Novel Patient-Centered Diabetes Education Program – A study to assess the feasibility, design, implement, and impact on patients.

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Abstract

BACKGROUND AND AIMS: Type 2 diabetes (T2D) continues to be a growing public health concern and will be the 7th leading cause of death by 2030[1]. We evaluated the efficacy of a novel patient-centered diabetes education program using the model designed by Esden and Nichols[2].

DESIGN: A single-group pretest-posttest quasi-experimental design was implemented including a three session program over a three month period from May 23, 2015-July 18, 2015.

SETTING: Phoenix VA Health Care System

PARTICIPANTS: Initially, eight veterans (N=8) in the age-range 18-85 years with a T2D diagnosis participated and five veterans (N=5) completed post-intervention data collection.

MEASUREMENTS: Participant Satisfaction Survey and validated and reliable instruments from Michigan Diabetes Research Training Center (MDRTC) including Brief Diabetes Knowledge Test (BDKT) and Diabetes Empowerment Scale (DES).

FINDINGS: Participants' knowledge of diabetes was higher at three months follow-up (*M* = 17; *SD* = 4.64) than at baseline/pretest (*M* = 13.8; *SD* = 2.95) with a 23.69% change in knowledge scores from baseline 95%CI[0.24,6.16], with corrected Cohen's $d_{unbiased}$ = 0.66 (i.e., medium effect).

CONCLUSIONS: Results suggest that Esden and Nichols' model was successfully replicated in the VA Health Care setting. We believe a patient-centered diabetes education program has value in improving diabetes knowledge and patient-perceived self efficacy.

Background

- It has been well established that T2D requires a combination of continuous medical care, patient self-management, education, and medication adherence to reduce the risk of long-term complications[3].
- Most diabetes educators view compliance/adherence as a standard goal for evaluating patient behavior and success. However, this traditional approach leaves educators frustrated and is generally ineffective in helping patients live with diabetes.
- "Patient-centered" education is a novel concept that incorporates the patients' lifestyles and guides care in a more humanistic approach.
- Changing the paradigm from provider-centered to patient-centered education enables patients to become empowered and become advocates for their own health[4].

Design/Methods

- Institutional review board (IRB) approval was obtained for this single-group pretest-posttest quasi-experimental design with participant informed consent.
- Participants were selected at random within Phoenix VA Health Care System. Inclusion criteria was the age range of 18-85 years with a known T2D diagnosis.
- Methodological approach was adopted from work conducted by Esden and Nichols.
- Pre- and post-intervention diabetes knowledge and patient-perceived self-efficacy were assessed using validated instruments: MDRTC Brief Diabetes Knowledge Test and Diabetes Empowerment Scale.
- Three session program content:

Session 1:
- Pathophysiology of diabetes, diet and barriers

Session 2:
- Medication education and adherence barriers

Session 3:
- Preventative care, exercise education and barriers

Results

- Eight veterans (N=8) from the Phoenix VA Health Care System were recruited and five (N=5) completed post-intervention assessments. Average age of the participant was 67.5 years (±7.6), and majority of the participants were males (n = 7; 87.5%) with some college or school. Slightly over 60 percent of the participants were overweight with an average height of 68.5" (±2.20") and an average weight of 192.7 lbs (±31.78 lbs).

Table 1

Demographics	Pre-intervention (N = 8)
Height in inches *(SD)*	68.5 (2.2)
Weight in US pounds *(SD)*	192.75 (31.78)
Years with diabetes *(SD)*	5.82 (4.65)
Body Mass Index Classification (%)	
Class I Obesity	1 (12.5%)
Class II Obesity	1 (12.5%)
Normal Weight	1 (12.5%)
Overweight	5 (62.5%)

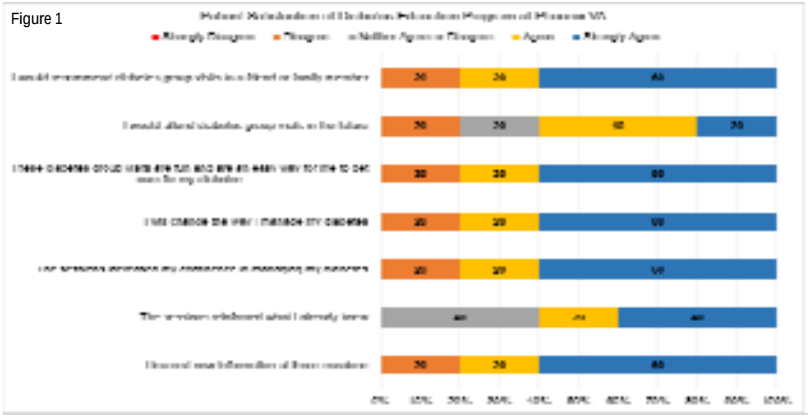
- There was very good pretest reliability for the three DES subscales: "managing the psychosocial aspects of diabetes (MPAD)" (α = 0.93), "assessing dissatisfaction and readiness to change (ADRC)" (α = 0.83), "setting and achieving goals (GS)" (α = 0.88). Preliminary results suggest that there was a moderate effect (*d* = 0.66) with 23.69% change in scores for BDKT before (*M* = 13.8; *SD* = 2.95) and after intervention (*M* = 17; *SD* = 4.64). Despite moderate effects in MPAD, ADRC, and GS there was no statistically significant differences in posttest test scores.
- Figure 1 illustrates the post-intervention participant satisfaction survey that subjectively measures the overall attitude towards the education program using a Likert scale 1 through 5, 1 being "strongly disagree" and 5 representing "strongly agree."

Table 2 Outcome variables

Outcome variables	Pretest (N)	Pretest Mean	Pretest SD	Posttest (N)	Posttest Scores	Posttest SD	Difference In Means	% Change	Effect Size‡	95% CI	P-value
MDRTC Brief Diabetes Knowledge Test	5	13.8	2.95	5	17	4.64	3.2	23.19	0.66	0.24, 6.16	0.04
Managing the psychosocial aspects of diabetes (MPAD)†	5	4.02	0.97	5	4.69	0.31	0.67	16.67	0.74	-0.3,1.64	0.129
Assessing dissatisfaction and readiness to change (ADRC)†	5	3.64	0.83	5	4.33	0.62	0.69	18.96	0.75	-0.32,1.7	0.13
Setting and achieving goals (GS)†	5	4.04	0.78	5	4.64	0.45	0.6	14.85	0.75	0, 1.2	0.053

Note: M = Mean; SD = Standard Deviation
***p < 0.001 **p < 0.01 *p < 0.05
† Pretest reliabilities for MPAD (α = 0.93); ADRC (α = 0.83); GS (α = 0.88).
‡ Cohen's d = $\frac{\text{Posttest Mean - Pretest Mean}}{S_{av}}$ where $S_{av} = \sqrt{\frac{SD^2_{pretest}+SD^2_{posttest}}{2}}$ $\quad d_{unbiased} = \left(1 - \frac{3}{4df-1}\right) * d$

Figure 1



Discussion/Conclusions

- This is the first study we know of that successfully replicated the patient-centered education program originally developed by Esden and Nichols in a VA setting.
- Similar to Esden and Nichol's study, diabetes knowledge increased at three-months following pretest and showed a moderate effect and DES sub-scale items (i.e., MPAD, ADRC, and GS); however, there were no statistically significant differences.
- Majority of the participants agreed that they gained greater confidence in managing diabetes and learning new information at the sessions.
- While promising, our replication study was limited due to small sample size, lack of a control group, and inconsistent participant attendance. In addition, the study was also limited by lack of specific program fidelity measures.
- Future work with a larger sample size and a matched control is needed to further validate the results found in this and Esden and Nichol's study, as it would be more representative of the T2D population. In addition, factors influencing participation, program fidelity should also be investigated.

References

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