



Assessing the Feasibility of a Multi-Program School-Based Intervention to Promote Physical Activity and Healthful Eating in Middle Schools prior to Wide-Scale Implementation

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ABSTRACT

Background: University-community partnerships can support schools in implementing evidence-based responses to youth obesity trends. An interorganizational partnership was established to implement and evaluate the Healthy Choices Collaborative Intervention (HCCI). HCCI combines an interdisciplinary curriculum, before/after school activities, and the School Health Index to promote physical activity, reduce television viewing, and increase fruit and vegetable consumption among middle school youths. **Purpose:** A modified rapid assessment process was used to explore potential influences on feasibility of implementing and sustaining HCCI before wide-scale implementation. **Methods:** Twenty-one in-depth interviews were conducted with administrators, program coordinators, and teachers who had experience with one or more of the intervention components. **Results:** Respondents believed combining programs would be beneficial because of common behavioral goals. A key leader, an engaged, multidisciplinary team, and parental, community, and administrative support were viewed as being important for effective implementation. Respondents believed sustainability would be facilitated through resources for networking and refreshers on intervention components. **Discussion:** Findings resulted in hiring regional coordinators to assist schools in implementation, allowing schools flexibility in implementation, and reducing the required number of Planet Health lessons and School Health Index modules. **Translation to Health Education Practice:** Findings illustrate the utility of rapid assessment procedures to gauge feasibility of combining multiple interventions before implementation.

BACKGROUND

Persistent increases in the prevalence¹ and earlier age at peak incidence of childhood overweight,² along with predictions of reduced life expectancy associated with overweight status,³ have challenged researchers and practitioners to develop effective, sustainable interventions to avert the health and social consequences of said status.⁴⁻⁷ In 2005, the Institute of Medicine called for immediate public health action based on the best available, rather than the best possible, evidence to address pediatric obesity trends.⁸ Schools are important organizational set-

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tings for this effort.⁹⁻¹²

A number of intervention programs have been developed that address the Centers for Disease Control and Prevention (CDC) guidelines for the delivery of comprehensive school health services.¹² Insufficient evidence exists to establish the overall effectiveness of multicomponent interventions⁹ that address influences on the development of lifelong physical activity and healthful eating using ecologic approaches.^{13,14} Nevertheless, intervention models demonstrating modest changes in health behaviors and weight status⁹ can provide the basis for schools' attempts to prevent and control child overweight.

As with health promotion activities in other settings,^{15,16} efforts to adopt evidence-based interventions in schools may face challenges in moving from research to practice. Collaborations between universities and public health partners (e.g., state and local public health departments, schools, churches, community groups) can foster novel approaches to designing and implementing programs to reduce risk and promote healthful behaviors.^{9,17}

Participatory methods that fully engage school personnel can play an important role in the adoption of efficacious curricula by defining objectives and demonstrating relative advantages, acceptability, perceived feasibility, and intent to sustain use among teachers.¹⁸ Potential benefits in using the school infrastructure to disseminate standardized health messages may be counterbalanced by the difficulty in meeting mandated testing requirements and by the lack of reinforcement of behavioral messages in the school food and activity environment.¹⁸ Additionally, it can be challenging to implement a curriculum component if the school environment does not support the intervention message.¹⁹

The Healthy Choices Collaborative (HCC)—a partnership among the Massachusetts Department of Public Health (MDPH), Blue Cross Blue Shield of Massachusetts (BCBS-MA), the Harvard School of Public Health (HSPH), and Massachusetts public middle schools—provides an

opportunity to explore the feasibility and sustainability of a multi-program intervention, the Healthy Choices Collaborative Intervention (HCCI). In partnership with private and public agencies, the MDPH has been involved in several school-based initiatives aimed at improving nutrition and physical activity among youths across the state by raising awareness and fostering healthy behavior. Beginning school year 2004–2005, BCBS-MA, in collaboration with the Massachusetts Overweight and Obesity Prevention and Control Initiative (MOPCI), made funds available to Massachusetts public schools to implement HCCI, which combines three individual school-based interventions (see Table 1): Planet Health,^{20,21} Healthy Choices,²² and the CDC's School Health Index (SHI).²³ Each participating school receives three years of funding (\$5,000 year 1, \$3,000 year 2, and \$1,000 year 3).

Planet Health, an interdisciplinary curriculum focusing on nutrition and physical activity, has been shown to reduce time spent watching television.²⁰ It also has been shown to be efficacious in improving dietary intake and cost effective in reducing obesity among girls.^{21,24} Healthy Choices, a before- and after-school program evaluated by MDPH, was shown to improve girls' nutrition knowledge and resulted in stabilized mean body mass index (BMI) from baseline to follow-up of girls in the intervention group, with an increase in mean BMI seen among girls in the comparison group.²² No significant effects were observed in boys. The SHI, a CDC-developed environmental assessment and planning tool for schools, has not been evaluated for impact. Nevertheless, qualitative studies reveal that time limitations, limited resources, and staff turnover hinder SHI implementation,²⁵ while the use of an outside facilitator enhances implementation.^{26,27}

PURPOSE

Before expanding the scope or reach of any evidence-based program, including HCCI, it is important to understand what is needed to both implement and sustain the

program. If implementation is inadequate or barriers are not fully addressed, the intervention may not be delivered in its entirety. As a result, interventions shown to be efficacious in ideal situations may be ineffective in changing health behaviors or outcomes in the "real world." This paper presents the results of a qualitative study conducted to explore the perceptions of key leaders who were previously involved in Planet Health, Healthy Choices, or the School Health Index about what is needed to facilitate the implementation and sustainability of HCCI.

METHODS

This study was conceptualized as a modified rapid assessment process (RAP), a research method adapted from anthropological research that uses qualitative methods to gather social and cultural information relevant to health programs.²⁸ Qualitative methods can provide an opportunity for new and unexpected information to emerge.²⁹ RAP has been used internationally for a variety of health programs to quickly determine program needs and communities' perceptions of what is needed to adopt and/or adapt programs.²⁸ MDPH was in the midst of comprehensive evaluation of the "5-2-1 Go!" project (Planet Health and SHI) when funding became available to implement HCCI. RAP was chosen as the methodology in part due to the short time-frame; this study began three months before the scheduled initiation of HCCI.

Participants

Purposive sampling was used to recruit individuals to participate in the in-depth telephone interviews in order to discover their experiences with and perceptions of the programs being incorporated into HCCI, as well as the possibility of sustaining HCCI. Interviews were limited to individuals who had prior experience with Planet Health, Healthy Choices, or SHI. The decision to interview only individuals who had prior involvement with one of these programs was made due to financial limitations and time constraints.

Initially, two sets of interviews were



Table 1. Description of the Three Programs Combined to Create the Healthy Choices Collaborative Intervention

Program	Program Goals	Description of program	Participants
Planet Health ^{19, 20}	<ol style="list-style-type: none"> 1. Reduce television viewing to less than 2 hours per day 2. Increase moderate and vigorous physical activity 3. Decrease consumption of high-fat foods 4. Increase consumption of fruits and vegetables to 5 or more per day 	Intervention activities involve teacher training workshops, classroom lessons, physical education materials, wellness sessions, and school fitness funds. Planet Health employs an interdisciplinary curriculum that was implemented by classroom and physical education teachers.	Middle school students (grades 6 to 8)
Healthy Choices ²¹	Modify behaviors and increase knowledge around healthy snacking, body image, television viewing, fitness, and body size diversity	School-based nutrition and physical activity intervention that uses nutrition projects, media messages, and physical activities to modify behaviors and knowledge around the programs goals.	Middle school students (grades 5 to 8)
School Health Index (SHI) ²²	Improve student health by addressing physical inactivity, poor eating habits, and tobacco use	A self-assessment tool with eight modules that allow school staff to evaluate strengths and weaknesses of their health promotion programs and policies, to develop a school-based action plan to improve student health, and to involve students, teachers, parents, and communities in promoting health and health behaviors	Primary, middle, and secondary school students

planned, but another series was added to explore issues brought up in the second set. In total, 21 interviews were completed between July and October 2004. Study protocol was reviewed and approved by the Institutional Review Boards of the participating institutions.

First set of interviews. Through a series of discussions, MDPH and HSPH identified five key individuals representing the institutional partners (MDPH, BCBS-MA, and HSPH) who had been intimately involved in designing, funding, and/or implementing Planet Health, Healthy Choices, and/or the SHI. None of the identified participants were involved in the current evaluation study, and

all agreed to participate when contacted via telephone. All participants were mailed a consent form, which was returned via fax or mail prior to the interview.

Second set of interviews. MDPH provided a list of school program coordinators who oversaw the implementation of one or more of the programs being incorporated into HCCI. The program coordinator is a voluntary position, undertaken in addition to the responsibilities associated with their paid position in the school. The goal was to recruit 10-15 people to participate in the interviews. Anticipating a low response due to the recruitment letters being sent during summer vacation, the researchers sent 42

letters with response cards to prospective participants. Of the 14 response cards returned, two people declined to participate due to other obligations and 12 agreed to be contacted. Of these 12, three could not be reached via telephone and nine were interviewed. Prior to each interview, a consent form was read over the phone and verbal consent was attained to participate in the interview.

Third set of interviews. In the second set of interviews, several participants voiced concern about whether implementing Planet Health would be too time-consuming and cumbersome. Therefore, an additional series of interviews was conducted in fall 2004



Figure 1. Interview Guides

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<p>Series 1 Interview Guide (Institutional Partners)</p> <ol style="list-style-type: none"> 1. Please tell me about your involvement in Healthy Choices, Planet Health, or the School Health Index. 2. How do you see the three interventions (Planet Health, the original Healthy Choices, and SHI) working together? 3. What challenges do you anticipate as Healthy Choices Collaborative Intervention (HCCI) is implemented? 4. Who do you think are the key partners in this program? 5. What do you think about the possibility of sustaining the program? 6. How would you define success for HCCI?
<p>Series 2 Interview Guide (Program Coordinators)</p> <ol style="list-style-type: none"> 1. Please tell me which of the three programs (Healthy Choices, Planet Health, the School Health Index) you were involved in and what role you played. 2. Who in the school was involved in the program and what was their involvement? 3. Who in the external community was involved in the program and what was their involvement? 4. How has your schools program continued? 5. In your experience, what parts of the program worked and why? 6. What parts of the program didn't work and why? 7. What do you think about this new Healthy Choices Collaborative Intervention (HCCI)? 8. How do you think the three components in HCCI will work together? 9. In what ways do you think HCCI can be sustainable? 10. How can the community get involved in the HCCI?
<p>Series 3 Interview Guide (Seeking additional information on Planet Health)</p> <ol style="list-style-type: none"> 1. Please tell me what role you played with Planet Health. 2. Who in the school was involved in the program and what was their involvement? 3. Who in the external community was involved in the program and what was their involvement? 4. How has your schools program continued? 5. Tell me about your experience implementing Planet Health. 6. What do you think about this program? 7. How do you think the three components in the Healthy Choices Collaborative Intervention (HCCI) program will work together? 8. In what ways do you think HCCI can be sustainable? 9. How can the community get involved with HCCI?

with program coordinators and teachers currently implementing the Planet Health curriculum to further explore these concerns. Eleven potential participants were contacted by mail and a follow-up telephone call. Of these 11 people, four could not be reached via telephone and seven agreed to be interviewed. None of the individuals participating in this set of interviews had been involved in either the first or second set. Similar to the second set, consent was attained verbally from each individual prior to the start of his/her interview.

Procedures

Two interviewers trained in qualitative research methods who had not participated in implementing or evaluating the program components conducted all interviews via telephone using semistructured interview guides (see Figure 1). The interview guide was developed through a series of iterative conversations between HSPH and MDPH. Interviews were 25 to 60 minutes in length and were audiotaped with the participant's verbal consent.

Data Analysis

A consultant transcribed the interviews with identifiers removed, and transcripts were reviewed for accuracy. A codebook was developed by initially coding two transcripts. Codes were created to identify similar phrases and/or ideas. The remaining transcripts were coded using the developed codebook. Initial codes were modified and new codes created as necessary. The codes were then examined for emerging themes, and these themes (with representative quotes) were organized into matrix displays. Themes within and across all sets of interviews were identified. All analyses were conducted manually by two researchers. If coding inconsistencies occurred, they were reviewed until agreement on the coding was reached. Consistent with a modified RAP approach, each set of interviews was analyzed before the start of the next set.

RESULTS

The results of all the interviews are presented together because they generated



Table 2. Facilitators and Challenges to Implementation

Identified Themes
Facilitators of implementation Theme: Programs being incorporated into HCCI are synergistic, not duplicative
Challenges to implementation and/or sustainability Theme: Establishing “buy in” Sub-theme: Time constraints of teachers and HCCI team members Sub-theme: Adopting a new curriculum Theme: Structure of program Theme: The need for partnerships Theme: The need for resources

similar themes. All themes are shown in Table 2.

Facilitators of Implementation

Theme: Programs being incorporated into HCCI are synergistic, not duplicative. Participants spoke of the programs being complementary rather than duplicative. As one participant stated, “[T]he only duplication is in the messages, and you do want the messages to be repeated.” Participants felt that the combined programs would be synergistic and that their joint impact would far exceed that of any of the individual programs implemented alone.

Challenges to Implementation and/or Sustainability

Theme: Establishing “buy-in.” Participants felt that without administrative support, they would have difficulty garnering enthusiasm for the program from teachers, staff, or students. Despite this, participants felt that a school’s decision to participate should not be solely the principal’s. As one participant stated, “In schools, it takes a village, and for this [HCCI] to happen effectively, you have to have buy-in from everyone.”

To achieve buy-in among teachers, participants felt that the faculty would have to enjoy being part of HCCI, and that their involvement could not impinge on other responsibilities. Several but not all respondents felt that offering teachers incentives would increase their support for the program and provide motivation for continued involvement in HCCI. Participants felt that if positive changes were occurring within

the school, teachers would want to continue being involved in the program. Additionally, participants felt that it is important to attain support from the cafeteria staff in order to sustain HCCI. Participants discussed the difficulties in implementing changes in cafeterias, and several mentioned that cafeteria food choices were often driven by multilevel, institutional pressures over which food-service directors had little influence. Participants noted the importance of actively engaging students and increasing their awareness of HCCI through a variety of mechanisms, including daily announcements, posters and murals, contests, and healthy snacks. Parental support also was seen as being needed for reinforcing the program’s message. As one participant explained, “[P]arental buy-in—that’s how you keep it sustained after they leave here.” Furthermore, participants articulated the importance of engaging the school committee and other interested organizations outside of the confines of the school to support the program and its message

Theme: Time constraints of teachers and HCCI team members. Participants spoke of time limitations that made it difficult to implement HCCI. One person stated, “I really [did not have] enough time to do the program. It just stressed me out because I’m running through the day, trying to keep up with what I do in my primary position.” Participants also voiced concern that limited time makes it difficult for teams to meet and may hinder participation in HCCI trainings. Participants felt that time constraints may

also make teachers hesitant to use the Planet Health curriculum

Theme: Adopting a new curriculum. Many participants in the first two series of interviews voiced hesitation about whether teachers would embrace the curriculum component due to competing priorities, including preparing students for the Massachusetts Comprehensive Assessment System (MCAS), a statewide proficiency exam. Participants also felt that teachers would be reluctant to use a curriculum developed by others. As one person stated, “[W]e’ve always been encouraged to use curricula as resource, but to build our own programs. So, I would be kind of hesitant if you’re required to use...just one canned program.” Respondents spoke of the importance of recognizing that teachers have numerous obligations when recruiting them to teach Planet Health, but felt that once teachers become familiar with materials they are supportive of the curriculum. Respondents also felt that the flexibility and inclusion of objectives in each lesson helped garner support for the curriculum.

Theme: Structure of program. Participants spoke of the challenges of implementing before/after school components of HCCI. Participants felt that issues such as transportation costs and limited availability of school buses as well as students’ competing priorities (e.g., babysitting, town and city sports leagues) would make it difficult to attract children to attend before/after school programs. Participants also mentioned that parents’ schedules may inhibit a child’s involvement in these programs.

Theme: The need for partnerships. Most participants felt that schools need a multidisciplinary team to implement and sustain HCCI. The team should consist of a variety of people, including classroom teachers, physical education teachers, food service personnel, school nurses, and administrators. A team approach was thought to enhance program quality. Several participants spoke of the difficulty of forming a team and pointed out that team members might not contribute equally. Participants also spoke of schools needing a key leader in addition



to a team. As one participant stated, “[Y]ou have to have that team, because you have to have a leader who wants to lead it, but you need the team to be able to carry the weight so that it’s not left on just one person.”

Furthermore, participants spoke of the importance of schools collaborating with a variety of community groups, including knowledgeable community residents, local gyms, and area businesses. As one participant noted, “[F]or sustainability purposes, I really think that schools need to get partnered up with a couple of significant organizations, like local fitness clubs that are willing to donate professional time, and local food establishments that can donate healthy snacks every week.”

Theme: The need for resources. Participants spoke of needing resources, including financial support and training for staff to sustain HCCI. Participants wanted additional training on a variety of topics, including program coordination; strategies for program implementation; initial and refresher training on SHI and the Planet Health curriculum; nutrition education and behavior management training for parents (e.g., learning to set limits with food and other temptations); and technical/software training. Participants thought that it would be beneficial to learn from others implementing HCCI. In addition, participants felt that networking among program coordinators would be beneficial as it would allow for coordinators to learn about other programs, including their successes and failures. The ability of school personnel to independently generate funding was seen as a key element to sustainability. Participants expressed a desire for representatives from the MDPH and BCBS-MA to meet more regularly with program coordinators.

DISCUSSION

Respondents believed that Planet Health, Healthy Choices, and SHI can be brought together as a sustainable intervention promoting behavior change within the context of the school environment. Critical elements needed for this to happen include establishing buy-in among teachers, administrators,

food-service personnel, students, parents, and the community, as well as having a key leader, a team, and readily available resources. Others have identified similar elements as being necessary to adopting school-based programs,^{11,19,27} and ongoing staff training has previously been identified as being important for maintaining changes in the school.³⁰

Consistent with the emphasis on the importance of a champion in literature on diffusion of innovations,³¹ research specific to Planet Health found an advocate or key leader¹¹ as well as a team approach to be beneficial in implementation.³² Implementing and sustaining a program such as HCCI requires effort that necessitates the creation of a diverse team that should include food-service personnel. Team members need to have time to meet regularly, and buy-in from school staff both within and outside the team is important. School administrators need to support these programs by providing needed resources, including time. These investments will have implications for sustainability. Indeed, others have pointed to the recursive nature of sustainability and the need to consider this phase from initial program conception.³²

Study’s Influence on HCCI Implementation

The findings of this study were instrumental in formulating how components of the program were implemented, particularly the dose of intervention. Due to concerns about time constraints and ease of implementation, requirements for implementing SHI and Planet Health were reduced. Implementation of SHI focused on Module 1 (“School Health and Safety Policies and Environment”) rather than all eight modules, and teachers were asked to teach a minimum of two Planet Health lessons rather than four per subject area, consistent with successful adoption of the curriculum in an urban school system in Massachusetts.¹⁸

Given that respondents identified a need for ongoing technical assistance to ensure both implementation and sustainability,

MDPH hired four regional coordinators, each assigned to a different area of the state (northeast, west, southeast, and central Massachusetts) to provide ongoing training and technical assistance to schools throughout their respective three-year grant period. Regional coordinators also assist in monitoring program implementation and serve as liaisons between the schools and MDPH. As a result of the RAP study findings, individual schools’ program coordinators were given flexibility on how and when they initiated the intervention components based on school readiness and in consultation with regional coordinators. Lastly, additional emphasis was given to creating a diverse HCCI team within each participating school. In an effort to provide an opportunity for program coordinators to network, a listserv was created for them, along with a newsletter highlighting schools’ programs.

Study Limitations

As the study was conceptualized, the key stakeholders were seen as being individuals who had implemented or overseen implementation of any of the intervention components. Because of the importance of parents to the success of school-based interventions¹⁰ and of buy-in, as noted by respondents, this study would have benefited from a more inclusive participatory process that included students, parents, community members, and members of the school dining services. Future evaluations of HCCI will attempt to include these individuals. An additional limitation is the low response rate for the second set of interviews, perhaps due to the interviews taking place in the summer. However, individuals who participated in the study might have been more positively engaged with the one of the intervention components than those who did not respond to the recruitment letters.

TRANSLATION TO HEALTH EDUCATION PRACTICE

Public health mandates to address pediatric obesity trends call on schools to not only take immediate action based on the best available evidence,^{8,30,31} but also



to promote healthy lifestyle behaviors in multiple spheres of influence—classroom, before- and after-school, policies and environments, and parental and community engagement.^{10,32,33} A multifaceted approach to obesity prevention and control is consistent with an ecologic model for health promotion³⁴ and with guidelines for coordinated school health¹² that are well known to most health educators. Yet schools may lack specific information relevant to their community and organizational context that could facilitate their capacity to mobilize resources and marshal an integrated response. State agencies responsible for oversight of health-related activities in schools also may require timely information to support rapid “upscaling” of promising programs shown to be effective in research or controlled settings.

Findings from this study point to concerns that are common to development and implementation of other health promotion efforts,^{11,35} such as the importance of training, resources, and buy-in within the school and community. Nevertheless, emergent themes and textual quotes provided direct, specific recommendations to address a range of generic barriers to successful implementation. For example, study participants identified the importance of training, consistent with the literature on adoption of health promotion programs,¹¹ but highlighted the need for resources for both initial and refresher training in the curriculum, as well as content that would assist them in implementing a school-wide program (e.g. applying for grant funding, managing multidisciplinary teams, engaging community members). The translation of the results into specific HCCI program elements at school and state levels depended on essential features of RAP methods, e.g., targeted collection and analysis of qualitative information and a university-community partnership with well-established infrastructure for communication and collaboration.

In summary, this study suggests that it is critical to assess the feasibility of implementing multiple interventions in tandem even when each intervention has been

pilot-tested and shown to be effective. In addition, themes identified by study participants were similar for implementation and sustainability; thus, the lessons from an initial study of facilitators and barriers may extend beyond the implementation period to eventual adoption and sustainability. To maximize the possibility that the three interventions will be implemented in a coordinated fashion, the dose of Planet Health lessons and of the SHI environmental assessment were reduced based on findings from this RAP study, and schools were allowed to decide when to implement the intervention activities. Such flexibility could result in a reduced intervention impact, but the merits of improved feasibility appeared more important to program success.

HCCI is being implemented in more than 110 Massachusetts schools serving over 50,000 students with the anticipation that it will have a significant and sustained impact on health behavior and obesity prevention among middle school students in Massachusetts. Results of an ongoing evaluation in 47 participating schools will provide valuable information on whether and how variability in implementation affects students' health behaviors and weight status.

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