Nutritional Education Using Cooking Demonstrations to Improve Outcomes in Patients with Type 2 diabetes

Marian Dam, DNP, ARNP, FNP- BC

Problem

- DM contributes to the burden of chronic illness and affects 30.3 million people in the U.S.
  - Type 2 diabetes (T2D) = 95% of diagnosed cases.
    - 50% of new cases are among ages 45 to 64 years.
  - Risk of death for adults with diabetes is 50% higher than those without the chronic disease (CDC, 2017).

- CDC (2016) projects that

By 2050, 1 in 3 people will have diabetes.

Project Aim

- Nutritional education is an integral part to overall diabetes management and requires each patient to be actively engaged in healthful eating knowledge with their healthcare team (ADA, 2017).
- The aim of this quality improvement (QI) project is to implement a hands on approach to nutritional education in adult patients with Type 2 diabetes to improve nutritional knowledge and reduce HbA1c and triglyceride levels.

Literature Review

Database 2007-present
- CINAHL, Scopus, Pubmed, Web of Science
- Level I to III studies: RCT, Non randomized RCT, Quasi-experimental, Cohort

Terms
- Diabetes mellitus, Type 2, OR type 2 and Diabet* AND cooking, culinary
- Measured either HbA1c, nutritional knowledge, and/or dietary behaviors

Five Studies
- Adults with chronic disease included Diabetes Mellitus
- Utilized cooking or teaching kitchens as nutritional intervention
- Significant improvement to nutritional knowledge and dietary behaviors resulting in better glycemic control, blood pressures, and cholesterol levels.

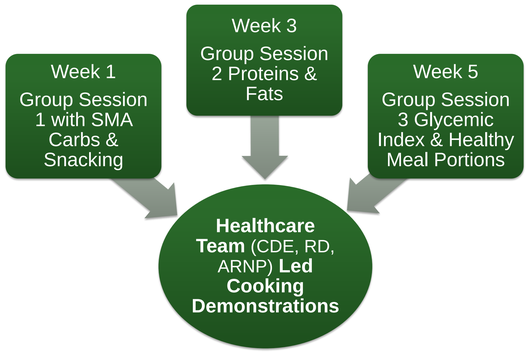
Conceptual Framework

Chronic Care Model: evidence-based health model with 6 core components to improve delivery of quality chronic care services (ADA, 2017)

- Organizational support, proactive team delivery system design, population based clinical information systems, evidence supported decisions, and self- management support.

Methods

- Convenience sampling using chart reviews. n=7 participants
  - Adults ≥ 40 y/o with uncontrolled diabetes (HbA1c ≥ 7.5%).
  - Existing lab results for HbA1c and triglyceride levels within 8 weeks.
  - No planned medication changes after start of project.
  - Three divided 90 minutes sessions
  - Informed consent for group visits



Note. (SMA) shared medical appointment. Group sessions were 90 minutes with food tastings. Certified diabetes educator* (CDE). Registered dietician* (RD).

Measurable Outcomes

- Primary outcome: Improved nutritional knowledge quiz scores.
  - Questions created using ADA recommendations and consultation with CDE and RD.

- Secondary outcomes: Reduction in HbA1c and triglyceride levels.

- A course satisfaction survey was collected to evaluate participants' feedback about the nutritional program.

Results

Table 1
Participant Demographics

Age	• Average 59 years
Gender (%)	• Male 4 (57%) • Female 3 (43%)
Duration of Diabetes Diagnosis	• Less than 1 year = 1 (14.29%) • 1 to 5 years = 1 (14.29%) • 6 to 15 years = 2 (28.6%) • 16 to 28 years = 3 (42.9%)
Insulin Therapy	• 7 (100%)
Poor Glycemic Control ≥ 7.5%	• 5 (71.43%)

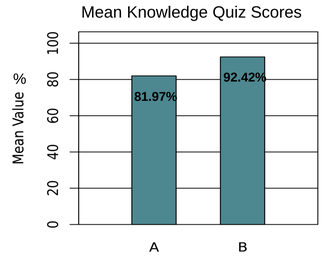


Figure 1. (A) Pre intervention knowledge quiz scores (B) Post intervention knowledge quiz scores * $p < 0.05$ significant

- The post intervention knowledge scores (M = 92.42, SD = 10.15) were significantly higher than the baseline mean nutritional knowledge scores (M = 81.97, SD = 10.03). p = 0.006

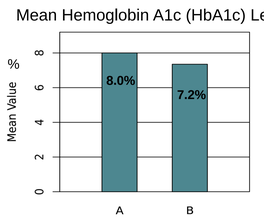


Figure 2. (A) Pre intervention HbA1c (B) Post intervention HbA1c
*p <0.05 significant

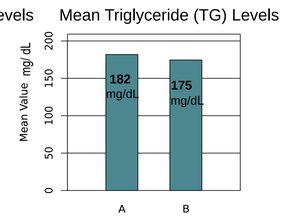


Figure 3. (A) Pre intervention TG (B) Post intervention TG
*p <0.05 significant

- A paired sample t - Test revealed a lower post intervention HbA1c by (-0.8%) and was statistically significant. $p = 0.035$
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- A paired sample t - Test reported reduction of (-7 mg/dL) in the post intervention TG levels, but was not statistically significant. $p = 0.803$

71% reported that the nutritional sessions were extremely helpful in learning of topics and recalled previous content.

83% strongly agreed that they felt providers cared for them.

71% were extremely likely to make a dietary change

Figure 4. Course Evaluation Survey

Discussion

- The QI project demonstrated improvement in nutritional knowledge and glycemic control among adult patients with T2D.
  - All participants were on intensified insulin therapy prior to the intervention and most were diagnosed with diabetes for at least 15 years. This implied an important role for nutrition.
- Providers reported that the project can help identify participant's true nutritional deficits and be individualized for future classes .
  - Providers and patients reported "very satisfied" with the time and schedule of classes.
- There was not any statistical improvement with triglyceride levels, but most participants resulted in lower post intervention triglyceride levels within 6 weeks.
- Limitations include costs, staff and office availability for shared medical visits.
- Recommendations include a longer intervention period, use of SMA format with larger groups, and increased staff availability.
- This hands on nutritional education with cooking can be implemented in offices with kitchen functionality.

References

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