

## In Brief

Diabetes education has changed a great deal in recent years. Diabetes self-management education (DSME) programs have become more patient-centered and theoretically based, and there is a greater emphasis on providing ongoing support to sustain the self-management gains made by patients as a result of education. Based on the frameworks of self-determination and autonomy support, empowerment has served as the philosophical basis for diabetes self-management education for more than 15 years. This article describes the evolution of empowerment-based programs from DSME to ongoing diabetes self-management support and provides practical strategies for educators to use in the development of these programs.

# From DSME to DSMS: Developing Empowerment-Based Diabetes Self-Management Support

Martha Mitchell Funnell, MS, RN, CDE; Tricia S. Tang, PhD; and Robert M. Anderson, EdD

The current approach to diabetes self-management education (DSME) interventions is usually based on a short-term program with or without some degree of follow-up. This approach can be conducive to the initial acquisition of basic diabetes self-management skills. However, to effectively manage diabetes over a lifetime, programs are needed that support the continued enhancement of self-management skills, behavioral strategies, social support, and metabolic improvements following DSME. Such interventions need to reflect the dynamic and evolving conditions of patients' "real-world" environment and life circumstances. Instead of trying to fit patients into predetermined self-management interventions, flexible self-management interventions that are responsive to the unique and individual lives of patients are needed. This support structure should be equally accessible to all patients

regardless of economic, social, and environmental circumstances.

Diabetes education has changed a great deal in recent years. One important change has been the increased emphasis on patient-centered or collaborative approaches to care and education.<sup>1-6</sup> A philosophy underpinning this approach is empowerment.<sup>7,8</sup> Another important change is greater understanding of the need for ongoing support for patients to sustain initial improvements resulting from DSME.<sup>9-12</sup> The new national standards for DSME<sup>13</sup> require educators to establish a plan with their patients to ensure that they receive this support. Although some communities have these programs in place, some educators are now beginning to develop these programs to make these services readily available for their patients. Because many educators have used empowerment as the philosophy on which their DSME

programs are based,<sup>3,8,14</sup> they want to continue to use this approach when providing diabetes self-management support (DSMS). This article will describe key elements of DSMS that are in keeping with this framework and our current research efforts to determine the effectiveness of an empowerment-based ongoing support program.

### The Empowerment Approach to Diabetes Self-Management

Diabetes is a self-managed, chronic illness that necessitates a patient-centered approach to care.<sup>15,16</sup> Empowerment as a philosophy of care emphasizes a collaborative approach to facilitating the self-directed behavior change of patients. Empowerment-based DSMS needs to be based on this understanding, as well as the theories, theoretical framework, and educational and behavioral strategies that have been effective for DSME.

During the past 18 years, interventions using the empowerment philosophy and self-determination theory have been developed and tested. Self-determination theory postulates that an individual is more likely to be motivated (autonomy motivation) to develop the skills and capacity to self-regulate the behaviors needed to function effectively if that individual views those behaviors as personally meaningful.<sup>17</sup> In the context of diabetes, autonomy motivation refers to the extent to which patients feel they are initiating and valuing specific diabetes self-management behaviors.<sup>18,19</sup>

The theoretical framework used to develop these interventions is autonomy support. Autonomy support is defined as the degree to which health care providers and social support sources understand the patients' diabetes-related priorities and needs, acknowledge patients' feelings, provide meaningful self-management choices, offer relevant information, and avoid controlling patients' behavior.<sup>19</sup> Research has indicated that patients with diabetes whose health care providers support autonomy motivation become more internally motivated to regulate their blood glucose levels, feel more competent at glucose monitoring, and show improvements in their hemoglobin A<sub>1c</sub> (A1C) values.<sup>19</sup> Autonomy support within the empowerment philosophy recognizes that diabetes and its self-management belong to

the patient. To be effective, patients' goals, objectives, and resources must guide the development of diabetes self-management plans.<sup>8,10,20-22</sup>

The primary educational strategy in the development of these programs has been problem-based learning (PBL). PBL is an educational technique that encourages learners to apply relevant skills and strategies to solve self-identified problems in a simulated "real-world" environment. In contrast to traditional didactic teaching, PBL was originally developed to teach medical students a comprehensive problem-solving approach that applied classroom knowledge to clinical practice.<sup>23</sup> In a diverse, dynamic, and ever-changing environment, proponents of PBL argue that this approach promotes conceptual reasoning skills, empathy for different viewpoints, communication skills, collaborative working styles, and self-directed learning.<sup>24</sup>

Studies examining the impact of PBL on learning have found students to report greater reflective skills, more meaningful learning experiences, and increased self-directed learning.<sup>25,26</sup> The PBL technique has particular relevance for patient-centered diabetes self-management interventions. By developing self-management skills in the context of the challenges that they encounter daily, patients derive direct benefits from these learning experiences and thereby increase their motivation for sustained self-care behaviors. PBL is a learner-centered format that fosters culturally appropriate and age-appropriate health education focusing on patient issues rather than on an educational agenda or curriculum of health care professionals. PBL strategies have been employed in diabetes patient education, including development of dietary and exercise behavior,<sup>27</sup> daily problem-solving skills for older adults,<sup>28</sup> and an "anchored instruction" approach to diabetes patient education with adolescents.<sup>29</sup>

The primary behavioral strategy used in empowerment-based interventions is the five-step behavioral change model.<sup>30,31</sup> This model is outlined in Table 1. A unique element of this model is the emphasis on goal setting as a series of experiments. Thus, the focus is not on success or failure, but the learning that occurs as a result of the experiment. Using this model allows patients to gain

insight into the barriers and supports they have and their need to make behavioral changes and ultimately to improve their ability to manage their diabetes. Providing the opportunity to reflect on these experiments and solve problems that arise with the support of the other members of the group are crucial elements of these empowerment-based efforts.

### Empowerment-Based DSME

Our initial work with patients was designed to provide training in empowerment-based skills and included self-directed goal setting, problem solving, coping, and stress management, as well as obtaining social support and maintaining motivation.<sup>20,32</sup> This intervention resulted in significant improvements in A1C, self-efficacy in setting goals, managing stress, obtaining support, and making decisions and had a minor effect on self-management behaviors.

Although the inclusion criteria for that study required patients to have previously obtained DSME and to attend an orientation session describing the program, many clinical questions arose during the group sessions. This led to the realization that patients do not distinguish between the psychosocial, behavioral, and clinical concerns caused by their diabetes. For them, the issues of living with diabetes and treating diabetes are integrated into their experience of diabetes.

Based on that experience, we developed and evaluated the Culture-Specific, Problem-Based, Patient Self-Management Intervention<sup>10,33</sup> and evaluated the impact of a six-session group DSME program designed specifically for African Americans with diabetes. The study was a randomized, controlled trial featuring a pretest/posttest design with follow-up measures and 239 participants.<sup>10</sup> Patients were randomly assigned to either a 6-week intervention group or a 6-week wait-listed control group.

This program used a question-based format to address patients' educational, behavioral, and psychosocial needs within the context of a 10-hour DSME program (Table 2). The sessions included opportunities to establish and reflect on self-management goals, discuss the emotional experience of living with diabetes, solve problems, and ask clinical questions. Culturally specific print

Table 1. Behavior Change Protocol<sup>31</sup>**Step I: Explore the Problem or Issue (Past)**

- What is the hardest thing about caring for your diabetes?
- Please tell me more about that.
- Are there some specific examples you can give me?

**Step II: Clarify Feelings and Meaning (Present)**

- What are your thoughts about this?
- Are you feeling (insert feeling) because (insert meaning)?

**Step III: Develop a Plan (Future)**

- What do you want?
- How would this situation have to change for you to feel better about it?
- Where would you like to be regarding this situation in (insert specific time, e.g., 1 month, 3 months, 1 year)?
- What are your options?
- What are barriers for you?
- Who could help you?
- What are the costs and benefits for each of your choices?
- What would happen if you do not do anything about it?
- How important is it, on a scale of 1 to 10, for you to do something about this?
- Let's develop a plan.

**Step IV: Commit to Action (Future)**

- Are you willing to do what you need to do to solve this problem?
- What are some steps you could take?
- What are you going to do?
- When are you going to do it?
- How confident are you that you can accomplish this plan, on a scale of 1 to 10?
- How will you know if you have succeeded?
- What is one thing you will do when you leave here today?

**Step V: Experience and Evaluate the Plan (Future)**

- How did it go?
- What did you learn?
- What barriers did you encounter?
- What, if anything, would you do differently next time?
- What will you do when you leave here today?

materials were designed and distributed to support the program. At the conclusion of the study, all patients were offered the opportunity to participate in a monthly support group or to receive a telephone call from the project nurse. The average number of sessions attended was 5.1 out of 6.

The participants showed a broad array of modest improvements in A1C, cholesterol, weight, perceived diabetes knowledge, and empowerment during the 6-week study. These gains were either maintained or enhanced during the 1-year follow-up period. For patients who participated in at least one support group or had at least one follow-up phone call, there was a correlation in the desired

direction between the number of follow-up contacts and their 1-year A1C values.

**Empowerment-Based DSMS**

This study led to the development of the Diabetes Lifetime Support Program.<sup>34</sup> Several key findings from the DSME study were used in the development of the DSMS program. The first was that empowerment-based programs held in community sites are effective for African Americans with diabetes. Second, patients will seek needed information, emotional support, and behavioral strategies from health professionals and peers in a group DSME program. Third, the integration of these aspects occurs naturally and as a result of patient-

generated questions and issues. The final key finding was that ongoing support enhances and sustains gains made during the DSME process.

The Diabetes Lifetime Support Program consists of weekly support groups held at community centers or churches for African Americans with type 2 diabetes. Patients are encouraged to attend as many sessions as they believe they need to attend. The format of the weekly sessions is the same as that of the DSME program (Table 2). More than 400 African-American patients have enrolled in two studies of this program in three urban communities. Weekly support groups will be offered for these patients during the next 3 years.

**Table 2. Structure of the Lifetime DSMS Intervention<sup>35</sup>**

**Component 1: Reflecting on Relevant Experiences (~ 10 minutes)**

Purpose: At the end of each session, group patients have identified a goal and action plan related to their self-management. At the beginning of the subsequent session, patients are invited to reflect on their experience of working on their self-selected goals.

- Invite group patients to comment on goals identified and implemented (plan of action) since the last session.
- Do the patients view their experience as positive or negative?
- What did patients learn from this experience?
- What did patients learn about their diabetes self-management?
- Can they incorporate what they learned into their overall self-management plans?

**Component 2: Discussing the Role of Emotion (~ 10 minutes)**

Purpose: Living with diabetes raises emotional issues related to relationships, work, family, economic circumstances, overall health, physical functioning, and other life events. We provide this time to have group patients discuss important events that have occurred since the previous meeting and how these events have affected their self-management.

- Invite group patients to talk about something that happened since the last session and what feelings it raised for them.
- How can these feelings influence self-management decisions?

**Component 3: Engaging in Systematic Problem Solving (~ 30 minutes)**

Purpose: The problem-solving component is based on the fundamental principle that patients' concerns and needs are the highest priority. Topics and issues discussed are ones patients have self-identified or generated. The problems addressed include interacting with health care providers as well as self-management and psychosocial issues. The flexibility of the group structure is guided directly by patients' needs.

- Invite a group patient to raise a problem or concern he or she is encountering.
- Generate possible solutions to the problem.
- Identify facilitators and barriers to implementing possible solutions.
- The individual patient determines the "goodness of fit" of the solution based on his or her experience.
- The individual patient outlines a plan of action based on the identified problem and goals for self-management.
- Each week, patients will be invited to conduct a self-care experiment by trying to achieve a self-selected short-term goal. However, patients will not be pressured to set a goal if they do not wish to do so.

**Component 4: Answering Clinical Questions (~ 20 minutes)**

Purpose: This component provides the opportunity for patients to inquire about diabetes self-management-related issues. We have an identified topic about which people can ask questions. These general topics areas are drawn from the National Standards for Diabetes Self-Management Education listing of required content areas.<sup>13</sup>

- Address diabetes-related clinical and health inquires raised.
- Participants share and exchange knowledge among the group.
- Participants are encouraged to seek consultation from health care providers when necessary.
- Psychosocial and behavioral aspects are addressed for each of the clinical areas identified as a way to integrate content with the patients' behavior and life experiences.

**Component 5: Providing Feedback (~ 20 minutes)**

Purpose: We actively solicit feedback from patients at the end of each session so the community-based group intervention can be tailored and modified to the needs of the patients.

- What are some things you found helpful about this session?
- Is there anything we can do to make future sessions better?
- What are future discussions or topics you would like to raise for next week?

This program was piloted with 65 African-American patients<sup>34,35</sup> to determine the feasibility of attracting patients to the program and to examine the cultural relevance and

acceptability (via frequency and patterns of attendance) of a DSMS intervention. The pilot study consisted of weekly 90-minute sessions conducted over a 6-month period. Patients were

encouraged to attend sessions as needed or as they fit into their current life situations and circumstances.

Sixty-six African-American patients, ages 36–82 years (average age

**Table 3. Helpful Hints for Facilitating an Empowerment-Based DSMS Program****Do:**

- Actively look for opportunities to turn the question back to the group. If it is a purely clinical question, then answer it. If not, ask the group to respond.
- Actively look for opportunities to ask questions that will help integrate psychosocial and behavioral aspects with clinical content.
- Clarify that you have been understood.
- Ask questions to stimulate discussions rather than just starting to lecture. For example, “What do you think of the sodium content of this food?” rather than telling the group it is too high in sodium.
- Provide positive feedback for effort, not results. Use experiences to help the group: “What is different about your exercise plan this time that is helping you to follow through? How were you able to get past your feelings of denial?”
- Listen. Allow a few minutes of quiet before responding unless it is clear that a question has been posed that requires a response.
- Include participants’ words in your response or feedback.
- Refrain from formulating your response based on the advice you want to give. Respond to what the patient has said.
- Redefine patients’ statements by putting it back to them: “What do you think?” or “How can you make that better?” or “What have you done in the past that has worked?”
- Be patient.

**Avoid:**

- Giving a 20-minute lecture in response to a question. Answer the question and then wait for the response. Think of it as an interview.
- Making judgments, including positive judgments.
- Using judgment words (e.g., good, bad, great, positive, negative, better, success, failure, control, out-of-control, must, should).
- Trying to direct the conversation. Remember that non-diabetes-related conversations help the group get to know each other and bond.

63 years), were recruited. Seventy-nine percent were women; 26% were married; 51% had at least some college education; 48% were retired; and 24% had Medicare insurance coverage. Twenty-four weekly sessions were conducted. Eighty-six percent ( $n = 57$ ) of the patients attended at least one session. Thirty-eight percent attended 12 or more sessions. Morning sessions attracted more participants, with a mean attendance of 16 (range 10–27); mean attendance for the afternoon session was 8 (range 2–18). Given that patients were encouraged to attend sessions as needed, an average attendance of 10–15 participants per morning or afternoon session was anticipated. Results show that the expected weekly attendance for the morning group (average 16, range 10–27) was exceeded, and the expectations for the afternoon group (average 8, range 2–18) were met.

Paired *t*-tests of pre- and post-program data found significant improvements in BMI and total, HDL, and LDL cholesterol levels. The mean A1C was 7.5% at baseline and 7.1% at follow-up, but the difference was not statistically significant. Significant increases were also found for self-reported behaviors, including following a healthy diet, spacing carbohydrate consumption throughout the day, exercising, and monitoring blood glucose.

**Implementing Empowerment-Based DSMS**

Although DSMS programs will of necessity be implemented in a variety of ways in different communities, educators can use specific strategies to develop programs that are consistent with empowerment-based care and education. These are:

- Affirm that the person with diabetes is responsible for and in control of daily self-management decisions.
- Provide information to promote informed decision making throughout the lifetime of diabetes.
- Facilitate patients’ efforts in setting and reflecting on the results of self-selected behavioral goals.
- Integrate clinical, psychosocial, and behavioral aspects of living with diabetes.
- Involve the group in problem-solving, and create opportunities for social and emotional support.

- Invite participants to include family and other supporters as desired.
- Respect the cultural, ethnic, and religious beliefs of the target population.
- Affirm that patients are experts on their own support needs.
- Affirm the ability of participants to determine an approach to diabetes self-management that will work for them throughout their lives with diabetes.
- Affirm the ability of participants to identify and solve their own problems.

Helpful hints for educators to ensure that these goals are met are listed in Table 3. In summary, as diabetes education moves from a one-time model to ongoing support models, we as diabetes educators need to develop programs that are effective,

patient-centered, and tailored for the target population. Empowerment-based DSMS programs are, by definition, patient-centered. They are therefore designed to meet the educational and support needs identified by patients at that time they are experienced. Because the issues addressed are those that are raised by patients, they are also culturally relevant and consistent with adult learning theories. This makes empowerment a highly relevant approach for providing DSMS.

**Acknowledgments**

This article was supported in part by grants NIH5P60 DK20572 and 1 R18 0K062323-01 from the National Institute of Diabetes and Digestive and Kidney Diseases of the National Institutes of Health.

## References

- <sup>1</sup>Von Korff M, Gruman J, Schaefer J, Curry SJ, Wagner EH: Collaborative management of chronic illness. *Ann Intern Med* 127:1097–1102, 1997
- <sup>2</sup>Piette JD, Glasgow RE: Strategies for improving behavioral and health outcomes among patients with diabetes: self-management education. In *Evidence-Based Diabetes Care*. Gerstein HC, Haynes RB, Eds. Ontario, Canada, B.C. Decker, Inc., 2000, p. 207–251
- <sup>3</sup>Glasgow RE, Hiss RG, Anderson RM, Friedman NM Hayward RA, Marrero DG, Taylor CB, Vinicor F: Report of the health care delivery work group. *Diabetes Care* 24:124–130, 2001
- <sup>4</sup>Glasgow RE, Funnell MM, Bonomi AE, Davis CL, Beckham V, Wagner EH: Self-management aspects of the Improving Chronic Illness Care breakthrough series: design and implementation with diabetes and heart failure teams. *Ann Behav Med* 24:80–87, 2002
- <sup>5</sup>Rubin RR, Anderson RM, Funnell MM: Collaborative diabetes care. *Pract Diabetol* 21:29–32, 2002
- <sup>6</sup>Williams GC, Zeldman A: Patient-centered diabetes self-management education. *Curr Med* 2:145–152, 2002
- <sup>7</sup>Funnell MM, Anderson RM, Arnold MS, Barr PA, Donnelly MB, Johnson PD, Taylor-Moon D, White NH: Empowerment: an idea whose time has come in diabetes education. *Diabetes Educ* 17:37–41, 1991
- <sup>8</sup>Funnell MM, Anderson RM: Patient empowerment: a look back, a look ahead. *Diabetes Educ* 29:454–464, 2003
- <sup>9</sup>Norris SL, Lau J, Smith SJ, Schmid CH, Englegau MM: Self-management education for adults with type 2 diabetes: a meta-analysis on the effect on glycemic control. *Diabetes Care* 25:1159–1171, 2002
- <sup>10</sup>Anderson RM, Funnell MM, Nwankwo R, Gillard ML, Oh M, Fitzgerald JT: Evaluating a problem based empowerment program for African Americans with diabetes: results of a randomized controlled trial. *Ethn Dis* 15:671–678, 2005
- <sup>11</sup>Brown SA, Blozis SA, Kouzekanani K, Garcia AA, Winchell M, Hanis CL: Dosage effects of diabetes self-management education for Mexican Americans. *Diabetes Care* 8:527–532, 2005
- <sup>12</sup>Polonsky WH, Earles J, Smith S, Pease DJ, Macmillan M, Christensen R, Taylor T, Dickert J, Jackson RA: Integrating medical management with diabetes self-management training: a randomized control trial of the Diabetes Outpatient Intensive Treatment Program. *Diabetes Care* 26:3048–3053, 2003
- <sup>13</sup>Funnell MM, Brown TL, Childs BP, Haas LB, Hosey GM, Jensen B, Maryniuk M, Peyrot M, Piette JD, Reader D, Siminerio LM, Weinger K, Weiss MA: National Standards for Diabetes Self-Management Education. *Diabetes Care* 30:1630–1637, 2007
- <sup>14</sup>Funnell MM, Anderson RM, Nwankwo R, Gillard ML, Butler PM, Fitzgerald JT, Two Feathers J: A study of certified diabetes educators: influences and barriers. *Diabetes Educ* 32:359–372, 2006
- <sup>15</sup>Anderson RM: Patient empowerment and the traditional medical model. *Diabetes Care* 18:412–415, 1995
- <sup>16</sup>Anderson RM, Funnell MM: Patient empowerment: reflections on the challenge of fostering the adoption of a new paradigm. *Pat Educ Couns* 57:153–157, 2005
- <sup>17</sup>Deci EL, Eghrari H, Patrick BC, Leone DR: Facilitating internalization: the self-determination theory perspective. *J Pers* 62:119–142, 1994
- <sup>18</sup>Williams GC, Grow VM, Freedman Z, Ryan RM, Deci EL: Motivational predictors of weight loss and weight-loss maintenance. *J Pers Soc Psychol* 70:115–126, 1996
- <sup>19</sup>Williams GC, Rodin GC, Ryan RM, Grolnick WS, Deci EL: Autonomous regulation: the motivational basis of adherence to medical regimens. *Health Psychol* 17:269–276, 1998
- <sup>20</sup>Anderson RM, Funnell MM, Butler PM, Arnold MS, Feste CC: Patient empowerment: results of a randomized controlled trial. *Diabetes Care* 18:943–949, 1995
- <sup>21</sup>Funnell MM, Anderson RM: Putting Humpty Dumpty back together again: reintegrating the clinical and behavioral components in diabetes care and education. *Diabetes Spectrum* 12:19–23, 1999
- <sup>22</sup>Weiss MA: Empowerment: a patient's perspective. *Diabetes Spectrum* 19:116–118, 2006
- <sup>23</sup>Albanese MA, Mitchell S: Problem-based learning: a review of literature on its outcomes and implementation issues. *Acad Med* 68:52–81, 1993
- <sup>24</sup>Engel C: Not just a method but a way of learning. In *The Challenge of Problem-Based Learning*. Boud D, Feletti G, Eds. London, Kogan Page Ltd., 1991, p. 23–33
- <sup>25</sup>Lieberman SA, Stroup-Benham CA, Litwins SD: Cognitive benefits of problem-based learning: do they persist through clinical training? *Acad Med* 76:S84–S86, 2001
- <sup>26</sup>Ozuah PO, Curtis J, Stein RE: Impact of problem-based learning on residents' self-directed learning. *Arch Pediatr Adolesc Med* 155:669–672, 2001
- <sup>27</sup>Toobert DJ, Glasgow RE: Problem-solving and diabetes self-care. *J Behav Med* 14:71–86, 1991
- <sup>28</sup>Glasgow RE, Toobert DJ, Hampson SE, Brown JE, Lewinsohn PM, Donnelly J: Improving self-care among older patients with type II diabetes: the “Sixty Something . . .” Study. *Pat Educ Couns* 19:61–74, 1992
- <sup>29</sup>Pichert JW, Murkin SC, Snyder GM, Boswell EJ, Kinzer CK: Problem-based diabetes education using a video anchor. *Diabetes Spectrum* 6:160–164, 1993
- <sup>30</sup>Anderson RM, Funnell MM: *The Art of Empowerment: Stories and Strategies for Diabetes Educators*. 2nd ed. Alexandria, Va., American Diabetes Association, 2005
- <sup>31</sup>Funnell MM, Anderson RM: Empowerment and self-management education. *Clin Diabetes* 22:123–127, 2004
- <sup>32</sup>Arnold MS, Butler PM, Anderson RM, Funnell MM, Fitzgerald JT, Feste CC: Guidelines for facilitating a patient empowerment program. *Diabetes Educ* 21:308–312, 1995
- <sup>33</sup>Funnell MM, Nwankwo R, Gillard ML, Anderson RM, Tang TS: Implementing an empowerment-based diabetes self-management education program. *Diabetes Educ* 31:53–61, 2005
- <sup>34</sup>Tang TS, Gillard ML, Funnell MM, Nwankwo R, Parker E, Spurlock D, Anderson RM: Developing a new generation of ongoing diabetes self-management support interventions: a preliminary report. *Diabetes Educ* 31:91–97, 2005
- <sup>35</sup>Tang TS, Funnell MM, Anderson RM: Group education strategies for diabetes self-management. *Diabetes Spectrum* 19:99–105, 2006

*Martha Mitchell Funnell, MS, RN, CDE, is a research investigator; Tricia S. Tang, PhD, is an assistant professor; and Robert M. Anderson, EdD, is a professor in the Department of Medical Education at the University of Michigan Medical School in Ann Arbor. Ms. Funnell and Dr. Anderson are also co-directors of the Behavioral, Clinical, and Health Systems Research Core at the Michigan Diabetes Research and Training Center in Ann Arbor.*