The Effects of Group Based Diabetes Self-Management Education Programs on Hemoglobin A1c in Type 2 Diabetic Adults

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Type 2 Diabetes (T2D) is a major public health issue, and its complications, such as hypertension and hyperlipidemia, cause many serious health issues for individuals (Ignatavicius & Workman 2013).

Currently, every 1 in 11 adults have are diagnosed with T2D; this number is projected to increase to 1 in every 5 adults by 2050 (CDC, 2014).

Purpose

• To analyze the effectiveness of three studies of group-based diabetes self-management education programs on improving glycemic control and diabetes knowledge in adults with Type 2 Diabetes.

https://www.med.uottawa.ca/sim/data/Study_Designs_e.htm
Significance to Nursing Practice

• T2D patients can continue to live normal lifestyles if they adequately maintain their blood glucose levels through treatment and lifestyle modification.

• Patient education provided by nurses is known to significantly improve patient health outcomes (Bastable, 2016).
Methods

- All three studies focus on the effects of group self-management education (intervention) on hemoglobin A1c levels in type 2 diabetic patients.

Databases Used: PubMed, CINAHL, Google Scholar, Web of Science

Key Search Words: Type 2 diabetes, self management, education, hemoglobin A1c

Parameters: English-only, peer-reviewed, research article, adults 19+, published in the last 5 years
The American Diabetes Association recognizes diabetes self-management education (DSME) as being a crucial part in managing diabetes and improving patient outcomes (Nicoll et al., 2014).
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<tbody>
<tr>
<td></td>
<td>DSME for 10 hours total divided into 2 sessions</td>
<td>DSME for 15 hours total divided into 3 sessions</td>
<td>DSME for 6 hours total over 1 session</td>
</tr>
<tr>
<td></td>
<td>Topics covered: healthy eating, being active, monitoring blood sugar, taking medication, reducing risks, problem-solving, and healthy coping.</td>
<td>Topics covered: information about diabetes type 2 and its components, diet, physical activity, and improving metabolic control.</td>
<td>Topics covered: lifestyle factors, food choices, physical activity, and cardiovascular risks.</td>
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<tr>
<td>Final number of subjects (n)</td>
<td>43</td>
<td>133</td>
<td>731</td>
</tr>
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Results: Hemoglobin A1c Levels

Nicoll et al. (2014)
M = 10.2 ± 3.7%
M = 7.8 ± 2.2%
p < 0.0001

Rygg et al. (2012)
M = 7.1 ± 1.4%
M = 7.1 ± 1.3%
p = 0.478
M = 7.0 ± 1.2%
M = 6.9 ± 1.3%

Pre-DSME | Post-DSME
Baseline | Experimental
Post-DSME | Control
Results: Percent Change in Hemoglobin A1c Levels

Khunti et al. (2012)

Change in Hemoglobin A1c (%)

-1.6
-1.4
-1.2
-1.0
-0.8
-0.6
-0.4
-0.2
0
0.2

Experimental
Post-DSME
Control

-1.32 (-1.57 to -1.06)
-0.81 (-1.02 to -0.50)

p=0.81
Results: Diabetes Knowledge

Rygg et al. (2012)

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<tr>
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<th>Baseline</th>
<th>6 months</th>
<th>12 months</th>
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<tr>
<td>PAM Score</td>
<td>6.3 ± 2.7</td>
<td>7.3 ± 2.9</td>
<td>7.7 ± 3.0</td>
</tr>
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</table>

p < 0.005

Experimental Group Post-DSME
Results: Diabetes Knowledge

Khunti et al. (2012)

- **Experimental**
  - Baseline: M=14.5
  - Post-DSME: M=20
  - p=0.01

- **Control**
  - Baseline: M=15.8
  - Post-DSME: M=19
Discussion

- Rygg et al. (2012) and Khunti et al. (2012) are randomized controlled trials; Nicoll et al. (2014) is a one-group quasi-experimental study
  - RCT design presents data with less bias, and attributes any difference in outcome to the intervention (Sullivan, 2011).
  - Both designs are experimental in nature

- Strong validity in the method used to measure the primary outcome
  - All blood samples were taken at reputable health care providers offices or clinics

- All studies used had convenience sampling
  - Considered weak, since participants are recruited based on their accessibility (Bornstein, Jager, & Putnick, 2013).

- All studies had weaknesses in the type of blinding used
  - (2014) and Khunti et al. (2012) were not blinded, and Rygg et al. (2012) was single blinded, possibly leading to biased outcomes.

- DSME was implemented differently in each study
  - There is currently no standardized curriculum or “best” approach to DSME
Nursing Implications

• DSME significantly increases diabetes knowledge and knowledge to self-manage diabetes
• Mixed results were reported when studying the efficacy of DSME on reducing hemoglobin A1c levels; however, all studies did report a slight decrease in post-intervention subjects
• DSME is a secondary preventative method that can be encouraged by nurses, in aims of reducing diabetes morbidity and the costs associated with healthcare
## Gaps in Knowledge & Future Research

<table>
<thead>
<tr>
<th>Gaps in Knowledge</th>
<th>Future Research</th>
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<tbody>
<tr>
<td>• Lack of research on the different types of DSME and the benefits of each</td>
<td>• How many hours should subjects receive DSME?</td>
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<td>• Identifying the most effective DSME</td>
<td>• Number of courses?</td>
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<td>• Generalizability to other populations</td>
<td>• Type of setting?</td>
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<td>• Topics covered throughout the course?</td>
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<td>• Number of people in each group?</td>
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<td>• Test on diverse populations</td>
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Conclusion

- DSME slightly reduces hemoglobin A1c levels and increases diabetes knowledge
- Patient education is an important component of nursing practice; thus, DSME is within the nursing scope of practice
- As a secondary prevention method, DSME can help relieve the large amount of healthcare costs related to diabetes
- Future research is needed to identify the best approach to DSME and to develop a standardized curriculum

http://www.letsintern.com/blog/group-discussion-tips/
References


