

The Process of Curriculum Development and Implementation for an Adolescent Health Project in Middle Schools

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Abstract

Childhood obesity has reached epidemic levels in developed countries and is showing no signs of abating. The causes of obesity in adolescence are extremely complex, and therefore approaches to prevention and treatments must be multifaceted. Early adolescence is a developmental period when youth are becoming more independent, are influenced by peers, and are making more decisions related to their own health and lifestyles. The purpose of this article is to describe the development, implementation, and evaluation of a multilevel school-based intervention program for middle school students in the Teen Eating and Activity Mentoring in Schools (TEAMS) project. Critical components of success included an interdisciplinary approach, applying available curricula to meet contextual characteristics, and involvement of all stakeholders in planning, evaluating, and refining the program.

Keywords

obesity, middle/junior/high school, program, development/evaluation, health education

Introduction

Childhood obesity has reached epidemic levels in developed countries and is showing no signs of abating. Since the 1980s, there has been an increase in the percentage of children who are overweight. From 1976 to 1980, only 6% of children aged 6–17 were overweight (body mass index [BMI] from 85th to 94th percentile). By 1988–1994, the overweight percentage had risen to 11% of children ages 6–17 years, by 1999–2000 it was 15%, and by 2005–2006, 17% of children were overweight. The rise in obesity rates (BMI \geq 95th percentile) was similar so that by 2005–2006 over 17% of children were obese (Centers for Disease Control and Prevention, 2009). Data from the National Health and Nutrition Examination Survey (NHANES) demonstrate that physical activity levels, as assessed by accelerometer, decline significantly from childhood to adolescence and continue to decline into adulthood. Forty-two percent of children aged 6–11 meet recommendations for 60 min of daily physical activity, yet only 8% of adolescents from 12 to 19 years meet recommendations (Chriqui, Schneider, Chaloupka, Ide, & Pugach, 2009).

The causes of obesity in adolescence are extremely complex and therefore approaches to prevention and treatments must be multifaceted. Early adolescence is a developmental period when youth are becoming more independent, are influenced by peers, and are making more decisions related

to their own health and lifestyles. Since students spend a large portion of the day in school, school-based interventions have been suggested by the Institute of Medicine as influential approaches for targeting obesity prevention (Kaplan, Liverman, & Kraak, 2005). A review of 16 school-based obesity prevention programs found that interventions focusing on increased physical activity, dietary modifications, healthy lifestyle education, and parental involvement showed promise for combating the increase in obesity (Zenzen & Kridli, 2009). Other studies and meta-analyses confirm that nutrition and physical activity interventions in schools demonstrate potential for addressing obesity in the school setting (Gonzalez-Suarez, Worley,

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Frimmer-Somers, & Dones, 2009; Katz, 2009; Katz, O'Connell, Njike, Yen, & Nawaz, 2008).

While schools are promising settings for obesity prevention programs, most schools have many educational requirements, making insertion of programs for health difficult to manage; in fact, physical activity classes have been increasingly shortened or eliminated due to competition with academic classes. Academic competition, in addition to the complexities of research in school systems and with youth, is daunting to many researchers. Therefore, in spite of recommendations, there have been scarce school-based interventions that evaluated outcomes, particularly with early adolescents attending middle schools. In addition to the difficulty in integrating and testing programs, there are few curricula that can be readily adapted to specific contextual requirements in schools. Particularly scant are curricular approaches that address the developmental needs of early adolescents.

The overall objective of the Teen Eating and Activity Mentoring in Schools (TEAMS) research project was to decrease prevalence and development of obesity during middle school years. The purpose of this article is to describe the development, implementation, and evaluation of the multilevel school-based intervention program for middle school students in TEAMS. This project was multifaceted in approach, involving school environment changes, individual nutrition education during school lunch periods and after school, introduction and promotion of physical activity and healthy eating, and family intervention consisting of newsletters and family events.

Theoretical Models

TEAMS was designed to use multiple-level interventions based upon the principles of *bio-ecological systems*, *self-determination theory*, and the *Transtheoretical Model (TTM) of Behavior Change*. Further, the social cognitive theory (SCT) of Bandura (1997) informed the application of self-determination theory and the process of curriculum development. The intervention employed strategies focused on the adolescent within the family and school environments that encouraged the development of individual intrinsic motivation (e.g., taste preferences for healthy, low-density foods; enjoyment of aerobic physical activity) as well as the integration of knowledge and attitudes regarding choices for healthy lifestyles (e.g., understanding the relation between eating, activity level, and health; understanding of the impact of portion size on obesity; developing sensitivity to satiation and hunger cues).

The underlying theoretical framework for the TEAMS integrated project was Bronfenbrenner's bio-ecological systems theory which recognizes the multiple, mutually interacting influences on human behavior. In his interdisciplinary theory, Bronfenbrenner argued that to fully understand human development, it is necessary to explore the

interactions between multiple levels of context that influence human behavior (Bronfenbrenner, 1997; 2005). The bio-ecological model focuses on the individual student within the family, the school, and the larger social environment. Applied to the issue of adolescent obesity, this model predicts that the most effective obesity prevention programs involve coordinated interventions at multiple levels. This theory guided the general approach toward targeted interventions at the environmental, individual, and family levels.

The second foundational theory, self-determination theory, proposes that intrinsic or self-determined motivation is an innate energizer of human behavior associated with more positive cognitive (e.g., value), affective (e.g., enjoyment), and behavioral (e.g., effort) consequences (Deci & Ryan, 1985; Ryan & Deci, 2000). Self-determination is nurtured by an environment that fulfills three psychological needs, which are to feel: (a) competent (i.e., interact effectively with the environment), (b) autonomous (i.e., exercise volition), and (c) related (i.e., experience meaningful connections to others). Ryan and Deci (2000) presented empirical evidence to suggest intrinsic motivation is encouraged by environments that encourage choices, acknowledge feelings, and provide opportunities for self-direction, whereas environments that discourage intrinsic motivation include the use of expected tangible rewards, threats, demanding directives, pressured evaluations, and imposed goals. Self-determination theory is particularly useful for work with adolescents, because adolescence is a phase of the lifespan characterized by increased autonomy from parents. This theory, in tandem with corresponding tenets of SCT of Bandura (elucidated below), was used to guide the individual and family based intervention components of TEAMS.

A third theory applied in planning interventions was TTM, which encompasses specific *stages of change* that have been proposed as a way of charting an individual's cognitive journey toward health behavior modification (Prochaska & DiClemente, 1983). During the first stage, *precontemplation*, people are not considering changing the target behavior in the near future (measured as the next six months). Next, in the *contemplation* stage, people intend to change sometime in the near future (measured as the next 6 months). In the *preparation* stage, people are planning to make changes (measured as the next month) and have taken some significant action toward changing their behavior in the past year. Individuals in the *action* stage have made significant changes related to the target behavior within the last 6 months. Finally, the *maintenance* stage includes people who have changed the target behavior and are concentrating their efforts on maintaining that change. Based on this theory, a counseling approach has emerged that is designed to facilitate behavior change by helping individuals move throughout the different stages of change. Specifically, motivational interviewing (MI) is a client (student)-centered approach to enhancing intrinsic motivation to change by both exploring and resolving ambivalence toward the target

behavior (Miller & Rollnick, 2002). Consistent with self-determination theory, the desired outcome is to foster motivation that is not coerced or directed externally. MI techniques (e.g., expressing empathy, developing discrepancy, “rolling with resistance,” supporting self efficacy), have been used to improve adherence to weight loss behaviors in students (e.g., dietary adherence; Berg-Smith et al., 1999).

In addition to the three major theories that informed the research project, the interventions for participants were developed using tenets of SCT (Bandura, 1997). Development of specific elements of the curriculum, lesson plans, and activities were grounded in self-determination theory and SCT in which learning is described as an interaction between the individual’s behavior (performing an activity), personal cognitive factors (knowledge, skills, prior experiences, and reflection), and the environment (family, friends, culture; Huitt, 2006). An individual’s behavior is influenced by the environment and in turn influences the environment, a concept congruent with Bonfenbrenner’s bio-ecological model described above. SCT proposes that to make behavior changes, the individual needs knowledge, skills and abilities, a supportive environment, and reflection on the experience of behavior or activity in the environment. Two key outcomes targeted by SCT include self-efficacy (confidence in one’s abilities to execute a specific task) and self-regulation. Research applying SCT with children has shown that mastery of activities is an important aspect of achieving intrinsic interest, sustaining behaviors, and cognitive competency—the belief that one “can do it” (Bandura, 1997); therefore, it is highly complementary to self-determination.

Method

Overview of the TEAMS Project

The research study from which this article is based is the TEAMS program. TEAMS was an integrated project (integrating research, education, and university extension approaches) designed to evaluate the impact of multilevel interventions to enhance and sustain improvement in early adolescent health. The multiple levels included environmental and individual student interventions, with family support/education as an added component. The study was quasi-experimental with entire schools assigned to the intervention groups described below; it was longitudinal with students joining at the beginning of seventh grade and participating until the end of eighth grade. The project was reviewed and approved by both the university and school district Institutional Review Boards (IRB).

Recruitment and Assessment

Students were recruited into the individual/family interventions of the TEAMS project at open houses, new student nights, through letters sent home to parents and during school

physical education classes. Participants were assessed as they entered the program and at the end of their seventh- and eighth-grade years. Physical measurements included height, weight, calculated body mass index (BMI), waist and hip circumference, triceps/subscapular skin folds, and blood pressure. Students completed FitnessGram and ActivityGram tests for strength, flexibility, and aerobic capacity (Cooper Institute, 2007). A fasting blood draw measured lipids and lipoproteins, glucose, insulin, uric acid, C-peptide, and C-reactive protein. Students were interviewed for a 24-hr diet recall to assess dietary intake. A series of surveys were completed to measure dietary and physical activity self efficacy, screen time, sleep, smoking, and amount/intensity of physical activity.

Intervention

Two levels of intervention were used within experimental schools to measure the effect of single versus combined levels of intervention. Four public middle schools were included in the study. The interventions were layered as follows:

- in one school only environmental interventions were applied
- in one school only individual/family interventions were applied
- in one school both environmental and individual/family interventions were applied
- the last school acted as control with students being tested while no interventions were applied.

This article addresses only the development of the curriculum for the individual and family intervention but for purposes of clarity, both intervention levels are briefly described below.

Environment. The school environment was modified by elimination of a la carte options in the lunch room, and unhealthy vending options in the school building while concurrently increasing healthy food alternatives. A free fruit and vegetable bar was available to all students at lunch time and fruits, vegetables and whole grain snacks were offered at all TEAMS activities.

Individual/family. School lunch activities and after-school nutrition/fitness activities were selected as the best venues for introducing individual interventions for those who agreed to participate. A comprehensive approach was employed to design the curriculum for these activities to be delivered using engaged teaching techniques to promote a healthier lifestyle; the curriculum development process is described in detail in the following section. In addition to the lunch and after school components, mentors were selected, trained in MI, and assigned to each participant who entered

the TEAMS project. Mentors (called “TEAMS leaders”) used MI to help students set goals, assess progress and barriers to achieving the goals, and establish strategies to successful achievement of the goals. Parents were provided with newsletters to encourage them to support their students’ health and fitness goals. Evening family nights with nutrition and physical activity components were offered to engage families and promote a healthy lifestyle. Once in a month family trips to community venues were offered to introduce the idea of family fitness and encourage the utilization of available community resources for activity.

Curriculum Development

Several steps preceded the development of the curriculum and are described here. The first step was to establish the desired characteristics for the nutrition/physical activity educator who would lead curricular development, implementation, and evaluation. This person needed positive interpersonal skills to interact effectively with university researchers, school district personnel, and community stakeholders. In addition, a thorough understanding of adolescent development and ability to communicate well with that age group were required. The educator was an integral part of the grant management team that included the two co-Principal Investigators, several university faculty with expertise in specific topics (i.e., motivational interviewing, educational psychology, child development) or approaches (i.e., extension), school district personnel (i.e., principals, nutrition director, physical education director, school nurse director), and community experts (i.e., family practice physician and pediatrician).

Following interview and appointment of the educator, but prior to the development of project activities, focus groups were conducted with children, teachers, and parents from the intervention schools to establish a baseline of the current knowledge and attitudes regarding nutrition, physical activity, and health. Topics discussed included perceptions of the current health of students, barriers for improving health, and ideas for activities to improve health. Discussion about implementation, areas of attention, and approaches that would be successful at engaging youth in TEAMS formed the basis for curricular planning. Of particular note for the development of individual and family activities was a strong desire on the part of the students for noncompetitive lifestyle activities. Results of the focus group have been published (Power, Bindler, Goetz, & Daratha, 2010).

Maintaining close contact with school officials was essential throughout the development and implementation of the project. Grant personnel worked closely with the school representatives to plan for student and family activities at times that could be integrated into the school day. School nurses served to assist planning for activities but were unable, due to work loads, to participate in a more involved manner in the curriculum delivery. It was decided

that a series of lunch activities and after-school activities would best meet the needs of the students without disrupting classes. In addition, evening and weekend events that included family members were viewed as important for program success.

Safety issues were an important part of planning with school personnel. Each activity was supervised by an adult who met the school district requirements for emergency care, approval to work with youth, and other criteria. When students and family members were transported by bus to an activity, the school district had to approve the activity and bus transport protocol. All TEAMS participants with Individualized Health Plans (IHPs) were identified and supervising adults were knowledgeable about the students’ health needs.

Next, TEAMS personnel developed six operational student goals to assist in focusing the curriculum and evaluating program success. They were to

- increase intake of fruits and vegetables
- decrease the amount of saturated fat intake
- decrease sweetened beverage intake
- decrease screen time
- increase the frequency of physical activity
- increase the intensity of physical activity

In an effort to increase the likelihood that students would make suggested changes in eating habits and physical activity levels, MI was implemented to propel the students through the stages of change to facilitate actual behavior transformation. Teachers, school counselors, and other personnel received training in motivational interviewing which taught them the skills to be mentors for the students. During the TEAMS project, each participant engaged in four motivational interviews yearly. During each meeting, the student’s readiness to change was assessed using a stages of change ruler (see Figure 1). Based on the student’s response, the mentor would tailor discussion with the student to fit that student’s level of readiness to change (see Figure 2), set goals, assess barriers to achieving goals, and establish strategies for successful goal achievement.

Because the focus groups revealed that most of the adolescents interviewed had limited knowledge of what constitutes healthy eating, the next major step was to peruse available curricula. While several programs for young children are available, there was no single curriculum for middle school students that met the theoretical goals and contextual requirements of TEAMS. Ideas were therefore drawn from programs that focused on youth as well as those with family components. Particularly helpful were the Kidnetics.com site developed by the Food Information Council Foundation, the WeCan curriculum designed by the U.S. Department of Health and Human Services, the Media-Smart Youth curriculum developed by the National Institutes of Health, and materials from the National Dairy Council. The TEAMS

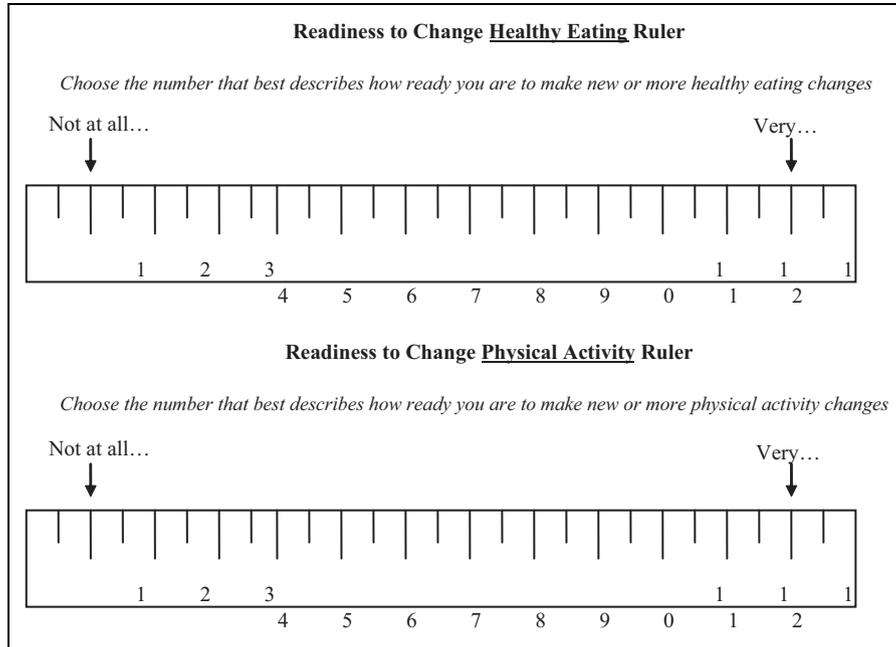


Figure 1. Readiness to change rulers.

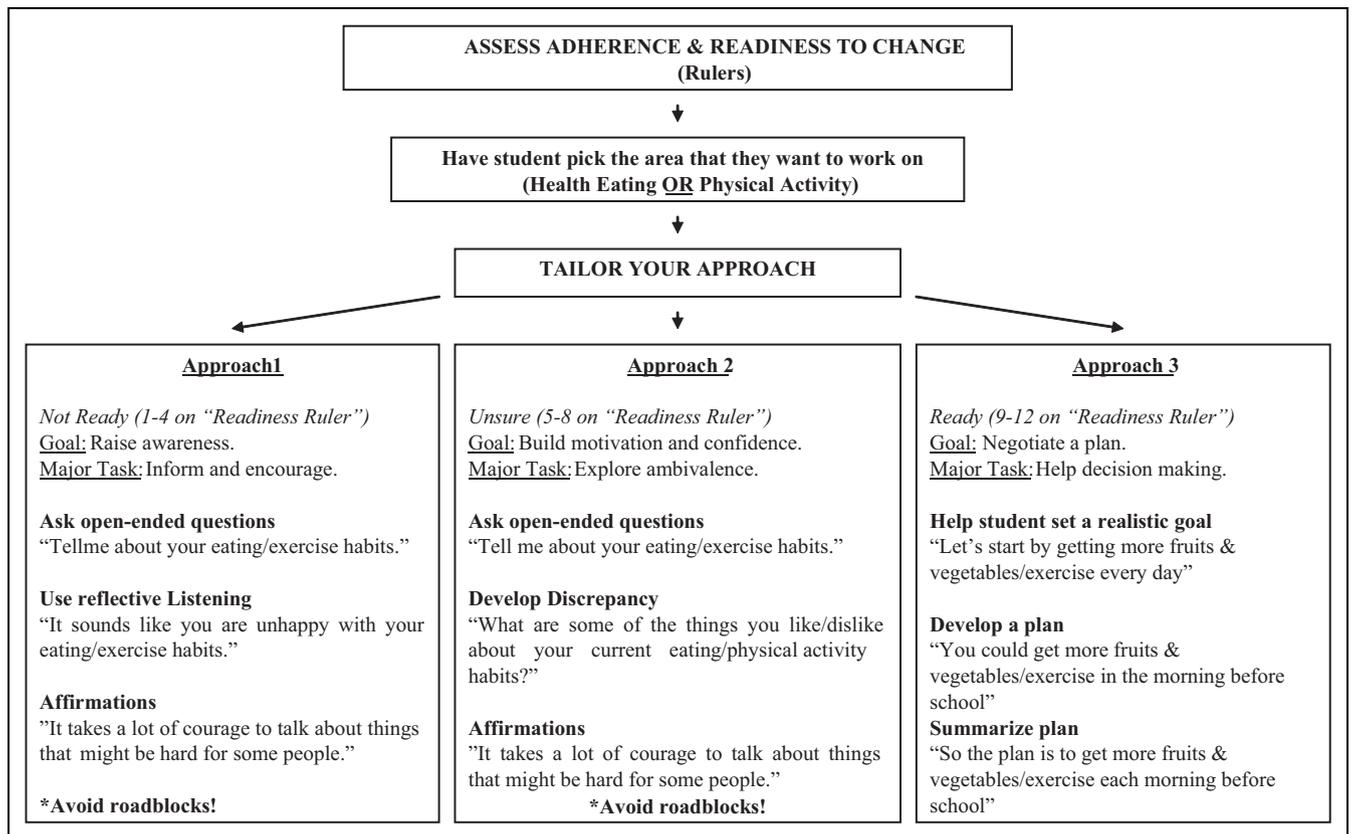


Figure 2. Readiness to change scripts.

educator was housed at the university Extension office that provided many additional materials used for school and family programs to enhance nutrition and exercise.

Lesson plans for nutrition and physical activity were developed using the theoretical frameworks of the intervention, available curricula, information from the focus groups, with consideration for the structure that could work best in the school system. The educator carefully planned to model healthy behaviors (e.g., exercising and eating nutritious foods with participants; cooking and teaching students during an "iron chef" competition). Careful attention to developmental needs of social connectedness and peer support were planned into the activities. Increasing competence and self-confidence were emphasized by minimizing competitive sports and creating lessons where everyone could excel. In line with self-determination theory, it was recognized that voluntary participation in TEAMS was important and reinforced the theoretical approach.

Finally, the project director contacted community stakeholders to elicit their support. For example, fitness clubs, sports stores, food vendors, and others were receptive to making contributions of foods, speakers, and activity resources for the teens and their families. T-shirts for all participants were designed to include logos of the contributors. Local coverage of the TEAMS project in newspapers, journals, radio programs, and television interviews greatly increased the visibility in the community. Additionally, templates were developed for the monthly calendar of activities, family newsletters, and other promotional materials.

Curriculum Implementation

Lunch activities. School lunch activities included a special lunch for TEAMS participants every 2 weeks. Lunch was held during students' normal lunch period in a separate room. Since adolescents in the focus groups showed considerable interest in trying new foods in the school context, the goals of the lunch were to model healthy food choices and introduce new foods to participants. This was also a social time for the students to talk with their mentors, get information on upcoming activities, and interact with each other. Speakers such as local athletes, doctors, and community leaders/group were often arranged to speak with the youth about how leading a healthy lifestyle has impacted their lives.

After school activities. A total of 60 after-school activities were offered each school year. These events were offered twice weekly with 1 day devoted to nutrition, and the other to physical activity. After school activities lasted 2 hr and took place directly at the end of the school day.

Nutrition-focused after-school activities included discussion, food sampling, food taste tests and product review, cooking, jeopardy games, and visiting presenters. Lessons always included tips on how the information presented could

be incorporated into the students' daily lives (see Table 1 for an example of a nutrition lesson plan).

Focus groups had revealed that students enjoyed non-competitive nontraditional type games, so physical activity lessons introduced students to engagement in lifestyle activities such as hip hop dance, kick boxing, Tae Kwan Do, weight training, disc golf, tennis, and roller skating. Playground games and weight training were offered to students as well. These types of activities focused on providing opportunities for everyone to master skills and gain confidence by fostering improvement over competition (see Table 2 for an example of a physical activity lesson plan).

Family activities. Family participation and support was viewed as a key component to the success of improving health of youth (Kaplan, Liverman, Kraak, & Whisham, 2007). Integration of families allowed for meaningful social interactions centered on healthy lifestyle activities, which served to foster self-efficacy and self-determination. A minimum of one family activity monthly was offered free of charge to TEAMS members and their families. Parent focus groups had stressed that joint family physical activities can effectively promote physical activity in youth, so events introduced activities such as snow shoeing, hiking, kayaking, and rock climbing. Additionally, community resources for family fitness in the community such as hiking, biking, visiting the Y or a local water park were shared, and families were encouraged to access events that their family would enjoy. During summer vacation one family activity was offered monthly to encourage student engagement in the program. The activities included trips to a local water park, attendance at baseball games, and family hikes. All TEAMS family activities modeled healthy snack and food choices to further support the goals of the grant.

Communication with the family through a newsletter kept parents informed about the curriculum being taught to their children and what they could do to support them. The newsletter was mailed out every other month to families and included a calendar of activities, a nutrition message, a physical fitness idea or tip, an easy nutritious recipe, and an update on any information obtained from the grant. The newsletters were important because many parents in the focus group indicated limited knowledge of how to best promote healthy eating and activity patterns in their children. Pictures of TEAMS activities were also included in the newsletter (see Figure 3).

Ongoing and summative evaluation was planned for the implementation phase. Attendance for each event was recorded and used to measure dosage in relationship to student health changes during the analysis phase. Attendance was also reviewed by the mentors and used in motivational interviews to seek information about why students were or were not attending events. Youth were surveyed by interview at the end of the first year so that incentives and barriers to attendance could be identified and used to plan for future approaches. Several parents were interviewed by

Table 1. Sample Nutrition Lesson Plan

Fruit

Objective: Increase intake of fruits and vegetables

Supplies

- Access to Internet for students to investigate fruit
- Fruit taste test handout
- Plates, utensils, napkins
- Variety of fruits to try
- Mypyramid fruit info http://www.mypyramid.gov/pyramid/fruits_why_print.html

Introduction

Provide nutritious snack

Talking Points

- What fruits are in the fruit group?
- What is the difference between the types of fruits listed below?
 - Raw or cooked
 - Fresh, frozen, canned, dried, or dehydrated
 - Whole, cut up, or mashed
 - 100% fruit juice
- What nutrients does fruit have?
 - Vitamin C*—helps heal the body tissue (*Oranges, Grapefruit, Strawberries, Cantaloupe, Papaya*)
 - Vitamin A*—helps fight infections and reduces the risk of heart disease (*Apricots, Peaches, Nectarines, Mangos*)
 - Potassium*—helps keep blood pressure at a healthy level (*Banana, Honeydew, Prunes, Orange juice*)
 - Fiber*—helps fill you up without extra calories
 - Consuming foods that are high in sugar make it more difficult to maintain energy balance and sugar contains no nutrients.
- How much fruit do I need?

1600 calories	1 ½ cups
2000 calories	2 cups
2400 calories	2 cups
- What counts as a cup of fruit?

1 cup cut up fruit	1 cup fruit juice
1 small apple	8 large strawberries
1 large banana/orange	1 small watermelon wedge
1 cup apple sauce	½ cup dried fruit
- How much fruit do you get? How could you get more?

Activity Day 1

- Have students go to the internet and access the dole web site www.dole.com/EatRightLanding/Allaboutfruits/tabid/683/Default.aspx or www.dole5aday.com
 - Ask students to pick 2–3 different fruits that they would like to taste that they may not have had before. Have students write the main nutrients in the fruit, what one serving of that fruit is and one interesting fact about the fruit.
 - Collect the information and create your fruit taste test for with the fruits the kids chose. More fruits can be added.

Activity Day 2

- Pass out fruit taste test form and explain how the taste test will work.
- Each student will talk about the fruit that they chose and share the information they found with the group as the fruit is being tried.
- Let the students talk about the food and fill out the forms. When they are done talk about the results, how they felt about the different fruits they sampled and what they would eat at home.

Take home activity

Have student ask their parents purchase their favorite fruit and share it with the family.

Curricula from which ideas were drawn: WeCan,

Media smart youth, Dole web page, Mypyramid.gov

phone to ascertain what they learned from the family events and what health changes they witnessed in their families. Increased feedback about the adolescents' health data, explanations by grant personnel, and further family events were integrated due to the family interview data. Ongoing meetings of the university, extension, and school personnel improved understanding of the resources and constraints of each setting and were essential for the constant adaptation required during grant implementation. Finally, participants

completed self-efficacy and self-determination questionnaires at the beginning and end of the study; these results are reported elsewhere.

Results and Lessons Learned

Many lessons were learned in the 3 years that the TEAMS curriculum was implemented. Nearly 200 youth volunteered for TEAMS in two intervention schools. The results

Table 2. Sample Physical Activity Lesson Plan

Climbing Night

Objective: Increase the frequency and intensity of physical activity

Supplies

- Access to climbing wall
- Helmet
- Safety equipment
- Harness and ropes

Introduction

- Provide nutritious snack
- Obtain signed waivers

Talking points

- How many of you have climbed before?
- Talk about safety and climbing terms and rules.

Belay—To protect a roped climber from falling by passing the rope through, or around, any type of friction enhancing belay device. Before belay devices were invented, the rope was simply passed around the belayer's hips to create friction.

Belay device—A mechanical device used to create friction when belaying by putting bends in the rope. Many types of belay device exist, including ATC, grigri, Reverso, Sticht plate, eight and tuber. Some belay devices may also be used as descenders. A Munter hitch can sometimes be used instead of a belay device.

Bouldering—The practice of climbing on large boulders. Typically this is close to the ground, so protection takes the form of crash pads and spotting instead of belay ropes.

Rappel—The process by which a climber may descend on a fixed rope using a friction device. Also known as Abseil or roping down.

Activity Day 1

- Observe an experienced climber on the wall at sporting store.
- Handle and become familiar with equipment

Activity Day 2

- Experience climbing with experts on the climbing wall.
- Discuss experience; reinforce safety and other lessons.

Take Home Activity

- Talk about classes available to learn more about climbing.
- Discuss equipment needs for beginning climbers.
- Provide information about where participants can climb in the area.

described here summarize activities provided and student/family evaluation.

Lunch activities. In the first year, lunch lessons involved speakers and community experts. In addition, a special nutritious lunch was prepared by the school kitchens. Evaluative data revealed that the students generally liked the opportunity to try new foods and get special meals but they did not like listening to a speaker. They also missed socializing with their friends during lunch. To accommodate this, the format was adjusted in Year 2 to allow students to bring a friend to lunch and the format was informal and relaxed with the grant educator facilitating discussion.

After-school activities. After-school activities were positively evaluated by the youth that attended. Major barriers to attendance that the adolescents identified were conflicts with school sports, clubs, and home obligations. The most positively reviewed activities were those involving direct participation; these included cooking, food taste tests, and games. Activities that were less favorably reviewed included lessons that involved reading, answering questions, and other academic-type approaches.

In the second year, after school cooking activities were expanded. Students created, marketed, and sold an entrée

in the school cafeteria; one example was chicken and rice burritos. This exercise was uniformly and enthusiastically engaged in by the participants. It provided an opportunity for the adolescents to apply healthy nutrition concepts and then to share these concepts with fellow students.

The physical activity lessons most highly rated were less competitive nontraditional games that allowed a greater mastery focus, increased confidence, and fun. This reinforced findings of the preimplementation focus groups in which students suggested that they wanted to be engaged in noncompetitive exercise. The adolescents liked learning new skills such as hip hop dance, Ti Kwan Do, Kickboxing, rollerblading, and tennis. They less favorably reviewed competitive games such as basketball or more traditional forms of exercise like running or weight training. Monthly visits by trainers from a local fitness gym became very popular; they designed an obstacle course on which the adolescents were timed. Adolescents competed against their own time each month and were rewarded by small gifts when they improved. Students stated that they liked competing with themselves rather than each other.

Family activities. The planned weekend and summer family activities were positively evaluated by participants. We

TEAMS TUNE IN

April/May 2010

GET CONNECTED

WHAT WE'RE DOING

The theme for April is ASSESSMENTS! This is our FINAL Assessment and we want to thank parents, guardians and our TEAMS participants in advance for completing this last and very important Assessment. Please contact our office immediately (509.324.7328 or ytsmith@wsu.edu) if you have not yet scheduled your appointment. And remember we are giving away some great incentives as well as an overnight stay at Silver Mountain!

Please mark your calendars as we have a busy Spring planned! OZ Fitness will be joining us after school, we have another Family Hike at Painted Rocks and the Iron Chef Competition is sure to be a ton of fun! We will celebrate with a Family BBQ and TEAMS Graduation in May. Both the Assessments & BBQ will include lots of prizes & incentives so please plan to participate!

April	11th Family Hike - Indian Painted Rock 10:30am-1:30pm
	15th Blood Draw 7:00-9:00am; Final Assessment Testing @ Sac 3:15-5:00pm
	10th Blood Draw 7:00-9:00am; Final Assessment Testing @ Sac - Movie & Pizza Night! 3:15 - 7:30pm
	17th Blood Draw 8:00-9:00am @ Sac; Final Assessment Testing @ WSU 9:00am-1:00pm
May	15th Family BBQ & TEAMS Graduation 5:30-7:30pm

Questions? Please call the TEAMS office at 509.324.7328 or email us at TEAMS.study@wsu.edu.



TEAMS participants prepared a delicious meal for their families!

WHAT WE'VE DONE

If you have been participating with TEAMS lately, then you know that we have been having A LOT of fun - everything from yoga, to cooking, to games with our friends from Oz Fitness!

As if that weren't enough, we have been climbing at REI, and swimming and playing games at the brand new YMCA downtown!

Many thanks to our wonderful TEAMS Leaders who chaperone and play with us!



Getting Hawaiian Chicken Rice Bowls to our school friends - delicious!



Enjoying friends and family at the Family Dinner.

NUTRITION ABC'S

Why Do I Care About Whole Grains?

You might ask yourself "What do I care about whole grains? What do they do for me?" Well, if you listen to all the hype about "energy releasing" drinks, then you should listen to this.

WHOLE GRAINS provide some of the best sources of B vitamins, and those vitamins allow your body to release the energy that makes your muscles move. They also provide fiber that give your intestines a workout, preventing intestinal diseases like colon cancer. AND Whole Grains are a perfect source of the healthy fats and fat soluble vitamins. Simply put - whole grains ROCK!

Here's a Challenge:

Choose 3 grain items that you can switch to whole grain (bread, pasta, bagels, tortillas, cereal, etc) and try the whole grain version for 3 months.

You will discover that you feel better and you'll grow to love the taste.

Dare to Be A Whole Grain Hero!

FITNESS FACTS

SPRING INTO RUNNING!

Bloomsday is coming and running is a great way to get ready for summer activities. Here are some tips to maximize your training and minimize injuries.

- **Ease into your running program gradually:** Some people get turned off by running because they do too much, too fast and end up achy and miserable. Plan to run 3-4 times per week and set reasonable goals and increase mileage slowly each week.
- **Warm-up & Stretch:** Before setting out, make sure to precede each session with a five-minute warmup walk or jog. Be sure to stretch both before and after. Check out this website for some great stretching tips: www.coolrunning.com/engine/2/2_1/126.shtml
- **20-30 minutes per run:** Plan to run 20-30 minutes at least 3 times per week; over time you will be able to run longer and faster.

Remember whether you walk or run, the idea is simply to move and have fun!

Information on Bloomsday 2010: www.bloomsdayrun.org.

WHAT DOES IT ALL MEAN?

WHAT ARE WHOLE GRAINS?

Whole grain products are made with 100% whole grain and not white processed flours and include:

- breads,
- pastas,
- grains, and
- cereals

Whole grains are made from the whole kernels of grain, which includes both the inside part of the grain and the outer covering. Processed flours remove the outer covering to give a lighter texture and taste to baked goods but that also removes a lot of the nutrition and fiber. Enriched breads have some nutrients returned to the bread, so be sure to read the labels when you are shopping.

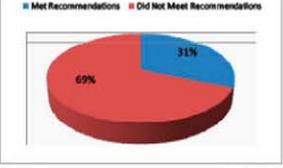
Why should we try to get more whole grains?

People who eat more whole grains have lower incidence of heart disease. The stomach and intestines stay healthy with whole grains. Whole grains help us to stay at a healthy weight (they make us feel full when we eat them) and reduce diabetes. Whole grains help us keep a healthy immune system and bones.

MEASURING TEENS

TEAMS Whole Grain Consumption

■ Met Recommendations
 ■ Did Not Meet Recommendations



N= 159

RECOMMENDED GRAIN INTAKE = 7.93 OZ.
MIDDLE SCHOOL GRAIN INTAKE = 6.95 OZ.

Figure 3. Newsletter sample.

learned that provision of bus transportation from the schools to activities which were off-site was important to maximize the ability of participants and their family members to participate.

Discussion

The establishment of a curriculum for healthy lifestyle and obesity prevention is a complex task. The TEAMS project applied a curricular planning component that was strongly based on theoretical foundations; it began with stakeholder focus groups and investigation of approaches described in other adolescent curricula. An interprofessional team worked together to plan the program and evaluative measures (Bindler, Richardson, Daratha, & Wordell, 2010). Guidelines for designing and planning health behavior change interventions have been established (Klesges, Estabrooks, Dzawaltowski, Bull, & Glasgow, 2005) and were critical to success in this program.

Application of self-determination and social cognitive theories to the design and implementation of the curriculum meant a dual approach to providing extensive opportunities for students to acquire new knowledge and skills while at the same time developing a supportive environment among peers and family. The curriculum allowed for active and

varied learning activities to accommodate the learning needs and interests of all students. The activities were planned as group activities to build a supportive peer environment and foster adolescent development. Activities were also planned to include family to enhance creation of a supportive environment that extended beyond school. Activities thought to be of importance were observation of demonstrations as a vicarious experience, and participation in doing the activity hands-on, and testing the new skill. New skills were first conducted under supervision during the lesson and subsequently on their own after the meeting/lesson time. Reproducing an activity under the supervision as a part of a group allowed the learner to apply knowledge accurately and reliably and therefore increase his or her confidence as the experience was shared with others. Reproduction of the activities and reflection of their successes and failures was seen as an important step toward increased self-efficacy and self-determination (Huitt, 2006). Lessons were developed to include both prospective reflection on application of how the activity could be used within their lives and at subsequent meetings a discussion about how the activity was actually applied. The project provided extensive, repetitive practice, encouraging mastery of food selection (taste test, reading labels, understanding food ingredients), food preparation and usage, and noncompetitive physical activities. It was

recognized that families needed regular communication to be supportive and specific communications and activities were designed for the family to foster independence over coercion.

Program evaluation is an essential part of curricular development and ensures the ongoing refinement of the approach. Frameworks have been suggested to enhance the external validity of approach and foster dissemination of results (Klesges, Dzewaltowski, & Glasgow, 2008; Klesges et al., 2005). Evaluation of feedback and participation revealed that lunch activities positively contributed to the project and provided a setting for students to learn how to meet the goals of decreasing sweetened beverages and fat while increasing fruits, vegetables, and whole grains. A special lunch for TEAMS members with a healthy menu and unique place was positively viewed. Having the ability to invite a friend enhanced attendance and is consistent with understanding of the importance of peer group in early adolescence. At times the special lunch menu was an additional stress for the cafeteria because standard recipes needed adaptation to emphasize healthy ingredients. In order to decrease this contextual barrier, some lunches were adjusted so that students selected their own food from cafeteria choices and ate together, discussing how to make healthy choices from foods available.

The after-school activities provided a meaningful social gathering for the participants. Participants enjoyed being together and increasing their physical activity frequency and duration. However, joint planning among the university and school personnel was essential to facilitating approaches that provided time, space, and resources for the after school program. Working in the school environment provided challenges that needed to be addressed. Reserving rooms and competing for space with other school activities sometimes limited potential activities that could be offered, and decreased student attendance. After school TEAMS activities were scheduled in consideration of seasonal sports and other clubs in order to maximize the ability for interested adolescents to attend.

Mentors (TEAMS leaders) were integral to the curriculum and to implementation of MI, since they were the major consistent point of contact for students in the schools. They delivered monthly calendars, collected paperwork, and provided the daily encouragement to keep their adolescents engaged in the program and attending curricular events. School nurses played a role in assisting with integration of the program within the school setting. Greater school nurse participation would have enhanced the program; however, as in many school systems, their allotted time for participation in projects such as TEAMS was extremely limited. School nurse holistic knowledge of the school system, student health needs and challenges, family situations, environmental impacts and more, makes them ideal leaders and key stakeholders in these types of programs.

Integrating the family into the TEAMS project was an essential component. Feedback from both students and

families cited that the planned events provided time for the family to be together and have fun as a unit. They stated they were often so busy that they did not do this without planning. The TEAMS events provided a forum that ensured family time and gave them ideas about other activities they could plan to do together. Communication with students and families were essential to success. Announcements in school about TEAMS activities, a special bulletin board with photos and a calendar of coming events, and newsletter and calendar were useful approaches to communication.

Implications for Research and Practice

The overall objective of the TEAMS research project was to decrease prevalence and development of obesity during middle school years. Two cohorts of seventh and eighth graders completed the project in middle schools in the Inland Pacific Northwest. Analysis of health outcomes is in progress. The purpose of this article was to describe the development, implementation, and challenges of a multilevel school-based intervention program for middle school students in TEAMS. Similar programs in other settings can benefit from applying the essential components of curriculum development identified in this project. These include

- identification of community needs
- careful perusal of existing curricula for extraction of useful materials and approaches
- tailoring of available curricula to meet the demands, needs, and limitations of the specific setting
- applying selected theories consistently to guide program offerings
- identifying personnel able to bridge the interdisciplinary, inter-organizational, and developmental considerations of the audience
- openness to evaluative feedback to inform adaptation of approaches.

The Institute of Medicine cites the importance of integrating efforts to improve nutrition and physical activity into multiple settings, including the schools (Kaplan et al., 2007). Strategic partnerships among university researchers, university extension, school personnel, and community stakeholders are most effective in implementing effective strategies in contextually different settings (Kaplan et al., 2005). Critical components of success include interdisciplinary approaches that use and test available curricula, adaptation of resources to meet contextual characteristics and involvement of all stakeholders in planning, evaluating and refining the program. The desired result is the potential for improved health among youth and establishment of health behaviors that can extend into later adolescence and adulthood.

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