GOAL SETTING EDUCATION AND COUNSELING PRACTICES OF DIABETES EDUCATORS

By

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GOAL SETTING EDUCATION AND COUNSELING PRACTICES OF DIABETES EDUCATORS

Abstract

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Goal setting education is a well recognized approach to help diabetes patients acquire diabetes self-management skills, yet specific education practices are understudied. Goal setting education practices with type 2 patients for diabetes self-management (DSM) was assessed by questionnaire with 179 diabetes educators (DE) from the American Association of Diabetes Educators membership. Objectives were to identify assessment, education and counseling practices, instructional tools, and patient follow-up processes, with an emphasis on dietary self-management. Many DE (76%) reported that most or all patients set healthy eating goals. Patterns of practices were characterized through principal components factor analysis of sets of responses and appeared to represent a theme of patient-centered approaches. Factor patterns for the frequency of information collected from the patient for the first diabetes education session showed that educators either focused on patients' "Self-management practices" (exercise and dietary practices, knowledge, and social impacts of diabetes) or "Issues with learning about self-management", which represented information to understand patient learning style and motivation for managing their diabetes. A novel measure, ways DE gauge patient

readiness to make a dietary change, showed approaches consistent with patient-centered care and mostly consisted of asking the patient for direction in selecting a change. Most DE documented patients' goals (93%) and also had patients write down goals (67%). Follow-up visits were conducted by 90% of DE, averaged 2.8 visits, and were initiated on average 1.4 months after initial diabetes education. Most educators reported practices which were largely patient centered as promoted by the ADA and models of chronic disease management.

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Be not afraid of going slowly;

be afraid only of standing still.

~Chinese Proverb~

LITERATURE REVIEW

Diabetes: Public Health Significance

Diabetes mellitus is a chronic non-infectious disease that contributed to an estimated 233,619 deaths in the United States in 2005.[1] Since 1987, deaths from diabetes have risen 45%, while death rates for heart disease, stroke and cancer have declined.[2] Approximately 7.8% of the U.S. population has diabetes. This percentage includes approximately 23.6 million children and adults. Of the 23.6 million cases, and approximately 5.7 million individuals are undiagnosed. It is estimated that 90% to 95% of adult diabetes cases in the U.S. are type 2.[3]

Diabetes is a costly disease for both patients and society. The Center for Disease Control and Prevention (CDC) estimated that in 2007 the U.S. spent approximately $174 billion total in indirect and direct costs; direct costs are those related to medical bills, while indirect costs include disability, work loss, and premature mortality.[4] Each patient with diabetes is estimated to spend up to $10,000 per year on medical costs, and those with medical insurance spent an estimated $1,600 out of pocket for costs not covered by insurance.[5]

Uncontrolled diabetes can lead to life altering complications such as blindness, kidney damage, cardiovascular disease, and lower limb amputations. Patients with type 2 diabetes and those at high risk for developing type 2 diabetes have higher rates of depressive symptoms and lower quality of life than those at low risk for developing type 2 diabetes.[6]

Treatment of Type 2 Diabetes

Self management education or training is vital to improving healthcare outcomes and quality of life for the type 2 diabetes patient. Patients with diabetes may lower the occurrence of complications related to diabetes by controlling their blood glucose, blood pressure, and blood lipids. According to Funnell and Anderson,[7] the diabetes patient conducts 95% of his or her own healthcare. Self management focuses on self-care behaviors including medical nutrition therapy, physical activity, and self-monitoring of blood glucose (SMBG). Patients gain knowledge and learn problem solving techniques and coping mechanisms by collaborating with diabetes educators,[8] which is important for improving health outcomes of type 2 diabetes patients.

Blood glucose control may be improved through learned self-care behaviors such as following a healthy meal plan, incorporating an exercise program, losing excess weight, and taking oral medication.[8] Patients and practitioners monitor glycemic control by screening the patient's glycated hemoglobin (HBA1c). Glycated hemoglobin (glucose non-enzymatically attached to hemoglobin) is expressed as the percentage of hemoglobin that is glycated. Oral medication and insulin are more frequently used with patients with poor glycemic control. A cross-sectional study of 822 type 2 diabetes patients showed that 88.7% of patients were being treated with oral medication and/or insulin: the use of these was more common for patients with HbA1c values from 7-8% versus those with values less than 7%.[9] In recent research, Nathan et al.[10] positively correlated the percentage of glycated hemoglobin with average blood glucose level over four to six weeks. The positive correlation supported the current practice of using glycated

hemoglobin as an alternative to average blood glucose values for monitoring diabetes control.

An analysis of data from the National Health and Nutrition Examination Survey (NHANES) determined trends in diabetes control for type 2 diabetes. Koro et al.[11] calculated glycemic control rates by calculating the percentage of type 2 diabetes patients with HbA1c less than 7%. Glycemic control rates of type 2 patients dropped from 44.5% in 1988 to 35.8% in 2000.[11] Diabetes control among type 2 diabetes patients in the U.S. has declined in recent years, indicating the need for diabetes education to more effectively assist patients in achieving better outcomes.

Risk Factors for Type 2 Diabetes

Various risk factors are believed to contribute to the development of type 2 diabetes. Personal risk factors include being greater than 45 years old, having a history of vascular disease or hypertension, and being overweight or obese. Higher risk is also associated with individuals that have impaired glucose tolerance (IGT) or impaired fasting glucose (IFG). Risk factors related to a patient's lipid profile include high density lipoprotein (HDL) $\leq$ 35mg/dL and triglycerides (TG) $\geq$ 250mg/dL. Further risk is associated with having first degree relatives with type 2 diabetes. Risk factors that relate to women are polycystic ovary syndrome and a diagnosis of gestational diabetes (GDM) or having a baby with a birth weight of nine pounds or greater.[12]

The risk for type 2 diabetes is also linked to modifiable lifestyle factors. Clinical trials have demonstrated that interventions involving lifestyle factors such as diet and exercise reduce the incidence of diabetes in individuals at risk for type 2 diabetes.[13,14,15] The Diabetes Prevention Program (DPP) attempted to reduce the onset of diabetes by

reducing participant incidence of overweight or obesity, and sedentary lifestyle. The presence of overweight, obesity, and sedentary lifestyle represent modifiable risk factors and are all accepted as central to the development of diabetes and its long term complications.[16] The goal of the DPP was to test lifestyle modification versus metformin (biguanide antihyperglycemic agent) in the prevention of type 2 diabetes. The participants were individuals that were at high risk for developing diabetes. They were randomly assigned to either a control group (placebo + standard lifestyle intervention), metformin intervention group (metformin + standard lifestyle intervention), or intensive lifestyle intervention group (intensive lifestyle modification program). The intense lifestyle modification required the participants to set a goal of achieving and maintaining a weight loss of 7% body weight through a low fat, low calorie diet, and 150 minutes per week of moderate intensity exercise. The intensive lifestyle intervention group also received a 16 lesson curriculum designed to teach them about diet, exercise, and behavior modification. The 16 lesson curriculum was taught one on one, and subsequent sessions beyond the 16 lessons were either one on one or group based to reinforce behavioral changes. Both the intensive lifestyle modification and metformin treatments resulted in decreased incidence of diabetes by 58% and 31%, respectively.[13] While the DPP completed its objectives by reducing the incidence of diabetes, it is unclear whether the program was a collaboration between the provider and patient or if the patients were given a set of goals to accomplish during the time of study.

A similar study in Finland run by the Finnish Diabetes Prevention Study Group examined the practicality and effects of a lifestyle program designed to delay or prevent the onset of type 2 diabetes. Individuals at high risk for developing type 2 diabetes were

randomly assigned to the following two groups: typical diabetes education (control), or intensive intervention program, which included a detailed diet and an individualized physical activity education. During seven sessions with a nutritionist, the intensive intervention participants received detailed advice about modifying their diet including reducing total fat intake to 30% of total energy, reducing saturated fat to 10% total energy, and increasing fiber to 15 g per 1000 kcal per day. The intervention group was advised to include thirty minutes of moderate exercise per day, with detailed strategies to do this, and was also provided the opportunity to participate in supervised circuit training. The intervention group was advised to reduce their body weight by 5%. After two years, the incidence of diabetes was 6% in the intervention group and 14% in the control group.[15] While it is clear that these studies reduced the occurrence of diabetes, it is not apparent which intervention and curriculum were the most effective with patients.

Pathology of Type 2 Diabetes

Type 2 diabetes occurs either when the body does not produce enough insulin or when cells are insulin resistant.[17] In either case, the β-cells are present and are still producing insulin. An insulin receptor deficiency results in the body being unable to utilize blood glucose.[12] Chronic hyperglycemia (elevated levels of glucose) and hyperlipidemia (elevated levels of fatty acids) are both thought to contribute to the β-cell defect.[18]

Hyperglycemia is the result of four contributing factors.[12] First, the liver releases excess glycogen nocturnally which leads to elevated fasting plasma glucose (FPG) levels in the morning. The FPG is defined as blood glucose levels measured after eight hours or

more of fasting. A second contributing factor to hyperglycemia is decreased peripheral glucose uptake at the site of muscle uptake that leads to elevated blood glucose (BG) before meals.[12] A third contributing factor is decreased insulin secretions from the pancreatic β-cells that leads to insulin deficiency and results in elevated BG postprandially (usually defined as 2-3 hours after a meal). The final contributing factor to hyperglycemia is excess food consumption leading to increased glucose influx, which can also result in elevated BG postprandially.[12] Chronic hyperglycemia may lead to impaired glucose-induced insulin secretion and insulin gene expression by adversely affecting the pancreatic β-cells,[19] eventually leading to β-cell "burnout" where the β-cells produce less insulin.[20]

Chronic hyperglycemia has three adverse affects on the β-cells: glucose desensitization, β-cell exhaustion, and glucotoxicity.[19] Glucose desensitization is an adaptive mechanism that refers to the rapid and reversible loss of the capacity of β-cells to respond to immediate exposure to high glucose levels.[19] After prolonged exposure to glucose, β-cell exhaustion occurs. Beta-cell exhaustion refers to depletion of the readily available pool of insulin, which is normally stored to create an instant reaction to a rise in blood glucose.[19] Beta-cell exhaustion leads to glucotoxicity, which is the state of elevated glucose; prolonged exposure to glucotoxicity irreversibly decreases function of pancreatic β-cells in response to a bolus of carbohydrate.[19] In a person predisposed to diabetes, such as those with a family history of diabetes, chronic hyperglycemia leads to insulin resistance, which is the lack of response to insulin.

Glucolipotoxicity, or lipotoxicity, is defined as the prolonged exposure to elevated levels of glucose and lipids.[19] In addition, lipotoxicity prevents a compensatory response to hyperglycemia. One theory is that concurrent elevated levels of glucose and fatty acids results in accumulated cytosolic citrate which is the precursor of malonyl-CoA. The cytosolic citrate then inhibits carnitine-palmitoyl-transferase-1, which is an enzyme that is responsible for transport of fatty acids into the mitochondria where they are oxidized for energy production. This inhibition of carnitine-palmitoyl-transferase-1 over a sustained period of time results in the accumulation of long-chain fatty acyl CoA.[19] The accumulation of long-chain fatty acyl CoA is proposed to mediate the deleterious effects of elevated fatty acids. As lipotoxicity progresses, β-cell compensation becomes insufficient and is unable to match the insulin response needed to sustain normoglycemia. This marks the earliest stage of β-cell decomposition and is characterized by postprandial hyperglycemia. Beta-cell decomposition eventually leads to β-cell failure that is characterized by fasting hyperglycemia. This stage is irreversible and leads to the diagnosis of type 2 diabetes.

The β-cells compensate to reduce insulin resistance in normoglycemic individuals that experience weight gain. This compensation occurs through a coordination of increased β-cell mass, insulin synthesis and insulin secretion. It is hypothesized that this compensation occurs through preference for fatty acids rather than glucose for metabolic fuel and this may explain the decrease in glucose-induced insulin response in individuals that are predisposed to diabetes compared to individuals without the predisposition.[18]

Type 2 Diabetes and Obesity

An association between obesity and type 2 diabetes has been observed in various populations. Obesity is defined as having a body mass index (BMI) > 30 kg/m^2 and results from an energy imbalance.[21] It is important to note that not all type 2 diabetes patients are obese and obesity is not required for the development of type 2 diabetes.[22] The mechanism behind obesity-induced insulin resistance is not well understood.

Adipose tissue is recognized as an endocrine organ that is a crucial determinant of energy balance.[22,23] Adipokines, defined as hormones secreted by adipose tissue, are being investigated as possible contributors to insulin resistance. Adipokines ultimately cause a disruption in energy homeostasis including faulty glucose and lipid metabolism. This contributes to obesity induced insulin resistance; however, an exact interrelationship has not been determined. Four adipokines that have received the most attention include leptin, tumor necrosis factor-α (TNF-α), interleukin-6 (IL-6), and adinopectin.[18,22,23,24]

Leptin is a single chain proteohormone secreted by adipose tissue. It is transported across the blood-brain barrier and interacts with two subpopulations of receptors in the arcuate nuclei (part of the hypothalamus). The interaction with these subpopulations inhibits two peptides, neuropeptide Y and Agouti-related peptide that stimulate food intake and reduce energy expenditure.[23] Leptin therefore decreases food intake by acting synergistically with other neurotransmitters.[23] Leptin is also associated with increased levels of serotonin. Elevated levels of serotonin in the hypothalamus are associated with decreased food intake.[23] The actions of leptin suggest that it is anorexigenic (causing loss of appetite). Notably, studies have shown that obese

individuals have elevated serum levels of leptin.[22,23] The possibility of leptin resistance is one hypothesis to explain elevated levels of leptin in obese individuals.[23]

Tumor necrosis factor-α (TNF-α) is a proinflammatory adipokine that is produced in the adipose tissue and targets the pancreas and the liver. TNF-α results in increased insulin resistance and increased glucose levels.[23] Insulin resistance may occur through inhibition of insulin-mediated tyrosine phosphorylation of the insulin receptor (IR) and IR substrate-1.[23] The exposure of TNF-α to muscles decreases insulin sensitivity in the muscles and stimulates the release of free fatty acids by stimulating the release or synthesis of cortisol. Overexpression of TNF-α occurs in both obesity and type 2 diabetes may be a link between both diseases.[21,22]

Cells within adipose tissue known as adipocytes secrete IL-6 which affects tissue within the liver, thymus, and bone.[22] Elevated levels of IL-6 are evident in obese individuals.[25] Comparisons of lean and obese women have positively correlated circulating IL-6 with insulin resistance in obese women.[26] In addition, IL-6 increases hepatic triglyceride secretions and decreases adipose lipoprotein lipase activity.[22] The increased hepatic triglyceride secretions and decreased adipose lipoprotein lipase may influence obesity associated insulin resistance by increasing circulating free fatty acids (FFA).[22] Increased FFA levels lowers insulin stimulated glucose uptake through inhibition of carbohydrate oxidation, glucose transport and phosphorylation, and glycogen synthesis.[27] Chronic exposure to higher levels of IL-6 dampens the production of TNF-α and interleukin-1, but it stimulates the production of C-reactive protein and fibrinogen. C-reactive protein is another pro-inflammatory chemical released in the

inflammatory response. Pradhan et al.[28] were able to associate elevated levels of CRP and IL-6 with increased incidences of type 2 diabetes, supporting the link between inflammation and type 2 diabetes.

Adinopectin, also known as Acrp30 and AdipQ, is induced during adipocyte differentiation and stimulated by insulin.[21] Adinopectin is a predominate insulin sensitizing hormone and at low levels has been linked to obesity.[23] Decreased levels of adinopectin may be another contributing factor in obesity linked insulin resistance.[22,23,29]

Diabetes Self-Management Education (DSME)

Diabetes self-management education (DSME) is necessary to achieve health promoting outcomes for a diabetes patient.[30] The clinical objectives of DSME are to achieve glycemic control, prevent acute and chronic complications, and increase quality of life for diabetes patients.[31] Another significant goal of DSME is to enhance the patient's belief in their ability to perform effective self-management skills, otherwise known as self-efficacy.[32] The process of DSME includes teaching patients how to manage their diabetes. This education has been considered an integral part of clinical management since the 1930s,[24] and when individualized it supports a patient's effectiveness in managing his or her diabetes.

Individualization of DSME is determined from a patient's personal attributes related to their ability to engage in diabetes self-care. The patient's personal attributes include their health status, psychosocial status, literacy and learning styles, culture and age, self-care skills, and access to resources.[30] The patient's psychosocial status includes their social support, economic resources, stress anxiety, and whether or not they have depression.[30] The patient's attitudes, beliefs, experiences, and desire to participate in

diabetes education are also important attributes for individualization, as well as their personal goals.[30] Inquiries about the patient's goals related to diabetes and what they would like to achieve through DSME guides the process and leads to a patient directed session.[30] Behavior change is effectively implemented if it is self-directed by the patient.[30] However, it is the diabetes educator's responsibility to effectively guide this patient-directed process.

Previous clinical trials have shown an association between self management education and improved glycemic control for type 2 patients. The United Kingdom Prospective Diabetes Study (UKPDS) demonstrated that improved glycemic control results in decreased rates of retinopathy, nephropathy, and neuropathy.[33] The UKPDS trial enrolled 3,044 newly diagnosed type 2 diabetes patients. The mean FPG of participants was 217±66.6 mg/dL and mean age was 52±8 years. Participants were on average overweight (mean = 130±26% of ideal body weight, IBW).[34] During the initial three month diet therapy, each participant had monthly visits with a diabetes educator; most often with a dietitian and a doctor.[35] The initial three month diet for all participants was approximately 50% carbohydrate, low in saturated fat, and moderately high in fiber. Additionally, obese participants were asked to reduce energy intake with a goal of attaining ideal body weight.[35] At the end of three months, a greater reduction in blood glucose was achieved by participants with a higher initial FPG and who lost more weight.[34] Results showed that on average, participants that presented with a FPG of 180 to 216 mg/dL needed to lose 28% of IBW to achieve FPG of less than 108 mg/dL. These results were positive; however, the most effective implementation methods for achieving such results are unclear.

A clinical trial in Thailand tested the efficacy of a diabetes self-management program. The objective was to improve glycemic control, decrease coronary heart disease risk, and improve quality of life. The participants were Thai type 2 diabetes patients.[36] The control group received usual nursing care and the experimental group participated in a diabetes self-management program. The program included one group education session, four group discussions, and one home visit by the principal investigator. This program addressed lifestyle changes, barriers to change, SMBG, and interpreting blood lipid levels and blood pressure.[36] In the intervention group, mean HbA1c decreased by 0.68±0.62% compared to a decrease of 0.07±0.23% for the control group. Although the study did not achieve the goal of HbA1c < 7%, the decrease in HbA1c significantly supported the benefit of DSME.[36] However, the details of the diabetes education program were unspecified. Future research is needed to identify which components of the program were most successful in improving clinical outcomes, which components were sustainable in new and recurring patients, and which components could be applied to other populations.

Diabetes self-management education (DSME) may be culturally adapted with favorable results. A non-randomized clinical trial tested the effectiveness of a culturally tailored DSME for type 2 Native American diabetes patients in New Mexico (n=105). Two intervention groups received culturally tailored education that included diabetes educational materials, skills building, and social support.[37] The intervention was conducted over ten months and five sessions were held approximately six weeks apart. One intervention group was focused on individualized education, while the other group received education with their friends and family.[37] An overall increase in HbA1c was

seen in the study; however, it was least for the individualized intervention (0.2%, p = 0.05) and friends and family intervention (0.5%, p = 0.05) compared to the control (1.2%, p = 0.05). Mean body weight decreased for the individualized intervention (-1.8 lbs, p = 0.14) and friends and family intervention (-2.0 lbs, p = 0.14) compared to an increase for the control group (+1.7lbs, p = 0.14).[37] After one year, both interventions demonstrated significant outcomes for weight loss and glycemic control, supporting the benefits of DSME. This research supports the need for culturally relevant diabetes education for diabetes patients of different ethnic backgrounds. Overall, these diabetes education trials have supported the efficacy of DSME programs; however, the settings and impacts of DSME vary widely.

Adherence to Diabetes Self-Management Education (DSME)

Adherence is defined as the patient's choice to adopt and maintain health behaviors,[38] and may be used as a measure of behavioral outcomes with DSME. In the course of diabetes treatment, early adherence to new behaviors is a good predictor of adherence later in the course of treatment.[38] Notably, adherence varies with diabetes self-management regimen. For example, in the Diabetes Attitudes, Wishes and Needs (DAWN) study that assessed diabetes patients and provider needs, adherence for type 2 diabetes patients was 78% for medication taking, 72% for appointment keeping, 64% for SMBG, 37% for diet, and 35% for exercise.[39] Adherence to diet and exercise was especially low when compared to other self management behaviors. Other research has shown greater adherence for medication taking as opposed to lifestyle changes (e.g., diet and exercise) in diabetes self-management.[40] Lifestyle changes to incorporate diabetes self-management practices into daily practice presents a challenge for most patients; an

emphasis upon facilitating lifestyle changes early in self-management education may improve behavior change outcomes and therefore clinical outcomes.

Medical Nutrition Therapy for Diabetes Self-Management

Medical nutrition therapy (MNT) for diabetes involves four steps.[41] The first step is an assessment of the patient's nutritional status, diabetes self-management knowledge, and diabetes self-management skills. The second step is to identify and design nutritional goals with the patient. After the nutritional goals have been established, the third step is to develop a flexible nutrition intervention, which patients implement on their own. The intervention session may include meal planning and nutrition education materials. Following intervention implementation, the fourth step is to monitor the patient and evaluate his or her progress.[41] Although these guidelines have been in place since 1994,[42] best practices for carrying out such an intervention are not standardized.

The benefits of MNT in diabetes management have been supported by MNT therapy trials. The UKPDS trial demonstrated that MNT has beneficial outcomes for weight loss and glycemic control independent of weight loss. During the three months following the initial UKPDS trial, the participants that achieved a trial endpoint FPG of less than 108 mg/dL continued to lose 2.1% IBW; however, their mean FPG increased by 7.2 mg/dL. The rise in FPG with weight loss suggests that the initial reduction in energy intake decreased FPG, rather than the weight loss.[34] Participants that maintained a FPG less than 108 mg/dL for one year after the initial three month period continued to lose 3% IBW on average during this time. This weight loss outcome also supports the benefits of the diabetes diet.[34]

Another prospective, randomized, and controlled clinical trial assessed the effectiveness of MNT in 179 type 2 diabetes patients. Intervention participants were randomly chosen from two different diabetes treatment centers. A non-randomized control group was evaluated at a separate outpatient diabetes center in Minneapolis, MN where the patients had no contact with a dietitian. The first intervention group received approximately one hour with a dietitian. Data from the patient and referring physician was used to develop a nutrition care plan during the appointment with the dietitian. Nutritional goals that were designed to achieve glycemic control were introduced and general nutrition management principles were discussed. The participants of basic care were not allowed any further contact with the dietitian after the first visit.[43] Participants in the second intervention group also received education from a dietitian; however, in the second intervention, the nutrition intervention was planned by the dietitian prior to the first visit. The first visit with the dietitian was approximately one hour in length, and followed by two additional visits approximately 30-45 minutes in length.[43] The dietitian reassessed the effectiveness of MNT during the follow-up visits, made recommendations to the referring physician as to changes in MNT, and requested medication changes if needed. The second intervention group was allowed to see the dietitian up to three times in six weeks following the initial visit, but after six weeks this option was unavailable. Post-tests of outcomes were conducted at three and six months. Outcomes remained unchanged for the control group. The first intervention group that received one visit with the dietitian reduced their fasting plasma glucose from 176±54 mg/dL to 157±45 mg/dL at three months ($p < 0.01$) and to 166±52 at six months ($p < 0.01$). The second intervention group that received multiple visits reduced their fasting plasma glucose from

184±49 at entry to 153±41 mg/dL after three months ($p < 0.001$) and to 164±52 at six months ($p < 0.01$).[43] Both interventions achieved greater blood glucose outcomes compared to the control; importantly, the participants receiving additional nutrition counseling achieved the best outcomes.

Medical nutrition therapy interventions improve glucose control for patients. However, implementation strategies were not identical between studies, and it is unclear which strategies lead to the most effective outcomes.

Nutritional Goals for Diabetes Control and Weight Management

Because overweight and type 2 diabetes are frequently concurrent, the nutritional goals for each will be described. The nutritional goals for obesity are centered on weight loss. Weight loss programs associated with any degree of success included exercise, behavior modification, nutritional education, and psychological support.[44] Nutritional approaches to weight loss include a low-calorie diet, increased physical activity, and lifestyle modification to attempt negative energy balance.[44] Lifestyle strategies for type 2 patients that may improve glycemic control independent of weight loss include reducing energy intake, monitoring carbohydrate servings, limiting consumption of saturated fats, and increasing physical activity.[44] Weight loss may improve glycemic control for type 2 diabetes patients in the short term.[44] Long term effects of weight loss on diabetes control are unknown, as long term weight loss is difficult to achieve.[44]

Standards for Diabetes Self-Management Education (DSME)

Standards for the process of diabetes self-management education (DSME) have been reviewed and revised every five years by key organizations.[45] The first standard is a written curriculum that includes recommended criteria for diabetes self management such

as MNT, SMBG, and physical activity. Initial assessment of the patient determines which of these criteria needs to be addressed during individual education. The next standard entails that the education program should be a collaborative development between the patient and the provider and should also be documented within the patient's education record. The third standard for the DSME process calls for a personalized follow-up plan as ongoing support of the patient. Lastly, the progress of the patient regarding their goal attainment should be measured and evaluated at regular intervals for effectiveness in improving diabetes control.[45]

The DSME standards also refer to goal setting,[45] which is the process of establishing new behaviors that promote glycemic control in people with diabetes.[46,47,48] The standards concerning goal setting state that patient behavioral goals should be documented for the entire diabetes care team to ensure that all members may address the goals during their time with the patient. The educator and the patient should develop a personalized follow-up plan for his or her goals and ongoing self-management education. Assessment of the patient's goal attainment is also needed to track their progress. The DSME standards identify the procedures to use once the patient's goal is set,[45] but the implementation of goal setting within education programs remained undefined. This allows many diverse interpretations of goal setting education within a standard DSME program.

Research on Goal Setting Education

Early research in goal setting education utilized the Chronic Care Model, which emphasizes methods of patient care that encourage the patient to take an active role in their self-care behaviors towards chronic disease management. The Chronic Care Model

is based on self-efficacy theory, problem solving, decision making, and empowerment.[49] Self-efficacy is belief about one's capability to produce designated levels of performance that influence one's life.[50] Problem solving is defined as the process in which a patient translates techniques for self-management into actions.[51] Decision making refers to making disease treatment decisions.[49] Finally, empowerment is the concept that patients accept responsibility to manage their condition and are encouraged to solve their own problems with information, not orders, from the health provider.[52] The Chronic Care Model represents a collaborative effort between the patient and provider, during which the provider helps the patient make an informed decision when setting a behavioral goal.[52]

The Chronic Care Model was used to design a Chronic Disease Self-Management Program (CDSMP), which was implemented in both a randomized controlled trial and also in a community based intervention for patients with chronic disease. The first study was a six month randomized controlled trial.[53] The control group (n = 476) received medical care from their respective clinics and was wait-listed to receive treatment after the first six month intervention. The intervention group (n = 664) and control group consisted of patients with chronic diseases including chronic lung disease, heart disease, stroke, or chronic arthritis. The intervention was given in seven weekly 2.5 hour sessions and consisted of topics incorporating self-efficacy (e.g. weekly action planning with feedback), group problem solving, and patient empowerment. The overall curriculum was taught with a facilitator approach in which a group of 10 to 15 participants developed their own set of solutions and decisions. Patients self-selected their behavioral goals for management with assistance from the health care provider.[54] Intervention participants

demonstrated improvements in health behaviors including exercise ($p < 0.0003$), communication with the physician ($p < 0.006$), and cognitive symptom management such as "practice progressive muscle relaxation" ($p < 0.0001$). Health status improved for self reported health ($p < 0.02$), health distress ($p < 0.001$), energy/fatigue ($p < 0.003$), disability ($p < 0.003$), and social/role limitations ($p < 0.002$). Additionally, health service utilization improved for hospital stays ($p < 0.047$) and duration of hospital stay ($p < 0.01$). To test the efficacy of the CDSPMP in a community based setting, the same study was repeated as a pre-test/post-test cohort study with patients having chronic diseases such as lung disease, heart disease, arthritis, and diabetes.[49] The study was similarly implemented, except class sizes were 8-20 participants and the 17 hour curriculum was delivered over 7 weeks at Kaiser Permanente health department sites. After one year, intervention participants ($n = 489$) demonstrated improvements in health behaviors and outcomes such as aerobic exercise ($p < 0.01$), self-efficacy ($p < 0.001$), depression ($p < 0.001$), and reduced ER visits ($p < 0.05$). Both studies improved patient outcomes using an intervention approach designed for various chronic diseases and demonstrated a promising approach to enhancing patient self-care. Further research is needed to identify key components of practice and their link to outcomes.

Goal setting as an approach to improving patient self-care shows favorable results when patients leave the provider's office with written document of goals they set during an education session. Levetan et al.[55] tested the effect of using personalized posters for diabetes patients that displayed their HbA1c results, a bulleted list of their goals, and recommended steps for achieving those goals. Patients in both treatment and control groups received diabetes education three months prior to enrollment. The

intervention participants were given an initial questionnaire. The answers from the questionnaire were used to generate personalized goals for intervention participants along with recommended steps for achieving those goals. Posters were created in the provider's office, and were given to patients to take home. After receiving the poster, intervention participants received one phone call of 10 minutes duration from a health educator to discuss their poster. The phone call excluded other educational, nutritional, and exercise interventions; patients were encouraged to discuss other questions and issues with their primary physician. A monthly postcard reminder was also mailed to each participant to remind them of the importance of HbA1c and related diabetes complications. A six month follow-up showed that control participants reduced their mean HbA1c by 8.6% (8.39 ± 2.03 to 7.79 ± 1.91, $p < 0.032$) while the intervention reduced participants' mean HbA1c by 17.0% (8.85 ± 2.48 to 7.78 ± 2.22, $p < 0.032$). It is important to note the sustainability of this program, as evidenced by the fact that 77% of intervention participants displayed the poster on their refrigerators at the close of the study.[55] Further research is needed using the poster approach with other diabetes patient populations, and to further test the usefulness of written goals.

Goal setting in diabetes education was investigated utilizing internet based systems. Lee et al.[56] tested a web based intervention that provided education materials personalized to each patient and included appointment reminders by e-mail and cell phone messages. Educational materials were developed by doctors and patient educators for self-management including diet, exercise, and foot care. The diabetes educator determined which component the patient needed to address and facilitated the patient's access to related materials on the website. The website also included a section for the

educator to write individualized goals for each patient. The patient's medical care data was integrated into the website, and both the patient and educator had access to the patient's medical care data and to the assigned educational material. In addition, the educator assigned patient access to additional materials, or composed additional materials as needed by the patient.[56] The control group (n = 140) and intervention group (n = 134) both received traditional diabetes education and returned for a follow-up every three months. The intervention group received a username and login for the website, and received training for the internet and cell phone messages. The intervention group reduced mean HbA1c by 1.82 for a final HbA1c of 6.74±2.12% ($p < 0.001$). By contrast, the control group reduced their mean HbA1c by 1.48 for a final HbA1c of 7.42±1.65% ($p < 0.001$).[56] It is unclear whether both intervention and control groups set or modified their goals or what goal setting strategies were used by the educators.

Research into goal setting approaches has shown successful patient outcomes for certain at risk patients. McMurray et al.[57] implemented a diabetes education intervention at a dialysis clinic using goal setting. The participants were allocated to control or intervention based on the day of their dialysis treatment. The control group received conventional therapy, including standard diabetes care as directed by their physician that included monitoring of blood glucose with a quarterly HbA1c measure. The intervention group received diabetes education followed by self-management education from a care manager that included motivational counseling to help the patient set and achieve goals. The intervention group showed a decrease in HgA1c from 6.9% to 6.3% ($p < 0.005$) compared to a non-significant change for the control group. The control group had five participants that received amputations, while the intervention group had none.[57] While

the intervention had a positive effect, it is unclear what types of goals were set or what method of goal implementation was used.

Cullen et al.[48] utilized a goal setting model as a conceptual framework for reviewing thirteen nutrition education studies that incorporated goal setting, and revealed some insights into goal setting approaches for effective behavior change. Studies were reviewed in the context of a four step goal setting model. The model represents a feedback process that begins with recognition of the problem (step 1), followed by setting a goal (Step 2), then attempting a goal and self-monitoring (Step 3), and concludes with self-rewarding for attaining the goal (Step 4). The steps may then be repeated as necessary to complete the goal.[48] In one of the studies, Howard-Pitney et al.[58] investigated the effects of nutrition education addressing low fat diets with low literacy, low income adults. The control group (n=168) received a five lesson general nutrition course on the food guide pyramid, food safety, and meal planning. The control curriculum did not include a goal setting component.[58] The intervention group (n=183) received the Stanford Nutrition Action Program (SNAP) over 20 months, including six weeks of classroom based education followed by 12 weeks of maintenance education. The goal setting component constituted approximately 25% of each lesson, and included activities such as reviewing low-fat strategies incorporated into recipes and assessment of current eating practices to help participants set their next low-fat behavioral goal.[58] This study incorporated steps 2 and 3 from the model into the SNAP intervention. Significant outcomes included greater reductions in dietary fat intake and greater self-efficacy when compared to the control group that received general nutrition education.[58] In another study,[59] participants in a nutrition education program for weight management lost more

weight when they followed a caloric intake goal than control participants who did not set a caloric intake goal. These and other studies[58] support the concept that setting the goal, attempting the goal, and self-monitoring appear to be integral to goal setting education and effective goal setting. However, past studies have variable goal setting procedures and optimal goal setting practices have yet to be identified.

Recent reviews of the goal setting literature[60, 61] suggest that certain goal setting components are related to goal attainment and therefore behavior change. For example, proximal goals (short term and action oriented) are more effective than distal (long-term) ones.[60,61] The patient's self-efficacy (confidence in one's ability to perform a task) is intertwined with goal setting and facilitates the capacity of the patient to set achievable goals.[60,61] Feedback and reinforcement (e.g. rewards) are components that can be used to help move the patient towards the achievement of the goal.[60,61] Investigations of goal setting in primary care and other settings indicate many potential elements and steps that require testing for specific application to diabetes. Protocols are needed to support optimal goal setting within diabetes education.

Goal setting education has shown favorable results in nutrition studies of enhancing healthy eating behaviors and weight loss. However, it is not clear which elements of goal setting are used in diabetes education practice and how effective they are in generating enhanced outcomes. Further, diabetes self-management education standards incorporate at least five more self-care areas in addition to healthy eating and weight loss, and there are no existing protocols to incorporate goal setting into diabetes education for these areas. The success of goal setting in diabetes education needs further

research as well as evidence based procedures for implementing a goal setting education program.

Outcome Measures for Goal Setting in Diabetes Self-Management Education Programs

The American Association of Diabetes Educators (AADE) developed diabetes education outcome measurement standards for their program goals relative to recognized diabetes education programs. The AADE stated that the former method of using clinical outcome measurements such as HbA1c does not completely characterize the successes or failures of diabetes education programs.[62] The AADE identified seven standard self-care behaviors: (1) being active, physical activity; (2) eating; (3) medication taking; (4) monitoring of blood glucose; (5) problem solving, especially for blood glucose highs and lows, and sick days; (6) reducing risks of diabetes complication; and (7) living with diabetes, psychosocial adaptation. The AADE developed a form, intended to document the attainment of goals in these seven areas, called the AADE7™ Impact.[63] The form is to be used for outcome measures for diabetes education programs that involve goal setting.

Each self-care area on the AADE7™ Form includes suggested self-care behaviors as goals for that area. The sheet also contains a follow-up section that identifies a time frame of follow-up and an outcome measure which allows the diabetes educator to rate the completion of goal on a scale of one to ten. The last section of the goal setting sheet includes a subjective evaluation of the goal by the educator, specifying whether the patient achieved, continued, or modified their goal. Currently, the use of the AADE7™ goal sheet has not been evaluated for diabetes educators in the U.S.

Goal Attainment Scaling (GAS) is a method to measure goal outcomes by gauging movement to or away from a targeted goal.[64] While GAS has been researched in varied healthcare settings; the approach has not been evaluated in diabetes management.[65,66,67] In an example developed for clinical rehabilitation such as stroke rehabilitation by Stokes,[68] the provider interviews the patient to identify problem areas in rehabilitation then mutually establishes goals with the patient in priority areas with a set date for follow-up. Expected outcomes are developed for each goal and are subsequently rated by the provider or team of providers (-2 = much worse than expected, -1, 0, +1, +2 = much better than expected). Expected outcomes are encouraged to be both observable and objective. On the appointed follow-up date, providers evaluate and rate the outcome for the patient. Once the scores for each goal are summed together, a score of zero indicates that the goals have been completed as expected.[68] Future research is needed to test the adaptability of the GAS program to diabetes education settings.

The Provider's Role in Patient Diabetes Self-Management Education

There are models of diabetes patient care that identify significant roles for the health care provider. The diabetes treatment approach has transitioned from acute care, where the symptoms of diabetes are treated as they arise, to the Public Health Model, where treatment includes patient education to prevent diabetes symptoms.[69] Research has tested patient self-management programs using the Chronic Care Model in which the patients and providers are partners in managing chronic diseases, including type 2 diabetes.[52,53,70] In the Chronic Care Model, the provider teaches management skills to the patient for chronic disease self-management.[52,70] Lorig et al.[54] have further demonstrated that patient self-management education may be successfully provided by trained laymen.

Another related model of patient care, The Empowerment Model, postulates that the provider should take a supportive rather than authoritative role in the patient's education.[71] In the Empowerment model, patients manage most of their own diabetes health care and providers enhance the patient's self-care behaviors by supporting the patient's efforts.[40] It is critical to have the provider recognize that it is the patient's responsibility to manage their disease;[40] this attitude underscores the role of the provider as a partner with the patient in managing the patient's disease. When the patient is setting goals, the provider takes a collaborative stance and sets goals with the patient instead of assigning goals to the patient, in effect empowering the patient to take charge of managing their disease.[69] Further understanding of the role of the provider will help clarify the elements of goal setting that link to improved patient outcomes and provide more evidence to define self-management education protocols.

Aside from the provider roles proposed in health care models, Funnell et al.[72] stress the importance of collaboration between the entire health care team to ensure that patients receive consistent reinforcement and support for their self-management goals. Through collaboration and teamwork, the provider may promote self-efficacy of the patient and improve patient outcomes in diabetes self-management.

With the increasing prominence of goal setting in Diabetes Self-Management Education and the expanding role of diabetes educators in facilitating patient-driven behavior change, there is a need to assess the current goal setting practices of diabetes educators during diabetes education. Such an investigation can help identify best practices for patient education and counseling, including strategies, educational tools, documentation, and outcome measures of goal setting. This information may also point to

additional needs of diabetes educators for supporting diabetes patient care. The role of the diabetes educator in supporting dietary goals is a key starting point, as diet is a cornerstone of diabetes self-management.

Study Objectives

A survey of diabetes educators and their goal setting education practices was designed to meet the following objectives: (1) to identify approaches to goal setting education used by diabetes educators with type 2 patients, including educational or counseling approaches; (2) to determine how diabetes educators evaluate their patients' readiness to make dietary changes for diabetes control during goal setting education; (3) to estimate the type and frequency of patients' dietary goals that diabetes educators see in their practice; and (4) to assess educators' use of outcomes measures for dietary goals.

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GOAL SETTING EDUCATION AND COUNSELING PRACTICES OF DIABETES EDUCATORS

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ABSTRACT

Purpose

Goal setting education is a well recognized approach to help diabetes patients acquire diabetes self-management skills, yet specific education practices are understudied. Objectives were to identify assessment, education and counseling practices, instructional tools, and patient follow-up processes, with an emphasis on dietary self-management.

Methods

Goal setting education practices with type 2 patients for diabetes self-management (DSM) were assessed by questionnaire with 179 diabetes educators (DE) from the 2008 American Association of Diabetes Educators membership listing.

Results

Many DE (76%) reported that most or all patients set healthy eating goals. Patterns of practices were characterized through principal components factor analysis of sets of responses and appeared to represent a theme of patient-centered approaches. Factor patterns for the frequency of information collected from the patient for the first diabetes education session showed that educators either focused on patients' "Self-management practices" (exercise and dietary practices, knowledge, and social impacts of diabetes) or "Issues with learning about self-management", which represented information to understand patient learning style and motivation for managing their diabetes. Most DE documented patients' goals (93%) and also had patients write down goals (67%). Follow-up visits were conducted by 90% of DE, averaged 2.8 visits, and were initiated on average 1.4 months after initial diabetes education.

Conclusions

Most educators reported practices which were largely patient centered as promoted by the ADA and models of chronic disease management.

INTRODUCTION

Goal setting is a recognized approach to diabetes patient self-management and self-management education within the American Diabetes Association (ADA);[1] however, goal setting practices in diabetes education remain understudied. Goal setting in diabetes education is the process of establishing new behaviors that promote glycemic control in people with diabetes.[2-4] The practice of goal setting education has not been standardized for diabetes education programs, and actual practices used by diabetes educators to assist patients with self-management have not been identified.

Models of diabetes care suggest a variety of roles for the provider during the goal setting process. In the Chronic Care Model, patients and providers are partners in managing chronic diseases, including type 2 diabetes.[5-7] An important component is that the provider teaches self-management skills and facilitates the patient's use of goal setting for long-term chronic disease self-management.[6,7] A related model of patient care called The Empowerment Model postulates that the provider should take a supportive rather than authoritative role in the patient's education.[8] In the Empowerment model, patients manage most of their own diabetes health care and providers enhance the patient's self-care behaviors by supporting the patient's efforts.[9] When the patient is setting goals, the provider takes a collaborative stance and sets goals with the patient instead of assigning goals to the patient, in effect empowering the patient to take charge of managing their disease.[10] It is critical to have the provider recognize that it is the

patient's responsibility to manage their disease;[9] this attitude underscores the role of the provider as a partner with the patient in managing the patient's disease. Aside from the provider-patient interactions proposed in these health care models, Funnell et al.[11] also stresses the importance of collaboration between members of the health care team to ensure that patients receive consistent reinforcement and support for their self-management goals. Further understanding of the role of the provider will help clarify the elements of goal setting that link to improved patient outcomes and provide more evidence to define self-management education protocols.

Recent reviews of the goal setting literature[12,13] suggest that certain goal setting components are related to goal attainment and therefore behavior change. For example, proximal goals (short term and action oriented) are more effective than distal (long-term) ones.[12,13] The patient's self-efficacy (confidence in one's ability to perform a task) is intertwined with goal setting and facilitates the capacity of the patient to set achievable goals.[12,13] Feedback and reinforcement (e.g. rewards) are components that can be used to help move the patient towards the achievement of the goal.[12,13] Investigations of goal setting in primary care and other settings indicate many potential elements and steps that require testing for specific application to diabetes. Protocols are needed to support optimal goal setting within diabetes education.

Studies in diabetes education have used a goal setting approach, yet have not used similar methods or connected specific aspects of goal setting with patient outcomes. Approaches have included use of visual aids displaying goals, computer-based programs, and multi-staged care with patient group support. For example, Levetan et al.[14] studied the effects of using posters with patients that displayed HbA1c results, patient goals, and

steps for the patients to complete their goals. A six month follow-up showed that mean HbA1c for intervention patients improved significantly compared to the control group ($p < 0.05$).[14] Other research used an internet site designed to supplement diabetes education.[15] The internet site was a shared interface for use by both patient and provider, where patients were offered information about their treatment and goals. Intervention participants showed more improvement in mean HbA1c compared to the control group ($p < 0.001$). The D-SMART (Diabetes Self-management Assessment Report Tool), an electronic system for patients to identify goals, has been used as an initial step prior to final goal setting with the educator.[16] Results showed that in the follow-up meeting with the educator, more patients indicated interest in setting goals than was reported from the D-SMART assessment, suggesting that the electronic step has the potential to encourage both initial and follow-up goal setting commitment. To enhance goal setting in face-to-face care, Langford et al,[16] designed a multi-stage care process starting with an individual appointment with a trained medical assistant to collect clinical assessment data and initiate discussion of goal setting with the patient.[16] Follow-up with the provider allowed focused attention to specific goal setting, while small group patient meetings and larger group visits reinforced goal setting.[16] While results of these studies propose useful educational approaches and showed favorable results towards goal setting in diabetes education, the educational component(s) of goal setting that led to clinical improvements in diabetes control are not known.

In a review of thirteen nutrition education studies that incorporated goal setting, Cullen et al.[4] utilized a goal setting model and revealed some insights into goal setting approaches for effective nutrition behavior change. Studies were reviewed in the context

of a four step goal setting model. The model represents a feedback process that begins with recognition of the problem (step 1),[17-20] followed by setting a goal (Step 2),[19,21-29] then attempting a goal and self-monitoring (Step 3),[19-21,24-28] and concludes with self-rewarding for attaining the goal (Step 4).[20] The steps may then be repeated as necessary to complete the goal.[4] As an example, Baron and Waters[26] studied goal setting in a weight loss intervention. All participants received general nutrition education for weight loss, but the participants lost more weight if they set caloric intake goals.[26] Howard-Pitney et al.[27] tested a five lesson general nutrition education program against the twenty month extensive Stanford Nutrition Action Program (SNAP) that consisted of 25% goal setting education during each lesson. Results showed that participants receiving SNAP education had greater reductions in fat intake and greater self-efficacy when compared to the general nutrition program.[27] However, these steps were tested for individuals without chronic illnesses who were trying to improve nutrition or lose weight; further research is needed to adapt these steps for diabetes education.

Diabetes self-management education standards address numerous self-care behaviors to which goal setting can potentially apply. The American Association of Diabetes Educators (AADE) has identified seven areas of diabetes self-care behaviors (AADE7™) that may be used when addressing goals for diabetes self-management: (1) physical activity; (2) eating; (3) medication taking; (4) monitoring of blood glucose; (5) problem solving; (6) reducing risks of diabetes complication; and (7) living with diabetes, psychosocial adaptation.[30] A goal setting form was designed based on the AADE7™ for use in diabetes education programs to aid diabetes educators during patient goal setting.[31] This form lists each self-care behavior and specifies several possible goals

the patient may work on. Other components include a confidence scale where patients describe their level of confidence in their ability to complete the goal and follow-up with a goal completion scale. Finally, the patient's goal and action plan may be reviewed by the provider.[30] At the present time the use of the AADE7™ goal sheet by diabetes educators has not been assessed. The process of goal setting in diabetes education for all self-care behaviors needs further research.

As a related issue, there is a need for standard approaches to documenting and measuring patient experiences with goals, or goal attainment. Goal attainment or outcomes in selected health care areas have been measured using Goal Attainment Scaling (GAS) in which there are levels of patient outcomes and numbers assigned to those levels (-2 = much worse than expected, -1, 0, +1, +2 = much better than expected).[30] Use of this goal attainment method includes a goal setting education approach and requires follow-up with the patient. When setting the goal, the provider and patient agree upon expected outcomes of the goal. Expected outcomes are developed to be both objective and observable. The actual goal outcome may then be compared to the expected goal outcome for measurement of goal completion. Intervention studies utilizing the GAS approach have shown favorable outcomes when studied in a variety of healthcare settings, but the approach has not been evaluated in diabetes self-management.[33-35]

Goal setting has increasing prominence in diabetes self-management education and diabetes educators have an expanding role in facilitating patient-driven behavior change. This underscores the need to assess the current goal setting practices of diabetes educators during diabetes education. Such an investigation can help identify best

practices for patient education and counseling, including strategies, educational tools, documentation, and outcome measures of goal setting. This information may also point to additional needs of diabetes educators for supporting effective diabetes education and patient care. The role of the diabetes educator in supporting dietary goals is a key starting point, as diet is a cornerstone of diabetes self-management.

The following objectives were developed for this study of diabetes education practices: (1) to identify approaches to goal setting education used by diabetes educators with type 2 patients, including educational or counseling approaches; (2) to determine how diabetes educators evaluate their patients' readiness to make dietary changes for diabetes control during goal setting education; (3) to estimate the type and frequency of patients' dietary goals that diabetes educators observe in their practice; and (4) to assess educators' use of outcomes measures for dietary goals.

METHODS

A mixed methods study was conducted to assess the goal setting education, counseling, and evaluation methods used by diabetes educators with type 2 diabetes patients. A preliminary study using the individual in-depth interview (qualitative method) was conducted to identify key domains of diabetes goal setting education practice and patient evaluation. Preliminary data were subsequently used to design a survey questionnaire (quantitative method). The survey was mailed to a national sample of diabetes educators (n=400) using a standard survey protocol. This study was approved by the Washington State University (WSU) Institutional Review Board (IRB).

Preliminary Study

Sampling

Ten diabetes educators were recruited as a convenience sample for the individual in-depth interviews: eight diabetes educators were recruited through a website by the American Diabetes Association (ADA) Recognized Diabetes Education Centers for Idaho,[36] and two were recruited from diabetes education sites in Alaska. An effort was made to recruit diabetes educators with diverse certifications and from varied workplace settings. The ADA website for Idaho provided participants' name, certifications, agency identification, and contact information. Other site information was found on the respective agency website. If demographic information was unavailable, information was collected from the respondent during the interview. Respondents were given informed consent by e-mail and responded by email to schedule an appointment for the in-depth interview. The sample included two persons with RN, CDE certification, three with RD, CDE certification, two with the RD, and three with RD, LD, CDE certification.

In-depth Interview Schedule

The interview schedule (Appendix A) was designed to identify goal setting education methods used by diabetes educators with type 2 patients, including patient assessment (Q1-2) and educational or counseling approaches (Q7-10). Additional questions probed how diabetes educators determine if their patients are ready to make diabetes changes for better diabetes control during goal setting education (Q3-6). Other questions asked respondents to discuss dietary goals and dietary goal setting sessions, including strategies used when patients do not have satisfactory outcomes (Q11-13). The

final questions assessed the educators' use of outcome measures for goals and patient follow-up regarding goals (Q14-16). The interview schedule was peer reviewed by experts in diabetes education, community nutrition, and survey development.

Cognitive Pre-Testing

The in-depth interview schedule was pre-tested using the cognitive pretesting technique.[37,38] This step determines whether the respondents interpret and respond to the questions as the investigators intended. Participants were recruited initially by e-mail. Email contacts were acquired from professional websites or personal referrals from diabetes educators. Interested educators were given informed consent by telephone and an in-depth interview by telephone was scheduled. Pre-test participants included one person with RD, CDE credentials and two with MS, RD, CDE credentials. Seven open-ended questions, including probes, were used for the pre-test interview schedule (Appendix B). To ensure that the terminology used with goal setting was appropriate, respondents were asked to describe what "goals", "goal setting sessions", and "goal attainment" meant to them. Pretest respondents were asked to recall their thoughts and impressions of all in-depth interview questions, and if they could recommend any revisions. Finally, respondents were asked to describe their overall impression of the interview schedule and to estimate the time it would take to complete the interview.

Overall results of the cognitive pretest led to minor revisions. Two questions were added: one asking educators to describe a goal setting session in which a patient set a goal and how the educator brought the goal to implementation with the patient, and the second asking respondents to summarize the typical steps that culminate in the patient setting a goal.

Implementation

In-depth interviews (n=10) were conducted by telephone by the graduate student (CLM). The interviewer noted site characteristics and educator certification on the interview schedule form. Interviews lasted approximately thirty minutes. Interviews were recorded and later transcribed (Appendix C). Detailed findings will be reported elsewhere. A $5 cash gift was later mailed to each respondent with a thank you letter.

Mail Survey

Sampling Frame

A purposive sample of 400 diabetes educators was selected from a national sample of members in the American Association of Diabetes Educators (AADE). The AADE mailing list, which was updated 11/17/08, was purchased from Medical Marketing Service, Inc. The sample was chosen based on state diabetes prevalence using a sampling design reviewed by the WSU Social and Economic Sciences Research Center (SESRC). Two states, Texas and North Carolina, were chosen because they have the highest incidence of diabetes in the U.S. for 2005.[39] Four states with the lowest incidence of diabetes (Alaska, Colorado, North Dakota, and Vermont) were included in the sample.[39] The high incidence states were sampled at 41% of the membership listing. Due to the low number of diabetes educators within the low incidence states, all of the members from those states were included in the sample. State subsample sizes therefore were: Texas (n = 183), North Carolina (n = 101), Alaska (n = 20), Colorado (n = 47), North Dakota (n = 19), and Vermont (n = 30) for a sample of 400.

Survey Questionnaire

A 38-item questionnaire assessed goal setting in diabetes education (Appendix D). The first item asked if the educator had practiced in the last year; if not, the respondent was asked to return the questionnaire. General characteristics of the respondent's practice setting were assessed (3 items). Practice with type 2 patients included general goal setting education (5 items) and dietary goal setting (12 items). Follow-up with type 2 diabetes patients was also included (6 items). Lastly, the survey assessed the educator's practice setting (4-items) and personal characteristics (7 items).

Preliminary study findings were content analyzed[40] to characterize domains of goal setting education practices. The domains of goal setting were: patient assessment, patient education about goal setting (general and diet-related), assessment of patient readiness for dietary goal setting, and patient follow-up related to dietary goals. Questionnaire items were developed for each domain.

For the domain of patient assessment, respondents were asked how often they collect specific information to prepare for their first session with the patient. A list of eight different types of information included the patient's questions about diabetes, knowledge about diabetes, and current diabetes self-management practices (1 = rarely or never, 2 = sometimes, 3 = usually or always). Respondents also identified information they collected to guide the discussion specifically about diet from a list of seven options, including dietary history, dietary preferences, and eating out patterns (circle all that apply).

To assess patient education practices, methods used in general diabetes education were assessed first. Educators indicated the type of diabetes education conducted

(1 = group education, 2 = individual education, or 3 = both). Respondents rated the importance of completing certain steps in the first education session from a list of five steps that included “to begin diabetes education” and “to have the patient set goals” (1 = not important, 2 = somewhat important, and 3 = very important). Respondents were asked if they routinely addressed diet during their sessions with the patient (Yes/No). If not, they were directed to skip to the section of the questionnaire that assessed personal demographics and characteristics of practice setting.

Diabetes education related to dietary self-management for type 2 patients included tools and methods used by diabetes educators to teach meal planning. Educators circled all that applied to them from a list of possible tools such as food models, sample menus, and carb counting. Respondents were then asked to identify which approaches or tools they used to guide the patient to set a specific dietary goal. A list of eight options included “I use the plate method” and “I teach carb counting”. Diabetes educators were also asked how often they use specific strategies with patients who have not been successful with dietary goals (1 = rarely or never, 2 = sometimes, 3 = usually or always). A list of eight possible strategies included “simplify the goal”, “reinforce the patient’s success (es) with him or her”, and “refer the patient to outside resources”.

To assess how educators judge patient readiness to commit to a dietary change, respondents circled all that apply from a list of eight options. The list included,”I use my intuition…”, “I ask the patient if he or she is ready…”, and “I have the patient respond to a scale…”.

An assessment of follow-up with patients began with questions about documentation. Educators indicated if the patients write down their goal (Yes/No), and

which formats their patients use to write their goal (1 = AADE goal sheet, 2 = other goal setting handout or sheet, and 3 = workbook). Respondents indicated whether or not they wrote the goal down for themselves and if yes, which format they used to write the goal (1 = paper copy, 2 = handwritten note in patient's chart, and 3 = electronic copy). Respondents also indicated whether or not they shared the goal with the referring physician (Yes/No). Educators indicated if they were able to follow-up with their type 2 patients regarding their dietary goals (Yes/No). If not, the respondents were directed to skip to the last section of the questionnaire. If yes, they reported average length between initial appointment and follow-up (weeks or months) and the approximate number of follow-ups with new patients. Type of communication used with patients for follow-up was assessed with five options, including "return appointment with patient" and "email from the patient" (circle all applicable). Respondents were asked to indicate whether or not they documented the patient's success with goal setting, such as goal outcomes or attainment (Yes/No). If yes, educators were asked to indicate which methods they used from a list of four responses, including "I use the AADE7™ form".

Diabetes educators were asked several questions about actual goals set by their patients. First, educators were asked to indicate what percentage of their patients set goals or behavior changes of any kind during their sessions (1 = none, 2 =less than 25%, 3 = 25 to 50%, 4 = 51 to 75%, and 5 = more than 75%), then to estimate how many of their patients set goals in the seven categories of self-management as identified by the AADE7™ self-care behaviors (1= none or 0%, 2 = few, 3 = some or 50%, 4 = most, or 5 = all or 100%).[41] Lastly, educators were asked how many of their patients have ever reported trying specific dietary changes, using a 15-item list developed in previous

research;[42] three items in this list were revised slightly as guided by preliminary data. Dietary changes included "reduce portion sizes", "avoid fried foods", and "eat higher fiber foods" (1= none or 0%) 2 = few, 3 = some or 50%, 4 = most, or 5 = all or 100%).

The educator's practice setting was assessed with three items. Respondents indicated whether they conducted diabetes education for in-patient care, out-patient care, or both. Educators also indicated whether they work the majority of the time with a diabetes education team, conduct diabetes education independently, or "other". Additionally, educators also indicated how many different type 2 patients they see in sessions, classes, or consults during a typical month (1 = less than 25, 2 = 25 to 50, 3 = 51 to 75, or 4 = more than 75).

Personal information and education received by educators was assessed at the end of the questionnaire. Information included age, gender, ethnicity, educational credentials, and years of practice in the field of diabetes education. Respondents were asked to indicate if they received training in five areas related to goal setting education, as follows (Yes/No): stages of change, behavior change strategies for diabetes control, motivational interviewing, problem solving techniques, and goal setting education and counseling.

Formatting of the questionnaire followed the principles of the Tailored Design Method.[41] The questionnaire was peer reviewed by experts in diabetes education, behavioral nutrition, and SESRC at WSU. A booklet style questionnaire was used for mailing.

Cognitive Pre-Testing

The survey was pretested using the cognitive pretesting technique.[37,38] Participants were recruited via e-mail. Two e-mail contacts were acquired from the

Oregon Diabetes Educators officer list[44] and two contacts were obtained from the American Dietetic Association "Find a Nutrition Professional Consumer Search".[45] Participants were given informed consent via e-mail, which was also used to schedule an appointment for a telephone interview. Cognitive pretesting participants by credentialing included one RN, CDE; one LD, RD, CDE; one MS, RD, LD; and one LD, CDE.

The cognitive pretest included 38 open ended questions. Probing and think aloud questions were used to elicit participants' interpretations and impressions of the questionnaire. Finally, respondents were asked to describe their overall impressions of the questionnaire and to estimate the time needed to complete the survey.

Pre-test interviews were conducted via telephone by the graduate student (CLM). The interview schedule form included site characteristics and educator certification. Interviews lasted approximately thirty-five minutes. The in-depth interviews were recorded and later transcribed (Appendix D). A $5 cash gift was later mailed to each respondent with a thank you letter. Minor revisions included the addition of "Portion Size Tools" to tools used to teach meal planning.

Questionnaire Implementation

Survey questionnaire implementation followed the Tailored Design Method (TDM),[43] which includes multiple mailings over a seven week period to prompt response. In a departure from the TDM, the final certified mailing was not conducted.

Data Analysis

Data were entered into Microsoft 2007 Excel and analyzed using SAS.[46] Descriptive statistics were used to summarize the data. The chi-square statistic was used to test associations among different diabetes education practices, and between practice

and program characteristics. Kendall's tau b tested correlations among reported practices, patient characteristics, DE characteristics, and educational outcomes. Principal components factor analysis (PCFA) was used to identify factor patterns of response within multiple-item questions, notably education practices that included information collected during the first diabetes education session, importance of completing certain stages during the first education session, and strategies used with patients struggling with dietary goals. PCFA was also run with other multiple-item questions, including reported patient dietary changes for diabetes control, and reported patient goals in diabetes self-management overall. PCFA in this study utilized orthogonal rotation to elicit independent factor patterns, and an eigenvalue cut-off = 1. Factor loadings used for interpretation were $\geq |0.45|$.[47] Factor scores from factor patterns were used in subsequent analyses. The t-test was used to test differences in mean factor scores by program, practice, and DE characteristics. Pearson's r tested correlations among factor scores, and between factor scores and other program and DE characteristics.

RESULTS

Response Rate

A total of 179 usable surveys were received for a return rate of 45%. The states with the lowest incidences of diabetes had variable return rates, as follows: Alaska (55%), Colorado (40%), Vermont (27%), and North Dakota (16%). By contrast, there was an approximate 50% return rate from states with the highest incidences of diabetes, specifically 52% for North Carolina and 46% for Texas. In total, 77% of the sample (n=138) was derived from high prevalence states and 23% (n=41) from low prevalence states. A total of 37 surveys could not be used: 23 respondents had not practiced diabetes

education in the past year; 6 were returned blank; 3 surveys could not be used; 2 surveys were “returned to sender”; and 3 were received late.

Personal Characteristics of Respondents

Personal characteristics of diabetes educators (DE) are summarized in Table 1. Most DE were female (95%), Non-Hispanic White (84%), and 50 – 59 yrs of age (47%). The mean age of DE was 51±9 years. A majority of DE were certified diabetes educators (CDE) (86%), registered nurses (RN) (50%) and/or registered dietitians (RD) (38%). Many respondents had multiple certifications; notably, RN,CDE (30%) and RD,CDE (28%). A majority of educators also received additional training in behavior change strategies for diabetes control (81%), motivational interviewing (76%), problem solving techniques (72%), or goal setting education and counseling (79%) (data not shown).

Characteristics of diabetes educators’ practice and work setting are presented in Table 2. Appointments were approximately evenly distributed between part-time (47%) and full-time (53%). The institutional setting varied, but the majority of DE practiced in out-patient care (91%), and in both individual and group education (67%). Most DE practiced as part of a diabetes education team (58%). Notably, more than one-half (52%) of DE had a caseload of more than 75 type 2 diabetes patients per month.

Reported Characteristics of Patients

Patient characteristics reported by DE are shown in Table 3. There was evidence that DE worked with a diverse ethnic patient population, primarily Non-Hispanic White (88%), Black or African American (67%), and/or Hispanic or Latino (66%). The majority of the patient populations DE work with was reportedly 40 to 59 years of age (66%).

Patient Assessment Practices

Patient assessments conducted by DE to prepare for the first diabetes education session are reported in Table 4. Most educators usually or always asked the patients about their current diabetes self-management practices (91%), questions they have about diabetes (90%), and/or assessed the patient's knowledge about diabetes (86%). Diet and exercise practices were also frequently assessed by many DE. Fewer DE usually or always asked the patient about their motivations for managing diabetes (69%), family, employment, or social impacts of their diabetes (65%), or how the patient likes to learn (50%).

Diabetes educators were asked about information they collect to guide a discussion with the patient about diet. Dietary intake information included diet history (88%) and/or supplement and vitamin intake (60%). Information related to the patient's eating patterns included timing of meals (88%) and/or eating out patterns (79%). Items related to patient attitudes toward diet included dietary preferences (77%) and/or satisfaction with current eating habits (40%). Finally, many DE collected information from the patient about who shops for or prepares the meals (72%) and/or other (unspecified information) (17%). Few DE (11%) did not collect dietary information from the patient.

Patient Education Practices

Table 5 reports the importance to the DE of tasks to finish with patients during the first diabetes education session. A majority of DE reported that it was very important to finish the assessment of the patient (70%) and/or to begin diabetes education (72%). Fewer DE felt that it was very important to introduce diet and/or dietary self-management

(66%) and/or to have the patient set goals (59%). The majority of DE were divided about whether it was very important (43%) or somewhat important (50%) to let the patient guide the meeting.

Diabetes educators were asked about what tools or approaches they used to teach meal planning to patients. The most frequently identified tools were carb counting (82%), educational handouts (80%), portion size tools (measuring cups, bowls, spoons, etc.) (78%), and the plate method (78%). Food models (69%) and sample menus (55%) were also widely used. The least widely used were websites (39%), lab values (36%), conversation map (23%), dietary assessment tool (22%), and the "My Food Plan" series from the International Diabetes Center (21%). One educator marked that he or she did not use any of the approaches or tools listed.

Respondents were also asked to identify approaches or tools they used to guide or help patients to set a specific dietary goal. Many diabetes educators reported letting the patient decide which dietary goal he or she wants to set (59%), and/or teaching carb counting (55%). Some used the plate method (49%), and/or reviewing a dietary self-assessment with patients and using it to identify areas for change (46%). Fewer diabetes educators reported using food models (35%), giving the patient a form with suggested goals to choose from (21%), and/or using the SMART goals process (18%). Others indicated that they used an approach or tool other than those listed (9%). "Other" responses included a goal setting sheet or blank paper (n=3), the patient's eating preferences (n=3), healthy food substitution (n=2), and/or goal simplification (n=2).

It was of interest to test if the same approaches or tools were used for both meal planning and to help the patient set a specific dietary goal. Almost all respondents that

used food models for meal planning also used food models to help the patient set a specific dietary goal (chi-square $p < 0.0001$). Respondents that used carb counting for meal planning were also more likely to use carb counting to help the patient set a goal ($p < 0.0001$). Finally, the respondents that used the plate method for meal planning were also more likely to use that method for helping the patient to set a dietary goal ($p < 0.0001$).

Table 6 displays strategies used by diabetes educators with patients who are struggling to carry out dietary goals. The majority of diabetes educators reported that they usually or always reinforce the patient's success (81%), give the patient support to keep trying to meet his or her goal (75%), and/or discuss the patient's motivations for working on the goal (55%). Fewer diabetes educators reported that they usually or always simplify the goal (46%), reduce roadblocks or obstacles to the goal (40%), and/or supply the patient with a food plan (33%). The least frequently used strategies were to refer the patient to outside resources or to identify a different goal.

DE were also asked about documentation of patient goals from educational sessions. The majority of respondents (63%) reported that their patients write down their dietary goals. Of these, 85% reported using a goal setting handout or sheet. Fewer diabetes educators reported using the AADE goal sheet (18%) or a workbook (4%). Respondents also reported how they themselves documented patients' goals. Of the respondents who document their patients' goals (85%), 54% put a paper copy of a goal form or sheet in the patient's file, 48% placed an entry in a computerized system, and 37% made a hand written note in the patient's file. The majority of respondents (80%) also shared a copy of the patient's goal with the referring physician.

Patient Follow-up Practices

Follow-up with patients relative to dietary goals was assessed in several ways. The majority (84%) of diabetes educator respondents were "able to follow-up with" their type 2 diabetes patients about dietary goals. The mean time elapsed between the first diabetes education session and the follow-up session was 1.4±1.4 months. The mean number of follow-up sessions for each new patient was 2.8±1.7. The most widely reported modes of communication used for follow-up sessions with patients were a return appointment with the patient (69%) or a telephone call (42%). Fewer respondents used e-mail (18%) or mailed inquiry (11%). Few educators did not do a separate follow-up about dietary goals (9%).

Associations of Assessment, Education, and Follow-Up Practices with Diabetes Educator Credentials

Responses to assessment, education, and selected follow-up practices were tested for associations with DE credentials, as the training of DE may influence their approaches to diabetes education. There were no significant associations between diabetes educator certification and information collected for the first diabetes education session. During the first diabetes education session, CDE were more likely to report that letting the patient guide the meeting was very important (chi-square $p < 0.05$). When collecting information from patients for a discussion about diet, certified diabetes educators (CDE) were more likely than others to collect information about their patients' eating out patterns ($p < 0.05$). Additionally, when helping patients set a specific dietary goal, the CDE were more likely than others to let the patient decide which dietary goal he or she wants to work on ($p < 0.05$). When patients are struggling with dietary goals, CDE

were also more likely to usually or always simplify the goal ($p < 0.05$) or discuss the patient's motivations for the goal ($p < 0.05$).

Differences were found in practices with educators having nursing credentials (RN or NP) versus others. When collecting information to guide a discussion about diet, RN were less likely to collect information about the patient's timing of meals (chi-square $p < 0.05$). When patients are struggling with dietary goals, the RN less frequently identified a different goal for patients ($p < 0.05$). To teach meal planning, RN were less likely to use websites ($p < 0.05$) and nurse practitioners (NP) were more likely to use lab values ($p < 0.05$).

Registered Dietitians (RD) were more likely to demonstrate certain practices, as well. When guiding or helping a patient set a specific dietary goal, RD were more likely to use the SMART goals process (chi-square $p < 0.05$). However, most RD overall (73%) did not use the SMART goals process. To teach meal planning, RD were more likely than others to use food models ($p < 0.05$) or websites ($p < 0.05$).

Certification was not significantly associated with follow-up practices, as measured by patient actions to document a goal. Other follow-up practice variables, including time since diabetes education for follow-up and number of follow-ups, were not tested for relationship with educator certification, as these practice measures may be controlled more by the diabetes education program and/or patients' insurance plans.

Principal Components Factor Analysis of Selected Diabetes Education Practices

Principal components factor analysis (PCFA) was conducted with selected assessment and education practice variables to identify factor patterns or "patterns of practice" in the data. PCFA reveals clusters of behaviors that provide a more accurate

representation of complex diabetes education practice, and extracts the maximum variance for each pattern from the set of variables tested. When a PCFA was run with frequency responses to collecting information from the patient for the first diabetes education session, two factors emerged accounting for 57% variance of the original data set (Table 7). The first factor pattern, "Self-management practices", reflects the practice of assessing diverse self-management issues ranging from exercise and dietary habits to the patient's knowledge about diabetes and social impacts. In contrast, the second factor pattern, "Issues with learning about self-management", included assessing patients' motivation for managing their diabetes and how they like to learn. The first factor pattern has an emphasis on collecting information about patient actions, while the second factor pattern focuses on patient attitudes.

Factor scores from factor patterns of information collected from the patient for the first diabetes education session were tested for correlation with selected personal, patient, and site characteristics, as these variables may relate to how the DE conduct their practice. No significant correlations were found with factor scores and educators' age or years of practice. Factor scores for factor pattern one, "Self-management practices", were positively correlated with increasing patient caseload per month (Kendall's tau $b = 0.15$, $p < 0.05$), but not with the age range of the majority of the educator's patients. Factor scores were also tested for association with whether or not the educator worked in an ADA recognized program. Respondents from ADA recognized programs more frequently collected information about "Issues with learning about self-management" ($t = 2.23$, $df = 162$, $p < 0.05$).

Other patterns of practice that were explored using a PCFA included data on reported importance of finishing tasks during the first diabetes education session (Table 8). Two factor patterns were identified, representing 57% of the variance in the original data set. The first factor, "To address core self-management education needs", represents educators who felt it was most important to start diabetes education and have the patient set goals. The second factor, "To have a patient guided session", represents educators who felt it was most important to let the patient guide the first diabetes education session. There were no significant correlations between factor scores from these patterns and the diabetes educator's age or years of diabetes education practice. In addition, there were no significant correlations between factor scores and reported patient characteristics. DE from ADA recognized programs did not differ from others in mean factor scores.

A PCFA was conducted with responses to how frequently educators used selected strategies with patients who struggle with dietary goals (Table 9). Three factors emerged accounting for 55% of the variance in the original data set. The first factor, "Try a new approach", reflects tactics that deviate from the dietary goal with which the patient is struggling. The second factor, "Make the goal easier to attain", represents strategies to use with the patient's present dietary goal, such as simplifying the goal. The third factor, "Reinforce success and support the patient", emphasizes taking a positive attitude with the patient rather than any specific task. Factor pattern one expresses the strategy of abandoning the goal(s) and trying something else, whereas factor patterns two and three are approaches to encourage patients to continue working on current dietary goals.

Factor scores for these patterns of strategies were tested for correlations with other variables. There were no significant correlations between factor scores and diabetes educator characteristics. Factor pattern three, "Reinforce successes and support the patient", was practiced more frequently by DE with higher patient caseloads (tau $b = 0.13$, $p < 0.05$). DE from ADA recognized programs more often implemented "Try a new approach" with patients who are struggling with their dietary goals ($t = 2.49$, $df = 123$, $p < 0.05$).

Factor scores from PCFA patterns of assessment and education practices were tested for inter-correlations. Educators who more frequently collected information related to "Issues with learning about diabetes self-management" during the first diabetes education session also felt that it was more important "To have a patient guided session" for the first diabetes education session (Pearson's $r = 0.25$, $p < 0.01$) and more frequently used the strategy pattern, "Reinforce success and support the patient" with patients struggling to carry out their dietary goals ($r = 0.18$, $p < 0.05$). Finally, those that rated "To have a patient guided session" as most important to finish during the first diabetes education session tended less frequently to "Try a new approach" when handling patients who are struggling with dietary goals ($r = -0.30$, $p < 0.001$).

Ways That Diabetes Educators Judge Patient Readiness to Commit to a Dietary Change

Diabetes educators were asked the ways they use to judge whether or not the patient was ready to commit to a dietary change (Table 10). Most educators ask the patients what dietary change he or she is ready to make (72%). More than one-half of the educators either ask the patients to show his or her understanding (58%) or ask if the

patient is ready to make a change (57%). Fewer educators use their intuition, Stages of Change, and/or have the patient respond to a numeric scale. A smaller percentage of educators wait for the patient to say whether he or she wants to work on dietary changes (11%).

Ways educators reportedly use to judge patient readiness to commit to a dietary goal were tested for associations with selected variables. Related to credentials, RD were more likely to ask what dietary change patients were willing to make (chi-square, $p < 0.05$). Diabetes educators with more years of experience were less likely to use Stages of Change ($t = -2.35$, $df = 165$, $p < 0.05$). Tests of association were used to determine if DE who use certain approaches to judge patient readiness to commit to a dietary change have other characteristics of practice or training. There was no significant association between the practice of asking patients if they are ready to make a dietary change and the practice of asking them what specific dietary change they are ready to make. The educators that reportedly use Stages of Change to judge a patient's readiness to commit to a dietary change were also more likely to have had training in Stages of Change (SOC) (chi-square $p < 0.01$). However, of the 139 educators who reported receiving SOC training; only 49 reported using it as a way to judge patient readiness to commit to a dietary change. No other associations with training were found. There were also no significant relationships with patient caseload.

Reported Goal Setting in Diabetes Self-Management

Diabetes educators were asked to estimate the proportion of patients within their practice that set goals or behavior changes for diabetes self-management. Most educators (52%) reported that more than 75% of their patients set goals. Fewer educators reported

that 51% to 75% of their patients (23%), 25% to 50% of their patients (14%) or less than 25% of their patients (9%) set goals. Only 2% of educators reported that none of their patients set goals. Overall, most educators stated that at least one-half or more of their patients set goals.

Respondents were asked to report the proportion of patients who set different types of self-management goals (Table 11). Many educators reported that most or all of their patients set goals for healthy eating (75%) monitoring blood glucose (66%), being active (53%), or taking medication (51%). A minority of educators reported that most or all of their patients set goals for reducing risks (28%), healthy coping (19%), and problem solving (16%).

The percentage of patients that reportedly set goals was tested for correlations with selected practice variables. Educators with a greater percentage of patients that set goals also reported a greater patient caseload (tau $b = 0.17$, $p < 0.01$) and greater importance in having the patient set goals during the first diabetes education session (tau $b = 0.24$, $p < 0.001$). The proportion of patients setting goals was not significantly correlated with the reported importance of beginning diabetes education or introducing diet and/or dietary self-management during the first diabetes education session. Finally, there were no statistically significant relationships between how many patients set goals and patient follow-up practices.

Variables assessing the proportion of patients setting goals in different areas of self-management were tested for correlation with selected practice variables. Having a greater percentage of patients who set healthy eating goals correlated with a greater patient caseload per month (tau $b = 0.13$, $p < 0.05$) and increased importance of having

the patient set goals during the first diabetes education session (tau $b = 0.18$, $p < 0.05$). Having more patients who set goals for monitoring blood glucose correlated with a greater patient caseload per month (tau $b = 0.15$, $p < 0.05$) and reported greater importance of beginning diabetes education during the first diabetes education session (tau $b = 0.15$, $p < 0.05$). A greater number of patient follow-ups was correlated with having a greater percentage of patients setting goals for taking medication (tau $b = 0.18$, $p < 0.01$). Additionally, having a greater percentage of patients setting goals for reducing risks was associated with greater reported importance in having the patient set goals during the first diabetes education session (tau $b = 0.17$, $p < 0.05$). There were no statistically significant associations of practice variables with proportion of patients setting goals set for being active, problem solving, or healthy coping.

A PCFA was conducted to identify patterns of types of self-management goals reportedly set by type 2 patients (Table 12). Two patterns were identified that represented 73% of the total original variance (Table 12). The first factor, "Goal setting for daily coping and risk reduction skills", represents lifestyle efforts by patients such as healthy coping, as well as more specific actions such as monitoring blood glucose. The second factor, "Goal setting for diet and exercise", specified two action goals: healthy eating and being active.

Factor scores for these patterns of self-management goals were tested for correlations with patient, practice, and educator characteristics. A greater proportion of patients doing "Goal setting for daily coping and risk reduction skills" was correlated with a greater number of follow-up visits or sessions (tau $b = 0.13$, $p < 0.05$). Educators having more patients doing "Goal setting for diet and exercise" tended to have a greater

percentage of patients setting goals overall (tau $b = 0.31$, $p < 0.0001$). Patient caseload per month and patient age did not significantly correlate with factor scores. There also were no significant correlations between factor scores and reported importance to have patient set goals during the first diabetes education session. Additionally, time between the first education session and follow-up did not significantly correlate with factor scores. Finally, educator certification showed no significant differences in factor scores for patterns of goals set by patients.

Reported Dietary Changes Attempted by Type 2 Patients

Diabetes educators were asked to estimate how many of their patients have ever reported trying specific dietary goals (Table 13). The majority of educators reported that most or all of their patients tried to avoid drinks high in sugar (71%) and/or reduce portion sizes (70%). Approximately one-half of the educators reported that most or all of their patients eat more vegetable or greens (53%) and/or grill meats instead of frying them (50%). Some educators reported that most or all of their patients attempted to eat low-sugar or sugar free foods (49%). Other goals for most or all patients included avoid fried foods (49%), cook with or use less fat or oil (46%), cook with or use a different type of fat or oil (45%), eat leaner meats (42%), and/or eat fewer fast food meals (41%). Fewer educators reported that most or all of their patients attempted to eat low fat foods (42%) and/or eat less grains and starches (36%). A few educators reported that most or all of their patients tried to eat higher fiber foods (34%) and/or eat more fresh or frozen fruits (34%). Reported patient dietary goals appeared related most prominently to glucose control (e.g., avoid high sugar drinks, reduce portion sizes), then cardiovascular disease risk reduction (reduce or moderate fat, eat more vegetables and higher fiber foods).

A principal components factor analysis (PCFA) was conducted to identify patterns of dietary change reportedly tried by type 2 patients. Three patterns emerged that accounted for 58% of the original variance (Table 14). The first factor pattern, "Lowering fat", may reflect dietary efforts toward cardiovascular risk reduction and focuses on changes in cooking oil, cooking method (i.e. grilling instead of frying), and food substitutions (e.g. low fat foods and/or leaner meats). The second factor pattern, "Eating more vegetables, fruits, and higher fiber foods", may also reflect dietary modifications related to reducing CVD risk, potentially emphasizing the role of fiber. These two patterns of dietary changes may also contribute to glucose and weight control. Finally, the third factor pattern, "Lowering carbohydrate intake", may be interpreted as changes for glucose control by eating fewer grains and starches, and other dietary actions.

Factor scores from these factor patterns were tested for relationships with reported patient characteristics. Factor scores were not significantly related to patient caseload per month. However, having more patients "Eating more vegetables, fruits, and higher fiber foods" correlated with having a greater percentage of patients who set goals overall (tau b = 0.13, $p < 0.05$). Educators with a greater percentage of patients "Lowering fat" also tended to have more of their patients set goals in healthy eating (tau $b = 0.21$, $p < 0.001$). Finally, dietary factor scores were not significantly related to patient age range.

Factor scores were also tested for relationships with selected practice variables. Educators who tended to have more patients "Lowering carbohydrate intake" were also more likely to use food models ($t = -2.40$, $df = 151$, $p < 0.05$) or the plate method ($t = -2.12$, $df = 151$, $p < 0.05$) to help patients set a specific dietary goal. Having more

patients attempt "Lowering carbohydrate intake" correlated with an increasing number of follow-ups with patients who set dietary goals (tau $b = 0.12$, $p < 0.05$), but not to length of time between initial diabetes education session and patient follow-up.

Goal Outcome Measures and Documentation for Dietary Goals

Most educators (85%) documented their patients' dietary goals from the diabetes education session for their own use. When documenting the goal, most educators put a copy of the goal documentation form in the patient's file (54%) and/or left an entry in a computerized system (47%). Fewer educators reported leaving a hand written notation in the patient's file (37%). Among the educators who reported documenting goals, many (80%) reported sharing a copy of the goal with the referring physician.

Most diabetes educators (76%) reported documenting the patient's success with dietary goal setting (goal outcomes) as part of patient follow-up. Of those educators, most described the goal outcome using the educator's own words in the patient's file or an electronic record (54%). Some respondents (29%) reported using percentages (such as 0-25%, 26-50%) and/or a scale or a defined set of categories (29%). Fewer educators reported using the AADE7™ form (12%).

Documentation practices for dietary goals were evaluated for association with ADA recognized programs. Educators working in an ADA recognized program were less likely to describe a patient's dietary goal outcome in the educator's own words (chi-square, $p < 0.0001$), but more likely to use a percentages scale ($p < 0.05$), a scale or a defined set of categories ($p < 0.01$), or the AADE7™ form ($p < 0.01$). In summary, educators from ADA recognized programs appeared more likely than others to use more

structured and quantitative methods for describing the patient's level of success with dietary goals.

Documentation of dietary goal outcomes was tested for relationships with diabetes educator certification. Certified diabetes educators were less likely to describe the patients' level of success with dietary goals in their own words (chi-square $p < 0.01$) and were more likely to use percentages ($p < 0.05$).

Documentation practices were also tested for associations with measures related to having the patient write down the goal (during education) and the practice of sharing goals with the referring physician. Educators that described the patient's level of success with goals in their own words for the patient's file or electronic record were less likely to have patients write down their dietary goal (chi-square $p < 0.01$). However, educators that have their patients write down their dietary goal tended to use percentages ($p < 0.05$) or a scale or defined set of categories ($p < 0.001$) when documenting the goal for themselves. Diabetes educators who used percentages to measure the patient's level of success with goals were also more likely to share a copy with the referring physician ($p < 0.05$). In summary, when educators reported documentation that used more quantitative formats, they also appeared more likely to have the patient write down the goal and to share the goal with the referring physician.

Documentation practices were tested for relationships with diabetes educator training and patient caseload per month. Educators that used the AADE7™ form were more likely to have received training in motivational interviewing (chi-square $p < 0.05$) and/or problem solving ($p < 0.05$). Goal outcome measures were not significantly related to patient caseload per month.

DISCUSSION

Respondent characteristics were compared to those from available diabetes educator (DE) samples: a 2009 AADE membership listing of the same type used in this study,[48] the AADE 2008 National Practice Survey (NPS) of the membership,[49] the combined reports of the 2005 and 2006 NPS,[50] and a survey of diabetes educators (sampled from the full AADE membership), physicians, and patients exploring access to diabetes self-management education ('DSME access study').[51] The return rate for the current survey study (45%, 179 respondents) was higher than that for the AADE 2008 National Practice Survey (NPS) of the membership (26%, 2447 respondents).[49] In the current survey, there were more respondents who were Registered Nurses (RN) (50%) compared to the 2009 AADE listing (46%),[48] the NPS from 2008 (40%)[49], 2006 (53%) and 2005 (45%)[50] and the educator sample from the DSME access study (65%).[51] There was an over-representation of Registered Dietitians (RD) in the present survey (38%) compared to the 2009 AADE listing (29%),[48] the three years of NPS data (30%)[49,50] and the educator sample from the DSME access survey (29%).[51] The percentage of Certified Diabetes Educators (CDE) was high as expected (86%), similar to the 80% CDE respondents in the NPS from 2005 to 2008.[49,50] Fewer respondents were full-time appointees (53%) compared to the 2008 NPS sample (62%).[49] In summary, our sample represented a predominantly CDE certified group that had a higher representation of RD and RN compared to the 2009 AADE listing.

Patterns of Practice in Diabetes Education

Certain patterns of practice and their apparent interrelationships reflect a patient-centered approach to diabetes education which is supported by the ADA standards. This

approach was reflected in both reported assessment and education/counseling practices. Examples are seen with the two factor patterns that relate to the frequency of collecting information in preparation for the first education session. The first practice (factor) pattern, "Issues with learning about self-management", expressed a more frequent effort to understand patient motivations for managing diabetes and their learning styles with self-management. Educators with higher factor scores from this factor pattern also reported that it was more important to them "To have a patient guided session". These educators may emphasize establishing rapport, a recognized step in the collaborative care process.[52] Educators who felt it was more important "To have a patient guided session" were also more likely to "Reinforce success and support the patient", a practice upheld by ADA standard no. 9 (ongoing diabetes self-management support).[54] The other factor pattern from the analysis related to collecting information for the first education session, "Self-management practices", appears to represent a patient-centered approach in a different way. When the diabetes educator assesses the resources the patient has (knowledge) and the supports and limits for self-management (family, employment or social impacts), then the educator can better determine what concerns the patient has[54] and what the motivation for adherence will likely be.[55] The patient's perceived ability to carry out the regimen[52] and the potential shifts in the patient's relationships and roles, both personally and professionally,[46] help determine the direction for self-management. All of these factor patterns represent patient driven practices supported by the ADA standard no. 6, which stresses personalized strategies when educating the patient.[51] The standard also specifies a need for a written curriculum designed in part to address psychosocial issues and concerns of the patient. Many reported interactions between

patient and educator are consistent with education sessions that are strongly guided by the patient.

Our results suggested that there are different approaches for early diabetes education, and also potentially for the introduction of diet into self-management education (Table 8: factor patterns for the importance of finishing tasks in the first session). Some educators encourage goal setting early on (factor one); overall results of the study suggest that they would utilize patient centered approaches. Table 8 results also imply that one group of educators tend to introduce diet in the first session whereas the other group does not. While diet is considered the cornerstone of diabetes self-management education,[57] dietary education is complex and may not be implemented by all educators during the first education session with type 2 patients.

Certain educational models support patient centered practices. For example, The Chronic Care Model emphasizes a partnership between the patient and provider when managing type 2 diabetes.[53,58,59] Additionally, the Empowerment Model encourages providers to support the patient's efforts for diabetes self-management, since the patient is presumed to manage most of his or her own care.[56] Overall, the recommended patient centered approach appears to be represented in patterns of practice in this study.

Patient caseload appeared related to certain reported patterns of practices in this research. One way to interpret these findings is to presume that higher caseloads represent a time limitation for DE when guiding their patients to the goal setting stage of education. As an example, DE with a greater caseload also reported that they had more patients who set goals and reported greater importance for having the patient set a goal during the first diabetes education session. Educators with a greater caseload may have a

goal setting education protocol in place for meeting time allotments with patients for the goal setting process. Alternatively, DE with greater caseloads may be presumed to have more experience with helping to guide the patients through goal setting.

A novel measure in this study was the assessment of ways the diabetes educator judges the patient's readiness to commit to a dietary change. The majority of responses showed approaches consistent with patient-centered self-management education, including, "I ask the patient what dietary change he or she is ready to make" (72%) and "I ask the patient if he or she is ready to make a change" (57%). Interestingly, the use of these two approaches did not significantly interrelate, suggesting that they may not be used in tandem. Training in Stages of Change apparently influenced the use of SOC to judge patient readiness, although only a minority of DE reported its use (28%). Patient caseload did not significantly relate to the use of any specific approach. Other factors not measured in this study that could influence the approaches used include program policies, other training and tools received by each site, and available budget.

Goal Setting Education

Almost all respondent educators (98%) reported that their patients set goals of any kind for diabetes self-management; 2005-2006 NPS results[50] showed that the majority of DE program managers reported their programs used goal setting as an instructional tool (69% in 2005, 72% in 2006). Additionally, the 2008 NPS[49] program manager sample reported a percentage of instruction at their sites as a mix of group and individual (66%) similar to that in our study (67%). Also, 75% of respondents reported that most or all of their patients set goals for healthy eating; NPS prevalence data for reported outcomes collected for healthy eating were 47% for 2005, 53% for 2006, and 51% for 2008.[49] It is

expected that our respondent sample would report more goal setting activities than would managers from the NPS sample as educators are more directly involved in patient care.

Follow-up is an important component of diabetes self-management education, as increased patient follow-up enhances self-management outcomes[60] and it is one of the standards of diabetes care (Standard no. 8).[54] A majority (84%) of our respondent sample were able to follow-up with their patients. Forty-two percent of those that followed up with their patients did so by phone; as a comparison, approximately one-half (47%) of NPS respondents also followed up with patients by phone.[49] Goal setting education conducted during follow-up was not assessed in this study; however, our sample appeared to be extending their connection with patients via follow-up in ways comparable to other DE surveyed nationally.

Diabetes Educator Certification and Training Issues

Although many DE had multiple certifications, there was evidence that having certain credentials was associated with specific diabetes education practices. Notably, CDE (86% of the sample) were more likely to reportedly let the patient both guide the first diabetes education session and decide which goal he or she would like to work on. This supports collaborative care with the patient[52,59] and enhances patient autonomy. According to Evert,[61] the role of CDE is to help diabetes patients acquire the knowledge, skills, attitudes, and behaviors for optimal self-management. Holman and Lorig[59] further specify the need for educators of chronic care patients to receive educational training to help teach the patient and give them necessary skills for increasing patient autonomy. Most respondents (≥72%) received additional training related to patient education including motivational interviewing and goal setting.

Goal Documentation

Documentation of goals may benefit both the patient and the educator. Almost two-thirds (63%) of DE reported that their patients wrote down their goals. According the Delameter,[52] writing down the goal can encourage the patient to self-monitor the progress of personal goals which in turn enhances self-management. A majority of educators (85%) apparently record the goal for their own use while somewhat fewer (76%) document the goal outcome. Documentation of the goal is an ADA standard,[54] and recommendations include the use of AADE7™ for documenting goal outcomes (Standard no. 9).[54] Notably, 59% of the 2008 NPS respondents use the AADE7™ Impact online tool,[49] few of our respondents (12%) reported use of the AADE7™ goal setting form. One respondent commented that the AADE7™ goal setting form was burdensome. It is evident that most DE document goals, but methods do not appear to be consistent even though standardized methods are encouraged.

Results suggested that educators practicing in an ADA recognized program tended to measure dietary goal outcomes quantitatively. ADA standards require that an ADA recognized program report on the patient's behavioral goals and outcomes.[54] Quantitative measures can be advantageous for annual reporting when evaluating the effectiveness of a diabetes education program.

Dietary Findings

Data on dietary approaches reported by educators for their patients indicated patterns of dietary strategies related to chronic disease risk reduction: "Lowering fat" and "Eating more vegetables, fruits, and higher fiber foods" (Table 14). Diabetes patients are encouraged to reduce cardiovascular disease risks and complications by lowering

saturated fat and trans fat[62] and increasing dietary fiber through increased fruit, vegetable, and whole grain intake.[63,64,65] In addition, lowering carbohydrate intake may be used prior to medication as initial treatment in an attempt to control blood glucose.[63] "Lowering carbohydrate intake" was also seen in this study as a pattern of reported patient dietary change. Interestingly, previous research with Caucasian and Latino type 2 diabetes patients from a community clinic using a similar assessment[66] found that participants' reported dietary changes clustered into similar factor patterns: "Modify fat, sugar and fiber", "Eat more vegetables, smaller meals", and "Eat less high sugar or high carbohydrate foods". Our data most closely resembled the latter two patterns, specifically "Eating more vegetables, fruits, and higher fiber foods" and "Lowering carbohydrate intake". Reasons why "Lowering fat" may be more frequently reported by educators include that fat is a widespread public health topic, it is visible in many foods, and food labels provide information on fat content for all foods. Patients may be more likely to recognize fat as a dietary concern and DE have multiple education support factors for facilitating dietary fat modifications.

Findings suggest that reported patient dietary changes differ between DE who report having more patients setting goals of any kind versus DE who report having more patients setting healthy eating goals. DE reporting a greater proportion of patients who set goals also reported that more of their patients worked on "Goal setting for diet and exercise" and set goals for "Eating more vegetables, fruits, and higher fiber foods". Some DE may initially use lifestyle changes such as increasing dietary fiber for diabetes control because high fiber diets have been linked with lower postprandial plasma glucose.[63] Increasing dietary fiber may also be easier for patients as this dietary change is supported

by widespread advertising, dietary guidance from the U.S. Department of Agriculture, and nutrition label information. By contrast, DE that report higher estimates of patients that set goals in healthy eating also reported more patients with goals for "Lowering fat". "Lowering fat" would be an expected dietary change pattern to attempt with patients because cardiovascular disease risk increases with diabetes,[62] and lowering saturated fat and trans fat reduces that risk.[64] Focusing on standard education for changes in dietary fat or lowering carbohydrate intake to guide goal setting, rather than tailoring individual education to each patient, may be a practical strategy that leads to more patients setting goals.

When teaching diabetes patients how to control carbohydrate intake, the ADA recommends that DE use the plate method and carb counting;[65] many DE in this study practiced dietary education using the plate method (78%) and food models (69%). Each of these tools was highly likely to be used for both meal planning and goal setting (chi square, $p < 0.0001$). Use of these tools by patients themselves, an aspect of practice unmeasured in this study, can potentially contribute to patient outcomes of diabetes education.[57] Overall trends in NPS data show increased use of purchased products revised by staff for diabetes education, rather than staff-created curriculum or tools.[49]

Limitations

This research used a purposive sample from a national membership listing of DE. Given our specific sampling approach for states high or low in diabetes prevalence, as well as a relatively low response rate, it is unlikely that results apply to the entire diabetes educator population. With a 45% response rate, the practices and opinions of many educators were not identified. Further, the state specific sampling approach may have

influenced response variation through differences in state programs and funding in high versus low diabetes prevalence states.

Certain limitations occurred with measurement. Because the survey did not differentiate education practices with new patients from those with returning patients, it cannot be determined if, or in what ways, these practices were similar or different. In addition, actions assessed during follow-up were limited to the number of follow-ups, documentation of the patient's success with goal setting, mode of communication, and strategies used with patients struggling with dietary goals. DE were not asked if reassessment of the patient or other actions took place for follow-up. Additionally, the number of follow-ups cannot be used to estimate the total number of education sessions the patients received from the educator. Also, education practices cannot be analyzed relative to group versus individual education, as many educators indicated that they practiced both. Goal setting results may also vary with how much time the provider has spent with the patient, which was not assessed in this study. Dietary findings of this study were reported for type 2 diabetes patients by educators, and are not necessarily an accurate reflection of the patients' actual actions or goals. Lastly, the results of this study cannot convey the chronology, detail, or depth of the diabetes education process. Results represent cross-sectional data and are insufficient to establish causality of the reported actions of educators. Initial qualitative data collected in this study will be reported separately to explore a more detailed picture of diabetes education practice.

CONCLUSIONS

This sample of diabetes educators were mostly CDE with multiple certifications who reported patterns of practice in diabetes goal setting education that represent patient-

centered care. Their perspectives and practices stemmed from experiences as a group with a variety of ethnic populations. Reported patient-centered practices imply a common theme of personalization of goal setting education. Educators who had their CDE credential and those working in American Diabetes Association (ADA) recognized programs were more likely to have the patient guide the diabetes education sessions.

The theme of patient-centered practice was seen throughout the data: in the frequency of assessment approaches used with patients to prepare for the first education session, the importance of finishing certain tasks with patients in that session, and frequency of strategies reportedly used with patients who are struggling with dietary goals. Ways used to judge patient readiness to commit to a dietary change indicated that DE mostly used their own individual approaches rather than standardized or quantified techniques. Training that would be expected to influence patient-centered practices, such as motivational interviewing and Stages of Change, has likely shaped approaches used by some DE.

Research is needed to further characterize details of practice, such as practices and programs that are most effective for new versus returning patients. Also, practices need to be assessed for DE working with specific populations, such as high risk ethnic groups. Cultural competency issues with specific goal setting practices remain understudied, as well as practices which are effective in cross-cultural settings. A follow-up research step in understanding how DE judge patient readiness in goal setting is to survey DE for how they gauge patient self-efficacy related to a goal, as this is a recognized factor in moving the patient towards goal setting. Further research is needed to identify the utility of goal attainment measures. Finally, there is a need to further

investigate the influence of educator training and availability of resources on diabetes education practices.

TABLES

Table 1. Personal characteristics of diabetes educators

Variable	Percentage (Frequency) (n = 179)
Gender	
Female	95 (170)
Male	4 (7)
Missing	1 (2)
Ethnicity[1]	
Non-Hispanic White	84 (151)
Hispanic or Latino	7 (12)
Black or African American	3 (5)
Asian or Asian American	2 (4)
American Indian or Alaskan Native	2 (4)
Hawaiian or other Pacific Islander	0 (0)
Other	2 (4)
Missing	2 (3)
Age by Decade	
20-29	2 (3)
30-39	11 (20)
40-49	21 (39)
50-59	47 (84)
60-69	14 (25)
70-79	2 (3)
Missing	3 (5)
Educational credentials[1]	
Certified Diabetes Educator	86 (154)
Registered Nurse	50 (90)
Registered Dietitian	38 (68)
Nurse Practitioner	6 (11)
Pharmacist	4 (7)
MD	0 (0)
Other	22 (39)

[1] Respondents could circle more than one answer

Table 2. Characteristics of diabetes educators' practice and work setting

Variable	Percentage (Frequency) (n=179)
Appointment	
Full-Time	53 (95)
Part-Time	47 (84)
Practice setting for the majority of their practice	
Out-Patient	91 (162)
In-Patient	9 (17)
Institutional Setting	
Clinic	27 (49)
Hospital	26 (46)
Diabetes Education Center	21 (37)
Other[1]	26 (47)
Type of education for the majority of their practice	
Diabetes Education Team	58 (104)
Independent	37 (66)
Other	5 (9)
Group or individual patient education	
Individual	30 (53)
Group	2 (3)
Both	67 (121)
Missing	1 (2)
Type 2 patient caseload per month	
More than 75	52 (93)
51 to 75	23 (41)
25 to 50	14 (25)
Less than 25	9 (17)
None	2 (3)

[1] Other settings included physician's office (n=10), outpatient services (n=10), research (n=4), pharmaceutical (n=4), telephone counseling (n=2), Indian Health Service (n=2), conference rooms (n=2), diabetes care center (n=1), patient home (n=1), health department (n=1), and weight loss program (n=1)

Table 3. Patient characteristics reported by diabetes educators

Variable	Percentage (Frequency) (n=179)
Patient ethnic affiliation[1]	
Non-Hispanic White	88 (157)
Black or African American	67 (119)
Hispanic or Latino	66 (117)
Asian or Asian American	28 (50)
American Indian or Alaskan Native	16 (29)
Hawaiian or Other Pacific Islander	8 (14)
Age range of patients	
40 to 59 Years	66 (119)
60 Years and Older	25 (44)
20 to 39 Years	3 (6)
19 Years and Younger	3 (5)
Missing	3 (5)

[1] Respondents could circle more than one response

Table 4. Information collected directly from the patient to prepare for the first diabetes education session

	Percentage (Frequency) (n=179)			
Variable:	Usually or Always	Sometimes	Rarely or Never	Missing
Their current diabetes self-management practices	91 (162)	7 (13)	1 (2)	1 (2)
Questions they have about diabetes	90 (162)	8 (14)	1 (1)	1 (2)
Their knowledge about diabetes	86 (154)	11 (20)	2 (3)	1 (2)
Their exercise habits	83 (150)	13 (23)	2 (3)	2 (3)
A dietary assessment (such as dietary recall)	76 (137)	20 (35)	3 (5)	1 (2)
Their motivation for managing their diabetes	69 (122)	27 (49)	3 (6)	1 (2)
Family, employment, or social impacts of their diabetes	65 (116)	27 (49)	6 (10)	2 (4)
How they like to learn	50 (90)	34 (60)	15 (27)	1 (2)

Table 5. Reported importance to the educator of finishing specific tasks with the patient during the first session

	Percentage (Frequency) (n=179)			
Variable:	Very Important	Somewhat Important	Not Important	Missing
To begin diabetes education	72 (130)	24 (43)	1 (1)	3 (5)
To finish an assessment of patient	70 (125)	26 (46)	3 (6)	1 (2)
To introduce diet and/or dietary self-management	66 (118)	27 (48)	5 (9)	2 (4)
To have the patient set goals	59 (106)	34 (61)	5 (8)	2 (4)
To let the patient guide the meeting	43 (77)	50 (90)	5 (9)	2 (3)

Table 6. Strategies used by diabetes educators with patients who are struggling to carry out dietary goals

	Percentage (Frequency) (n=179)			
Variable:	Usually or Always	Sometimes	Rarely or Never	Missing or Skipped[1]
Reinforce the patient's success(es)	81 (145)	10 (18)	0 (0)	9 (16)
Give the patient support to keep trying to meet his or her goal	75 (135)	12 (22)	1 (1)	12 (21)
Discuss the patient's motivations for working on the goal	55 (99)	30 (54)	2 (3)	13 (23)
Simplify the goal	46 (82)	45 (80)	0 (0)	9 (17)
Reduce roadblocks or obstacles to the goal	40 (71)	48 (87)	1 (1)	11 (20)
Supply the patient with a food plan	33 (59)	28 (50)	19 (34)	20 (36)
Refer the patient to outside resources	16 (29)	44 (78)	22 (39)	18 (33)
Identify a different goal	14 (26)	56 (100)	10 (18)	20 (35)

[1] Eleven respondents "skipped" as they reported that they did not routinely address diet in diabetes self-management education

Table 7. Principal Components Factor Analysis (PCFA) for information collected from the patient for the first diabetes education session

Factor Pattern 1		Factor Pattern 2	
"Self-management practices"		"Issues with learning about self-management"	
[1]0.83	Their exercise habits	0.81	Their motivation for managing their diabetes
0.77	Their current diabetes self-management practices	0.73	How they like to learn
0.73	A dietary assessment (such as recall or diary)	0.61	Questions they have about diabetes
0.62	Their knowledge about diabetes		
0.55	Family, employment, or social impacts of their diabetes		
Variance accounted for:			
33%		24%	

[1] Factor loadings

Table 8. Principal Components Factor Analysis (PCFA) for importance of finishing selected tasks in the first diabetes education session

Factor Pattern 1		Factor Pattern 2	
"To address core self-management education needs"		"To have a patient guided session"	
[1]0.78	To have the patient set goals	0.83	To let the patient guide the meeting
0.76	To begin diabetes education session	-0.45	To introduce diet or dietary self-management
0.60	To introduce diet and/or dietary self-management		
Variance accounted for: 33%		24%	

[1] Factor loadings

Table 9. Principal Components Factor Analysis (PCFA) for diabetes educator strategies for patients struggling with dietary goals

Factor Pattern 1		Factor Pattern 2		Factor Pattern 3	
"Try a new approach"		"Make the goal easier to attain"		"Reinforce success and support the patient"	
[1]0.75	Supply the patient with a food plan	0.78	Simplify the goal	0.73	Reinforce the patient's success
0.74	Identify a different goal	0.66	Reduce roadblocks or obstacles to goal	0.73	Give the patient support to keep trying
0.54	Refer patient to outside resources	0.64	Discuss the patient's motivations for goal		
Variance accounted for: 19%		19%		17%	

[1] Factor loadings

Table 10. Reported practices used to judge patient readiness to commit to a dietary change

Variable[1]	Percentage (Frequency) (n=179)
I ask the patient what dietary change he or she is ready to make	72 (128)
I ask the patient to show his or her understanding	58 (103)
I ask the patient if he or she is ready to make a change	57 (102)
I use my intuition to judge the patient's readiness	30 (54)
I use Stages of Change to assess their readiness	28 (51)
I have the patient respond to a scale (such as 1 to 10)	20 (36)
I wait for the patient to tell me if he or she wants to work on dietary changes	11 (20)
None of the above	1 (1)
Missing or Skipped[2]	7 (12)

[1] Respondents could circle more than one response
[2] Eleven respondents "skipped" as they reported that they did not routinely address diet in diabetes self-management education

Table 11. Self-management goals set by type 2 diabetes patients as reported by diabetes educators

	Percentage (Frequency) (n=179)					
Variable:	All (100%)	Most	Some (50%)	Few	None (0%)	Missing
Monitoring blood glucose	15 (27)	51 (91)	22 (40)	10 (18)	1 (1)	1 (2)
Taking Medication	14 (26)	37 (66)	25 (44)	22 (40)	1 (1)	1 (2)
Healthy Eating	11 (20)	64 (114)	19 (34)	3 (6)	1 (2)	2 (3)
Reducing Risks	10 (17)	18 (33)	40 (71)	29 (52)	2 (4)	1 (2)
Problem Solving	9 (17)	7 (13)	45 (80)	34 (60)	4 (7)	1 (2)
Healthy Coping	8 (14)	11 (20)	39 (69)	36 (65)	5 (9)	1 (2)
Being Active	7 (13)	46 (82)	39 (70)	6 (11)	1 (1)	1 (2)

Table 12. Principal Components Factor Analysis (PCFA) for reported self-management goals set by type 2 diabetes patients

Factor Pattern 1	Factor Pattern 2
"Goal setting for daily coping and risk reduction skills"	"Goal setting for diet and exercise"
[1]0.89 Healthy coping	0.90 Healthy eating
0.88 Problem solving	0.86 Being active
0.80 Reducing risks	
0.74 Taking medication	
0.65 Monitoring blood glucose	
Variance accounted for: 46%	27%

[1] Factor loadings

Table 13. Reported diabetes diet changes for type 2 diabetes patients

	Percentage (Frequency) (n=179)					
Variable:	All (100%)	Most	Some (50%)	Few	None (0%)	Missing or Skipped[1]
Avoid drinks high in sugar (e.g. soda pop)	22 (40)	49 (88)	19 (33)	2 (3)	0 (0)	8 (15)
Eat more vegetables or greens	8 (14)	45 (81)	35 (62)	4 (7)	0 (0)	8 (15)
Avoid fried foods	8 (14)	41 (74)	36 (64)	8 (14)	0 (0)	7 (13)
Eat low-sugar or sugar free foods	8 (14)	41 (74)	30 (54)	11 (20)	1 (2)	8 (15)
Reduce portion sizes	7 (13)	63 (112)	22 (39)	1 (2)	0 (0)	7 (13)
Cook with or use a different type of fat or oil	7 (12)	38 (68)	38 (68)	9 (16)	<1 (1)	8 (14)
Eat fewer fast food meals	7 (12)	34 (61)	42 (75)	8 (14)	1 (2)	8 (15)
Eat higher fiber foods	7 (12)	27 (48)	46 (83)	11 (19)	1 (2)	8 (15)
Grill meats instead of frying	6 (11)	44 (79)	36 (65)	5 (9)	<1 (1)	8 (14)

[1] Eleven respondents "skipped" as they reported that they did not routinely address diet in diabetes self-management education

Table 13. Continued

Variable:	All (100%)	Most	Some (50%)	Few	None (0%)	Missing or Skipped[1]
	Percentage (Frequency) (n=179)					
Cook with or use less fat or oil	5 (9)	41 (74)	41 (73)	5 (8)	0 (0)	8 (15)
Eat more fresh or frozen fruits	5 (9)	29 (51)	47 (84)	10 (18)	0 (0)	9 (17)
Eat leaner meats	4 (7)	38 (68)	40 (72)	8 (15)	1 (1)	9 (16)
Eat low fat foods	4 (7)	32 (58)	43 (77)	12 (21)	0 (0)	9 (16)
Eat less grains and starches	4 (7)	32 (57)	40 (71)	13 (24)	2 (4)	9 (16)
Eat less canned fruit	3 (6)	12 (22)	34 (60)	34 (61)	7 (12	10 (18)

[1] Eleven respondents "skipped" as they reported that they did not routinely address diet in diabetes self-management education

Table 14. Principal Components Factor Analysis (PCFA) for reported dietary changes attempted by type 2 diabetes patients

Factor Pattern 1 "Lowering fat"		Factor Pattern 2 "Eating more vegetables, fruits, and higher fiber foods"		Factor Pattern 3 "Lowering carbohydrate intake"	
[1]0.80	Cook with or use less fat or oil	0.84	Eat more vegetables or greens	0.77	Eat less grains and starches
0.77	Avoid fried foods	0.71	Eat more fresh or frozen fruits	0.75	Eat less canned fruit
0.71	Cook with or use a different type of fat or oil	0.58	Eat higher fiber foods	0.53	Eat higher fiber foods
0.61	Grill meats instead of frying	0.55	Eat leaner meats	0.52	Eat low-sugar or sugar-free foods
0.56	Eat fewer fast food meals	0.52	Eat fewer fast food meals	0.46	Eat more fresh or frozen fruits
0.55	Eat low fat foods				
0.51	Eat leaner meats				
Variance accounted for: 24%		19%		15%	

[1] Factor loadings

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APPENDICES

Appendix A: Preliminary In-depth Interview Schedule

Let's start by thinking about the diabetes education you do with patients who are about to set goals for the first time.

Q-1 What information do you collect to help prepare for a goal setting session with your patients?

Q-2 Are there ways you assess knowledge, attitudes, or behaviors to set up a goal setting session with a patient for the first time?

Now I'm interested in what happens specifically with goal setting related to diet, and especially what happens during sessions when you are discussing dietary changes to improve diabetes control.

Q-3 How do you know when a patient is ready to move from *receiving* information about diet to *taking action* to change dietary behaviors for better diabetes control?

Q-4 Do you use any particular assessment technique or approach to evaluate the patient's readiness for or interest in making dietary changes for diabetes control?

Now, I'd like you to think about a typical session where a patient sets one or more dietary goals for diabetes control.

Q-5 When a patient is ready to talk about changing his or her dietary behaviors, what happens next in the session?

Q-6 What kind of conversation or interaction between you and the patient moves them towards setting a goal? During this process, is there any strategy, framework, or theory basis that you use as a guideline for setting dietary goals?

Q-7 What strategies, if any, do you use to help the patient formulate a goal? [If respondent identifies a strategy such as motivational interviewing, problem solving, then ask for a definition]

Q-8 What do you and the patient do to formulate a plan of action towards achieving their goal?

Q-9 What educational tools if any do you use during goal setting sessions that relate to diet?

- Food models
- Printed material

Q-10 What are some typical dietary goals that your patients set for themselves?

Now, I'd like to ask you about the follow-up you have with patients who have set dietary goals and worked on these goals.

Q11 When you are seeing a patient who has already tried dietary goals to control their diabetes, how is this session different from a session with a patient who is trying to set dietary goals for the first time? How are these two sessions the same?

Q12 What strategies do you use with patients who have *not* had satisfactory outcomes with their diet or meal action plan?

For the last topic, I'd like to ask how you document or write up the goal setting sessions you have with patients. I'm interested in how you monitor or record the patient's experiences with setting goals and how you document what happens with their goals.

Q-13 When a patient is setting a *dietary goal* for better diabetes control, how do you record this goal for your purposes? How does this goal get recorded for the patient, if at all?

Q14 What follow-up, if any, do you do with the patient regarding dietary goals? How do you record or document this follow-up information?

Q-15 How do you track goal attainment for your patients who have dietary goals?

Appendix B: Pre-test of In-depth Interview

1. As a diabetes educator, when you are talking about goals, what does the word goal mean to you?

   R1-Statement of intent to change action or behavior
   R2-Sets in hope to improve their health
   R3-Major favorable endpoint including behavior change

2. Q 1-2: What did you think questions 1 and 2 were trying to identify?

   R1-If educator assesses readiness to change how do you know if they're ready
   R1-What are current behaviors and readiness to change, they ask questions to assess their readiness?
   R2-How to preassess where the pt is at
   R3-Standard form including an assessment of current actions, struggles, diet, activity, feeling about DM, what they want to learn, current Rx, high/low BS, medical hx

   Any suggestions for rewording?

   R1-Thought these questions were asking similar things.
   R2-Q1"What information do you collect from the pt /What information do you collect about the patient prior to goal setting session?" Q2"…ways or techniques"
   R3- Q1: add education, goal, and behavior change
   Q2: add education, goal, and behavior change

3. Q3-4: What did you think about the transitional statement between questions 2 and 3? Was this transition adequate? Do you have any suggestions for rewording?

   R1-Transition was great.
   R2-Transition was good, might change all "dietary to nutritional" "lifestyle changes related to nutrition"
   R3-Adequate

- Did questions 3 and 4 seem clear?

  R1- Q4 was good, scale of 1-10 on readiness to change came to mind. In diabetes classes (not individual) teach scale of readiness to change to patients
  R2-Yes
  R3-Yes

4. Q5-10: What did you think about the transitional phrase we used after question 4 to move into actual goal setting sessions? Was this transition adequate? Do you have any suggestions for rewording?

   R1-Transition was good.
   R2-good
   R3-May add behavior change

   - Q5: What did you think about when you read question 5? How would you ask this question?

     R1-What do we do if we talk about change. Do you talk about barriers or just set the goal? [Barriers to change, Reality of their goal, Assess support network, Just set the goal]
     R1-"When a patient is ready to talk about changing his or her dietary behaviors, what you discuss next?" R1 felt this question was fine though. "Leave it like that"
     R2-"Getting more information" "Good b/c it's open ended"
     R2-"……..What might you discuss next, what discussion might take place, what questions could you ask?"
     R3-getting more detailed information, more specific (It's good)

   - Q7: What came to mind when you read question 7? Are there other questions that need to be there to fully describe the goal setting step?

     R1- Motivational interviewing, when patient can't commit, problem solving, barriers
     R1-Q6 leads to Q7, thought they were very similar to 7, need to differentiate b/t the two, word Q6 differently
     R1-Q7 "Now that they're ready to set goals…." (This clarifies it)
     R2-Don't create the goal for the pt, try to make them come up with it

R2-(to add) How do you assess that pt is still past contemplation and ready to make an action
R3-Elaborate more here by giving examples (operationally define)

- Q8: What does the phrase plan of action mean to you? What would be the best way to ask question 8?

  R2-Plan of action=steps to achieve their goal
  R2-[nothing to add]
  R3-how you work to attain goal or behavior change or identify behavior changes that would reach goal
  R3-Ask them to give an example of a goal and have them describe how they work through it

  Q9: What did you think about when you read question 9? What does the term "goal setting sessions" mean to you?

  R1-What visuals they use during the appt: Food models, food labels, fat/sugar tubes, plate
  R1-Goal setting session: there is not a separate appointment for goal setting, it's woven into all of the appointments, every pt has 1 or 2 goals that they're continually working on. There's really no such thing as goal setting session, maybe the last 10 minutes of appt when they talk to pt about changes or intent to do something different.
  R2-add some other things such as: printed material, food log
  R2-Goal setting session=client driven session where the educator is there to lead the road
  R3-Involves assessing education, establishing behavior strategies
  R3-Add education to goal setting session, provide examples to clarify

Now I'd like to ask about questions 5-10 as a group that relate to goal setting.

- Did questions 5-10 come across clearly?
  R1-Q7 should tweak it to tools used in goal setting [take out "session"], b/c might get tools that they use in every appt
  R1-Q8 had similar answers to Q5/Q6, they discuss "barriers and how to make it realistic for the pt, how do they fit it into their life", this is very similar to "what happens next" If looking for something different in Q8 from Q5, need to reword it.

R2-yes
R3-clarify by providing examples to get them in the right direction (ie Q7 and Q9)

- Did any appear out of order or off topic?

  R1-Q8 was similar to Q5
  R2-No it "Flows"
  R3-Q5 might be out of order because behavior identification follows initial goal setting, might come up after Q9 (for her the proper order is establishing goal →gathering tools →identify behavior that needs changing

- Do you have any comments or suggestions for rewording?

  R1-Q7 take out the word session, Q8 separate it from Q5
  R2-None
  R3-adding examples and behavior change in addition to goal setting

5. Q11-12: What did you think about the transitional sentence we used between questions 10 and 11? Do you have any comments or clarifications? Do you have any suggestions for rewording?

   R1-Transition was very clear.
   R2-Transition really clear
   R3-Now I'd like to ask you about the follow-up you have with the patients who have set dietary goals and worked on behavior change

   - Q11: What did you think question 11 was asking of you?

     R1- Already been out there, set the goal, now do I do anything different. 2nd visit more about behavior, 1st was education. When said "how is this session the same" though we were asking if they had to review material
     R3-Thought of goal setting and behavior change

   - Q12: From your experience with patients who have not had satisfactory outcomes with a diet *plan*, is this the best question to ask? If not, what might be a better question?

R1-Set goal and didn't make it
R3-Fine

- Were questions 11 and 12 clear? Any comments or suggestions for rewording?

  R1-Very clear
  R3-Q11Have tried/made/attempted various behavior change to control diabetes

6. Q13-15: What did you think about the transitional statement between questions 12 and 13? Do you have any comments or clarifications? Do you have any suggestions for rewording?

   R1-Transition was good, Now that they have set goal how do you follow-up. If educator f/u behind you would they be able to pick up where you left off?
   R2-Transition was good
   R3-For the last topic, I'd like to ask how you document or write up the goal setting sessions and behavior change. I'm interested in how you monitor or record the patient's experiences with setting goals and how you document the outcome.

   - Q13: What did you think question 13 was asking of you?

     R1- Once pt sets down their goal do you record in medical record, is their a pt copy? Is it verbal or written?
     R2-How do you record in medical records and how does the pt get a copy
     R3-about their standard form they have for documenting outcome with the patient (They ask pt to rate how much they have accomplished in the goal-0 to 100%)

   - Q14: When it comes to patient follow-up and documentation about goal setting, is this the most important question to *ask*, or is there a better one?

     R1- Q14 is good. What happens, how do you f/u do you talk about the goal in the next session? Where do other providers find in the chart?

R2-"…the f/u session?/…visit occurring in the f/u session?"
R3-fine

- Q15: What do you think the phrase "goal attainment" will mean to most diabetes educators? Is there a term more commonly used that would mean the same thing?

  R1- Thought about how the pt rated their goal success. On a scale of 1-10, 1 being not at all and 10 being 100% how do you think you did?
  R2-assumes that pt achieves it or didn't. "Outcomes" is more commonly used
  R3-achieve big goal or behavior objective
  R3-No

7. Finally, I'd like to ask about your impressions of the entire interview and how all the questions came across to you.

   - Did any question project any negative connotations?

     R1-None
     R2-None
     R3-None

   - Were there any clarifications needed?

     R1-None
     R2-#1(about information needed) #15('outcomes')
     R3-Separate goal setting and behavior changes

   - Do the questions flow logically?

     R1-Yes
     R2-yes
     R3-Generally yes except Q5

   - Is there any awkward wording we should change?

     R1-Just the ones discussed above
     R2-None

R3-Nothing

- Do you think we can conduct this interview in about thirty minutes? If not, can you identify which parts might take longer than others?

  R1-Yes, wrote down her answers and completed it in 20 min.
  R2-~45min. due to 3-8 being qualitative, some thinking involved here, if we make changes suggested could perhaps get it down to 30min.
  R3-Yes, have to keep them moving along though

Appendix C: In-depth Interview Results

Let's start by thinking about the diabetes education you do with patients who are about to set goals for the first time.

1. Q-1 What information do you collect about the patient to help prepare for goal setting with the patient?

   R1-Computerized medical form to help with teaching. Other health conditions, barriers, we collected information about physical, emotional, psychosocial barriers. Family history, lifestyle habit history and then we collect and give them you know a knowledge base and talk in a more formalized way. Cover half of the seven core concepts (AADE) before you start setting goals with patients. How are they feeling about the diagnosis? Educational level….while we're talking to them we're saying words like carbohydrate, protein and fat. If they have no understanding of any of those words then we're most likely going to work with Idaho Plate Method.

   R2-collect food habits, blood sugar values, exercise habits, lab values-cholesterol, triglycerides, blood pressure, current stress level

   R3-fill out health assessment to see where their health problems are. Ask them questions to assess what they understand. If they are willing to do this or that. Help them see how changing certain health behaviors would improve diabetes, and then see what the patient is willing to do.

   R4-background, family history, personal medical history, weight (highest and lowest in past 5yrs), current weight, desired weight, eating pattern, meals eat per day, who prepares meals, how many times per week do they eat out, do they skip meals, nighttime eating, rate their appetite, satisfaction with current eating pattern, binge eating, typical water intake, caffeinated beverages, alcohol, dietary preference (type of milk, fat (hi or lo fat or combo of both), salt intake (enjoy salt, add salt), fiber preferences, vitamin supplements, physical activity and type of exercise, readiness to change (five description and choose one that best describes where they're at) are they planning to change, starting to change, change in 6 mo, help maintaining change.

   R5-Depends on if they're on insulin. Do get people that are managing with diet or oral meds. Tend to deal with them different.Methods they use to track carbohydrates (carb counting, plate method, exchanges). General: is patient testing BG and/or ketones, past diabetes education, how long since first diagnosed, A1c, medical history, co-morbidities, exercise, active in job, psychosocial concerns (depression associated w/lifestyle changes), diabetes affect on family relations, regular foot care and eye check ups, immunizations for flu

R6-How do you want to learn assessment sheet: do they like to learn by watching, reading, printed material, or combo of those things. May directly ask them how they like to learn. Always give them printed handout material at 14 font. Clinical: labs: FPG, HbA1c, cholesterol panel, liver panel, renal (esp. within 3-6 mos.), blood sugar, blood pressure, measured height and weight.

R7-develop rapport first. Usually dietary habits, exercise habits, medications, what they do at work. Sometimes cut off right there because they've had enough. Medical history, labs

R8-24 hr food recall, medical history, allergies, family history, weight and height, exercise level

R9-full assessment, 3 pages long. Do goal setting after first 4 hour session. [2 four hour classes and 1 hour with exercise physiologist.] During class pt asks questions. Have them pick their goal or guide them by reminding them that they were really interested and ask them if they want to work on that area. 3 Page assessment: demographics, how they treat high and low blood sugars, level of exercise, labs, frequency of doctor and ER visits, goals, learning barriers, nutrition information (24 hr recall or typical day) 'how many times a day you drink milk, fruit, meat etc. allergies, family history.

R10-intake sheet: past medical history, how long they've had diabetes, usu. we ask what are they interested in. before we do anything and that's what we use to work with goals. What were they interested in when they came in the door. Height/weight, bmi, food allergies, family hx of diabetes. Then we do a dietary intake on current intake. That gives us an idea of what to plan because we don't want to give them too much at once.

2. Q-2 Are there techniques you use to assess knowledge, attitudes, or behaviors to prepare for goal setting with a patient for the first time?

R1- Empowerment model: process of working with the patient and asking all these questions. Going back to planning, action, and maintenance. Asking questions is the main technique to find out what are they doing, because we want to set goals that are SMART goals. That's another technique that's used by a lot of educators.

R2-discuss stages of change in group class (precontemplation to action). Are they still thinking about change or are they going to make the change. Fill out assessment form or knowledge prior to education which shows them what they do or don't know about diabetes. Just attended training on how to use stages of change in individual setting.

R3-Say "when you stand back and look at things what is something that you'd be willing to change to improve your diabetes" Let them make the decision.

R4-ask them generally "have you ever seen a dietitian or read anything related to diet" how was that experience. Their attitude usually comes out through that.

R5-Past diabetes education, how often they're able to follow diabetes diet regardless of method (gives info. Whether first time concepts or reinforcement), whether they need encouragement…usu. Ask "do you know what foods have carbohydrates" if no, that's where you start if yes move on to other methods (i.e. serving sizes, carb content, label reading)

R6-Mostly individualized. Some have had a negative experience with dietitian. Very difficult for dietitians because they are the only ones that have to work on behavior and lifestyle change. Most of the time she'll introduce themselves as diabetes educator and later say that she's a dietitian. Especially if they have food questions.

R7-Informal. Ask them about what they do. Their interests.

R8-ask them how much they know. Can tell from what they tell her. What they're eating. If they've been looking things up and they know what they're supposed to be doing.

R9-listening, involving them in education (interactive) instead of lecture. To assess knowledge.

R10-in theory you wish you had lots of time but that is not the case. So you build rapport as quickly as you can, try and make them feel comfortable and go from there. We will ask questions 'how long they had diabetes' 'prior education they might've had. Then we'll ask if they're testing their BS at home if they've had an A1C lately. If they don't know any of those answers then we assume they don't know nothing, if you ask them enough questions you can get a good idea of their knowledge base. We don't do a quiz that's intimidating. We had the chart notes of doctor and nurse who have already done an assessment

Now I'm interested in what happens specifically with goal setting related to diet, and especially what happens when you are discussing dietary changes to improve diabetes control.

3. Q-3 How do you know when a patient is ready to move from *receiving* information about diet to *taking action* to change dietary behaviors for better diabetes control?

R1-Again assessing where they're at with stages of change. About if they're going to be open to change. If they tell us that they never eat vegetables and that they never eat them, then we know that's going to be an area of challenge. It really depends on what knowledge they come to us with.

R2-ask patient what they feel that they can commit to changing.

R3-teach them how to carb count or about the plate method. Then say let's make up a menus for 45g carbs what would you plan for breakfast, lunch. Or show me what you'd put on this plate.

R4-when they are get realistic and specific and write it down. Maybe name a vegetable and how much. Anything general that can't be measured then she questions the follow through. Found that when they target problem areas and ask them if they're willing to make a goal concerning that area. Usually ask them if they care about their health if so are they willing to line up their actions with their "heart". "Hearts" desire has to correlate with their actions. Start with their "heart" (value system) then get real specific. I encourage them to start small and specific

R5-interpreting non-vocal indications (engaged in conversation, eye-contact versus arms folded, sitting back) if they're receptive. Sometimes will go through information and ask their comfort level, understanding. Do they foresee themselves doing that at home? Is it even something they're interested in "are you interested in managing your diabetes or controlling blood glucose with diet" some people say "not really"

R6-mostly it's patient initiated, first question is do they have any questions. Give them quiet time to answer them and hand them material. At the end reiterate what they have covered and ask them what they would like to work on. A lot of times they'll realize pop is hard on BS "I'm gonna stop drinking soda". I'm gonna check my BS three times a day instead of once to see what food is doing to my body. Really individual and patient driven. Sometimes patient won't have any goals and she'll work with that.

R7-When they start asking specific questions: "do you have any ideas of how to apply this? Menus?"

R8-the easiest way to know if they're following what you're telling them to do. If they're motivated enough or if they repeat things back to you (lets you know if they caught on)

R9-readiness to learn or readiness to change. Are they contemplating or not even thinking about it, starting but hesitant, or completely ready. Think

through that process in your brain. If I'm teaching someone only diet, then their goal will only be diet related. In class we go over a lot of other information and let them pick the area that they would like to start with and they tell us 'oh I'm gonna start with diet", so then they're telling us they're ready. Or they may be thinking about a different goal (SMBG). We let them tell us what area of diabetes they want to work on first. Readiness to learn [some of them they come here because the doctor told them to and they don't even want to sit there…well they're not ready to learn] vs. someone who is willing to come in and they'll listen but they're not too sure you know people who say 'tell me everything you possibly can' and they're calling us and asking a lot of good questions and they're active instead of passive learners. But then some of them are willing to learn but are they willing to take that and go out in the world and do it.

R10-a lot of it's subjective. After rapport building, you spend a 1.5 hour the first time. You can usu. tell by their enthusiasm then you ask what they are willing/ready to do. What would you like to work on? If they are enthusiastic if they have a good time of what they. I always incorporated exercise and lifestyle changes with diet so sometimes it wasn't meal planning. Sometimes it was to increase activity.

4. Q-4 Do you use any particular assessment technique or approach to evaluate the patient's readiness for or interest in making dietary changes for diabetes control?

R1-I was thinking if we could call it techniques because we vary it so much with each person. We do use food models; we put it down and discuss this portion, well would you be willing to have this much to eat of this food. And then we do label reading….

R2-Scale 1-10 (1 not ready to change at all, 10-very ready to commit to making change). Ask them where they are on that scale. Why did you choose 2 vs. 8? Wait till they choose 3 or above, then encourage them to make a change. 1 or 2 is not ready and don't force it.

R3-have them do a log book of past 3 day foods they have eaten. Gives an idea of what changes need to be made from there.

R4-ask them why do they want to be healthy (for their family, energy)

R5-it's informal, primarily being able to read patient's attitudes and appropriateness of question. Sometimes there will be a family member that will say whether family is ready or not to adapt to change.

R6-motivational counseling techniques (how confident do you feel that you will reach this goal, on a scale of 1 to 10 how important is this goal to you),

have the patient set goals, for people to change it has to come from inside "are you ready to set a goal" then be quiet…."well if I want my BS to be better I guess I better do something"…"What area do you want to work on? Food, Medication or Exercise?"

R7-Not at this time, looking into it. Experimental. She's new just got her CDE. Rougher tools. AADE books and tries different ideas (forms, manuals "Art and Science of DM self management education", also joined AADE so gets journal articles>

R8-Not certain of real technique. You read the patient and see where they're at. Cued by saying things like "I'm willing to do whatever it takes….I'm willing to make some changes in my life…." Can tell if doctor or family member *made* them come and they're probably not willing to make changes.

R9-Just the assessment tool (extensive) and when we ask them what are your goals for coming in. if they say doctor told them to…well that tells me they're not very ready. So when we ask them what they're purpose for coming in is that's my biggest key. But after doing this for along time you use clinical judgment we don't have a scale. Patient is not ready to learn but the MD still wants them to come we'll go easy on them.

R10-well the model we use is stages of change: precontemplative, contemplative…there's one I've just found that I like better. The ruler, I like it because it's visual. It's just a ruler with numbers from 1-10. You ask the pt on a scale of 1-10 can you show me where you might be on this. "How ready are you to do…"protein twice a day, whatever it is.

Now, I'd like you to think about a typical session where a patient sets one or more dietary goals or behavior changes for diabetes control.

5. Q-5 When a patient is ready to talk about changing his or her dietary behaviors, what do you discuss next?

R1-how they're going to do it, again it goes back to SMART goals. A lot of people say "I'm going to watch what I eat more" so what does that mean for them. And so we try to find out something specific…are they going to change something about their meal timing or is going to be something with their portion control. We want it to be measurable so are they going…I'm going to eat earlier…I'm going to eat my breakfast earlier…well does that mean you're going to eat it at 7am? Are they going to eat 7-8...or 10-11? So something that's very measurable. I'm going to cut down on my pasta. Are you going to have this size or that size? Attainable…something that isn't too big of a change…one thing that we have worked with for years when we talk about

goal setting is another technique we call Small Steps to Change. We don't want them to set goals that are too different from what they're already doing.

R2-what it is that they would be willing to change. Ex. Amount of carbohydrates per meal, or amount of fat, or "I will eat a French fries less often"

R3- More in depth, what do you understand about carb counting are you measuring the foods are you truly carb counting. Would you be willing to keep a log book for three days to see where they're willing to make those changes?

R4-ask them how they're going to do it. They have to be specific, realistic, and small. Real measure is when they come back, majority really want to make changes. If they bring in someone they usually confirm what patient is doing. Hard to maintain drastic changes.

R5-talk about something they can take home to use right away (plate method plan) ask them if they can see themselves using at home. Are you willing to do this for dinner tonight? Can you see yourself practicing? General encouragement (it's a process), Reinforcement, Realistic, recognizing that there will be impractical situations, obstacles

R6-ask them to state a goal, has it worked for them in the past, how do they plan on accomplishing it. Review labs with them, show them their labs and discuss what laboratory goals are. Show them what it's reflecting. Ex: show them their FPG it's good but your HbA1c is high, this indicates that it's probably your postprandial BS that are elevated. She'll discuss checking postprandial BS to help get their average BS down. If LDL is out of range they'll discuss LDL foods to look at in diet to find healthy substitute, reduce item, or eliminate altogether. Not hardcore, want to be friend, help them. Might be too gentle rather have that and make a great goal in 3 or 4 appointments, rather than lose them after the first appointment.

R7-try to pick one thing that's easy. If they're drinking 10 cans of pop, would you be willing to cut that down to 5. Too much change, they'll mentally walk out the door.

R8-discuss how they're going to do it, what they'll accomplish, how they'll accomplish that

R9-we actually do a goal setting session. We talk about basically that they've learned a lot of things in that class. We don't want them to go home overwhelmed. We want to help them get started. You know "where do I start". That's how we introduce it. We discuss how some people are gung ho and try

to do everything, then after a couple of weeks they go 'forget all this it's too much' type thing. Or you take it home and don't do it because there are too many things to think about. And then we present SMART goal setting. So we go over that and give lots of examples. If you tell me you never exercise and you're going to run 1 hr a day…that's not very realistic. You give them a lot of examples. And we have them review what we talked about in class: nutrition, monitoring, exercise, medication. And then we ask them what area do you really think that's the one thing I've really got to start with. Then they tell us I'm going to work on exercise or nutrition and we have a separate goal setting sheet for every one. So we hand them the goal setting sheet for nutrition it has several goals for nutrition. It's really hard to explain it all to a patient and have them come up with a perfect goal without examples and we've learned not to do that. It has four or five choices and other (to write their own). And we only let them pick one goal a week. We tell them they can work on more than one but we're only going to monitor one because we want them to take one step towards their health. And we don't want it to be too complex. Sometimes you say you skip breakfast so why don't you let that be your other. How many times a week will you eat breakfast…. and I will kind of guide them during the process. Sometimes they say you know I don't want to work on that and that's alright we want them to pick. At the bottom of the page is all the health benefits possibly related to their nutrition goals and they can mark as many as they want. They feel would benefit from their goal (feel healthy, feel better, better blood sugars…) we collect those and the next time they come to class we give those sheets back to them and give feedback on how they did.

R10-well that depends on what they're talking about. If they've just been doing regular meals we try to have them do carb counting as quickly as they're able. So that's probably where I've spent most time. That takes approx. 2-3 sessions where they're proficient

6. Q-6 In general, what kind of conversation between you and the patient results in the patient setting a goal?

   R1-um something where they feel confident and empowered something they feel that they can do. It's a goal that they can meet. I think the biggest thing is something that is specific and attainable. So those are the ones that are most successful…it's something they can do

   R2-in class, at the end, talked about goal setting and SMART goals, importance of goals to change behavior. Give them a form of suggested goals to choose from or tailor their own. Encouraged to only choose goals that they are comfortable. Have seven to choose from. Encourage them to set 2 or 3 goals. Individually set goals after a conversation of getting patients feedback,

how they feel about changing eating habits, lifestyle. Are they agreeable to setting goals?

R3-Have a guideline sheet with examples "I am going to make dietary changes by……." (counting carbs, choosing smaller portions)-helps them make a choice

R4-Value system: if they value their health are they willing to make changes to improve their health, line this up with their actions. They see that these small things line up with their "heart"; they see that it's not going to be easy; they're dealing with their body that's used to a certain eating pattern. Get them ready for that battle; see what their cravings are, taste bud cravings, and thought patterns. So they don't get discouraged, they know that practice makes habit. It's become easier. [Heart=desires, values, importance to them]

R5-asking those flat out what they want to get out the time together. Allows them to recognize that they have control. Trying to find out their interest

R6-Try to get them thinking of it when she walks in the door. States that she is part of diabetes education team and do they have any questions. How can she be helpful and then she sits in waits. Sometimes they say that they don't have any questions. So then start mostly by getting labs and say let's look at your labs together (stimulate the patient, lead them to comment) "Oh wow BUN is high maybe I'll start drinking water.

R7-Encouragement, talk about current practices, talk about possible changes, then patient will spring board from that. See how they can set goals (small) and still meet the goal of change.

R8-assess current practices and what they need to work on, stimulates a goal

R9-if they know what goal they want to work we just let them pick it. We just check to make sure it's specific, realistic. So we may say that sounds great but maybe we can make it more specific so we drill it down so that it is a SMART goal. But we don't tell them this is not a good goal we guide them. If they're having a hard time setting a goal. And there are usu. two of us at this point. We just kind of look through some of the sample goals and they sometimes see something that will stimulate a goal from all sheets. And they'll say oh yeah I can get a flu shot. Some of them want to mark all the goals and you have to say no…the most important one to you.

R10-summary kind of thing. how did it go today did we cover what you thought we were going to cover. Was there anything you wanted to talk about that we didn't talk about. Was something we talked about that struck your

interest that you'd really like to work on? (That's my lead in to setting goals) it needs to be patient driven it's not something I want them to do.

7. Q-7 When the patient is ready to set a goal, is there any strategy, framework, or tool that you use for this process? [If respondent identifies a strategy such as motivational interviewing, then ask for a definition]

R1-writing them down. We do have a workbook that we put together. We're part of the Providence system. We put together a really wonderful diabetes workbook using all these wonderful tools that I'm talking about. The stages of change…the empowerment model…um SMART goals. And we have a workbook. If it's a patient that is literate enough and would find it useful they can actually write down the goals we really encourage that and we will have them very often write down a food diary and bring that in. It's the Diabetes Self Management Binder.

R2-Form that use during class. Goals under each heading. Seven Outlined by AADE. (Healthy eating…etc.) Eight hour course offered 2hr/wk for four consecutive weeks

R3-AADE goal setting form

R4-couple of sheets depending on situation (weight management, diabetes). Simple one "patient goals, patient actions to meet goals" addresses goal and steps to achieve the goal, on the back of sheet is SMART with example. Eat more fruits and vegetables (eat a fruit as a snack, and include one vegetable with meal each day)

R5-educational material, handouts, "food and activity guide" easiest of all.

R6-Try to get them to nail down when, where, and how. When are you going to do this? How are you going to do this or how long are you going to do it? Strategize a plan: I'm gonna start walking…Great we have a lot of barriers in Alaska what are you going to do in the winter?...ok so and so likes to mall walk maybe I'll walk with them…Ok when are you going to do that. Encourage them to find a partner for any type of exercise

R7-Talk about how to walk through it: say they want to try to eat one serving of vegetable every day; and talk about how to prepare or vegetables they like

R8-Have a sheet. Write the goal and how they're going to accomplish that. And make a copy on copy machine for the patient.

R9-SMART goals, goal setting tool. of course the second time they've already done one and we add another cause we want to teach them that all through life they need to take steps.

R10-goal setting handout…measurable, specific to measure their success. It's simple goals need to be measurable, not more than one or two in short amount of time. We have them sign it and date it. We keep a copy and they keep a copy.

8. Q-8 How do you help the patient move from setting a goal to becoming ready to make a behavior change?

R1-So first of all you know we have to assess where they're at. They're willingness and want and desire to make changes. We try to help them set the goals that are SMART goals. And when I say SMART I don't mean intelligent. Specific Measurable Attainable Realistic and Timed goals. We have a definite time for them to do follow-up with us. And like I said if we can we have them write 'em down. I think that's pretty much what we do and it works for a lot of patients. If they're not at them place where they're willing to make changes then we work really hard on trying to keep the door open. That they're open to coming back to see us. That they're open to you know not feeling like they're going to be judged. We work really hard on trying to develop the relationship with them at that point. Because that certainly does come up with some folks.

R2-discuss what they do to achieve that goal. I'm going to be active three times a week for 20 min. then help them decide what activity they most want to do. Schedule it.

R3-If they're setting a goal they're making a behavior change

R4-readress reasons why they care about their health, why they set that goal, encourage them to keep the reason before them as motivation to carry it out. Encourage them to remind themselves of that.

R5-use their goal (weight loss, better glycemic control) walk them through their day and talk them through a scenario to incorporate their goal into their day. Take them mentally through their day and have them think up scenarios

R6-Previous experience, have you ever bee on a diet or exercise, what worked and what didn't work. How can they change it to be successful? Use past as a learning tool. Prepare them to know that goal may not work so well. So we know that this hasn't worked what else can we try. Get them to try until they find something that works for them.

R7-Making a plan of how to do it. Do you need cookbooks, affordable vegetables, use commodities (and how to make that vegetable lower in sodium) commodities are food provided for people on the reservation: canned vegetables, flour, starchy pastas. Use what they've got and make a plan from that.

R8-Often the goal is a behavior change. It's practicing at home and having regular follow-up visits.

R9-you can't go home in their pocket the only thing I can say is we tell them we're going to follow-up on it so that gives them motivation to do it. Ok next time we're going to see how it went, vs. here's a goal and we're never going to check with you. That's a kind of accountability. That works great if they're coming back if they aren't then we mail that goal to them, but you can't make 'em do it.

R10-you do as much motivating as you can a lot of that is in their ball park. Keeping in mind that we only have a short amount of time with them.

Can you give an example of how a patient set a dietary goal and worked with you to bring it to the implementation stage?

R1-ok let's just use one person where they know that they're eating too many carbohydrates with their meals and so we've given them the tools to show them how many carbohydrates are in some different foods and then we've helped them look at how they're normally eating ah let's use for an example their breakfast and say they're having a piece of cereal and a toast and some fruit and coffee. For this person that was too many carbs at one time so we've suggested that they have their piece of fruit in the middle of the morning as a snack. And that's something that would work for them and not cause their BS. to spike so high in the morning.

R2-Taught about carbohydrates beforehand in individual session (label reading, meal plan, carb counting, and practice putting meals together with goal carbs).

a. Set a goal of eating 30-45g of carbohydrate during class.
b. (3mo follow-up) come back for evaluation and see if they have put this into place.

R3-have them measure their foods to help them see where they are. Or writing their food down. I see that you're eating a donut for breakfast, lunch, and dinner.

R4-couple that husband is diabetic and wife has weight management issues: worked on eliminating weekend overeating of desserts. Worked on that awhile. The husband was not checking BS daily, began to check it a couple of times a week. They had come back beaming about making those changes. He limited his portions at dinner time to one. Change lunch from fast food to lean cuisine. They also went to diabetes education classes. Gave a lot of positive feedback.

R5-encourage them or set a goal where they want to have better blood glucose control-talk about serving size of starch-goal is keep carbohydrate per meal at 50g-send them out the door with food log to have them be able to track and make changes as necessary or just be more conscientious of food patters-during follow-up use that as reinforcement/self monitoring tool

R6-LDL. Traditionally AK Natives have high fat/high protein. Subsistently that's a healthy diet, but when you take it to the store, it turns very unhealthy. Sit down here's the goal to protect against heart attack and stroke, here's where you on your labs. Then circle foods on this sheet that has high saturated fat foods that you consume regularly (Spam, bacon, sausage, etc.) If they circle more then they have more work to do with their diet. Some people opt to take pill instead of diet. Some work on a little bit of both. In 3-6 months check lab values and see how they did. Usually they do pretty good; when they see change in lab values it motivates them more.

R7-Series of appointments, talk a little bit, one week later. Talk about how it went, what were their struggles and schedule another week out. Don't have the restriction of payment can see as many times as she wants.

R8-lady has had trouble with weight loss. Seeing for a few weeks and no weight loss. Talked about what she's eating and she said it's her portion sizes. She set a goal to work on portion sizes. Also set a goal to keep her hydrated. Set goal to drink 8 cups of water a day.

R9-sometimes they'll pick I'm gonna look at labels and try to understand carbohydrates and try to get 4 carbohydrates at each meal. Sometimes they'll pick one meal to work on because I don't think they can do all three. And after that is up to them until the follow-up. Explain the diet when they come back I ask them all the questions, how did it go what worked what didn't. that's on our sheet that we ask them "what worked for you, what did you learn from doing this goal" if I see that how often did you accomplish that "always, sometimes, most of the time, never" if they say never I'll just ask "is it too much" "no I'm just really busy. And I'll give them a plate method. 'What do you think of this" we keep refining it to something that works.

R10-pt that are learning carb counting. First we teach them what foods have carbs, and begin to do diet record (short term goal) and they come back in, when they've successfully accomplished that we do some education and planning a certain number of carbohydrates per meal. It's a building process when they've mastered one skill you go onto the next. But you have to build a foundation or they get overwhelmed.

9. Q-9 You've told me about the goal setting process that happens between you and your patient. If you were to summarize the steps needed to guide the patient from deciding on a goal to being ready to implement it, in what order do the steps usually happen?

   R1-First we have them identify the changes they're willing to make then if they're willing to we have them write it down. And we always record it by the way. Whether the patient writes it down or not so we can check back with the patient on our next follow-up phone call or visit. And then we make a date for when they're going to start those changes and we make a date for when we're going to do follow-up/check in with them to find out how they're doing with those changes and then if it didn't work if there were barriers to it we discuss those barriers or why didn't it work and what we could do differently what could help make this change work for you.

   R2-gathering info about what person is currently doing in their life. What changes they need to make to better their blood sugars. Help them figure out appropriate goal. Patient writes it down. Take the carbon copy with them out the door.

   R3-assessment (see where their standing is and what their understanding is Education, Reinforcement (concerning education), goal setting, follow-up

   R4-goal has to be SMART, remind them of their desires and health and why, set reward system to jumpstart, write down their reward (shopping spree, fishing trip, re-exploring themselves through hobby), important to apply this reward no matter how small the goals.

   R5-have patient verbalize goal (with help if necessary)-recognize benefit (what will it be for you-weight loss, more energy, no highs and lows for BS)-strategize implementation and strategy (using plate method etc.)-provide monitoring tool

   R6-patient driven. Okay we've reviewed exercise, blood sugar goals, and healthy eating. Which goal would you like to work on? (Let them tell her what they want to work on). Sometimes people say that's too much to work on. Say "we're here to help. Try to check blood sugars and take medication" Don't want to lead to burn out. Something came up (medication, vacation, and

children) it's easy to get off track. They'll come back embarrassed that they didn't achieve goal. Remind the patient that it's life. What can we work on today (make it a small goal to get them going), next time build on that

R7-First is building trust (she's not Native)-food records (couple of days)-evaluate their eating-have them look at carbohydrates and grams of fat if possible-give them materials (Calorie King Fat and Carbohydrate Counter-2007ed, 2008 will be larger print)-checking BS

R8-First step is to learn what they're supposed to be doing and take care of their diabetes. Pick out something that they're not doing. Work from that.

R9-explain the concept of goal setting using SMART-assist them in setting a goal-follow-up

R10-Identify an area they want to work on, interested in, that they agreed upon-help them set a reasonable goal, let them do it first-if needed, tweak it and tell them why-make and appointment-if they weren't able you have to assess why, if they did well then you praise them and you say ok do you want to maintain this for awhile or add another one to the package. It's individual

10. Q-10 What educational tools if any do you use during goal setting that relate to diet?

    R1-We may use if there are people that are internet savvy there are websites that we use (mypyramid.gov, calorieking.com for carbs/carb counting/calories for weight loss/heart healthy foods). We have a table mat that illustrates the plate method. We have food models. A box of labels and food wrappers.

    R2-Twelve days of menus, preassessment (simple intro to carb counting) "here's foods with carbohydrates here's how much. Class (detailed listing of carbohydrates and amounts). Food lists (serving sizes), plate method. Food models. Label reading class (labels). Meal planning activity done in groups (plan a menu) 45-60g of carb and low fat. Information on fiber, those foods that are more quickly digested and fully digested. Sample menu of high fiber diet.

    R3-AARP-plate method, ADA carb counting book (purple and gold?), Fast food guide from BD

    R4-Food models (for carb counting to visualize serving size and for all food groups), plate model (great for kids), Conversation map (created with ADA with a guide for educator as facilitator) see a picture ask a question "what does it mean to them". Color coded pamphlets to show different food groups.

Labels. Food guide pyramid with magnet sized foods to attach, stickers, stuffed animal veggies,

R5-plate method, simple meal plan, simple recipes with carb control, brown bag lunch handouts for people that find themselves eating out often, carb count resource that includes lots of foods and beverage choice, large book about diabetes in general (define A1c, what does alcohol do to you)

R6-"Carbohydrates and Diabetes" for Alaskan native has native foods. ADA handouts on healthy eating, carb counting. Handout one side has carb/non-carb foods, other side details plate method=beginning nutrition paper. When making a meal choose one carb food and non starch and protein from paper. No forbidden foods to prevent bingeing. All foods are ok what matters is the amount and the timing. Check BS to see what body says, don't truly know amount of rice you can have. Go home measure carb choice and then check your BS afterwards. Has good response because you're not telling them to have ½ cup of rice. You say "I don't know check your BS" If there's something you truly love, go for a walk, have your treat and then go for another walk. Let your muscles use it up instead of letting it sit in your body making trouble".

R7-Calorie King Carbohydrate and Fat Counter, ADA exchange handout, in process of trying to find new, better fitting tools. Not liking tools that she has right now. [During the visit] Used "My Food Plan" from the international diabetes center which might be too advanced for some. "One carb choices", plate method, varies from patient to patient and their reading ability

R8-food models, empty boxes with food labels

R9-SMART handout (we teach the nutrition before goal setting) for nutrition from ADA "reasons for meal planning" sheet on carbohydrates, "my food plan" from diabetes international centers it's fabulous, amazing, I've used it for years. Sample meal plans designed here for 3, 4, 5 carb meals. Those are the most common. If they drink give them alcohol and diabetes handout. That's in the first nutrition session. Heart health nutrition the second class.

R10-"my food plan" purple color, that's for people learning carb counting, ask them to read three labels and bring them to the next appt and we talk about it

11. Q-11 What are some typical dietary goals that your patients set for themselves?

R1-*Basic goal*=Eat more fruits and vegetables. Higher fiber foods. People that are more sophisticated we will give them a specific carb count based on their height weight activity level per meal. The third one that we work on with

everyone is getting them so they understand about heart healthy diets so we're going to be talking about fat, cholesterol, healthy heart choices.

R2-Set how many carbohydrates they will eat per meal and per snack. Reduce portion sizes, increasing fiber, reducing sodium.

R3-begin carb counting with recommended guideline (i.e. 45-60g/meal), cut back on portion sizes

R4-eat fast food less often (more specific: limit fast food to once a month) eat more fruit and vegetables (eat at least one fruit as a snack, one vegetable to dinner), decrease to one regular soda and eventually converting to diet soda, decrease my meat portion from half a plate to quarter plate, try to have half the plate be one side of non-starchy vegetables, change rate at which they go out to eat. Or making healthier choices while eating out.

R5-maintaining steady carb intake, monitor blood glucose, measuring portions per meal, consistently knowing their carb intake per meal, reducing carb rich foods (ice cream etc.), switching whole milk to 1% or 2%, weight loss is not the focus

R6-substitute items to include favorite foods. Fruit instead of chips. "I'll start eating breakfast" [for big time snackers] hard to control BS with snacking-timed snacking. Old advice used to be everyone with diabetes needs a nighttime snack now she advises don't do it if you don't need it. It leads to weight gain. If they say they'll have a low blood sugar then review education.

R7-Big one is regular pop and heavily sweetened iced teas, Kook Aid, Sports drinks. If they're willing that the first one-diluting, switch to water

R8-food record is common. Staying within certain carbohydrate amount, 3-5 vegetables a day, 8 cups of water

R9-they often pick label reading, learning how to count carbs from labels, understand the label. Maybe they don't eat breakfast so they're going to look at breakfast bar labels or yogurt or something. Frequently it's amount of carbs per meal. If they don't eat at regular times it's gonna be eat breakfast every day. I do talk a little bit about fruit and vegetables for high blood vegetable (I'm going to include vegetable with dinner). If I don't think they can handle carb counting I will pull the out of that class and my nurse will actually teach them the plate method, and their goal will be use the plate method for breakfast or for four days this week all three meals.

R10-eat breakfast every day, eating regular meals (every 3-4 hours have a meal or a moderate snack),

Now, I'd like to ask you about the follow-up you have with patients who have set dietary goals and worked on behavior changes.

12. Q12 When you are seeing a patient who has already tried dietary goals to control their diabetes, how is this session different from a session with a patient who is trying to set dietary goals for the first time?

    R1-That's a great question. So the person that has not ever set dietary goals. That we usually have to start with the basic understanding of diet, the food groups, which foods are carbohydrates, proteins, fats. How they work in their body and then go in to what they are doing and try to see what types of changes we can make. The person that may have already set goals and hasn't worked then we talk about what types of goals they set and try to find out why they think those goals didn't work and then we go towards what could we do differently and also considering outside resources. Maybe the reason their goal didn't work is because they're depressed and they need to see a psychologist for some counseling. Maybe it's because they were trying to do a low fat diet and didn't understand that the carbs were the thing that was raising their blood sugars so again reassessing their knowledge base but also the important thing with that person is finding out why their goals didn't work the first time and problem solving with them and addressing their barriers to care or to goal setting changes.

    R2-see if they have met the goal, percentage met the goal, review goal (already worked on goal)

    R3-time involvement is greater the first time due to education, second time you have to assess goal attainment and find out why they're not working if that's the case. Is it because you ate a potato that was too large. Help them see where the mistakes are.

    R4-usually the ones that have practiced the step over and over and it becomes a habit. It's automatic and then she comes for the follow-up and is able to work on something else. They usually have more motivation to set more goals to reach the ultimate goal (long term). Short term goals are the steps to the ultimate goal.

    R5-Assess how goals went, less talking on educator's part. Patient's successes and failures with strategies. Encourage things that work. More of a build on first session and education and accountability

    R6-Second time assess where the patient is at. Their diet may be fine but they need to look at medication. May work with patients with other areas other than the nutrition.

R7-Second time, look at what they've done and work from that keeping in mind the original goal. If the patient went home and worked on other goals then track that. Patient guides the session as far as questions and their movement. Then adjust from there.

R8-second has already had initial information. Follow-up on goal and if they didn't do anything to accomplish goal then keep working on it. If they've accomplished this goal then work on a different one. Sometimes enhance and add to education

R9-we look at their goals we talk about them we talk to them and see how it went. We have them set another goal we remind them of SMART but we don't do as much teaching about it. We've done some additional teaching so their goals become a lot broader. We're doing the heart health (second session) you know so they might count Trans fats saturated fats or whatever. Limit their portion of meat; switch from whole to 2% or 1%. It's really an abbreviated goal setting the second time.

R10-well the second session you've already built the rapport, you know about them you don't have to assess them a second time, you can ask more open ended questions like how's it going, what have you felt good about that's happened since the last time we talked, lots of open ended questions just to see where they're at and how they're feeling about what's going on, and there's not much time for that in the first session

How are these two sessions the same?

R1-Yes as far as basic information about foods and that we're going to always be encouraging more fruits and vegetables and higher fiber diets. That's going to be the same.

R2-assessing what they're doing (eating), physical activity level, check blood sugar levels

R3-biggest thing is a basic understanding of where patient is. Assessing knowledge and find what they're willing to change. If they're not measuring food maybe find something different

R4-Repetition: even though they may have improved still reiterate the pros/benefits. Use the repetition as praise.

R5-restate goals, restate strategies, always ask what they want to learn or what they want to get out of their time.

R6-always work on controlling BS. Same techniques: patient driven, motivational counseling. If patient is uninterested in any behavior change ask: how will this change benefit you? How will it affect your health? If they say it doesn't mean anything, but they'll think of it when they leave and when they come back they may be ready to work on behavior change.

R7-Main thing is BS improvement. Maybe continue with assessment because the patient stopped in the middle.

R8-Talking about the same things often, it's just enhancing on them during the next visit.

R9-assisting them in setting a goal.

R10-client centered, focused on what the patient came in with and you be sure to address that before they leave

13. Q13 What strategies do you use with patients who have *not* had satisfactory outcomes with their diet or meal action plan?

R1-May be referring to outside resources: counseling, cardiac risk reduction, cardiac rehab, sleep clinic (apnea), pain clinic (stress eating, emotional eating),

R2-ask them what difficulties they have meeting goal (barriers), strategize to remove "roadblock" and be more successful, brainstorm. Ex. Woman didn't want to walk because dog gets upset when she leaves, so she used a stroller to bring her dog out with her.

R3-have a form that has 10 days of meals (sample). They can pick whatever breakfast, lunch, dinner, or snack. (Glucerna) has a place on their website where they can make their own menus

R4- If they try the goal we better work on a smaller goal or reassess the goal. Repeat their desire, priorities, is one of these their health. If they really have passion/desire to take care of themselves. Then use that as fuel for motivation. If there's a lack of motivation then question their desire. Or they tell that they really value their health. Try to make the goal smaller and attach a goal to that.

R5-talk about how hard or easy it was to implement the changes. Barriers. Alternative strategies (easier), try to be realistic (if not 100% it's not realistic to expect it to be)

R6-checking BS individualizes it for each person. Have to figure out what will work for each patient. Exercise (check BS before and after exercise). Use labs for pre and post change. Ask them how they feel: BS out of control = grouchy. Talk about emotional effects of high BS. First work on medication then check after 3mos. After that they'll almost always say that they feel better. Then they're ready to work on something else. [Quality of life they fell better}

R7-More support, letting them know it takes time, it's a lot to learn, and you're doing fine. Most of the time they'll be doing something. Try to find something to praise them on. Just by coming to the appointment is *something*. Some clients are afraid to come to medical.

R8- Do very small goals at a time. Easy and attainable so they feel good about what they're doing. Try to start over and do something different that's a little bit easier.

R9-actually we haven't used a lot but I've just come across a tool that's very helpful where they rate that and I'm going to implement this. 'What could help you meet that goal' 'what things are keeping you from meeting that goal' you know in the first session we are looking at potential obstacles. And that's what we usu. do is what were the obstacles and what can we do about that. That's all you really can do. If they just didn't want to do it I'll sometimes ask if they need to see a counselor. Cause they usu. want to be healthier. I don't do that with everyone so if they seem depressed I'll refer them to a counselor.

R10-circle back around, check readiness to change, positively reinforce anything they did right, and listen and find out why were they not able to do it, problem solve, if goal is reasonable ask them to try it again, if it needs tweaking then do that

For the last topic, I'd like to ask how you document or write up the goal setting sessions. I'm interested in how you monitor or record the patient's experiences with setting goals and how you document the outcome.

14. Q-14 When a patient is setting a *dietary goal* for better diabetes control, how do you record this goal for your purposes?

    R1- computerized system (Logician): developed with CDE's in Providence DE base. Second to the last part of session is setting the goals. Review the goals. Ask them if session was helpful, any questions they have. Goal setting is the biggest piece.

    R2-(in class) use the form. (Individual and group) document in electronic medical record.

R3-carbon copy form

R4-section in "Patient Report" intervention, educational tools, and things went over. "Evaluation" type in goals

R5-chart on all patients (PES statement): nutrition diagnosis, nutrition intervention – what they've discussed, what patient agrees to do, goals they've set and why, skills that they practiced, special notes that want others to be aware of, monitoring note: pt agrees to keep food and activity log, check BS 2hr Postprandial, document handouts provided (if they haven't received tool that would be useful try to catch it) with drop down lists for common goals

R6-Use PCC plus form there's an area for "plan"

R7-{hard because transitioning from paper to electron} So focused on paper method since started transition last fall. Write it in notes to herself. Use PCC form-"chief complaint" write follow up or referral from doctor. "Subjective", "purpose", "notes section" write label reading or using Calorie King, Write one or two goals down at the bottom. Might make notes below that such as more goals that she wants to work on with the patient later.

R8-write the goal down on that sheet that's copied. There's a place on electronic chart for goal.

R9-we keep those goal setting sheets in their chart. And we do send a letter about their goal to their doctor. We actually set several goals and we also set one that we mail to them. So they can get the concept. At the end of the year we tally all the goals (how many people picked nutrition/exercise/medication goals) what percent accomplished their goals in an always/somewhat always. And we talk to advisory board to advise how to make those better. Sometimes we've pulled classes because you know they're not checking feet or whatever we want them to do. So it gets documented in a lot of places.

R10-pull out the goal sheet look at it and assess it together "did you meet the goal?" if yes wonderful if no why what happened. It's more verbal interchange with very brief notes on goal sheet itself. That copy goes in the patient's chart

How does this goal get recorded for the patient, if at all?

R1-we don't record it for the pt unless they want us to, we usu. Just discuss it with the pt. a lot of the patients, they're way of measuring it is "are they feeling better?", "are they losing weight?", "are their BS looking better.

R2-carbon copy (in class), meal planning materials (write for them their carbohydrate goal). They also handwrite for them their goal.

R3-carbon copy form

R4-Encourage them to write it down, don't force it if not wanted. Not 100% compliance here.

R5-no

R6-They usually write it down, on a piece of educational material or post it

R7-Diabetes group is developing sheets. On the front says "diabetes goal contract" below that is Exercise, diet, take all meds properly, annual eye exam, SMBG. They select one of those goals, and below that the patient writes an action plan. If they have time they discuss barriers. On the back there are definitions for patient.

R8-Take copied paper home with them.

R9-when we do a session they get a paper to write their goal. And we get the sheet but they write down just the goal that they picked and they put that in their binder.

R10-they get a copy from copy machine

15. Q15 What follow-up, if any, do you do with the patient regarding dietary goals?

R1-depends upon the pt. if we feel like they're doing great then we always do a 3 mo. If we've finished with the person we feel like we've given them the information, they're on board they're working on things. Then our standard practice is to do a 3 mo. Follow-up call and see how they're doing and at that point if they feel like coming back in then we offer them that opportunity. If we don't feel like they're doing well and we feel like they need more help then we set a follow-up appointment and we space them at 2 weeks/1mo. Out depending on what seems will work for that pt and sometimes their insurance will cover it and sometimes it may not and so that's a place where our hands do get tied up a little bit. But we do have some scholarship money and the hospital's been very generous in supporting us, in doing some follow-up with our patients. And a few have chosen to pay when they didn't have insurance and they didn't qualify for assistance a few of them have quite a bit of money. And it's important for them.

R2-(after class) 3 mo follow-up, hand them back form and evaluate themselves on how their doing with their goal. (Individual) pull up electronic record of previous goals, generally 1 week to a month after appointment.

R3-1 week, 1 month and every 3 months after that for a year. If they can't do a 3 mo. Follow-up then they do a phone follow-up. Write their food down for one week out of the month

R4-1 month follow-up for month face to face appointment. Before the appointment encourage patient to call or e-mail.

R5-Have 3 follow-ups, gauge success and where they are, use this to decide whether to reinforce or introduce new topics. No time frame. Approximately once a month (up to the patient)

R6- Not primary care, so once they see them they sent them back to their provider. Some don't like they'll then they see them every 6 mos. to a year. Call village coordinator and let coordinator deal with follow-up. If it's local they'll see them probably every couple of weeks until they're comfortable.

R7-Try to schedule an appointment there. If they come they talk about it if they don't come call them and talk about it on the phone. Ask them about their work schedule then push it out to a month. If they have concerns and they want to come in do it every two weeks. Let the patient set it.

R8-Come in usually every week for a few weeks. If they have special needs do e-mail or phone call.

R9-if their in the class we follow the next session and we follow-up by mail. If their individual for diet only they're two nutrition devoted session and we do the exact same thing. Some of them come and the next class is next week and others their next is in four or five weeks. I'd say about a week to a month. And the letter goes out 1-3 months after they complete it.

R10-whatever the plan was, follow-up in 2-3 weeks. We do have to follow billing guidelines. That's the issue. Often their insurance will only pay for so much.

How do you record or document this follow-up information?

R1-Yea we always make chart notes. In our Logician whether it's a follow-up phone call, the 3 mo. follow-up phone call or whether it's just a phone call or visit.

R2-electronic medical record

R3-have a goal sheet for the educator concerning the patient. What they plan to do with them.

R4-Same system for encounter using the following sections: "reported outcome" "direction that session was to got tom, "intervention" "evaluation" "patient goal section" "next step"

R5-Database to track appointments and use this to schedule follow-ups. If they miss appointment they send letter to provider and them to call and reschedule. No paper records

R6-All on PCC plus. SOAP format: Subjective, objective, assessment and plan.

R7-PCC on every patient contact.

R8-On electronic chart

R9- those sheets go in their charts

R10-in the patient's chart (electronic)

16. Q-16 How do you track goal attainment or outcomes for your patients who have dietary goals?

    R1-we've got the place in Logician where we do track it. We don't separate out dietary goals. All of our goals are tracked and maintained dietary is not the only part. During follow-up we look up goals and we actually have space down below where we ask how they felt about their goals did you meet your goals. How much of the time do you feel like you met your goal (25, 50, 75, and 100%)? So we can measure in percentages.

    R2- How much have you met your goal (0-25, 26-50, 51-75, 75-100%) after class? After individual have them bring in their own records of how their doing with meals.

    R3-AADE worksheet. Goal was met, what you did to improve the goal. Maybe they made goal to measure food one week out of the month if that didn't work ask them to measure one day out of the month.

    R4-Record goal during the first session. Next time whether a visit, email, or phone call.

R5-Drop down list of Numeric scale on EHR (1-3). 1=thinking of/considering goal 2=implementing changes, 3=permanent lifestyle change [allows tracking to see success rate of program]

R6-Mostly refer back to most recent last note and check with the patient. If there's no note start from scratch. Could use labs, RPMS diabetes health summary.

R7-usually use their file and keep PCCs together. Review what they talked about and looked at what they've done. Check BS, weight loss, are their clothes fitting different... measure waist and hips.

R8-Written in chart also if there's a goal that affects weight or lab values then track it that way.

R9-we gather all those sheets and tally it up and do a quality improvement. Scale is always, most of the time, sometimes, a few times, and never. What did they learn from working on the goal? They write really neat stuff like "I didn't realize I could make these changes this easy or I realize how important it was or it wasn't hard as I thought it would be.

R10-well there's room for improvement. Have to go back in medical notes. It'd be nice if we had charts and bar graphs and all that but that didn't happen. Previously marked yes or no and went from there

Appendix D: Survey

Q1. Have you practiced as a diabetes educator, at least part-time, in the last year?

1 Yes
2 No → **You do not need to finish the survey. Please return the questionnaire to us in the envelope provided. Thank you!**

First, we would like to get some information about your practice as a diabetes educator.

Q2. Has the *majority* of your diabetes education been conducted in an in-patient or out-patient setting? *(Circle your answer.)*

1 In-patient
2 Out-patient

Q3. The majority of the time, do you work in a diabetes education team or do you conduct diabetes education independently? *(Circle your answer.)*

1 I work with a diabetes education team
2 I work independently
3 Other

Q4. In their sessions with you, approximately what percentage of your patients set goals or identify behavior changes of any kind (whether written or not) for diabetes self-management? *(Circle your answer.)*

1 None
2 Less than 25%
3 25% to 50%
4 51% to 75%
5 More than 75%

Now we would like to know about diabetes education with your <u>type 2 patients</u>.

Q5. How many different type 2 patients do you see in sessions, classes, or consults in a typical month?

1 Less than 25
2 25-50
3 51-75
4 More than 75

Q6. Do you conduct diabetes education with type 2 patients individually or in groups?

1 Individually
2 In groups
3 Both

Q7. To prepare for your first diabetes education session with a patient with type 2 diabetes, how often do you collect the following information *directly* from the patient? *(Circle one answer for each.)*

	Rarely or Never ▼	Sometimes ▼	Usually or Always ▼
Questions they have about diabetes	1	2	3
Their knowledge about diabetes	1	2	3
Their current diabetes self-management practices	1	2	3
Family, employment, or social impacts of their diabetes	1	2	3
A dietary assessment (such as recall or diary)	1	2	3
Their exercise habits	1	2	3
How they like to learn	1	2	3
Their motivation for managing their diabetes	1	2	3

Q8. For each of the following, please tell us how important it is for you to finish it during your *first* session with the type 2 diabetes patient. *(Circle one answer for each.)*

	Not Important ▼	Somewhat Important ▼	Very Important ▼
To finish an assessment of the patient	1	2	3
To begin diabetes education	1	2	3
To have the patient set goals	1	2	3
To introduce diet and/or dietary self-management	1	2	3
To let the patient guide the meeting	1	2	3

Q9. How many of your type 2 diabetes patients set goals in the following self-management areas? *(Circle one answer for each.)*

	None (0%) ▼	Few ▼	Some (50%) ▼	Most ▼	All (100%) ▼
Healthy eating	1	2	3	4	5
Being active	1	2	3	4	5
Monitoring blood glucose	1	2	3	4	5
Taking medication	1	2	3	4	5
Problem solving	1	2	3	4	5
Healthy coping	1	2	3	4	5
Reducing risks	1	2	3	4	5

These next questions relate to when you and your type 2 patient first talk about <u>diet and dietary changes</u> for diabetes control.

Q10. In your practice, do you routinely address diet for diabetes control?

1 Yes
2 No → **Skip to Q28, page 9**

Q11. What specific information about the patient's diet do you usually collect to guide a discussion about diet? *(Circle ALL that apply.)*

1 Diet history, food diary, or typical day's intake
2 Supplement and vitamin intake
3 Dietary preferences
4 Timing of meals
5 Person who shops for or prepares meals
6 Eating out patterns
7 Satisfaction with current eating habits
8 Other
9 None

Q12. How do you judge whether patients are ready to commit to a dietary change? *(Circle ALL that apply.)*

1 I use my intuition to judge the patient's readiness
2 I ask the patient if he or she is ready to make a change
3 I ask the patient what kind of dietary change he or she is ready to make
4 I have the patient respond to a scale (such as 1 to 10) to measure readiness
5 I use Stages of Change to assess their readiness
6 I ask the patient to show his or her understanding (for example, by counting carbs or planning a meal)
7 I wait for the patient to tell me whether he or she wants to work on dietary changes
8 None of the above

Q13. Which of the following approaches or tools do you use to teach meal planning to your patients? *(Circle ALL that apply.)*

1 Food models
2 Portion size tools (Measuring cups, bowls, spoons, etc.)
3 Sample menus
4 Dietary assessment tool
5 Carb counting
6 Conversation map
7 Plate method
8 Lab values
9 "My Food Plan" series from International Diabetes Center
10 Educational handouts
11 Websites
12 None of the above

Q14. What approaches or tools do you use to guide or help patients to set a *specific* dietary goal? *(Circle ALL that apply.)*

1 I let the patient decide what dietary goal he or she wants to set
2 I review a dietary self-assessment with patients and use it to identify areas for change
3 I use food models
4 I use the plate method
5 I teach carb counting
6 I give the patient a form with suggested goals to choose from
7 I use the SMART goals process
8 Other (please specify): _____

Q15. How often do you use the following strategies with patients who are struggling to carry out their dietary goals? *(Circle one answer for each.)*

	Rarely or Never ▼	Sometimes ▼	Usually or Always ▼
Simplify the goal	1	2	3
Reduce roadblocks or obstacles to the goal	1	2	3
Discuss the patient's motivations for working on the goal	1	2	3
Reinforce the patient's success(es) with him or her	1	2	3
Give the patient support to keep trying to meet his or her goal	1	2	3
Identify a different goal	1	2	3
Supply the patient with a food plan	1	2	3
Refer patient to outside resources	1	2	3

Q16. How many of your patients have ever reported trying these dietary changes for diabetes control? *(Circle one answer for each.)*

	Proportion of Patients Who Tried Changes				
	None (0%) ▼	Few ▼	Some (50%) ▼	Most ▼	All (100%) ▼
Reduce portion sizes	1	2	3	4	5
Cook with or use less fat or oil	1	2	3	4	5
Cook with or use a different type of fat or oil	1	2	3	4	5
Avoid fried foods	1	2	3	4	5
Grill meats instead of frying	1	2	3	4	5
Eat fewer fast food meals	1	2	3	4	5
Eat more vegetables or greens	1	2	3	4	5
Eat low fat foods	1	2	3	4	5
Eat leaner meats	1	2	3	4	5
Eat more fresh or frozen fruits	1	2	3	4	5
Eat low-sugar or sugar-free foods	1	2	3	4	5
Eat higher fiber foods	1	2	3	4	5
Eat less grains and starches	1	2	3	4	5
Eat less canned fruit	1	2	3	4	5
Avoid drinks high in sugar (e.g. soda pop)	1	2	3	4	5

Q17. When your patients set a dietary goal, do they write it down?

1 Yes
2 No → **Skip to Q19**

Q18. Which of the following formats are used? *(Circle ALL that apply.)*

1 AADE goal sheet
2 Other goal setting handout or sheet (original or photocopy)
3 Workbook

Q19. When your patients set a dietary goal, do you record it for your own use?

1 Yes
2 No → **Skip to Q22**

Q20. Do you use any of the following formats? *(Circle ALL that apply.)*

1 Paper copy of a goal form or sheet that I put in the patient's file
2 Hand written notation in the patient's file
3 Entry in computerized system

Q21. Do you share a copy of the patient's goal with the referring physician?

1 Yes
2 No

Now, we would like to ask you about your follow-up with type 2 diabetes patients and their dietary goals.

Q22. Are you able to follow-up with any of your type 2 patients about their dietary goals?

1 Yes
2 No → **Skip to Q28, page 9**

Q23. How many weeks (or months) on average after initial diabetes education do you usually conduct the initial follow-up?

_____ Weeks

(OR_____ Months)

Q24. Approximately how many follow-up visit(s) or session(s) (e.g. class or one-on-one) do you have with each new type 2 patient?

_____ Follow-up(s)

Q25. What kind of communication do you use with patients to follow-up about their dietary goal(s)? *(Circle ALL that apply.)*

1 Return appointment with the patient
2 Telephone call to the patient
3 Email from the patient
4 A mailed inquiry to the patient
5 I don't do a separate follow-up for dietary goals

Q26. Do you document the patient's success with goal setting, such as goal outcomes or attainment?

1 Yes
2 No → **Skip to Q28**

Q27. How do you describe the patient's level of success with goals? *(Circle ALL that apply.)*

1 I describe in my own words the goal outcome in the patient's file or electronic record
2 I use the AADE7™ Form
3 I use a percentage (such as 0-25%, 26-50%)
4 I use a scale or a defined set of categories (such as met or not met)

The next few questions are about your practice setting.

Q28. In what agency or work setting do you primarily conduct your diabetes education? *(Circle one answer.)*

1 Hospital
2 Clinic
3 Diabetes Education Center
4 Other (please specify): _____

Q29. Is your program ADA (American Diabetes Association) recognized?

0 Don't know
1 Yes
2 No

Q30. What primary ethnic groups do you work with? *(Circle ALL that apply.)*

1 Non-Hispanic White
2 Hispanic or Latino
3 Black or African American
4 Asian or Asian American
5 Hawaiian or Other Pacific Islander
6 American Indian or Alaskan Native

Q31. Please circle the age range of the *majority* of your Type 2 patients. *(Circle one answer only.)*

1 19 years and younger
2 20 to 39 years
3 40 to 59 years
4 60 years and older

Finally, we would like to ask you some questions about yourself to understand the data.

Q32. What is your gender?

1 Male
2 Female

Q33. How old are you?

_____Years

Q34. With which of the following ethnic groups do you consider yourself a member? *(Circle ALL that apply.)*

1 Non-Hispanic White
2 Hispanic or Latino
3 Black or African American
4 Asian or Asian American
5 Hawaiian or Other Pacific Islander
6 American Indian or Alaskan Native
7 Other (please specify): _____

Q35. Please circle which of the following educational credentials you have. *(Circle ALL that apply.)*

1 Certified Diabetes Educator
2 Registered Nurse
3 Nurse Practitioner
4 Registered Dietitian
5 Pharmacist
6 MD
7 Other (please specify): _____

Q36. How many years have you practiced in the field of diabetes education?

_____ years

Q37. Do you currently work in diabetes education part-time or full-time?

1 Part-time
2 Full-time

Q38. Have you ever received training in the following areas? *(Circle one answer for each.)*

	Yes ▼	No ▼
Stages of Change	1	2
Behavior change strategies for diabetes control	1	2
Motivational interviewing	1	2
Problem solving techniques	1	2
Goal setting education and counseling	1	2