

Are Individuals Who Serve Healthy Meals to Our School Children Actually Healthy Themselves?

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Abstract

Background: There is very little research examining school foodservice employees' health status and quality of life. In the Southern United States, many of Louisiana's school foodservice employees have obesity and potential comorbidities. More than 25% of Louisiana children and adolescents have overweight or obesity and consume one-third of their energy intake at school. More than 75% of child nutrition personnel in the state of Louisiana are overweight or obese.

Objective: We conducted focus groups and administered a survey both focusing on the health and the influence of the workplace on health with an overall objective of developing a future wellness intervention for child nutrition personnel.

Design: An objective cross-sectional survey design was used via self-reported surveys including the NCI Fruit and Vegetable Screener. Qualitative data on personal health and wellness were obtained via focus groups from a subset of the survey respondents. Focus group recruitment was determined by stratified cluster sampling whereby the total population was divided into clusters and then into three strata: elementary, middle and high schools. Clusters were randomly chosen to identify a target of 125 focus group participants. One cluster included administrative staff. Each selected cluster of participants was asked to attend a focus group that lasted approximately 1 - 1.5 hours. A total of 122 Child Nutrition employees from 18 schools and the administrative office participated in focus groups consisting of 6 - 12 people.

Participant/Setting: Survey participants were school foodservice personnel (n = 363) from a large metropolitan school system in Louisiana serving more than 50,000 meals per day. The survey was administered in conjunction with a large in-service training. Focus groups described above were conducted at elementary, middle school and high school cafeterias as well as the central office for the school system child nutrition program. All research activities were completed by May 2018.

Main Outcome Measures: Obesity status, health conditions, barriers to work performance, descriptive data to describe perceptions, insights, attitudes, experiences and beliefs about health and wellness with a unique occupational group was collected.

Statistical Analyses Performed: Analysis of variance and sum of squares were used when comparing questions about fruit and vegetable intake from the National Cancer Institute Fruit and Vegetable Screener and the survey question, “I usually eat the school lunch meal prepared at our school”. Significance level was set at $P < 0.05$.

Results: The participants were predominantly non-smokers; more than 50% had high blood pressure, almost 20% had diabetes, and 23% had elevated cholesterol levels. Focus group findings pointed to physical mobility and stress as significant barriers to wellness and optimum work performance. Those reporting that they “usually eat school lunch” ate 1.11 more fruit/veg servings on average compared to those who didn’t. “Usually consuming school lunch” was associated with lunchtime fruit and vegetable intake ($p < 0.038$).

Conclusion: School foodservice employees who actively choose to be more health conscious regarding diet and more physically active may be role models for children and teens. Clearly, there are intervention possibilities to pursue with this population.

Keywords: *Child Nutrition Professional; School Foodservice; Employee Wellness; Adult Weight Management; Evidence-Based Guidelines*

Introduction/Background

Both child nutrition personnel and the children they serve bear a heavy burden of obesity. Seventy-seven percent (77%) of the United States of America’s state of Louisiana child nutrition personnel reportedly have overweight or obesity [1] while 27.1% of Louisiana children and adolescents (2 - 19 year-olds) are overweight or have obesity [2]. A high prevalence of obesity is associated with substantial health disparities: in this study 40% of the population were African-American and 94.3% were female [1]. There is a desperate need for effective interventions to prevent or reduce obesity.

Few efforts have been made to address the metabolic health of child nutrition personnel, despite growing interest in personal health improvement due to a high prevalence of chronic comorbidities. According to the 2016 Louisiana Child Nutrition Training Needs Assessment ($n = 1,076$) and Louisiana Child Nutrition Personnel Health and Wellness Needs Assessment ($n = 147$), 69% of child nutrition personnel were interested in participating in medical and wellness programs and 90% were interested in learning more about scientific studies and health in general [1]. We know the attitudes of child nutrition personnel toward the students, the school staff, and the job influences these individuals on a daily basis [3]. But what about their attitudes toward health and their own personal health? Does this influence the health of the children served?

The Centers for Disease Control (CDC) Whole School, Whole Community, Whole Child (WSCC) [4] model includes Nutrition Environment and Services as one of its ten integral parts of the community centered around the child. Support for the wellness (physical, emotional and professional well-being) of child nutrition personnel will foster healthy behaviors both in the worksite setting and in the personal lives of the staff. This is critical to address the health needs of child nutrition personnel because: 1) Implementing wellness programs and practices can help to reduce stress and boost morale, productivity, and effectiveness in the workplace. 2) Improving employee’s wellness can directly impact the health of students since they can potentially serve as role models. 3) Healthy employees can save schools significant costs through reduced health care and fewer missed sick days.

A two-year research intervention completed in Somerville, Massachusetts [5] investigated changes in the school food environment as a logical target to prevent childhood overweight. The intervention was broad and included school meal changes, professional development, capacity building, and communication strategies. The results specific to the child nutrition staff members included awareness, attitude,

and behavior changes that relate directly to personal health habits. After one year of the study, food service workers reported changes in their personal eating habits consuming higher amounts of fruits and vegetables, lesser amounts of high-fat foods, reducing snack consumption, and increasing whole grain consumption. The primary reasons for making these changes included: wanting to lose weight, to improve their health and to reduce their risk of illness [5].

According to the Self-Determination Theory (SDT) [6], addressing the metabolic health of community leaders will enhance motivation and commitment to educational efforts in their own communities. Weight management is critical to long-term metabolic health. Our study also gathered preliminary data specific to the feasibility and use of the Evidence-Based Adult Weight Management Nutrition Practice Guidelines [7] in the school food service setting. Registered Dietitians/Nutritionists (RDs or RDNs) who work in community settings strengthen the practice guidelines and provide greater outreach to expand the coordination of care and comprehensive weight management efforts. The 2014 Adult Weight Management Guidelines are designed for RDs or RDNs who provide medical nutrition therapy (MNT) in the clinical outpatient or inpatient clinical setting. The guidelines' focus on MNT in clinical settings, which is a barrier to RDNs who work in the weight management field in community-based settings. Despite agreement that MNT sessions are essential for improved outcomes, MNT may not be available to certain populations. There is a need to inform RDNs who work in community settings to expand the coordination of care and comprehensive weight management efforts. The 2016 Position of the Academy of Nutrition and Dietetics: Interventions for the Treatment of Overweight and Obesity in Adults [8] states obesity interventions should be delivered in multiple types of settings, increasing client accessibility. These efforts would endorse energy balance behaviors within the population, potentially improving efforts to maintain a healthy weight. This study helped to inform use of the guidelines by developing collaborative partnerships with key stakeholders in the child nutrition arena—those stakeholders being the child nutrition personnel who serve thousands of school children meals each day. The child nutrition staff at some schools may interact with a student four times during the day if a child participates in multiple meal programs at school.

Objective of the Study

The objective of the current study was to determine the issues facing school nutrition personnel within their work environment and to identify the health and physical issues to consider within their work performance. We also wanted to determine factors that influenced their health profile with the ultimate goal of designing appropriate interventions tailored to the needs of this occupational group. Our hypothesis was that the health of the workforce is a positive influence on the health the children.

Research Question

What do we know about the health of those who feed our school children: will child nutrition personnel who are concerned about health and wellness, and actually wanting to be healthier themselves modeling this behavior to our children?

Key Findings

The child nutrition personnel in this study reported high prevalence of chronic diseases including obesity, diabetes, high blood pressure, high cholesterol and depression. Forty-four percent (44%) of these participants have worked in the child nutrition field for greater than 11 years and 40% were between 55 - 64 years old. Focus group findings reveal limited exposure to health and wellness activities during the workday and outside of work. Stress and physical mobility are barriers to wellness and optimum work performance. Those who reported that they “usually eat school lunch” ate 1.11 more fruit and vegetable servings on average compared to those who did not.

Methods

The Pennington Biomedical Research Center Institutional Review Board approved the study protocol. Participants provided written informed consent.

Study location and participants

Child nutrition personnel from a large school district in Louisiana were invited to participate in this study. The district serves 30,000 students at lunch and 20,000 students at breakfast daily. Under the Community Eligibility Provision [9], all children in the current study (82.2% minority population) eat at no cost. A Community Needs Index (CNI) of the city where the study was conducted enabled us to describe the participants of our study based on zip code indicators. Eighty-seven percent (87%) of participants lived in zip codes with a CNI of > 3.4, 42% lived in zip codes with a CNI > 4.5 and 21% lived in zip codes with a score of 5.0. The CNI score averages five barrier scores measuring socioeconomic indicators: income, culture, education, insurance and housing. A 5.0 indicates an area with needs determined to be highest and most immediate in terms of addressing.

Survey

Participants (n = 363) completed an 11-page paper based health and wellness survey which included the NCI Fruit and Vegetable Screener [10] questions 2 and 2a as shown in figure 1. The surveys were completed and collected at an in-service training. The survey included demographic data, questions about current health conditions, whether school lunch and breakfast are eaten at school as well as occupational specific questions such as, “On a typical workday how many hours do you stand on your feet?”.

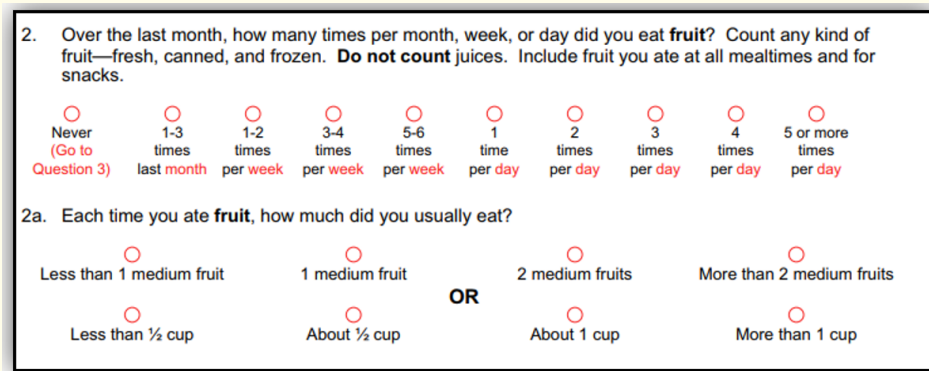


Figure 1: Questions 2 and 2a from the National Institutes of Health Eating at America’s Table Study Quick Food Scan.

Focus groups

Focus group recruitment was determined by stratified cluster sampling whereby the total population was divided into clusters and then into three strata: elementary, middle and high schools (Figure 2). Focus group sessions were designed to host 6 - 12 volunteers and last 60 - 90 minutes. At the beginning of each focus group, participants were provided with a recruitment brief explaining the purpose and expectations of the focus group sessions, followed by the opportunity to volunteer and sign a consent form. The sessions were held in school cafeterias after the work shift or at an administrative office. The focus group sessions included a combination of open-ended and probing questions. Focus group findings were categorized according to three specific areas as outlined by the Evidence Based Adult Weight Management Practice Recommendations. 1) Motivation for Weight Management 2) Coordination of Care 3) Behavior Therapy Strategies.

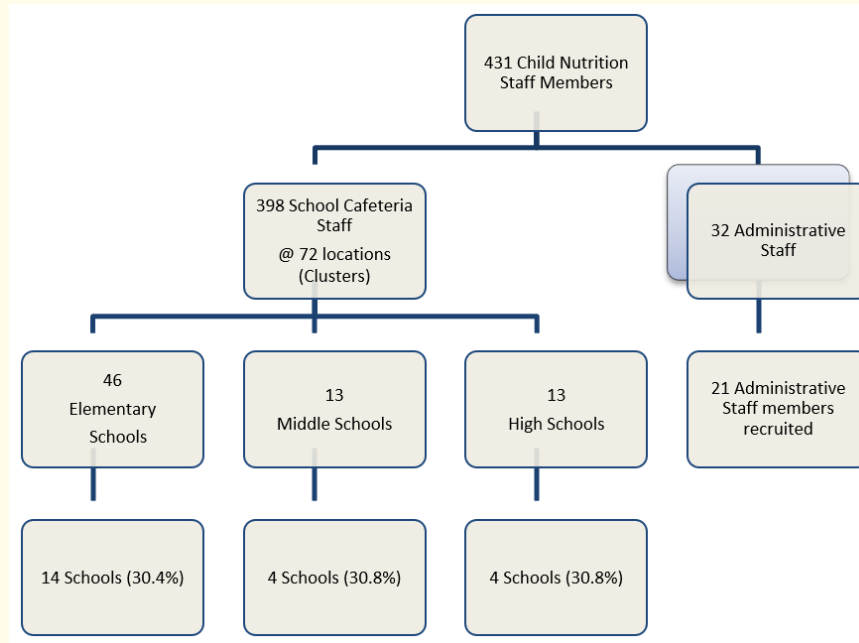


Figure 2: Stratified cluster sampling for Focus Groups.

Statistical and content analysis

An independent-samples t-test was used to examine mean fruit and vegetable consumption between those who usually eat school lunch and those who did not. Fruit and vegetable consumption was 1.1 servings higher for those who usually eat school lunch compared to those who did not (4.4 ± 5.4 vs 3.3 ± 3.9 ; $p < 0.05$). Note that group fruit and vegetable consumption varied significantly relative to their respective means (this is illustrated best in the sum of squares) as seen in Table 1. Demographics and other characteristics of the populations are presented in Table 2. Employees shared their specific observations when asked about specific questions during the focus group (Table 3). Tascam DR-05 Linear PCM Recorders were used to collect focus group data. Undergraduate dietetic students were tasked with transcribing with focus group data. Content analyses of the focus group data were categorized using the focus group questions, subject themes and specific chronic conditions e.g. high blood pressure (Table 4). All analyses were conducted using SAS® software version 9.4 (SAS Institute Inc., Cary, NC, USA).

	N	%			
I usually eat the school breakfast prepared at our school.	185	52.56%			
I usually eat the school lunch prepared at our school.	213	60.86%			
One-Way Analysis of Variance of Fruit and Vegetable Intake by School Meal Consumption	DF	Sum of Squares	Mean Square	F Value	P Value
Between Groups	1	101.69	101.69	4.33	0.0382
Within Groups	342	8029.13	23.48		
Total	343	8130.82			

Table 1: Responses to questions about consuming school breakfast and lunch and fruit and vegetable intake.

	n	%
Male	42	11.6%
Female	321	88.4%
Race		
Black/African American	315	87.0%
White	196	5.3%
Other	28	7.7%
Age		
18-24 years	8	2.2%
25-34 years	35	9.7%
35-44 years	46	12.7%
45-54 years	109	30.1%
55-64 years	143	39.5%
>65 years	21	5.8%
BMI Classification		
Underweight	38	10.4%
Normal Weight	42	11.5%
Overweight	104	28.5%
Obesity Grade 1	92	25.2%
Obesity Grade 2	56	15.3%
Obesity Grade 3	33	9.0%
Years in current position		
Less than a year	24	6.7%
1 to 5 years	131	36.3%
6 to 10 years	42	11.6%
11 to 15 years	62	17.2%
More than 15 years	98	27.2%
Not sure	4	1.1%

Table 2: Demographics of 363 school foodservice employees participating in survey and focus groups.

	N	%	Mean
On a typical work day, how many hours do you work?	351		7.13 hours
On a typical work day, how many hours do you stand on your feet?	349		6.27 hours
Smoking Status			
Never a smoker	266	77.33%	
Former smoker	33	9.59%	
Curret smoker	45	13.08%	
Has a doctor told you that you have any of the following?			
High Blood Pressure	203	55.62%	
Diabetes	70	19.18%	
High Cholesterol	84	23.01%	
Depression	36	9.86%	
Other	29	7.95%	
Health related comments			
I have medical insurance.	343	95.54%	
I have dental insurance.	289	81.64%	
I have vision insurance .	272	78.39%	
I got my flu shot this year.	137	39.60%	
I take my medicines as prescribed by my doctor.	242	88.32%	

Table 3: Comments regarding work and health by 363 School Foodservice Employees participating in survey and focus groups.

<p>Focus Group Questions</p>	<ul style="list-style-type: none"> • How did you like taking the survey? • Can you think of any other questions that should have been asked on the survey? • What do you think are the most important health problems of child nutrition cafeteria staff? • What are barriers to being healthy? • What does health and wellness mean to you? • What health issues do you worry about? Why? • Is there someone in your cafeteria who is into health and wellness? • What would help you take better care of yourself?
<p>Sample of Focus Group quotations categorized by self-efficacy, coordination of care and problem solving strategies</p>	
<p>Self-efficacy for weight management, based on behavior change theories and models.</p>	<ul style="list-style-type: none"> • I have a health problem-and I don't know it! • It is the soda and the sweets that cause weight gain. • I can't understand why I'm gaining weight. • I get to huffing and puffing, so I know I need to lose weight. • Discipline is important for weight loss. • You know what motivates me to stay healthy? I look at my mom and dad. Both of my parents are still living. That's a blessing. They are healthy. • When I leave work-I am so exhausted. • Just by not consuming as much I've lost a few pounds. Its not what you eat-but how much.
<p>Coordination of care with an interdisciplinary team of health professionals promotes the greatest effectiveness of MNT.</p>	<ul style="list-style-type: none"> • I can't afford to pay for my health care. Income level is a barrier to being healthy. • It is important to not be afraid to see the doctor. • Having people encourage you to be healthy helps a lot. • Sometimes you can't trust the insurance companies. I worry they won't cover me if they find out I have a health problem. • I could have cancer right now. But if I find out I have it...that's when the stress comes. • When the cardiologist talks-his message about making changes might just stick.
<p>Problem-solving strategies for weight maintenance and weight loss.</p>	<ul style="list-style-type: none"> • We get fruit two times a day and now I like fruit! • I think xxx is a good role model because she is fit. • You might hear a co-worker talk about a long walk and being healthy. It rubs off on you...when you hear someone talking about being healthy. • Good communication helps with stress.

Table 4: Sample questions and quotations from focus group participants.

Limitations of the Study

Some limitations were associated with the focus group sessions including: several group member(s) dominating the discussion preventing others to express their opinion. In addition, the desire to discuss off topic subjects like the flavor of food served and cooking

methods associated with school meal service were distracting. Fortunately, the skilled facilitators were able to invite other participants to join the conversation and redirect the group to the approved focus group questions. The survey and focus group data served as complementary research methods [11]. The focus groups helped to clarify survey findings.

Results

The group completing the surveys (Table 2 and 3) were predominantly non-smokers; however they had a high prevalence of chronic diseases, especially high blood pressure. Only 40% reported having had a flu shot while more than 80% reported taking medicines as prescribed by their doctor. This group, unlike the statewide data compiled previously [1], is majority African American (87%) and 88% female. Those reporting that they “usually eat school lunch” ate 1.11 more fruit/vegetable servings on average compared to those who did not. The results of the survey were largely confirmed by discussions in the focus group sessions (Table 4). For example, one focus group participant referenced the opportunity to eat fruit twice a day as part of the school meal plan. Another participant discussed how co-workers have the potential to motivate others during the work day, “When you hear a co-worker talking about taking a long walk and being healthy-it rubs off on you”.

The survey data did not align with the focus group data when health care was discussed. When asked about medical and dental insurance on the survey, the majority reported medical and dental coverage. When this topic came up in the focus group sessions, many reported high health insurance costs and “income is a barrier to being healthy”. Another participant conveyed mistrust with health insurance companies and is worried she will not have adequate coverage or her coverage will be denied.

When the topic of weight management came up in the focus groups there were three major themes: lack of time, fatigue and lack of success despite trying to lose weight. Focus group participants discussed working one or two extra jobs in addition to their job as a child nutrition employee, feeling stress from taking care of family members and anxiety about making ends meet at the end of the month.

We acknowledge that the size of the study population may be considered a limitation to this research. However, we feel that based on discussions with a number of groups both within the broader school nutrition personnel and our interaction with school nutrition professionals nationally, we feel the findings are most likely true of many child nutrition workers. The fact that this population is majority African American might also be considered a limitation since we did not have equal numbers of non-minority populations. However similar minority population groups working in other food service institutions and perhaps even retail establishments who mimic the demographics of the population here may equally benefit from a health and wellness intervention.

Discussion and Conclusion

The physical demands of child nutrition professionals are significant. Survey data collected in this study indicates employees are standing during the workday for an average of more than 6 hours. In view of the fact that over 44% of the survey participants in the current study were in their position for more than 11 years and more than 40% were over the age of 55 years, this is an important consideration when addressing health and wellness needs. Preliminary findings from focus groups suggest that physical mobility and stress are significant barriers to optimum work performance; in particular participants report back and foot pain as result of completing tasks at work. One participant’s coping mechanism upon completing her day’s work was that she just wanted to “sit in her truck until she could muster up the energy to get moving and drive home”. Other individuals in the focus groups registered similar sentiments. Pain associated with a day’s work lingers potentially into the after-work home environment and, if substantial, can translate into poor performance when completing activities later during the day.

A recent report by Jackson., *et al.* [12] spotlights food insecurity and physical functioning in older U.S. adults. That report states that food insecurity among U.S. older adults has more than doubled in the past 20 years. Congruent with that statement, in focus groups held in the current study child nutrition workers report that often more than one job is needed to make ends meet. While Jackson., *et al.* [12]

linked physical limitations with food insecurity, that data from the National Health and Nutrition Examination Survey (NHANES) notes that there is disproportionately higher rates among minority populations, affecting among others, activities of daily living, general physical activities, and often with as many as four physical limitations. As mentioned previously, more than 45% of the participants in this study were over the age of 55 and reported more than one job and physical stress due to the tasks associated with their daily job responsibilities. In addition, 87% of the population is African American. These facts coincide with previous data [13] and would indeed indicate that they are both food insecure at some level with associated physical limitations due to the pain associated with work tasks described.

Another interesting study on food workers regarding factors related to health and hygiene in food service was conducted by Clayton, *et al* [13]. They interviewed these individuals particularly discussing food safety practices and workplace factors using a social ecological model with multiple levels of influence on health and hygiene behaviors. While their main focus was foodborne disease, their interviews reveal issues with food service procedures, working conditions, and community resources, in addition to policies. When probing about institutional factors, their participants note various workplace demands, understaffing, time pressure and strenuous work schedules added to their concerns. The subject population of Clayton, *et al.* [13] is primarily restaurant workers and while their issues are somewhat different from school food service, there are some similarities from which comparisons can be made. The research presented by Clayton, *et al.* [13] focuses on working conditions of time pressure, high volume, work schedules, understaffing, the physical environment, resources, and wages and benefits. Focus groups in the current study delved into all of these factors and issues were raised in all areas despite the fact that these study participants are in school food service as opposed to restaurants or other commercial food service establishments.

The issue of physical barriers to performance is critical in school food service whereby these workers often have to lift heavy boxes or move around heavy equipment which may not always be the case in commercial establishments that have personnel particularly assigned to these tasks. Hence, the situation in school food service encounters all of the issues others have reported on in general, yet the literature has not weighed heavily on details involving child nutrition personnel tasked with the nutrition needs of our future generations. Indeed, extensive research into the physical, health, social and emotional issues faced by these individuals should be a next step. Such data can help to inform potential interventions that will have a positive effect on performance, with wellness high on the priority list.

Other than the current study presented here and the few research articles presented in this section, there is a paucity of research specific to school lunch personnel and in particular, examining school foodservice employees' metabolic health. This project aimed to assess the health of school foodservice employees using quantitative (survey) and qualitative (focus group) methods. Assessing the motivation for weight management, coordination of care and behavior therapy strategies is important in determining physical issues that impact individuals in the work environment. Critical information about personal health status, fruit and vegetable intakes associated with a healthy diet, and perspectives, opinions, attitudes and interests in health problems, along with their solutions helps to inform future research. Findings from the focus groups indicate that there are physical barriers to optimum work performance. These barriers potentially relate to obesity, hypertension and diabetes, and exacerbate health disparities.

An occupation specific wellness promotion/weight management intervention for child nutrition personnel is the next step for this research. In addition, a specific document to guide child nutrition leaders in altering the school cafeteria environment to accommodate worksite wellness activities that afford employees the opportunity to practice and adopt strategies for role modeling and healthy lifestyle behaviors is desperately needed. The focus groups also reveal strong family relationships and social connectedness as important factors to consider when planning an intervention with this population. Participants desire encouragement from peers, family role modeling and support from the school community. Clayton, *et al.* [13] also note community level factors in their study and allude to the importance of relationships with co-workers and management. The individuals in the current study verbalize the importance of these sorts of issues as well and supervisors need to listen to their employees and review their particular management style - most important of which is their ability to make their workers know that they see them and that they are a valued member of the team. Accomplishing this enables increased self-esteem in the individual and motivation to get the job done and to do it well.

One strategy to expand upon the evaluation of the use of the Evidence-Based Adult Weight Management Nutrition Practice Guidelines [6] in the school food service setting is to consider a community-based participatory research (CBPR) intervention. The Doing Me! Sisters Standing Together for Healthy Mind and Body [14] study in Chicago identified community and culturally-relevant intervention approaches to promote weight loss in low-income African American women using CBPR. This randomized pilot study (n = 60) aimed to increase participants' self-efficacy, self-regulation and behavioral capability as it relates to weight management strategies while offering modeling through a culturally sensitive design. A CBPR intervention for child nutrition personnel that reinforces healthy eating, physical activity and behavior change modifications similar to those described by the Doing Me! program would create a culture of health among child nutrition personnel, improve attitudes toward what it means to be healthy and ultimately benefit the health of the children served in school cafeterias.

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