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Evaluation of an individualized counseling approach as part of a multi-component school-based program to prevent weight-related problems among adolescent girls

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Abstract

School-based interventions show inconsistent results in reducing weight-related problems. One limitation of school programs is that they do not easily allow for individualization of targeted messages. An important question regards the feasibility and effectiveness of implementing individual sessions within broader school-based programs. This paper evaluates the feasibility and effectiveness of the individual counseling component of New Moves, a school-based program designed to prevent weight-related problems in adolescent girls, which was evaluated in a randomized, controlled study. A total of 356 girls from six intervention and six control high schools in the St. Paul/Minneapolis metropolitan area participated in the New Moves study in 2007-2009. This analysis includes the 182 girls from the intervention schools, all of whom were offered individual counseling as part of the program. The intervention girls had a mean age of 15.7 years (SD= 1.13) and were racially/ethnically diverse (73.1% non-white). During the individual sessions, which incorporated motivational interviewing strategies, girls set targeted behavioral goals aimed at preventing a spectrum of weight-related problems. Over 80% of the girls

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participated in five or more individual sessions. Girls chose goals for behavioral change based on individual needs. For example, girls with low levels of breakfast intake at baseline were most likely to set a goal to increase breakfast frequency. Satisfaction with the individual sessions was high, with 95% of the girls reporting being satisfied or very satisfied with the sessions. The addition of an individual counseling component to school-based interventions is feasible and has the potential to enhance behavior change.

Keywords

obesity; dieting; adolescent; motivational interviewing

Weight-related problems are common among adolescents (1-3). Although the prevalence of obesity is similar across gender, other types of weight-related problems, including inadequate physical activity, poor eating behaviors such as skipping breakfast, use of unhealthy weight control practices, and body dissatisfaction, are generally higher in girls than boys (1, 4-6). Programs to prevent weight-related problems are needed for adolescents, with consideration given to developmental stage, gender and cultural factors.

School-based programs provide an excellent venue for prevention programming since schools reach more than 95% of all US children (7). Schools also provide a structure into which health education can be easily incorporated (3, 8). In spite of these seemingly favorable conditions, school-based interventions have shown inconsistent success regarding their effectiveness to reduce weight-related outcomes (9-13). One reason for this lack of success is that the classroom environment may not be conducive to discussing students' individual concerns and barriers to behavior change (14). For example, adolescent girls may not feel comfortable discussing personal and sensitive issues related to weight among their classmates. Another limitation is that a classroom style of delivery assumes that most students are similar in terms of their motivation and readiness to make behavioral changes, which is not always the case (15-17). In contrast, a one-on-one setting can provide a private environment in which to discuss sensitive topics and incorporate a counseling style that aims to help individuals explore their own behaviors and ultimately commit to change (18-20).

Motivational interviewing (MI) is a collaborative, directive, individual-centered counseling style for eliciting behavior change (15). MI has been shown to be effective in promoting physical activity and improving eating behaviors (21). This counseling approach provides useful tools to promote behavior change, including reflective listening, expressing acceptance and affirmation and reinforcing the individual's own self-motivational statements. A school-based obesity prevention intervention incorporating individualized MI sessions has the potential to address some of the limitations of previous school-based efforts and help students overcome personal barriers to behavior change.

New Moves is a school-based intervention that was designed to prevent weight-related problems in adolescent girls (22, 23). New Moves included both classroom components and individual counseling sessions that utilized MI strategies. There is limited literature describing interventions that combine group and individual sessions and to the authors knowledge, none of these programs have been conducted in schools (23-25). The feasibility of implementing individual sessions from a small New Moves pilot study with adolescent girls (n=20) has been previously reported (26). These findings resulted in further development, refinement and implementation of individualized counseling sessions into the New Moves randomized controlled school trial with more schools and a larger and more diverse study sample. The aims of this paper are to: 1) provide a description of the individual sessions, which incorporated motivational interviewing strategies, and were a

component of the New Moves intervention program; 2) examine the feasibility of implementing individualized sessions within a school-based intervention; 3) assess participant satisfaction with the individualized approach; and 4) examine the goal setting behaviors of girls to assess what behavioral goals were selected and if the goals were associated with behavioral changes over time. It was hypothesized that girls would report high satisfaction with the individual sessions, select appropriate goals based on their baseline behaviors, and that setting behavioral goals would promote behavior change over time.

METHODS

Overview of New Moves

New Moves was implemented in schools as an all-girls physical education class with supplementary group and individual counseling sessions. The program strived to provide an environment in which all girls were comfortable being physically active and discussing weight-related issue regardless of their size, shape or level of physical activity. Program components included 1) the New Moves physical education class (four days/week for one semester), which incorporated nutrition and social support sessions (one day/week); 2) individual counseling sessions that incorporated MI strategies; 3) weekly lunch get-togethers after the physical education class ended; and 4) minimal parent outreach (27, 28).

Study Design

New Moves was evaluated with a group-randomized, controlled design, with six intervention and six control high schools in the St. Paul/Minneapolis metropolitan area of Minnesota during 2007-2009 (22). High schools were randomized into intervention or control conditions following baseline data collection. The goal was to recruit approximately 30 girls from each school. A total of 356 girls participated in the New Moves study (182 intervention, 174 control). The current analysis includes the girls from the intervention high schools; all of whom were offered individual counseling sessions as part of the program. The study was approved by the University of Minnesota's Institutional Review Board and by each school district. Both child assent and parental consent were obtained.

Recruitment

Girls were invited to register for an all-girls physical education class as an alternative to the regular coeducational class, and receive physical education credit. Recruitment materials such as posters and course descriptions were designed to appeal to girls who were inactive, felt uncomfortable in regular physical education classes, and were interested in healthy weight management.

Individual Counseling Sessions

All girls enrolled in the intervention were encouraged to participate in individual sessions. The individual session component allowed for one-on-one attention that was not provided within the group physical education class. Seven individual sessions were offered throughout the school year. Two of the sessions were completed during the New Moves physical education class (first semester), and five were conducted after the class had ended (second semester) so that motivation and support could continue beyond the class. Sessions lasted about 20-25 minutes and were held every two–three weeks to allow girls time to work on achieving their goal(s). A time (during a study hall or before/after school), day of the week, and specific school location was established for each session. Reminder notes were given to each participant the day prior to the session in order to maintain a regular and consistent meeting schedule.

In order to promote consistency and maintain continuity of study staff, each of the intervention schools was assigned a team of two New Moves staff members to deliver the classroom sessions and serve as individual coaches. The staff was a Registered Dietitian who conducted the classroom-based nutrition sessions and a health educator who conducted the classroom-based social support sessions. A total of four staff members implemented the intervention at three schools during each of the two school years of the study. Each study participant in the intervention schools was randomly paired with one of the New Moves staff who worked in the school and the coach/participant pairs were maintained throughout the program so that relationships could be fostered and maintained.

Individual counseling sessions utilized motivational interviewing strategies to guide the discussions. This counseling strategy was chosen as it has been highly effective in promoting behavior change and is minimally prescriptive, which works well for adolescents who value their independence (16, 18, 24). The focus is to help people individually work through their ambivalence and enhance their commitment to behavior change, as well as facilitate that behavior change and maintain long-term adherence (15, 29). During the individual sessions, the coach established a non-confrontational and supportive climate in which the girls felt comfortable expressing their thoughts and feelings. The sessions were designed to put the girls in the active role of choosing and attaining their physical activity and eating goal(s). For example, the coach would first establish rapport, outline the agenda, ask the participant to select one or more of the eight New Moves behavioral objectives (see Table 1) to focus on during the session, explore barriers and strategies for achieving the selected behavior change, and ultimately set a personal goal to work toward before the next counseling session. Participants' personal goal could be more specific than the general New Moves behavioral objective. For example, if the objective was to consume more fruits and vegetables, girls could set a personal goal to eat one additional vegetable at lunch. Throughout each session, the coach strived to enhance the girls' motivation for and commitment to change, as well as support each girl's autonomy and ability to make healthy lifestyle decisions around the New Moves behavioral objectives.

The coaching team underwent a two-day interactive motivational interviewing training workshop before the individual sessions began, followed by ongoing supervision and coaching by the New Moves Intervention Coordinator who had training and experience with motivational interviewing (17, 26). Throughout the study, coaches attended regular case management meetings to discuss, as a team, strategies to improve participant behavioral goals. To ensure uniformity of practice and quality control, ongoing observations of the sessions were facilitated by the Intervention Coordinator and feedback was given.

Measures

At baseline, prior to the New Moves intervention, girls' physical activity was assessed with a 3-Day Physical Activity Recall (30), fruit and vegetable intake was measured using a 24-hour recall (31), frequency of breakfast consumption in the past week was assessed via a single self-report survey item (23, 32) and awareness of portion sizes was measured using four self-report survey items. Participants' height and weight was measured using standard procedures (33). BMI was calculated and participants were classified as non-overweight (BMI < 85th percentile); overweight (BMI between the 85th - 95th percentile); or obese (BMI ≥ 95th percentile) using the CDC growth charts (34, 35). Table 2 provides a description and psychometric information for study measures. During the follow-up evaluation period at the end of the school year, behaviors were assessed using the same measures as at baseline. A single survey question was used to measure girls' satisfaction with individual sessions. Additionally, tracking forms were completed by New Moves coaches following each individual counseling session. The tracking form collected information on: 1) goal(s) set; 2)

barriers to meeting goal(s); 3) what plan was established to meet the goal(s); and 4) notes on the reason why girls did not attend if the session was not completed.

To assess the impact of the individual sessions on behavior change, the four goals that participants chose most frequently were examined (physical activity, fruit and vegetables, portion control and breakfast). Reducing sweetened beverage intake was also a goal of the program and one of the girls' options however very few chose this goal and therefore it was not included in the analysis. Girls were classified as setting the physical activity goal "frequently" (four-six times), "often" (one-three times), or never. Fruit and vegetables, portion size and breakfast goals were classified as being set "frequently" (three-six times), "often" (one-two times), or never (Table 3).

Statistical Analysis

Global ANCOVA (two degrees of freedom (df), adjusted for age and race) was used to assess differences in baseline behavior and also in behavior change (follow-up minus baseline) according to levels of goal-setting in the individual sessions. If significant, a p-value for linear trend (one df) across the categories was conducted. P-values were generated for informing interpretations with the threshold for significance set at $p < 0.05$. All statistical analyses were conducted using the Statistical Analysis Software (version 9.2, 2008, SAS Institute Inc, Cary, NC).

RESULTS

The intervention girls ($n = 182$) had a mean age of 15.7 years ($SD = 1.13$); 16.6% of the girls were overweight and 30.4% were obese. The participants were 32.4% black, 26.9% white, 16.5% Asian, 13.2% Hispanic, 3.3% Native American, and 7.7% of mixed or other race/ethnicity.

On average, girls completed a mean of five of the possible seven individual sessions with a range of zero (1 girl) to seven (17 girls). Over 80% of the girls had five or more individual sessions during the school year. Reasons reported for not attending all sessions were: school change; difficulty scheduling a time to meet; and low interest in behavioral change and thus not feeling they needed to meet.

Girls were encouraged to set goals from the eight New Moves behavioral objectives and could choose one or more goals to work on at each session. On average, girls set five different goals over the course of their visits (range 0-15 total goals set). As shown in Table 1, the goals chosen most often were increasing physical activity (set by 86% of the girls), increasing fruit and vegetable intake (49%), paying attention to portion size (37%), and eating breakfast (36%). Additional analyses focused only on these four most common goals.

Girls who set goals for increasing breakfast consumption had the lowest levels of breakfast intake at baseline and thus the most room for improvement ($p_{\text{trend}}=0.002$). No associations were observed between girls' baseline level of behavior and their frequency of setting a behavioral goal for the other three behaviors. No significant associations were observed between girls' frequency of setting a behavioral goal and their change in the specific behavior between baseline and follow-up, although trends generally suggested greater behavioral change associated with setting a goal more frequently (Table 3).

Frequently experienced challenges to making behavior changes reported by the girls included: 1) personal barriers ($n=126$) such as lack of motivation and stress; 2) perceived lack of time ($n=74$) due to commitments at school, work and extracurricular activities; 3)

lack of access to healthy food and physical activity opportunities (n=62); and 4) weather (n=41).

Girls' satisfaction with the individual sessions was high. Among girls who completed the process evaluation survey (n=175/182), 95% reported they were satisfied (41%) or very satisfied (54%) with individual sessions. Typical comments included *"I liked the one-on-one sessions where it focuses on me"* and *"I liked how we got our own coaches to help us talk about our health and eating right."*

DISCUSSION

New Moves, a school-based intervention to prevent obesity and other weight-related problems, was designed and promoted as an all-girls physical education class focusing on healthy eating, physical activity and social support. The program integrated individual sessions that incorporated MI techniques to enhance participants' behavior change by addressing girls' individual goals and barriers and providing a safe space in which to discuss personal topics. Many previous school-based intervention programs have focused on addressing the health behaviors of groups of students and have been delivered in the classroom setting. Although this type of intervention has shown some success, most programs report inconsistent outcomes, perhaps due to the inability to tailor intervention messages and behavior-change strategies (21, 25).

Findings from the individual session component of New Moves show a high level of participant satisfaction, most notably because of the personal attention the girls received from their coach. This is likely because during the individual sessions girls were provided with a comfortable and welcoming environment in which to openly explore personal barriers and strategies to address those barriers. Although not significant, trends toward positive health behavior change were seen by the end of the intervention among girls who participated in the individual sessions.

One of the main aims of this paper was to examine how setting goals was related to current behavior and behavior change during the intervention. The girls were active participants in selecting and setting a goal during each individual session and therefore had the opportunity to individualize the intervention based on their own needs. For the goal of eating breakfast every day, girls who selected this goal the most often reported the least frequent breakfast consumption at baseline. Thus, it appears that girls did not choose to set this goal only because it could be easily achieved, but because it was a behavior that needed improvement. Also of interest is that girls seemed to be more willing to set goals such as increasing their physical activity and breakfast frequency (positive goals) rather than decreasing behaviors such as limiting sedentary activity or watching TV (negative goal). This tendency has implications for future health behavior change interventions in that programs may be more successful in aiming to increase participants' engagement in positive behaviors rather than limiting negative behaviors.

Study strengths and limitations need to be taken into account in interpreting the findings. The socio-demographically diverse study population is a study strength. Additionally, girls at risk for obesity due to sedentary lifestyles were successfully recruited into the intervention. Strong measures, which have been tested for validity and reliability, were used to assess physical activity and dietary intake (30, 31, 36). However the 24-hour dietary recall, which was selected for the New Moves study since it is suitable for assessing change at the group level, is not ideally suited for analyses at the individual level as was done in the current study. An additional limitation is that all girls who received the New Moves intervention received the individual session component. In order to more fully explore the

utility of an individualized intervention, a possible next step might be a three-arm research design including : 1) New Moves physical education class alone; 2) New Moves physical education class plus individual sessions; and 3) control group with no intervention. This design could assess if individual sessions using motivational interviewing enhance behavior change beyond what can be obtained in a classroom intervention alone.

CONCLUSIONS

The school setting provides an ideal opportunity to reach populations of youth at high risk for obesity and other weight related problems. School-based interventions that incorporate individual counseling components and utilize motivational interviewing strategies have great potential to provide targeted and tailored intervention messages and assist program participants with overcoming their personal barriers to behavior change. Although additional research is needed to determine the effectiveness of individual sessions in promoting behavior change among adolescents in the school setting, individual counseling sessions were well received by the adolescent girls participating in New Moves and were feasible to conduct as part of a school-based intervention.

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Table 1

New Moves behavioral objectives and percentage of girls who chose to work on each behavior during individual counseling sessions (n=182).

Behavioral Objectives	% of girls addressing each behavior ^a % (n)
1) Be more physically active	86 (157)
2) Eat more fruits and vegetables/day	49 (89)
3) Pay attention to portion sizes and your body's signs of hunger and fullness	37 (67)
4) Eat breakfast every day	36 (66)
5) Focus on your positive traits	24 (44)
6) Limit soda and sweetened beverage intake	19 (35)
7) Avoid unhealthy weight control behaviors	15 (27)
8) Limit sedentary activity	5 (9)

^a Girls could choose to work on more than one behavior at each individual session.

Table 2
Description of variables assessed with focus on the four most commonly set goals and individual session satisfaction.

Behaviors Measured	Assessment Method	Description
Physical activity	Three-day physical activity recall	Girls were asked to report their primary activity for each block of time from a list of 65 choices that included both sedentary (e.g. sitting in class) as well as physical activities (e.g. yoga, walking). Each day was broken into 30-minute blocks and girls reported their activity for the previous three days. Each girl's average daily physical activity was calculated as the average number of blocks during which she reported engaging in any physical activity (30). Mean $\pm$ SD = 4.5 $\pm$ 3.58 (30 minute blocks per day)
Fruit and vegetable intake	24-hour Dietary Recall	Servings of fruits and vegetables consumed on the previous day were obtained via one in-person interviews with trained staff using Nutrition Data System for Research software (NDS-R, version 2006) (Nutrition Coordinating Center, University of Minnesota, Minneapolis). Fruits and vegetables did not include French fries, fried fruits and vegetables or juice (31). Mean $\pm$ SD = 1.80 $\pm$ 1.99 servings per day
Breakfast consumption	New Moves Survey	"How many days in the past week did you eat breakfast?" (23, 32) Responses options: eight options from 0 to 7 days. Range: 0-7 Test/retest r = 0.75
Portion control	New Moves Survey	Four items: "I pay attention to portion sizes" "I check the serving size on food and drink labels." "I am aware of the portion size that I eat." "When I eat dessert, I try to eat a small portion." Response options: "Hardly ever," "Sometimes," "Much of the time," "Almost always" Developed for New Moves. Range: 4-16 Test/retest r = 0.87 alpha = 0.79
Satisfaction with individual sessions	New Moves Process Evaluation Survey	"How satisfied were you with the individual sessions with your New Moves coach?" Response options: "very unsatisfied," "unsatisfied," "satisfied," or "very satisfied"

Table 3

Most frequently selected behavior goals set during individual sessions and baseline mean level and change from baseline of the corresponding behavior (n = 182)^a.

Health Behavior Goal	Number of times goal set	N	Mean level at baseline Mean (SE)	p value ^b	Change from baseline Mean (SE)	p value ^c
Be more physically active	4-6	44	3.95 (0.53)		+1.31 (0.69)	
	1-3	107	5.03 (0.34)	p=0.231	-0.04 (0.44)	p=0.209
	None	24	4.54 (0.72)		-0.33 (0.94)	
Increase fruit and vegetable intake	3-6	13	2.68 (0.73)		+0.81 (0.81)	
	1-2	71	2.78 (0.31)	p=0.862	+0.29 (0.35)	p=0.950
	None	81	2.85 (0.29)		+0.32 (0.33)	
Pay attention to portion size	3-6	11	8.18 (0.86)		+0.91 (0.93)	
	1-2	55	7.80 (0.38)	p=0.354	+1.56 (0.41)	p=0.676
	None	111	8.24 (0.27)		+0.35 (0.29)	
Eat breakfast every day	3-6	7	0.86 (0.95)		+2.86 (1.05)	
	1-2	57	2.42 (0.33)	p<0.001	+1.56 (0.37)	p=0.157
	None	112	3.96 (0.24)	p _{trend} =0.002	+1.03 (0.26)	

^aTests are global ANOVAs (2df); ptrend is test of linear trend across the categories and not applicable unless the global test of any differences is significant.

^b p value is based on test (2df) of differences between categories

^c p value is based on test (2df) of differences in changes between categories