

# Implementation of a Diabetes Self-Care Management Program in a Primary Care Clinic

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## Introduction and Problem

- ❖ Diabetes mellitus (DM) is a complex disease affecting a wide range of ages across the health care continuum.
- ❖ DM is one of the leading causes of death in the U.S, with 87,647 deaths documented in 2019.
- ❖ DM affects nearly half a million people across the globe, an estimated 80% in low- and middle-income countries.
- ❖ The increasing number of patients with uncontrolled diabetes in the primary care setting has led to the implementation of this quality improvement project (QI).
- ❖ The project site does not have a certified diabetes educator, and patients only rely on the provider to provide them with diabetes education.

## Purpose of the QI Project

The purpose of this quantitative, quasi-experimental QI project was to determine if the implementation of the Association of Diabetes Care & Education Specialist Seven (ADCES7) Self-Care Behaviors™ *Diabetes Self-Care Management Program* would improve the average blood glucose levels and self-care knowledge scores among adult patients with T2DM

## Variables

**Independent Variable:** The ADCES7 Self-Care Behaviors™ diabetes self-care management program.

**Dependent Variables:**

1. Pre- and post-implementation ACCU-CHEK® average blood glucose levels.
2. Pre- and post-implementation Diabetes Self-Management Questionnaire-Revised (DSMQ-R) scores. The DSMQ-R is a validated and reliable tool used to assess self-management activities associated with glycemic control.

## Methods and Materials

**Theoretical Framework:** Dorothea Orem’s self-care nursing theory and Kurt Lewin’s change theory.

**Project Design:** A quasi-experimental design with pre- and-post-tests.

**Project Setting:** Primary care clinic.

**Project Sample:** Nineteen adult patients aged 18 years and above with T2DM. Out of 19, 16 patients completed the pre-and post-implementation blood glucose checks and DSMQ-R survey.

**Variable Measurements:** Pre- and post-test DSMQ-R scores on self-care and ACCU-CHEK® average blood glucose levels .

**Data Analysis Plan:** Descriptive statistics were calculated using frequencies and means; Shapiro-Wilk Test for normality of the variables; Paired *t*-test was used for pre-and post-implementation statistics.

## Descriptive Data

Frequency Distributions of Demographic Characteristics of Patients (N = 16)		
Demographic Variable	n	%
<b>Age</b>		
60-69	3	18.8%
70-79	7	43.8%
80-89	6	37.5%
<b>Gender</b>		
Male	7	43.8%
Female	9	56.3%
<b>Marital Status</b>		
Single	1	6.3%
Married	12	75.0%
Widow/Widower	3	18.8%
<b>Length of Time with T2DM</b>		
Less than 5 years	2	12.5%
5-10 Years	7	43.8%
More than 10 years	7	43.8%
<b>Diabetes Treatment Regimen</b>		
Oral medication	8	50.0%
Insulin Therapy	2	12.5%
Both	6	37.5%
<b>Ethnicity</b>		
Asian	1	6.3%
Black/African American	2	12.5%
Caucasian	11	68.8%
Hispanic/Latino	2	12.5%

## Results

Table 1

Summary of Statistics for DSMQ-R Total Scores, Pre- and Post-Intervention

Time	Mean (SD)	Minimum	Maximum
Pre-Intervention	6.21 (1.59)	3.00	8.83
Post-Intervention	6.65 (1.59)	3.33	9.83

Table 2

Results of Paired T-Test for DSMQ-R Scores

	t	df	Sig.
Pre- and Post-Intervention	1.745	15	0.101

Table 3

Results of Paired T-Test for DSMQ-R Scores

	t	df	Sig.
Pre- and Post-Intervention	1.745	15	0.101

## Results

Table 4

Summary Statistics for Blood Glucose Measures Pre- and Post-Intervention

Time	Mean (SD)	Minimum	Maximum
Pre-Intervention	202.8 (101.2)	91	430
Post-Intervention	132.8 (28.9)	92	194

Table 5

Results of Paired T-Test for Blood Glucose Measures

	t	df	Sig.
Pre- and Post-Intervention	-2.667	15	0.018

## Conclusion

- ❖ The findings demonstrated no statistically significant improvement in the patient level of knowledge, as evidenced by the DSMQ-R score, before the intervention (M=6.21, *SD* = 1.59) and after the intervention (M=6.65, *SD* = 1.59); *t*(15) = 1.745, *p* = 0.101.
- ❖ There was statistically significant reduction in the patients’ blood glucose levels before the intervention (M=202.8, *SD* = 101.2) and after the intervention (M=132.8, *SD* = 28.9); *t*(15) = -2.667, *p* = 0.018.
- ❖ The findings are clinically significant, because it helped in reducing the risk factors for diabetic complications among adult patients with T2DM .

## Discussion

The findings of the DSMQ-R survey showed no statistically significant mean difference in the DSMQ-R score. Though the DSMQ-R mean difference score was sufficient to answer the first clinical question, it did not confirm the effectiveness of the ADCES7 Self-Care Behaviors™ diabetes self-care management program among adult patients aged 18 years and above with T2DM. It may be that the self-management behaviors have changed, but the change was too small to be statistically significant given the sample size of 16 patients. It may be the case that the self-management behaviors have truly not changed; however, this seems discordant with the blood glucose results.

## Project Limitations

- ❖ A smaller sample size reduces the power of the study and increases the margin of error, which may lead to bias and limit the generalizability of the project findings
- ❖ The pre- and post-test design can threaten internal validity, including testing, instrumentation, and quasi-experimental mortality.
- ❖ There was a four-week limited timeframe to implement the QI project intervention.
- ❖ The Covid-19 pandemic restrictions limited the routine face-to-face contact with the patients.

## Recommendations for Future Projects and Practice

- ❖ Use a larger and more general sample to confirm the project findings on a larger scale.
- ❖ Use a longer time frame for implementation.
- ❖ Involve registered nurses or diabetes educators in future diabetes self-care management programs.
- ❖ Use a more reliable blood test to measure the effectiveness of the intervention, such as the HbA1c.
- ❖ Include the use of the ADCES goal-setting monitoring tool in a future project.
- ❖ Use an evidence-based tool that assesses individual social determinants of health (SDoH) and social needs, that will drive further one-on-one communication with patients as to strategies to access needed resources.

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List of references is available upon request.

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