Web Site Targets Teens' Type 1 Self-Management

BY SUSAN LONDON

FROM THE ANNUAL MEETING OF
THE SOCIETY OF BEHAVIORAL MEDICINE

SEATTLE — A Web-based intervention for adolescents with type 1 diabetes helps them better manage their disease, according to findings of a randomized controlled trial.

Adolescents who accessed the Web site, which offered problem-solving activities to help them manage their disease, had a 0.19-point increase in self-management scores on a 5-point scale. Meanwhile, their peers assigned to usual care had a 0.02-point decrease.

In addition, the intervention group had a minimal change in hemoglobin A_{1c} levels, whereas the level rose in the control group, although this difference was not statistically significant.

"The overall results indicate that the teens thought the Web site was interesting and relevant to them, and the results of change in behavior and A_{1c} were promising," lead investigator Shelagh Mulvaney, Ph.D., of Vanderbilt University in Nashville, Tenn., said at the meeting "We plan to expand the content and develop the Web site through a larger randomized trial."

Children with type 1 diabetes typically have a rise in HbA_{1c} levels during adolescence, indicating worsening glycemic control, she noted. Part of this is due to the difficulty of reconciling self-management with everything else going on in their lives.

"One recent study estimated that people with type 1 diabetes have to complete 25 tasks a day for adequate self-management," Dr. Mulvaney observed. "You can imagine that carrying out 25 tasks a day would be dif-
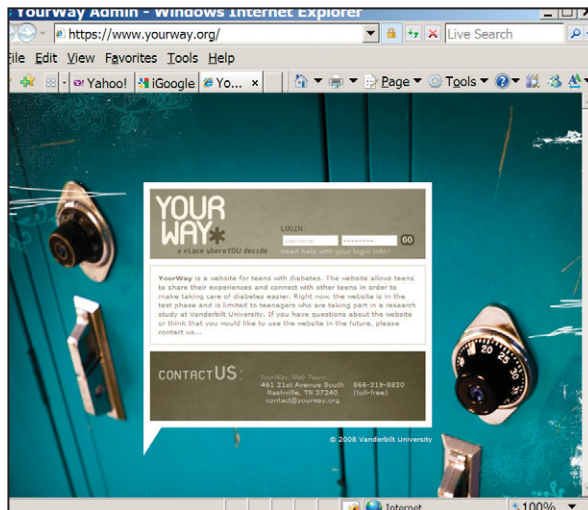
The site, www.yourway.org, offers a forum for teens to connect with their peers who also have type 1.

ficult, but then add that they have to do it around mealtimes, at school, around their friends, at parties and social gatherings, and you can see how …psychosocial barriers to self-management could come into play."

Adolescents say such barriers—competing demands, negative emotions, social situations, conflict or tension with specific people, and planning—typically are not well addressed during their regular clinic visits, she added.

For the 11-week trial, investigators enrolled adolescents, aged 13-17 years with type 1 diabetes from a pediatric diabetes clinic. They were randomly assigned in a 1:2 ratio to usual care alone or usual care plus a Web-based intervention (www.yourway.org) that focused on problem solving to overcome barriers to self-management.

The Web site featured multimedia first-person stories that modeled problem-solving techniques for self-management of diabetes, as well as problem-solving cycle activities aimed at helping adolescents apply the skills they were learning to their own lives. It also features a forum to connect with other teens, didactic presentations, and the option to ask experts for advice.

The adolescents were sent weekly e-mail prompts to use the Web site. They received up to $80 for partici-

pating in Web site activities and up to $50 for completing questionnaires.

The study results were based on 72 adolescents, 92% of whom were white; average age was 15 (Diabetes Care 2010;33:602-4). The mean time since their diabetes diagnosis was 6 years, and about half were using an insulin pump. The baseline HbA_{1c} level was 8.2% in the control group and 9.1% in the intervention group.

In the intervention group, seven adolescents never logged onto the Web site, Dr. Mulvaney reported. The rest completed a mean of 5.2 of the 6 stories, and a mean of 1.5 of the 2 problem-solving cycles.

The number of total online activities declined over the study period, likely because the content was no longer updated after the sixth week, she said.

Study outcomes were not statistically significant in intent-to-treat analyses. But in on-treatment analyses, adolescents in the intervention group had an increase of 0.19 points in their total self-management score, as assessed with the 5-point Diabetes Behavior Rating Scale, whereas those in the control group had a decrease of 0.02 points.

In addition, scores on a novel problem-solving scale increased by 0.06 points in the intervention group but decreased by 0.07 points in the control group, and HbA_{1c} levels fell by 0.01% in the intervention group but rose by 0.33% in the control group. Neither difference was statistically significant.

Adolescents in the intervention group rated the program as excellent (63%) or good (37%). On 5-point scales, they found the stories to be highly relevant (4.7 points) and realistic (4.4 points).

"Our challenges and next steps include expanding the content and increasing the duration of the study, probably to 6 months," said Dr. Mulvaney.

"We'd like to … increase engagement by increasing interactions between users about problems, so we have created other activities that allow them to comment on each other's problems and provide support to each other directly, which they could do through the forum but they tended not to do."

In addition, the adolescents expressed interest in some kind of role for their parents, she noted. "So we have designed a parallel parent Web site that we are pilot-testing right now," she said. ■

VITALS

Major Finding: Adolescents participating in the Web-based intervention had a 0.19-point increase in self-management scores on a 5-point scale, whereas their peers receiving only usual care had a 0.02-point decrease.

Data Source: A randomized trial among 72 adolescents aged 13-17 years with type 1 diabetes.

Disclosures: Dr. Mulvaney reported that she had no conflicts of interest related to the study.

Depression May Impair Compliance in Teens With Type 1

BY NEIL OSTERWEIL

FROM DIABETES RESEARCH AND
CLINICAL PRACTICE

Depressive symptoms in adolescents with type 1 diabetes might be a marker for poor treatment compliance, a new report shows.

Adolescents with type 1 diabetes and clinically significant symptoms of depression were more likely than their nondepressed peers to have higher glycosylated hemoglobin A_{1c} values, and to perform less frequent daily blood glucose monitoring (BGM), Meghan E. McGrady and Dr. Korey K. Hood wrote (Diabetes Res Clin Pract. 2010;88:e35-7 [doi:10.1016/j.diabres. 2010.03.025]).

The most commonly reported depressive symptoms among the 144 teens in the study included ineffectiveness and negative mood. These symptoms, linked to both A_{1c} levels at baseline and to BGM at baseline and at 6 months, might be targets for intervention, the authors wrote.

Ms. Grady and Dr. Hood, who are af-

filiated with the Cincinnati Children's Hospital Medical Center, looked at 144 patients, aged 13-18 years, who were treated at the hospital's pediatric diabetes clinic. Most of the participants were white (87%), female (69%), and from households with two caregivers (76%). They were asked to fill out the 27-item Children's Depression Inventory (CDI), in which individual symptoms are rated on a scale of 0 (no symptoms) to 2 (distinct symptoms). Total scores of 13 or greater on the validated scale are deemed to be portents of clinically significant depression, indicating a need for more comprehensive evaluation. The patients also filled out follow-up questionnaires 6 months after the baseline visit.

The investigators correlated the symptoms scores with data on BGM frequency obtained from downloads of blood glucose meter data taken at the time of clinic visit, and with A_{1c} values measured by a standard point-of-care analyzer.

At baseline, 33 patients (23%) had CDI scores of 13 or greater (mean score for all participants: 7.92 ± 7.14). The most frequently reported symptoms were ineffectiveness (mean score 0.38 ± 0.41), negative mood (0.34 ± 0.36), anhedonia (0.32 ± 0.30), negative self-esteem (0.24 ± 0.30), and interpersonal problems (0.15 ± 0.23).

Both total CDI scores (P less than .001) and all subscale scores listed above were significantly correlated with lower frequency of BGM at baseline. Higher baseline A_{1c} scores were significantly related to CDI total score (P less than .01), negative mood (P less than .01), interpersonal problems (P less than .05), and ineffectiveness (P less than .0001).

At 6-months' follow-up, BGM frequency retained a significant correlation with total CDI scores and with the negative mood, ineffectiveness, and negative self-esteem subscales (P less than .05 for all). No significant correlations were found between A_{1c} values and either total scores of any of the

subscale scores at 6 months, however.

"Symptoms of negative mood include sadness and indecisiveness, while anhedonia is characterized by a loss of energy and appetite disturbances. These symptoms may inhibit adolescents from initiating and following through with diabetes management. Ineffectiveness indicates feelings of poor self-efficacy, which has been linked to decreased adherence," the authors wrote.

The study, which the authors said was the "first to examine the responses on CDI subscales in adolescents with type 1, had several limitations. Depressive symptoms were self-reported, and it is difficult to generalize the results to other samples because of the sociodemographic characteristics of the adolescents studied. Future studies should examine depressive symptoms over time, they said. ■