

## **Healthy Eating: Incorporating Nutritional Management into Lifestyle American Association of Diabetes Educators (AADE) Position Paper**

### ***Introduction***

Lifestyle practices and eating habits affect many aspects of our overall health. The connections between eating and diabetes are obvious: the food we eat directly impacts our blood glucose levels and body weight. In turn, glycemic control is the central issue in diabetes management, and overweight/obesity has been demonstrated to aggravate the disease process independent of the impact of macronutrient intake on blood glucose levels.<sup>1,2</sup> Eating habits are also a major factor in several of the cardiovascular comorbidities that affect persons with diabetes. The Centers for Disease Control and Prevention (CDC) reports that adults with diabetes are 3.2 times more likely than those without diabetes to have a history of coronary artery disease, 2.9 times more likely to have a stroke, and 1.9 times more likely to have another heart condition.<sup>3</sup> The United Kingdom Prospective Diabetes Study (UKPDS) reported that three parameters were highly significant risk factors for coronary artery disease: dyslipidemia (elevated LDL-cholesterol, low HDL-cholesterol, elevated triglycerides), elevated HbA1c, and elevated systolic blood pressure.<sup>4</sup> All of these parameters are highly correlated with eating habits. In addition, healthy eating for a woman with gestational diabetes may have an effect on perinatal outcomes and prevention of obesity in children.<sup>5,6</sup>

Even before the onset of frank diabetes, poor eating habits may contribute to risk factors related to the development of this disease.<sup>2,7</sup> The patient with pre-diabetes, characterized by impaired fasting glucose, is frequently overweight, but the pancreatic beta-cells are able to compensate for increasing glycemic loads by increasing the synthesis of insulin.<sup>6,7</sup> This process helps to maintain plasma glucose at near normal levels. As nutritional intake overwhelms the capacity of the insulin-producing beta cells and insulin resistance sets in, frank diabetes develops.<sup>2,7-9</sup> Thus, helping persons with diabetes or at risk for developing diabetes acquire healthy eating practices is a priority for the healthcare community in general.<sup>10-12</sup>

Diabetes educators can assist people with diabetes in gaining knowledge about the effect of food on blood glucose, sources of carbohydrates, protein, and fat, appropriate meal planning and resources to assist in making healthy food choices to include whole grains, vegetables, fruits and

decrease sources of saturated fat, trans fat, cholesterol and sodium.<sup>11-13</sup> Diabetes educators also help people understand portion sizes, how to read food labels, how to plan and prepare meals, understand that the best times to eat are central to managing diabetes, and how to address barriers to healthy eating. In this way, they make an especially valuable contribution in helping persons develop self-management skills in the area of healthy eating.

### ***Background***

Diabetes is increasing in prevalence in the United States.<sup>8</sup> A National Health Interview survey in 2009 found that 9% of U.S. adults were diagnosed with diabetes, representing an increase of 76% in just 10 years.<sup>14</sup> It has been estimated that an additional 5.7 million U.S. adults have diabetes, but have not been diagnosed, and as many as 57 million have metabolic and nutritional issues that put them at risk for diabetes – a condition described as “pre-diabetes.”<sup>4,7,9,10</sup> According to the CDC reported rates of gestational diabetes range from 2% to 10% of pregnancies. Immediately after pregnancy, 5% to 10% of women with gestational diabetes are found to have diabetes, usually type 2. Women who have had gestational diabetes have a 35% to 60% chance of developing diabetes in the next 10–20 years.<sup>11</sup>

The impact of eating habits on comorbidities in persons with diabetes has been noted. In particular, 1) pregnancy outcomes in gestational diabetes can be improved (ADA Evidence Analysis Library), 2) blood pressure control can reduce the risk of cardiovascular disease, including coronary artery disease, heart attacks, and strokes, by 33% to 50%, and the risk of microvascular complications by about 33%.<sup>16,17</sup> For every 10 mm Hg reduction in systolic blood pressure, the risk for any diabetes-related complication is reduced by 12%.<sup>17</sup> Moreover, improved control of LDL-cholesterol can reduce cardiovascular complications in persons with diabetes by 20% to 50%.<sup>8</sup>

### ***Role of the Diabetes Educator***

The *National Standards for Diabetes Self-Management Education* leads with the following statement:

“Diabetes self-management education is a critical element of care for all people with diabetes and is necessary to improve patient outcomes.”<sup>18</sup>

Standard 6 notes that the assessed needs of the individual with pre-diabetes or diabetes will determine which content areas are to be provided, and lists one of the content areas as incorporating nutritional management into lifestyle.<sup>18</sup>

Two approaches to implementing healthy eating as a vital component of both diabetes management and diabetes prevention have been described.<sup>19</sup> One is medical nutrition therapy (MNT), which is a specific application of nutritional care in clinical settings focused on the management of disease.<sup>19</sup> It is defined as nutritional diagnostic, therapy, and counseling services for the purpose of disease management which are furnished by a registered dietitian or a qualified nutrition professional pursuant to referral by a physician.<sup>19,12</sup>

Diabetes self-management education and training (DSME/T), is furnished by an individual or entity that meets quality standards, and includes instruction in a variety of behaviors that contribute to the self-management skills of persons with diabetes, including education about meal planning and exercise and motivation for patients to use the skills for self-management.<sup>12,18,19</sup> DSME/T addresses 7 self-care behaviors (AADE7™) that include healthy eating, being active, monitoring, taking medication, problem solving, healthy coping, and reducing risks, that are essential for successful and effective diabetes self-management.<sup>12</sup>

The AADE Guidelines for the Practice of Diabetes Education contains this statement about the role of diabetes educators regarding healthy eating:

“There is now good evidence to show the benefits of healthy eating for people with diabetes. These benefits include: improvement in glycemic control and lipid profiles, maintenance of blood pressure in the target range, and weight loss or maintenance. Because there is no one set of nutrition recommendations or intervention that apply to all persons with diabetes, AADE believes nutrition and education should begin with an assessment of each individual’s current eating habits and preferences. Then, in collaboration with the individual, the appropriate nutrition education program and goals should be determined. The healthy eating self-care behavior is addressed by two distinct, but interrelated healthcare services, DSME/T and medical nutritional therapy (MNT). The emphasis on nutrition education, not MNT, serves as the basis for the health eating self-care behaviors in the DSME/T program.”<sup>12</sup>

In accordance with these guidelines, diabetes educators should understand the differences between nutrition education and medical nutrition therapy, what role they should play in providing education, and when to refer a patient to a registered dietitian.<sup>12,14,19</sup> Education on healthy eating habits should be tailored to the individual religious and cultural preferences of clients.<sup>20</sup> Continued follow-up and intervention is the key to long term success in attaining healthy eating habits.<sup>14,18-22</sup>

Numerous studies have demonstrated that DSME/T specifically directed towards healthy eating practices can improve management of diabetes and its related conditions.<sup>22, 23, 24, 25, 26, 27</sup> The literature also confirms the effectiveness of DSME/T in affecting healthy eating and behavior changes in persons with type 2 diabetes, resulting in improvements in glycemic control and in factors that would tend to contribute to the development of cardiovascular comorbidities.

### ***Importance of Healthy Eating Practices to Diabetes Educators***

Healthy eating is an integral component of the AADE7™ Self-Care Behaviors, which emphasize knowledge and skill-training, help persons with diabetes identify barriers and facilitate problem-solving and coping skills to achieve effective self-care behavior and behavior change.

Healthy eating is also beneficial to persons who are overweight or are at high risk for developing diabetes. Several studies have shown that education intervention has a positive impact on reducing risk and delaying onset of diabetes. Healthy eating, which includes consuming foods low in saturated fats, trans fats, cholesterol, sodium, and added sugars has been shown to be beneficial in reducing cardiovascular disease and other comorbid conditions.<sup>22, 28</sup> Finally, DSME/T that includes instruction in healthy eating is a cost-effective intervention.<sup>29-31</sup>

The American Association of Diabetes Educators is addressing this issue because healthy eating is a cornerstone of self-management care that will lead to improved quality of life in persons with diabetes.<sup>32,33</sup> Moreover, healthy eating can delay the onset of diabetes and comorbid conditions if addressed early enough in youth and young adulthood.<sup>33</sup> The curriculum for diabetes education should include healthy eating and setting goals for measurable change.<sup>34</sup>

### ***Importance of Healthy Eating Practices to Persons with Diabetes***

Persons with diabetes, whether or not they are able to implement healthy eating practices on their own, are in general agreement that changing their nutritional habits is an important part of diabetes self-management.<sup>35</sup> A survey of 954 individuals with diabetes found that 74% identified healthy eating as the most common behavior-change goal.<sup>35</sup> From that group, 527 subjects identified goals that were mutually identified with their diabetes educator; of these the two most commonly cited were healthy eating (94%), followed by being active (59%).<sup>35</sup>

The benefits of changes in dietary patterns on measures of glycemic control and other parameters that impact diabetes and pregnancy outcomes in gestational diabetes and the risk for developing diabetes have been amply documented.<sup>36,37,38</sup> In spite of the clear evidence supporting healthy eating, weight loss, and physical activity, the trends are in the contrary direction. It is the unfortunate reality that obesity is on the rise in the U.S., physical activity has declined, and consumption of fruits and vegetables has decreased, all by sizeable percentages.<sup>39</sup> Adherence to five healthy lifestyle habits ( $\geq 5$  fruits and vegetables/day, regular exercise  $>12$  times/month, maintaining healthy weight [body mass index 18.5-24.9 kg/m<sup>2</sup>], moderate alcohol consumption [up to 1 drink/day for women, 2/day for men], and not smoking) has declined from 15% to 8%.<sup>28</sup>

The disparity between the large potential benefits of healthy lifestyle practices and the small proportion of U.S. persons who have adopted these practices points to a need for more research and greater involvement by diabetes educators and other qualified persons.

### ***Where is More Research Needed?***

- More research is needed to clarify which patterns of food modification interventions lead to defined measurable outcomes for weight, and fat, saturated fat, and carbohydrate intake.
- Outcomes studies are needed on the impact of healthy eating on both primary and secondary prevention and management of type 1, type 2 diabetes, and gestational diabetes.
- Diabetes education interventions should be designed to focus on maintenance of healthy eating behavior change as well as initiation of healthy eating behavior change.

- More studies are needed to determine the factors that support sustainable, long-term adherence to changes in eating patterns.
- Research studies should assess which teaching methods are most effective for educating people with diabetes on healthy eating.

### ***Recommendations***

- The AADE7™ healthy behavior construct is appropriate for DSME/T and serves as a foundation upon which people with diabetes will incorporate healthy eating into their self-care and lifestyle. This construct supports dietary change and physical activity and is intended to achieve weight loss or maintenance.
- Educating people with diabetes to follow a healthy eating plan should be a priority for all diabetes programs. Diabetes educators should address healthy eating as a self-care goal in diabetes management and a secondary goal associated with reducing risk for co-morbid diseases, especially cardiovascular disease and obesity and improving pregnancy outcomes in gestational diabetes.
- Patients should be taught that effective weight loss does not involve a short-term or fad diet; rather it involves adoption of a healthier eating style that limits caloric and saturated and trans fat intake, controls carbohydrate and sodium intake and meets RDAs/DRI for all micronutrients, for the long term.
- All materials, education, and coaching approaches should target the unique cultural, financial and religious beliefs of each individual as necessary for success.

### **Acknowledgements**

We recognize the considerable contributions made by the Evidence Review Team:

Wahida Karmally, DrPH, RD, CDE, CLS, FNLA; Lorena Drago, RD, MS, CDN, CDE; Peggy Odegard, PharmD, CDE; Patricia Geil, MS, RD, FADA, CDE; Joyce Malaskovitz, PhD, RN, CDE; Karen Fitzner, PhD; Dawn Sherr, RD, CDE; and Kristina Ernst, BSN, RN, CDE. \* \* \* \* \*

*Criteria for rating evidence and grading recommendations\**

**Level-of- Study Design or Information Type**

***Evidence\*\****

- |   |  |
|---|--|
| 1 | <i>Large randomized controlled trial (RCT); Multicenter trial; Large meta-analyses with quality rating, Governmental statistics</i>  |
| 2 | <i>Randomized controlled trial that has some design or methodological flaws; Prospective cohort study; Meta-analyses of cohort study; Case-control study; Quasi-Experimental study (rigorous pre-post with a control group); Systematic review that is well designed</i> |
| 3 | <i>Methodologically flawed randomized controlled trial; Nonrandomized controlled trial; Observational study; Case series or case report; Review (note Cochrane reviews are systematic reviews that could qualify as Level 2 evidence)</i>                                |
| 4 | <i>Expert consensus; Expert opinion based on experience; Theory-driven conclusions; Unproven claims; Experience-based information; Opinion Piece</i>   |

*\*This is not an exhaustive list – Reviewers will need to use their own judgment at times.*

*\*\*The evidence rating that has been assigned to each citation is shown at the end of the citation.*

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