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The Effect of Diabetes Self-Management Education in Conjunction with Diabetes Medication Therapy Management on Hemoglobin A1C

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BACKGROUND

- There are 500 million adults with Type two Diabetes Mellitus (T2DM) worldwide (7); 30.3 million In the United States (2); and 13.9% in Georgia (4).
- There has been an increasing awareness of T2DM and more evidence-based Diabetes Self-Management Education (DSME) support but T2DM care outcomes have improved at a much slower rate (5).
- The poor utilization of evidence-based practice guidelines in DSME was identified as a major contributor to this gap.

AIM AND OBJECTIVES

This project aimed to evaluate the effectiveness of DSME on T2DM care outcomes.

OBJECTIVES:

- To conduct diabetes self-management educational session
- To improve diabetes self-management knowledge and skill
- To increase patient perceived self-efficacy for self-management care.
- To measure the effects of DSME on Diabetes Self-Management Skills (DSMS), Perceived Diabetes Self-Management Skills (PDSMS) and hemoglobin A1c (Hba1c).

CLINICAL QUESTIONS

- What is the effect of DSME integrated with the standard diabetes care in comparison to the standard diabetes care alone on hemoglobin A1c (HbA1c) level in adults with T2DM over three months"?
- What is the effect of DSME on Perceived Diabetic Self-Management Skills (PDSMS) in adults with T2DM over three months?
- What is the effect of DSME on Diabetic Self-Management skills (DSMS) in adults with T2DM over three months?
- How do HbA1c levels correlate with DSMS and Perceived Self-efficacy in adults with T2DM over three months?

PROJECT METHODOLOGY

Design: Quality improvement project with the utilization of pre-test and post-test

Setting: Outpatient family private care clinic.

Sampling: Quantitative nonrandomized purposive homogeneous sampling

Sample size: 43 T2DM adults

Measurement Tools: 1). Perceived Diabetes Self-Management Scale (PDSMS). 2). Diabetics Self-management Questionnaire (DSMQ).

Intervention/description:

- **Planning Phase**: 1). Completed Collaborative Institutional Training Initiative. 2).Obtained Organization Letter of Cooperation. 3).IRB Application and Approval obtained. 4). Project information flier distributed at the clinic.
- **Implementation Phase**: 1). Pretest to assess baseline knowledge. 2). Structured Diabetes Education and Skill intervention Session. 3). Post-test conducted three months post to assess effect of education.
- **Evaluation Phase**: Result was analyzed with 1). SPSS. 2). Descriptive Analysis. 3). Paired sample T-test. 4). Multiple Regression Model

RESULTS

Clinical Questions Result Analysis

Question 1: *The Paired-Samples t-test result indicated a statistical difference in the Pre HbA1c (M=6.906, SD=1.127) and post (M=6.659, SD=1.153) with a p-value = 0.022 . Suggesting DSME improves HbA1c levels of the participants*

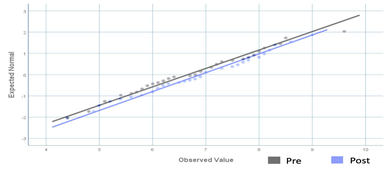

Figure 1. Normality plot for pre and post hemoglobin A1c level

Std. Dev.	Std. Error of Mean	95% CI for Mean Difference		t-Value	P-Value
0.7132	0.1040	-0.4562	-0.3741	2.3730	0.022

Table 1. Paired Sample T-Test for HbA1c levels before and 3 months after DSME

Question 2: *The Paired-Samples t-test indicated that the difference in pre (M=16.034, SD=3.135) and post PDSMS (M=20.905, SD=3.471) with p < 0 .001. Suggesting that DSME positively impacted the participants' PDSMS*

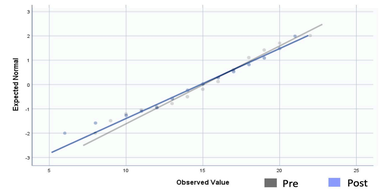

Figure 2. Normality plot for pre and post PDSMS score

Std. Dev.	Std. Error of Mean	95% CI for Mean Difference		t-Value	DF	P-Value
3.5579	.54250	-5.8620	-3.6720	-8.7870	42	<0.001

Table 2. Paired Sample T-Test for PDSMS score before and 3 months after DSME

Question 3: *The Paired-samples t-test showed pre (M=19.488, SD=6.201) and post DSMQ (M=41.295, SD=6.441) with p < 0.001. Suggesting DSME has a positive impact on DSMS in adults with T2DM*

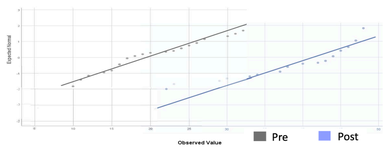

Figure 3. Normality plot for pre and post DSMQ score

Std. Dev.	Std. Error of Mean	95% CI for Mean Difference		t-Value	DF	P-Value
6.7920	1.0358	-23.9973	-19.8166	-21.150	42	<0.001

Table 3. Paired Sample T-Test for DSMQ score before and 3 months after DSME

Question 4: *The change in Hb1AC levels and change in the PDSMS scores computed a correlation coefficient of -0.068 while the change in Hb1AC levels and change in DSMQ score computed a correlation coefficient of 0.183. Therefore, the Changes in DSMQ (p=0.439) and PDSMS (p=0.060) did not correlate with the change in HbA1c levels at 0.05 level of significance.*

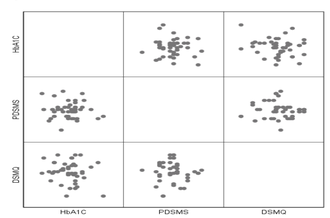

Figure 4. Correlation matrix of changes in HbA1c level, PDSMS and DSMQ scores

Parameters	Coefficient	Std. Error	t	p-value	95% CI		Correlations	
					Lower	Upper	Zero Order	Partial
(Constant)	6.713	2.035	3.299	.002	2.612	10.815		
DSMQ score	-.459	.587	-.782	.439	-1.642	.724	-.147	-.117
PDSMS score	.899	.466	1.928	.060	-.041	1.838	.292	.279

Table 4. Multiple regression analysis of changes in HbA1c, PDSMS and DSMQ scores 3 months after DSME

CONCLUSIONS

Limitations:

- Limited sample size
- Absence of Multiple Baseline (MB) design
- Limited socio-economic diversity
- Nonrandomized convenience sampling

Future Implications:

- Improve quality of care for patients with T2DM
- Enhance the adoption of self-care attitude among T2DM patients
- Provide increased accessibility to DSME
- Improve patient knowledge of T2DM to facilitate increased care compliance
- Improve patient Perceived self-management of T2DM capability.
- Improve patient care outcomes and decrease diabetes related complications

Conclusion:

In conclusion the results from this study suggested:

- DSME is flexible and cost-effective.
- DSME enhance knowledge on diabetes and Self-Management skill
- DSME enhance adoption of self-care behavior.
- DSME improves the outcome of T2DM care

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