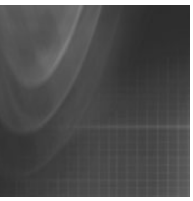
Training At-Risk Youth to Become Diabetes Self-management Coaches for Family Members

Partnering Family Medicine Residents With Underserved Schools



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Purpose

The purpose of this study is to evaluate the impact of a school-based health program in which family medicine residents trained healthy at-risk adolescents to become diabetes self-management coaches for family members with diabetes.

Methods

A mixed methods study included 97 adolescents from 3 San Francisco Bay Area high schools serving primarily ethnic minority youth of low socioeconomic status. Physicians came to schools once a week for 8 weeks and trained 49 adolescents to become coaches. Student coaches and 48 nonparticipant students completed pre- and posttest intervention questionnaires, and 15 student coaches and 9 family members with diabetes gave in-depth interviews after participation. Linear regression was used to determine differences in knowledge and psychosocial assets on pre- and posttests between student coaches and nonparticipant students, and NVIVO was used to analyze interview transcripts.

Results

After controlling for initial score, sex, grade, and ethnicity, student coaches improved from pre- to posttest significantly compared to nonparticipants on knowledge,

belonging, and worth scales. Student coaches reported high satisfaction with the program. Articulated program benefits included improvement in diet, increased physical activity, and improved relationship between student coach and family member.

Conclusions

Overall, this program can increase diabetes knowledge and psychosocial assets of at-risk youth, and it holds promise to promote positive health behaviors among at-risk youth and their families.

In less than a decade, prevalence of type 2 diabetes and prediabetes has more than doubled, from 9% to 23%, among US adolescents aged 12 to 19 years.[1] Effective strategies are needed to increase diabetes awareness and motivate at-risk youth to adopt healthier lifestyles that reduce diabetes risk. School-based health programs have shown promise to reduce risk factors for type 2 diabetes among low-income ethnic-minority children.[2,3] Children of parents with diabetes may be a particularly important group to reach with such programs, given their increased risk of diabetes due to shared environment and genetics.[4] For adults with diabetes, evidence demonstrates that self-management programs—specifically, those in which peer coaches teach adults to manage their diabetes—are effective for diabetes management and subsequent reduction in health costs.[5,6] Training adolescent family members as coaches could promote diabetes prevention among high-risk youth by increasing diabetes knowledge and promoting acquisition of psychosocial assets—personality resources such as self-worth, resilience, and belonging. Youth asset development is a known precursor to engaging in healthy lifestyles,[7-13] and Healthy People 2020 emphasizes the importance of youth asset development to promote adolescent health.[14] Few studies, however, have explored employing adolescents as self-management coaches for diabetic family members.

This program combines the proven effectiveness of school-based health programs, diabetes self-management programs, and promotion of youth assets. The main goal was to determine whether training healthy adolescents to become self-management coaches for family members with diabetes could influence adolescents' knowledge of diabetes and personal psychosocial assets. A secondary goal was to evaluate participants' perceived program benefits and determine whether this program encourages adoption of positive health behaviors.

Methods

Research Design

To investigate the impact of the program on adolescents' diabetes-related knowledge and psychosocial assets (self-worth, resilience, and belonging), a mixed methods study was used. Pre- and posttest survey results were compared between participating student coaches and a convenience sample of nonparticipating students in the 9th through 12th grades in the same schools. In-depth phone interviews were completed with participating student coaches (n = 15) and their family members with diabetes (n = 9). The institutional review board at Stanford University approved the study. All student coaches provided assent; coached family members provided informed consent; and student coaches' parents provided informed consent.

Sample and Setting

Eligible students in 3 high schools were invited to participate in the Stanford Youth Diabetes Coaches Program (San Francisco Bay Area, CA, USA) during school year 2011-2012. Students were eligible to participate if they were in grades 9 through 12. Students were recruited through advertisements posted in the schools, and participation was voluntary. All 3 high schools served predominantly racial/ethnic-minority students, with between 72% and 94% of students qualifying for free or reduced-price lunch. In total, 56 student coaches initiated the course, and 49 completed it and pre- and posttest surveys. Students who did not complete the program cited schedule conflicts as the primary reason. Students in grades 9 through 12 in the same 3 schools were recruited to serve as a comparison group. In total, 48 nonparticipating students completed both a pre- and a posttest survey. Fifteen student coaches and 15 family members with diabetes were randomly selected to participate in phone interviews designed to evaluate participants' assessment of the program and whether it encouraged the adoption of healthier behaviors. The first author conducted phone interviews in English or Spanish, lasting approximately 30 minutes, with 15 students and 9 family members with

Table 1

Stanford Youth Diabetes Coaches Program Content by Class, 2011-2012

Session	Diabetes and Health Knowledge	Coaching Skills
Class 1	Diabetes basics	Coaches responsibilities, respect for family member's choices, scheduling meeting times, communication
Class 2	Blood glucose monitoring, achieving blood glucose balance	Body language, active listening, reflective listening, communication
Class 3	Healthy eating, nutrient guidelines	Introduction to action plans, making action plans, communication
Class 4	Meal planning, food labels, plate method	Creating and assessing action plans, action plan coaching communication
Class 5	Physical activity	Action planning, problem-solving steps, problem-solving communication
Class 6	Achieving a healthy weight	Action planning, problem-solving challenges
Class 7	Health maintenance for diabetics	Action planning, problem-solving challenges
Class 8	Stress management, partnering with health providers	Action planning, problem-solving challenges

diabetes. Six family members could not be reached by phone, despite repeated attempts.

Intervention

The Stanford Youth Diabetes Coaches Program was modeled after the Stanford University Diabetes Self-management Program for adults.[15] Effective self-management relies on acquiring problem-solving skills and using action plans for effective goal setting.[15] An 8-session program was created combining principles of chronic disease self-management with strategies for meeting the needs of our target population—underserved high school students. Each session was developed in great detail to support instructors to implement all curricular materials and experiences. For each 1-hour session, there was an accompanying script for instructors, PowerPoint presentation, quiz, and weekly coaching assignment. The program was designed to be taught by physicians and medical residents previously trained by a member of the research team. To ensure consistency in how the program was implemented, we requested that physician and medical resident instructors closely adhere to the PowerPoint presentation and script.

In addition to teaching basic diabetes knowledge, the program included instruction on nutrition, healthy meal planning, physical activity, healthy weight maintenance, stress reduction, and developing partnerships with health care providers (Table 1). The program emphasized the acquisition of communication, problem-solving, and action-planning skills designed to promote the psychosocial assets of the student coaches who were trained to help family members manage their diabetes.

Student coaches planned a 30-minute meeting once a week with family members, during which they completed coaching assignments. Student coaches interviewed family members about their experiences with diabetes and their goals for managing health; they discussed topics learned in class; and they helped them make action plans for health improvement for the week. Student coaches were also asked to make action plans for their own health improvement to share with their family members. Because mental health concerns have been noted among youth who care for adult family members with chronic illness,[16,17] the curriculum emphasized that in their role as coaches, students were not responsible for the behaviors or health of family members whom they were coaching. Most students coached adult family members with diabetes (usually, parents or grandparents), but some coached nonadult siblings or non–family members (eg, peers or teachers). To reduce confusion, we use the term *family member with diabetes* to denote the person whom the student participant chose to coach.

Measures and Analysis

Outcome Measures

Diabetes-related knowledge was measured with questions from the Michigan Diabetes Research and Training

Center's validated Brief Diabetes Knowledge Test,[18] as well as knowledge questions developed by the team that derived directly from program curriculum. Psychosocial assets, including self-worth, belonging, and resilience, were measured with scales adapted from the validated California Healthy Kids Survey[19] and the Rosenberg Self-esteem Scale.[20]

Knowledge was measured with questions from the general test segment of the Michigan Diabetes Research and Training Center's Brief Diabetes Knowledge Test, which includes 14 multiple-choice questions with 4 response options. We did not utilize the subscale of this test containing insulin-use questions. This test was designed for adults with type 1 or type 2 diabetes, and its reliability and validity have been assessed with only that population.[21] In the absence of a known test of diabetes knowledge for healthy adolescents, however, we believe that the simplicity of the test questions allows for a fair assessment of basic diabetes knowledge for the study participants. We selected 11 of the 14 questions with the best item-to-program content match, for program evaluation purposes. We added 7 multiple-choice questions with 4 response options to capture other knowledge gained from program participation, such as reading food labels and using the plate method. With 18 total knowledge questions, the response range of 0 to 18 represents the number of correct answers—1 point for each correct answer, with a higher score indicating higher level of diabetes and health knowledge.

Resilience and belonging were measured with questions from the California Healthy Kids Survey, which is a widely used tool to assess student resilience and risk behaviors.[19] The psychosocial assets scales, including belonging and resilience domains, have been extensively evaluated and found to exhibit good internal consistency and be associated with student risk factors.[22]

Belonging was measured with 4 school belonging questions from the California Healthy Kids Survey, 2009-2010, Module A, with 2 questions containing 4 Likert response options ranging from *not at all true* to *very much true* and with the other 2 questions containing 5 Likert response options ranging from *strongly disagree* to *strongly agree*. The total score represents the degree to which the respondent agreed with each item, with a possible response range of 4 to 18. A higher score indicates that the participant felt a higher degree of belonging to his or her school.

Resilience was measured with 18 questions from the California Healthy Kids Survey, 2009-2010, Module B, which is currently known as the Resilience and Youth Development Module. We selected the first 18 questions from the module because these asked for participants to provide personal self-assessment while the others asked for assessment of friends and family. Each question had 4 Likert response options ranging from *not at all true* to *very much true*, with a possible response range of 18 to 90.

Worth was measured with 5 questions from the Rosenberg Self-esteem Scale and with 4 questions that we designed to measure program-specific worth related to coaching a family member. The Rosenberg Self-esteem Scale has been tested widely in diverse populations, including youth, in the United States and in more than 20 languages and countries. It is considered a highly validated scale against which new self-esteem constructs are validated.[23] The worth scale included 9 total questions with 5 Likert response options ranging from *not at all true* to *very much true*, with a possible response range of 9 to 45. In a few cases with the worth questions, item answers were reverse coded so that higher scores always represented a higher level of worth. In addition, posttest surveys for participants included questions on program acceptability and demographic information.

For the in-depth interviews, an interview guide was developed with 7 open-ended scripted questions designed to investigate the experience of student coaches and family members with diabetes and to identify perceptions of whether program participation encouraged adoption of positive health behaviors. Interviews with student coaches and family members with diabetes were conducted by phone and transcribed simultaneously by the interviewer.

Data Analysis

Only students in the intervention (n = 49) and nonparticipant (n = 48) groups with complete pre- and posttest data were included in the analysis. Student coaches and nonparticipating students were compared according to sociodemographic characteristics according to the chi-square test and the Fisher exact test, in cases of small cell sizes (<5 observations). Mean values of diabetes knowledge and psychosocial assets were compared from the pre- and posttest surveys on the basis of *t* tests. Linear regression models were used to compare changes in knowledge and psychosocial assets between the pre- and posttest among participating coaches and nonparticipating students, controlling for initial score, sex, grade, and ethnicity. Covariates were chosen because they significantly

Table 2

Select Characteristics of Intervention and Nonparticipant Students (n = 97)

Characteristic	Nonparticipant, n = 48		Intervention, n = 49		*P* Value[a]
	n	%	n	%	
Age, y					.00
13-14	0	0.0	9	20.5	
15-16	37	80.4	21	47.7	
17-18	9	19.6	14	31.8	
Grade					.009
9th	3	6.3	10	22.2	
10th	25	52.1	12	24.4	
11th	8	16.7	6	11.1	
12th	12	25.0	20	42.2	
Sex					0.005
Male	13	27.7	5	11.1	
Female	34	72.3	40	88.9	
Ethnicity					.348
Asian	27	56.3	19	38.8	
Latino	13	27.1	16	32.7	
African American	2	4.2	4	8.2	
Other	6	12.5	10	20.4	
Living situation					.247
With both parents	30	63.8	27	49.0	
With one parent	11	23.4	14	26.5	
Other	6	12.8	15	24.5	
Languages spoken at home					.007
Only English	34	72.3	21	48.8	
Only English, parents mostly other language	3	6.4	11	25.6	
English and other language equally	2	4.3	5	11.6	
Mostly language other than English	6	12.8	1	2.3	
Only a language other than English	2	4.3	5	11.6	

[a] *P* value from chi-square test or Fisher exact test in cases of cell sizes < 5.

differed between the student coaches and nonparticipant groups and because they are factors that could be independently related to psychosocial asset development.[13] Stata 11.2 for Mac was used for all analyses.

The interview transcripts were initially read independently by 2 investigators (E.R., R.J., research assistant) who determined themes based on repetition of responses and coded transcripts accordingly. Two additional team researchers (L.G., L.G.R.) then read transcripts and corroborated thematic designations and coding of transcripts. In cases of initial discrepancies in coding, the 4 investigators discussed and reached consensus. Thematic analysis of the interviews was completed with NVIVO 7 software (QSR International).

Results

Student coaches and nonparticipating students were primarily underrepresented minorities, with Asian and Latino students making up the majority (Table 2). Compared to student coaches, nonparticipants included fewer ninth graders and were significantly older, more likely to be male, and more likely to speak only English at home. They did not differ by race/ethnicity or living situation (with both parents, with one parent, or other).

At baseline, student coaches scored an average of 9.3 ± 2.4 points out of a possible 18 on the diabetes knowledge scale, which was significantly higher (P = .009) than that of nonparticipants, who scored an average of

Table 3

Mean Test Scores and Differences—Higher Score Better for All Measures (n = 85)

	Student Coaches		Nonparticipants		
	Mean	SD	Mean	SD	*P* Value[a]
Pretest					
Knowledge[b]	9.3	2.4	8.0	2.6	.009
Resilience[c]	76.2	7.9	70.9	7.7	.001
Belonging[d]	14.3	2.6	12.1	2.1	<.001
Worth[e]	34.2	4.5	33.0	4.5	.186
Posttest					
Knowledge	13.6	3.1	10.8	2.7	<.001
Resilience	78.8	7.0	73.8	5.9	<.001
Belonging	14.3	2.6	12.3	2.2	.001
Worth	37.7	4.7	34.5	4.4	.001
Mean difference					
Knowledge	4.3	3.3	2.8	3.7	.050
Resilience	2.4	5.3	2.7	6.7	.797
Belonging	0.1	2.2	0.1	1.7	.952
Worth	3.4	5.1	1.5	4.3	.054

[a]*P* values calculated per *t* test.
[b]Range, 0-18.
[c]Range, 18-90.
[d]Range, 4-18.
[e]Range, 9-45.

8.0 ± 0.26 points (Table 3). Student coaches also scored significantly higher than nonparticipants on the resilience scale (76.2 vs 70.9; $P = .001$) and the belonging scale (14.3 vs 12.1; $P < .0001$) at baseline. Student coaches and nonparticipants did not significantly differ on their scores on the worth scale at baseline. Posttest scores showed that student coaches scored significantly higher than nonparticipants on the following scales: knowledge (13.6 vs 10.8; $P < .0001$), resilience (78.8 vs 73.8; $P < .0001$), belonging (14.3 vs 12.3; $P = .0001$), and worth (37.7 vs 34.5; $P = .0001$).

Although student coaches scored significantly higher on the posttest than nonparticipants, unadjusted mean differences between pre- and posttest scores showed that both student coaches and nonparticipants improved their scores on all 4 scales. In the unadjusted analysis, student coaches had a higher mean difference between pre- and posttest score on only the knowledge scale (4.3 vs 2.8; $P = .050$). The unadjusted mean differences between pre- and posttest scores did not significantly differ between student coaches and nonparticipants for the resilience, belonging, and worth scales. However, after adjusting for initial score, sex, grade, and ethnicity, student coaches' scores for knowledge ($P < .01$), belonging ($P = .02$), and worth ($P = .03$) increased significantly more than scores of nonparticipating students (Figure 1). For example, in the adjusted analysis, student coaches significantly increased their knowledge score from pre- to posttest by 1.83 points more than nonparticipating students ($P = .002$). While the crude belonging scores did not measurably change from pre- to posttest for student coaches or nonparticipating students, the adjusted analysis demonstrated that student coaches increased their belonging score from pre- to posttest by 0.97 points more than nonparticipating students ($P = .023$). Student coaches increased their scores on the worth scale by 2 points more than the increase observed for the nonparticipating students ($P = .026$). Although the adjusted mean difference for resilience was higher for student coaches compared to nonparticipating students, the difference was not statistically significant.

Additionally, as part of their posttest survey, student coaches rated the program's acceptability based on overall program satisfaction, program usefulness, satisfaction

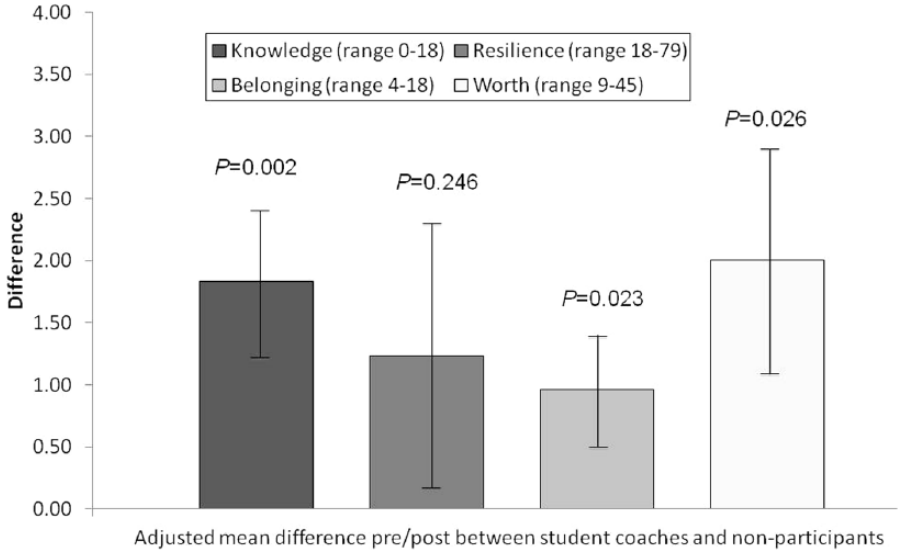

Figure 1. Adjusted mean pre- and posttest differences between student coaches (n = 49) and nonparticipants (n = 48) adjusting for initial score, sex, grade, and ethnicity. *P* values determined by linear regression model.

with the instructor, and program relevance for their lives (data not shown). The majority of student coaches ranked these areas as very good or excellent: overall program satisfaction (81%), program relevance for life (81%), instructor satisfaction (90%), program usefulness (93%).

Qualitative Interviews

Seven unprompted themes emerged in the analysis of the qualitative interviews (Figure 2). The 4 themes most frequently mentioned were as follows: improved diet, increases in physical activity, improved relationship between student coach and family member, and appreciation for having a physician teach the class (Table 4). Overall, in the qualitative interviews, students reported improvement in personal health behaviors, regular use of action plans to accomplish goals, and confidence in their ability to effect positive change in the lives of family members. Family members with diabetes reported considerable lifestyle changes and attributed willingness to improve health behaviors to being coached by someone close to them.

Discussion

The results of this study indicate that the Stanford Youth Diabetes Coaches Program approach increases knowledge and psychosocial assets of participant youth. In addition to significant improvements in diabetes and health knowledge after participation, youth coaches reported significant increases in self-worth and belonging—psychosocial assets identified as precursors to engaging in healthy lifestyles.[7-9,11-13] Youth participants also reported positive changes in their own lives as they coached family members, and family members emphasized the importance of student coaches' role in encouraging healthier behaviors. Additionally, youth participants reported high program satisfaction.

Socially disadvantaged adolescents, such as racial/ethnic minorities and those of low socioeconomic status, are disproportionately represented among youth with type 2 diabetes in the United States.[24] The clinical, psychological, and social consequences of this worrisome trend have been extensively documented.[25,26] Because this research targeted underserved schools serving ethnic-minority students of low socioeconomic status, we believe that these findings demonstrate that this program has potential to address needs of high-risk youth. The measured program benefit for participants as compared to nonparticipants may be a conservative result given that 45 of 48 nonparticipant subjects participated in comprehensive diabetes curriculum through their school health academy. For students who do not have access to diabetes curriculum, improvement in diabetes knowledge and potentially in psychosocial assets after program participation could be greater.

These results substantiate current work suggesting that school-based health programs benefit adolescents

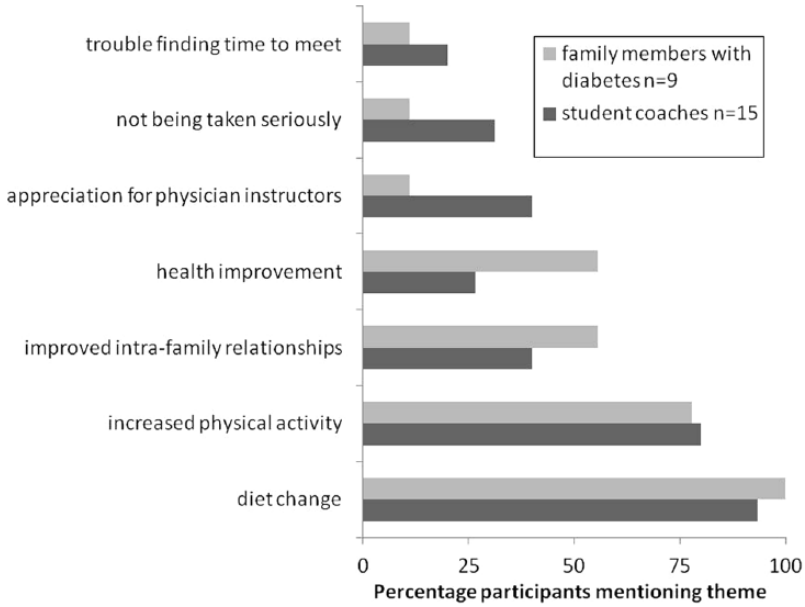

Figure 2. Major themes from qualitative interviews with student coaches (n = 15) and family members (n = 9) after participation. Designated themes were mentioned without specific prompting and were extracted from interview transcripts according to NVIVO.

and that children have potential to support the self-management of family members with diabetes. Evidence strongly suggests that school-based health programs hold promise to improve health of at-risk adolescents. Such programs—such as those conducted by the Healthy Study Group,[27] the Kids N Fitness Program group,[28] or the prevention program tested by Grey et al[29]—demonstrate that combining health education and communication in a community and family context holds potential to reduce risk factors for type 2 diabetes among ethnic-minority youth of low socioeconomic status.

The Stanford Youth Diabetes Coaches Program utilized the same principles of school-based health education in a community context, but this program is unique in that it specifically trained adolescents to become self-management coaches for family members. In doing so, it capitalized on the validated success of diabetes self-management programs[5] and the established benefit of intrafamily and peer support in the management of chronic illness.[30,31] Student coaches' perceived ability to guide family members to better health may contribute to the increases seen in psychosocial assets. The combination of improved psychosocial assets and establishing a health partnership with family members may lay the groundwork for sustainable health improvement for youth and their families.

Within the context of self-management programs, few have explored the role that children could have in supporting the diabetes self-management of adult family members. When compared to adolescents with healthy parents, adolescents with a diabetic parent have more than twice the risk for type 2 diabetes[4]; as such, the need for interventions for teens that involve the whole family is especially important.[32] A study by Laroche et al suggests that without official instruction, children have potential to play both supportive and undermining roles in the self-management of family members.[33] For example, parents in that study explained that while children made recommendations for healthier behavior, they also often tempted diabetic parents with unhealthy foods. Unlike the children in the Laroche study, student coaches in this study are encouraged to make personal action plans for health improvement as models for their family members with diabetes, which may lessen the problem of temptation. This work suggests that with formal training in self-management support, children could more consistently provide support to family members with diabetes and be less likely to undermine their self-management. In

Table 4

Sample Quotes by Theme From Student Coaches and Family Members With Diabetes Randomly Selected for Postprogram Interviews (n = 24)

Improved diet

- It helped all of us because my dad is the one who makes the food, so it pretty much helped us all control our eating habits. (Student coach)
- My action plan was to drink water every day, three times a day. It's working out good. I used to have soda for dinner every night, now I'm not stuck on soda at all. Now I drink water. (Student coach)
- My mom wanted to stop eating fast food so often, so I told her to eat healthier foods like whole grains and vegetables at home and cutting down her meat portions and making vegetables bigger. She used to eat fast food three or four times a week. Now, just once a week. (Student coach)
- Now, I make half the plate vegetables. (Student coach)
- Before, [my dad] would just eat fast food every night. Now, he makes the salad from my grandparent's garden. He likes it better. Making the action plans and trying to achieve the goals really works. (Student coach)
- I liked all the nutrition plans I was learning. Now I know about calories and serving size and cholesterol. I am using all of that now when planning my meals. (Mother)
- [The program] helped me realize what my diet was and how unhealthy I was feeding my kids and myself before. And it also helped me realize the energy I have gotten by watching what I am eating—like not eating McDonald's every day like we were doing. (Father)

Increases in physical activity

- For exercise, [my grandmother's] plan was to walk for 5-10 minutes a day in the neighborhood. Then, she walked more and more gradually. Now, she walks two times a week for 30 minutes for exercise. She wasn't doing any kind of exercise consistently before. (Student coach)
- I helped my sister make an action plan to be active. She does no type of exercise at all. So, we decided we were going to try running. And I told her we would do it together. And since I was there to motivate her, she wanted to do it. (Student coach)
- Before the class, [my mom] maybe went [to the gym] once a week or not at all. Then, the action plan motivated her to exercise three times a week at the gym, and she is still doing it now. (Student coach)
- Now, she told me to exercise, so I have been doing that. I think for me, she is telling me how to take care of myself. (Father)
- I am walking now more, too. I am going out at night or in the morning to walk. (Mother)

Improved relationship between student coach and family member

- They trust me and depend on me more. I'm like their guide telling them what to do now. (Student coach)
- My favorite part was going home and actually telling my mom things she can do. I was able to tell her about things to help her health—it was good knowing things that I could actually do to help her. (Student coach)
- Now I know my grandma in a different way. (Student coach)
- I learned to listen to my dad and find ways to both compromise. (Student coach)
- It was just nice working with [my daughter]. It got us communicating and closer together also. (Father)
- She knows my weakness. She knows how to guide me. It's a good thing. And I am so proud of her. (Father)
- It was helpful working with [my daughter]. She explained things really well to me, and I knew this information would help her in her future as well. (Mother)

Appreciation for having a physician instructor

- My favorite part was when the doctors came to us because it is not every day that you get to learn from doctors. (Student coach)
- I loved that the family doctors came to our school and . . . it was a great feeling that they shared their experience with us. Learning from them was the best part. (Student coach)
- I liked being able to interact with the doctors—it was actual doctors who were there to help you which really made the program. (Student coach)
- I really liked all the doctors dropping by because they were very informative. (Student coach)
- [My daughter] is telling me, so I know that idea came from the doctors, so I believe her. That's why, ok, I am going to do it. (Father)

fact, formal engagement in improving the health of family members may have a positive impact on the psychosocial assets of participant youth. Moreover, because research suggests that positive emotions in adolescence are predictive of improved health as adults,[8] this program could have the potential for a lasting, positive impact on the health of the participant youth.

Study Limitations

Several limitations should be considered when interpreting the results of this study. While the study's findings demonstrate that student participants have significant increases in psychosocial assets immediately after program completion, this effect could be dampened if the program was administered mandatorily rather than on a voluntary basis. If students had not chosen the class, they might have been less motivated, and we may have seen less knowledge improvement. Additionally, leniency in allowing student coaches to coach nonadult family members may have hampered assessment of the true effect of the program if all student coaches had coached only adult family members with diabetes.

Also, we were not able to follow-up with participants and assess long-term impact of the intervention on student coaches or family members with diabetes. The 8-week interval between the pre- and posttest captured only the short-term impact of the program.

Last, the qualitative interviews were conducted by a member of the research team. Although the team member used scripted questions specifically soliciting "good and bad things about the program" and did not participate in the direct implementation of the program, we recognize the potential for interviewer bias by the nature of the team member's investment in the program's success.

Conclusions

In summary, this school-based program—bringing physicians into classrooms, teaching the principles of diabetes self-management, and emphasizing family and community involvement in health—can significantly improve students' health knowledge and psychosocial assets in the short term. Students overwhelmingly expressed satisfaction with participation in the program. We propose that engaging adolescents as coaches motivates them to become key players in determining the health of those close to them and encourages healthy lifestyle changes for the youth coaches themselves. Ultimately, this program may increase motivation for diabetes prevention among at risk youth, and it has potential to support continued health improvements over time.

Implications for Diabetes Educators

Involving family members in the self-management and prevention of type 2 diabetes has been proven to be a successful approach in at-risk, ethnic-minority populations.[34-40] This program has potential to serve the dual purpose of promoting diabetes prevention among at-risk youth and supporting the self-management of the youth's diabetic family members. This approach is cost effective; it leverages strengths in low-income ethnic-minority communities; and it benefits the whole family. Because the program curriculum is tightly scripted and highly structured with online access to all teaching materials, it has potential for widespread utilization.

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