL staff representing Alaska, American Samoa, CNMI, Guam, and Hawaii, who met weekly through teleconferencing across seven time zones and the international dateline. The group was charged to develop an intervention based on the social ecological model (SEM) and the concept of positive deviance that would help children ages 2–8 years (1) decrease sugar-sweetened beverage (SSB) intake, (2) increase water intake, (3) increase fruit and vegetable (F/V) intake, (4) decrease recreational screen time (RST), (5) increase physical activity (PA), and (6) increase duration of sleep.<sup>5</sup> After development, this multilevel intervention was to be tested through a cluster randomized, control trial using a delayed intervention design.<sup>6</sup>

The SEM emphasizes the need to intervene at organizational, community, and policy levels, as well as the individual and family level, if sustained behavioral changes are intended.<sup>7</sup> Reducing obesity calls for increased healthy eating and PA, which certainly involves individual behavior change. However, changing behavior is easier if the environment supports change.<sup>8–10</sup> Examples of successful environmental strategies include regulating foods available to children through vending machines as well as promoting PA by developing safe walking and biking routes to school.<sup>11–13</sup>

A "positive deviant" is defined as someone who practices behaviors that are healthier than the community norm. These behaviors "are likely to be affordable, acceptable, and sustainable because they are already practiced by at-risk people, they do not conflict with local culture, and they work" (p. 1177).<sup>14</sup> Health workers have noted success at identifying positive deviants, analyzing their beneficial behaviors and environments, and designing interventions to help others adopt them.<sup>15</sup>

A major challenge facing CHL was to design an intervention that would appeal to residents of communities across the US-Affiliated Pacific, yet be evidence based. CHL selected the ANGELO (Analysis Grid for Environments/Elements Linked to Obesity) model as a guide for intervention development because it encompassed both elements.<sup>16</sup> The ANGELO model has been used successfully to guide the development of environmental interventions to reduce childhood obesity in the South Pacific.<sup>17</sup> It advises researchers to work with communities to engage stakeholders, host workshops to identify assets and priorities for changing obesogenic environments, share finding from the literature, and plan action strategies.<sup>16</sup>

The aim of this article is to describe how the ANGELO model was used to design a multilevel intervention to be implemented in CHL communities across the US-affiliated Pacific region that would lead to increased F/V intake, water consumption, PA, and sleep duration and decreased RST and SSB consumption in 2- to 8-year-olds.

## Methods

Application of the ANGELO model included four steps: (1) engage the community to identify and prioritize preferred intervention strategies; (2) review the literature for successful intervention strategies; (3) merge findings from the community and the literature; and (4) formulate the intervention (Table 1). This study was approved by the University of Hawaii Institutional Review Board.

### *Step 1. Engage Communities To Identify and Prioritize Preferred Intervention Strategies*

The Land Grant colleges in the jurisdictions of Alaska, American Samoa, CNMI, Guam, and Hawaii invited community leaders, childhood obesity experts, child care providers, government representatives, and others to join a local advisory committee (LAC). The LAC members, in turn, helped identify positive deviants (termed by CHL as "role models"). Role models included individuals and representatives of agencies that supported healthy behaviors among children in these communities. Together with LAC members, role models shared information on community-specific norms and resources that target young children. This helped to develop a shared vision of CHL's community involvement and guided work within the participating communities.

To start the field work, community meetings were held in four communities per jurisdiction, to which parents, teachers, and community leaders were invited. These meetings were opened according to the cultural protocol of the jurisdiction (e.g., with prayer), and the mission and goals of CHL were introduced. Participants were asked to identify factors (e.g., safe drinking water), agencies (e.g., preschools), resources (e.g., local parks), and people (e.g., parents and teachers) that supported healthy living for children. They also identified barriers to children's healthy living, such as traffic, high costs of fresh produce,

**Table 1. Steps and Activities in the ANGELO Model as Modified by the Children's Healthy Living (CHL) Program**

Step	Activities
Step 1. Engage communities to identify and prioritize preferred intervention strategies	A local advisory committee was established in each jurisdiction.
	Multiple key informant meetings were held to learn about community-specific resources targeting young children, to help develop a shared vision of CHL's community involvement, and to guide work with the communities.
	Four community meetings were held in each of five jurisdictions to identify community-preferred intervention strategies. These strategies were collated by jurisdiction.
	Three inventories (programs, data, and policies) were compiled for each of four communities in each jurisdiction.
	Collated lists of preferred intervention strategies and inventory findings were shared in a second series of community meetings in each jurisdiction. Strategies on these lists were prioritized by community participants based on their perceived importance and feasibility.
Step 2. Review scientific literature	Intervention team conducted a systematic literature review of effective environmental strategies to prevent and control childhood obesity.
Step 3. Merge findings from the community and literature	CHL Coordinating Center merged findings from the community meetings and literature.
	The intervention team reviewed, discussed, and finalized the intervention activity grid.
Step 4. Formulate CHL multilevel intervention	The region-wide CHL intervention was formulated at week-long annual meeting with representatives from all jurisdictions.
	Jurisdiction-specific meetings were held to plan how the CHL intervention would be specifically operationalized in the jurisdiction's communities.

television, and easy access to fast foods and SSBs. These were translated by the groups into a raw list of possible intervention strategies for action.

Findings from the first round of community meetings were disseminated at a second round of community feedback meetings. After reviewing the raw data, participants were asked to rank each of the proposed intervention strategies on its importance and feasibility, as well as discuss their perceptions of the process and preferences for action. Rankings were tabulated after the meeting, and CHL staff in the five jurisdictions created their priority list based on community-gathered data and discussions in CHL conference calls.<sup>18</sup>

### *Step 2. Review the Literature*

Concurrently, the CHL team conducted a literature review of multilevel obesity-related interventions targeting young children. Articles were identified from 1995 to 2012 through Google scholar, EBSCO Host databases, and citation chasing. Search terms included childhood, obesity prevention, physical activity, nutrition, and environmental interventions. Articles were excluded if they described only cognitive-behavioral interventions, given that CHL's focus was to develop a multilevel intervention to reduce or prevent obesity in young children. Articles also were excluded if they were tested with nonexperimental designs.

The resulting studies were rated on an intervention effectiveness rating system by Brennan and colleagues, which considered study design, intervention duration, and effect size.<sup>19</sup> For interventions rated as "effective," common evidence-based strategies were identified.

### *Step 3. Merge Findings from the Community and Literature*

Priorities from the community meetings in the five jurisdictions were sent to the CHL Coordinating Center at the University of Hawaii, where they were compared against the evidence-based strategies identified through the CHL literature review. Findings were displayed in grids, shared with the CHL staff in each jurisdiction, and discussed in CHL conference calls.

### *Step 4. Formulate CHL Multilevel Intervention*

The final intervention was formulated at the week-long June 2012 annual meeting of CHL attended by representatives of all jurisdictions. Findings from the first three steps were shared, and meeting participants rotated through small workgroups to discuss, extend, and contextualize the proposed intervention strategies as they could influence the behaviors of children. A facilitated discussion with the entire group led to the finalization and adoption of the CHL multilevel intervention strategies.

## Results

### *Community-Identified and Prioritized Intervention Strategies*

Over a 14-month period, each of the five jurisdictions met with its LAC at least twice, identified potential role models, conducted multiple key informant meetings, and held four community meetings to identify assets and potential intervention strategies. Follow-up meetings were held to share findings and prioritize strategies for the intervention. Across the five jurisdictions, 912 individuals participated in one or more of these activities; 20% of participants were parents, 36% were from educational settings, and the remaining 44% represented health and social services, government, food suppliers, wellness professionals, church members, business leaders, and others.<sup>18</sup>

The findings yielded nine intervention strategies that were prioritized as important and feasible by two or more jurisdictions: (1) educate parents, siblings, grandparents, children, and communities on healthy living; (2) educate parents to limit children's screen time; (3) stress the importance of family, teachers, leaders, and other respected figures as role models for healthy living; (4) improve and increase access to free community activities and resources to promote healthy living; (5) increase access to, and maintenance of, PA resources; (6) improve access to drinking water; (7) change or enforce school policies to make school lunches healthier, encourage water intake, increase PA, limit screen time, and reduce consumption of SSBs; (8) change government policies to promote healthy lifestyles; and (9) increase access to, and affordability of, healthy local foods, especially by engaging families and children in gardening.<sup>18</sup>

At the feedback and prioritization meetings, community members expressed support for CHL developing a multilevel intervention based on these priorities. In the discussion session, community members reflected how communities differed within, as well as across, jurisdictions. They requested flexibility to tailor the intervention to fit their culture, role models, and resources, thereby increasing community ownership for the intervention. They also stressed the importance of building the capacity of community resources identified through assets inventories and supporting local role models to deliver the CHL message, rather than reinventing services. The need for more local role models was a consistent message, reflecting community recognition of the power of positive deviance. Types of individuals felt to be important role models included parents and teachers, community leaders, native elders (especially in American Samoa and Hawaii), and church pastors (especially in American Samoa).

### *Data and Literature Review*

For the literature review, 590 articles were identified, 19 of which met the inclusion criteria and described interventions deemed effective based on Brennan and colleagues'

effectiveness rating scale.<sup>19</sup> An analysis of the components of these 19 effective interventions yielded eight recommendations for the CHL intervention: (1) introduce, enhance, and support policy (e.g., in early childhood education programs) for active play and healthy eating among young children; (2) increase accessibility of environments for safe play and PA for young children; (3) train teachers in PA and healthy eating curricula for young children; (4) train teachers to role model PA and healthy eating to young children, especially water consumption instead of sweetened beverages; (5) educate parents to create a healthy environment at the family level, role modeling and promoting desired healthy behaviors; (6) educate children on PA and healthy eating through preschool/school settings; (7) engage young children in growing and eating locally produced healthy foods; and (8) combine involvement of children, parents, and teachers in intervention activities.

### *Merged Strategies and Literature Findings*

The merging process revealed close alignment between community-preferred strategies and the scientific evidence. For example, interventions that engaged children in growing and eating local healthy foods have been shown to change attitudes and behaviors related to produce consumption.<sup>20,21</sup> Because many young children attend preschool, it is critical that these settings establish and follow good wellness policies.<sup>8,13</sup> Children's eating and PA habits start developing at home, and parents can be taught to be better role models of healthy behaviors.<sup>22</sup> In turn, parents and teachers of young children are influenced by role models in their lives, for example, pastors, and several investigators have demonstrated the effectiveness of promoting health messages from the pulpit.<sup>23,24</sup> Other investigators have worked successfully with schools and local governments to promote walkability and bikeability of children's routes to school, increase access to PA in and after school, and increase consumption of water over SSBs.<sup>10-12,25,26</sup>

### *CHL Multilevel Intervention*

The CHL multilevel intervention was formulated at the June 2012 annual meeting, attended by five international advisors and 50 CHL employees from the Pacific jurisdictions. Six intervention strategies were supported by the group: (1) introduce, enhance, and support policy for healthy eating and PA of young children; (2) engage young children in growing and eating local healthy foods; (3) train and support role models to promote desired behaviors; (4) increase accessibility of environments for safe play and PA for young children; (5) increase accessibility of good water for young children; and (6) provide other education and training related to the six CHL behavioral objectives. These strategies addressed the interpersonal (training roles models, parents, and teachers), community (increasing access to healthy foods and environments for safe play), and organizational/policy (strengthening preschool wellness policies) levels of the SEM. These six

**Table 2. Relationship between the Children’s Healthy Living Program (CHL) Intervention Cross-Cutting Functions and How They Help Impact the Six CHL Behavioral Outcomes**

	↓ SSB	↑ F/V	↑ PA	↑ Water	↓ RST	↑ Sleep
1. Review assessment data for the policy and physical environment related to the six CHL behaviors						
a. Preschool wellness policy						
i. Review preschool wellness policy assessment data to identify training needs	X	X	X	X	X	X
ii. Work with preschools to address weakness and implement solutions	X	X	X	X	X	X
b. Greater community						
i. Assess physical environment (parks, stores, and markets) to identify areas for improvement	X	X	X	X		
ii. Improve and advocate for improved physical activity environments	X	X	X	X		
2. Partner and advocate for environmental change						
a. Work with existing organizations and coalition and/or form new coalitions to advocate for:						
i. Better access to parks that are safe and inviting			X			X
ii. Better access to clean water	X			X		
iii. Safer environments for walking, biking, etc. (e.g., bike lanes/racks, sidewalks, greenways)			X			X
iv. Better food placement and availability	X	X		X		
v. Gardens and hydroponics		X	X		X	
b. Partner with existing entities to purchase or obtain sponsorship for:						
i. Water in the preschools and child care centers	X			X		
ii. Gardening supplies for preschool kids		X	X		X	
iii. Sports equipment for preschool kids			X		X	X
iv. Campaigns and messages	X	X	X	X	X	X
3. Promote the CHL message						
a. Support role models to deliver CHL messages in various ways	X	X	X	X	X	X
b. Support exiting social marketing campaigns and distribute CHL social marketing materials	X	X	X	X	X	X
c. Advertise CHL or other activities that promote six CHL target behaviors	X	X	X	X	X	X
4. Train the trainers						
a. Train individuals to promote gardening in preschools and communities		X				
b. Train individuals to lead interactive, hands-on sessions to promote the six CHL behaviors	X	X	X	X	X	X
c. Train individuals to organize and lead family-based activities that support the six CHL behaviors	X	X	X	X	X	X
d. Provide technical assistance to preschool and child care staff on wellness policies	X	X	X	X	X	X
e. Train child care providers and preschool teachers in curricula related to six CHL behaviors	X	X	X	X	X	X
f. Train role models (community champions, role celebrities, and community leaders)	X	X	X	X	X	X

SSB, sugar-sweetened beverages; F/V, fruits and vegetables; PA, physical activity; RST, recreational screen time.

intervention strategies were collapsed into four cross-cutting functions, signifying the four action areas of the intervention: (1) strengthen and actualize school wellness policies; (2) partner and advocate for environmental change; (3) promote the CHL message; and (4) train trainers (capacity building). Specific recommended activities under each cross-cutting function were provided, and relationships between these activities and the CHL's behavior-change objectives are shown in Table 2.

The CHL intervention that resulted from this process is purposely broad. For example, although all jurisdictions were required to engage children ages 2–8 years in growing and eating local healthy foods, approaches could vary based on jurisdiction assets, role models, and structures. For example, jurisdictions could choose to work with schools to build gardens, promote hydroponics or container gardens, expand community access to farmer's markets, and/or work with stores to increase availability of local foods and healthy snacks.

Another cross-cutting function was to train trainers. However, a mandate to use a specific curriculum was not made. Rather, several evidence-based curricula were reviewed and approved for use by a jurisdiction. Examples include SPARK, a curriculum to help teachers increase physical education opportunities for school-age children,<sup>27</sup> and Food Friends, a curriculum to teach children to try and like new and healthy foods.<sup>28</sup> The exception was the curriculum for role model training, because no existing curriculum was identified.<sup>29</sup> This curriculum was based on several guiding principles—trust, active listening, stages of change, a strengths focus, positive deviance, and positive psychology.<sup>14,15,30–33</sup> A 2-day role model training was provided to CHL staff across the region at the June 2013 annual meeting, with the expectation that trainees would return to their jurisdictions to train others. However, jurisdictions were free to select which stakeholders were offered role model training and when. For example, role model training was targeted to community leaders in CNMI, teachers and service-learning youth in Guam, early childhood education teachers in American Samoa and Hawaii, pastors in American Samoa, and coalitions in Hawaii. Ongoing support for role models was provided through quarterly newsletters and technical assistance.

The cross-jurisdiction CHL intervention team also developed templates for social marketing materials, designed to be tailored to each jurisdiction with space for community-specific contact information, cultural symbols, and photos of local children, fruits, vegetables, and cultural activities. Following the stages of change theory, different materials (including posters, brochures, tip sheets, and coloring books) were developed for individuals in the precontemplation (introducing the CHL behaviors), contemplation/preparation (presenting pros and cons of behavior change), and action/maintenance (focusing on goal setting and reinforcement) stages.<sup>30</sup>

For the cross-cutting function on preschool policy, a sample wellness policy was provided to jurisdictions,

along with a checklist to gauge the extent to which healthy policies were being implemented in preschools. Based on jurisdiction structures and relationships, however, different approaches were taken in helping preschools adopt and actualize health policies. For example, Hawaii worked with teachers at Head Start preschools, which are funded by the US government to provide comprehensive early education programs for children of low-income families. In comparison, Alaska worked with a nonprofit organization that specialized in licensing and providing continuing education to preschools. CNMI worked to pass jurisdiction-wide legislation requiring preschools to adopt and implement policies to promote PA and healthy foods and beverages. The CHL intervention was exempt from the University of Hawaii IRB, and the community randomized trial to test its effectiveness on child outcomes was approved.

## Discussion

This article described how the ANGELO model was used to guide the process of intervention development. Using this model assured that the final intervention was evidence based and culturally competent across the various communities in which it would be delivered. As community-based participatory researchers have learned, communities engaged in intervention development (as opposed to having an intervention dictated for use) are more likely to adopt, use, and sustain the program.<sup>34</sup> Yet, learning from and building on the scientific literature also is critical. The ANGELO model presented a way to do both.

The CHL intervention builds on four cross-cutting functions that are being implemented across the region. However, it is flexible enough to allow communities to operationalize activities in ways that are most workable and acceptable to them. This, in turn, allows communities some early victories, increasing feelings of competence and ownership for the intervention.<sup>34</sup>

The 14-month community-engagement process also helped identify good partners for CHL, including role models, agencies, and coalitions, that agreed to join together in the cause of reducing childhood obesity. For example, almost every jurisdiction had a chronic disease coalition that welcomed CHL to meetings and was willing and able to promote and sustain CHL messages. The ANGELO process also helped identify natural role models, that is, those individuals demonstrating one or more of the CHL behaviors on a consistent basis in the face of alternate community norms.<sup>14,15</sup> These individuals were invited to attend CHL role model training and then supported to spread the CHL message in their families, schools, churches, and communities.

Although the ANGELO model proved successful in guiding the development of the CHL intervention, it was a time-consuming process, requiring approximately 14 months of the 5-year grant period. Also, the resulting level of flexibility in the CHL intervention was frustrating to some staff initially, because each jurisdiction had to take

time to discern the best approach to operationalizing the cross-cutting functions.

Currently, the CHL intervention is being evaluated through a cluster randomized, controlled trial in which two communities in each jurisdiction receive the intervention and two comparable communities serve as delayed-intervention control communities.<sup>6</sup> The research is testing the intervention's impact on anthropometric indicators (e.g., BMI and waist circumference), as well as its ability to increase F/V intake, water consumption, PA, and sleep duration and decrease RST and SSB consumption. Because of the flexibility of operationalizing the intervention, reach, dose, and duration of each intervention component are being tracked, and dosage will be a control variable in the analysis of findings.

## Conclusions

This article described how the CHL Program used the ANGELO model to design a sustainable, multilevel intervention based on community input and evidence-based strategies for the US-Affiliated Pacific region. The resulting intervention addressed multiple levels of the SEM and could be tailored to fit the realities of individual communities.

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## References

- Goran MI, Ball GDC, Cruz ML. Obesity and risk of type 2 diabetes and cardiovascular disease in children and adolescents. *J Clin Endocrinol Metab* 2003;88:1417–1427.
- Ogden CL, Carroll MD, Curtin LR, et al. Prevalence of high body mass index in U.S. children and adolescents, 2007–2008. *JAMA* 2010;303:242–249.
- Oshlansky SJ, Passaro DJ, Hershov RC, et al. A potential decline in life expectancy in the United States in the 21st century. *N Engl J Med* 2005;352:1138–1145.
- Novotny R, Fialkowski MK, Li F, et al. Systematic review of prevalence of young child overweight and obesity in the United States–Affiliated Pacific region compared with the 48 contiguous states: The children's healthy living program. *Am J Public Health* 2014;e1–e14. [Epub ahead of print.]
- Novotny R, Fialkowski MK, Areta A, et al. The Pacific way to child wellness: The Children's Healthy Living Program for Remote Underserved Minority Populations of the Pacific Region (CHL). *Hawaii J Med Public Health* 2013;72:406–208.
- Wilken LR, Novotny R, Fialkowski MK, et al. Children's Healthy Living (CHL) Program for Remote Underserved Minority Populations in the Pacific Region: Rationale and design of a community randomized trial to prevent early childhood obesity. *BMC Public Health* 2013;13:944.
- McLeroy KR, Bibeau D, Steckler A, et al. An ecological perspective on health promotion programs. *Health Educ Q* 1988;15:351–377.
- Chang DI, Shuell J, Gertel-Rosenberg A. A journey to support environmental change in early childhood. *Child Obes* 2014;10:192–193.
- Huang TT, Drewnoski A, Kumanyika S, et al. A systems-oriented multilevel framework for addressing obesity in the 21st century. *Prev Chronic Dis* 2009;6:A82.
- Sallis JF, McKenzie TL, Conway TL, et al. Environmental interventions for eating and physical activity: A randomized controlled trial in middle schools. *Am J Prev Med* 2003;24:209–217.
- Economos CD, Hyatt RR, Goldberg JP, et al. A community intervention reduces BMI z-score in children: Shape up Somerville first year results. *Obesity* 2007;15:1325–1336.
- Foltz JL, May AL, Belay B, et al. Population-level intervention strategies and examples for obesity prevention in children. *Ann Rev Nutr* 2012;32:391–415.
- Story M, Hannan PJ, Fulkerson JA, et al. Bright Start: Description and main outcomes from a group-randomized obesity prevention trial in American Indian children. *Obesity* 2012;20:2241–2249.
- Marsh DR, Schroeder DG, Dearden KA, et al. The power of positive deviance. *BMJ* 2004;329:1177–1179.
- Bisits Bullen PAB. The positive deviance/health approach to reducing child malnutrition: Systematic review. *Trop Med Int Health* 2011;16:1354–1366.
- Simmons A, Mavoia HM, Bell AC, et al. Creating community action plans for obesity prevention using the ANGELO (Analysis Grid for Elements Linked to Obesity) Framework. *Health Promot Int* 2009;24:311–234.
- Swinburn B, Egger G. Influence of obesity producing environments. In: Bray GA, Bouchard C (eds), *Handbook of Obesity: Clinical Applications*. Marcel Dekker: New York, 2004.
- Fialkowski MK, DeBaryshe B, Bersamin A, et al. A community engagement process identifies environmental priorities to prevent early childhood obesity: The Children's Healthy Living (CHL) Program for Remote Underserved Populations in the US Affiliated Pacific Islands, Hawai'i and Alaska. *Matern Child Health J* 2013 Sep 17. [DOI 10.1007/s10995-013-1353-3; ePub ahead of print]
- Brennan L, Castro S, Brownson RC, et al. Accelerating evidence reviews and broadening evidence standards to identify effective, promising, and emerging policy and environmental strategies for prevention of childhood obesity. *Annu Rev Public Health* 2011;32:199–223.
- Davis SM, Clay T, Smyth M, et al. Pathways curriculum and family interventions to promote healthful eating and physical activity in American Indian schoolchildren. *Prev Med* 2003;37:S24–S34.
- McAleese JD, Rankin LL. Garden-based nutrition education affects fruit and vegetable consumption in sixth-grade adolescents. *J Am Diet Assoc* 2007;107:662–665.
- McLean N, Griffin S, Toney K, et al. Family involvement in weight control, weight maintenance, and weight-loss interventions: A systematic review of randomized trials. *Int J Obes* 2013;27:987–1005.
- Ka'opua LS, Park SH, Ward M, et al. Testing the feasibility of a culturally tailored breast cancer screening intervention with Native Hawaiian women in rural churches. *Health Social Work* 2011;36:55–65.
- Resnicow K, Campbell MK, Carr C, et al. Body and Soul. A dietary intervention conducted through African-American churches. *Am J Prev Med* 2004;27:97–105.

25. de Silva-Sanigorski AM, Bell AC, Kremer P, et al. Reducing obesity in early childhood: Results from Romp & Chomp, an Australian community-wide intervention program. *Am J Clin Nutr* 2010;91:831–840.
26. Nigg C, Geller K, Adams P, et al. Successful dissemination of Fun 5—A physical activity and nutrition program for children. *Transl Behav Med* 2012;2:276–285.
27. Sallis JF, McKenzie TL, Alcaraz JE, et al. The effects of a 2-year physical education program (SPARK) on physical activity and fitness in elementary school students. *Sports, Play and Active Recreation for Kids*. *Am J Public Health* 1997;87:1328–1334.
28. Johnson SL, Bellows L, Beckstrom L, et al. Evaluation of a social marketing campaign targeting preschool children. *Am J Health Behav* 2007;31:44–55.
29. Butel J. *Role Model Guide*. University of Hawai'i Children's Healthy Living Project: Honolulu, HI, 2013.
30. Prochaska JO, DiClemente CC. Stages of change in the modification of problem behaviors. *Prog Behav Modif* 1992;28:183–218.
31. Rogers C. *Client-Centered Therapy: Its Current Practice, Implications, and Theory*. Houghton Mifflin: Boston, MA, 1951.
32. Saleebey D. *The Strengths Perspective in Social Work Practice*, 5th ed. Pearson: Upper Saddle River, NJ, 2008.
33. Seligman ME, Steen TA, Park N, et al. Positive psychology progress: Empirical validation of interventions. *Am Psychol* 2005;60:410–421.
34. Israel BA, Eng E, Schulz AJ, et al. *Methods for Community-Based Participatory Research for Health*, 2nd ed. Jossey-Bass: San Francisco, CA, 2013.

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