Lehigh Valley Health Network

LVHN Scholarly Works

Department of Community Health and Health Studies

Implementation and Evaluation of a Low Health Literacy and Culturally Sensitive Diabetes Education Program (Poster)

Deborah Swavely DNP, RN
Lehigh Valley Health Network, Deborah.Swavely@lvhn.org

Allison Vorderstrasse DNSc, APRN
Lehigh Valley Health Network

Edgardo Maldonado MD
Lehigh Valley Health Network, Edgardo.Maldonado@lvhn.org

Sherrine Eid MPH
Lehigh Valley Health Network, Sherrine.Eid@lvhn.org

Jeffrey Etchason MD
Lehigh Valley Health Network, Jeff.Etchason@lvhn.org

Implementation and Evaluation of a Low Health Literacy and Culturally Sensitive Diabetes Education Program

Deborah Swavely DNP, RN; Allison Vorderstrasse, DNSc, APRN; Edgardo Maldonado, MD; Sherrine Eid, MPH; Jeffrey Etchason, MD

Lehigh Valley Health Network, Allentown, Pennsylvania

Background

- Health literacy – degree to which individuals have the capacity to obtain, process, and understand basic health information and services to make appropriate health decisions
- 36% of adults (78 million people) have low or basic healthy literacy skills
- Diabetes self-management is complex, requiring knowledge and skills pertaining to diet, exercise, blood glucose monitoring, and medication administration
- Individuals with diabetes and low health literacy (LHL) have poorer glycemic control, higher rates of retinopathy, and more episodes of hypoglycemia

Objective

Evaluate the effectiveness of a LHL diabetes education program by measuring patients' diabetes knowledge, self-efficacy, self-care, and metabolic control; and, patient, provider, and staff satisfaction.

Methods

Study Design

A prospective pre-post evaluation design was utilized to investigate the short term outcomes over 12 months for patients who completed the culturally sensitive LHL diabetes education program.

Participants

English and Spanish speaking patients with type 2 diabetes aged 18 years and older referred from six primary care medical practices located in an urban setting.

Program Description

- Individual and group diabetes education sessions provided in English and Spanish, encompassing 13 hours of education over 12 weeks
- The U.S. Diabetes Conversation Maps were used for their visual approach to education
- Education facilitated by lay health workers and professional staff who had prior diabetes education experience
- Staff received training on health literacy, effective and clear communication techniques, cultural tailoring, and incorporating self-efficacy into patient encounters

Measures

- Self-reported demographic and health information
- Health literacy using The Short Test of Functional Health Literacy in Adults (STOFHLA) tool and the diabetes knowledge using the Spoken Knowledge in Low Literacy for patients with Diabetes (SKILLD) tool
- A1C values from the hospital's data warehouse
- Self-efficacy using the Stanford Diabetes Self-Efficacy tool
- Diabetes self-care using the Summary of Diabetes Self-Care Activities tool

Analyses

- Descriptive statistics were calculated as mean with standard deviation (SD) or frequency and percentage for categorical variables
- Change in diabetes knowledge was analyzed using the McNemar test for paired proportions. Pairs were determined by percent of patients who achieved and did not achieve a pre-determined knowledge score of 80% before and after the education intervention
- A1C, diabetes self-care behaviors, and self-efficacy were evaluated by comparing pre- and post-test mean scores using a paired t-test
- Data were also stratified for diabetes knowledge by adequate and inadequate health literacy levels as a secondary analysis comparing pre- and post-test mean knowledge scores using a paired t-test

Findings

Demographics

- Over the 12 month evaluation period a total of 277 patients enrolled in the program, with 106 patients having complete survey data
- 77.4% of the patients were Hispanic, mostly Puerto Rican, living in the United States for longer than ten years, and preferred to speak Spanish
- The mean age was 56.8 (± 10.4 years) with 66% of participants female. Over 88% of the patients had Medicare or Medicaid; and 13.2% had no insurance coverage
- Most patients were low income or at or below poverty and nearly half did not have a High School Diploma

Health Literacy

- 63.2% of patients had adequate health literacy, with 11.3% of patients scoring in the marginal, and 25.5% of patients in the inadequate health literacy categories

Program Completion

- Median time to complete the education program was 14.21 (SD± 6.5) weeks

Diabetes Knowledge Pre-Program

Diabetes Knowledge Post-Program
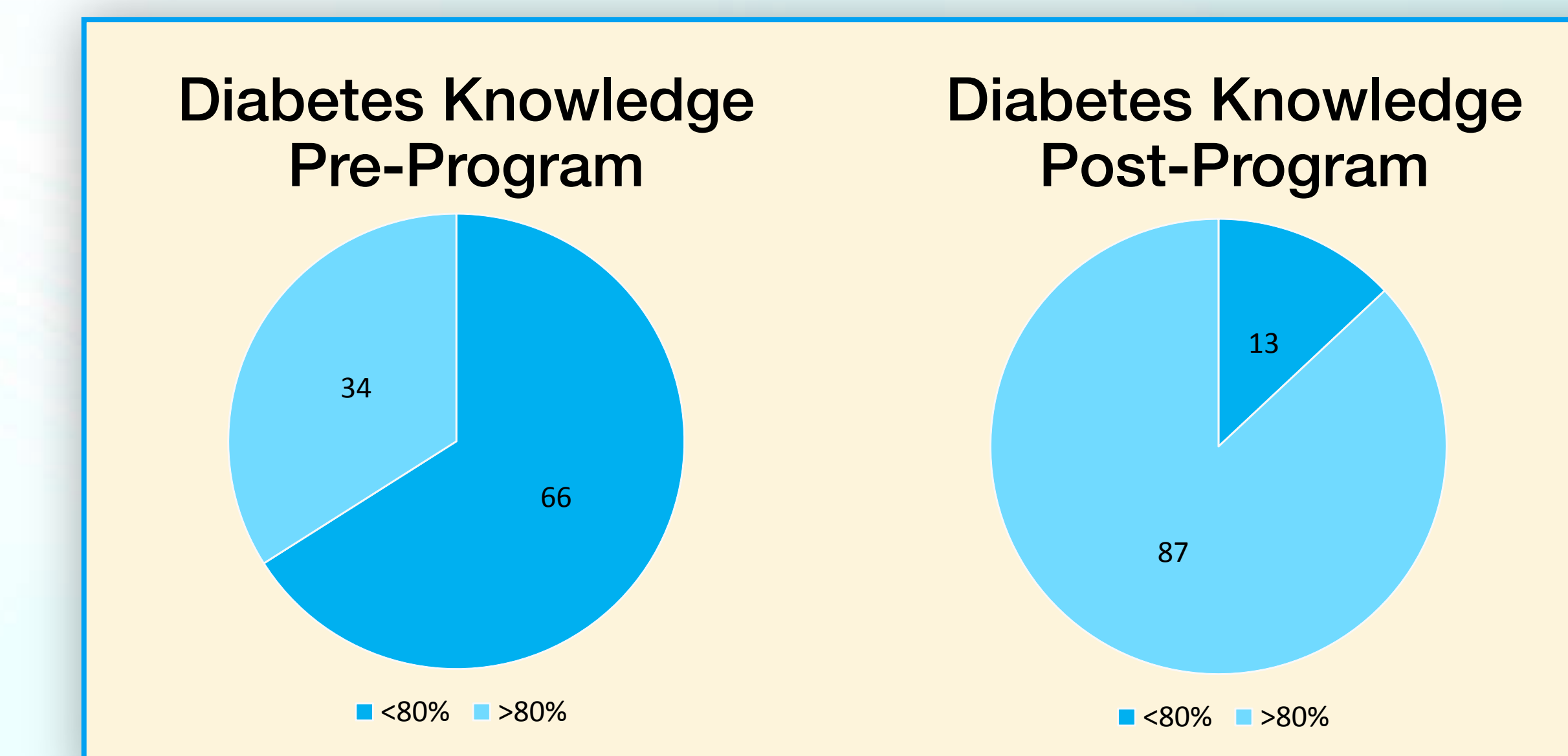
Patient knowledge significantly improved with 87% of the patients scoring 80% correct or higher on the SKILLD upon completing the LHL Diabetes Education Program, compared to only 34% scoring 80% or higher prior to beginning the program n=106, X^2_{Mc} (1)=61.83; p<0.001.

Table 1. Stratification by Literacy Level

Outcome	Pre (M ± SD)	Post (M ± SD)	p value
Adequate Health Literacy (n=66)	64.27 ± 23.6	88.34 ± 12.0	<0.001
Inadquate Health Literacy (n=39)	59.86 ± 24.4	87.25 ± 15.1	<0.001

To account for levels of health literacy, the patients' SKILLD score was analyzed by adequate and inadequate health literacy strata. Patients were grouped in two categories, those with adequate and inadequate health literacy. When stratified by health literacy level, the knowledge gain was significant for both groups.

Table 2. Self-care, Self-efficacy, and A1C

Outcome	Pre (M ± SD)	Post (M ± SD)	p value
Diabetes Self Care			
Diet (n=106)	3.39 ± 1.5	4.16 ± 1.2	<0.001
Exercise (106)	0.921 ± 1.0	1.74 ± 0.73	<0.001
Blood Sugar Testing (104)	4.22 ± 2.6	4.44 ± 2.6	0.345
Foot Care (n=105)	6.59 ± 2.3	8.47 ± 1.2	<0.001
Self Efficacy (n=105)	6.59 ± 2.3	8.47 ± 1.2	<0.001
HgbA1C (N=58)	7.98 ± 1.4	7.43 ± 1.4	0.007

Statistically significant change in patient reported self-care behaviors (days per week) that they followed recommended diet, exercise, and foot care regimens, with no statistical significant change in the frequency of glucose testing. Self-efficacy scores as measured on a scale of 1-10 were significantly improved at the completion of the program. There was also a significant improvement in pre-program and post-program A1C levels.

Conclusion

Results from the program evaluation were similar to other LHL diabetes education studies. Significant improvements occurred in diabetes knowledge, self-efficacy, the diet, exercise, and foot care domains of self-care, and A1C for patients who completed the program. Importantly, improvements in diabetes knowledge were significant for patients with both adequate and inadequate health literacy.

Given the relationship between LHL and poorer health outcomes and increased costs, health care organizations and providers need to take action to transform systems of care to address the literacy needs of patients.

A PASSION FOR BETTER MEDICINE.™

Lehigh Valley Health Network